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65 *Features* •The Product Monitor •Appleworks file to text file •Editor Creator II •Making your own APT •Walk-thru guide to Questron II •Wrath Mapper •Some IIgs notes •Fixing the Core Disk Searcher •Help with 3½ inch disk protection *Softkeys* •Adventure with Fractions •Bard's Tale II (gs) •Certificate Maker's Library vol 1 •Coast To Coast •Create-a-Base •Design Your Own Train •Deja Vu •Diagnostic System •Dreadnoughts (IIe) •E-Z LOGO •Elementary - Volume 8 •Elementary - Volume 9 •Elementary - Volume 10 •English Parts of Speech •Estimation •Grade Manager •Graph •Graphing Primer •Growgins' Fractions •Guessing and Thinking •Jigsaw •Keyboarding Master •Keyboarding Primer •Kings Quest III •Labels, Letters, and Lists •LOGO Words and Ideas •Management System •Market Place •Master of the Lamps •Math Wizard •Mathematics Volume 1 •Mathematics Volume 2 •Mathematics Volume 3 •Mathematics Volume 4 •Mavis Beacon Teaches Typing v1.5 •Maxi Golf •MECC Speller •Millionaire v2.1 •Mind Puzzles •Mini-putt •Monte Carlo •Number Systems •Nutrition Volume 1 •Nutrition Volume 2 •Oh, Deer! •Paperboy IIe •Pirates! GS •Prime Numbers •Probability •Problem Solving Strategies •Puzzles and Posters •Rampage •Run Your Own Train •Scoop Mahoney •Shadowgate GS •Shanghai •Showoff v1.1 •Slide Shop •Sound Tracks •Spanish Facts for Fun and Practice •Starglider •Strip Poker GS •Strip Poker II •Study Guide •Stuff and Fetch •Superprint •Take 1 Deluxe •Tetris •Weather Forecaster •Word Choice 2.0 •Word Match 2.0 •Word Search 3.0 •Word Scramble 3.0 •World Tour Golf •Writing a Narrative •Zany Golf *APTs* •DeathSword •Oils's Well •Run For It •Tower of Myraglen •Wings of Fury •Wizardry V *Playing Tips* •Questron II *Notes* •Changing high scores •Notes on Alien Mind •In the lore library (Wiz V) •Fixing a bug in Wizardry V? •Patch Appleworks cursor, addendum •Notes on copying Tomahawk •Notes on Tetris **IBM** Softkeys •Multilink v2.06 •Multilink v2.08, 2.08c, 3.00c •Professional BASIC •ThinkTank v1.000, 1.001 •Visicalc

64 *Features* •Apple DuoDISK Modification •The Bard's Dressing Room III •EOADIS Adapter •Merging Controllers into Super IOB •The Product Monitor *Softkeys* •4th & Inches •Ace Reporter •Alphabet Express v2.1.5 •Balance of Power •Bard's Tale II GS •California Games •Crossbow •Crossword Magic 4.0 •Dataquest: Presidents Data Base •Dinosaurs •Dive Bomber •Elementary Social Studies Vol 3 •Elementary Social Studies Vol 6 •Facemaker •Flight Simulator II v2.0 •Galaxian •The Games - Summer Edition •Grammar Gremlins •Kings Quest III •The Last Ninja •Math Shop •Microtype •Mini-Putt •New Oregon Trail •Notes "N" Files •Number Bowling •Paperboy •Path Tactics •PFS Write •Principles of Economics •Reader Rabbit •Shadowgate •Shape Starship v2.1.5 1986 •Skate or Die •Starglider •Star Maze •Story Writer •Super Sign Maker •Troll's Shop Right •Ultima V •Zany Golf *APTs* •Gauntlet •Into the Eagles Nest •Moebius •Wings of Fury *Playing Tips* •Alien Mind •Bard's Tale II •The Last Ninja *Notes* •A bit copy for Algeblaster •A bit copy for Alien Mind •A bit copy for Homeworker •A bit copy for Where in the USA is Carmen SanDiego? •A look at Alien Mind (IIgs) •A look at GS/OS •A look at Tomahawk (IIgs) •An alternate to COPYA? •More on Appleworks and printer codes •Playing Notes on Thexder •Super Index "Bugs"? •The meaning of "M" •Saving Strip Poker II pictures **IBM** *Softkeys* •Balance of Power •Enable v1.10 •Mean 18 Golf & Arch •Memory Shift v2.1 •PC Draw v1.4 •Personal Communications Manager v1.0 •Trivia Fever

63 *Features* •Infocom games & Lower-case •Infocom games & 80 columns •The Product Monitor •Deprotecting with an altered DOS 3.3 disk •Graphics and your Word Processor •Put 2400 A.D. on a 3½ inch disk •Editor Creator •Deactivating Signature Checks •Ultima V Character Editor •2400 A.D. Quick Mapper •Short Programs *Softkeys* •Algebra volume 3 •Algebra volume 4 •Bard's Tale II (gs) •BC's Quest for Tires •Car Builder •Create with Garfield •Deadline •Enchanter •Following Written Directions •Galaxy Math Facts: Decimals •Galaxy Math Facts: Fractions •The Game •J & S Grade Book v5.4.1 •Killed until Dead •Kings Quest I •King's Quest II (gs) •King's Quest III (gs) •Let's go Fishing •Magic Spells •Monatan Reading Program •Operation Frog •PSAT/SAT Analogies •PSAT Word Attack Skills •Rampage •Rainbow Painter •RAMBO First Blood part II •Reading Skills Two •SAT Word Attack Skills •Scrabble •Secrets of Science Island •Skate or Die (gs) •Sorceror •Space Eggs •Starcross •Stickers •Strategies for Test Taking •Take 1 Deluxe •Transylvania Enhanced •Vocabulary Baseball •Word Master •Zany Golf (gs) •Zork II, III *APTs* •Deathlord •Demons Winter •Leisure Suit Larry •Microwave *Playing Tips* •AutoDuel •Bard's Tale •Bruce Lee •Deathlord •Hacker •Leisure Suit Larry •Maniac Mansion •Taipan •Ultima V.16,22,33,35 •Wasteland •Wings of Fury •Wizardry *Notes* •ProDOS IOB bug •Note on Wasteland Tip •Free Thexder Upgrade •Publish it & importing graphics •Addendum to Davidson & Associates •A fix for Controller Writer •Ultima V APT caution •Giveaways for Ultima V •Sound bugs in Ultima V •Bit copy of Airheart **IBM** Softkeys •Chuck Yeager's Advanced Flight Simulator v1 •dBase III v1.10 •Memory/Shifter •Printmaster •Ultima II

62 *Features* •No more floppies for Word Juggler? •A better Bootable Thexder? •Print Shop catalog patch, revisited? •The Product Monitor? •Convert PrintMaster graphics into Print Shop graphics? •Recovering the hidden OTHEXDER? •ProDOS IOB 5.25 *Softkeys* •Alge-Blaster •All About America (IIgs) •Below the Root •Calendar Crafter •Certificate Maker IIgs •Club Backgammon (IIgs) •Dazzle Draw IIc •DC Heath Elementary Math •Deathlord •Decisions Decisions •Easy Graph •Fortran •Fraction Factory •Fractions •Game Frame •GATO v1.3 •Geoworld •Graphics Studio (IIgs) •High Seas •Hometown •Instant Music •Kindermath •King's Quest I (IIgs) •King's Quest II (IIgs) •King's Quest III •Matchmaker World Geography Facts •Mavis Beacon Teaches Typing •Maxi Golf •Mind over Matter •On Balance •One World •Pac-Man •Project Space Station •Rad Warrior •Read and Rhyme (IIgs) •Reading Workshop •Robot Rascals •Run For It •Space Quest 2 (IIgs) •Street Sports Soccer (IIgs) •Tetris IIgs •Thexder (IIgs) •Timeliner •Toy Shop •Trains •Treasure Hunt •Ultima V. •Ultraterm Applewriter Preboot-V •USA Profile •Vegas Craps (IIgs) •Vegas Gambler (IIgs) •Word Juggler 2.9 *APTs* •AutoDuel •Bard's Tale III •California Games •Lode Runner •Pharoah's Revenge •Thexder *Playing Tips* •Moebius *Notes* •A bit copy of Wings of Fury •Autocopy for Calendar Crafter •Put Calendar Crafter on hard disk •Paintworks Gold printer drivers •Bribery in ""Best of ?88" vote! •Moebius editing warning •More on booting from drive 2 •Half-key for Tetris •Disable ProDOS error checking •POKEing around Hires •Disk controller card locations •Math operators in Applesoft •Mousetext from BASIC •Modification for Alien Mind •Other informative publications •More clues to Ultima V •Bard's Tale III code wheel •Notes on Airheart •Notes on Legacy of the Ancients •Bit copy of Bank Street Writer IIc **IBM** Softkeys •Disk Mechanic •Enable •Fastback •Focus •Multilink •Print Shop •Print Shop Companion

61 *Features* •Double DOS •Deprotection tips for DOS and ProDOS •A Search Command for II's •Zip Chip finally Ships •The Product Monitor •Put a deprotected Where in Europe is Carmen Sandiego on a 3½ inch disk •A self-booting Thexder, Put ProDOS and Thexder on a 3½ inch disk •Capture protected RWTS with RWTS Worm *Softkeys* •Adventures of Sinbad •ARCHIVEmath •Aztec •Broadsides v2.0 •Calculus Toolkit •Cannonball Blitz •Catalyst 3.0 •Cofa Courseware •Cross Clues •Deathsword •Defender of the Crown •Dondra •Gauntlet •G.I. Joe •King's Quest I •King's Quest II •King's Quest III •Magical Myths •Math Shop •Mathblaster •Mathbusters •Mavis Beacon Teaches Typing •Megabots •Micro Addition/Subtraction •Microzine #25 •Microzine #26 •One-on-One •PFS Computer Checkup •PFS File •PFS Graph •PFS Report •Pirates! •Pirates! IIgs •Presenter •Rescue on Fractalus •Science Toolkit •Smart Eyes •Softswitch •Spiderbot •Tales from the Arabian Nights •Thinkware •Tink's Subtraction Fair •Tower of Myraglen •Ultima V •Xevious *APTs* •Bard's Tale III •Ultima V *Playing Tips* •Ultima V •Wasteland *Notes* •Mindscape •Scholastic •Hartley Software •Prentice Hall •CAI •CTW Series •Garfield **IBM** Softkey •Print Shop •Test Drive **IBM** Playing Tips •Leisure Suit Larry in the Land of the lounge Lizards

60 *Features* •Reading from Protected Disks •EDASM Transfer Utility •Amper QuickDraw II Routines •Slow Speeds for Arcade Games •A Patch for Copy II Plus •The Product Monitor •Low Cost Alternate Languages •Another method for Copy-Protecting DOS 3.3 •Change Appleworks Cursor from a blinking underline to a blinking apple in one quick patch *Softkeys* •Ace Programmer •Aesop's Fables (GS) •Apple GEOS v2.0 •Artic Antics •Creating the Constitution •Crossword Magic 4.0 •Death Sword •Dome Bookkeeping •Essential Data Duplicator III (EDD 3) •Garfield Deluxe Edition •Gauntlet IIgs •J & S Gradebook •Kings Quest IIgs •Kings Quest I (GS) •Lazer Maze •Leisure Suit Larry •Magical Myths •Mastertype v2.1 •Mavis Beacon Teaches Typing •Mind Prober/Mind over Minors •NATO Commander v1.2 •Paperboy •Pegasus •Pinball Construction Set •Pool 1.5 •RAD Warrior •Railroad Works •Road Rally USA •Robomath •Science Tool Kit •Search and Rescue •Showoff •Social Studies Vol 1 •Social Studies Vol 2 •Solo Flight •Space Quest •Springboard Publisher •Spy.vs Spy III •Star Fleet I v2.1 •Tales of Fantasy: The Dark Tower, Frog & The Fables •Tapper •Troll Courseware: Maps & Globes, Latitude & Longitude •Type! •Ultima V •Wagons West •Zorro *APTs* •Kid Niki Radical Ninja •Lode Runner •Space Quest IIe •Thexder *Playing Tips* •2400 A.D. •Captain Goodnight •Space Quest IIe *Notes* •Defending the Crown with "Visit Monitor" •Formatting extra tracks •Merging controllers with Super IOB •More on Tower of Myraglen •Some notes on Electronic Arts •Some notes on Epyx •Tips for cracking IIgs 3½ inch disks **IBM** Softkeys: •Clipper •DoubleDOS v1.0 •LoadCalc v4.13 •Mind Prober

59 *Features* •Boot IIc Utilities on any compatible •Help with Ultima V •Convert Printmaster graphics into Print Shop graphics •The Invincible Bard (III) •The Deprotection Game •Patching ProDOS 1.1.1 •The Product Monitor •AppleWorks and the ImageWriter II *Softkeys* •APBA Major League Players Baseball •Better Working: Spreadsheet •Better Working: Word Processor •Beyond Pinball •BoulderDash Construction Kit •Calendar •Calendar Crafter •California Games •Championship Baseball •Clip Art Collection vol 1 •Cours Et Gagne v1.0 •Dazzle Draw •Everbody's Planner •GATO v1.3 •GoldFinger •Jumpman •King's Quest •Management Edge •Movie Monster Game •MultiScribe v3.0 •Negotiation Edge •Nightmare Gallery •Patchworks •Picture Phonics •Printographer •Reader's Treasure Chest •Real Math •Sea Strike •Shifty Sam •Simulation Construction Kit •Snoopy's Reading Machine •Snoopy's Skywriter Scrambler •Snoopy to the Rescue •SongWriter •Spell It! •Stickybear Reading Comprehension •Super BoulderDash *APTs* •Bard's Tale III •Super BoulderDash •Ultima V *Playing Tips* •Alternate Reality •Auto Duel •Ultima V •Where in the World is Carmen Sandiego **IBM** Softkey •Chartmaster v6.04 •Clout v1.0 •Copywrit •Graphwriter •Signmaster v5.04

58 *Features* •Mixing ProDOS with Thexder •Infocom Decoder Revisited •Cracking on the IIe •Might & Magic Revisited •Might & Magic Character Editor •An indepth guide to Ultima IV •Computing for 1-3 year olds •The Product Monitor *Softkeys* •A.I. •BoulderDash •BoulderDash Construction Set •DeathSword •Design Your Own Home: Architecture •Design Your Own Home: Interior •Design Your Own Home: Landscape •Facemaker •Gauntlet •Kings Quest II •Mastery Arithmetic •Microzine #26 •Muppet Slate v1.0 •PFS: Graph •Polywriter 1.2 •Rad Warrior •Rings of Zilfin •Seaspeller •Smart Eyes •Spell It! •Wings of Fury *APTs* •Castle Wolfenstein •Marble Madness IIgs •Might & Magic •Ultima IV •Ultima V *Playing Tips* •Coveted Mirror •Deathlord •Might & Magic •Oo-Topos •Ultima IV *Notes* •A better way to print Starter Kit DOC's •Curing Fatal System Error #0911 •Realtime Situation Control using CDAs •Chuck Yeager's Advanced Flight Trainer **IBM** Notes •Help Wanted!

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55 *Features* •A Utility to Save the Lower 8 Pages of Memory •Bard's Tale Effects Locator •How to Capture Phantasie Screen Maps •Alternate Reality Character Editor •Updating the ProDOS Block Editor •Loading Flashcalc onto your RAMcard •A Copy-protection Scheme for ProDOS •The Product Monitor •Autoduel Car Editor *Softkeys* •Alphabet Sequencing •Animal Alphabets and Other Things •Arctic Antics •The Boars' Store •The Boars Tell Time •Career Focus •Castle Wolfenstein •Charlie Brown's 123's •Charlie Brown's ABC's •City Country Opposites •Coveted Mirror •Create With Garfield •Crypt of Medea •Customized Alphabet Drill •Customized Flash Spelling •Dig Dug •Digital Paintbrush System •Estimation •Fay: Word Hunter •Fix It •Focusing on Language Arts •Fundamental Capitalization •Fundamental Punctuation Practice •Fundamental Spelling Words in Context •The Hobbit •Homonyms in Context •Individualized Study Master •Inside Outside Shapes •Inside Outside Opposites •Leisure Suit Larry in the Land of the Lounge Lizards •Master Diagnostics II & II+ •Mastertype v2.1 •Mathematics Series •Mr. and Mrs. Potato Head •Paper Models - The Christmas Kit •Peanuts Math Matcher •Peanuts Maze Marathon •Peanuts Picture Puzzlers •Perry Mason: The Case of the Mandarin Murder •Railroad Works •Random House Library •Management Programs •Rocky's Boots v.4 •Sensible Speller •Snoopy's Reading Machine •Snoopy's Skywriter Scrambler •Snoopy to the Rescue •Snoopy Writer •Spelling Demons •Stock Market Simulation •Story Builder •Story Starter •Studio II •Test Maker •Think Quick v1.0 •Tournament Bridge •Tutorial Comprehension •Typing is a Ball, Charlie Brown •Under Fire •Word Blaster •Word Count •Word Mount •Your Personal Net Worth *APTs* •Under Fire **IBM** Feature: •Flight Simulator RGB Modifications

54 *Features* •Picture Loader •How To Make DEMUFFIN PLUS •Convert Print Shop graphics into Print Master graphics •lower case letters For Your Apple II Plus •The Product Monitor •Apple IIc Paddle Fix •Softkey for Daisy Professional "Most-Protected' Award •DOS EOR Maker *Softkeys* A2-PB1 Pinball •Animate •Bank Street Music Writer •Boulderdash Construction Kit •California Games •Countdown to Shutdown •Coveted Mirror •Create with Garfield •Daisy Professional •Destroyer •Donkey Kong •Expedition Amazon •General Chemistry Disk #8 •Graphics Studio •Green Globs & Graphic Equations •Kalamazoo Teacher's Record Book 2.0 •Kids on Keys •Marble Madness •Math Blaster •Maxwell Manor •Peanut's Maze Marathon •Petro-Calc •Police Artist •Practical Grammar •Rendezvous •Ring Quest •Roadwar Europa •Roadwar 2000 •Rocky Horror Show •Sesame Street Electric Coloring Book Series •Sesame Street Letters for You •Sesame Street Numbers •Seven Cities of Gold •Snoopy's Reading Machine •Spy's Adventures In Europe •Spy's Demise •Super Sunday Football •Talisman •Tellstar II •Top Draw v1.01A •The American Challenge •The Dam Busters •The Science Professor •Tubeway •Vocabulary Adventure I •Winter Games •Wizards' Crown •Zero-Gravity Pinball *APTs* •Expedition Amazon •Might and Magic *Playing Tips* •Beauracracy •King's Quest II •Lurking Horror •Maniac Mansion •Stationfall **IBM** Feature •Introduction to IBM Disk Format, Access, and Copy-protection •Putting Sargon III on harddisk **IBM** Softkeys •Prokey 3.0 •R:base 400 •Time Manager

53 *Features* •Modify Super IOB to read/write every other track •APT for Rings Of Zilfin: Turn yourself into a lean, mean fighting Machine •More Softkeys for M.E.C.C. software (1987) •How To Use The Electronic Art's RWTS •APT for Realms Of Darkness: Realm's Wrecker! •Putting Super Boulder Dash onto a hard disk *Softkeys* •2400 A.D. •Age Of Adventure •Apple's Core II •Arcade Boot Camp •Arctic Fox •Aztec •Ballblazer •Bard's Tale IIgs •Blue Powder Gray Smoke •California Games •Championship Wrestling •Colonial Conquest •Comprehension Skills I,II •Conquering Whole Numbers •Coordinate Math •Countdown To Shutdown •Dataquest: The World Community •Destroyer •Dream House •Dream Zone •Earth Orbit Station •Equation Math •Forecast: Your At-Home Weather Station •Fraction Concepts Inc •Fraction Munchers •Fraction Practice Unlimited •GBA Championship Basketball •Genesis •GFL Football •Ghost Rider •Goonies •Grade Manager v2.3 •Great American Cross-country Road Race •Hardball IIgs •Ikari Warrior •Jenny's Journeys •Kid Niki Radical Ninja •Kung-Fu Master •Learning To Tell Time •Leisure Suit Larry •Let's Learn About Money •Let's Learn about the Library •Letters For You •Lords Of Conquest •Magic Spells •Math Blaster •Money Works •Maps & Globes: Latitude & Longitude •Marble Madness •Microzine 18,19,20,21,22,23 •Mist •Morning Star Math •Movie Monster Game •Multiplication Puzzles •Multiscribe v3.0c •Murder On The Mississippi •Music Made Easy •Mystery Sentences •Number Munchers •Numbers Count •Odell Lake •Operation Frog •Opposites Attract •Oregon Trail v1.4 •Phonics Prime Time:

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Readers Data EXchange

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

What is a softkey, anyway?

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

Commands and control keys

Commands which a reader is required to perform are set apart by being in boldface and on a separate line. The **return** key must be pressed at the end of every such command unless otherwise specified. Control characters are preceeded by a **ctrl** key. 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 **ć 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 **ć** 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 the "S-C Assembler" from S-C software or "Merlin/Big Mac".
- Bit-copy program such as "Copy II Plus", "Locksmith" or "Essential Data Duplicator".
- Word-processor (such as AppleWorks).
- "COPYA", "FID" and "MUFFIN" from the DOS 3.3 System Master disk.

Super IOB and Controllers

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

Reset into the Monitor

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

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

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

Apple //e, //c: Install a modified CD ROM on the computer's motherboard that changes the **ć ctrl reset** vector to point to the monitor. (This will void an Apple //c warranty.)

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 **ć ctrl esc** to go to the Desk Accessories menu. Select *Visit Monitor* and there you are. Use **ctrl Y** to exit.

Recommended literature

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

Typing Applesoft programs

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

```
10HOME:REMCLEAR SCREEN
```

The LIST will look like:

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

...because 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 delta 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 delta (▵) charactors. **SAVE** the program at periodic intervals using the name given in the article. All characters after a REM are not checked by the checksum program so typing them is optional.

Typing Hexdumps

Machine language programs are printed in COMPUTIST as hexdumps, sometimes also as source code. Hexdumps are the shortest and easiest format to type in. You must first enter the monitor:

CALL -151

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

3D0G

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

Typing Source Code

The source code is printed to help explain a program's operation. To enter it, you need an "Assembler". Most of the source code 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 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.
- Whenever possible, **send everything on Apple format 5¼" disk**. (Your disk will be returned 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.
- Don't include hardcopy (printout) unless:
  - *You are writing about a bug or other printing error.*
  - *You are writing to ask for help.*
  - *You are writing about your subscription or sending an order for back issues or software.*
- 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.
- When writing to request help, be sure to include **ALL** relevent information. The more information you include, the easier it is to find a solution. There's an old saying that goes "A properly framed question includes 90% of the answer".
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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

A real editorial

A letter from a reader complains, "When are we going to see a real editorial?". Well, it would help if I knew what you meant by "real editorial". I've reread some editorials in other publications and this is what I've come up with. A "real editorial" is, the editors opinion (good or bad only) stated in uncompromising terms. So here goes.

The death of the Apple II

I'm PO'd at Apple Computers, Inc. about the way that they have been handling (or mishandling) the Apple II line. From inadequate upgrades, to ignoring the II line, to actually designing a II upgrade that is a giant technological step backwards. Yes, I'm talking about the IIgs. Apple has been doing owners of II computers a vast disservice. And now, they have finally managed to hem and haw and delay, till the II line is effectively dead. Oh I know, there are some neat new peripherials for the II, but they're not enough to overcome the prolonged neglect that Apple Computer is guilty of. Mac magazines have been warning Apple II owners to buy a Mac, right now!, and there doesn't seem to be any really new, on the leading edge of technology, software for the II. By all accounts from people in the industry, the Apple II line is kaput, unless...

Do any of you remember the TI-99 computer? It became an orphan and only the owners have been supporting it since. The Apple II is the abandoned child of Apple Computer. Our parent has deserted us and if we want to save our investment in the Apple II, we're going to have to do it ourselves. We're going to have to design *the new Super II* computer.

The Super II computer

There are rumors that Laser or Applied Engineering or both (depending on who you talk to) are going to come out with a new Super II computer. That would be great but I don't think we should just sit back and wait. I think we should design it ourselves and then if someone hasn't come out with it by the time we're finished, we should get together and hire someone to make it for us. I'm writing from the viewpoint of the Apple II, II+ and IIe owners, but those of you who plunked down your hard earned bucks for a IIgs may want to listen in.

Before we start on something new, we need to look at the "shortcomings" of the old machine and to use that information to make some rules about the new machine. Let's take a look at what we have (or don't have). Feel free to write and correct me on any omissions or errors that I make.

Speed = 1 Mhz (65C02)
Memory = 64K (directly addressable)
Video = up to 16 colors, 560 x 192 pixels
I/O = 7 slots, Paddle port (built in)
Sound = direct ON/OFF control of speaker
Disks = 143K - 5¼" or 800K - 3½" drives

Short list, isn't it? Let's take a look at what we can do to improve on these points, but first, here are some rules for our new system. We'll think up some more as we go along.

1. *It must be 100% compatible with the existing machine.* This does not mean that the new modes will automatically be used by older software, however, it does mean that existing hardware and software must work in the new machine. Whatever cards or software an owner has in their current Apple IIx must fit in the new machine. That way you don't lose anything.

2. *It must be modular* so that improvements in technology may be incorporated into the existing machine with minimal expense. That means that we are going to stay away from huge motherboards that have to be completely replaced to change any little thing.

3. *It must be compatible with an existing hardware base* so that expansion cards will be available immediately. This is because hardware companies will not design hardware for a new machine until it has proved itself in the marketplace. (Proof like selling 100,000 or more of the new machines.) By making our Super II compatible with an existing hardware base, we circumvent this problem.

Speed

The Apple II runs at 1 Megahertz (Mhz). That's one million machine cycles each second. Sounds like a lot, but it isn't. How do we fix this? Well, most of you are aware that there are speedup cards (Transwarp, 3.6Mhz) and speedup chips (Zip Chip, 4Mhz – Rocket Chip, 5Mhz) that boost the peak processing speed of your Apple. This is a good place to start and it's something you can do right now. All of these speedup methods have one thing in common, they use a high speed RAM cache to hold portions of slower memory data, so that a faster processor can be used. This is something that Apple Computer is well aware of and it should have been built-in to the IIgs. Our Super II must be designed with a cache so that we can use the fastest processor available. A 65SC816, with cache, running at 6 or 8Mhz sounds like a good starting point ($400).

Note: Some processors come with a built-in cache but this doesn't invalidate our cache. The on-chip cache is usually quite small and our larger cache will be more effective.

Note: Zip Technology has announced an 8 Mhz version of their Zip Chip. Those of you, in-the-know, remember when they first announced the 4Mhz Zip Chip. There was quite some time between their announcement and the actual ship date. So, maybe there is a 8Mhz version, and maybe there isn't. It would be a smart marketing ploy to announce the 8Mhz chip at this time in order to kill sales of the Rocket Chip which runs at 5Mhz, 25% faster then the 4Mhz Zip Chip.

The NEW Processor

We can pick and chose among the new processors, but I must admit that I'm partial to the 65SC816 from Western Design. Having learned how to program in 6502 code, I'm reluctant to change. But there are some things about the 65SC816 that I'm not too fond of. First, they use a 40 pin DIP and multiplex the bank address on the data bus. This complicates the response to the RDY line and requires a bank latch which slows things down. I was hoping that Western Design would go to a different package and not multiplex the bank address. Second, there isn't a math coprocessor for the 65SC816 and a math coprocessor can speed up a math intensive program more than any accelerator card can.

Another wish, is that Western Design would build a cache into the next generation 65xxx.

The other two processors, most likely to be used, are the 680x0 from Motorola and the 80x86 from Intel. These two large, well known, companies are devoting a lot of time and money to improving their processor. They are at the leading edge of technology and we should seriously consider using their product.

Memory

The directly addressable memory of the Apple II is 64K bytes. Other memory is banked switched. This means that a portion of the memory is overlayed (replaced) by the memory on an expansion card. The bank switching protocol is arcane and confusing to the casual user as well as the first-time programmer. Complex memory maps and switching protocols are something we should avoid in our new design. We should adopt a new processor that allows more (directly) addressable memory, 16M bytes sounds like a comfortable amount to start with. Our new design should use 1 megabyte SIMMs. I've seen them advertised as low as $150 each. The minimum memory of our new computer would then be 1 megabyte. A good place to start.

Virtual Memory

Virtual memory is a way to get more cheap-but-slow memory into our machine. It works by setting aside a portion of the hard drive and addressing it as if it were RAM memory. A separate controller (and/or control program) maintains a RAM cache with the most often used sectors. A properly chosen cache size will allow programs residing in virtual memory to run as fast as programs in RAM. Support for virtual memory should be built-in to our new design.

Video

Everyone will agree that the Apple II desparately needs a video upgrade. I believe that 256 colors should be the minimum standard. The least expensive way to achieve this is to use one or another of the color cards already available for other computers. We would simply construct a plug-in slot that supports whichever card that we choose. The Apple Mac II color video card has a max. resolution of 640x480 pixels, 256 colors out of a palette of 16M colors. The Super VGA card ($300) for IBM compatibles has a max. resolution of 800x600 pixels, 256 colors out of a palette of 256K colors or 1024x768 pixels with 16 colors. An 800x560 resolution color monitor costs about $500, while 640x480 resolution costs about $400. A color monitor that takes advantage of the full resolution would cost about $1200. As you can see, the video upgrade cost depends on the monitor size and resolution that you require.

Input/Output

This is a place where we can really go wild if we want, but I believe our new design should have a minimum of:

2 - serial ports
1 - parallel port
1 - game/mouse port
1 - clock/calendar (battery backed)

The interesting thing here is that there is a card for the IBM PC/XT compatables that comes with all of this. It costs $60. We can do the same here as with the video card.

Sound

This is an area where I don't have any strong opinions. We could use a sound controller chip like the IIgs or whatever. I do think we should include a MIDI interface for dedicated sound hacker/musicians. What do you think?

Disks

Might as well go for the best as well as the standard, 1.44 megabyte, 3½" drives. Again, an IBM compatable controller costs $60. It controls up to 4 drives. The drives are available for $100-129. Or we could go with Apple 800K drives, about $200 each and a 2 drive controller for about $200 more.

Hard Drives

We can get a Apple compatable 20 megabyte hard drive for about $500 or we can use an IBM compatable controller card and get a 60 megabyte harddrive for the same amount.

Keyboard

We can go several ways here. We could support the IBM keyboard ($69-104 keys) or we could support the Apple ADB port and extended keyboard ($145-105 keys). Or we could do both and let the firmware ROM routines control keyboard access so it will be transparent to software. You decide.

The case

I think we should put all of this hardware into a "Tower" case with a huge power supply ($225). I think the little baby cases used by the IIgs and the Mac IIcx are cute, but we want some room to expand. I'd rather put a tower case next to my desk then a little box on top of my desk.

Those are my suggestions for a starter system. We should not be satisfied with anything less from Apple Computers, or from anyone else for that matter.

The hardware hackers have probably figured out what I'm leading up too, but let's say it out, plain and clear. I suggest that we get a tower case with a 250 watt power supply. (The Apple comes with a 37 watt power supply) Then we take the motherboard out of our Apple II and put it into the tower case. At this point, all we have is an Apple II with a large power supply. But now lets construct a "Bridge Card" that plugs into the Apple II board on one side and drives PC/XT compatable slots at the other side. That way, we have everything that our Apple II started with and we have access to the IBM compatable hardware. That hardware is much less expensive than the hardware available for the Apple II. The bridge card would also have a 65SC816 processor with a built-in cache running at 6 or 8 Mhz and support for 1 megabyte SIMMs.

Our new system would have:

•Tower case with 250 watt pwr supply	$225
•Speed: up to 8 Mhz (65816 w/cache)	$400
•Memory: up to 16M bytes (1M min.)	$150
•Video: 256 colors, 640 x 480 pixels	$600
•I/O: 2 serial ports, 1 parallel port, a clock calendar w/ battery plus whatever is in your Apple II	$60
•Sound: Chip? with MIDI interface?	$??
•Disks: disk drive controller (for up to 4 drives)	$60
1 - 1.44M 3½" drive	$110
60 Mbyte Harddrive w/ ctrl	$500
•Keyboard: Extended ADB w/ mouse	$180

The retail cost for one would be $2295. We can do better than that if we buy in quantity.

Pros

The beauty of this system is that it supports an existing hardware base with a wide selection of cards using the latest technology. The prices are low and the system is modular so new technology can be incorporated piecemeal, at minimal expense. Don't forget, you still have everything in your Apple II. You still have DOS/ProDOS, the Apple disk drives, any I/O cards, etc. The difference is that our new processor treats the Apple like a peripheral that just happens to take up 64K of memory and has an odd assortment of functions.

Cons

Software, software and software. Since it is new, there isn't any software available until we write it. It would seem that in the beginning, at least, it is going to be a hackers machine. But if we support it, then anyone who writes software for our system in the beginning is going to be in on the ground floor and will probably get rich!

Questions/Options

Obviously, this is just a start. Let me know what you think. Do you have any ideas for improvements, other ways to do the upgrade, other hardware that I didn't mention? There is a great deal of room for this to grow and change. You don't have to be a hardware hacker, just say what you want and let the hackers try to figure a way to do it.

That's enough for you to chew on, right now, so I'm going to turn over the soapbox to the next RDEX writer. But think about what I said, then write and be heard.

Bobby

A more powerful IIe for $14.95?

Apple has the ability to almost double the effective power of the IIe without increasing their cost or yours. All they have to do is start using the 65C802 processor in the IIe. That would allow all new software to use the new commands and the 16 bit modes that are available for software written for the IIgs. The 65C802 is pin compatible with the 65C02 and software compatible in the emulation mode. You simply plug it in where the 65C02 is now. It has all of the instructions of the 65C02 and a lot more. Basically, it is the same processor used in the IIgs, without the bank select feature that gives the IIgs direct access to so much more memory. In certain instances, the speedup given by using 16 bit registers can more than double the speed of software. For instance. The code for moving two bytes from one place in memory to another on the 65C02 takes 4 machine cycles

to read a byte and 4 cycles to store a byte for a total of 16 cycles. Using a 16 bit register would take 5 cycles to read two bytes and 5 cycles to store two bytes for a total of 10 cycles. In this simple example, the 65C802 is about 37% faster than the 65C02 or you could say that the 65C02 is 60% slower than the 65C802. A better example is incrementing a 16 bit pointer or doing any kind of multi-byte math. The 65C02 must handle a 16 bit number as two 8 bit numbers, while the 65C802 simply uses 16 bit registers. The speedup can be dramatic.

Imagine a game, like Ultima, that uses block characters. The standard character is two bytes wide by 16 bytes high. To the 65C802, that's only 1 word wide by 16 words high. The graphics would be much faster.

All this speedup and more powerful commands can be had by simply changing the processor. *But Apple must do it or it wouldn't work.* If Apple makes the change, then all the newer IIe's would come with the 65C802 and owners of older IIe's would buy the new processor ($14.95) to upgrade. Only this way, will the software companies began writing new software with the new opcodes and the 16 bit mode. You can bet that they're not going to write new versions of their software for the small handful of us who are now using the 65C802.

Don't run out an buy a 65C802 and put it in your Apple. It won't help you unless you're a programmer. The 65C802 switches to 65C02 emulation mode after a reset. Any software you have will run normally (slow as molasses in winter). In order to get the improved speed and power, the software must be rewritten to take advantage of the new, more powerful instructions. That's why I say that Apple Computer must make the change. Only then will there be enough 65C802 processors out there for it to be worthwhile for the software companies to update and write new software.

In the meantime, if you are into machine language programming, go ahead and get a 65C802 for your IIe. Make sure your assembler can use the new opcodes and get a data sheet that shows the new instructions. You're going to love the added power and speed. The rest of us will just have to wait for Apple to wake up. (Fat chance!)

Charles R. Haight

Well, I asked you to write and you sure did. I've spent my weekends just reading letters. I'm going to paraphrase your questions (and suggestions) in commentary and in Q & A format and answer them the best that I can.

A note on honesty

When I talked to some other publishers in the area, they said, "Never tell your readers the truth about your problems, it will only make it worse". Obviously, I didn't listen to their advice. They were right. Most readers renew when they receive our first reminder, but that's not happening now. Our renewal numbers show that readers are waiting till the last moment before renewing. Since we send out the first renewal reminder 3 months in advance, it means that our monthly cashflow will be even more reduced for the next two months, or so. The total renewal numbers are the same so everyone is still renewing, you're just waiting to see how things come out. Please don't wait, it negates part of the club income and puts an additional strain on us!

This reminds me of a news story I once read about a self-fulfilling prophecy. It seems a TV reporter, in order to prove a point, ended his commentary with the offhand remark that the local area stores would be experiencing a shortage of toilet paper and they weren't sure when the situation would get better. By noon of the next day, the shortage was real. Viewers, hearing about the false shortage, went out and bought all of the toilet paper available. (To hoard it, I assume.) So the false shortage became real and lasted for two days.

For the rest of you who called and wrote to join the club, and for all of you who sent $20 instead of $10 (even more in some cases), you have my most sincere thanks amd my promise that I will continue to do everything I can to see that Computist continues to be printed. You helped take a big bite out of our overdue bills and that has made our creditors a bit more friendly, which also helps take some of the pressure off. I been too busy with this issue to get to the club member certificates. Some of you have written and said "Forget about printing any fancy certificates, use the money you save for more pages in the next issue". Nice sentiment, but we're still going to do something with a laser printer or some such thing. After all, the club certificate may become a collectors item someday and the club idea is going to become more important as Apple reduces their support from the Apple II line.

Some of you have asked how the reduced cashflow could become so serious, so soon. You say you don't understand, well, sometimes I don't either. But I believe it is related to Apple's non-support of the Apple II line. The Apple II market is depressed. That means less new Apple II owners and less income from back issue sales which, as you may recall, was a large part of our income and helped subsudize the low subscription rates.

The whole publishing arena is taking a beating. Magazine subscriptions are dropping everywhere. As you probable heard, A+ sold out to Incider. "CALL APPLE" is going to a 4 time/year printing schedule. Reboot is going to a 6 time/year schedule. And some Apple oriented specialty newsletters just quietly faded away, while others are switching over to the Mac. That's where things are right now. When it comes to printing and publishing, it's the pits.

The majority of us, who are paid subscribers, are truly the "Hardcore" of Computist and we will probably always be here. When I say that this is your newsletter, I mean it. I'm just the driver, you tell me where to go (in so many words). I will always let you know what is happening, good or bad. And you should never hesitate to write about anything that bothers you.

??Tabloid??

The response to the tabloid format ranges from "I like it" to "I hate it". That includes 4 readers (now ex-readers) that canceled their subscriptions. Most of the responses were in the neutral to negative range. The most often repeated comment was "I don't like the newspaper format but I think you should do whatever is neccesary to keep printing".

Also, Karen reminded me that there is one thing that I didn't tell you about the tabloid format, because of limitations in the way our typesetter works, we are using an odd sized paper. The web press uses large rolls of paper, very large rolls. Because we are using an odd sized roll, the printer required us to buy the rolls (5 of them for the 40 page issue). We have to print 2 more tabloid issues in order to use up the rolls that we have already purchased.

8 issues/year

The overwhelming response to my suggestion that Computist print 8 issues each year was, "I hate it. I can't wait now for my issues to arrive. Don't go to the 8 time schedule." Ok, I got your message, loud and clear. Uh, the issues are going to be about 5 to 6 weeks apart until I can work out a way to get here more often. The tabloid has a lot more info than the previous issues and it takes a lot more time to get things cleaned up and ready to typeset. I have a few ideas on how to speed up my end and I'll be trying them out. Please allow extra time between issues before you get anxious and start calling.

Fingerprints?

Many of you commented that the ink smudges. We are using a more costly "low rub" ink, but "low rub" is not the same as "no rub". The ink will still smudge, though not as much, try not reading the issue while you're eating (just kidding).

$24 Archive-able copy?

Many of you are happy about the increase in information but are worried about the durability of a newspaper issue. So am I. My best solution is to print a compilation every 8 issues or so. I've got a quote for 500 copies of a book, with 800 pages, loose-leaf and 3-hole drilled for a standard 3-hole binder. The cost is lower than I thought it would be. Several readers expressed concern that some people would just buy the book and not subscribe. They suggested a 3 tier pricing schedule that I think is a good idea. The book would cost $48. A club member would get a $12 discount and a current subscriber would get a $12 discount. If you are both, you get both discounts. The cost would then be $24. Quite reasonable and fair. Those readers who do not directly support Computist by subscribing or joining the club would pay the higher price.

A Club Disk

A couple of readers suggested that we send out a call for "neat" software, that readers wrote themselves, and compile it on a "club disk". The disk would be made available to other club members only and would not be printed in the newsletter, so you don't have to worry about cleaning up your code. Just so long as it works. It sounds like a neat idea. What do you think? Will it fly? Do you have any "nifty" software routines that you have written and are willing to share? If so, send them to "Club Diskette" care of RDEX, include any needed documentation on a text file.

Speaking of the club, there are now 997 members in the club, about 25% of Computist's paid subscribers.

More Programming

A reader writes, "I know that you can only print what you receive but I'd like to see more programming". I would too. I'd like to see more, well commented, BASIC programs and more assembly language programs with lots of commented source code so that beginners can have something to help them learn. All right hackers, I know your reading this. How about doing some writing, short or long, and sending it to RDEX.

Writing/Not writing

Some of you have never written to RDEX, but having talked to many of the non-writers on the phone, I firmly believe that you have something to say and valuable information to share. I know, "(You) just can't seem to find the time to write", but please try. Just think of all the pages we could fill, if all of us would start writing. You don't have to be a hacker and you don't have to write a long article. Send us the latest rumor that you heard or a quick tip on how to do something inside of some program or a hint about a game. There are almost four thousand of us and that can add up to a lot of useful tips, if we would just find the time to write. On the other hand, if you don't have anything to say, don't worry, you're supporting Computist just by being a subscriber.

Which reminds me, many of you are writing. We're getting a half dozen or so disks every day and I'm thinking of going to 48 pages/issue so that we can keep up. We also receive the same number of printed letters each day. Please! please! please! Send your "letters to RDEX" on disk. You should only enclose a hard copy for a note to Karen, a plea for help (so I can be sure to put it in the next issue) or a hot rumor, etc. But put your RDEX text on a disk. Most of your letters contain valuable information and there is not enough time to type all of them into the computer. That equals a net loss to Computist readers. Remember, you can't lose when you send a disk, because I return it to you with all the programs in the current issue copied onto it. It's a bargain.

Free Software

Some of you liked this idea but most of you said to save the money for more pages in the issue. You said that I don't have to bribe you, that you'll look for new subscribers anyway. Ok, but I'd like to see if I can't figure some way to get software companies to donate software for our giveaway by offering free space for new software anouncements or maybe a software received section.

Help with CD ROMs

A good number of new subscribers do not have any cracking hardware and are not able to "reset into the monitor". Most of the ones I have spoken to have IIe's. I have looked in the Jameco catalog at prices for 8K ($4) and 16K ($5) EPROMs and feel that a $10 to $15 charge is fair. This includes the cost of the parts (plus a portion of the shipping and handling charge from the parts order), the cost of packaging and shipping to the reader and a small labor charge. I suggest that you do not lower the charge, because some of the packages that you send will be lost in the mail (this is the voice of experience) and you will have to eat the cost of replacing them.

I believe the correct way to do this is for the reader to make a binary file copy of the code in their CD ROM and to send this, on disk, along with the appropriate charge, to the closest volunteer with a ROM burner. Be sure to include all information about your Apple (II, II+, IIe, IIe enhanced, etc.) in case the reader wants to burn other routines also.

There are two ways to replace the CD ROM in an Apple IIe. You could use an 8K EPROM, change the **ctrl reset** vector to point to the monitor, then correct the checksum. Or you could use a 16K EPROM and burn an exact copy of the original CD ROM contents into one half of the EPROM and then put entirely different code into the second half. Then solder a switch to the highest address so that you could select which half is active. The details get a bit complex but if a reader has a EPROM burner, they probable know all about this.

Are there any readers who have a EPROM burner and are willing to volunteer their time to help other new readers? If so, write to RDEX and I will pass along any requests for cracking ROMs. (Let me know if I can print your address.)

A MAC clone

Can it be? Yep! It can be. A Mac clone was shown at a consumer electronics show in Germany. The clone is said *not* to infringe on Apple's copyrights because the ROM sockets are empty. If any of you read Computer Shopper, you know that Mac ROMs are available. I hear that Apple is going to require their authorized dealers to sign an agreement that states that they will *not* use Apple parts to repair non-Apple machines. That would seem to give credence to the Mac clone. I guess it would be an understatement to say that Apple is not happy.

Interested in hardware?

One of our readers, George Schilling, wrote to inquire about our interest in hardware. I answered his letter by quoting from a 1986 reader survey. Then I thought, maybe, the hardware data would be of interest to other "hardware hackers". Here it is:

In an early survey, 88% of the COMPUTIST readers said they were interested in hardware details or hardware modification projects. 18% indicated that they had already done some modifications. 80% said they would be interested in building a hardware project. (Of that group; 24% were interested in projects for under $25, 34% - under 75$, 28% - under $150.) Here is how the readers rated their interest:

Things to plug into the joystick port
60% - real world interfacing
49% - data transfer
19% - gizmos with neat sounds
16% - gizmos with flashing lights

Things that plug into the slots
78% - deprotection aids
57% - RAM cards
49% - ROM cards
45% - memory

Article topics
64% - disk drives
59% - MODEMs
50% - video
45% - sound
10% - other:
Speed and memory enhancements
I/O devices
Common peripherals
Keyboards

Totals do not equal 100% as many readers marked more than one answer.

So, if you're thinking about writing an article about hardware, go for it!

Questions and Answers

Q. Why don't you print each issue in looseleaf (3 hole punched) format?
A. The printing cost would be higher and while many readers have commented that they feel Computist is under priced, almost everyone else agrees that they don't really want to pay more.
Q. How about putting Computist on a disk?
A. Again, the cost would be much higher. This also applies to the suggestion that we use a laserwriter to make the originals and have a copyshop make the copies. Bulk printing on a newspaper web press is still the least expensive way to distribute the information in Computist each month.
Q. Why don't you send out each issue like A2 Central, in First Class envelopes?
A. That would work if everyone would accept the change to 8 pages per issue, one fifth of a magazine issue and one tenth of a tabloid issue. Otherwise, the mailing cost alone would increase to $4875.00/mo. and that would add $11/yr. to the subscription rates.
Q. Why do Canadian subscriptions cost so much more than US subscriptions?
A. They don't. Canadian subs cost the same as US 1st Class subs. The reason is that there is no bulk mail to Canada, so all Canadian subs must be sent 1st Class.
Q. Why don't you get a MAC, a DeskTop Publishing (DTP) program and a laserwriter to do your typesetting? It would be cheaper that the $2300/month that you pay now.
A. You're right, and it has occured to us before. Unfortunately, we signed a lease for the Compugraphic/Powerview system that we use now. If you have any experience with leases, you know that they are not easy to get out of. The way our lease is written, we could default on our payments and Compugraphic could repossess the equipment, but we would still be liable for all the remaining lease payments. There's no easy answer to this one. If anyone out there is a lawyer, perhaps you could suggest a way for us how to convince Compugraphic that they have made enough money off of us and to take back there typesetter.
Q. I have upgraded to an IBM compatable and I don't use my Apple anymore. The IBM is just so much better than a IIe. When are you going to expand the IBM section?
A. Whenever we start receiving more IBM material. I can only print what I receive and, right now, IBM info is just trickling in.
Q. Why don't you print material about other computers like Amiga and Atari? Some of us (without being traitors) own other machines.
A. I am quite willing to print material about *any* computer but first I have to receive the info. (See previous answer.) A reader put it best when he said, "Your principle edge over (other publications) is your superb *Information Exchange*. That is, your ability to print mountains of correspondence."

I think that the most powerful feature of the RDEX format is its ability to present vast amounts of reader input. Any information that pertains to computers, whatever the brand name, should find a spot in RDEX. That applies to requests for help, news, reviews, rumors, tips, softkeys or whatever. It is impossible to predict what piece of info will be useful to what reader. I don't even try. I do the least amount of editing to your letters that I can. Most of my changes are for grammar or spelling. The bottom line is the same as always, if someone will send it to RDEX, we will print it in Computist.
Q. Why don't you drop the IBM section?
A. I'd rather expand it. The more different computers that we support, the wider our reader base, and the healthier the newsletter. Why not think of it as, they're supporting your Apple section.
Q. Many Apple users move up to MAC and sell their Apple II's. Why don't you print more MAC info?
A. Sigh! Please see previous answers.
Q. Could you use newsprint but print in the 8 1/2 by 11 inch magazine format?
A. Yes, but the savings would be much smaller. A tabloid is less expensive for several reasons. It uses a less expensive web printer. When it is printed, it comes off the press folded and ready to ship. It doesn't have to be sent to a bindery to be trimmed and saddle stiched. These differences reduce the overall cost/issue and that's a big concern at this time.
Q. Why don't you sell stock in Computist?
A. Say again? Sounds like that could get really complex. I'm not sure how something like that could be done or what the actual benefit would be. Could someone with more knowledge explain this to me?
Q. Why did you drop the "Hardcore" from "Hardcore Computist", it is a much better name for the publication as most of the readers are "Hardcore"?
A. I agree, but we were experiencing a lot of problems with the Hardcore part of the name. Some of the problems were funny but many were not. We would get calls from women asking if we needed any "models". And we sent one reader multiple replacement copies and finally found that his mother had been throwing out the issues. She never looked past the "Hardcore" on the cover. Then the post office returned a copy with the note that the recipient had signed a complaint that he did not wish to receive pronographic material in the mail. Of course he didn't mean the magazine but you see what I mean.

We decided to change the name and in each later issue we reduced the size of the "Hardcore" on the cover until it finally disappeared completely. But the "Hardcore" remains in our readers and in the content of our newsletter.
Q. What happened to the Christmas specials, I really miss them?
A. Uh, would you believe that I just didn't have any time to put anything together. We used to have half a dozen people here on a full time basis. Now there's only Karen and I and misc volunteers. But check out the summer sale on back issues on page 1, 39 and 40.
Q. Why don't you quit printing the magazine and put everything on a BBS? Think of the money you would save from not printing or mailing. MODEMs are cheap and everyone should get one. You could have several Mega-Harddrives and dozens of telephone lines. You could charge by the hour or even by the month.
A. Hmmm... After you paid for the new equipment, the costs would seem to be lower but I don't have any experience in the area of Bulletin Board Systems. I don't know what the setup costs are or what problems we might encounter. (IE. How do you charge and how do you collect the charges.) Or how the readers would react to an announcement that we were going to all BBS. I have a feeling that the costs here would go down but the cost to the subscribers would go up. Of course, they would be able to access the information sooner but I'm not sure that would offset the increased cost. I don't have a ready answer. I guess this comes under "something to think about". Perhaps the readers should comment on this.
Q. Why don't you set up a BBS and use a "976" number so the phone company will collect the bill for you?
A. I'll need to find out how the "976" numbers work and get back to you on this one. How about this for all of the BBS questions, I'll set up a BBS with mailboxes and some kind of forum to start with, then we'll sit back and let it grow? It can define itself as the users suggest changes.
Q. Why do you want to set up a BBS? Not only is the new equipment going to cost you but you're assuming that readers will want to call long distance just to converse. Why don't you get an account on AppleLink: The Personal Edition?
A. Now that would be an ambitious undertaking, but I'm interested. Could you find out more details and send them to me?
Note: To everyone who wrote and said they have put a Computist Ad on a BBS for us, thank you very much. Post a couple more when you find the time.
Q. Why don't you get rid of the older softkeys? I'm tired of seeing new softkeys for software you can't even buy anymore.
A. Please see next question.
Q. How about some more softkeys for older software? You could start a vintage software section.
A. Sounds alright to me, but as I have been saying all along, I can only print what I receive. How about it readers? There is a lot of older sofware that has never been softkeyed because it is easy to make a bit copy.
Q. I noticed that you used a larger size text in Computist #66. I had no problem reading the text in the previous issues. Why don't you go back to the smaller size?
A. You're right, we used a point size of 10 with a line space of 11. This is the standard type size used in most other magazines. In previous issues, we used a point size of 9 with a line space of 10. It allowed us to squeeze a little more info into each issue. I used the standard size type because I wasn't sure how readable the printing would be on newsprint, but it turned out OK. This page is set in point size 9 with a line space of 10. Is it clear and readable? How do the rest of you feel about it?

Bobby

I'm so tired of the namby-pamby crybaby bullsh-t that some readers are putting out. Why don't you just ignore all that useless crud and get on with the business of printing the best Apple rag around. I don't care how you print it. I think you are doing just fine. Every time that you have made a change, it has always been towards more information. You are always so apologetic about the changes when you are actually giving us more and more. Don't be so darn humble. I don't think that I would be able to handle the pressure of the bills and still be able to get an issue out every four or five weeks. It's ok for readers to make suggestions but you're the one who is in a position to see it all. You've done a great job so far and I trust you to keep on doing a great job. Do what ever you have too.

Print the issues on newsprint, I like all that extra information. When you get the book ready, let me know, I'll buy a copy and put it on my shelf with my other Apple reference material.

Sorry if I came on too strong, but I get so angry at readers that can't see how good they have it. Anyway, that's my two cents.

B. Dudley Brett

Initializing extra tracks

After a few years playing with my Apple II, I have almost come to the point of purchasing either a 3.5 in. 800K drive or a Hardrive. I am now "up to here" in floppies, and am increasingly trying to find that great utility that I think is on one of my disks somewhere, but where, oh where! Perhaps if I could just consolidate all those programs on just a few disks?

As an interim step, before making any expensive purchase, I decided to initialize 40 track data disks that could hold 152K instead of only the usual 124K on the 35 track disk. In the process, I programmed a useful utility for the purpose and am sharing it with you. INITOR can initialize either a DOS 3.3 diskette or a DOSless data disk with 18 to 40 tracks. The DOS 3.3 version can have from 224 sectors (18 tracks used) to 576 sectors (40 tracks), and normal DOS 3.3 or a FastDOS such as ProntoDOS can be initialized. The DOSless version will hold up to 608 sectors of data and includes a boot-up message telling the user that the disk will not boot and to reboot with a disk containing DOS.

I am heavily indebted to Open-Apple and Tom Weishaar for most of the techniques used in INITOR. The method of creating a 40 track disk is based upon a letter by Yin Pun in the April, 1985 Open-Apple newsletter, and the sector R/W routine, used to place the boot message on the DOSless disk, is found in "The DOSTalk Scrapbook" by Tom Weishaar and Bert Kersey.

When the program is run, the user is first prompted to decide whether to initialize a disk containing DOS 3.3 (Y) or a DOSless data disk (N). Then the number of tracks to initialize is requested. One can enter any number between 18 to 40. The user must then place a disk (not the one containing any useful data!) to be initialized in the drive. Press **return** the job takes a few seconds and the program then requests the user for another disk, or exit.

Note that most drives can now handle 40 tracks, but there are also a few that will only allow 39, as well as the pre 1982 drives which read 36 tracks. One will know if 40 tracks is not allowed if the INIT command fails with a "?SYNTAX ERROR".

On older Apple drives, that only allow 36 tracks (maybe), the program may not fail with a syntax error. It may say everything is alright, when it is not. Let's say you selected 40 tracks. What happens, is that the 36th track is initialized and than initialized again and again until track 40 is reached by the program. A quick look, with Diskedit, shows that after track $34 (35th track), is track $39 (40th track). Perhaps the program needs a routine to check the previous track before incrementing the track counter and stop when it gets an error. . . . . .RDEXed

The key to initializing a disk with an unusual number of tracks is found in lines 260 and 320. Three pokes to DOS are necesssary, setting the correct number to initialize. Note that after the INIT is complete, these are set back to 35 tracks, for safety in lines 260 and 350. For making a data disk, three other pokes are also necessary in line 330. These consecutively prevent DOS from being copied on tracks 0 to 2, stop the HELLO file from being copied, and mark tracks 1 and 2 free in the VTOC on T$11, S$00. Once more, after INIT, the default original settings are placed back in line 360.

Once a data disk has been initialized, it is necessary to provide a boot message to inform the disk user that the disk really is only a data disk. Otherwise, upon boot, one might conclude either that the disk is blank, or damaged. To perform the task of providing this useful message, INITOR copies a machine language message print routine to track $00, sector $00. Note that Boot0 loads this sector to $800 in RAM, then jumps there to continue (aborted in this case) the Boot process. The routine provided here simply prints a message on the screen instead of a normal Boot.

This message is copied to track $00 by a 1 sector zap function contained in the program. In lines 380 and 390 a buffer is set up to hold the message routine and a subroutine from 550 to 610 pokes a machine language subroutine into page $3 to find the IOB (Input/Output control block) in order to access RWTS to read or write a single sector. Then in lines 440-460, track $00, sector $00 is specified, the function is set to a read operation (CMD = 1) and the sector is read (lines 620-700). The provided buffer is then filled with the message routine (lines 470-500) and the data is written in the disk sector by setting CMD = 2 and accessing the RWTS subroutine in lines 620-700 again. Note a peculiar 2 byte poke in line 500 that ensures that the boot message will include the correct number of tracks initialized.

For those who wish to personalize the data disk boot message, please note that this information is contained in the data lines 760-780. The first 37 numbers are sacred (the machine code part), whereas the 38th to 80th numbers hold the message (in high ASCII). One can simply translate a new message into high ASCII (Examples: "A" is $C1 or 193 and "2" is $B2 or 178). Words are separated by a space ($A0 or 160) and a carriage return at the end of each line is $8D (or 141). Note that the 47th and 48th numbers (180 & 176) are hex $B4 and $B0, and stand for "40" (as in 40 tracks). These are the 2 bytes that are changed in line 500 to the appropriate number of tracks initialized. If a change is made to the message, and no adjustment is made in line 500, strange results may be expected.

How about copying your new disk? Most copiers just provide for 35 tracks. Variable COPYA is the answer! Before you copy a disk just add the following line to COPYA:

```
95 T=40: POKE 44725,T*4: POKE 48894,T: POKE
   770: POKE 863,T: REM Change T to your
   personal satisfaction
```

```
10 REM *
20 REM *
30 REM * INITOR
40 REM * BY
50 REM * B.D.BRETT
60 REM * 18/08/88
70 REM *
80 REM *
90 HOME: VTAB 6:D$=CHR$ (4):T1=35
100 IF PEEK (978) < > 157 THEN PRINT "PROGRAMME^
    WORKS^WITH^48K^DOS^3.3^ONLY.": END
110 HTAB 17: INVERSE: PRINT "INITOR" ;: NORMAL:
    PRINT
120 PRINT: PRINT "AN^UTILITY^TO^INITIALIZE^
    5.25^IN.^DISKS": PRINT "WITH^UP^TO^40^
    TRACKS.^DISKS^CAN^BE"
130 PRINT "INITIALIZED^WITH^DOS^3.3^OR^
    WITHOUT": PRINT "DOS^3.3^ON^TRACKS^0^-^2."
140 PRINT: PRINT "DATA^DISKS^CAN^CONTAIN^UP^TO^
    608^FREE": PRINT "SECTORS^WHILE^DOS^3.3^
    DISKS^ CAN^ CONTAIN": PRINT "576^ FREE^
    SECTORS."
150 VTAB 22: PRINT "PRESS^ANY^KEY^TO^CONTINUE:^
    " ;: GET Z$: PRINT
160 HOME: VTAB 8: PRINT "WITH^DOS^3.3^IMAGE^(Y)^
    OR^NOT^(N)?^:" ;: GET Z$: PRINT
170 IF Z$ < > "Y" AND Z$ < > "N" THEN 160
180 VTAB 10: INPUT "NO.^ OF^ TRACKS^ ON^ DISK^
    (18-40)^:" ;T
190 IF T < 18 OR T > 40 THEN 180
200 B1=INT (T / 10):B1=B1 + 176
210 B2=T - INT (T / 10) * 10:B2=B2 + 176
220 IF Z$="N" THEN 300
230 HOME: VTAB 8: INPUT "INSERT^AN^ERASABLE^
    DISK^AND^HIT^<RETURN>" ;A$
240 POKE 48894,T: POKE 44725,T * 4: POKE
    46063,T: REM TELL DOS NO. OF TRACKS TO
    INITIALIZE
250 PRINT D$; "INIT^HELLO"
260 POKE 48894,T1: POKE 44725,T1 * 4: POKE
    46063,T1: REM RESET TRACKS=35
270 HOME: VTAB 8: PRINT "A^" ;T; "^TRACK^DOS^3.3^
    DISK^ HAS^ BEEN": PRINT "INITIALIZED.^
    ANOTHER^ONE?^(Y/N)^:" ;: GET Z$: PRINT
280 IF Z$="Y" THEN HOME: VTAB 8: GOTO 110
290 HOME: END
300 HOME: VTAB 8: INPUT "INSERT^AN^ERASABLE^
    DISK^AND^HIT^<RETURN>" ;A$
310 PASS=PASS + 1
320 POKE 48894,T: POKE 44725,T * 4: POKE
    46063,T
330 POKE 44793,11: POKE 42344,76: POKE 44723,4:
    REM PREVENT DOS & HELLO SAVE AND MARK TRACKS
    1 & 2 FREE
340 PRINT D$; "INIT^HELLO"
350 POKE 48894,T1: POKE 44725,T1 * 4: POKE
    46063,T1: REM RESET TO 35 TRACKS
360 POKE 44793,5: POKE 42344,32: POKE 44723,12:
    REM RESET DOS INIT
370 TEXT: HOME
380 BUF=20000
390 HIMEM: BUF
400 GOSUB 550
410 DSLOT=PEEK (IOB + 15) / 16:DRV=PEEK (IOB +
    16):VOL=0
420 D$=CHR$ (13) + CHR$ (4)
430 REM LOAD TRACK 1, SECTOR 0
440 PRINT: PRINT "LOADING^TRACK^0^-^SECTOR^0":
    PRINT
450 TRK=0:SEC=0:LOC=BUF
460 CMD=1: GOSUB 620
470 REM SECTOR ZERO BOOT MESSAGE
480 FOR I=0 TO 79: READ X
490 POKE LOC + I,X: NEXT
500 POKE LOC + 46,B1: POKE LOC + 47,B2
510 REM SAVE SECTOR
520 PRINT: PRINT "SAVING^SECTOR": PRINT
530 CMD=2: GOSUB 620
540 PRINT T; "^TRACK^DATA^DISK^INITIALIZED!":
    GOTO 720
550 REM PREP FOR RWTS
560 FINDIOB=768:RWTS=FINDIOB + 8:ERR=78
570 FOR ADR=FINDIOB TO FINDIOB+25: READ V: POKE
    ADR,V: NEXT
580 CALL FINDIOB:IOB=PEEK (78) + PEEK (79) *
    256: RETURN
590 DATA 32,227,3,133,79,132,78,96
600 DATA 32,227,3,32,217,3,176,5
610 DATA 169,0,133,78,96,169,1,133,78,96
620 REM * RWTS *
630 POKE IOB + 1,DSLOT * 16: POKE IOB + 2,DRV
640 POKE IOB + 4,TRK: POKE IOB + 5,SEC
650 POKE IOB+9,LOC / 256: POKE IOB+8,LOC - PEEK
    (IOB + 9) * 256
660 POKE IOB + 12,CMD: POKE IOB + 3,VOL
670 CALL RWTS
680 POKE 72,0: POKE IOB+3,255: REM IMPOSSIBLE
    VOLUME NUMBER
690 IF PEEK (ERR) THEN 710
700 RETURN
710 PRINT: PRINT "DISK^ERROR"
720 PRINT D$; "MAXFILES^3": REM RESET HIMEM TO
    NORMAL
730 VTAB 22: PRINT "Another^Disk?^:" ;: GET Z$:
    PRINT
740 IF Z$="Y" THEN HOME: CLEAR: RESTORE
    :D$=CHR$ (4):T1=35: GOTO 110
750 HOME: END
760 DATA 1,166,43,189,136,192,32,88,252,1
    69,37,133,0,169,8,133,1,32,24,8,169,0
    ,240,252,160,0,177,0,240,6
770 DATA 32,240,253,200,208,246,96,196,20
    7,211,173,204,197,211,211,160,180,176
    ,160,212,210,193,195,203,160,196,201,
    211,203,141
780 DATA 194,207,207,212,160,193,206,207,
    212,200,197,210,160,196,201,211,203,0
    ,0,0
```

Checksums

```
10 - $BADD    270 - $9E47    530 - $462F
20 - $9B13    280 - $EFE5    540 - $D56C
30 - $4D3B    290 - $A1D4    550 - $5BDD
40 - $AD92    300 - $2D2F    560 - $DA64
50 - $C899    310 - $8FB0    570 - $854C
60 - $FF65    320 - $1423    580 - $7D44
70 - $A3BF    330 - $4F05    590 - $C337
80 - $A900    340 - $3236    600 - $E59B
90 - $1490    350 - $0F61    610 - $F211
100 - $E467   360 - $7285    620 - $C22D
110 - $E03A   370 - $E4DD    630 - $3A75
120 - $5F62   380 - $E907    640 - $8BC3
130 - $B0A3   390 - $B229    650 - $B4B1
140 - $6BE9   400 - $903C    660 - $A2B9
150 - $F8E4   410 - $6095    670 - $6583
160 - $E1E1   420 - $47A6    680 - $08EE
170 - $97BA   430 - $0EC4    690 - $C22D
180 - $D596   440 - $A13F    700 - $CDEC
190 - $9F6E   450 - $8166    710 - $4E7D
200 - $52AE   460 - $9B98    720 - $8CC8
210 - $5960   470 - $C8D8    730 - $FF6B
220 - $B402   480 - $C64A    740 - $FBEB
230 - $2B2A   490 - $E2B6    750 - $CE33
240 - $2470   500 - $3F6A    760 - $AC74
250 - $153B   510 - $724C    770 - $A76E
260 - $6659   520 - $1995    780 - $9329
```

In COMPUTIST #57, pp 33-34, there are at least 2 BUGS in Klaus Iden's article. First, line 1030 in the Controller cannot work. GOSUB 499 is impossible. Should it be GOSUB 490? Second, in step 2 of the Catalog Patch on page 34, the patches to MENULIB will not work. First, the patch instructions do not fit the disassembly immediately below them. Note particularly the confusion of JSR $9913. Should it be patched at $8044 or $80D5? In any case, neither location will satisfactorily work, as the patch ends with a "00" which causes a break to the monitor. Can this patch be clarified?

Findcat

FINDCAT is a utility designed to read a DOS 3.3 disk catalog and to furnish, for each file, the starting track and sector of the T/S list pertinent to that file. Seeing the usefulness of the address and length information given for binary files during an 80 column CATALOG of a ProDOS formatted disk, I decided to include this feature as well. First, type in the accompanying program (Use DOS 3.3 only!) and save it as "FINDCAT".

When the program is first run (Do try this out on a DOS 3.3 disk with some assorted files, but use a disk which can be wasted - A typing error may cause damage!), the drive will turn on and off several times as each catalog sector containing file information is read. Then, the screen will clear as the drive stays on for a number of seconds, reading the binary file T/S lists and the first information sector to extract starting address and file length for each binary file.

The drive finally stops, and a screen request is made to turn on the printer. A list of files is then printed out with the track/sector information for all files and address/length information for the binary files. This information is better displayed on a printer, but if you do not have one, simply delete lines 580, 590 and 970.

Do not expect this routine to work too well on heavily protected disks. It seems to work on DOS 3.3 disks, with minor address and data field changes where DOS pokes allow a CATALOG.

How it Works

After initialization of the RWTS subroutine (lines 90-180 and 990-1050), the catalog sectors on track $11 are read, one by one, starting with sector $0F and working backwards. This is accomplished in lines 190-490 and in lines 1060-1140 (the actual read routine). As each of 7 files is read from each directory sector, the existence of a file is verified (line 220) and if no file is present the read operation is aborted. That way, a sector will not be read if there is no valid file information on it. If information is present, the file type is checked by a peek to byte 13 (line 220) and the file type is recorded (lines 240-280). The file name and T/S list disk address is recorded (bytes 11 & 12). Note lines 280-320 to see how a TEXT file is read. Similar routines for an Applesoft file are seen in lines 430-460, a binary file in lines 330-370, and an Integer file in lines 380-420.

It will now access the Track/sector (T/S) lists for each binary file in order to acquire its address and length. Unfortunately, this is found on the second sector of the file. The first sector is simply a list of all sectors containing the file. The second (or third, if it is a long, long file) sector contains the actual file start. The first 4 bytes of this second sector are the starting address (bytes 1 and 2) and the file length (bytes 3 & 4). See line 510 for the read of a binary file's first T/S list sector. In line 520, the next sector address is PEEKed (bytes 12 & 13) and read. The first 4 bytes are peeked from this second sector (line 530). The process is repeated over and over in a loop (lines 510-540) until all binary files have been accessed.

The printing of all files is completed in lines 550-970. Note that no special print controls are used so that any printer can be used. Only one unusual process takes place in this routine. As the computer world is more easily understood by hexadecimal notation, whereas Applesoft seems to 'think' decimal, I decided to convert all peeked numbers to Hex notation. Note lines 730-760 where each number (for track, sector, address and length) is converted to the variable DE and sent to line 1200 for conversion to Hex. This one line subroutine sends back H$, containing the Hex number.

```
10 REM *
20 REM *
30 REM * CAT.READ
40 REM * BY
50 REM * B.D.BRETT
60 REM * 18/08/88
70 REM *
80 REM *
90 HOME: VTAB 6
100 BUF=20000
110 HIMEM: BUF
120 D$=CHR$ (4):T1=35:HE$="0123456789ABCDEF"
130 IF PEEK (978) < > 157 THEN PRINT "PROGRAMME^
    WORKS^WITH^48K^DOS^3.3^ONLY.": END
140 HTAB 16: INVERSE: PRINT "CAT.READ" ;:
    NORMAL: PRINT
150 PRINT: HTAB 12: PRINT "READING^CATALOG^"
160 DIM NA$(50,4): DIM T(50,4),S(50,4),
    L(50),A(50)
170 TRK=17:SEC=15:LOC=BUF
180 CMD=1: GOSUB 990: REM Initialize
190 DSLOT=PEEK (IOB + 15) / 16:DRV=PEEK (IOB +
    16):VOL=0
200 TI=0:N1=0:N2=0:N3=0:N4=0:OF=35
210 GOSUB 1060
220 TY=PEEK (LOC + 14 + TI * 35): IF TY < > 0
    THEN TY=PEEK (LOC + 13 + TI * 35): GOTO 235
230 GOTO 500
235 IF PEEK (LOC + 11 + TI * 35)=255 THEN 470
240 IF TY=0 OR TY=128 THEN 280
250 IF TY=1 OR TY=129 THEN 330
260 IF TY=2 OR TY=130 THEN 380
270 IF TY=4 OR TY=132 THEN 430
280 N3=N3 + 1
290 Z$="": FOR I=1 TO 30:Z=PEEK (LOC + 13 + I +
    TI * 35) - 128:NA$(N3,3)=NA$(N3,3) + CHR$
    (Z)
300 NEXT
310 T(N3,3)=PEEK (LOC + 11 + TI *
    35):S(N3,3)=PEEK (LOC + 12 + TI * 35)
320 GOTO 470
330 N4=N4 + 1
340 Z$="": FOR I=1 TO 30:Z=PEEK (LOC + 13 + I +
    TI * 35) - 128:NA$(N4,4)=NA$(N4,4) + CHR$
    (Z)
350 NEXT
360 T(N4,4)=PEEK (LOC + 11 + TI *
    35):S(N4,4)=PEEK (LOC + 12 + TI * 35)
370 GOTO 470
380 N1=N1 + 1
390 Z$="": FOR I=1 TO 30:Z=PEEK (LOC + 13 + I +
    TI * 35) - 128:NA$(N1,1)=NA$(N1,1) + CHR$
    (Z)
400 NEXT
410 T(N1,1)=PEEK (LOC + 11 + TI *
    35):S(N1,1)=PEEK (LOC + 12 + TI * 35)
420 GOTO 470
430 N2=N2 + 1
440 Z$="": FOR I=1 TO 30:Z=PEEK (LOC + 13 + I +
    TI * 35) - 128:NA$(N2,2)=NA$(N2,2) + CHR$
    (Z)
450 NEXT
460 T(N2,2)=PEEK (LOC + 11 + TI *
    35):S(N2,2)=PEEK (LOC + 12 + TI * 35)
470 TI=TI + 1: IF TI=7 THEN TI=0:SEC=SEC - 1
480 IF TI=0 AND SEC > 0 THEN 210
490 GOTO 220
500 TEXT: HOME
510 FOR I=1 TO N2:TRK=T(I,2):SEC=S(I,2): GOSUB
    1060
520 TRK=PEEK (LOC + 12):SEC=PEEK (LOC + 13):
    GOSUB 1060
530 A(I)=PEEK (LOC) + 256 * PEEK (LOC +
    1):L(I)=PEEK (LOC + 2) + 256 * PEEK (LOC +
    3)
540 NEXT
550 VTAB 3: HTAB 14: INVERSE: PRINT "BINARY^
    FILES" ;: NORMAL: PRINT
560 VTAB 5
570 PRINT "TURN^ON^PRINTER^&^PRESS^<RETURN>"
    ;: GET Z$: PRINT
580 PRINT D$; "PR#1"
590 PRINT CHR$ (9); "80N"
600 PRINT TAB( 20); "APPLESOFT^FILES": PRINT
    TAB( 20); "_____"
610 PRINT
620 IF N1=0 THEN PRINT "NO^FILES^PRESENT": GOTO
    680
630 FOR I=1 TO N1
640 DE=T(I,1): GOSUB 1200:T$=H$
650 DE=S(I,1): GOSUB 1200:S$=H$
660 PRINT NA$(I,1); "^-T/S^LIST^AT^T$" ;T$; "^
    ,S$" ;S$
670 NEXT
680 PRINT: PRINT
690 PRINT TAB( 20); "BINARY^FILES": PRINT TAB(
    20); "_____"
700 PRINT
710 IF N2=0 THEN PRINT "NO^FILES^PRESENT": GOTO
    790
720 FOR I=1 TO N2
730 DE=T(I,2): GOSUB 1200:T$=H$
740 DE=S(I,2): GOSUB 1200:S$=H$
750 DE=A(I): GOSUB 1200:A$=H$
760 DE=L(I): GOSUB 1200:L$=H$
770 PRINT NA$(I,2); "^,A$" ;A$; "^,L$" ;L$; "^
    -T/S^LIST^AT^T$" ;T$; "^,S$" ;S$
780 NEXT
790 PRINT: PRINT
```

```
800 PRINT TAB( 20); "TEXT^FILES" : PRINT TAB(
    20); "----------"
810 PRINT
820 IF N3 = 0 THEN PRINT "NO^FILES^PRESENT" :
    GOTO 880
830 FOR I = 1 TO N3
840 DE = T(I,3): GOSUB 1200:T$ = H$
850 DE = S(I,3): GOSUB 1200:S$ = H$
860 PRINT NA$(I,3); "^-T/S^LIST^AT^T$" ;T$; "^
    ,S$" ;S$
870 NEXT
880 PRINT : PRINT
890 PRINT TAB( 20); "INTEGER^FILES" : PRINT TAB(
    20); "-------------"
900 PRINT
910 IF N4 = 0 THEN PRINT "NO^FILES^PRESENT" :
    GOTO 970
920 FOR I = 1 TO N4
930 DE = T(I,4): GOSUB 1200:T$ = H$
940 DE = S(I,4): GOSUB 1200:S$ = H$
950 PRINT NA$(I,4); "^-T/S^LIST^AT^T$" ;T$; "^
    ,S$" ;S$
960 NEXT
970 PRINT D$; "PR#0"
980 GOTO 1160
990 REM Prep for RWTS
1000 FINDIOB = 768:RWTS = FINDIOB + 8:ERR = 78
1010 FOR ADR = FINDIOB TO FINDIOB + 25: READ V:
    POKE ADR,V: NEXT
1020 CALL FINDIOB: IOB = PEEK (78) + PEEK (79) *
    256: RETURN
1030 DATA 32,227,3,133,79,132,78,96
1040 DATA 32,227,3,32,217,3,176,5
1050 DATA 169,0,133,78,96,169,1,133,78,96
1060 REM * RWTS *
1070 POKE IOB + 1,DSLOT * 16: POKE IOB + 2,DRV
1080 POKE IOB + 4,TRK: POKE IOB + 5,SEC
1090 POKE IOB + 9,LOC / 256: POKE IOB + 8,LOC -
    PEEK (IOB + 9) * 256
1100 POKE IOB + 12,CMD: POKE IOB + 3,VOL
1110 CALL RWTS
1120 POKE 72,0: POKE IOB + 3,255: REM impossible
    volume number
1130 IF PEEK (ERR) THEN 1150
1140 RETURN
1150 PRINT : PRINT "DISK^ERROR"
1160 PRINT D$; "MAXFILES^3" : REM Reset himem to
    normal
1170 VTAB 22: PRINT "Another^Disk?^:" ; : GET Z$:
    PRINT
1180 IF Z$ = "Y" THEN HOME : CLEAR : RESTORE : GOTO
    90
1190 HOME : END
1200 H$ = "" : FOR M = 3 TO 0 STEP - 1:N% = DE / (16
    ^ M):DE = DE - N% * 16 ^ M:H$ = H$ + MID$
    (HE$,N% + 1,1): NEXT
1210 RETURN
```

Checksums

10 - $BADD	410 - $A212	820 - $0E5D
20 - $9B13	420 - $4D62	830 - $A497
30 - $4D3B	430 - $E9B3	840 - $E0D8
40 - $AD92	440 - $6DA7	850 - $610F
50 - $C899	450 - $DB32	860 - $C83C
60 - $FF65	460 - $E50C	870 - $912D
70 - $A3BF	470 - $167F	880 - $1DB6
80 - $A900	480 - $1CC2	890 - $3D62
90 - $D005	490 - $B4EA	900 - $AF99
100 - $33BE	500 - $6D64	910 - $DA90
110 - $3B70	510 - $4599	920 - $1023
120 - $27E5	520 - $AFD1	930 - $95A2
130 - $EE82	530 - $238F	940 - $3A92
140 - $E8E8	540 - $5CC4	950 - $8CD7
150 - $2245	550 - $4C2D	960 - $6EB0
160 - $BA3F	560 - $0484	970 - $7F1C
170 - $F864	570 - $83E5	980 - $4242
180 - $EA8B	580 - $C23E	990 - $97C7
190 - $59B0	590 - $3159	1000 - $AA71
200 - $96DD	600 - $04F2	1010 - $34E5
210 - $0AFE	610 - $2DDA	1020 - $91EF
220 - $A247	620 - $0EC2	1030 - $6BFF
230 - $2B5C	630 - $4123	1040 - $6FB8
235 - $AD59	640 - $B7F6	1050 - $DC5D
240 - $E637	650 - $8CCF	1060 - $E191
250 - $47D1	660 - $67D2	1070 - $F1BE
260 - $8DD4	670 - $5D6F	1080 - $4374
270 - $5744	680 - $3F83	1090 - $D845
280 - $AAB5	690 - $16FE	1100 - $22FE
290 - $6701	700 - $F94B	1110 - $612F
300 - $0DF7	710 - $854D	1120 - $90FD
310 - $56E7	720 - $4DFA	1130 - $7A7F
320 - $61DF	730 - $3D12	1140 - $38E2
330 - $5364	740 - $ABAD	1150 - $11D4
340 - $597C	750 - $2CCF	1160 - $5352
350 - $BC16	760 - $A1D4	1170 - $66A2
360 - $AB59	770 - $73C2	1180 - $8E31
370 - $7931	780 - $E767	1190 - $61FE
380 - $2ECE	790 - $F5E7	1200 - $3685
390 - $197E	800 - $B7D0	1210 - $7291
400 - $8EA9	810 - $3D54	

For some years, I have heard about a modified COPYA program (CopyB?), somewhat in the manner of DeMuffin Plus, but with more allowance for patches. A few times it has been mentioned in COMPUTIST, with no references given as to its availability. Is there any way of acquiring such a program?

See page 00 for one version of CopyB.

. . . . . *RDEXed*

An MECC softkey fix

A teacher friend discovered that one of my MECC ProDOS disks (COMPUTIST #53, pg. 25) was incompletely softkeyed. Next, Bill Jetzer's article (COMPUTIST #60, pp. 10-12) provided an excellent summation of DOS 3.2 and 3.3 RWTS prologue and epilogue markers, an invaluable resource and all in one place, too! Thirdly, Jim Bancroft's updated softkey on Science Toolkit furnished me, not only with a fine read, but an insight into the psyche of those who deprotect software.

It all started when my friend tried a supposedly normalized version of Fraction Concepts Inc. The disk would boot fine, go through the menu with no problem, but when any activity was tried, it would crash with a message to please insert the disk again. A reboot of the disk would crash immediately. As it turned out, the corrected softkey involves a sector edit of only one additional byte.

The updated softkey of Broderbund's Science Toolkit (COMPUTIST #60, pp 31-32) provided me with another example of incomplete softkeys (COMPUTIST #49, pp 26-27). As soon as one writes to the disk, it becomes unreadable. This is the same error I made on the MECC disks, forgetting to change the RWTS write bytes as well as the read bytes.

After remonstrating with myself, I realized that the reason I sometimes commit this sort of error is not due to stupidity, but to a personality better suited to the problem solving involved in creating normalized software, than to the actual process of using the software. Other than a wordprocessor program, I find that most of the software I actually use is what I have designed myself. From letters in previous COMPUTIST issues, I gather that incomplete softkeys are not unusual. Perhaps we should recognize that authors may rush into print, spurred by the exhilaration of their (perhaps only partial) success. Rather than condemning them, we should appreciate the insights these authors provide. And then use our own intelligence to find the answers to newly discovered problems in software protection.

After exhausting the exercise of personal psychology, I proceeded to find the answer to the MECC ProDOS disk crashes. I quickly found that upon entering any disk activity, following the menu, that the disk asks for the student's name. This is then written to a text file, resulting in that file's disk block and one directory block on track 0 becoming unreadable. Obviously, as I had normalized the disk data epilogue during copy, I had only sector edited the unusual read byte, but not the corresponding write byte. Searching through ProDOS was not easy, as I don't have complete documentation as I do for DOS 3.3. I could find how prologue bytes are read or written, but epilogue bytes seem to be accessed in a way quite unlike DOS. Fortunately, I finally found these three bytes (DE AA EB) are contained in a lookup table (MECC has 97 AA EB instead). A quick sector edit of the lookup table is all that is required to complete the crack.

Upon completing the sojourn through ProDOS in search of marker bytes, I decided to compile their location for your readers information, as Bill Jetzer has done for DOS 3.3.

I then asked myself a question. Is it possible to produce a simple protected ProDOS disk with altered markers, but not containing a nibble count? Such a disk could be bit copied, but could not be quickly copied with a sector copier. Using a modified User's Disk, I have succeeded in producing such a protected disk, and share the procedure with you, as well as the deprotection method. But first, let's fix the MECC softkey.

Softkey Addendum for...

MECC ProDOS Software

Minnesota Educational Computing Corp

Having neglected to sector edit, on copied ProDOS disks, the altered write byte of the data epilogue, my softkey of COMPUTIST #53, pp 24-25 will not work. 97 AA EB must be changed to DE AA EB. These three write bytes may be found in a lookup table at $53C4-$53C6 in the ProDOS file, and may be edited in the file itself, or by means of a sector edit. The read byte may also be changed from C9 97 to C9 DE at $56C7-56C8 in the same ProDOS file. In addition, the bypass of the nibble count (90 03 4C xx xx 60 to 18 EA EA EA EA 60) may be sector edited or patched in the first SYS file. I am including both methods of softkeying to suit your preference.

Before you start, copy all ProDOS MECC disks with COPYA.

RUN COPYA
ctrl C
POKE 47397,24 *Ignore epilogues*
POKE 47398,96
70
RUN

Method 1:

Make the following sector edits to the COPYA copy.

To Preserve, Protect and Defend:

Trk	Sct	Byte(s) From	To
$01	$0E	$D3-D7 90 03 4C	18 EA EA EA EA
$16	$09	$C8 97	DE
$16	$0C	$C4 97 AA EB	DE AA EB

Equation Math:

Trk	Sct	Byte(s) From	To
$07	$02	$D3-D7 90 03 4C	18 EA EA EA EA
$0B	$05	$C8 97	DE
$0B	$08	$C4 97 AA EB	DE AA EB

Fraction Practice Unlimited:

Trk	Sct	Byte(s) From	To
$01	$0A	$D3-D7 90 03 4C	18 EA EA EA EA
$13	$07	$C8 97	DE
$13	$0A	$C4 97 AA EB	DE AA EB

Coordinate Math:

Trk	Sct	Byte(s) From	To
$09	$0C	$D3-D7 90 03 4C	18 EA EA EA EA
$1B	$09	$C8 97	DE
$1B	$0C	$C4 97 AA EB	DE AA EB

Fraction Concepts Inc.:

Trk	Sct	Byte(s) From	To
$01	$0A	$D3-D7 90 03 4C	18 EA EA EA EA
$18	$0D	$C8 97	DE
$17	$0F	$C4 97 AA EB	DE AA EB

Money Works:

Trk	Sct	Byte(s) From	To
$09	$0C	$D3-D7 90 03 4C	18 EA EA EA EA
$07	$05	$C8 97	DE
$07	$08	$C4 97 AA EB	DE AA EB

Method 2

Edit the ProDOS file:

[1] Boot a ProDOS disk with BASIC.SYSTEM and exit to BASIC.

[2] Place MECC disk in drive one (make sure no sector edits!).

PREFIX,D1
BLOAD PRODOS,A$2000,TSYS
PR#3

CATALOG *Read and record file length of ProDOS, Record name and file length of first SYS file (usually A.SYSTEM, L2127).*

[3] Enter the monitor and make the changes.

CALL-151
53C4:DE *change write byte from 97 to DE*
56C8:DE *change read byte from 97 to DE*
UNLOCK PRODOS
BSAVE PRODOS, A$2000, Lxxxxx, TSYS*xxxxx is file length*

[4] Change the SYS file.

BLOAD A.SYSTEM, A$2000, TSYS*first SYS file-may be different name*
25D3:18 EA EA EA EA *disable nibble count*
UNLOCK A.SYSTEM
BSAVE A.SYSTEM, A$2000, Lyyyy, TSYS*yyyy is file length*

[5] Repeat steps 2-4 for more ProDOS disks.

Now, your disks are COPYAble and, better yet, they'll work!

ProDOS Sector Markers

After reading Bill Jetzer's article on reading from protected DOS disks (COMPUTIST #60, pp 10-12), I decided to search through ProDOS to furnish your readers (and myself) with a table of address and data field marker locations. Because of the special peculiarities of ProDOS, the list is not as complete as for DOS 3.2 or DOS 3.3. Perhaps some other readers can add more data, particularly about the write address field. Locations referred to in the following tables all can be found by Bloading ProDOS (all versions) at $2000.

Standard ProDOS RWTS Locations

Description	Reading Hex	Reading Decimal	Writing Hex	Writing Decimal
Address:				
prolog	$55AB:D5	21931	????:D5	?
	$55B5:AA	21941	????:AA	?
	$55C0:96	21952	????:96	?
checksum	$55C5:00	21957		
epilog	$55EC:DE	21996	????:DE	?
	$55F6:AA	22006	????:AA	?
Data:				
prolog	$563C:D5	22076	$5727:D5	22311
	$5646:AA	22086	$572C:AA	22316
	$5650:AD	22096	$5731:AD	22321
checksum	$5656:00	22102		
epilog	$56C8:DE	22216	$53C4:DE	21444
	????:AA	?	$53C5:AA	21445
			$53C6:EB	21446

ProDOS disks can readily be copied using DOS 3.3 utilities such as COPYA. For single file copying, however, it may be advantageous to know some of the error trap pokes. Be careful, as ProDOS is relocated in BSM (bank switched memory). To try the following pokes, one has to BLOAD ProDOS, patch it, and then BSAVE it (BSAVE ProDOS, A$2000, Lxxxxx, TSYS). The best approach is to copy a disk containing the ProDOS and BASIC.SYSTEM files, patch it, use it, then erase the patch before it is, inadvertently, used again.

Reading protected ProDOS disks

	Hex (Dec)	Check	Ignore
Address prolog:			
1	$55AD (21933)	EF (239)	00 (0)
2	$55B7 (21943)	F2 (242)	00 (0)
3	$55C2 (21954)	E7 (231)	00 (0)
Checksum:	$55E5 (21989)	15 (21)	00 (0)
Epilog:	$55EA (21994)	FB (251)	0E (14)
Error Flag:	$55FB (22011)	38 (56)	18 (24)
Data Prolog:			
1	$563E (22078)	F4 (244)	00 (0)
2	$5648 (22088)	F2 (242)	00 (0)
3	$5652 (22098)	E8 (232)	00 (0)
Checksum:	?	?	?
Epilog:	?	?	?
Track Check:	?	?	?

Note: there are omissions recorded by question marks. I could not find how the address field was written to disk. Perhaps only the data field is written to the already formatted sector. Also, data epilogue bytes seem to not be

checked during a read operation. Perhaps some tenacious reader might like to figure this out!

The write bytes for the address header are probably not in ProDOS, as ProDOS does not initialize disks. . . . . RDEXed

Making Protected ProDOS Disks

Two distinct protection methods are commonly used in recent ProDOS disks. The first involves a form of nibble count, usually done by the first SYSTEM file on the disk. The second method involves a minor change in the ProDOS file to produce altered prologue/epilogue bytes in the address or data sector fields. The following article outlines how to produce a protected disk with the attributes of the second method. This disk may be copied by a bit copier, but will resist normal sector copiers, and even with a patched COPYA, it will require some sector edits to produce a normalized runable disk.

In order to accomplish the task of producing a protected ProDOS disk, no really special utilities are required. Stanley Planton (COMPUTIST #60, pp. 32-33 & COMPUTIST #51, pp. 12-13) extensively used EDD IV to produce a DOS 3.3 disk with every second track carrying a D4 AA 96 address prologue (instead of normal D5 AA 96). I found this method interesting, but extremely time consuming. Besides, I don't have EDD IV! All my method calls for is a copy of the ProDOS User's Disk and a ProDOS formatted disk containing ProDOS and BASIC.SYSTEM. The former is required (after being copied and patched) to format the protected disk, and the latter is needed (again it needs to be copied and patched) to allow the transfer of files from normal ProDOS disks to the protected disk.

The following four procedures are for those who wish to have and use their own protected software:

1) How to produce a formatted ProDOS protected disk.

2) How to transfer files to the protected disk.

3) How to copy and normalize your disk.

4) How to produce an exact copy of your protected disk.

Formatting ProDOS Protection

As an example of a protected format, we will not do anything fancy; we will just alter one byte - the first epilogue data byte, from DE to 97. Those wishing to try other bytes, refer to my article on ProDOS sector markers. In order to accomplish this, one must patch the FILER program on the User's Disk, changing read and write bytes from DE to 97. One must also change the write byte in the ProDOS file. Here is how to do it:

[1] Use any copy program to copy User's Disk.

[2] Boot a ProDOS disk containing BASIC.SYSTEM

[3] Place the copied User's Disk in drive 1 and patch ProDOS.

```
PREFIX,D1
BLOAD PRODOS,A$2000,TSYS
CALL-151
53C4:97                    change DE write byte to 97
UNLOCK PRODOS
BSAVE PRODOS, A$2000, L15360, TSYS    use appropriate file length from CATALOG
```

[4] Now patch Filer.

```
BLOAD FILER, A$2000, TSYS
7A5B:97                    change DE read byte to 97
7B8A:97                    change DE write byte to 97
UNLOCK FILER
BSAVE FILER, A$2000, L25600    use appropriate length!
```

Different versions of FILER may have the read and write bytes at different locations. If so, one can search for the read byte by searching for C9 DE. Read the code, just before, to see if the data field is being read. Each data field byte (D5 AA AD) is sequentially read and checked with a CMP (eg. C9 D5 or C9 AA). Likewise search for A9 DE to find the write byte, again checking for the data field (A9 D5 or A9 AA or A9 AD). Once found, patch FILER at the appropriate locations.

[5] Boot the patched User's Disk. From the Menu choose FILER, from the FILER MENU choose Volume Commands (V), from the Volume Menu choose Format a Volume (F). Place a blank disk in the drive and follow directions.

You now have a formatted disk that cannot be read by a sector copier. It will not boot, however, as the ProDOS and BASIC.SYSTEM files need to be present.

Transferring Files

The transfer of files from a normal ProDOS disk to your newly formatted protected disk involves using a special patched ProDOS disk which will read normal disks and write to protected disks. All that is necessary is to patch the ProDOS file, altering the single write byte. Here is the procedure:

[1] Copy a normal ProDOS disk containing ProDOS, BASIC.SYSTEM and any other useful files.

[2] Boot the copied disk and exit to BASIC

```
PR#3
CATALOG                    Find length of ProDOS file
```

[3] Patch ProDOS.

```
CALL-151
BLOAD PRODOS,A$2000,TSYS
53C4:97                    change write byte DE to 97
UNLOCK PRODOS
BSAVE PRODOS, A$2000, Lxxxxx, TSYS    use appropriate length
```

[4] Boot patched ProDOS disk. Place formatted protected disk in drive 2. Patch ProDOS and save it to the protected disk.

```
CALL-151
BLOAD PRODOS, A$2000, TSYS
56C8:97                    patch read byte DE to 97
PREFIX,D2                  access protected disk
CREATE PRODOS,TSYS
BSAVE PRODOS, A$2000, Lxxxxx, TSYS
```

[5] Transfer BASIC.SYSTEM to the protected disk.

```
PREFIX,D1                  back to normal disk
BLOAD BASIC.SYSTEM, A$2000, TSYS    check for length!
PREFIX,D2
CREATE BASIC.SYSTEM, TSYS
BSAVE BASIC.SYSTEM, A$2000, Lyyyyy, TSYS
```

[6] Transfer STARTUP.

```
PREFIX,D1
LOAD STARTUP               Let's capture another file
PREFIX,D2
SAVE STARTUP
```

[7] Transfer all wanted files in a similar fashion.

Now you have a protected disk! Make sure to label it as such. Take care, as one can read a normal disk using this disk. But if you try to write to a normal disk, it will implant the strange marker on all accessed sectors, including the catalog on Track 0. This would be disastrous.

DeProtecting the ProDOS Disk

This is fairly easy. One just has to use COPYA with a patch to remove the check for data trailer bytes. Then, a file edit is required of the normalized copied disk to change the read and write bytes back to normal (97 to DE).

[1] Use COPYA to copy the disk.

```
RUN COPYA
ctrl C
POKE 47411,106
70
RUN
```

[2] Boot a normal ProDOS disk (not the copied one!). Insert the copied disk in drive 1.

```
PREFIX,D1
BLOAD PRODOS,A$2000,TSYS
CALL-151
53C4:DE                    write byte from 97 to DE
56C8:DE                    read byte from 97 to DE
BSAVE PRODOS,A$2000,Lxxxxx,TSYS    make sure about track length
```

Your disk is now just like anybody else's now!

Making a Protected Copy Disk

Again one uses COPYA to accomplish an exact copy. This involves modifying DOS 3.3 to read and write with the altered bytes.

[1] Use COPYA.

```
RUN COPYA
ctrl C
POKE 47262,151             change write DE to 97
POKE 47413,151             change read DE to 97
70
RUN
```

You now have a genuine protected copy!

Softkey for...

Fixit
Random House

Only epilog bytes have been changed. I decided to do this the easy way.

```
INIT HELLO                 Initialize a blank disk
CALL-151
B988:18 60                 Ignore epilogs and disk will CATALOG
B925:18 60
ctrl C
BRUN FID                   Follow prompts and copy all files to the initialized disk
```

Softkey for...

D.C. Heath Chemistry Series
D C Heath

Scanning through these 10 disks with the C.I.A. Linguist shows that the last byte of the data prologue is altered from AD to something else in each disk and that epilogue bytes are extensively changed. The translate table also has been modified, as garbage shows up when a sector can be read. As each of the 10 disks have slightly different modifications, I decided to simply trap the RWTS for each disk and use, tried and true, DEMUFFIN PLUS.

[1] Boot each disk and reset into the monitor to capture the RWTS.

```
6800<B800.BFFFM
```

[2] Boot a slave disk without hello and save the RWTS.

```
BSAVE RWTS.x, A$6800, L$800    BSAVE RWTS.1 to RWTS.10
```

[3] For each disk, insert a blank disk and:

```
INIT HELLO                 1 side for each program, use a fast DOS
```

[4] Boot DOS 3.3 and get out your disk with DEMUFFIN PLUS.

```
BLOAD DEMUFFIN PLUS,A$4000
BLOAD RWTS.x,A$6800        put disk number in "x"
CALL-151
803<4000.6000M             Move Demuffin into place
B800<6800.6FFFM            Move the RWTS into DOS 3.3
803G                       Start up Demuffin
```

[5] Follow the prompts and copy all files to the initiallized disk.

[6] Repeat steps 4 & 5 for each disk.

Softkey for...

Perry Mason
Telarium Corp

Charles S. Taylor's softkey of Perry Mason (COMPUTIST #34, pg. 8) used a sector edit based upon Jeff Lucia's analysis of Rendezvous with Rama (COMPUTIST #19, pg. 6). Unfortunately, the file IO, which contains the nibble count, has been slightly altered and the method of bypassing by JSR'ing to a different place will not work. I found that allowing the nibble count to proceed and then NOP'ing the jump to disk death was easier.

[1] Copy both sides with a fast copier (Locksmith 6.0 Fastcopy)

[2] Sector edit side one:

Trk	Sct	Byte(s)	From	To
$17	$0C	$CC-CE	4C 04 60	EA EA EA

Softkey for...

Hide and Seek
Bionic Beaver Software

Data epilogues have been altered to CA AA instead of normal DE AA. COPYA seems to be a natural here, but a sector edit is required to allow the Hide and Seek DOS to read normal epilogues. I also found a funny further trap located in the Applesoft program, HELLO-2, that would hang the program upon boot by falling into an infinite loop and repeatedly ringing the bell!

[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] Make the following sector edits to the copy you just made.

Trk	Sct	Byte(s)	From	To
$00	$02	$9E	CA	DE
$00	$03	$35	CA	DE

[4] Boot normal DOS 3.3 again.

```
LOAD HELLO-2               from copied disk
LIST 420                   Note this line beeps, then GOTO's itself!
420                        delete it!
SAVE HELLO-2
```

Softkey for...

Math Assistant I: Addition and Subtraction
Math Assistant II: Multiplication and Division
Scholastic Inc

On side 1 (Program) and side 2 (Disk Work), epilogues are altered from DE AA to FF FF for both editions. The Data disk is not protected and can be copied normally. A simple way to deprotect this series is to FID all files to initialized blank disks (Use a fast DOS 3.3), after turning off the error trap.

[1] Use a fast DOS to initialize both sides of each blank disk (1 disk for each program). Don't forget to flip the disks after each delete.

```
INIT A/S.PJPRWJ 1          Side 1 of M.A. I
DELETE A/S.PJPRWJ
INIT A/S.PJPRWJ 2          Side 2 of M.A. I
DELETE A/S.PJPRWJ 2
INIT M/D.PJPRWJ 1          Side 1 of M.A. II
DELETE M/D.PJPRWJ 1
INIT M/D.PJPRWJ 2          Side 2 of M.A. II
DELETE M/D.PJPRWJ 2
```

[2] Tell DOS to ignore checksum and epilog errors, then use FID to copy all files to the appropriate disks.

```
POKE 47426,24
BRUN FID
```

[3] Use a fast copy program to copy the Data Disk.

Softkey for...

Math Blaster
Davidson & Assoc

I read Edward Teach's article on Double.DOS (COMPUTIST #61, pp.12-14) with considerable interest, and decided to follow his method to deprotect Math Blaster. All went delightfully well until I had to make the

modifications in the M ctrl Z ATH BLASTER program. It appears that not only people wishing normalized backups read Computist, but program designers as well! In my copy the line numbers have been changed from 360 to 359 and from 400 to 359 for the edits. As well, another similar trap has been inserted in line 342. If your version is like mine try this:

[1] Follow Edward Teach's method (p.15) up to the edits in the file M ctrl Z ATH BLASTER.

[2] Load the file and change the following lines.

LOAD M ctrl Z ATH BLASTER
LIST 342 *Change the = to <>*
LIST 359 *Change the = to <>*
LIST 399 *Change the = to <> and the <> to =*

[3] FID all files to an initialized fast DOS 3.3 disk. (I found this necessary as I copied tracks $00-02, using Edward Teach's method and found it would not boot. An alternate approach might be to copy a fast DOS to tracks $00-$02.)

The Saltine

Convert uncopyable 18 sector disks to 16 sector disks

Softkey for...

Nord and Bert couldn't make Heads or Tails of it
Infocom

■ Requirements

☐ Copy program (like COPYA or Fast Copy)
☐ Sector editor
☐ DOS 3.3 disk with no HELLO program
☐ Assembler (Optional)
☐ 1 double sided disk formatted on both sides.

I believe that this is the first 18 sector conversion ever in COMPUTIST! I will try to explain every step in detail so that you can apply this to other 18 sector programs. I am also interested in getting originals of Wings of Fury, Airheart or any other 18 sector program to convert for COMPUTIST. If anyone has one of these, drop me a letter, care of COMPUTIST.

First we need to do some setup tasks to prepare for the conversion.

• Make a backup copy of the original boot side onto side 1 of the formatted disk.

• Make an edit to that backup to make the disk break into the monitor after the DOS has been loaded, but before the program is loaded.

Trk	Sct	Byte(s)	From	To
$00	$00	$54	20 05 D5 4C 86 D0	2C 81 C0 4C 59 FF

• Boot the DOS 3.3 disk then type in the hexdumps.

```
7F00: 00 00 00 00 00 00 00 00     $804F
7F08: 00 00 00 00 00 00 00 00     $007F
7F10: 00 00 00 00 00 00 00 00     $804F
7F18: 00 00 00 00 00 00 00 00     $007F
7F20: 00 00 00 00 00 00 00 00     $804F
```

BSAVE READER, A$7F00, L$28

```
0F00: C5 F2 F2 EF F2 A1 A0 A0     $C8EC
0F08: C6 E9 EC E5 A0 F4 EF EF     $2B8E
0F10: A0 EC E1 F2 E7 E5 AE 00     $928B
0F18: 01 01 09 C2 D5 C7 A1 A0     $22A9
0F20: C2 D5 C7 A1 A0 C9 CE A0     $08D2
0F28: D3 C1 D6 C5 00 03 18 02     $598B
0F30: 01 06 02 0D D4 F9 F0 E5     $7BD1
0F38: A0 EC E5 F4 F4 E5 F2 A0     $05DE
0F40: EF F2 A0 F3 F0 E1 E3 E5     $8A00
0F48: A0 E6 EF F2 A0 EE E5 F8     $A527
0F50: F4 A0 F3 E3 F2 E5 E5 EE     $FDCF
0F58: A0 EF F2 A0 F2 E5 F4 F5     $9AA6
0F60: F2 EE A0 F4 EF A0 E1 E2     $74AE
0F68: EF F2 F4 AE 00 01 01 09     $E97E
0F70: C9 EE F6 E1 EC E9 E4 A0     $9284
0F78: E6 E9 EC E5 A0 EE E1 ED     $3050
0F80: E5                          $D5C2
```

BSAVE WRITER, A$F00, L$81

Reader source code

```
      ORG $7F00
      BIT $C083
      BIT $C083
      BIT $C08B     Turns on 16k card
      LDA #$1       Tell DOS side 1 is in drive
      STA $E7       so you get pretty message
      LDA #$60
      STA $00       Save slot to proper places
      STA $01
      LDA #$10      Make buffer $1000
      STA $B3
      LDA #$65      Variable to count 66 blocks
      STA VAR
L1    JSR $D51D     jump to DOS, automatically
      DEC VAR       increases buffer & block
      BPL L1        Read in 66 blocks yet?
      BIT $C081     If so, turn off 16k card
      RTS           DONE!
VAR   DFS 1
      END
```

Writer source code

```
      ORG $F00
      LDA #$0
      STA $B7EB     Make DOS match any volume
      STA $B7F0
      LDA #$10      Make Buffer $1000
      STA $B7F1
      LDA #$2
      STA $B7F4     Tell DOS you want to write
      LDA #$65
      STA VAR       Set variable to write 66 sectors
LOOP  JSR RWTS      Jump to DOS 3.3
      INC $B7F1     Increase buffer and sector
      INC $B7ED
      LDA $B7ED
      CMP #$10      End of track?
      BNE L1        No just keep going
      LDA #$0
      STA $B7ED     Reset sector to read to 0
      INC $B7EC     Next track
      LDA $B7EC     On track 23?
      CMP #$23
      BNE L1        No, just keep going
      JSR TDO       Yes, send message 'B', wait for key
L1    DEC VAR       Decrease sector counter
      BPL LOOP      If not done write next sector
      RTS           Return
RWTS  LDA $B7ED     Get sector
      PHA           Save it
      TAY
      LDA SKEW,Y    Get physical sector number
      STA $B7ED     Tell DOS this is sector to write
RWTS1 LDA #$B7      Set up jump to rwts
      LDY #$E8
      JSR $BD00     Jump to rwts
      BCS RWTS1     If error occured, try again
      PLA           Get sector back
      STA $B7ED     Save it for loop
      RTS           Return
SKEW  HEX 000D0B0907050301 0E0C0A0806040200F
TDO   LDA #"B"
      JSR $FDED     This routine is not needed
      LDA #$0       For this conversion, I
      STA $B7EC     Included it because it is
      STA $B7ED     Needed in other 18 sector
      BIT $C010     Conversion
TDO1  LDA $C000
      BPL TDO1
      BIT $C010
      RTS
VAR   DFS 1
      END
```

Now comes the fun part, converting the disk to 16 sectors!

Let me clear something up first, the first side of the disk is 16 sectors. Only the second side is 18 sectors, so we only have to worry about side 2.

The first step in converting to 16 sectors is to find the DOS. I really can't explain how I found it, or how I found how it works. Most of the time I just look through code and try every routine that is JSRed to, and if something good happens, then I know that the routine I'm looking for is within that subroutine. I also put breakpoints at different places with a sector editor, that way, if I boot the disk and something I am looking for happens, I know it is before the breakpoint. With DOS, I look for access to $C08C or $C0EC. Then, when the DOS is located, I look for calls to it to see what variables are used before execution.

I found DOS to be in the second bank of the 16K card (thanks to Ed Teach). Next, I had to find out how the tracks and sectors were accessed. I noticed that there were two variables that were used in conjunction with each other, where if one was incremented (INC) and equaled 0, the next was incremented. I concluded through trial and error that this was a sort of a 'block' number. These variables were $B1 and $B2. I then plugged 0 in to each of the variables, and jumped to the DOS. I found that track $03 sector $00 was loaded. So now we have block $00 as track $03, sector $00. Next, I noticed that within the DOS, if the block number was over $18A or bigger, then the 18 sector DOS was used.

This happens to be a pretty easy crack, since there is already a DOS 3.3 in memory, all you have to do is convert the second side. And instead of the code for the 18 sector DOS actually reading the disk, it would subtract $18A from the block number, then jump to the block read routine for DOS 3.3, tricking the program into thinking it passed through the 18 sector read routine. All that needs to be done is that the blocks have to be written sequentially, for instance, the 17th sector on track $00 of side 2 would end up on the first sector of the first track of the same side. In fact, after the second side is converted, only 5 bytes on the boot side have to be changed. Yes, I said only 5 bytes!

[1] Boot your modified copy of the boot side. After the program crashes into the monitor, do the following.

COE8 *Turns off disk drive*
F000<F000.FFFFM
C083
C083
C08B *Turns on 16K language card with $D000 bank 2*
D505 *Sets up Infocom DOS*

[2] Insert disk with DOS 3.3

6 ctrl P *Reboots disk*
BLOAD READER
CALL-151
B0:8A 01 00 10 *Sets DOS to read block $18A to $1000*

[3] Now, place the original, side 2, in drive 1 and read the first 66 blocks into memory. It reads slow, so be patient.

7F00G

[4] Again, place the DOS 3.3 disk in the drive.

BSAVE F1, A$1000, L$6600

[5] Place original, side 2, in drive 1.

7F00G

[6] Place DOS 3.3 disk in the drive.

BSAVE F2, A$1000, L$6600

[7] Place original, side 2, in drive 1.

7F00G

[8] Place DOS 3.3 disk in the drive.

BSAVE F3, A$1000, L$6600

That's all there is to reading the disk, the rest of the disk is empty! Now, let's write the disk back in 16 sector format.

[9] Put the DOS 3.3 disk in the drive.

BLOAD WRITER
BLOAD F1
B7EC:03 00 *start at track $03, sector $00*

[10] Now put formatted disk, side 2, in drive.

F00G

[11] Now put in DOS 3.3 disk.

BLOAD F2
B7EC:09 06 *Lost track and sector, after saving file*

[12] Now put formatted disk, side 2, in drive.

F00G

[13] Now put in DOS 3.3 disk.

BLOAD F3
B7EC:0F 0C

[14] Now put in formatted disk, side 2, in drive.

F00G

That's it, you have now converted, side 2, to 16 sectors!

The reason that you have to change $B7EC and $B7ED each time, is that after loading the files (F1, F2, F3), the values here have changed. Since each of the files are 66 sectors long, each time you run the WRITER program, the disk arm should be 6 tracks and 6 sectors away from the last time. Also, the reason we started on track $03, is that the DOS 3.3 in memory will only go back to track $03, sector $00. And, since there are only about 12 tracks of data on side 2, starting at track $03 will not make us run out of disk space. It also makes the reading easier.

Now, recopy the original boot side to your backup and make these sector edits.

Trk	Sct	Byte(s)	From	To
$00	$03	$46	38 E9 12	4C 72 D5
	$0D	$00	EA EA	A9 02

The first sector edit is in the *18 sector read* portion of DOS, it calculates the block # on side 2 to read, then jumps to the side 1 reader, which reads in DOS 3.3.

The second sector edit loads the value that the 16 sector DOS uses to tell the read routine to use 16 sector format.

You may have noticed that I have skewed the sectors on the write routine, this is because of the way in which the 16 sector DOS reads the disk. It reads the physical sector rather than the DOS 3.3 sector, so when using DOS 3.3 to write the sectors, you'll need a lookup table to get the data on the correct sector.

Now write protect both sides, and you will have a COPYA version of Nord and Bert, Couldn't Make Heads or Tails of It.

P.S. Many thanks to Ed Teach and Jack Nissel for the original, making this softkey possible!!

Duane E Spencer

This is my first letter to COMPUTIST. It was made possible by the tips and techniques of Edward Teach, for his signature check feature, and Gerald Meyers, for the Deprotection Game feature. Thanks gentlemen.

I own an Apple IIgs with the following equipment.

• Laser 3.5 800k disk drives (2 ea)
• Universal Disk Controller
• Meiji 5.25 disk drive
• Magnovox RGB monitor
• NEC pinwriter P660 24 pin printer
• AE 1.5MB GS RAM card

The reason that I have indicated my system setup is because it is not a standard system. Most of the time when I buy software that is copy protected, I have to removed the protection just so the program will run. This is the reason that I joined the COMPUTIST crowd. I have a good system and the laser drives are fantastic, but the UDC card has trouble with copy protected software. So, I decided that instead of buying the $399 Apple drive, I would just pay $32 for a subscription to COMPUTIST. I have not regretted my decision to subscribe to COMPUTIST and I never will. Every softkey that I have tried has worked. Thank you, COMPUTIST, for such an outstanding magazine.

Softkey for...

The Last Ninja
Activision

■ Requirements

☐ Apple IIgs
☐ Copy II Plus
☐ 1 Blank diskette

My method is more trial and error then

expert detection. First, backup your original Ninja disk and put the original in a safe place. It took me 30 days to finally crack this protection, but most of that was because I'v never done it before. I was inspired by Edward Teach, to keep trying, and so I did. I read the book "Beneath Apple ProDOS" and it helped a whole lot in understanding how software is loaded into the IIgs memory.

After loading the Memory Peeker and Visit Monitor CDAs into my Classic Desk Accessories menu, I booted the backup copy of Ninja. When the program got to the "Insert the key disk" statement, I entered the Classic Desk Accessories (ctrl esc). Using the Monitor, I set break bombs (00's) every 10 bytes starting at the general purpose buffer ($9600). I would set the break bomb and go back to the "key disk screen" to check for an abort condition. I kept doing this until I got a hit (or break) at address $9650. Now comes the guess work. I examined the bytes and noticed a BRA instruction, so I place two NOP bytes over the BRA instruction, and it worked. So I searched the disk for the BRA instruction.

Block Byte(s)	From	To
$003C 1DB-1DC	80 32	EA EA

This is not perfect, it takes longer to load, but it does work.

Is there anybody else, out there, that uses laser disk drives?

Michael Warren

I have been subscribing to COMPUTIST for over a year, and feel its time I contributed something to repay everyone for all the help I have gotten from past issues. Before I start, I would like to make some general comments.

To Edward Teach, Gerald Myers, Stephen Lau, Zorro, and all the rest. Thanks for taking the time and effort to explain your cracking techniques for all of us beginners.

To Jack Nissel. I'm voting "yes" to detailed articles on the softkeys. Sure, I like to back up my software, but I also want to know how and why something works. If I can't learn from the articles and softkeys, how can I be expected to contribute and help keep COMPUTIST alive and well? Keep the detailed articles coming!!

Regarding the IBM RDEX, I recently took a poll of 10 people at my office who are dedicated IBM owners. I showed each of them a recent issue of COMPUTIST, and the IBM RDEX pages. I asked them what they thought about the information, and whether they would like to subscribe. The answers ranged from "What's copy protection?" to "Isn't that illegal?" to "Why would I want to subscribe to an Apple magazine?". I rest my case!

That kind of ignorance is exactly why they do need the IBM RDEX. . . . . RDEXed

To Doc Devious. There is an APT for Thexder in COMPUTIST #60 and #62. If you have Copy II Plus Parms for programs on the most wanted list, send them in. Sometimes a bit copy is better than nothing. You'll also find a discussion of what the Parms are about in the documents that come with Copy II Plus.

A.P.T. for...

Wizardry IV: The Return of Werdna

Sir-Tech

■ Requirements

☐ A copy of your saved game disk
☐ A sector editor

As Wizardry fans know, Werdna was the evil bad-guy of the first Wizardry scenario...The Proving Grounds of the Mad Overlord. Well, in Wizardry IV you get to be Werdna and attempt to fight your way out of the tomb in which you have been imprisoned. Your opponents are groups of heroes, your allies are groups of foul monsters you summon to help you. Quite a novel approach to fantasy gaming!

The disks are not copy protected, but Sir-Tech uses a code book, and you have to provide a 4 number code in response to a series of numbers, in order to move from one level of the dungeon to the next. The code book is impossible to photocopy, and nearly impossible to read even with good lighting. However, in COMPUTIST #51, Bob Colbert provides us with a way around this obstacle, even though it requires a little old fashion arithmetic. Surely someone out there can come up with a way to negate the code check?

I have been playing the game off and on for several months and find it to be quite a challenge. One rainy Saturday, after dying yet again, I decided to explore the disk and see where my games were being saved. One thing led to another, and soon I had compiled a list of magic items and other assorted facts which I am now sharing with you. This information is not complete as regards to being able to edit every aspect of your Werdna character, but it will enable you to alter the game in some areas, thus increasing your chances of survival.

You can save a game in any of 8 positions. Each saved game occupies 2 sectors, and can be found on tracks $05 and $06. The first save position is located on track $05, sectors $06 and $07. Using your sector editor, move forwards and backwards to locate the other save positions. My recommendation is that you save your current game at this position before you make any edits, that way you don't have to search the disk.

Most of the information we are interested in is found in the first sector of each save position, ie: saved game # 1, track $05, sector $06.

Player Items:

Item #	Location	Item #	Location
1	42	2	4A
3	52	4	5A
5	62	6	6A
7	72	8	7A

The **total number of items** you possess is in byte $3A. If you give your self 8 items, byte $3A must reflect this, otherwise all items are not recognized. ie: a $04 in byte $3A means you have 4 items and anything in positions 5-8 would not be recognized.

Experience Level is located at bytes $82 and $84. Both of these should be the same number.

Hit points are located at bytes $86 and $88. $86 = maximum #, $88 = current #.

Spells:

Byte Location	Spell Level	Byte Location	Spell Level
92	1	94	2
96	3	98	4
9A	5	9C	6
9F	7		

Placing an $09 in each of the above bytes gives you the ability to cast 9 spells at that level. Note, however, that you must also change your level to reflect high enough ability to cast that level of a spell. In the first Wizardry scenario, a Mage did not gain 7th level spells until he reached 13th level. *These edits affect mage spells only!* I have only completed the first 6 levels of the dungeon, so I'm not sure if Werdna even gets Priest spells. Does anyone else know?

During the game you will find areas that allow you to summon monsters to your aid. You are allowed to summon 3 groups of monsters, each of which contains from 1 to 9 creatures. Obviously, the more help you have, the better your chance for survival. So this edit allows you to get the maximum number from each group.

Group Number	Byte location
1	D0
2	D2
3	D4

Placing an $09 in each position gives you 9 of each group of creatures.

Last, but far from the least, here is a list of items both mundane and magical with which to equip yourself.

Byte	Item type	Byte	Item type
01	Bloodstone	02	Lander's Turquoise
03	Amber Dragon	04	HHG Saunty Ock
05	Winged boots	06	Dreampainter's Ka
07	East Wind Sword	08	West Wind Sword
09	Dragons Claw	0A	Hopalong Carrot
0B	Cleansing Oil	0C	Witching Rod
0D	Aromatic Ball	0E	Void Transducer
0F	Kris of Truth	10	Inn Key
11	Crystal Rose	12	Dab of Puce
13	Pennonceaux	14	Maintenance Cap
15	Long Sword	16	Short Sword
17	Anointed Mace	18	Anointed Flail
19	Staff	1A	Dagger
1B	Small Shield	1C	Large Shield
1D	Robes	1E	Leather Armor
1F	Chainmail	20	Breast Plate
21	Plate Mail	22	Helm
23	Dios Potion	24	Porfic Potion
25	Long Sword +1	26	Short Sword +1
27	Mace +1	28	Staff of Mogref
29	Katino Scroll	2A	Leather +1
2B	Chain +1	2C	Plate +1
2D	Shield +1	2E	St. K.A.'s Foot
2F	Badios Scroll	30	Halito Scroll
31	Staff +2	32	Dragonslayer Sword
33	Helm +1	34	Jeweled Amulet
35	Badial Scroll	36	Sopic Potion
37	Long Sword +2	38	Good Hope Cape
39	Magicians Hat	3A	Novices Cap
3B	Dilto Scroll	3C	Copper Gloves
3D	Initiate Turban	3E	Wizards Skullcap
3F	Plate +2	40	Shield +2
41	Mordorcharge Card	42	Dial Potion
43	Ring of Porfic	44	Wereslayer Sword
45	Mage Masher Sword	46	Mace of Curing
47	Staff of Montino	48	Blade Cusinart
49	Amulet of Manifo	4A	Rod of Flame
4B	Cape of Hide	4C	Cape of the Jackal
4D	Cape of Hide	4E	Amulet of Makanito
4F	Diadem of Malor	50	Badial Scroll
51	Dagger +2	52	Dagger of Speed
53	Lich's Robes	54	Skull's Cap
55	Masopic Potion	56	Silver Gloves
57	Get Out of Jail Free	58	Golden Pyrite
59	Oxygen Mask	5A	Chronicles of H
5B	Lord's Garb	5C	Murasama Blade
5D	Shuriken	5E	Chain of Ice
5F	--------	60	--------
61	Ring of Healing	62	Ring of Dispelling
63	Ring of Death	64	Adept Baldness
65	Arabic Diary	66	Demonic Chimes
67	Black Candle	68	Black Box
69	St. Trebor Rump	6A	Bish's Tongue
6B	St. Rimbo Digit	6C	Arrow of Truth
6D	Orb of Dreams	6E	Rallying Horn
6F	Signet Ring	70	Mythril Glove
71	Holy Limp Wrist	72	Twilight Cloak
73	Shadow Cloak	74	Cone of Silence
75	Darkness Cloak	76	Night Cloak
77	Entropy Cloak		

Equip these at your own risk, for some of them may be cursed. I haven't tried them all yet.

Gary M. Thorpe

Help! I am in great need of a NMI (Non Maskable Interrupt) Card for my Apple IIe. I tried calling Cutting Edge Enterprises, the makers of the Senior Prom, but to no avail, they don't exist. All I want to do is be able to reset into the monitor in order to softkey a program. I am at the end my rope!! Does anyone out there have a used one for sale? If anyone out there can help me, please contact me at:
P.O. Box 460667, Houston, TX 77056-8667
TEL (713) 993-9400 (8-5 M-F)
FAX (713) 993-0340 (24 Hrs)

Seymour Joseph

An In-Depth Softkey

or how to use the Super IOB Swap controller without anxiety

Softkey for...

The Railroad Works

Thunder Mountain Software

I recently saw a letter from a Computist reader that asked for more explanations in softkeys. While I have enjoyed the increased number of methods published in the newer RDEX issues, I have missed the more in depth articles. In an attempt to be part of the solution, I have written to share my softkey for The Railroad Works, and more importantly explain the methods used.

The Railroad Works is a cute program that allows you to lay out railroad track on a playing field, add scenery and then control up to two trains on your layout, picking up and delivering cargo and passengers. An included game mode scores you on how efficiently you handle your trains and how promptly you deliver your cargo. The disk is, of course, copy protected.

I booted the original a few times and listened to the head movements. It seemed to start normally, but after reading a track or two there was the extended swoosh sound of the head seeking to the inside of the diskette. After a second there it returned to some outer track and continued reading normally

I first tried to backup up the disk with copy programs designed to duplicate non- protected disks. Standard copiers like COPYA and Copy II Plus fast copy, failed to copy the disk and gave errors on every track. I then took a look at the disk with a nibble editor. It looked pretty normal except for some strange sync bytes, so I tried copying it with E.D.D. 4+ from Utilco Software. The bit copy would boot part way but would hang after the rapid head seek movement to the center of the disk.

Some sort of disk check was taking place there. I tried copying the disk with the sync option with no luck. Finally I copied track #34 with the "manual nibble count" option and got a functional (but of course, still copy protected) backup.

I booted the backup and noticed that at the beginning of the boot, the Applesoft prompt "]" was displayed for a second. This is a good indicator that the disk can be easily softkeyed with the Super IOB program using the Swap Controller. The rest of this article will explain the method I used to softkey The Railroad Works, so that you can take the techniques presented here and try your hand softkeying your own software.

The DOS 3.3 operating system is made up of several parts. One part handles input from the keyboard, one interprets commands, one keeps track of files and one does the actual reading/writing of disks. This last part, called RWTS for Read/Write Track-Sector takes care of all the lowest level reading and writing of a DOS 3.3 diskette.

Sometimes when a publisher changes the disk format to make a copy protected disk, they take the regular DOS 3.3 RWTS and modify it to read and write their changed format. Then, instead of having to write all their own routines to load their program and data files, they can use this modified RWTS to do most of the work for them.

When a disk boots and shows an Applesoft prompt on the screen early in the boot, it usually means that disk is using some modification of DOS 3.3, rather than a completely custom program loader.

Since the RWTS is a stand-alone set of routines, we will capture the modified set from the protected disk and put it in memory with the regular DOS 3.3 set. We can use Darryl Hanna's great Super IOB program with its Swap Controller to copy our protected disk. The Super IOB Swap Controller installs the foreign RWTS, reads as many sectors off the protected disk as it can fit in memory, and then it swaps the normal DOS 3.3 RWTS into place and writes the sectors back out to your backup disk using normal DOS format. It then swaps RWTS routines again and reads the next group of sectors, repeating the swapping, reading and writing until all of the data from the original protected disk is on the DOS 3.3 format backup.

You will need an initialized DOS 3.3 slave disk for this procedure. To make one, boot a DOS 3.3 disk, remove it, insert a blank and type the following at the Applesoft prompt:

```
NEW
INIT HELLO
```

This makes a disk that will boot DOS but not disturb most of memory. Put this disk away for later.

After you boot a DOS 3.3 disk, the RWTS routines are normally located in memory at $B800 and are $800 bytes long, ending at $BFFF. (Numbers prefixed by a $ are in base 16 - Hexadecimal, this is the number system the Apple Machine Language Monitor works in.) What we want to do now is boot the protected disk, wait for its RWTS to load and somehow get ahold of it.

We get ahold of the foreign RWTS by regaining control of our computer while the protected program is in memory. Early Apple II computers will always reset into the Machine Language Monitor when you press Reset. The rest of us with Apple II+, IIe, IIc or IIgs computers have to use more advanced tricks to stop the program, because when we press Reset (or **ctrl-reset** on newer machines) the program currently running can control what happens and often just restarts, or clears memory. We cannot use **ctrl ↺ reset** because this command alters key memory locations.

The solutions at this point are many. For people preferring the hardware route, a wildcard or other NMI copy card can be used, The Senior Prom, advertised in this magazine, and the old standard Integer BASIC ROM board will work in most Apple IIs. Apple IIgs owners might be able to use the built in "Visit Monitor" CDA if the program in question does not disable interrupts. For people preferring other software alternatives, (or Apple IIc owners who don't want to open the case) several software utilities from past issues of COMPUTIST can be a big help. I recommend two articles specifically: Secret Weapon: RAM Card in COMPUTIST #16 and Anti-Reboot Disk (ARD) in COMPUTIST #23.

The first shows you how to fool some 64K programs into booting into the upper 64K of a 128K Apple and then taking control away from them. The second shows how to keep a program's reboot from erasing most of memory.

Once you have booted the protected program, get control of your machine (using your favorite method from above) and then enter the monitor (by typing CALL -151 from Applesoft) if you are not already there.

The Apple DOS 3.3 RWTS normally lives at $B800. If you are looking at the "*" monitor prompt, examine the machine language code at $B800 by typing B800L. The first few bytes of a RWTS will look like this:

```
B800- A2 00   LDX #$00
B802- A0 02   LDY #$02
B804- 88      DEY
```

If this is what you see when you dissasemble the memory at location B800 using the L command, you have captured the protected program's RWTS.

Now that you have the foreign RWTS, how do you save it to use it with Super IOB? Won't booting another disk erase memory? Yes, but luckily, not all of it. Booting another disk will certainly put its RWTS at $B800, so that memory location is not a safe place to keep this one. Booting a slave DOS 3.3 disk changes most of low memory up to address $1000 and much of high memory, but in the middle there is quite a bit that is not touched by just booting DOS. Move the foreign RWTS to a safe memory location with the following command:

1900<B800.BFFFM

This monitor move command tells the Apple to move the contents of memory locations $B800 through $BFFF to the area of memory starting at $1900.

Now that the alien RWTS is in a safe place in memory, boot the slave DOS 3.3 disk you prepared earlier. When you see the Applesoft prompt, save the protected disk's RWTS to your DOS 3.3 slave by typing:

BSAVE RWTS,A$1900,L$800

You should end up with a 10 sector file containing the RWTS code from the protected disk.

Now that we have the key piece of code from the protected disk, get out your Super IOB disk and install the Swap Controller. List line 10010 and edit the print statement to load the protected program's RWTS at address $1900. Insert your DOS slave disk with the alien RWTS saved on it and run Super IOB, it will load the RWTS and then ask for the Super IOB disk to be inserted again. Insert it and press space. Have a blank disk ready, let Super IOB format it, and then follow the prompts to let the magic begin. If everything goes well, when Super IOB stops, you will have a DOS 3.3 disk with all the files from the protected original on it. To get some gratification, catalog the disk before you go on to the next step. If the protected disk had a catalog, you will see all its files!

Since the protected disk's DOS was modified to read the protected format, it won't read the files in their new DOS 3.3 format. The Swap Controller does not even copy tracks 0, 1 and 2, where DOS normally resides because the protected DOS wouldn't work anyway. To make your backup bootable, you have to put DOS 3.3 on it. You can do this in two ways: copy tracks 0,1 and 2 from a normal DOS disk using a track copier, or use the Master Create program on your DOS 3.3 Master disk to write DOS on your backup.

Try booting your backup. If the only protection on the disk was the modified disk format, you are done. If not, you at least have all the files in a normal format where you can load and look at them to figure out the rest of the protection. If the backup boots and runs normally, you might want to try replacing DOS on tracks 0, 1 and 2 with a fast DOS replacement like DiversiDOS or ProntoDOS to make the program load faster.

Here is the step by step softkey for The Railroad Works using XFER.BOOT and AUXMEM.RESTORE from the article "Secret Weapon: Ramcard".

[1] Load XFER.BOOT.

[2] Insert The Railroad Works disk in drive one.

[3] Boot The Railroad Works into auxiliary memory. The boot will fail, but not until after the RWTS is already loaded.

[4] Press **ctrl-reset** to regain control of your Apple.

[5] Load AUXMEM.RESTORE.

[6] Using Auxmem.restore, move the RWTS from $B800 through $BFFF in auxiliary memory to the safe storage location $1900 in main memory.

[7] Save the RWTS to a DOS 3.3 disk.

BSAVE RWTS, A$1900, L$800

[8] Load Super IOB and install the Swap Controller.

[9] Edit line 10010 to reflect the name of your RWTS file.

[10] Insert the disk with the saved RWTS file on it and run Super IOB.

[11] Let Super IOB format a blank and copy the files from The Railroad Works disk.

[12] Use Master Create to put DOS 3.3 on your backup disk.

[13] Put your protected original disk in a safe place and enjoy your new easily backed up copy of The Railroad Works.

D Blondeau

A.P.T. for...

Thexder

Sierra OnLine

■ Requirements

☐ A copy of your original Thexder disk
☐ A block editor

Here is a cheat patch for the improved Thexder (The one where you can use a joystick). With this patch, you will be able to keep your energy level always at the maximum. (Now you will be able to pass Level 1 !!).

You can make a copy of Thexder with any diskcopy utility. When it is done, use your block editor on the copy of Thexder.

Block	Byte(s)	From	To
$0014	$17F	FØ	8Ø

I used the information found in a patch file for the old Thexder, by T. Harrington, also here in DL4.

Another New Thexder patch.

Block	Byte(s)	From	To
$000D	$13A	BØ	8Ø
$000D	$145	FØ	8Ø
$000D	$15D	9Ø	8Ø
$000D	$17F	9Ø	8Ø

You only need this patch if you intend to use Thexder on a 3½" disk. If you want to play it from your hard disk or want to rename your play disk, add this patch:

Block	Byte(s)	From	To
$000D	$11C	9Ø	8Ø

Then just put THEXDER.SYS16 and its DATA folder together in a NEWFOLDER anywhere you want on your hard disk. The NEWFOLDER name is for you to decide.

And believing in giving credit where credit is due: I used the information found in a file from "Soundwave", downloaded here by S. Knutson, and from another patch file by Brian A. Troha.

Dr. Leigh Rowan-Kelly

Apple IIgs Deprotection

Here are all the files I have on IIgs deprotection, as is. Some of them may have been printed already.

Softkey for...

Aesop's Fables

?

Block	Byte(s)	From	To
$349	$B6-B7	.A2 21	8Ø 2C

Alternate method

Block	Byte(s)	From	To
$316	$1BØ	FØ	8Ø

Softkey for...

Bard's Tale

Electronic Arts

Open /Bards.Tale/Burger, read block $00, byte $11, change from BØ to 9Ø and byte $26, change from 38 to 18.

Alternate method

Search for 78 98 E9 1E BØ and change BØ to 9Ø. Search for E9 2Ø 9Ø Ø1 38 and change 38 to 18.

Alternate method

Block	Byte(s)	From	To
$7	$1DØ-1D1	DØ 18	EA EA
	$13E-13F	DØ ØE	EA EA
$21	$66	FØ	8Ø
$157	$1FD	9Ø	8Ø

Alternate method

Block	Byte(s)	From	To
$1E3	$Ø8-ØB	E9 1D 9Ø 1A	E9 3D 9Ø 1A
	$22-26	E9 2Ø 9Ø Ø1 38	E9 2Ø 9Ø Ø1 18

Alternate method

BLOAD BURGER, A$2000
CALL-151
2009:3D
2026:18
ctrl C
BSAVE BURGER, A$2000, L715

?Bug - first method - Open File the same, change byte $11 the same, but in lieu of changing byte $26, change byte $1D from 9Ø to BØ.

Alternate method

BLOAD BARD.SYSTEM, A$2000, TSYS
CALL-151
21FA.21FD *should be 20 00 A0 90*
21FA:A9 0F 18 60
ctrl C
BSAVE BARD.SYSTEM, A$2000, TSYS

Softkey for...

Calendar Crafter

MECC

Block	Byte(s)	From	To
$567	$1D	BØ	9Ø

Softkey for...

Cobra Cavern

PBI Software

Block	Byte(s)	From	To
$235	$1DE	22	AF
	$1E2-1E8	C9 ØB ØØ FØ Ø3 A9 ØØ	EA EA EA EA EA A9 ØB
$3F3	$1F	22	AF
	$23-29	C9 ØB ØØ FØ A9 ØØ	EA EA EA EA EA A9 ØB

Softkey for...

Deluxe Paint II

Electronic Arts

Block	Byte(s)	From	To
$412	$165	22	AF
	$16A-16B	FØ Ø2	EA EA

Alternate method

Search for Ø8 C2 3Ø 8B ØB DA 5A 4B AB 3B 38 and change Ø8 to 6B. Should be at block $291, byte $1B3. Then search for A8 FØ Ø2 8Ø 1F and change A8 FØ Ø2 to EA FØ ØØ. Should be at block $412, Byte 169.

Softkey for...

Destroyer

Epyx

Block	Byte(s)	From	To
$3D	$5D-5E	E2 3Ø	8Ø 38
	$97-98	BØ ØC	C2 3Ø
$267	$1D1-1D2	A2 2Ø	8Ø 32
$26E	$B9-BA	A2 2Ø	8Ø 32
$272	$131-132	A2 2Ø	8Ø 32
$273	$13D-13E	A2 2Ø	8Ø 32
$278	$7C-7D	A2 2Ø	8Ø 32
$27D	$1D3-1D4	A2 2Ø	8Ø 32
$284	$128-129	A2 2Ø	8Ø 32
$28A	$64-65	A2 2Ø	8Ø 32
$295	$119-11A	A2 2Ø	8Ø 32
$268	$Ø5-Ø6	BØ ØC	C2 3Ø
$26E	$ED-EE	BØ ØC	C2 3Ø
$272	$165-166	BØ ØC	C2 3Ø
$173	$171-172	BØ ØC	C2 3Ø
$278	$BØ-B1	BØ ØC	C2 3Ø
$27E	$Ø7-Ø8	BØ ØC	C2 3Ø
$284	$15C-15D	BØ ØC	C2 3Ø
$28A	$98-99	BØ ØC	C2 3Ø
$295	$14D-14E	BØ ØC	C2 3Ø

Softkey for...

Draw Plus v1.0

Mediagenic

Block	Byte(s)	From	To
$516	$2F-57	AD E0 0C C9 40 Ø6 DØ 23 AD 84 ØØ 48 AD 86 ØØ 48 ØB A2 F6 ØC A0 ØØ ØØ 22 Ø8 ØD ØØ 2B FA 8E 86 ØØ FA 8E 84 ØØ C9 Ø8 ØØ DØ Ø2	all EA's (39 Bytes)

Alternate method

Block	Byte(s)	From	To
$516	$34-35	DØ 23	8Ø 21

Alternate method

Block	Byte(s)	From	To
$516	$2D	2B	ØØ
	$35	23	ØØ
	$56	Ø2	ØØ
	$A9	18	6B
$523	$5E	?	ØØ
	$66	?	ØØ
	$77	?	ØØ
	$1EE	?	6B

Softkey for...

Dream Zone
Baudville

Block	Byte(s)	From	To
$1B7	$A9-AC	22 DB C4 ØØ	AF DB C4 ØØ
	$DF-E2	22 DB C4 ØØ	AF DB C4 ØØ
Block	Byte(s)	From	To
$1BC	$F6-F9	22 DB C4 ØØ	AF DB C4 ØØ
	$12C-12F	22 DB C4 ØØ	AF DB C4 ØØ

Alternate method

BLOAD DREAD.SYS16, A$1000, L$2000, T$B3
CALL-151
16A9:AF
16DF:AF
20F6:AF
212C:AF
ctrl C
BSAVE DREAM.SYS16, A$1000, L$2000, T$B3

Softkey for...

Fantavision
Broderbund

Block	Byte(s)	From	To
$2B	$8E-8F	2Ø Ø3	8Ø 38
	$C8-CC	EB 98 E5 Ø1 EB	A9 Ø1 EB A9 4Ø

Softkey for...

Gauntlet
Mindscape

Block	Byte(s)	From	To
$17C	$199-19E	22 ØØ 9Ø ØØ C9 Ø2	AF ØØ 9Ø ØØ 8Ø Ø3

GBA 2-on-2 Championship Basketball

Block	Byte(s)	From	To
$6Ø8	$157	5Ø	EA

Alternate method
Search for 5Ø 2Ø F6 4F 35 and change 5Ø to EA.

Alternate method

Block	Byte(s)	From	To
$24B	$A1-A2		28 6Ø

Alternate method

Block	Byte(s)	From	To
$24Ø	$13F-141	2Ø 9D 3Ø	9C 8C 5E

Alternate method

Block	Byte(s)	From	To
$24B	$AA-AB	9Ø 15	EA EA
	$AF-BØ	9Ø 1Ø	EA EA
	$B8-B9	9Ø Ø7	EA EA
	$BD-BE	9Ø Ø2	EA EA

Softkey for...

Graphics Studio
Accolade

Block	Byte(s)	From	To
$31	$4C-4D	DØ 42	EA EA
	$51-53	38 E9 4Ø	82 93 ØØ

Alternate method

Block	Byte(s)	From	To
$31	$14-1F	AD 98 ØØ DØ Ø3 82 D3 ØØ A5 FØ FØ Ø3	9C 98 ØØ EA EA A9 Ø1 ØØ 85 FØ EA EA

Softkey for...

Graphicwriter
Datapak

For v1.0r

Block	Byte(s)	From	To
$3F	$FB	FØ Ø3	8Ø 4F

For v1.1

Block	Byte(s)	From	To
$4BF	$1AØ	FØ Ø3	8Ø 4F
$45C	$F9	FØ Ø3	8Ø 4F

Alternate method for v1.1RA

Block	Byte(s)	From	To
$45C	$12B-12C	DØ ØA	EA EA
$3DC	$15F-16Ø	DØ Ø5	EA EA

Alternate method
Open /Programs/Graphicwriter. Search for DØ ØA A9 AA D5 8F 6A and change DØ ØA to EA EA. Open /Programs/Hd.Install and Search for DØ Ø5 A9 ØØ Ø1 8Ø Ø3 and change DØ Ø5 to EA EA.

For v2.0

Block	Byte(s)	From	To
$471	$79-7A	FØ Ø3	8Ø 5Ø

Softkey for...

Hacker II
Activision

Block	Byte(s)	From	To
$3D8	$3C	22	AF
	$43-44	DØ Ø6	EA EA
$456	$3C	22	AF
	$43-44	DØ Ø6	EA EA

Alternate method

Block	Byte(s)	From	To
$3D3	$7D-7E	FØ 12	EA EA
$451	$7D-7E	FØ 12	EA EA

Alternate method

Block	Byte(s)	From	To
$3BC	$7D-7E	FØ 13	EA EA
$3C1	$3C	22	AF
	43-44	DØ Ø6	EA EA
$454	$7D-7E	FØ 13	EA EA
$459	$3C	22	AF
	$43-44	DØ Ø6	EA EA

Softkey for...

Hardball
Accolade

Block	Byte(s)	From	To
$32C	$1EE-1EF	C2 2Ø	18 6Ø
$32F	$FF-1ØØ	DA C2	18 6Ø

Alternate method for Hard Disk

Block	Byte(s)	From	To
$31D	$9-C	2Ø 5D 6B BØ	2C 5D 6B 24
	$14-17	2Ø 5D 6B BØ	2C 5D 6B 24
$31E	$54	48	6Ø
$321	$1A3-1A4	2Ø CD	Ø8 6Ø
$329	$7D	48	6Ø
$32C	$1EE-1EF	C2 2Ø	18 6Ø
$32F	$FF-1ØØ	DA C2	18 6Ø
$335	$1DE	48	6Ø
$339	$67	48	6Ø
$33D	$1Ø9	ØØ	Ø4

Alternate method
Move the file HARDBALL/SYSTEM/START to a blank formatted 5¼" disk. Search for 8F F3 Ø3 ØØ and change to EA EA EA EA. Then move the file back to the 3½" disk. Reformat the 5¼" disk. Move the file HARDBALL/HARD.CODE to the blank 5¼" disk. Search for 9C F3 Ø3 9C F4 Ø3 and change to EA EA EA EA EA. You can now hit ctrl-reset without Rebooting. Search for Ø8 8B ØB C2 2Ø A9 5D 6A 5B E2 2Ø AD etc and change to Ø8 28 A9 35 8D 78 Ø3 A9 1E 8D 79 Ø3 A9 DØ 8D 3B ØØ A9 12 8D FØ ØØ A9 Ø1 8D F4 ØØ A9 BØ 8D F6 ØØ A9 ØD 8D F7 ØØ A9 22 8D F8 ØØ 8D EC ØØ A9 19 8D EA ØØ A9 ØB 8D EB ØØ A9 A8 8D ED ØØ A9 Ø3 8D Ø2 95 A9 F8 8D Ø4 95 A9 48 8D Ø5 95 A9 41 8D Ø6 95 8D ØA 95 A9 52 8D Ø7 95 A9 44 8D Ø8 95 A9 42 8D Ø9 95 A9 4C 8D ØB 95 8D ØC 95 A9 ØØ 8D F5 ØØ 8D F1 ØØ 8D EE ØØ 8D ØØ 95 8D Ø1 95 8D Ø3 95 8D ØD 95 8D ØE 95 A2 E3 A Ø 1F 6Ø EA EA EA. Move the file back to the 3½" Disk.

Softkey for...

Instant Music
Electronic Arts

Block	Byte(s)	From	To
$111	$5E	22	AF
	$63-64	FØ Ø2	EA EA

Alternate method
Search for A8 FØ Ø2 8Ø and change A8 FØ Ø2 to EA FØ ØØ. Should be at block $111, bytes $62-64. Then edit:

Block	Byte(s)	From	To
$14	$1DD	Ø8	6B

Softkey for...

King's Quest I
Sierra OnLine

Block	Byte(s)	From	To
$A0	$B7-C1	22 ØØ ØØ ØØ 22 ØØ ØØ ØØ AE ØØ ØØ	22 ØØ ØØ ØØ AF ØØ ØØ ØØ AE ØØ ØØ

Alternate method

Block	Byte(s)	From	To
$73	$1D6-1DA	ØØ FØ 1E 22 ØØ	ØØ 8Ø 1E 22 ØØ

Softkey for...

Leisure Suit Larry
Sierra Online

Block	Byte(s)	From	To
$A5	$155-15F	22 ØØ ØØ ØØ 22 ØØ ØØ ØØ AE ØØ ØØ	22 ØØ ØØ ØØ AF ØØ ØØ ØØ AE ØØ ØØ

Alternate method

BLOAD LL.SYS16, A$1000, L$1000, B$13000, T$B3
CALL-151
1B59:AF
ctrl C
BSAVE LL.SYS16, A$1000, L$1000, B$13000, T$B3

Softkey for...

Magical Myths
Unicorn

Block	Byte(s)	From	To
$1EE	$141-145	8B Ø8 4B AB 48	6B Ø8 4B AB 48

Softkey for...

Marble Madness
Electronic Arts

Block	Byte(s)	From	To
$ 381	$F3-F7	2Ø ØØ 37 BØ ØC	2Ø ØØ 37 9Ø ØC

Alternate method

BLOAD DOS8.SYSTEM, A$2000, TSYS
CALL-151
20F6:90
ctrl C
BSAVE DOS8.SYSTEM, A$2000, L7054, TSYS

Alternate method

BLOAD DOS8.SYSTEM, TSYS, A$2000
CALL-151
20F3:38 EA EA
3D0G
BSAVE DOS8.SYSTEM, TSYS, A$2000

Alternate method

Block	Byte(s)	From	To
$381	$F3-F5	2Ø ØØ 37	EA EA 38

Alternate method

CALL-151
RENAME DOS8.SYSTEM,DOS8.SYS
BLOAD DOS8.SYS, TSYS
2083:EA EA EA 80
CREATE DOS8.SYSTEM, TSYS
BSAVE DOS8.SYSTEM, TSYS, A$2000, L7054

Softkey for...

Mavis Beacon Teaches Typing
Electronic Arts

Edit disk one:

Block	Byte(s)	From	To
$3E	$113	DØ	8Ø

Alternate method

Block	Byte(s)	From	To
$3B3	$8D-96	F4 3A Ø6 F4 Ø1 ØØ 22 ØØ ØØ ØØ	F4 3A Ø6 F4 Ø1 ØØ AF ØØ ØØ ØØ

Softkey for...

Mean18
Accolade

Block	Byte(s)	From	To
$5Ø6	$174	8D	AD
$29C	$174	8D	AD

This is not able to be run from Hard Disk because they have used Direct Prefixes rather than modifiable ProDOS 16 Prefixes, which have a preceding length byte.

Hard Disk Patch (unverified)

Block	Byte(s)	From	To
$29E	$A4-A6	DØ Ø3 82	DØ ØØ 82
$5F1	$A5-A7	DØ Ø3 82	DØ ØØ 82

Alternate method

Block	Byte(s)	From	To
$5F2	$D1-D3	DØ Ø3 82	DØ ØØ 82
$29E	$A4-A6	DØ Ø3 82	DØ ØØ 82

Softkey for...

Multiscribe GS v3.0c
Styleware

Block	Byte(s)	From	To
$538	$1CE-1CF	DØ 1D	8Ø 1A

Alternate method
Search for DØ 1D AD 22 Ø1 and change to 8Ø 1A AD 22 Ø1.

Alternate method

Block	Byte(s)	From	To
$538	$DC	22	AF
	$E1-E2	9Ø 12	8Ø 26
	$1Ø9	AD	9C
	$1ØC-1ØD	DØ 19	EA EA

Softkey for...

Music Construction Set
Electronis Arts

Block	Byte(s)	From	To
$43E	$1CF-1DØ	49 2Ø	EA EA

Alternate method
Search for 2Ø 1A B5 A9 Ø1 and change 2Ø to 6Ø.

Alternate method

Block	Byte(s)	From	To
$43E	$CA-D3	20 00 BF C5 42 49 20 C2 4A 90	EA EA EA EA EA EA EA EA EA 80

Alternate method

BLOAD JIMSCODE, A$2000
CALL-151
21CF:EA EA *was 49 20*
BSAVE JIMSCODE, A$2000, E18944

Alternate method

Block	Byte(s)	From	To
$C5	$31	?	60

Alternate method

Search for 20 00 BF C5 42 49 20 C2 4A B0 and change to EA EA EA EA EA EA EA EA 80.

Softkey for...

Music Studio
Activision

Block	Byte(s)	From	To
$03D	$016-018	82 82 00	EA EA EA

To allow use on a Hard Disk

Block	Byte(s)	From	To
$03D	$00D	22	AF

That AF is used to fool OMF-Relocative Loader. This may be found alternatively at block $44D.

Alternate method

Block	Byte(s)	From	To
$44D	$14	F0	80

If not found search for 0C 00 C9 01 00 F0 and change last byte to 80.

Softkey for...

Paintworks Plus v1.0
Mediagenics

Block	Byte(s)	From	To
$0A0	$1E0-1E1	D0 01	EA EA
	$1CF-1D0	D0 12	EA EA
	$1D8	22	AF

This last edit may be found at block $291.

Alternate method

Block	Byte(s)	From	To
$291	$1C9	AD	60

Alternate method

Block	Byte(s)	From	To
$2B0	$43	20	8D

Alternate method

Read block $291. Search for C9 06 09 D0 01 and change to EA EA EA EA EA. This should be found at bytes $1DD-1E1.

Version 1.01

Read block $4B. Search for C9 06 09 D0 01 and change to EA EA EA EA EA.

Version 1.1

Block	Byte(s)	From	To
$48A	$DE	AD	60

Alternate method

PREFIX/Paintworks
BLOAD Paintworks, T$B3, A$1000, L$1000
POKE 6621,96
BSAVE Paintworks, T$B3, A$1000, L$1000

Alternate method

Block	Byte(s)	From	To
$48A	$F2-F6	?	EA EA EA EA EA

Softkey for...

Paperboy
Mindscape

Block	Byte(s)	From	To
$D0	$128-133	18 FB C2 30 A2 42 21 A0 00 00 22 00	A9 02 8D 45 21 18 69 98 8D CB 21 60

Softkey for...

Print Shop
Broderbund

Block	Byte(s)	From	To
$2F	$37	48	60

Alternate method

Search for 48 C9 05 00 and change 48 to 60.

Alternate method

Block	Byte(s)	From	To
$2F	$7F-81	20 4F 67	20 57 68

Alternate method

Block	Byte(s)	From	To
$2A	$7F-81	20 4F 67	EA EA EA

It may be on block $2F in the same location.

Alternate method

Search for F0 AB 20 61 42 20 4F 67 and change 20 4F 67 to EA EA EA or change 61 42 20 to 61 42 60.

Softkey for...

Read & Rhyme
?

Block	Byte(s)	From	To
$38A	$6F-70	A2 21	80 2C

Softkey for...

Reader Rabbit
Learning Company

Block	Byte(s)	From	To
$41	$125	F0	80

Softkey for...

Sea Strike
PBI Software

Block	Byte(s)	From	To
$5B4	$147	D0	80

Alternate method

Block	Byte(s)	From	To
$58E	$0B	22	AF
	$0F-15	C9 0B 00 F0 03 A9 00	EA EA EA EA EA A9 0B

Softkey for...

Shanghai
Activision

Block	Byte(s)	From	To
$27D	$162-165	18 FB C2 30	A9 01 00 6B

Alternate method

Block	Byte(s)	From	To
$243	$E1	F0	80

Alternate method

Open /Shanghai/System/Start and change block $0, byte $DF from 01 to 00.

Alternate method

Block	Byte(s)	From	To
$243	$1E5	00	01
	$1E7	22	AF
	$1EB	8D	8C

For new version

Block	Byte(s)	From	To
$243	$52-58	00 00 22 7A 78 00 8D	01 00 AF 7A 78 00 8C
$267	$148	F0	80

Softkey for...

ShowOff
Broderbund

Block	Byte(s)	From	To
$17C	$70	08	60

Softkey for...

Silent Service
Microprose

Block	Byte(s)	From	To
$1C4	$1F6-1F9	F0 05 A9 20	EA EA A9 60
$1C6	$27-2A	F0 05 A9 20	EA EA A9 60
	$5C-5F	F0 05 A9 20	EA EA A9 60
$1C7	$117-11A	F0 05 A9 20	EA EA A9 60

Alternate method

Block	Byte(s)	From	To
$1CA	$1E6	?	60

Softkey for...

Sinbad's Adventures
?

Block	Byte(s)	From	To
$47A	$F7-FB	8B 08 4B AB 48	6B 08 4B AB 48

Softkey for...

Softswitch
Roger Wagner

Block	Byte(s)	From	To
$112	$3D-41	22 00 00 E1 68	68 68 A9 FE 00

Note that it may be found on block $11D, bytes $4A-4E.

Softkey for...

Space Quest v2.2
Sierra OnLine

Block	Byte(s)	From	To
$9E	$177	22	AF

Softkey for...

Tass Times in Tone Town
Activision

Block	Byte(s)	From	To
$25	$130	?	C7

Alternate method

Block	Byte(s)	From	To
$25	$130	?	C5

Softkey for...

Thexder
Sierra OnLine

Block	Byte(s)	From	To
$55C	$55	22	AF

Alternate method

Block	Byte(s)	From	To
$562	$30	B0	80
	$3B	F0	80
	$53	90	80
	$75	90	80

Softkey for...

TopDraw
Styleware

Block	Byte(s)	From	To
$394	$1E2-1E3	D0 1D	80 1A

Alternate method

Block	Byte(s)	From	To
$393	$0E-12	AD C2 42 D0 13	9C C2 42 EA EA
$520	$154-157	AD C2 42 D0 13	9C C2 42 EA EA

Softkey for...

Tower of Myraglen
PBI Software

Block	Byte(s)	From	To
$58C	$88-8C	C9 0B 00 F0 03	A9 0B 00 80 03

Softkey for...

Winter Games
Epyx

Block	Byte(s)	From	To
$61E	$A5-A6	?	18 60

Alternate method

Block	Byte(s)	From	To
$61E	$65	20	AD
$423	$BE-C5	AF F3 2A E1 C9 72 D0 FC	A9 72 8F F3 2A E1 EA EA

Softkey for...

World Games
Epyx

Block	Byte(s)	From	To
$7	$A2-A3	?	18 60

Alternate method

Block	Byte(s)	From	To
$7	$65	20	AD
$3E	$1D-24	AF F3 2A E1 C9 72 D0 FC	A9 72 8F F3 2A E1 EA EA

Softkey for...

Writers Choice Elite v1.0
Mediagenics

Block	Byte(s)	From	To
$523	$5F	AD	60

Alternate method

Block	Byte(s)	From	To
$523	$73-77	C9 07 00 D0 01	EA EA EA EA EA

Softkey for...

816 Paint
Buadville

320 Version

Block	Byte(s)	From	To
$273	$11D	30	80

640 Version

Block	Byte(s)	From	To
$2DB	$DF	30	80

Alternate method

Block	Byte(s)	From	To
$276	$41	?	6B
$2DE	$B	?	6B

Mark J. Ruskin

Convert 8/16 Paint graphics for Publish It

Here's a simple program that I use to convert my graphics. I thought it might help someone out there. It's a straight-forward program that works under ProDOS, with a 80 column display. It could be easily modified to work with a 40 column display by deleting line 30.

It also shows which files have already been converted for Publish It's use. The only change in the file name, when converted, is a suffix of "1" or "2" added to the original file name. So if you convert "Filename" with my converter program it will save a new copy of the file with "Filename1" for HiRes or "Filename2" for double HiRes files. I did it that way so it wouldn't add more than 1 character to a file name, as you are only allowed 15 characters in a ProDOS file name.

Here's my version of the converter program:

```
10 REM GRAPHICS ADDRESS CONVERTER
20 D$ = CHR$ (4)
30 PRINT D$ "PR#3"
40 PRINT : PRINT : PRINT
50 VTAB 10: HTAB 20
60  PRINT "GRAPHICS^ ADDRESS^ AND^ LENGTH^
    CHANGER"
70 VTAB 11: HTAB 25
80 PRINT "^BY^MARK^J.^RUSKIN"
90 VTAB 14: HTAB 20
100 PRINT "(1)^CONVERT^HIRES^GRAPHIC";
110 VTAB 16: HTAB 20
120  PRINT  "(2)^ CONVERT^ DOUBLE^ HIRES^
    GRAPHICS";
130 VTAB 18: HTAB 20
140 PRINT "(3)^QUIT^PROGRAM^TO^BASIC";
150  VTAB 20: HTAB 20 PRINT "WHAT^ IS^ YOUR^
    CHOICE?";
160 GET A$
170 IF A$ = "1" THEN 300
180 IF A$ = "2" THEN 400
190 IF A$ = "3" THEN 500
200 IF A$ < "1" OR A$ > "3" THEN 160
300 HOME
310 VTAB 14: HTAB 20: INPUT "FILE^ NAME^ TO^
    CONVERT?^";B$
320 ONERR GOTO 10
330 PRINT D$ "BLOAD";B$
340 PRINT D$ "BSAVE" ;B$; "1,A$2000,L$2000"
350 ONERR GOTO 10
360 GOTO 30
400 HOME : VTAB 14: HTAB 20
410 INPUT "^FILE^NAME^TO^CONVERT?^";C$
420 ONERR GOTO 10
430 PRINT D$ "BLOAD";C$
440 PRINT D$ "BSAVE" ;C$ "2,A$2000,L$4000"
450 ONERR GOTO 10
460 GOTO 30
500 PRINT : PRINT D$ "PR#3" : END
```

Checksums

10 - $BADD	130 - $048D	340 - $DE17
20 - $B3E7	140 - $F3C4	350 - $AF4E
30 - $AF6A	150 - $946B	360 - $2A1A
40 - $5280	160 - $013C	400 - $2887
50 - $D042	170 - $B86D	410 - $8440
60 - $C5CE	180 - $AFB1	420 - $769B
70 - $1475	190 - $001C	430 - $047A
80 - $BB9C	200 - $D3CF	440 - $FAFF
90 - $5225	300 - $4E05	450 - $3512
100 - $8327	310 - $8B30	460 - $5692
110 - $BF32	320 - $7B71	500 - $6E76
120 - $E14A	330 - $ECD0	

As you can see all the program does is ask for the name of the file to convert and then changes the file name into a variable. It then BLOADs the file and turns around and saves it again with the new address under the same name but with a suffix of "1" or "2".

That's all there is to it.

Frank M. Polosky

I think a name change is in order for "Computist". How about "IIgs Review" or "Education +" or maybe "Borring-Computing". Seriously, I haven't seen a decent issue since COMPUTIST #56. Unless I win the lottery, I am never going to own a IIgs. There is nothing more boring than reading about something you have no access too. There are "hundreds" of software programs that have never seen the pages of COMPUTIST. I, for one, would like to read about them and have cracking information and APT's as well.

Let me say that I'd like to see COMPUTIST survive! On its present course, I don't think it will.

- I'm bored to tears with D&D game breakdowns and Ultima Part 99. Enough already or at least tone it down a bit.
- I'd like to see some "Razzle Dazzle" in COMPUTIST. A little flair, some new life blood, a few contest's, maybe even a real editorial now and then. A little commerical hype might not hurt.
- Fair coverage for the whole Apple Line, not just the IIgs.
- I'd like to see a Nostalgic crack section for "older" software. Or a "My favorite game and why" section.
- As for the "Most Wanted List", if it's never been "cracked" in Computist, it should be on the list (Old or New).
- In the issue of Dec. 1983 of "Softalk" this type of "Hype" sold the Apple to the world as much as anything else did. How is anyone going to know about the "Wealth of Software" if they never heard of it, or read about it? A nostalgic list like these "Golden Oldies" might start renewed interest for old hackers and new ones alike. Certainly many of the older software programs are more original and interesting than a lot of "Junk" out there today. A few people will complain because the material is old. But isn't this magazine supposed to be for ALL APPLE USERS?

I hope you will consider some of my suggestions. I really think COMPUTIST can be both informative and ready to set the computer world on fire, as far as I can see, your closest competition is Nibble and SoftDisk, there isn't anybody else!

In 62 issues of COMPUTIST, I have never seen any actual tutorial material on three important topics.

1. How to install a pause in a game.
2. How to find the "lives", "fuel", "timer", "ammo", etc features in a game program.
3. How to convert "arcade" keyboard games into joystick versions. (Super Tax Man II, etc.)

I don't just want the end results, or sector edits. I want to know what and where to search. I would also like to know how the determination to do such things was arrived at, as well as what changes can be made. It's time to take the mystery out of computing and share the knowledge with others.

Poor Quality Software - 1989 (or is this 1982?)

Why is the industry giving the "Cold Shoulder" to the Apple IIe and IIc? It seems that in 1985, the industry made attractive claims of more memory for the dollar, similar to the "Hype" of the IIgs, etc in 1988. Apple IIe and IIc 128K software seems to be a "Fairy Tale, Not Yet Come True". What software that does exist, is generally "substandard" or of "poor" quality. 128K "Arcade" games for one, are basically non-existant. Toy game systems have the software that rightfully belong on the Apple II line.

Is it Apple's fault? Perhaps, but maybe it is the software companies lack of ambition to create decent software for the Apple 128K line? It used to be the cry, "We did the best we could with 48K, or 64K". What's their excuse now?

From over the counter software displays, to magazines, support for the 128K Apple II line is disappearing or poor at best. Nothing is more boring than reading about computers, you don't have access to. It will be increasingly hard to support any magazine that choses to "Close Out" coverage of the Apple II line. The older Apple II line may have had it's day, true, but the Apple II 128K line is still waiting!!

I wonder how long the IIgs and other computers will survive, before the industry "Hype's" another machine without keeping the promise it originally made in order to "Hype" a New Sale. I wonder what home user needs a 512K desktop anyway? Unfortunately, letters like mine generally receive a reply like, "Sorry, Technology has passed you by". In reality, the answer should be, "You got the Shaft", now go buy another computer, and try again!

Sure must be nice to dictate " Policy" courtesy of the "Swiss Bank Account"! Any novice "hacker" can tell you many software programs only used for 16K to 48K (even though the packaging stated that "64K was required"). If lack of software for the Apple brings the end to Apple, the industry will say "Piracy" was the cause. Perhaps instead, the demise was caused by "Crummy" software.

I'm tired of the "Short Change Shuffle", and I'm putting my checkbook on "Ice" until I get what I pay for. If current software for the Apple II line (128K) can't show any "real" signs of improvement, (Pretty Pictures, don't always make a better game). I'd be better off spending my money on some of the older "Quality" of the Past.

It worked for me

These are dedicated to those that always seem to find information in "Computist" that doesn't seem to work. Eight or nine hrs. of swearing and cursing pays off now and then. (These all worked for me.)

Softkey for...

Castle Wolfenstein
Main St. Pub.

Use Locksmith 6.0 Fast Copy (sometimes twice). Produces a cracked and working copy.

Softkey for...

Saracen
Data Soft

Use Locksmith 6.0 Fast Copy. Produces a working and copyable copy. Sometimes it pays to run a fast copy program even on an original.

Softkey for...

Teleport
Cavalier

Use Locksmith 6.0 Fast Copy. You get all A's on track 10,11,& 12, but it works. A similar crack was used on "Microwave" that fast copied over one track. If you fast copy this "cracked?" copy, you get no errors. Unfortunately it does not produce a binary file, thus you must keep it on one whole side of your disk.

Bitcopy for...

Borg
Sirius

Use Locksmith 6.0 w/parms, bit copy. Write protect!

Bitcopy for...

Ice Demons
Morningstar

Use Copy II Plus v8.3, bit copy, "Try Standard". Write protect!

Softkey Addendum for...

Movie Monster
Epyx

Edits from COMPUTIST #53 result in a cracked copy. Fast copy "twice" other copies you make, otherwise you may hear a grinding noise upon booting.

Bitcopy for...

Rings of Zilfin v1.1
SSI

All three controllers up to COMPUTIST #62 failed. "Darn Mad", I found a alternative for now. Use Copy II Plus v8.3 w/parms, bit copy on side 1. Write protect, it works!

A.P.T. for...

David's Midnight Magic
Broderbund

For ProDOS 8 v1.4 17-Apr-87. This may also work on the older originals of the game. An old friend of mine couldn't erase "High Scores" on his copy. I used Copy II+ (Sector Editor), search (S) text (T) for my initials, FMP in this case. Use your own! for your search.

Or simply read track $09, sector $03, bytes $00-07. They should look something like this:

```
F M P 02 67 18 00 00
```

Your score was 267,180. Use 00-09 to change each byte of your score. Copy II+, sector editor. H (hex), enter new values, esc, quit, W (write to disk), press return twice! Clear the high scores and names and put "New Life" into your game!!

To learn your "A, B, C's" in hex, read track $14, Sector $0C, byte $1B-34.

Scott Lloyd

I wish to voice my opinion concerning a BBS for your magazine. I think that a BBS would be a wonderful thing to have for Computist; but I wish to point out the possibility for abuse of the board.

No matter how well I think of your magazine, I still can't shake the notion that people use your magazine for kracking, i.e. illegal distributions, rather than deprotecting, i.e. archiving the originals. Might I suggest a subscription number for an access code and active sysop diligence in keeping the board from degenerating into just another pirate board.

You sure can. I'm interested in any ideas that the readers have on how the BBS should be structured. . . . . RDEXed

Wolfgang

Have you ever tried to list a Applesoft program that was on one of those old Beagle Bros. disks and met with a "This program is unlistable" message? The program has been protected with DOS Boss. To bypass the security, do the following:

[1] Load the program. Slow down the listing speed.

```
SPEED = 0
```

[2] List the program.

```
LIST
```

[3] Watch the listing carefully. It should print the line number of the protection. Once you've seen it, press control-reset and type the number you saw before it was over-written with that message. IE. If the line was 10 then type 10 and press return to delete that line.

[4] Set the speed back to 255.

```
SPEED = 255
```

List it all you want.

David B Selig

A note on Thexder

The program has been updated to use a joystick. The softkey in COMPUTIST #51, pg. 13 still works, but the block has moved. On my

version 2.7, I found it on block $00D instead of $562.

Block	Byte(s)	From	To
$00D	$13A	B0	80
	$145	F0	80
	$15D	90	80
	$17F	90	80

The Thexder softkey in COMPUTIST #50, page 19-20 has also moved. Block $55C is now to be found at $007. The code has changed somewhat, so the softkey is no longer valid. How about Brian A. Troha redoing his great fix. Enclosed is a copy of the original code and the new code.

Finally, a note of warning. I purchased the new Thexder when I read in A+ magazine that it had been updated to use the joystick. That, it turns out is not exactly true. I have an Apple IIgs, with a CH Products joystick. The up-down-left quadrants work fine, but the right quadrant does not work at all. I called Sierra On-Line for three days! I got a busy signal constantly. I finally called their corporate number and was put on hold for fifteen minutes. They ultimately transferred me to customer service, who said he could not explain my problem, but would transfer me to technical support. He did and disconnected me along the way. I called back and demanded to talk to the owner. Not surprisingly, I was told he and his wife were not in. I finally got the customer service manager who said she would have someone call me back. Kerry, from tech support called back shortly, he knew all about my problem.

According to Kerry, Thexder has been written to work only with the Apple brand of joystick. They do not support any other brand of joystick. I'm amazed, since I have never come across this problem before and was not aware that there was any difference between joysticks. I protested that the outside of the box should identify this limitation and he said he would pass it on. I returned the program to my dealer, never again to buy a Sierra product.

Thought I would pass on the above. Love your publication.

Rob Fiduccia

(?) Help! In Ultima V, after I was done giving myself 99 of spells, potions, and weapons, I saw a weapon that I never saw before. It was the Chaos Sword. Pretty strange weapon if you ask me. From what I remember,if you are equipped with this weapon you'll fall deep asleep the second battle starts or when you enter a chamber in a dungeon. Why in the world would someone wish to fall asleep if there were hundreds of Insect swarms or even a huge Dragon ready to burn your bones to dust? It's not clear to me. And where exactly do you get this weapon in the game? Is it something British stuck in for those sneaky players that cheat? I'm wondering about this because I know British wouldn't stick this in for no reason, I met him, and he's the type that uses things when they're needed. If you're wondering where I met him, it was at APPLEFEST 1988 in Boston. He is a pretty cool guy. So if anyone has any info on this topic, Please send it in.

(?) I have a question for Brandon LaCava, who gave tips for Ultima V in Computist #63 pgs.22 and 23. Where in the world did you learn to yell 'FLIPFLOP'? I was blown away then everything was upside down. And you also mention 'Trying to re-live the tale of Lore' what does that mean? One other question for you, you say making your own spells is possible. Well I've had no luck at all, just getting blown up or poison. I know the spell AN YLEM that needs garlic and moss, which gets rid of some furniture (not walls). I learned it at the Stone Keep east of Jhelom. I don't think there is any more because I gave myself once 99 of all spells and if I don't have it then I never will.

Bug: In Computist #63, pg. 15, there is a bug in my article. To get the Blue Crystal you must enter from the West side, NOT East, sorry.

And I was looking at my Deathlord A.P.T.s on the character edits, I see the sector to edit but not the track. The track for hit points and level is $22. As for all the rest I can't help you right now, I lost the paper that had all information, sorry again! If George I. Miller, who sent helpful tips on Deathlord in Computist #56 pgs.27 and 28, is still reading this magazine, then here is the answer to your question about mausoleum. You CAN'T enter them. They do nothing in the game except make you ask the question you did.

(?) I have used DOS UTILITY in Computist #54 (Thanks a ton Keith!) but ProDOS doesn't like it one bit. I'm asking this because I'm working on an Ultima V Dungeon Chamber Editor and I have data up to the ceiling. So I want to use the 'CHAIN' command so my program is smaller and doesn't take all the BASIC memory even with HIMEM. The editor takes up 130 sectors in BASIC and will take 3 minutes to load. I will send it into Computist but not as a program listed in the magazine because it'll take half the magazine up (really) and will also take days to type in, think of the errors. So if Computist will let me send the disk with the file and then somehow readers can order it. You don't have to pay for the program, but the disk you'll have to, I would think. And another reason I don't want it printed in the magazine is because I did't organize my program like others do at all! It's really messy. I'll give an indepth review about it in a future Computist when I finish it.

(?) In COMPUTIST #56, pg. 30, David Lavender gave tips on Wrath of Denethenor. In tip 3, what do you mean by "water traps"?

(?) And is there anyone out there working on a Bard's Tale III item maker?

Now, the answer everyone is waiting for. Lenny Nole, you had an good good question in Computist #63. How do I get my girlfriend more into computers? Well I can't give you an answer myself, but I'm going to asked my girlfriend and I can't wait to hear the answer (she's on vacation). I'll mail it in, be looking! Keep up the great work EVERYONE and let's keep on keeping Computist gold.

P.S. Where are all the great pictures that were on the cover of Computist everyone? No one has any more pictures? My printer is down at the moment, but I have tons that I'm going to mail in, come on, let's get a better cover.

My fault, on the pictures. Readers have been sending them in as binary files (the prefered method) but I haven't been uploading them to the typesetter. It's a time consuming process to convert Apple format graphics to a format that our typesetter will accept and I haven't had a lot of time, lately. But we're working on automating that process so you will see a difference in future issues. Also, the color process is different for the tabloid so we're working on learning that too. One good thing, color is less expensive in the tabloid format so we'll be able to do more, once we figure out how. . . . . .RDEXed

Zak Egendorf

This program uses what's known as "Lock it Up" copy protection. Lock it Up protection is very easy to recognize -- when it's booted, it will sit on track $00 for a second, the drive will grind and then it will complete the boot. The rhythm of the initial boot after the grind is very distinctive.

Using FID

1 First, get the files off the disk. Use the "=" when prompted for the file name.

```
BLOAD FID
CALL -151
B942:18
BAAA:00
803G
```

Now skip to step 2.

Using Demuffin Plus

The FID method has the disadvantage that whenever you turn off the checksum (B942:18), you are likely to get data errors. DeMuffin Plus is a more reliable method, but you cannot simply hide it at $6000 as we usually do, because Lock it Up overwrites all of memory. You are going to need a (slightly altered) copy of the Lock it Up RWTS to complete the crack of many Lock it Up disks, so let's save it now. You will need a way to reset into the monitor.

1a Boot the disk protected with Lock it Up protection. Press **reset** to get into the monitor.

```
2700<B700.BFFFM
```

1b Boot a slave disk without a hello program.

```
BSAVE LOCK IT UP RWTS,A$2700,L$900
```

1c Now, for the altered RWTS you may need later, do this:

```
CALL -151
2942:18
2AAA:AA
2A29:96
3D0G
BSAVE ALTERED LOCK IT UP RWTS,A$4000,L$900
```

1d Now we'll use Demuffin Plus to get the files.

```
BLOAD DEMUFFIN PLUS
BLOAD LOCK IT UP RWTS          Not altered one!
CALL - 151
B700<2700.2FFFM
803G                           startup Demuffin Plus
```

1e Many programs will work without any modification, but most have some checks for the Lock it Up DOS, and these can be very difficult to remove. All you need to do to make these programs run is to use the ALTERED LOCK IT UP RWTS you saved above. If the files you just Demuffin Plused won't run, just write a small EXEC file to start up the program. Put these commands into the EXEC file:

```
BLOAD ALTERED LOCK IT UP RWTS
CALL -151
B700<4000.48FFM
RUN HELLO          or whatever the boot program is
```

2 Now that you've gotten the files off the disk, I might as well tell you why they will not work or re-initialize over themselves. What you have to do is LOAD in an Applesoft file that was transfered from the a Lock-It-Up protected disk and LIST it!

Look for a "CALL 47721". This calls back protected DOS, and if it isn't there, you'll get an error. Replace it with a "CALL 47741" (switch to DOS 3.3).

Look for a "CALL PEEK (40222) + PEEK (40223) * 256 + 1". This re-initializes a disk if it detects DOS 3.3. Replace it with a for next loop.

Watch for FP statements in REM lines.

Look for "PEEK (512)" and delete it. This is a read keyboard routine and will crash the program.

David Stewart

Playing Tip for...

Bard's Tale III

Electronic Arts

I was very impressed when I got my copy of Bard's Tale III. The bard songs, of which there are now eight, are much better than in previous Bard's Tales and the automap feature is great. I would like to see more programs that use the IIe's standard music circuits so well.

After playing Bard's Tale III for a while, I discovered an oversight in the program that allows characters to get free experience points. Go to the review board in Skara Brae. For those of you who do not know where it is and have never played Bard's Tale I, go to the main plaza in the center of Skara Brae with the statue of Mangar. Take the street on the northeast side of the plaza. When you get to an intersection, go one space north, turn east and you will be in front of the review board. Enter it and the Old Man will award every member of your party 600000 experience points. Then, go back to the refugee camp, remove one character and replace him with a newly-created character. Go to the Old Man again and he will give every character the experience points, as long as at least one has not been there before. Return to camp, delete the 'new' character and repeat these steps as many times as necessary.

If you have already gone on all the quests and have gotten all of the items that the old man wanted, gather them all up, add a 'new' character and go to the board - even if the old man has been killed. He will be alive when you return and will reward each member 3,600,000 experience points! Go to the storage building by the entrance to the city, retrieve your items (the old man will take them away when you go to the review board) and create another character at the refugee camp to replace your old 'new' character. This may also be repeated to accumulate experience. For reference, the items that you need to give the Old Man to complete the quests are:

Valarians Bow	Sphere of Lanatir	Crown of Truth
Arrows of Life	Wand of Power	Belt of Alliria
Hammer of Wrath	Helm of Justice	Werra's Shield
Ferofist's Helm	Sceaclu's Cloak	Strifespear

The Bard's Tale III character editing table in Computist #61 explains how to give your character these items. Thanks to Thomas Rapheld, Brian Symonds, Harold Day, and all of the others who have contributed to the Bard's Tale III effort.

(?) Anyone know where you go to change your warriors into geomancers? How do you get the Rainbow rose in Lucenia?

More Help with Ultima V

The basis for this letter is Doc Devious's article in Computist #63. Some of the information was not complete and so I have sent this update to supplement his data.

Places to find people:

- Julia - Empath Abbey (Second floor)
- Toshi - Empath Abbey (Second floor)
- Maxwell - Serpent's Hold (In the training room during daytime)
- Saduj - Lord British's Castle

If you have not found Saduj, count yourself lucky. He is the one character in this game definitely not worth having, and you are given a clue about this when you meet him and it says 'You see a shifty-eyed man.' If you get him to join you, he will behave like a normal character...until combat. During combat, he controls himself and will attack the rest of your characters. Also, there is a significant loss of 'virtue points' when he joins your group and I have not found a way to correct either of these problems. For those of you who are STILL dying to find him, seek him in his hideout in the basement of Lord British's Castle, where he sleeps during the day. He can be found wandering up on the roof at night near British's private chamber. If you find a way to control him, let me know because he is an excellent fighter, as anyone who has had a run-in with him will attest.

Known Settlements:

Serpent's Hold	Courage
Britain	Compassion
Cove	(no virtue)
Jhelom	Valor
New Magincia	Humility
Skara Brae	Spirituality
Bordermarch	(south of Skara Brae)
Lycaeum	Truth
Stonegate	(north-east of Cove)

Location of Shards:

- Cowardice - Go to the bottom of dungeon Hythloth and, using magic, reach a small chamber that has the shard. Be sure to bring PLENTY of magical transport spells.
- Spyglass -in a keep to the east of Jhelom. Lets you look at stars without a telescope.
- Sextant - Gives you a fix on your bearings, in latitude and longitude. Unfortunately, it uses that runic garbage so you have to decipher it

into normal English. To get one, go to Greyhaven, the lighthouse south of Trinsic, and ask the grouchy lightkeeper, David, about a sextant.

• Oppression - To join, go to Windemere (a keep south-east of the abyss) and tell Elistaria the oppression's password, IMPERA. She will also issue you a black badge that lets you get past guards without having to pay tributes to Blackthorn.

• Try going to a well and wishing for a Ferrari, a Lotus, a Lamborghini, a Porsche, or a Corvette.

• If a Shadowlord is attacking a city that you enter and you are surrounded by an air of falsehood, people will try to steal items from you when you talk to them.

One final note: dying is much worse in Ultima V than in Ultima IV. Although all your characters will be resurrected and restored to good health, every character will lose up to about 300 experience points or so. I think that the number of points that you lose has something to do with your virtue ratings at the time of death, but I have been unable to verify this.

Thanks to Doc Devious for his excellent article! I hope that my information helps fill in any information gaps readers may have. If you still have any questions about Ultima V, write in and I will do my best to to answer them.

Suggestion: Why don't you start a small BBS that we can call to leave articles and other information? It would be much faster than air mail and we wouldn't have to worry about our disks being lost or damaged in the mail.

All right by me, but what about the free library disk that you get when your disk is returned? . . . . . RDEXed

(?) Does anyone know how to use the transporters in 2400 AD? I know the authorization code (LETSGO) but have been unable to find out how the destination codes work.

To Paul A. Johnson: I would like to take you up on your offer to send information on how to map the upper floors of 2400 AD if there were any interested parties. (Computist #63.) I think that this information would be a great help to me and other readers.

Nick C. Gagliardi

When a friend of mine asked me to help him backup Spy's Adventures In North America (Polarware, 1986), I first tried to use COPYA since the program was selling for $9.95. At that price, I thought it really isn't worth the expense of trying to protect the disk. I was wrong. The disk copies but freezes after the program side (side 1) is inserted into the drive.

Since, I save all my issues of "COMPUTIST" and "HARDORE" I found a softkey in #52. When that didn't work I kept looking and discovered Edward Teach's sector edits in #56. None of the bytes were on my version. Mr. Teach also had a softkey for Spy's Adventures In Europe immediately following. So, I searched for bytes FØ FE. This code was found on two tracks. I removed both occurances and the rest is history.

Softkey for...

Spy's Adventure In North America
Polarware

[1] Copy both sides of the disk with COPYA or any disk copy program.

[2] Sector edit side 2 (boot side).

Trk	Sct	Byte(s)	From	To
$Ø2	$Ø1	$91-92	FØ FE	EA EA
$13	$Ø7	$7E-7F	FØ FE	EA EA

The disk still takes a long time to boot but I haven't encountered any problems playing the game.

R. E. Williams

Several times in the past I have started to get some information together to send up to Computist, but something has always gotten in my way. Often it's just that someone else has come up with the same information before I can get it together. This time, however, I will prevail.

First I want to comment about the ongoing discussion of long vs. short softkeys. My first observation is that since Mr. Nissel, Mr. Teach, and Mr. McClelland are all psychic, (see issue #63, pages 30-32 about soap boxes and Pac Man) I have a small stack of programs I've been working on for quite some time. Please send in softkeys for them. I don't care if they're short or long as long as they WORK!!! Seriously, though, my thoughts about softkeys is that for the programs that take only a swap controller and/or a one or two byte sector edit should, for the most part, be handled with only a cookbook style softkey. This is especially true of instances where similar softkeys have appeared before in RECENT issues.

The Data Page could be extended and/or modified to include the basic information about capturing a RWTS and then referred to in softkeys. Another possibility would be a one-time offer to new subscribers for a specially priced package of all previous Computist issues. Some other basic info on cracking could also be included here or perhaps even better in text files on a disk similar to your Starter Kit. If anyone is interested in a disk like this and/or would like to send in ideas about what could or should be included on it, I would be glad to attempt to compile it and supply a copy to anyone who sends me a disk to put it on. It can be supplied in either Appleworks or text format.

I have also just completed an Appleworks database of Computist articles excluding reviews and I will supply it to anyone who sends me a disk and a SASE to return it in. It is a 100+K file so let me know if you need it broke down or not. Also let me know if you want an Appleworks or text file format.

If you wish to contact me about either of these projects or to talk 'Computist' between the issues, I can be reached at this address:
R. E. Williams
1105 E 13th
McMinnville, OR 97128

It would be greatly appreciated if when you send your disk(s) that they contain something. i.e. your Computist database, some hi-res/super hi-res pictures, Music Construction Set songs etc.

Basic Rules for Cracking Disks
(Which I often forget to follow)

1) Don't ignore the obvious. Try to copy the disk with fast copy. Try to copy the disk with a ProDOS/DOS 3.3 utility such as Copy II+. Try to copy just the files to a normal/fast dos disk or try to copy a fast dos onto your backup copy. Try to verify the disk. Any of these things may give you the most valuable piece of information you need to crack the disk. Who knows? Maybe YOUR disk is not protected at all.

2) Gather together good reference material and tools. My list includes Copy II+ 5.5 & 8.3 (approximately 90% of my deprotection work is done with this program.), a Computist library with an index of some sort, COPYA, Beneath Apple DOS, Beneath Apple ProDOS, What's Where in the Apple (Out of print), The Big Tip Book (from Beagle Brothers), a way into the monitor (IIgs CDA, Wildcard, Senior Prom, etc.), and most importantly, a collection of your experience.

3) Set up a routine for checking original disks. Mine is as follows:

a. Boot the original. Watch and listen to what happens. Note unusual disk access. If you see the Applesoft prompt "]", and fast copy fails; then you have a candidate for the 'Swap controller'.

b. Attempt a fast copy. If you get no errors or very few errors, you probably have a good start at cracking your disk. Always copy to a formatted disk, as the track(s) or sector(s) that had read errors on the original will not have them on the copy.

c. If fast copy fails, then attempt to read the disk with a sector editor with a patch to ignore epilogs and/or address checksums. If this happens you have a candidate for the '*B942: 18-- COPYA routine'.

d. If the patch fails to read the disk, then try the nibble editor to search for address and data headers/trailers. Learn to recognize common combinations and know what past controllers handled that situation. For example, the alternating D5/D4 address headers have been in use for several years. Whenever I encounter those, I attempt to use the Dragonworld controller from Super IOB collection #2 or Computist #30. Several others have appeared in print that do exactly the same thing. The trick is to know what the controllers actually do.

e. If the disk is really unusual, I wait and learn and go back through my box of unbacked-up disks regularly and see if I've learned enough new tricks to do something I couldn't do before.

f. If that fails I anxiously await my latest Computist and immediately check out the index for help.

4) Always try to start from an original disk when you attempt to normalize it. Using bit copies can result in new errors.

Hope this has been of some help to some of the new readers out there.

Comments about Copy II Plus

In my comments above I mentioned that I use both versions 5.5 and 8.3. The reason for this is that version 5.5 was, as far as I know, the last DOS 3.3 version produced. When the ProDOS version was introduced several changes were made to both the bit copy and utility programs. The two major changes were the inability of the ProDOS version to read DOS 3.2 disks and changes to the sector editor program. As Jim Hart mentioned several issues ago, the sector editor no longer has the ability to 'follow' a file. What that means is, if you have a disk with a DOS 3.3 catalog, you can use the sector editor to trace through a file on the disk. This is especially helpful if you have discovered that a certain file is the 'protection culprit'; but the byte sequence you are searching for appears several times on the disk, you can trace through the file to find it and change it.

Other uses include, copying files from a ProDOS disk onto a DOS 3.3 disk to search them; making the necessary changes and copying back. Also works if anybody out there doesn't have a block editor, but uses 3.5 disks.

Using Copy II Plus to copy files from tracks other than 11

This trick I discovered by accident one day as I was playing around with some piece of educational software for a local teacher. As can be common with protected software, the boot was quite slow and the disk did some sort of disk verification in the operating system. The disk had normal DOS markers but a catalog from DOS 3.3 showed that there were NO FILES. Examining track 11, sector 0, byte $01-02, showed the normal catalog start at track $11 sector $0F. But that sector was blank. Examining track $01, sector $05-09 showed a semi-normal DOS pattern with a boot program being HELLO. I decided to search the disk for the text 'HELLO' and found it in two locations, on track 1, and on track $10, sector $0E. Examining sector $0F on the same track showed more files. Here comes the trick — other people have transfered all the sectors from their existing track to track $11 by hand and edited the sectors to point to the next sector on track $11. I edited track $11, sector $00 to point to track $10, sector $0F. In sector $00 of track $11, bytes $01 and $02 are the track and sector of the start of the catalog. Changing byte $01 from 11 to 1Ø allowed the disk to be catalogued, booted, etc from a normal/fast DOS. It also allows Copy II+ to do all of its file work. I usually format another disk and copy the files to it, but that is not necessary. It should probably be done however if any writing is done to the disk. This way the VTOC will reflect the true condition of the disk.

Notes on modifying some programs to run on the IIgs

I discovered that my versions of Drol and Karateka would not run on the IIgs. Knowing that the boot code in the IIgs is not the same as the boot code on the Disk II controller cards made me think that perhaps the IIc modifications from Computist #37 & #52 would work. **They did!**

Comments about Documentation Check Copy Protection

Not only do I agree with Brian Troha that "copy protection is still copy protection" and should be removed on general principles, but I find the mentality behind it to be that of a non-gamer. Can you imagine how many less Monopoly sets would have been sold if; for example; every time you passed 'GO' you had to look on the doc sheet and count words or whatever before you could collect your $200.

After I learn the rules, etc. of a game I could care less if I ever saw most docs ever again and I certainly don't want to drag them over to my limited desk space in front of the computer just to play a computer game. On the more realistic note, I purchased all of Synapse's adventures (Essex, Brimstone, etc.) a few years back and never got around to doing anything with them. About a year ago we had a mobile home fire and my computer and a lot software and/or documentation was destroyed. Those programs do a documentation check. That documentation burned up with my bookcase. I can no longer attempt to play these games unless I remove the checks. I haven't had any luck with these programs yet but two newer SSI programs have fallen prey to my 'gamers mentality.'

Softkey for...

Demon's Winter
SSI

This wordy softkey is dedicated to Ed Teach.

This one gave me fits for several hours. The documentation check comes after you have made copies of the game disks with SSI's copy program and are ready to go adventuring. As you put the second disk into the drive, you are greeted with a question about the rules. At this point, I used the 'visit monitor' CDA in the IIgs and zeroed out all of the memory between $800 and $BFFF. (800:00 N 801<800.BFFFM ctrlY to go back to the accessories menu and choose QUIT.)

At this point you are greeted by a BRK followed by an address. This is the address at which the program was operating when you interrupted it. I noted this address and rebooted the disk, went to the second disk and interrupted the program again. Then I went to the address found in the previous step. When this yielded no help, I interrupted the program at an earlier point and looked around in machine language and found some interesting stuff, but all my changes made the program worse. At the bottom level, I had a program that would ask the check question and not allow an answer but just go through the crash sequence.

After sleeping on the problem; I decided to do a disk search for some known bytes, which I had gathered on my abortive cracking attempts from the previous night. I found several of the bytes early on the disk and tried changing all sorts of things. Then I went back into the monitor and started listing around the addresses that I had found the previous evening. Only then did I see the pattern that indicated that I was in the middle of a BASIC program. I checked the 'run flag' at $D6 and discovered a FF.

I changed the byte (D6:00), entered BASIC (3D0G), listed the program (LIST), and there

it was. Checking through the program, I discovered the following interesting code:

```
1030 ON X GOSUB 1100, 1200, 1300, 1400
1040 CALL 20346,A$
1050 IF B$ <> A$ THEN ...
```

The code at 1100 etc. were the question forms. A lot can probably be learned about documentation checks from this piece of programming.

To remove the code, I decided to make lines 1030 to 1050 REM statements. I decided to do this on the disk rather than in the program because I didn't want to go through the bother of saving the program back to the disk in RDOS.

Here is the Cookbook Method (dedicated to Jack Nissel).

[1] Copy side A

[2] Sector edit the disk.

Trk	Sct	Byte(s)	From	To
$05	$04	$00	8C	B2
		$0E	AD	B2
	$05	$E5	B4	B2

[3] Copy the other 3 sides and enjoy.

Softkey for...

The Dungeon Master's Assistant

SSI

This one had the documentation check in a binary program. What it did was jump to a question subroutine, which I NOP'ed out, then did a compare and crashed if not equal. To nullify the compare, I just loaded the accumulator with 00.

[1] Copy side A

[2] Sector edit the disk.

Trk	Sct	Byte(s)	From	To
$02	$0B	$13	20 ?? ??	EA EA EA
		$29	?? ??	A9 00

[3] Copy the other 3 sides and generate D&D monsters to your hearts content.

Softkey for...

California Games GS

Epyx

To crack this one, I looked back through the back issues of Computist to find a hint about what Epyx was doing. I found my clue in Computist #54 in the Destroyer softkey (thanks to Brian Troha). Once again Epyx used the same disk check routine but with another different pass/fail routine. To defeat this routine, I used 3 BRA (branch always) and nulled out the compare routines.

I found the protection on block $FC but if the bytes don't match then search the disk for A2 20 A0 01. The code right before it should be 90 03 4C 93 52 and the same code should appear twice after. In each instance the 90 should be changed to 80. After the third sequence of those bytes, about 17 bytes later is a sequence FF AD 9E ..... B0 05. All of these bytes should be changed to EA.

[1] Copy the disk.

[2] Block edit the disk.

Block	Byte(s)	From	To
$FC	$53	90	80
	$77	90	80
	$9C	90	80
	$B2-D2	FF ... 05	EA EA ... EA

Kingpin

Here is my latest addition to the Computist RDEX files. It is a program that I got from a BBS just after I got my new MODEM, and I thought Computist readers would like it. I hope it can be of use to some of the people out there in Computist land. It does require 128K, and at least one disk drive. It works essentially the same as COPYA, but it works in only three disk passes.

COPYB

```
1 IF PEEK (104) < > 137 THEN POKE 104,137: POKE
    137 * 256,0: PRINT CHR$ (4) "RUN^
    COPY128"
5 PRINT CHR$ (4) "BLOAD^COPY128.OBJ"
10 RD = 34816:WR = 34819:FMT = 34822:MA =
    34984:AM = 34987
20 DIM SDV%(3,3):SDV%(2,0) = 7:SDV%(2,1) =
    2:SDV%(2,2) = 254
100 HOME : INVERSE : PRINT "^^^^APPLE^DISKETTE^
    DUPLICATION^ UTILITY^ ^ ^ ^ ^ 128K^ RAM^
    REQUIRED/COMPARABLE^TO^COPYA^" : NORMAL
200 VTAB 12: PRINT "ORIGINAL^SLOT^^:" : HTAB 10:
    PRINT "DRIVE^:"
210 VTAB 16: PRINT "DUPLICATE^SLOT^:" : HTAB 10:
    PRINT "DRIVE^:"
300 FOR I = 0 TO 1: FOR J = 0 TO 1
310 VTAB I * 4 + J + 12: HTAB 17: CALL - 868:
    GET A$: PRINT A$
320 MX = SDV%(2,J):MN = 1:SDV%(I,J) = VAL (A$):
    IF SDV%(I,J) < MN OR SDV%(I,J) > MX THEN
    PRINT CHR$ (7): GOTO 310
340 VTAB I * 4 + J + 12: HTAB 17: CALL - 868:
    PRINT SDV%(I,J)
350 NEXT J,I
360 D1 = 1: FOR J = 0 TO 1: IF SDV%(0,J) < >
    SDV%(1,J) THEN D1 = 0
370 NEXT J
400 VTAB 20: CALL - 868
410 VTAB 22: PRINT "ARE^THESE^VALUES^CORRECT?^
    :Y" ; CHR$ (8);: GET A$: PRINT A$
420 IF A$ < > CHR$ (13) AND A$ < > "Y" AND A$ < >
    "y" THEN 100
430 VTAB 22: CALL - 868: PRINT "PRESS^ANY^KEY^TO^
    BEGIN^:" ;: GET A$: PRINT A$: VTAB 22: CALL
    - 868
500 FIRST = 1
510 FOR T = 34 TO 0 STEP - 16: FOR I = 0 TO 1
520 POKE 1,SDV%(I,0): POKE 2,SDV%(I,1): POKE
    5,15
600 IF I THEN 700
605 GOSUB 3000
610 FOR J = 0 TO 1: POKE 0,T - (8 * J)
615 A$ = "READING^DISK" : GOSUB 2000
620 POKE 4,SDV%(I,2)
630 CALL RD
640 A$ = "" : IF PEEK (3) THEN A$ = "UNABLE^TO^
    READ"
650 GOSUB 2000
660 IF PEEK (3) THEN I = 1:T = 0:J = 1
661 IF T < 8 THEN J = 1
662 IF NOT J THEN CALL MA
664 NEXT J
670 GOTO 1000
700 GOSUB 4000
705 IF ( NOT FIRST) OR SDV%(I,2) < > 0 THEN 800
710 A$ = "FORMATTING^DISK" : GOSUB 2000
720 CALL FMT
730 A$ = "" : IF PEEK (3) THEN A$ = "UNABLE^TO^
    FORMAT"
740 GOSUB 2000
750 IF PEEK (3) THEN I = 1:T = 0: GOTO 1000
800 FOR J = 1 TO 0 STEP - 1: IF T < 8 THEN J = 0
802 POKE 0,T - (8 * J)
803 A$ = "WRITING^DISK" : GOSUB 2000
805 POKE 4,SDV%(I,2)
810 CALL WR
820 A$ = "" : IF PEEK (3) THEN A$ = "UNABLE^TO^
    WRITE"
830 GOSUB 2000
840 IF PEEK (3) THEN I = 1:T = 0:J = 0
850 IF J THEN CALL AM
860 NEXT J
1000 NEXT I
1010 FIRST = 0
1020 NEXT T
1200 A$ = "COPY^SUCCESSFUL."
1210 IF PEEK (3) THEN A$ = CHR$ (7):A$ = A$ + A$
    + "COPY^ABORTED."
1220 VTAB 20: PRINT A$
1500 VTAB 22: PRINT "COPY^ANOTHER^DISKETTE^?^
    :N" ; CHR$ (8);: GET A$: PRINT A$
1510 IF A$ = "Y" OR A$ = "y" THEN 400
1600 POKE 216,0: HOME : CALL 979
1699 REM "HARD WAY TO END
2000 VTAB I * 4 + 12: HTAB 21: CALL - 868:
    PRINT A$: RETURN
3000 IF D1 THEN VTAB 22: HTAB 1: INPUT "INSERT^
    ORIGINAL^THEN^PRESS^RETURN:" ;A$: VTAB
    22: CALL - 868
3005 RETURN
4000 IF D1 THEN VTAB 22: HTAB 1: INPUT "INSERT^
    DUPLICATE^THEN^PRESS^RETURN:" ;A$: VTAB
    22: CALL - 868
4005 RETURN
```

Checksums

```
1 - $A051      605 - $F13B    805 - $4224
5 - $8C3C      610 - $8945    810 - $4076
10 - $E0F7     615 - $29DB    820 - $AE02
20 - $454A     620 - $F05D    830 - $84B2
100 - $5126    630 - $E399    840 - $DD43
200 - $8CD8    640 - $AF1A    850 - $0E71
210 - $1611    650 - $BEBC    860 - $2A15
300 - $488B    660 - $485A    1000 - $6F10
310 - $6AB5    661 - $0165    1010 - $A433
320 - $D5D3    662 - $DF9A    1020 - $9680
340 - $3BD9    664 - $38C8    1200 - $4B84
350 - $A93C    670 - $FEB9    1210 - $3279
360 - $A945    700 - $D2E8    1220 - $0529
370 - $F274    705 - $F85B    1500 - $62F9
400 - $0F15    710 - $08DD    1510 - $E6CD
410 - $3EF8    720 - $9654    1600 - $FCEE
420 - $79DE    730 - $5D44    1699 - $8618
430 - $53C3    740 - $0015    2000 - $3BB6
500 - $493C    750 - $A72A    3000 - $C2EF
510 - $46AB    800 - $B992    3005 - $1463
520 - $5265    802 - $3FE0    4000 - $77DD
600 - $88EC    803 - $84C5    4005 - $2C5E
```

COPY128.OBJ

```
8800: 4C 72 88 4C 83 88 4C 8E          $8365
8808: 88 20 E3 03 84 07 85 08          $F4B3
8810: A0 01 A5 01 0A 0A 0A 0A          $82AE
8818: 91 07 A0 02 A5 02 91 07          $9EF9
8820: A0 08 A9 00 91 07 C8 A9          $B884
8828: 08 91 07 A0 0C A5 06 91          $292B
8830: 07 60 A2 80 A0 03 A5 04          $8AD8
8838: 91 07 A0 04 A5 00 91 07          $7855
8840: A0 05 A5 05 91 07 8A 48          $1CF0
8848: A4 07 A5 08 20 D9 03 68          $FDED
8850: AA B0 19 A0 09 B1 07 18          $6A2C
8858: 69 01 91 07 C6 05 10 08          $9C29
8860: A9 0F 85 05 C6 00 30 03          $ACE7
8868: CA D0 C9 18 A9 00 6A 85          $2F13
8870: 03 60 A9 01 85 06 20 09          $4E89
8878: 88 20 32 88 A0 0E B1 07          $7E66
8880: 85 04 60 A9 02 85 06 20          $5E0F
8888: 09 88 20 32 88 60 A9 04          $EEDC
8890: 85 06 20 09 88 A0 03 A5          $D7A3
8898: 04 91 07 A4 07 A5 08 20          $B76D
88A0: D9 03 4C 6C 88 60 20 67          $B39E
88A8: 38 B0 01 18 20 C9 88 A2          $A6E0
88B0: 05 A0 04 B0 04 A2 03 A0          $734B
88B8: 02 8E 0B 00 8C 1A 00 8D          $3E3C
88C0: 00 C0 20 00 00 20 C9 88          $B061
88C8: 60 A2 1F B5 00 48 BD E0          $9838
88D0: 88 95 00 68 9D E0 88 CA          $257C
88D8: 10 F1 60 60 75 85 F6 A5          $E14F
88E0: A9 08 85 3D A0 00 84 3C          $EAAF
88E8: A2 80 8D 00 C0 B1 3C 91          $1D48
88F0: 3C C8 D0 F9 E6 3D CA D0          $2DA6
88F8: F4 8D 00 C0 60                   $A60E
```

Now, some additional comments and questions.

To Donald Jones. My Appleworks book told me that when you choose the print option (Open-Apple P) after you complete your Wordprocessor document, your options include 'print to text (ASCII) file'. I wrote this article on Appleworks, and then printed it to a Standard Text file. Then, I used Copy II+ (v.8.3) to copy the text file to a standard DOS 3.3 diskette. A time-consumming but easy task.

(?) I have an unabashed plea for all of you power users. I just purchased Wasteland, and I cannot crack it! I have Copy II+ (v.8.3), Locksmith 5.0, and Super IOB. If anyone would care to crack Wasteland with any of the above three means (Copy II+ preferred), then I would be eternally grateful.

To S Todd Grant: By using your Toaster Repair Skills, you can pull a plasma coupler out of the broken toaster, and the coupler is used to destroy the computer in the end of the game. In order to solve Wasteland, you must destroy the computer at Base Cochise (N of Darwin). Maybe, when my friend is done with my copy of Wasteland, I will write in how this is done (next issue, I hope). By the way, I don't know what is in the toaster you found. The toaster I found was in the Inner Sanctum, on the left, in the Guardian Citadel.

Also, to any Modem users. I just got a 2400 baud Modem for Christmas, and I urge any of you out there to send in your support for a Computist BBS. That is one BBS that I would pay money for, and I would use frequently. If anyone out there knows of a good BBS program, please let Computist know!

Joe Trodello

I have two reasons for writing this letter. First, I would like to state my position on the controversy surrounding the magazine. Since I am fairly new to working with my computer, I find it extremely helpful to have softkeys explained exactly as they are discovered. It has little meaning to read that certain bytes should be changed. Although this does deprotect the disk, it does not teach anybody about the process used. The articles by Jim Hart, Ed Teach, and Bill Jetzer all do a great job of explaining how the softkeys are obtained. This has helped me, and I'm sure many others, to begin to understand different techniques available . Remember, the more we learn, the more people available to provide softkeys.

As far as wasting space is concerned, I consider it as relevant as providing playing tips for adventure games. I don't play these games very often, but I can see their use to some readers. Should they be excluded because most of us subscribed to the magazine for softkeys? Should we *not* provide softkeys for Apple IIgs if most of us have a IIc or a IIe? That would be ridiculous. So if we need IBM softkeys to keep the magazine going, then so be it. As far as I'm concerned, none of this material is irrelevant - as is true for any magazine, all articles aren't going to appeal to all readers.

My second reason for writing is to explain my difficulty with Super IOB on the Starter Kit. As I said, I'm new and I make mistakes that probably seem ignorant to the experienced, but I'm learning. Here is what I discovered about the Super IOB - I hope it helps others.

I used to type in the controller in the magazine and then try to save it using the original disk's name. The machine would always respond with a 'Disk Full' messege. Maybe others are doing the same thing. Anyway, this is what I did and have since had no problems.

1) Load Super IOB (options 2B on my menu),

2) Type in the controller,

3) Type 'RUN' and follow the prompts.

If the controller is long I SAVE it in increments using the command SAVE CON.XXXXX (where XXXXX is the original programs name).

This technique worked for me so I assume that is is correct. If it isn't someone can let me know.

Well, I hope that the next time I write it will be with a softkey. Keep up the good work on the magazine. It definitely is the best magazine around. It does what it says it will more than any other magazine I've ever read.

It's a good idea to make a separate Super IOB disk and to SAVE all of your controllers to that disk. .....RDEXed

Tim Valuk

Well, I have finally gotten around to writing to this excellent magazine. I started with COMPUTIST #44, and recently ordered all possible back issues. During the time I have been a subscriber, I have seen many changes in the magazine, mostly for the better. Since issue #44, the magazine has been expanded and an IBM section has come into existence. As long as that IBM section does not diminish the size of the Apple section, I applaud your decision to include it, as it may bring in more subscribers. I would also like to make a comment to anyone who lends their Computist magazines to a friend (or friends) on a regular basis; unless you want to see a great magazine go down the tubes, have them get their own subscription! For a paltry $24, they can get their own monthly magazine.

I have also recently signed on to AppleLink, the fairly new modem network. It is rather good, except for the $6.00 an hour fee. I have downloaded a few deprotection schemes from there, but many have already been published in Computist. One of them, however, led me to a deprotection of Bard's Tale II for the GS, and here it is:

IIgs Softkey for...

Bard's Tale II

Electronic Arts

■ Requirements

☐ 512K Apple IIgs
☐ 3½" disk copier (I used Copy II Plus)
☐ 3½" disk editor (I used Copy II Plus)

This copy of the program started to boot exactly like Bard's Tale GS. However, when the copy was booting, it asked me to "Insert the Master Disk." In a letter from a person on Applelink, they mentioned changing Bytes $66-$6A on Block $0423 to EA EA EA. However, after this patch one would still get the "Insert Master Disk" prompt. If you pressed <return>, the program would load. I did not like that deprotection. So, I set out to redeprotect the disk. After some searching around on the mentioned block ($042E), I was able to deprotect Bard's Tale II quite easily. Here is some of the code on that block:

```
26:8D 08 C0     STA C008          disk check routine
29:C2 30        REP #30
2B:A9 FF 9F     LDA #$9FFF
2E:1B           TCS
2F:22 00 A0 00  JSL 00A000        do disk check
33:A2 FF        LDX #FF
35:01 9A        ORA (9A,X)
37:E2 30        SEP #30
39:8D 09 C0     STA C009
3C:C9 01        CMP #01
3E:F0 2B        BEQ 6B (+2A)      Branch if EQual to $6B
40:A2 00        LDX #00           start of message print
42:8E 35 C0     STX C035
45:BD CC B4     LDA B4CC,X
48:F0 0C        BEQ 56 (+0C)
```

... later in the block.

```
61:10 FB        BPL 5E (-05)
63:2C 10 C0     BIT C010          wait for a keypress
66:20 EB B4     JSR B4EB
69:80 BB        BRA 26 (-45)      BRAnch back to disk
                                  check
6B:A2 30        LDX #30           continue loading the game
```

Remembering the Jump to SubRoutine that was mentioned in the Applelink letter, I examined the surrounding code. I noticed that at $69 it seems to branch back to the beginning of the protection scheme. It seems the Applelink deprotection had the program continue after the prompt by NOPing this BRAnch. I wanted to skip the prompt altogether.

This is the route the program would take if the disk check failed: The disk would be read and the Branch if EQual at $3E would fail, causing the code after it to be processed. That code would then print out the "Insert Master Disk" message and wait for a keypress. It would then BRAnch back to the beginning of the scheme and check the disk again. If the disk was the original, it would branch to $6B and continue the loading process. If the check failed, the above process would be repeated. The only way out of this loop was the Branch if EQual at $3E. However, if the code from the disk was not equal (which it probably would be since the block was not nibble copied), the branch would not be taken. Therefore, I changed the Branch if EQual to a BRanch Always, and the disk worked fine.

1 Copy the disk with any 3½" disk copier.

2 Make the following edits to the copy:

Block	Byte(s)	From	To
$042E	$2F	22	AF
	$3E	F0	80

If the proper instruction is not found at $3E, search for E2 30 8D 09 C0 C9 01 F0 2B and change the F0 to 80.

IIgs Softkey for...

4th and Inches

Accolade

■ Requirements

☐ 512K Apple IIgs
☐ 3½" disk copier (I used Copy II Plus)
☐ 3½" disk editor (I used Copy II Plus)

4th and Inches is a great football simulation by Accolade. I figured they used the same protection as they always use on their GS software, so I scanned for A2 20 A0 01 and found it on Block $00C5. After examining this code I came up with a deprotection for this game. Here is some code to check your disk against:

```
EB:C9 00        CMP #00           CoMPare the result to 00
ED:AD 62 EB     LDA EB62
F0:E9 20        SBC #20
F2:90 2A        BCC 11E (+42)     branch on carry clear
                                  to bomb
F4:AD 63 EB     LDA EB63
F7:C9 00        CMP #00           CoMPare the result to 00
F9:AD 64 EB     LDA EB64
FC:E9 1F        SBC #1F
FE:B0 1E        BCS 11E (+30)     branch on carry set to
                                  bomb
100:82 2D 00    BRL 130 (+2D)
```

... later in the block.

```
118:AD 5B EB    LDA EB5B
11B:B0 01       BCS 11E (+01)     branch on carry set
11D:60          RTS               return to loading process
11E:C2 30       REP #30           start of protection code
120:A2 00       LDY #00
```

At locations $F2, $FE, and $11B are types of conditional branching statements to the start of the protection. Just NOPping these three branches so that the program never goes to the "bomb" routine should result in a deprotected copy.

1 Copy the disk with any 3½" disk copier.

2 Make the following edits to the copy:

Block	Byte(s)	From	To
$00C5	$F2-F3	90 2A	EA EA
	$FE-FF	B0 1E	EA EA
	$11B-11C	B0 01	EA EA

If the numbers after the branch statements are not the same or in a different place, try to search for the surrounding code and figure out where the protection starts. Then NOP all branches to that address.

IIgs Softkey for...

Mini-Putt

Accolade

■ Requirements

☐ 512K Apple IIgs
☐ 3½" disk copier (I used Copy II Plus)
☐ 3½" disk editor (I used Copy II Plus)

Since this program is also by Accolade, I scanned for A2 20 A0 01 and found the bytes on block $003A. It seems that if the nibble count fails, a branch to $1CF is taken. At $1CF, I placed a 18 6F (CLear Carry and ReTurn from Long) here and the disk booted perfectly.

1 Copy the disk with any 3½" disk copier.

2 Make the following edits to the copy:

Block	Byte(s)	From	To
$003A	$1CF	C2 30	18 6B

IIe Softkey for...

AD&D Master Assistant Volume I

Strategic Simulations

■ Requirements

☐ 64K Apple IIe/IIc/IIgs
☐ 5¼" disk copier (I used Copy II Plus)
☐ 5¼" sector editor (I used Copy II Plus)

When I first bought this program, I read the manual and it said to "never use the original." I thought, "Great! It's not copy protected!" I was right, it wasn't copy protected, but it *was* manual protected. Somehow, it is much easier to deprotect the manual protection scheme on 5¼" games than on 3½" games. Anyhow, here's how I did it:

I loaded the game until it asked for a password. I found the correct password in my manual and dropped into the monitor (I used the "Visit Monitor" command in my GS's Desk Accessories). I scanned memory for the password and, to my surprise, found a short table of possible passwords. I located the beginning of the rountine that prints the password routine on the screen and found a Jump to SuBroutine to it at $1038. I then NOPped this Jump ($20 DA 11) on the disk and rebooted. It died.

I went back into the monitor and searched around. I figured there was something the program needed in the routine I just bypassed. I was correct. I had noticed that after the JSR to the password routine was completed, a JuMP to $A800 was taken. At $A800 was another JuMP to $A800. This meant ENDLESS LOOP, which was what I was experiencing. I searched through the protection code and found what I was looking for. At $1207, a $90 is LoaDed into the Accumulator and STored in a memory location, namely location $A801. This changes the JuMP at $A800 from a JuMP to $A800 to a JuMP to $A890. Finally, I went back to the disk and loaded the track and sector where I had previously NOPped the three bytes. I simply changed the 20 00 A8 after them to 20 90 A8 and the protection scheme was passed! Here is some code to follow:

```
102F:AD 52 C0   LDA C052
1032:AD 51 C0   LDA C051          set text screen
1035:20 62 11   JSR 1162          routine to print credits
1038:20 DA 11   JSR 11DA          routine to get password
103B:4C 00 A8   JMP A800          Jump to $A800
```

... later in memory.

```
1207:A9 90      LDA #90           store a $90 in the accum.
1209:8D 01 A8   STA A801          transfer from accum. to $A801
```

1 Copy the disk with any 5¼" disk copier.

2 Make the following sector edits to the copy:

Trk	Sct	Byte(s)	From	To
$02	$0D	$38-3A	20 DA 11	EA EA EA
		$3B-3D	4C 00 A8	4C 90 A8

Notes And Stuff

In regards to your asking for a good bulletin board system, I have a very good suggestion. Buy a modem and sign up on AppleLink. Talk to one of the main guys working there and set up a "room" that opens once or twice a week. You will not have to pay for your time online, as you are considered an AppleLink "worker." All of us deprotecters could then get together and chat! The only thing you must buy is a modem (I recommend a DataLink 1200 or 2400 baud modem by Applied Engineering).

(?) Also, many people have mentioned that they check the "program counter" to see what address the program came from. What is this "program counter" and where is it?

In addition, a reader requested that someone send in an editor for Bard's Tale III. I have made a great editor, allowing many changes to be made to either your characters at the guild or on a saved adventure (if a character is dead, you do not have to get back to the guild, just use the editor!). However, the program is probably too large to send in (no one would want to type it). Instead, just send a check or money order for $10.00 to:
Tim Valuk
P.O. Box 212
Kensington, CT 06037

(?) Finally, I would like to ask fellow readers for some help. I have many programs that need deprotecting. They are as follows:
Apple IIgs programs
Uninvited, Suspended, Deja Vu (Mindscape)
Bard's Tale, (Electronic Arts)
Rampage, The Last Ninja (Activision)
Alien Mind (PBI Software)
Dream Zone (Baudville)
Apple IIe programs
Test Drive (Accolade)
Superstar Ice Hockey, Indoor Sports (Mindscape)
Might and Magic II (New World)
Micro League Baseball, GM/Owner's Disk, Stats Compiler (Micro League Sports)

Any help with these programs would be greatly appreciated. Also, I hope someone figures out how to rid disks of that annoying manual-based copy protection. I hate having to look up those words!

P.S. Anyone who is also on Applelink can drop me a line by sending E-Mail to "Tim V8." I would love to hear from you. Thank you, and those of you who haven't contributed yet, send in info and keep this great magazine going!

Bob Igo

First comes the *silly bit* (well, you've heard of *high* and *low bits*). In Computist #63, Lenny Nole asked, "How can I get my girlfriend more interested in computing?"

Well, Lenny, the problem might be what you do on the computer. Someone who isn't interested in computers can become quite bored with a hexdump or monitor listing on the screen. It even bores me, and I like computers (obviously). Perhaps I could tell you what my girlfriend and I do on my computer (that sounds kinky). A simple game like Jeopardy! can be great fun with the right person beside you. The interest isn't the game itself, but how well you can distract the other player when he/she has the correct question to an answer. Maybe this will cause her to connect computers with enjoyment, thus removing the misconception that it's just a box with keys. Let us know what develops!

Now, the completely serious bit, on a tremendously serious game put out by Beagle Brothers, called I.O. Silver. You are allotted three lives with which to build a supercomputer by matching chips, making circuit boards, and fusing the circuit boards into various sorts of hardware. On the surface, this may sound very simple, but when you get into it you realize how it is almost impossible to create anything above a pocket calculator. So, to make up for my poor game-playing ability, I hacked through the game's code with my skill and came up with an APT for unlimited lives.

A.P.T. for...

I.O. Silver

Beagle Brothers

Trk	Sct	Byte(s)	From	To
$15	$0B	$ED-EF	CE 32 08	EA EA EA
$18	$07	$F5-F7	CE 32 08	EA EA EA

Good luck building the supercomputer!

Gerald Berry

Enhanced COPYA (COPYA+)

■ Requirements

☐ Apple II
☐ COPYA

The article by Michele Jackson appearing in COMPUTIST #63 (et. el.), prompted me to write a convenient way to modify COPYA without the necessity of having several forms on disk. Also, I was tiring of looking up PEEK and POKE codes each time I wish to modify COPYA to meet my specific needs. Eurika! COPYA+ has emerged.

Thanks to the work of Bill Jetzer in COMPUTIST #60, the searching for appropriate code POKEs was minimized. The enhancements in COPYA+ contain Bill's listing as presented at the top of page 12 and three others I believe to be meritorius.

Entering COPYA+ listing

There are several methods available for adding COPYA+ to COPYA. I will list four.

1) Obtain a library disk from RDEX COMPUTIST or

2) Load COPYA from your available disk and type in the listing of COPYA+. SAVE COPYA+ to your program disk or

3) Type NEW. Type in listing of COPYA+ and save to disk under your name. Use Apple'S RENUMBER program to load COPYA and merge with your file. SAVE COPYA+ or

4) Create a text file of the listing of COPYA+. Load COPYA and EXEC your text file. SAVE COPYA+.

About the enhancements

Lines 430 to 540 and their counterparts in Lines 730 to 840 all appear in Jetzer's article.

Line 550 allows DOS to ignore unreadable (perhaps damaged) sector(s) that exist within a particular Track. DOS should continue to the next readable sector.

Line 560 allows COPYA+ to not format the duplicate disk. Use this Key when you have already formated the duplicate disk and DOS doesn't accept what you are attempting to IGNORE.

Line 570 allows COPYA+ to copy more than the standard $22 Tracks. When Key <O> is set to IGNORE, DOS will format the duplicate to $23 Tracks and copy to Track $23. *For each Track above $23, increase the 36's appearing in Line 870 by (1) one and increase the 144 by (4) four.*

CAUTION: After using COPYA+ to IGNORE Apple's standard values you will be working with non-standard DOS. Re-boot your disk!

Adding Enhancements

Presently the program will accept (3) three additional enhancements without overflowing the available 24 line screen. To add an enhancement do the following:

A. KISS (keep it simple sir/sis).

B. Increment the value of NB = 14 in Line 400 by (1) one.

C. Place the description starting at Line 580.

D. Place the appropriate code POKE(s) starting at Line 880.

E. Save and TEST your enhancement.

F. Send your enhancement c/o RDEX COMPUTIST so others might enjoy.

G. Have a good day.

1 Type COPYA+ and verify the checksums. Save it to disk.

2 Add this line and run the program. It will create a text file with the COPYA+ extra lines.

```
0 TEXT : HOME : D$ = CHR$(4) : PRINT D$"OPEN XTRA" : PRINT D$"WRITE XTRA": LIST 75, : PRINT D$"CLOSE"
RUN
```

3 Load COPYA and execute the text file.

```
LOAD COPYA
EXEC XTRA
```

4 Save the new COPYA.

```
SAVE COPYA+
```

COPYA+

```
75 GOSUB 400
400 NB = 14: DIM X$(NB,1): FOR I = 0 TO NB: X$(I,1) = "CHECK^" : NEXT
410 HOME : HTAB 17: PRINT "COPYA+"
420 FOR I = 1 TO 40: PRINT "=" ;: NEXT : PRINT "KEY" ;: HTAB 7: PRINT "DESCRIPTION" ;: HTAB 28: PRINT "CHECK/IGNORE" : FOR I = 1 TO 40: PRINT "=" ;: NEXT
430 PRINT "<A>^ADDRESS^MARKER^#1"
440 PRINT "<B>^ADDRESS^MARKER^#2"
450 PRINT "<C>^ADDRESS^MARKER^#3"
460 PRINT "<D>^ADDRESS^CHECKSUM"
470 PRINT "<E>^ADDRESS^EPILOGUES"
480 PRINT "<F>^DATA^MARKER^#1"
490 PRINT "<G>^DATA^MARKER^#2"
500 PRINT "<H>^DATA^MARKER^#3"
510 PRINT "<I>^DATA^CHECKSUM"
520 PRINT "<J>^DATA^EPILOGUES"
530 PRINT "<K>^READ^ERROR^FLAG"
540 PRINT "<L>^TRACK^#^CHECKER"
550 PRINT "<M>^UNREADABLE^SECTORS"
560 PRINT "<N>^FORMAT^DUPLICATE"
570 PRINT "<O>^COPY^TO^TRACK^$22^ONLY"
580 REM ADD <P> DESCRIPTION
590 REM ADD <Q> DESCRIPTION
600 REM ADD <R> DESCRIPTION
610 FOR I = 0 TO NB: VTAB 5 + I: HTAB 32: PRINT X$(I,1): NEXT
620 FOR I = 1 TO 40: PRINT "=" ;: NEXT
630 VTAB NB + 7: HTAB 20: PRINT "<ESC>^ =^ FINISHED" ;
640 VTAB NB + 7: HTAB 5: PRINT "CHANGE^->^" ;: GET X$: PRINT ;: X = ASC (X$): IF X = 27 THEN 720
650 IF X < 65 OR X > NB + 65 THEN 640
660 X = X - 65: IF X$(X,1) = "CHECK^" THEN X$(X,1) = "IGNORE" : INVERSE : GOTO 680
670 X$(X,1) = "CHECK^"
680 VTAB (X + 5): HTAB 32: PRINT X$(X,1): NORMAL
690 IF X$(0,1) = "IGNORE" AND X$(1,1) = "IGNORE" THEN PRINT CHR$ (7) CHR$ (7): VTAB NB + 7: FLASH : PRINT "WARNING:" ;: NORMAL : PRINT "^DO^NOT^IGNORE^BOTH^<A>^&^<B>!!" ;: GET X$: PRINT ;: VTAB NB + 6: PRINT : CALL - 958: GOTO 630
700 IF X$(5,1) = "IGNORE" AND X$(6,1) = "IGNORE" THEN PRINT CHR$ (7) CHR$ (7): VTAB NB + 7: FLASH : PRINT "WARNING:" ;: NORMAL : PRINT "^DO^NOT^IGNORE^BOTH^<F>^&^<G>!!" ;: GET X$: PRINT ;: VTAB NB + 6: PRINT : CALL - 958: GOTO 630
710 GOTO 640
720 VTAB NB + 7: HTAB 2: PRINT "LAST^TIME^-^ARE^ THE^ABOVE^OK?^(Y/N)^" ;: GET X$: PRINT ;: IF X$ < > "Y" THEN VTAB NB + 6: PRINT : CALL - 958: GOTO 630
730 IF X$(0,1) = "IGNORE" THEN POKE 47447,0
740 IF X$(1,1) = "IGNORE" THEN POKE 47457,0
750 IF X$(2,1) = "IGNORE" THEN POKE 47468,0
760 IF X$(3,1) = "IGNORE" THEN POKE 47498,0
770 IF X$(4,1) = "IGNORE" THEN POKE 47503,14
780 IF X$(5,1) = "IGNORE" THEN POKE 47337,0
790 IF X$(6,1) = "IGNORE" THEN POKE 47347,0
800 IF X$(7,1) = "IGNORE" THEN POKE 47358,0
810 IF X$(8,1) = "IGNORE" THEN POKE 47406,0
820 IF X$(9,1) = "IGNORE" THEN POKE 47411,106
830 IF X$(10,1) = "IGNORE" THEN POKE 47426,24
840 IF X$(11,1) = "IGNORE" THEN POKE 48584,71
850 IF X$(12,1) = "IGNORE" THEN POKE 929,234
860 IF X$(13,1) = "IGNORE" THEN POKE 42319,96
870 IF X$(14,1) = "IGNORE" THEN POKE 770,36: POKE 863,36: POKE 44725,144: POKE 46063,36: POKE 48894,36
880 REM LINE 580 CODE POKES
890 REM LINE 590 CODE POKES
900 REM LINE 600 CODE POKES
910 RETURN
```

Checksums

```
75 - $76EF    570 - $84B9    750 - $41A6
400 - $AAE0   580 - $DA97    760 - $7477
410 - $FF88   590 - $94FC    770 - $832F
420 - $5E16   600 - $7B7B    780 - $8DC8
430 - $D1EB   610 - $6AF3    790 - $FEF1
440 - $6F10   620 - $DCB9    800 - $E9F5
450 - $51F4   630 - $BF9A    810 - $6FF3
460 - $52A2   640 - $1E8A    820 - $2A7B
470 - $17BD   650 - $E2BE    830 - $4BD1
480 - $6D67   660 - $6A71    840 - $558B
490 - $12DE   670 - $5B71    850 - $D4AB
500 - $60F2   680 - $1819    860 - $3075
510 - $8B39   690 - $9F2D    870 - $2DD7
520 - $5E54   700 - $AEB8    880 - $9635
530 - $41C8   710 - $CC01    890 - $0CB7
540 - $0196   720 - $BF8B    900 - $AEC2
550 - $B6E0   730 - $775D    910 - $3492
560 - $55ED   740 - $661B
```

Bill Jetzer

Bug in Computist #63

I found a few bugs in Michele Jackson's "Deprotecting with an Altered DOS 3.3 Disk" article in COMPUTIST #63. In step 1, omit the third and fourth changes. The third change simply ignores RWTS errors (i.e. read errors, drive errors), so if an error does occur, the drive will just grind a few more times before quitting. The fourth change is usually made to ignore checksums and epilogues, which the first two changes have already taken care of. Also, omit step 3; using Master Create to update the disk will only wipe out the changes made to the disk.

Softkey for...

Peanuts Picture Puzzlers
Random House

■ Requirements

☐ Super IOB 1.5

This disk is completely normal except that the address epilogues have been changed from DE AA to AA DE. To deprotect it, use the following controller with Super IOB 1.5:

Controller

```
1000 REM PEANUTS PICTURE PUZZLERS
1010 TK = 0: LT = 35: ST = 15: LS = 15: CD = WR: FAST = 1
1020 POKE 47426,24: GOSUB 490: GOSUB 610
1030 POKE 47426,56: GOSUB 490: T1 = TK: TK = PEEK (TRK) - 1: RESTORE : GOSUB 310: TK = T1: GOSUB 610
1040 IF PEEK (TRK) = LT THEN 1060
1050 TK = PEEK (TRK): ST = PEEK (SCT): GOTO 1020
1060 HOME : PRINT "COPY^DONE" : END
5000 DATA ^2^CHANGES
5010 DATA 0,3,145,222
5020 DATA 0,3,155,170
```

Checksums

```
1000 - $356B   1040 - $C168   5010 - $D132
1010 - $2544   1050 - $9114   5020 - $7C45
1020 - $B5FB   1060 - $FEE3
1030 - $BB1C   5000 - $BC43
```

Softkey for...

Logic Builders
Scholastic

■ Requirements

☐ Super IOB 1.5

☐ FAST.CON

This disk has a weird DOS and altered epilogues. To deprotect it, follow these steps:

1 Initialize a disk.

```
INIT HELLO
```

2 Load Super IOB 1.5.

```
LOAD SUPER IOB
```

3 Merge FAST.CON with Super IOB.

```
EXEC FAST.CON
```

4 Turn off DOS's error checker.

```
POKE 47426,24
```

5 Set the beginning track to 3 and run the program.

```
1011 TK = 3
RUN
```

Softkey for...

Alphabet Circus
Number Farm
DLM Software

■ Requirements

☐ Super IOB 1.5

This softkey will probably work on many more DLM releases.

The address prologs have been changed from D5 AA 96 to D7 AA 96, the data prologs have been changed from D5 AA AD to D7 AA AD, and the data epilogues have been changed from DE AA to DF AA.

To deprotect these disks, INITialize a blank disk with a file name of HELLO, merge the following controller with Super IOB and run the resulting program:

Controller

```
1000 REM DLM SOFTWARE
1010 TK = 3: LT = 35: ST = 15: LS = 15: CD = WR: FAST = 1
1020 POKE 47447,0: POKE 47337,0: POKE 47411,106: GOSUB 490: GOSUB 610
1030 POKE 47447,240: POKE 47337,244: POKE 47411,251: GOSUB 490: GOSUB 610: IF PEEK (TRK) = LT THEN 1050
1040 TK = PEEK (TRK): ST = PEEK (SCT): GOTO 1020
1050 HOME : PRINT "COPYDONE" : END
```

Checksums

```
1000 - $356B   1020 - $721F   1040 - $7F86
1010 - $2445   1030 - $224E   1050 - $A379
```

Softkey for...

Extra! Extra!
Milton Bradley

■ Requirements

☐ Super IOB 1.5

☐ FAST.CON

This disk's epilogues have been changed from the normal DE AA to AA AA. To deprotect it, follow these steps:

1 Initialize a disk.

```
INIT HELLO
```

2 Load Super IOB 1.5.

```
LOAD SUPER IOB
```

3 Merge FAST.CON with Super IOB.

```
EXEC FAST.CON
```

4 Turn off DOS's error checker.

```
POKE 47426,24
```

5 Set the beginning track to 3 and run the program.

```
1011 TK = 3
RUN
```

Softkey for...

The Factory
Sunburst Communications

■ Requirements

☐ Super IOB 1.5

☐ SWAP.CON

It was easier to do a swap controller with this than make all the necessary POKES to DOS. To get the RWTS you could use RWTS Worm (COMPUTIST #61) and jump to step 7, or follow this procedure:

1 Get into the monitor.

```
CALL -151
```

2 Move the boot code down in memory.

```
9600<C600.C6FFM
```

3 Make some changes so that it will stop loading after the RWTS is in memory.

```
96F8:A9 00 8D 4A 08 4C 01 08
```

4 Execute the changed code.

```
9600G
```

5 Move the RWTS to a safe location.

```
1900<B800.BFFFM
```

6 Boot a DOS disk (assumes slot 6).

```
C600G
```

7 Save the RWTS.

```
BSAVE RWTS.FACTORY,A$1900,L$800
```

8 Initialize a blank disk.

```
INIT HELLO
```

9 Load Super IOB into memory.

```
LOAD SUPER IOB
```

10 Merge the swap controller with Super IOB.

```
EXEC SWAP.CON
```

11 Put the name of the new RWTS into the program.

```
10010 PRINT CHR$ (4)"BLOAD RWTS.FACTORY, A$1900"
```

12 Run the program.

```
RUN
```

Softkey for...

The Muppet Word Book

Sunburst Communications

■ Requirements

☐ ProDOS IOB 5.25
☐ A ProDOS formatted disk

This disk uses an altered device driver—perfect for ProDOS IOB. To deprotect this disk follow these steps:

1 Use Copy II Plus or some other program to format a ProDOS disk with any volume name.
2 Get into the monitor.

CALL -151

3 Move the boot code to lower memory.

9600<C600.C6FFM

4 Make changes to the boot code so that the disk will use its own special read routine to load in blocks $2-7. You can check it against the disassembly following the hex dump:

96F8:A9 60 8D 4E 08 A9 02 8D
9700:41 08 A9 0C 8D 45 08 20
9708:01 08 EE 03 97 EE 03 97
9710:EE FE 96 AD FE 96 C9 08
9718:F0 03 4C 00 96 60

```
96F8-A9 60     LDA #$60       Put an RTS at $84E
96FA-8D 4E 08  STA $084E
96FD-A9 02     LDA #$02       Block 2
96FF-8D 41 08  STA $0841
9702-A9 0C     LDA #$0C       Data buffer
9704-8D 45 08  STA $0845
9707-20 01 08  JSR $0801      Read block
970A-EE 03 97  INC $9703      Increment buffer twice
970D-EE 03 97  INC $9703
9710-EE FE 96  INC $96FE      Increment block number
9713-AD FE 96  LDA $96FE
9716-C9 08     CMP #$08       At block 8 yet?
9718-F0 03     BEQ $971D
971A-4C 00 96  JMP $9600      No, continue loading blocks
971D-60        RTS            Exit
```

5 Move the data from blocks 2-7 to a safe location.

7000<C00.17FFM

6 Boot a ProDOS disk.

C600G

7 Make a routine that will write blocks $2-7 to the copy. You can check it against the disassembly following the hex dump:

0300:20 00 BF 81 19 03 B0 F9
0308:EE 1C 03 EE 1C 03 EE 1D
0310:03 AD 1D 03 C9 08 D0 E8
0318:60 03 60 00 70 02 00

```
0300-20 00 BF  JSR $BF00      Call the MLI
0303-81        DFB 81         Write block call
0304-19 03     DA  PARMS      Address of parms
0306-B0 F9     BCS $0301      Branch to a BRK if error
0308-EE 1C 03  INC $031C      Increment buffer twice
030B-EE 1C 03  INC $031C
030E-EE 1D 03  INC $031D      Increment block number
0311-AD 1D 03  LDA $031D
0314-C9 08     CMP #$08       Done with all blocks?
0316-D0 E8     BNE $0300
0318-60        RTS            Yes, exit
0319-03        DFB 03         3 parms
031A-60        DFB 60         Unit number, assume S6, D1
031B-00 70     DA  BUFFER     Data buffer address
031D-02 00     HEX 0200       Block number
```

8 Insert the formatted disk and execute the code.

300G

9 Now you need to capture the device driver. Boot the original (**ctrl** ć **reset**).

10 Wait until after ProDOS has been loaded and the program has started, then get into the monitor.

ctrl ć **reset**
ctrl reset
CALL -151

11 Move the device driver to a safe location.

300:AD 88 C0 A2 00 BD 00 D0
308:9D 00 80 E8 D0 F7 EE 0A
310:03 EE 07 0E D0 EF AD 8A
318:C0 60
300G

12 Boot your ProDOS IOB disk and save the device driver.

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

13 Merge the following controller with ProDOS IOB and run the resulting program:

Controller

```
2000 REM MUPPET WORD BOOK
2010 BK = 8:LB = 279
2020 GOSUB 380:CD = RD: GOSUB 30
2030 GOSUB 380:CD = WR: GOSUB 30
2040 BK = PEEK (BLK) + PEEK (BLK + 1) * 256: IF
     BK < = LB THEN 2020
2050 A$ = "COPY^DONE" : GOTO 10280
10010 PRINT CHR$ (4) "BLOAD^ DRVR.MUPPETS,
     A$1900"
```

Checksums

```
2000 - $DF03   2030 - $306D   10010 - $33E2
2010 - $C3AB   2040 - $3327
2020 - $B077   2050 - $75C9
```

14 Use Copy II Plus or some other file copier to copy a normal version of PRODOS onto the copy.

James Albert

Softkey for...

Paperboy

Mindscape

■ Requirements

☐ Apple IIe
☐ CIA - linguist
☐ COPYA
☐ A sector editor
☐ Blank disk

Using Linguist CIA, I noticed that the format is close to standard. The only thing stopping COPYA is the FF FF address and data epilogs instead of the usual DE AA.

1 Boot a DOS 3.3 system disk.

2 Use COPYA, minus some error checks, to copy the disk.

POKE 47426,24
RUN COPYA

3 Scan the disk for 4C 47 22 and change to EA EA EA. I found it on track $14, sector $01, byte $28.

Trk	Sct	Byte(s) From	To
$14	$01	$28-2A 4C 47 22	EA EA EA

Mike Basford

I have noticed that many of your cracks have a search for a nibble count routine, usually LDA C08C,X. This is then traced back to its beginning, and the code that jumps to it is then searched for, and defeated by NOPing the jump so that the check is never run. However, if the code ONLY does a check of the nibble count, and doesn't contribute to the program in any way, it is simpler to change the first byte of the code to 60, a RTS or return from subroutine, and you don't have to search for the jump, saving lots of time, especial if the jump is indirect, or disguised in some way.

(?) Is there anyone out there that could send in a list of locations in ProDOS, such as where prolog & epilog bytes are stored. I have a pretty good handle on DOS 3.3, but ProDOS is still a bit of a mystery. I have Beneath Apple ProDOS, but it leaves me with lots of questions.

Here's another log for the IBM - Apple fire! I started my computer career on an Apple II+, but with a Z80 card, running CP/M. Although we don't hear much about CP/M, it has some interesting features. It is quite similar to MS-DOS, the operating system all the IBM clones use. In fact, MS-DOS was based on CP/M in the beginning. It has a more powerful processor in the Z80 than the 6502, and many powerful programs were written using it, such as Wordstar and dBase II. You haven't lived until you program in GW BASIC, available on the Apple with CP/M. It has things like IF-THEN-ELSE, and PRINT USING, TRON and much more. Of course, if you want to get your hands dirty, you have to learn Z80 assembly language, but learning's fun anyway, isn't it!

I have a Matchpoint board in my IBM that reads Apple disks, and with a program called Uniform, can read Apple or any other CP/M disk. This means that 2 - 3 years worth of files don't have to be converted. It also means that if I want some security on the files I'm now creating, I can save them in some weird CP/M format, and nobody else can read them ! If any of your readers would like to start a small subdivision of COMPUTIST for CP/M, how about a letter? I have vast quantities of Apple CP/M software (all Public Domain) as well as a collection of weird and wonderful boards.

I fully support any suggestion to start a BBS and suggest a cheap IBM clone with a Perstor controlled hard drive. This is the cheapest way to get LOTS of storage. In fact you could probably get most of the stuff free if you check the many computer stores, and trade parts for advertising. I have some parts to start you off, and if any of the readers are willing to contribute, let's get this off the ground. The amount of public domain software boggles the imagination, and it would be nice to share problems and solutions quickly, and publish the results in COMPUTIST when ready. It would be simple to have separate Apple and IBM sections, and someone that's half-way through a crack, and gets stuck, can ask for help and be quickly on the way to a solution.

(?) There is a new trend in the copy protection war. For many years now, it has been simple to copy a disk, but, due to a nibble count, the copy won't run. Now we find many programs completely unprotected, but they require a key disk to run, or worse, they ask questions that can only be answered by looking in the manual. Sierra is changing to this form of protection, as are many others. The purchaser has the convenience of simple backups but suffers the nuisance of having to keep the manual by the machine in order to run the program. Has any one managed to bypass this?

(?) If anyone has found a good cracking BBS, how about the number?

I vote for L-O-N-G explanations of cracks. Sometimes the cookbook methods fail because the software people read this magazine, and simply move the code a little. If an explanation of how it was found is included, the new location can usually be found. And of course the educational factor is important too. How many of us would have bothered learning anything about assembly language otherwise?

Dick Lavallee

IIgs Softkey for...

Reading and Me 1.0

Davidson

■ Requirements

☐ Two blank 3½" disks
☐ Block editor for 3½" disk
☐ 3½" Disk copier that ignores errors

Reading and Me comes on two 3½" disks, Program Disk and Data Disk. Only, the Program Disk is protected and has a block error ($308) when copied. Because, Reading and Me is written in GS16FORTH (Swahili to me) and the program didn't use the ProDOS 16 Read Block call or direct read, a brute force procedure was necessary.

I narrowed it down, that only a bad block read was necessary (no code in block $308) to deprotect this program. I searched the Program Disk for $0308 (08 03) and found this code in many places and one by one edited the disk and rebooted. You guessed it, the last edit did the trick.

The protection code is in the root directory of the Program Disk with the file name R.SYS16. I reversed the code 08 03 ($0308) to 03 08 ($0803) so that there would always be a block error read when the program tries reading block $803 which is out of range on a 3½" disk.

1 Copy both Program Disk (ignore error $308) and Data Disk.

2 Edit the Program Disk.

Block	Byte(s)	From	To
$4CD	$1A8-1A9	08 03	03 08

If the from bytes at Block $4CD are not found at this location, search the disk for 08 03 59 1A 2B 09 06 and reverse the first two bytes from 08 03 to 03 08. If you don't have a block editor for 3½" disks, copy the file R.SYS16 from the Program Disk to a 5¼" disk, search for bytes, edit the disk and recopy to Program Disk.

Softkey for...

Mini-Converter

Pelican Software

■ Requirements

☐ Apple with a RAMdisk
☐ ProDOS 1.4 file
☐ ProDOS file copier (Copy II+ or similar)
☐ Blank formatted ProDOS disk with volume /MINI.CONVERTER

Mini-Converter has a non-standard ProDOS format with a modified ProDOS file. This modified ProDOS does not re-boot upon quiting from its main menu. That gives us an entry point. By using a RAMdisk to copy files to or from a disk, the protected RWTS is not a problem.

1 Boot a ProDOS copier and copy its file to your RAMdisk.

2 Remove the ProDOS copier disk and insert the protected disk and boot it.

3 Exit from its main menu and you should be in ProDOS Quit Code Menu.

4 Type the following:

/RAM5 *or other RAM volume*
UTIL.SYSTEM *or other copier file*

5 Copy all the files from the protected disk to your RAMdisk, with the exception of ProDOS.

6 Insert your ProDOS formated with volume /MINI.CONVERTER

7 Copy all the protected files from your RAMdisk to /MINI.CONVERTER.

8 Copy unmodified ProDOS 1.4 to the /MINI.CONVERTER disk from another disk.

Softkey for...

The Children's Writing & Publishing Center 1.0

The Learning Company

■ Requirements

☐ COPYA or similar copier.
☐ Blank disks (3)

The Children's Writing & Publishing Center is easy to deprotect.

1 Boot a DOS 3.3 disk.

2 Use COPYA to copy all 5 sides.

POKE 47426,24 *to ignore checksum & epilog errors*
RUN COPYA

George Bigelow

A.P.T. for...

Zany Golf

Electronic Arts

Now that you have the cracked copy of Zany Golf, and have played it over and over again, now what? You have gotten to the Energy Level several times but blow it every

time. If only you could practice it a number of times! Here's how.

The file numbers for the holes (in the catalog of the disk) do not correspond to the actual hole numbers. Here is a table putting together the file number, hole number and name.

Hole #	Name	File #
1	Windmill	3
2	Hamburger	8
3	Walls	0
4	Pinball	9
5	Fans	4
6	Magic Carpet	5
7	Castle	1
8	Ant Hill	7
9	Energy	6
0	Secret	2

Since the correspondance is so random, there must be a table somewhere on the disk that tells the program which hole to run next. This, on my disk, is on block $7D starting at byte $154. You should see a series of numbers looking like this: 03 08 00 09 04 05 01 07 06 02. If you don't see this just search the disk for that string. This series of numbers tells the program the sequence of holes, so to play any series of holes (even the same one over and over) just re-order that set of numbers. For example, exchanging 03 and 06 will set up the program to start with the Energy hole.

Speaking of the Energy hole, there are two buttons on the computer, a rectangular one and a circular one. Hit those two buttons with the ball, and the funnel-shape over to the middle right (connected with the pipe) will take your ball to the upper level. An easier way to finish this hole is to get fairly near to the mouse hole (the one with the eyes that show every now and then), wait till the eyes turn red then putt into the hole (you have to be fast!).

Groucho

I am a new subscriber to Computist, and I want to congratulate you on producing a magazine that the Apple community has needed since the first copy of a protected program hit the market. I am in the process of learning assembly language and hope to be making significant contributions before it's time to renew my subscription! In the meantime...

Bitcopy for...

Ancient Art of War at Sea
Wings of Fury
Broderbund

■ Requirements

☐ Copy II Plus or EDD4

1 Boot Copy II Plus.

2 Use CREATE PARM ENTRY to create a parm entry that reads as follows:

```
T0-T1,SECTOR COPY,6B=00,A1=00,78=01,A2=0A
T2-T22,0E=A5,0F=96,10=BF,B3=01,45=00,46=0
3,BD=01,
B4=D4
```

3 Save this parm entry on your Copy II Plus Disk.

4 Use AUTO COPY to copy the front side of your disk.

5 Now, CREATE NEW PARM ENTRY:

```
T0-T22,0E=A5,0F=96,10=BF,B3=01,45=00,46=0
3,BD=01,
B4=D4
```

6 Use AUTO COPY to copy the back side of the disk.

7 Boot your backup and test it. Retry if it fails.

If you are not a Copy II Plus user, there is a fairly simple parm for Essential Data Duplicator 4+ (EDD4+) that will do the job just as easily and with much less typing.

1 Boot your EDD4+ disk.

2 Select the CHANGE PARAMETERS option from the main menu.

3 Select the REPROGRAM PREANALYZE ROUTINE option from the CHANGE PARAMETERS menu.

4 Change the 00=01 to 00=B0

5 Return to the main menu and select BACK UP DISK.

6 Copy tracks #0 through #34, without SYNC or Nibble Count, but use the BITCOPY TRACKS option.

This should work for both sides of the disk.

Copy II Plus Users: If you have a recent version of the program and want to save typing, use the AUTO PARM entry for Bank Street Speller Plus. It should work perfectly, as that is where I got the parms to begin with.

Users without either program: I will be glad to make a backup of the disk for you if you'll send a blank disk, your original copy, and a SASE. My address appears at the end of this letter.

To Doc Devious: I'd like very much to correspond with you directly if you're interested. In any case, as far as Wings of Fury goes, I believe that the problem with this program is that Broderbund is using extra timing bits which are making it difficult for a sector editor to reliably read the information on the disk. I don't know how you would counteract this to make the disk editable, perhaps someone else out there knows?

Also, I'm not sure I can do much as far as helping you translate Copy II Plus parms to Super IOB parms. I tried to translate the Wings of Fury parm and could not get IOB to read beyond track 1 without making loads of noise. Still, I will try and explain any parms to you that I am able to. Just ask. I've read my manual from cover to cover at least twice now, and have even managed to create a few sets of parms myself. I am still working on Super IOB and how it works.

Playing Tip for...

Castle Wolfenstein
Muse

If you want to blast a Nazi without risking your life, try this. If the Nazi in question is separated from you by a wall, and there is a corner in that wall somewhere, line your man up and shoot through the corner (i.e., right through the wall). Also, to speed up chest opening time (actually double it), hold down the spacebar (if you have auto key repeat) or the spacebar and the repeat key (if you don't). The game is old as the hills, and I wouldn't be surprised if all of you who have the game don't know those tricks already.

Tips on Blackjack

For any game involving Blackjack (such as Legacy of the Ancients), you can often beat an "honest" house out of a large quantity of money by using the following betting strategy: When you have a "pat" hand, that is, one which totals 17 through 21, you always stand. When you have 12 through 16 (and neither card is an Ace), and the dealer's card that's showing is a two through six, you always stand. When you hold a 12 through 16 and the dealer's card showing is a seven through an Ace, always hit. While you're at it, and if it is possible, "count" the cards. An easy way to do this is to write out a table of four columns, such as:

```
2 2 2 2
3 3 3 3
4 4 4 4
5 5 5 5
6 6 6 6
7 7 7 7
8 8 8 8
9 9 9 9
T T T T
J J J J
Q Q Q Q
K K K K
A A A A
```

Then, as you see each card drawn, mark it off of the table. Eventually, most of the cards are marked off. At this point, using the information that the chart gives you (for example, that there are mostly Aces and Face Cards left), make larger, and INFORMED bets. (In my example, you would expect that you have great odds of getting a blackjack -- but so does the dealer!) But if you bet larger bets and win, you make larger money wins. At all other times, when you don't think your odds of winning are very good, bet some constant amount. For example, bet $25 until your card counting has revealed that your odds of winning are great, then bet $50 or $100 or $200, depending on what you have as a bankroll. This strategy will put the odds slightly IN YOUR FAVOR, and the betting will see to it that when you win, you win MORE money. In a game like Legacy of the Ancients, where gold is a necessity, playing a blackjack table for awhile can save a character's life by giving him the gold he needs for a "healing".

Other Blackjack notes

If you are allowed to "split" hands in a blackjack game, *always split a pair of aces*. You double your odds of a Blackjack immediately! Also, always split eights, for a similar reason. But DO NOT split tens. You will lose more than you will win. And never take "insurance" bets unless you are positive the bet will pay off.

That's all the information I have for everyone this time. Hopefully there will be more later, but college demands a great deal of time on occasion. I don't promise quick answers, but feel free to write. My address is: Groucho, P.O. Box 200-X, Sewickley, PA 15143-0600.

Tom Glover

Softkey for...

Ancient Art of War at Sea
Broderbund

■ Requirements

☐ COPYA
☐ Sector Editor
☐ Apple IIe or IIc

Ancient Art of War at Sea is a strategy game involving sea battles chosen or created by the user. The game is a versatile and challenging addition to any gamer's library. If you plan to lay down $39.95 for this game though, do yourself a favor and review it first. You may find the graphic displays disappointing.

Whenever I see a disk published by Broderbund I think of programs like Dazzle Draw and Where in the World is Carmen San Diego. So, after spending two hours to finally come up with a funtional bit copy, I finally decided to take a look at the disk formatting. Surprise (1)! It's in normal disk format, except for altered epilogues of FF FF EB. There is no check for these epilogue marks on the original, as all of side "A" is directly loaded by the Boot ROM routine ($C65C) on the disk controller card. The disk itself is in ProDOS format but there is not enough room to copy the file "ProDOS" from another program.

Still expecting a "Broderbund BOMB", I disassembled about 50 pages of program code to get a good look at what was going on. Surprise (2)! I didn't have to go far. I found a simple signature check in sector 3. I have not found any secondary protection while testing the game, so maybe we got off easy?

If the sector edit listed below is not found in the same place on your copy try using a disk search program, like the Core Disk Searcher, to search for C9 E7 D0 F4 BD 8C C0. If that doesn't produce results try A9 0A 85 50 A6 2B. Once you find the signature routine, follow it until you get to the end. Surprise (3)! They even list the bytes to check against.

1 Boot a DOS 3.3 system master disk and load COPYA.

```
LOAD COPYA
```

2 Tell DOS to ignore some errors.

```
POKE 47503,14          ignore address epilogues
POKE 47411,106         ignore data epilogues
RUN
```

3 Copy side "A" and edit the copy.

Trk	Sct	Byte(s)	From	To
$00	$03	$07-08	A9 00	18 60

4 Copy side "B" with any whole disk copier. Side "B" is not protected.

Softkey for...

L.A. Crack Down
Epyx

■ Requirements

☐ Apple IIe or IIc
☐ Any disk copier that will let you ignore errors
☐ Copy II Plus or any sector editor

L.A. Crack Down is a Text/Graphic Adventure which has a user interface similar to Broderbund's "Carmen San Diego" series. The protection used is standard Epyx fare. The program reads the disk several times, in a single routine, looking for bytes of E7.

If you have been following Computist for any length of time you should already know that the same programs will have different protection routines. Even if the routines are similar you may find them in different locations. Epyx chooses to follow this trend. If this softkey doesn't work on your version, or if the protection routine is located in a different location, I suggest you read the article on "Epyx Notes" in COMPUTIST #60.

I'm afraid I've misplaced all my notes on the actual routine, but perhaps the sector edits listed below may be of help to some of you. Good Luck.

1 Boot a DOS 3.3 system master disk and use COPYA (without end checks) to copy side 1 of the disk.

```
POKE 47426,24
RUN COPYA
```

2 Sector edit the copy.

Trk	Sct	Byte(s)	From	To
$00	$05	$2D-$45	BD 8C C0 10 FB 88 F0 5C C9 D5 D0 F4 A0 00 BD 8C C0 10 FB 88 F0 4E C9 E7 D0	A9 E7 85 F8 85 FB A9 FC 85 F9 85 FC 85 FC A9 EE 85 FA 85 FD 85 FE 4C 7C F0

Softkey for...

Print Shop (Color) Side 2
Broderbund

■ Requirements

☐ Apple IIe
☐ Any whole disk copier
☐ Copy II Plus or any sector editor
☐ A softkeyed version of PS Companion
☐ Optional: Super IOB 1.5

The combination of Print Shop (PS) and Print Shop Companion (PSC) creates a powerful printing package for home use. Although each program can work independently, "Update" features are provided for enhanced compatability. Trying to use these features with softkeyed versions, however, quickly inform us that we have a slight problem.

The softkey for PSC (COMPUTIST #32) removes the obstacle of updating PS, because the "update" routines are an integral part of that program. The task of updating PSC to print in color, however, is a little more difficult. The routines necessary are on the back side of PS, and are used independently of the main program.

Although the back side of the disk can be copied with COPYA, all checks required for reading an original PSC disk are included in it's execution. These checks must be by-passed if you want to update your softkeyed version of PSC. Also included is a routine to make sure you have made your "legal back-up", before allowing you to continue. Seems, even Broderbund didn't want you to alter an original disk!

Listed below are two methods you may use to defeat these checks. You may then use the

"update" program on the back of PS to produce a softkeyed "Color Companion".

Method 1:

[1] Copy side 2 of Print Shop with any whole disk copier.

[2] Sector edit the copy.
Track Sector Byte(s) From To

Trk	Sct	Byte(s)	From	To
$10	$06	$2D-2E	A0 00	60 40
	$0C	$E0-E1	A9 00	60 49
$06	$0E	$36-38	A9 2C 85	18 90 25
$06	$0C	$0E-10	10 FB C9	18 90 3B
		$CE-CF	F0 03	EA EA

Method 2:

[1] Copy side 2 of Print Shop with any whole disk copier.

[2] Type in the controller listed below and save it to disk.

[3] Load Super IOB and merge the controller. Run the program and answer yes to the format question.

[4] Copy the back side of Print Shop.

Controller

```
1000 REM PRINT SHOP SIDE 2 CONTROLLER
1010 TK = 0:LT = 35:ST = 15:LS = 15:CD = WR:FAST
     = 1
1020 GOSUB 490: RESTORE : GOSUB 610
1030 GOSUB 490:T1 = TK:TK = PEEK (TRK) - 1:
     RESTORE : GOSUB 310:TK = T1: GOSUB 610:
1040 IF PEEK (TRK) = LT THEN 1060
1050 TK = PEEK (TRK):ST = PEEK (SCT): GOTO 1020
1060 HOME : PRINT "COPY^DONE" : END
5000 DATA 12^CHANGES
5010 DATA 16,6,45,96
5020 DATA 16,6,46,64
5030 DATA 16,12,224,96
5040 DATA 16,12,225,73
5050 DATA 6,14,54,24
5060 DATA 6,14,55,144
5070 DATA 6,14,56,37
5080 DATA 6,12,14,24
5090 DATA 6,12,15,144
5100 DATA 6,12,16,59
5110 DATA 6,12,206,234
5120 DATA 6,12,207,234
```

Checksums

```
1000 - $356B  5000 - $229A  5070 - $93A4
1010 - $2544  5010 - $56DB  5080 - $B99B
1020 - $5B7E  5020 - $F36F  5090 - $8C01
1030 - $6BD8  5030 - $2CF7  5100 - $97AB
1040 - $A5B8  5040 - $A21A  5110 - $3D64
1050 - $2100  5050 - $3BB2  5120 - $E620
1060 - $A697  5060 - $1E6A
```

Note: I used the softkeys in COMPUTIST #46 and #32 to de-protect my versions of Print Shop and Print Shop Companion. These articles give accurate explanations on finding the nibble count routine.

Eliminating this routine saved a lot of time and effort on my part. It's this kind of information that makes COMPUTIST and the Reader's Data EXchange important to everyone. Thank you.

Softkey for...

PacMan

Thunder Mountain

■ Requirments

☐ Apple II+, IIe, IIc
☐ Super IOB 1.5
☐ Blank disk

I recently purchased PacMan, under the Thunder Mountain label, for my daughter. I tried the softkeys in earlier issues of COMPUTIST and they didn't work for me. I found that swapping RWTS's worked on my particular disk.

To de-protect PacMan we will use Super IOB with the swap controller and use the RWTS of the protected disk to read the original disk then use a normal RWTS to write the information back to your blank disk.

[1] Initialize a blank disk.

INIT HELLO
DELETE HELLO

[2] Boot your original disk and at the Applesoft prompt reset into the monitor by pressing **ctrl reset** twice in rapid succession.

[3] Move the RWTS to a safe place, so it won't be destroyed when you boot your slave disk.

1900<B800.BFFFM

[4] Boot your slave disk.

C600G

[5] After the disk boots and the Applesoft prompt appears, insert your Super IOB disk and save the RWTS to it.

BSAVE RWTS.PACMAN, A$1900, L$800

[6] Install the PacMan controller into Super IOB, run it and copy your original disk to your blank disk. Answer NO when asked if you want to INITialize the blank disk.

Controller

```
1000 REM CON.PACMAN
1010 TK = 3:ST = 0:LT = 35:CD = WR
1020 T1 = TK: GOSUB 490: GOSUB 360: ONERR GOTO
     550
1030 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST < DOS
     THEN 1030
1040 IF BF THEN 1060
1050 ST = 0:TK = TK + 1: IF TK < LT THEN 1030
1060 GOSUB 490:TK = T1:ST = 0: GOSUB 360
1070 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST < DOS
     THEN 1070
1080 ST = 0:TK = TK + 1: IF BF = 0 AND TK < LT THEN
     1070
1090 IF TK < LT THEN 1020
1100 HOME : PRINT "COPY^DONE" : END
10010 PRINT CHR$ (4) "BLOAD^ RWTS.PACMAN,
     A$1900"
```

Checksums

```
1000 - $356B  1040 - $6342  1080 - $6CA2
1010 - $3565  1050 - $ABA3  1090 - $9DCA
1020 - $6170  1060 - $20C0  1100 - $9A4D
1030 - $7771  1070 - $28C5  10010 - $7FD0
```

P.S. Please, re-instate the Hardware Hacker. When it was first introduced it quickly became my favorite column. It is a great way to learn about the Apple computer.

We do have the first hardware card ready, but the software drivers aren't written yet. As for hardware explanations of various parts of the Apple, I'd like to see something there too. How about it readers? . . . . . RDEXed

The Switch

A.P.T. for...

Into The Eagle's Nest Page

Mindscape

Into The Eagle's Nest is a Castle Wolfenstein-like game. It, like a lot of games, is hard to completely solve without some sort of cheat, so I dove in and figured this one out. Using a sector editor, make the following changes to your disk:

Trk	Sct	Byte(s)	From	To
$17	$06	$61-$65	?	EA EA EA EA EA
	$08	$56-$5A	?	EA EA EA EA EA
$19	$0E	$26-$2B	?	EA EA EA EA EA

That gives you unlimited hits, ammo, and keys. You will still have to shoot open the yellow doors, and shooting explosives still kills you. You will not have unlimited elevator passes, though. I couldn't find the right address for those. If you want to change the addresses directly in the program while it's running, I've included the addresses:
$76F5 = Keys ($0-$FF)
$76F6 = Ammo ($0-$FF)
$76F7 = Hits ($0-$4F)

Hope this helps you at all. Have fun.

Call theses boards:

Infinity's Edge	IIgs	60 megs	2400 bd
		(415)	820-9401
Insanity's Club	IIgs	60 megs	9600 bd
		(415)	838-1620
Dark	IIe	80 megs	2400 bd
		(415)	676-5248
The Office	?	20 megs	1200 bd
		(415)	672-0308
The Sound Barrier	IIgs	60 megs	9600 bd
		(916)	758-9540

Bob Dylan

IIgs Softkey for...

California Games GS

Epyx

I noticed this game on your list of wanted softkeys. The program copies without read errors, so the likelihood of a nibble count seemed high. Searching with the Copy II Plus sector editor for A2 20 A0 01 revealed the protection code at Block $FC. I traced back to the start of the routine (same block, immediately after an RTS) at Byte $40, and directed the program back from whence it came by replacing the PLA (68) with RTS (60). End of story.

Block	Byte(s)	From	To
$FC	$40	68	60

IIgs Softkey for...

Last Ninja GS

Activision

I used the Verify Disk function on Copy II Plus to identify a bad block at block $63F. I booted up Info Desk off of Prosel (highly recommended!) to print out a catalog of files by block locations on the disk. I then searched for the ProDOS 16 block read routine (22 A8 00 E1 20), and found it at block $CD, at the beginning of the Last Ninja system file. After the block check, the program checks to see if the carry flag is clear. If it's an original, the bad block will set the flag; if it's a copy there will be no bad block, so the carry flag will be clear, and the program jumps to the 'Insert Original' routine. The program then checks for an expected return value from the block check. If this is OK, the program BEQ's to the game program. I wrote over the initial block check with the BEQ instruction, so that the program jumps straight to the program without checking the block at all. Although I haven't thoroughly 'play tested' the game, it now boots and seems to run just fine.

Block	Byte(s)	From	To
$CD	$1B0	22 A8 00 E1	80 20 EA EA

IIgs Softkey for...

Deja Vu
Uninvited
Shadowgate GS

Mindscape

These games, ported over from the Mac, are some of the best I've seen in a while for the IIgs. I particularly enjoyed Shadowgate. The games were written in the order listed above, with each subsequent game more difficult than the one before, so Deja Vu is a good place to start for the inexperienced or weak of heart.

All three programs conveniently use the exact same protection in exactly the same places on the program disks. There is a bad block (block 7), which is checked for an expected returned value. If the check passes, the program BEQ's past the protection; if not, a BRA is encountered which branches back to the block check, and hence to an endless loop. The easy fix is to change the first BEQ into a BRA, so that regardless of the returned value, the branch past the protection is always taken. This identical routine is inserted six times on the disk, and must be corrected in each location. These are some of the first new games out on GS/OS, and a string of 22 55 E7 00 is used for the block check command.

Block	Byte(s)	From	To
$D	$5C	F0	80
$E	$15A	F0	80
$23	$149	F0	80
$24	$39	F0	80
$24	$B4	F0	80
$24	$190	F0	80

Note: Thanks to all who have taken the time and effort to contribute tutorials to Computist. I agree that being able to back-up software is a real necessity, however I also see un-protecting software as a part of the game. After all, in most games you are trying to meet the challenge of the game designer/programmer when you play the game, and deprotecting the game can be considered an extension of that challenge. It's a puzzle to be solved. And that's why copy protection can't be successful, particularly against game players: the challenge will be met.

Southern Exposure

Where are the MAC softkeys?

For quite a number of years now I have subscribed to your magazine, and learned a great deal about the operations of software and computers from it. Since I have just recently also acquired a Mac SE, I am naturally quite interested in backing up its software as well. When I checked my "Computist" database for Mac backups, I found a reference to the Mac only once. For many computer users, the Mac is often the next step up from a IIe or IIgs, depending on what their interests are.

What most people don't realize is that the information recorded on Mac disks uses exactly the same prologues and epilogues as are found on standard Apple II disks. Switching to a Mac, therefore, means that you already know a great deal about what goes on at the base level of the disk. What you don't have ready access to is the kind of disassembler that is built into the Apple II. Finally, after many years of "slow" learning, I'm at the point where I can really begin to appreciate and use that "monitor" to help me find out what's going on. *It would be absolutely great if I knew how to do the same thing on the MAC!* If someone out there has info on this, please send it to "Computist" for me.

Today, I am mainly writing for those other Apple computer users who might also like some assistance in backing up Mac software.

Those Mac programs that are protected generally fall into the categories of entertainment and education. That fact alone, of course, makes them prone to breakdown because of their frequent use by youngsters who are not necessarily too concerned about the preservation of the disk. And that fact makes deprotecting these programs just as important as for the IIe.

So far the only MAC copy program that does anything other than straightforward copying is COPY II for the Macintosh. If readers know of a better program than this, I would love to read about it in Computist.

Recently I was very frustrated in attempting to back up a copy of Springboard's "Certificate Maker". Straight sector copying didn't do it, and neither did any of the combinations of bit copying - nor did simply sliding the file names across to a new disk work. Only when I followed Central Point's (Copy II Mac) suggestion did I get a successful copy. The trick employed here might well work for a number of other "slightly protected programs".

Here's what was called for. First you simply sector copy the disk (with format if it's a new one), and watch the screen display for read or, in my case, write errors. I discovered one on track 15. Then you were told to recopy that track with the Bit Copy option, without sync or track length being set. Time and again when I tried this, the resultant disk worked!! Interestingly enough, when I tried the same tactic on a just made "copy" of the disk it worked as well, but this time other tracks were

to a new disk work. Only when I followed Central Point's (Copy II Mac) suggestion did I get a successful copy. The trick employed here might well work for a number of other "slightly protected programs".

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Mac Softkey for...

Crossword Magic
Mindscape

Another Mac program that caused endless frustration was that old standby, "Crossword Magic" by Mindscape. The version 4.0 for the IIe can successfully be backed up with Copy II Plus for the Apple II by using their Auto Copy Parms. This version is only "copied"; it is not deprotected — I would still like to be able to deprotect it and am making an *Official Request* to have you put it on the MOST WANTED LIST (backup info on version 4 does not work since it can be freely copied but checks for the original disk when you go to print).

The same thing, however, is not true for the Mac version, also 4.0. No matter what I tried, it could not be copied - each copy was identified as "illegal" even though a "backup" is quite legal - especially if you purchase it!

Mindscape has, however, tried to appease the buying public by providing for "hard disk installation". Once the program is installed, the floppy no longer works. You may also remove it from the hard disk and restore it to the original floppy, and have that floppy disk work. Restoring it to another disk will not allow the program to work. The problem with this method is that hard disks are at times in need of attention, maintenance, repair and break down. If you don't have an original "that works", you're out of luck! This happened to me with a brand new disk!!! I'm still fuming! I have heard of several destroyed "Crossword Magic" programs because of hard drive installations!

This is what I discovered, after the fact from a second original disk that I had available, and may provide a technique to try with other programs that are copy protected but that allow themselves to be installed on a hard drive. I am sure there are all sorts of ways of doing this, but Mindscape "appears" to have decided on a rather straightforward process of dealing with the problem of copying.

With the Apple II a file that is deleted is "not really deleted". Information about where it's kept is just removed one step from the user, and lots of programs like Central Point's "Copy II Plus" are capable of deleting and UNDELETING files simply by shifting a few codes around. It "appears" that Mindscape has employed this technique. I decided to make a sector copy of "Crossword Magic", and then to do a little snooping. I used "Mac Tools", which comes on the "Copy II Mac" disk and which is the equivalent to the utilities section of the Apple version of the program, and opted to "undelete files". Lo and behold, there were a whole pile of files there waiting to be undeleted, including one called, you guessed it, "Crossword Magic".

Interestingly enough, the deleted file was only 38 blocks long whereas the program that actually ran was 57 blocks in length. I was quite concerned about this ... and you may draw your own conclusions. I "undeleted" the file, with the help of the "Mac Tools" from the "Copy II Mac" disk, and ran it. To my surprise, it worked!

From this point on, it was a simple matter to discover that I didn't need any of the other undeleted files to operate the program. I trashed the original "Crossword Magic" application on my copy of the disk, and copied the undeleted one onto it. I shut the whole system off, held my breath, and turned the computer on with the disk in place. You'd never know that this was a backup!

This simple technique might work on a significant number of Mac programs that are protected but that do allow themselves to be installed on the disk.

Another pleasant surprise I have had is that the softkeys for IIe versions of programs at times can be made to work with Mac versions. Whenever you are prompted to search for a byte sequence on disk and to deactivate it with a series of EA's or the like, you might check your Mac version of the same program for that same byte sequence. It seems to me that this trick worked with Broderbund's "PrintShop" - it took a little experimenting, but I finally deleted the right sequence of bytes. Unfortunately, I don't at this time have a record of which softkey I used. (Record keeping of "what you did" is one of the most important aspects of deprotecting disks. The other is a database of what publishers and programs can be found in what issue and on what page of "Computist".) If you're really desperate, write to Computist and ask them to forward your query to me, and I will go through the process again.

Here are a few shortened softkeys for some programs that I have successfully deprotected for the Apple II series. I know detail is really important to those of us who are constantly learning, but I am going to keep this short for now. Perhaps I will write another note another day giving you some of the tricks that I have managed to employ successfully. Here goes.

Softkey for...

Magic Spells
Learning Co.

This is for version 2.1x, 1985. Many of their programs in the early eighties used similar protection schemes - half tracks on parts of the disk, disguised catalogues and modified markers. With "Magic Spells" my notes tell me that I loaded in the "Startup File", listed line 45, deleted "Call PP" from the end of that line, and then resaved Startup. That was it.

Softkey for...

Calculus Toolkit
Addison Wesley

These four disks were first copied with COPYA from the DOS system master. The "Hello" program on each disk FIRST loads in a file called "C" to check the copy protection. This is how to deactivate it. First load in normal DOS and type:

```
BLOAD C,A$6000
CALL-151
6OOEL
600E:EA EA EA
6013:EA EA EA EA
BSAVE C,A$6000,L$01E4
```

Here's what happens. After you bload the file, list it from the monitor by typing 6000L. Then study the printout. At 600E the programs does a branch to a subroutine to check for an original disk. It does this with JSR $6131, or in Hex, 20 31 61. At $6013, the program tests the validity of the disk with a compare to 0 (C9 00). Finally, line $6015 sends a failure message to the screen with a BNE $601B (D0 1B). All the nonsense continues with $605C's jump to the start of the program. If we can get past that point, the program continues at $605F. The above EA's send the program past this section to address $605F with a JSR at $6017: JSR $605F.

Softkey for...

Racter
Mindscape

Racter can be copied with a modified version of COPYA that has had the epilogue check removed from it - see Computist #28, page 12. Use your sector editor to search the now readable copy for the byte sequence: 4C 00 C6, and replace these with EA EA EA. I found this sequence on track 0, sector 6, at bytes 90-92. Write the change back onto your copy of the disk and you will have a working backup.

Softkey for...

Fat City
Xerox

Fat City can be backed up with Locksmith's Fast Copy option or with COPYA. Then with your sector editor, read in track 2, sector 6, and change byte $00 from A0 or A9 to 60. Write back to disk.

Dan Gordon

Playing Tip for...

Alien Mind (IIgs)
PBI

Like Philip Romine (Computist #64), I got stumped on the passwords, so I looked for another way to find them. I loaded up Copy II plus, went to Sector Editor and started to disassemble the program. As I went along, I discovered that all of the messages were in ASCII code and they were written to the right of the screen. As I read it, I discovered that all of the passwords were written within the messages. So whenever I got stuck, I just loaded up my Copy II plus and found the word that I needed. I was able to figure out about half of them, but some of them were so hard that I never would have got them, like Siren and Anthill. Also, make sure that you have lots of energy when you face the Alien because he has a Super Weapon too. Here's the list of all the passwords:

Something I sent you	Telegram
Color of the Ocean	Aqua
Lazy bed	Hammock
What the sun emits	Radiation
Informational interests	Elevator
Aaron's wife	Judy
Seductress	Siren
Traditional greeting	Biologist Ho!
A scale	CDEFGAB
What travels through water	Light
Place to contact	Bio-Lab
Dancing hat	Sombrero
Liquid that holds a liquid	Glass
Roman numeral 1,174	MCLXXIV
Audio tool	Ear
Visual enhancer	Telescope
Legendary continent	Atlantis
Last project	Transit
Life giving fountain	Oasis
Ancient communication	Hieroglyphics
Painters desk	Easel
Ancient transport system	Ark
Efficient community	Anthill
Waterhouse	Igloo
Black but isn't	Black hole

Playing Tip for...

Pirates! (IIgs)
MicroProse

Here's a list of the place and times of the Treasure Fleets and the Silver Train in Pirates:

Treasure Fleet - 1560	Silver Train - 1560	Treasure Fleet - 1600
Cumana - early Oct	Cumana - early Apr	Cumana - early Oct
Puerto Cabello - late Oct	Borburata - late Apr	Caracas - late Oct
Maracaibo - early Nov	Puerto Cabello - early May	Maracaibo - early Nov
Rio de la Hacha - late Nov	Coro - late May	Rio de la Hacha - late Nov
Nombre de Dios - early Dec	Gibraltar - early Jun	Santa Marta - early Dec
Cartagena - late Dec	Maracaibo - late Jun	Puerto Bello - late Dec
Campeche - late Jan	Rio de la Hacha - early Jul	Cartagena - early Jan
Vera Cruz - early Feb	Santa Marta - late Jul	Campeche - early Feb
Havava - early Mar	Cartagena - early Aug	Vera Cruz - late Fubruary
Santiago - late Mar	Panama - late Aug	Havana - late Mar
Florida Channel - late Apr	Nombre de Dios - early Oct	Florida Channel - late Apr
Silver Train - 1600	Treasure Fleet - 1620	Silver Train - 1620
St. Thome - early Apr	Caracas - early Sep	St. Thome - early Mar
Cumana - late Apr	Maracaibo - late Sep	Cumana - late Mar
Caracas - early May	Rio de la Hacha - early Oct	Caracas - early Apr
Puerto Cabello - late May	Santa Marta - late Oct	Puerto Cabello - late Apr
Coro - early Jun	Puerto Bello - early Nov	Gibraltar - early May
Gibraltar - late Jun	Cartagena - early Dec	Maracaibo - late May
Maracaibo - early Jul	Campeche -early Jan	Rio de la Hacha - early Jun
Rio de la Hacha - late Jul	Vera Cruz - late Jan	Santa Marta - late Jun
Santa Marta - early Aug	Havana - late Feb	Cartagena - early Jul
Cartagena - late Aug	Florida Channel - late Mar	Panama - late Jul
Panama - early Sep	Puerto Bello - early Sep	Puerto Bello - late Oct
Treasure Fleet - 1640	Silver Train - 1640	Treasure Fleet - 1660
Caracas - early Oct	Cumana - early Apr	Caracas - early Sep
Maracaibo - late Oct	Caracas - late Apr	Maracaibo - late Sep
Rio de la Hacha - early Nov	Gibraltar - early May	Rio de la Hacha - early Oct
Santa Marta - late Nov	Maracaibo - late May	Santa Marta - late Oct
Puerto Bello - early Dec	Rio de la Hacha - early Jun	Puerto Bello - early Nov
Cartagena - early Jan	Santa Marta - early Jul	Cartagena - early Dec
Campeche - early Feb	Cartagena - late Jul	Campeche - early Jan
Vera Cruz - late Feb	Panama - late Aug	Vera Cruz - late Jan
Havana - late Mar	Puerto Bello - early Oct	Havana - late Feb
Florida Channel - late Apr		Florida Channel - late Mar
Silver Train - 1660	Treasure Fleet - 1680	Silver Train - 1680
Cumana - early Mar	Caracas - early Oct	Cumana - early Apr
Caracas - late Mar	Rio de Hacha - late Oct	Caracas - late Apr
Gibraltar - early Apr	Santa Marta - early Nov	Maracaibo - late May
Maracaibo - late Apr	Puerto Bello - late Nov	Rio de la Hacha - late Jun
Rio de la Hacha - early May	Cartagena - late Dec	Santa Marta - early Jul
Santa Marta - early Jun	Campeche - late Jan	Cartagena - late Jul
Cartagena - late Jun	Vera Cruz - early Feb	Panama - late Aug
Panama - late Jul	Havana - early Mar	Puerto Bello - early Oct
Puerto Bello - early Sep	Florida Channel - late Apr	

(?) Does anyone know how to bypass the passwords in King's Quest IV?

(?) I'm stuck in the Circus in Dreamzone, what do I do now?

(?) I got a copy of Styleware fonts for Multiscribe gs, but how can I use them?

B. Walter Disney

Softkey for...

Designasaurus
Designware

Softkey for...

Seasame Street: Crayon Numbers
Polarware

■ Requirements

☐ Blank disks
☐ Copy II Plus
☐ Locksmith 6.0
☐ COPYA

This program is the in thing for young kids (shhh.. its educational, but don't tell them).

Designasaurus is a ProDOS based disk. The protection involves an alteration of the address header (D4 AA 96).

So you don't know where D5 AA 96 is, well nooo problem. Neither did I until after reading Beneath Apple DOS and ProDOS. To find the headers, boot Locksmith 6.0 and press "N". Pressing **ctrl R** will prompt you for the track and drive. The arrow keys allow you to move around in the data. Keep looking around and the D5 AA 96 will eventually appear.

[1] Boot a DOS 3.3 system disk.

RUN COPYA
ctrl C
70
CALL-151
B942:18
B956:EA EA
ctrl C
RUN

After the copies are finished, put a new ProDOS on the disk and you are finished. Not bad for my first deprotection.

Keith J. Scala

I read with interest Mr. Steven Paulson Letter in Computist 64 on Page 7 about his use of Information Master for his databases with his Apple IIgs. Information Master is a old program that must go to a DOS3.3 data disk for every record. I was in the same situation with many mailing lists for my Real Estate business and the Car Club that I was in.

Information Master was just to slow and I wanted to convert the files to Appleworks which reads all records into memory only once, and also convert the files to ProDOS so I could keep them on a hard disk. My advise for Mr.Paulson who has a IIgs and a hard disk, is that Appleworks is the way to go, and not try to save the old DOS 3.3 disk based Information Master.

I contacted Jim Hodge who has cracked many programs in these pages and is the man to talk too about any Apple hacking. Jim is the arthor of the Applesoft program that will convert Information Master files to Appleworks database files. If you have very large files, like I did, you can use Beagle Brothers Extra K to get more memory room in Applesoft BASIC or split your database files up. Here is the cookbook method, it's not that simple but it is easier then retyping all those records.

[1] Type the below program into DOS 3.3 Applesoft and Change line 6 so F is equal to the number of fields in each record and L is equal to the number of records in each database. Change IMFILE in lines 20 and 50 to the name of your database. Save this program to a DOS 3.3 disk for future use.

[2] With this program still in memory, put your Information Master data disk in Drive 1 and a DOS 3.3 formatted disk in Drive 1 and RUN the program.

[3] You will now have a text file on the disk in drive 1 with the name ASCII.DATA. Use Apple's CONVERT program, or Copy II plus ProDOS, to copy the file to a ProDOS disk or the RAM disk in your IIgs.

[4] Now boot up Appleworks and ADD FILES TO DESKTOP, select the DATABASE option and then the FROM A TEXT (ASCII) FILE. Use the address /RAM5/ASCII.DATA (or the Volume name of your ProDOS disk with the text file name). Appleworks will then ask you for the number of fields. And thats it, your file is in Appleworks and you can change the Database format to your liking.

Info Master Convert

```
1 ONERR GOTO 140
5 DIM T$(11):I = 0:N = 0
6 F = 8:L = 104: REM F=#FIELDS/REC & L=#REC LEN.
10 D$ = CHR$ (4)
15 HOME
20 PRINT D$ "OPEN^IMFILE.DAT,L" L ",D2"
30 PRINT D$ "OPEN^ASCII.DATA,D1"
40 N = N + 1
50 PRINT D$ "READ^IMFILE.DAT,R" N
55 PRINT "REC-" N
60 FOR I = 1 TO F
70 INPUT T$(I)
75 PRINT I "^" T$(I)
80 NEXT
85 PRINT D$ "APPEND^ASCII.DATA,D1"
90 PRINT D$ "WRITE^ASCII.DATA"
100 FOR I = 1 TO F
110 PRINT T$(I)
120 NEXT
125 I = FRE (0)
130 GOTO 40
140 PRINT D$ "CLOSE"
150 PRINT "FILE^TRANSFER^FINISHED"
170 PRINT "ERR#^" PEEK (222) "^IN^LN#^" PEEK
    (218) + PEEK (219) * 256
```

Checksums

```
1 - $76AA     50 - $2614     100 - $983C
5 - $8283     55 - $A5AA     110 - $83CD
6 - $D639     60 - $5DBB     120 - $8398
10 - $B174    70 - $2DA4     125 - $3DE4
15 - $86CF    75 - $B1E6     130 - $A343
20 - $FDBB    80 - $3470     140 - $FDC1
30 - $8403    85 - $4A1A     150 - $5B6F
40 - $E816    90 - $DC1D     170 - $BCE8
```

Computist in Colorado

Bitcopy for...

Jet & Jet Scenery Disks
Sublogic

■ Requirements

☐ EDD v4.x

[1] From the main menu choose EDD "Disk Scan" to scan the tracks on your version of Jet and/or any scenery disks.

[2] Write down the tracks and/or track ranges that have data on them, ignore tracks that are solid white (which indicates no data on track). Tracks: 0-1, 3-15, and 17-22, showed valid data on my version.

[3] Put in a blank disk and use EDD to "Verify and Erase" disk: "TRACK 0-34, STEP .5".

[4] Copy only the tracks you wrote down as having data. Use "Back up a Disk", type in track or track range, STEP 1, with the Sync option ON ("Y"), Nibble-count OFF ("N").

Put a write protect tab on your back-up before booting, or else the screen will blank-out when you try to take off in the Jet program.

Bitcopy for...

Crusade in Europe
?

■ Requirements

☐ EDD 4.x

[1] Use EDD to "Verify and Erase" two blank disks: "TRACKS 0-35, STEP 0.5".

[2] Copy all the tracks plus track 36 on both sides: "TRACKS 0-35, STEP 1, Sync (N), Nibble-count (N)".

[3] To run, you still will need the codes in the "Docs" booklet that comes with the game.

Note: I had to copy both sides two times before I could get a working back-up.

The Copy II program by Central Point Software is great, but both of these programs are listed in the Copy II v8.2 Bit Copy program, however, neither would back-up these disks for me.

(?) Can anyone help me with Avalon Hill's Under Fire program? I followed John Howard's softkey (COMPUTIST #37):
- I finally found a DOS utility that moves DOS up into the language card (Pronto-DOS's DOS-UP).
- Finally broke into the monitor from the game (using the IIgs's "#" sign from the monitor, booting the UF program and pressing **ctrl** ♁ **esc** to enter the control panel) to chose option "Visit The Monitor" (Thanks, Nancy).
-Moved the RWTS from B600.BFFF to 8600.8FFF.
-Booted a slave disk with no hello program.
-Bloaded DEMUFFIN PLUS (following very carefully the info on how to create it from COMPUTIST #54-more than once).
-Moved the RWTS to its normal location B600.BFFF.
-Ran DEMUFFIN with 803G.
-Followed the prompts to the "Hello" program and chose "Y" to convert.

At this point I am always thrown into the monitor around $6E8C (one time $9???).

By the way, I wouldn't recommend this game to anyone. It's a real disk "accesser" (read my lips: it wears out the disk and doesn't do the drive any good, either), requires a lot of time and study to learn how to play and costs a bunch!

The only reason I want a back-up is to protect my $50 investment and not have to send Avalon Hill any more money (I think they want $15 or $25 for a back-up).

The Executioner

First, let me commend you on the most amazing magazine that I have ever read. Over the past year and a half, I have read A+, Nibble, InCider, Personal Computing, Family and Home Office Computing, Open-Apple, Computist, K.R.U.N.C.H. (a magazine that I made with Newsroom), Call A.P.P.L.E., and Apple II Review. This year, I am only staying with Computist (forever, if possible), Open-Apple, and A+ (until my 3-year subscription runs out). September's issue is worth a million dollars a page! If this is your first issue, or for some reason, you didn't get September's issue, order it NOW! From time to time, when I have time, I will try to send in a tip and technique for the month. I have only been able to deprotect about 4 out of my 250-disk collection (and I have almost every back issue), but I still enjoy reading this magazine.

Mr. Hart, in COMPUTIST #57 (July), you tried to deprotect Math Blaster! by Davidson & Associates. You had trouble getting into the monitor, so I have a suggestion: when all else fails, try the easy way out. When you see the prompt in the beginning, press **ctrl C**. Easy enough? P.S. I love your articles and softkeys!

Mr. Mulder, in the September issue, you had problems trying to convert PrintMaster graphics to Print Shop graphics. Now, I don't have PrintMaster (though I want to get it some day), so don't blame me if I'm wrong. In April's issue (#54), Mr. Marks said to convert the Print Shop Graphics to ProDOS and they would work on PrintMaster (actually there was a little more about subdirectories...), and I think if you put PrintMaster graphics on a DOS 3.3 disk, maybe that will work. If that doesn't work, maybe changing the file length of the graphic will work.

"Doc Devious", when I read your article in the January issue of Computist, I thought I was reading about myself! I have pages and pages of notebook paper filled with the same type of one and two-liners as you. I'd like to become a member of the SPS, too. Put your phone number in the next letter you send, and I'll contact you about all sorts of info on games, tips and techniques, and any other "quickies" you would like to know about.

Here are the tips & techniques for this month. This program will scare the living daylights out of your friends:

This program could also earn you a punch in the nose if you aren't careful. Use it at your own risk and *don't* say you say it in Computist.

.....RDEXed

Fake Init

```
10 REM PRETEND TO DELETE THE DISK
20 PRINT "THE^DISK^IS^ABOUT^TO^BE^DELETED!"
30 POKE - 16151,1
40 FOR T = 1 TO 50
50 NEXT T
60 POKE 49384,0
70 PRINT "FOOLED^YOU!^HA!^HA!"
80 END
```

Checksums

```
10 - $BADD     40 - $F924     70 - $BA8E
20 - $1AE6     50 - $511C     80 - $A686
30 - $8457     60 - $5C27
```

What the program actually does, is spin the disk drive for 50 seconds (depending what SPEED=). In lines 30 & 60, I put the negative command and the positive command for turning on and off the drive (you can use whichever ones you like). NOW, I have 2 tips for this month. The first, on Karateka (on the original), play the flip side of the disk. It may be hard unless you flip your monitor upside-down, AND your keyboard (the keys are considered upside-down, too!). And my second tip- KEEP SUBSCRIBING TO COMPUTIST!!

Gerald Berry

Softkey for...

Ancient Art of War at Sea
Broderbund

■ Requirements

☐ 128K Apple to operate
☐ COPYA+ or COPYA
☐ Sector editor

This disk contains a modified ProDOS operating system and uses two known protection methods. The copy protection is by altered address and data epilogues plus a nibble count/signature check routine.

If you are using COPYA+, RUN COPYA+ and set Keys (E) & (J) to IGNORE. Copy both sides of the disk. Make the sector edit to side A to defeat the nibble count.

If using COPYA do the following:

[1] Boot a DOS 3.3 disk

[2] Tell DOS to ignore some errors and use COPYA to copy both sides of the disk.

POKE 47426,24
RUN COPYA

[3] Sector edit side A.

Trk	Sct	Byte(s)	From	To
$00	$03	$85-87	95 38 60	95 18 60

The disk is now COPYA-able.

Notes: When I first deprotected the disk, I NOPed much of the code that proceeds bytes $86 and $87. This was not necessary. The $38 operative sets the carry flag while the $18 operative clears the carry flag. In effect what

was done was to balance the checkbook by using the UFF (universal fudge factor) method. Interesting enough, this same method applies to Broderbund's "WINGS of FURY". I wonder how many more? Seriously, I found much identical disassembled code around the changed routine in "...WAR at SEA" and around the byte that was changed while deprotecting "WINGS of FURY".

Bitcopy for...

Wings of Fury
Broderbund

■ Requirements

☐ 128K Apple to operate
☐ Bit copier (I used COPYII PLUS)
☐ Sector Editor

The graphics on this disk are great. I've only been able to get five planes on the carrier deck at one time. This disk has two protection schemes, an altered form of disk sectoring and a nibble count/signature check.

Bit copy both sides of the disk, then make the following sector edit. If using COPYII PLUS, use the DOS 3.3 patched mode. If using a different Sector Editor, adjust your program so as to allow for address & data epilogues being set to FF's.

Trk	Sct	Byte(s)	From	To
$00	$0B	$EC-EE	60 38 60	60 18 60

One final note: If you are wise (Wisdom comes from experience.) , you will ALWAYS WRITE PROTECT the disk you are attempting to copy. Sooner or later you will try to copy a protected disk and find your disk drive WRITING when it should be READING. Too late!

John T. Chiao

Softkey for...

Algebra Vols. 1, 2, 3
Britannica Software

■ Requirements

☐ Britannica controller from COMPUTIST #40

Use Jim S. Hart's "Encyclopedia Britannica" controller found in Computist No. 40 to deprotect Algebra Volume 1 as follows:

[1] INITialize a blank disk with the name BOOT.

INIT BOOT

[2] Install the Encyclopedia Britannica controller into Super IOB and run.

To deprotect Algebra Volumes 2 and 3, INITialize with the name EDU-WARE and follow the same procedure as above.

Don Westcott

Softkey for...

Death Sword
Epyx

■ Requirements

☐ COPYA
☐ COPY II+ (ProDOS version)
☐ 2 blank disks

[1] Use COPYA to copy Death Sword to a blank disk:

POKE 47426,24
RUN COPYA

[2] Use COPY II+ to format a ProDOS disk. Then transfer the ProDOS file from COPY II+ to this disk.

[3] Use COPY II+ to transfer all the files, except ProDOS, from the Death Sword copy to the ProDOS disk.

Partial Softkey for...

Starglider
Rainbird

POKE 47426,24; RUN COPYA made a working copy. The other protection is finding certain words in certain paragraphs on certain pages of the included book in order to start playing.

Softkey Notes

I recently bought the Senior Prom for my IIe so I went through my old Computists to try all the "Reset Into the Monitor" softkeys. I came across Floyd Splidnik's method for Hayden Software (Computist #8, page 6 / Book of Softkeys II, page 108). I tried it on Hayden's Laser Bounce and Wargle with success. Floyd mentioned it would also work with other disks that display a prompt (]) when booting. These are the ones I have that it worked on:

Mask of the Sun - Broderbund
The Missing Ring - Datamost
Empire I:World Builders - Edu-Ware
The Prisoner - Edu-Ware
Fortress - S.S.I.

(?) I had trouble with the Software Entertainment version of Stellar 7. I wasn't able to transfer the binary file LEV7. Neither could I get the game to work.

This method smoothly transfered the files of C'est La Vie and Rear Guard, both from Adventure International, but neither would work. Edward Hauff's softkey for Adventureland, also from AI, said to modify the file M2. Rear Guard has a file M3, but it has a different address and length than M2 so I couldn't draw a comparison.

Can anyone help me with these nearly cracked games?

(?) I've tried different bit copies and softkeys for Penguin's Arcade Album #1. The first two games (Spy's Demise & Spy Strikes Back) always work but the third game, Thunderbombs, never works on the copy. I've isolated its files, TBA and TBB but I can't get them to work.

Does anybody know how to make the 'Thunderbombs' files work?

Wayne Zurow

Softkey for...

Mathematics Today: (Silver Series) Problem Solving Today: (Gold Series)
H.B.J.

Mathematics Today and Problem Solving Today are multi-level programs for grades 1 thru 8. The graphics are good and the problems presented easy to understand. The best part of the programs are that they are easy to deprotect.

■ Requirements

☐ Disk copier
☐ Sector editor with search

[1] Copy all the disks.

[2] Search the disk for C9 E7 D0. When you find it, search that sector for the first occurence of BD 8C C0 and change to EA 18 60. I found mine on track $00, sector $05.

Trk	Sct	Byte(s)	From	To
$00	$05	$59-5B	BD 8C C0	EA 18 60

[3] You now should have a deprotected copy. If you want, you could just copy tracks $00-02 of this disk onto the rest of your disks. They all the same DOS in both series. Do not, however, put a fast DOS or any other DOS on your copies.

Softkey for...

Brainstorms
Mindscape

■ Requirements

☐ COPYA (from the DOS 3.3 system disk)
☐ 2 BLANK DISKS
☐ FILE COPIER PROGRAM (FID)

[1] Boot DOS 3.3 and init a disk with the boot name "GIFTED".

INIT GIFTED
DELETE GIFTED

[2] Use COPYA to copy the protected disk to your second blank disk.

ctrl C *stops the program*
CALL-151 *enter the monitor*
B957:00
B98A:00
B98F:00
B942:18
ctrl C
70
RUN *restart the program*

[3] Use a file copy program to copy all the files from the COPYA disk to the initilized disk.

[4] On the initialized disk, change line 24 of the GIFTED program to delete the CALL.

LOAD GIFTED
LIST 24 *delete the call*
SAVE GIFTED

Add a fast DOS if you like.

Bitcopy for...

Kalamazoo Teacher's Record Book
Hartley Courseware

■ Requirements

☐ COPY II+

Here are the parameters for version 08.25.84.

Select sector copy

Copy tracks 0 to 22 using the following parameter changes: 5C = DA 66 = DA 77 = FF.

Bit copy track 23 using sync and keep track length.

To copy the tutorial data side on the back just use disk copy from the main menu.

Do not write protect the program side or the data side.

† *Softkey for...*

Author Author Dyno-Quest
Mind Play

Use the softkey for Mindplay software in COMPUTIST #52. The sector edits for both of these programs were found on track $01, sector $01, bytes $24-25, from BD 8C to 58 60. Remember, for Mindplay software, to scan for C9 D5 F0 0F C9 and change the first BD 8C C0 of the sector to 58 60 C0.

Softkey for...

Mathematics Action Games
Star Maze
Pyramid Puzzler
Number Bowling
Picture Parts
Frog Jump
Scott Foresman

Mathematics Action Games are a series of programs to help students develope their math skills for grades 2 thru 6. The programs are written in Pascal and are entertaining, however, the keyboard response is slow. All 5 programs have altered epilogs, 2 programs have one kind of nibble count and 3 programs use a Prolock type of signature check.

[1] Use COPYA to copy the disk.

POKE 47426,24
RUN COPYA

[2] Use a sector editor to scan for BD 8C C0 10 FB 88. You should find these on track $00, sector $05, bytes $6C-71, for programs Star Maze, Pyramid Puzzler, and Number Bowling. Change the BD 8C to 18 60 and write the sector back to disk. Do not write protect the programs.

[3] For Picture Parts and Frog Jump, we need to tell DOS that we have changed the epilogs from FF FF to DE AA. Scan for C9 FF. You should find these on track $00, sector $0C. Change bytes $4F-50 from C9 FF to C9 DE and bytes $59-5A from C9 FF to C9 AA. Further along, change bytes $DE-DF from B0 01 to EA 18. This will clear the carry and keep the program from jumping over the RTS into the reboot routine. Write the sector back to the disk and do not write protect the disk.

If anyone would like to write to me my address is:

Wayne Zurow
Attn: Cyclotron
K.F.S.H. Box 3354
Riyadh, Saudi Arabia

Bud Boyd

(?) **To Edward Teach:**, COMPUTIST #56, pg 35. What was your source for the program "Intercept 1.2"? I would appreciate details - name, address and cost of program. Thanks.

Softkey for...

Design Your Own Train
Abracadata

■ Requirements

☐ Super IOB v1.5

Thanks to Michael Paterno, COMPUTIST #58, pg 7 and Tim Snyder, COMPUTIST #53, their Super IOB controller used on the Design Your Own Home series works on Design Your Own Train, and probably on Run Your Own Train as well. The controller is repeated here for your convenience:

Just install the controller into Super IOB and copy the disk, then put away your original disk and use the de-protected copy.

Controller

```
1000 REM ABRACADATA DESIGN YOUR OWN SERIES
1010 TK = 0:ST = 0:LT = 35:CD = WR
1020 POKE 47507,0: POKE 47517,0
1030 T1 = TK: GOSUB 490
1040 POKE 47445,213
1050 IF TK < > ( INT (TK / 2)) * 2 THEN POKE
     47445,212
1060 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST < DOS
     THEN 1060
1070 IF BF THEN 1090
1080 ST = 0:TK = TK + 1: IF TK < LT THEN 1040
1090 GOSUB 490: POKE 47445,213:TK = T1:ST = 0
1100 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST < DOS
     THEN 1100
1110 ST = 0:TK = TK + 1: IF BF = 0 AND TK < LT THEN
     1100
1120 IF TK < LT THEN 1030
1130 POKE 47507,174: POKE 47517,164: POKE
     47445,213
1140 HOME : PRINT : PRINT "DONE" : END
```

Checksums

```
1000 - $356B   1050 - $26A1   1100 - $9356
1010 - $3266   1060 - $29A5   1110 - $F70D
1020 - $5917   1070 - $077B   1120 - $9811
1030 - $0A12   1080 - $0507   1130 - $BC98
1040 - $AFB3   1090 - $A256   1140 - $92D3
```

Joseph H. McGlynn

Softkey for...

Keyboard Cadet
Thunder Mountain

The softkey for Keyboard Kadet in Computist #56 didn't work on my copy, then I noticed that Kadet was spelled "Cadet" and the program was distributed by Thunder Mountain instead of Mindscape.

I used the Nibble Editor of Copy II Plus and found that the epilog marks had been changed to FF. I booted COPYA, POKEd 47426,24 to ignore epilog and checksum errors and copied the disk.

I booted the copy and listened to the disk drive. Almost immediately I heard a click as the drive head switched tracks shortly after it rebooted. I immediately thought of a nibble count. I remembered an article in Computist (#57) by Jim S. Hart that had a similar boot. So, I booted the sector editor of Copy II Plus and checked track $00, sector $00, at relative byte $4A, where normal DOS 3.3 has an indirect JuMP to $8FD, there was a JuMP to $0E00.

I booted the copy again and as soon as I heard the drive head switch tracks I dropped into the monitor with **ctrl reset** . Then I typed **0E00L** and copied down the first five bytes at that location (A9 17 8D 9F BE).

I booted the sector editor of Copy II Plus and used the S[can] feature to search for the bytes. They showed up at track $01, sector $0B. I D[umped] the Sector to my printer and then looked for:

```
LDA $C08C,X
BPL $????
CMP #$??
BNE $????
```

I found the routine at location $0E7C and it looked like this:

```
0E7C- LDA $C08C,X      get a byte
0E7F- BPL $0E7C
0E81- CMP #$E7         compare it to this value
0E83- BNE $0EB1        if not equal branch here
0E85- LDA $C08C,X
0E88- BPL $0E85
0E85- CMP #$E7
0E8C- BNE $0EB1
0E8E- LDA $C08D,X
0E91- LDY #$10
0E93- BIT $06
0E95- LDA $C08C,X
0E98- BPL $0E95
0E9A- DEY
0E9B- BEQ $0EB1
0E9D- CMP #$EE
0E9F- BNE $0E95
0EA1- LDY #$07
0EA3- LDA $C08C,X
0EA6- BPL $0EA3
0EA8- CMP ($48),Y
0EAA- BNE $0EB1
0EAC- DEY
0EAD- BPL $0EA3
0EAF- CLC
0EB0- RTS
```

I changed the two bytes in each of the BNE statements to EA EA, wrote the change back to track $01, sector $0B and then booted the disk. Everything worked fine.

1 Boot DOS 3.3 and disable error checking.

POKE 47426,24

2 Copy the Keyboard Cadet disk.

RUN COPYA

3 Sector edit the copy.

Trk	Sct	Byte(s)	From	To
$01	$0B	$7A	D0 F4	EA EA
		$83	D0 2C	EA EA
		$8C	D0 23	EA EA
		$9F	D0 F4	EA EA
		$AA	D0 05	EA EA

John Jackson

Congratulations on producing the absolute best apple magazine available! Also many, many thanks for responding so quickly to my requests for information and photocopies of back-issues! Once again, so you know someone really does enjoy and appreciate your hard work, Thank You!

Now I would like to make my first contribution. The idea came while I was doing the softkey for Snoopy's Reading Machine, in issue #59 p.27. I decided to try to catalog some disks I was working on and it worked!

Softkey for...

Gertrudes Puzzles
Learning Company

Softkey for...

Verb Viper
Developmental Learning Materials

■ Requirements

☐ The original disks
☐ A blank disk
☐ FID from the DOS 3.3 system disk
☐ Copy II Plus

1 Initialize each side with the boot name "HELLO" and delete the "HELLO" program.

NEW
INIT HELLO
DELETE HELLO

2 Boot your DOS 3.3 system disk and at the "]" prompt type:

POKE 47426,24
BRUN FID

3 Copy the files from the original disk to your initialized disk. When asked for the file name use "=" and when asked if you want prompting answer "No"

4 On Gertrudes Puzzles, use Copy II Plus to change the boot program to "PUZZLESGOOSE.O".

Enjoy your COPYA-able disk!

(?) These are articles I've had trouble with, and on which, I've spent **a lot** of time without success. Could someone correspond directly with me on these to see if we could get them to work.

Issue #51 p.26 -- Making a fast boot disk
Issue #53 p.27 -- How to use the Electronic Arts RWTS
Issue #56 p.12 -- 5 second fastboot into Locksmith 6.0 Fastcopy

May I offer some suggestions? I'm sure many of your subscribers, like myself, starting with issue #50, have not had a chance to read all of your wonderful articles. The opportunity to get back issues is great, but I'm sure many would like to see reprints of special interests on a regular basis. You could title this section something clever and include hardware articles, tips, or softkeys from popular programs. An example was a reprint of Demuffin plus in issue #54 p.11. Please get my drift here, I'm saying there's alot of good stuff we may have missed, and I hope your long time subscribers won't mind seeing these great articles again!

R.A. Grim

(?) I just finished typing in the Bard's Dressing Room III (COMPUTIST #64) and find it will not work. The checksum at the end matches so it's not my typing error. There must be a bug in the program. When I run it and choose a drive, the program goes into listing the applesoft program in extended 80 column screen. Must be a bug?

I enjoy your magazine very much. Keep up the good work.

George Sabeh

I am writing to share a softkey with your readers.

Softkey for...

Pacman
Thunder Mountain

■ Requirements

☐ Original Pacman.
☐ Super IOB with New Swap controller.
☐ Fast DOS is optional

1 Boot DOS 3.3 and initialize a slave disk.

INIT HELLO
DELETE HELLO

2 Boot original Pacman and break into monitor with **ctrl reset** or any available means. I used the NMI of the Senior Prom.

3 Move the RWTS to a safe area of memory.

1900<B800.BFFFM

4 Boot the slave disk and SAVE the RWTS to your Super IOB disk.

SAVE RWTS.PACMAN

5 Load Super IOB and merge the NEW SWAP controller. Change the RWTS name in line 10010 of the NEW SWAP controller to RWTS.PACMAN and type RUN to start Super IOB. Copy the disk.

6 Change the boot file name from HELLO to RUNNER. You could also RENAME RUNNER, HELLO. I used Copy II to change the boot file.

7 Optional: Use a fast DOS. I used ProntoDOS.

(?) I am having difficulty with Amnesia by Electronic Arts. The softkey by John Wiegley and correction in COMPUTIST #51 were used. I still cannot pick up any object. As explained by Mr. Wiegley, this is due to a disk check for the original. Could John or any of your readers help! Apparently John has missed a signature check.

Thanks again for a great publication. I will continue to support you in every possible way.

R Williams

Guess it's time to try another letter to Computist. If I can just remember to put in the softkeys as I do them, this wouldn't be too hard to do.

Softkey for...

Field of Fire
Shards of Spring
SSI

These programs both use that now common protection of alternating tracks of D5 AA 96/D4 AA 96.

I use the Dragonworld controller from Computist #30 although one could also use the modified IOB to read/write every other track from issue #53.

Controller

```
1000 REM D5 AA 96/ D4 AA 96 CONTROLLER
1010 TK = 0:ST = 0:LT = 35:CD = WR
1020 POKE 47507,0: POKE 47517,0
1030 T1 = TK: GOSUB 490
1040 POKE 47445,213
1050 IF TK < > ( INT (TK / 2)) * 2 THEN POKE
     47445,212
1060 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST < DOS
     THEN 1060
1070 IF BF THEN 1090
1080 ST = 0:TK = TK + 1: IF TK < LT THEN 1040
1090 GOSUB 490: POKE 47445,213:TK = T1:ST = 0
1100 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST < DOS
     THEN 1100
1110 ST = 0:TK = TK + 1: IF BF = 0 AND TK < LT THEN
     1100
1120 IF TK < LT THEN 1030
1130 POKE 47507,174: POKE 47517,164: POKE
     47445,213
1140 HOME : PRINT : PRINT "DONE" : END
```

Checksums

```
1000 - $356B   1050 - $26A1   1100 - $9356
1010 - $3266   1060 - $29A5   1110 - $F70D
1020 - $5917   1070 - $077B   1120 - $9811
1030 - $0A12   1080 - $0507   1130 - $BC98
1040 - $AFB3   1090 - $A256   1140 - $92D3
```

Softkey for...

Comics
Accolade

This one can now be cracked to run on other machines than the Laser 128, thanks to the person who originally cracked it, Mike Javorka. Mike did all the leg work, and even supplied the answer to the problem. Perhaps this program could be studied to see a difference in the Laser and 'real' Apples.

In his original crack, Mike did three sector edits to three different sectors. Two of the edits were the same. It was the odd third one that caused the apparent problem. Mike NOP'ed some code. Instead of doing the NOP, I took a stab at doing an '18 60' and the rest is comic book history.

1 Copy Comics side A with any fast whole disk copier. Ignore the read error on track 22.

2 Make the following sector edits to side A.

Trk	Sct	Byte(s)	From	To
$07	$0D	$A7-A8	BD 3F	18 60
$11	$02	$B6-B7	A0 09	18 60
$20	$08	$12-13	A0 09	18 60

3 Copy the other 5 sides of the program with your fast copier.

Softkey for...

Body Transparent
Designware

Here's an old one that can be copied using the same method from the 'golden oldies' files of Computist (#18).

1 Copy the disk with your fast copy.

2 Make one sector edit.

Trk	Sct	Byte(s)	From	To
$00	$03	$64-65	A5 1E	A9 FF

Softkey for...

Pipeline
Learning Technologies

1 Copy disk with fast copier.

2 Make the following sector edit

Trk	Sct	Byte(s)	From	To
$11	$00	$01	11	03
$1E	$07	$AB-AD	A8 DD 88	18 60 88

The second edit is the only one that is necessary. The first edit allows you to read the files with Copy II+ and/or a normal DOS so that you may make modifications or just study the program.

To Gerald E. Myers: COMPUTIST #64, pg 24. This "old-timer" is not ticked off but I would like to examine your "no more COPYA" idea a little bit before we convince all the other "old-timers" to throw away their copies of COPYA/DOS 3.3 masters and the "beginners" to give up a search for the elusive System Master. For those who don't know, that's where COPYA lives.

First, if you have only one drive (and there are a few people in that position), the COPYA method is much handier than the Copy II+ method which requires 35 disk swaps compared to COPYA's four or five.

Second, and more importantly, the Copy II+ method still leaves us with a partially protected disk. The epilogs are still abnormal, as shown by the necessity of "Patching DOS" to allow the sector editor to read the sectors. This means that we cannot put a "normal"/fast

DOS on this disk. If the program is a game; and someone writes an editor program, we would most likely not be able to employ it. The files would not be open to us from a normal DOS. I think the readers can see that the COPYA version would have definite advantages over the Copy II+ version.

Finally, you speak of ease of use. I think that "beginners" are going to have as much, if not more, trouble understanding the "patch DOS" routine in Copy II+ as they will have with the "patch DOS" method with COPYA. As I see it, you patch DOS at some point with either method; and the end result with one is an unprotected disk and with the other you still have a protected disk, although it is a backup. The choice seems obvious to me.

I love Copy II+, and I always had hoped that they would have built in a routine into their sector copy program that would allow you to normalize a disk as you copied it. They didn't, probably to avoid the pirate issue as best as they could. Perhaps someone, who understands this program a little better than I, could come up with a patch for their RWTS to allow it to normalize as it wrote.

For the time being, I believe that COPYA, when available to the user, with the patches to DOS 3.3 is much more handy to use.

Please note that I am not putting down Mr. Myers' ideas or contributions, but merely supplying some of my own rhetoric. I also understand that different people want different sorts of back-ups for different reasons. For example, the Copy II+ method will work just fine for teachers who don't want a totally unprotected program in their classrooms. However, for the user who wishes to modify and examine; I believe the other method is better.

Magnus Hedlund

I have received your magazine since issue #1 and I am extremely pleased. I would like to thank all the dedicated editors at your publication who've tripled my knowledge of the Apple II. While I'm busy thanking people, I'd like to give a special thanks to Gerald E. Myers, who sent in an excellent letter on deprotection for beginners, without which I could never have done the following softkey:

Softkey for...

Paperboy IIe

Mindscape

■ Requirements

☐ Apple IIe or II plus
☐ COPYA
☐ Sector Editor (with search option)
☐ 1 Blank disk
☐ Original Paperboy disk

Paperboy is a game where you deliver papers to various houses through your neighborhood. The graphics are good (for the Apple IIe), but the animation is herky-jerky.

Inspired by the starting of my own "cracking notebook" (which I recommend to all beginners in the softkey world), I set out to deprotect Paperboy. In the past, Mindscape has not had very difficult protection. Experienced crackers may skip to the cookbook method, but for a beginner's point of view, read on.

Starting out

First I booted the protected disk and discovered it was in ProDOS. I tried to bit copy the disk, but the ProDOS greeting didn't even come up. So I tried good ol' COPYA, ignoring errors (POKE 47426,24-RUN COPYA).

The resulting copy booted, but flipped to a weird HiRes screen after the Mindscape title page. I immediately thought, signature check. So using Copy II Plus I scanned for the bytes 8C C0, as in LDA $C08C,X which does a direct load from disk, and found them on track $14, sector $01. Disassembling the code, I found this:

```
21FA-BD 8C C0  LDA $C08C,X     get a byte from disk
21FD-10 FB     BPL $21FA       if there was no byte, load again
21FF-C9 E7     CMP #$E7        was the byte E7?
2201-D0 23     BNE $222F       if not go to 222F
```

The code continued like this for a while, always branching to $222F. At $222F there was a JMP to $2247. Looked suspicious, so I booted Copy II Plus, and NOPed the code. It worked!

Cookbook Method

[1] Boot the DOS 3.3 system master disk.

[2] Use COPYA without error checks to copy the disk.

POKE47426,24
RUN COPYA

[3] Sector edit the copy.

Trk	Sct	Byte(s) From	To
$14	$01	$2F-$31 4C 47 22	EA EA EA

A few comments and suggestions

? Could someone list all of the modifications to COPYA to copy protected disks?

? Now that someone wrote an article about deprotecting signature checks, could someone write an article on checksum routines, because I'm not too clear about that.

? Also does anyone know how to get rid of the high score name ROGER on Paperboy, or save high scores to disk?

? Finally, I started to deprotect Indoor Sports by Mindscape, but it has a modified ProDOS, and when I catalog the copy it says Volume 001 (as in DOS 3.3), but the game loads ProDOS. Does anyone know how to get around this form of protection?

Uncle "Dom"

The softkey for Microzine #19 in COMPUTIST #53, pg. 30, did not work for my copy. Reading the many fine softkeys submitted for other Microzine disks, I discovered what they had done. The nibble count program is W.SPC and is found on track $0D, sector $04. Not being much of a hacker, I was unable to modify it to work. There was no boot program listed when I used Copy II+ to try to change it. If I copyed the disk and loaded and ran HELLO I could get the disk to run. The boot program I believe is on track $01, sector $09. Having all this information, I proceeded to break the program in two ways.

Method one

[1] Copy the disk with COPYA.

[2] Use the DOS 3.3 System Master disk and run MASTER CREATE.

[3] When prompted, make the greeting program "HELLO".

That's it. But if you want it to be a listable version then use method two.

Method two

[1] Copy the disk with COPYA.

[2] Using a program such as Copy II+, copy DOS from your System Master.

Now you have a completely listable, catalogable copy.

? I am anxiously awaiting help from others, out there, to come up with a deprotecion scheme for Reader Rabbit, Kindercomp and Magic Spells, that is different than all others previously published. Your help will be appreciated.

Kearney J. Gravis

This is just the second time that I have written to the RDEX and it has been awhile. (My first contribution appeared in the September 1988 issue.) During this time I've had quite a lot of fun performing many of the softkeys provided by the contributors to this fine magazine. I've also had the opportunity to develop some of my own! So, now it's my turn to be a contributor and share some of these with you.

Softkey for...

Balance of Power
Indoor Sports

Mindscape

■ Requirements

☐ Apple IIe (128K to play), Apple II+ (64K to crack)
☐ 2 Blank Disks
☐ ProDOS IOB 5.25 (from Computist #62 and #63)
☐ DOS 3.3 (To make a capture disk)
☐ Optional: A fast disk copier that ignores errors (I used Disk Muncher 1.0)

Both disks use a modified disk formatting (altered epilogues), encoded file names, and a modified ProDOS device driver for reading the protected disk. Both programs can be converted to standard format utilizing Bill Jetzer's new ProDOS IOB 5.25 with a very slightly modified Swap controller installed. (Note: I had just deprotected both these programs the day before receiving the February issue of Computist with The Silky!'s Softkey for "Balance of Power". Using an Applied Engineering Ramfactor memory expansion card, I tried his method and was unable to get it to work on my copy. I was able to catalog the disk using the Filer, but received an error message and a locked up computer when I tried to copy the files.)

[1] Initialize a 48K slave disk and delete the "Hello" program. Any compatible DOS 3.3 can be used.

INIT HELLO
DELETE HELLO

[2] (This step is optional as the originals can be used, if desired.) Remove the disk created in step 1 and start your fast disk copier. Make a copy of your original disk (copy the front side of "Balance of Power" and both sides of "Indoor Sports"). If you use this step, the originals can be put away in a safe place, since they won't be needed any more.

[3] Boot the copy of the disk made in step 2 (or the original). Shortly after the ProDOS title is displayed and, if using a copy, before the error message is displayed, press **ctrl reset** (twice minimum) to drop into the monitor. This make take a few tries but you want to get into the monitor before the error message because I found that, more often than not, the device driver is erased. (Note: As a precaution I opened the drive door prior to pressing **ctrl reset** . This would be especially advisable if you plan to use your originals in this step, which is risky and totally unnecessary.)

[4] Now the search for the device driver is on! After studying the beginning of a normal ProDOS 8 v1.4 device driver for a few minutes before tackling these programs, I knew what to look for but not exactly where to find it. However, I got lucky and after a few minutes of scanning through memory in the monitor, I found the device driver! It is located at $5300-$59FF. Move the device driver down to a safe area of memory at $1900.

1900<5300.59FFM

[5] Remove the copied program disk and boot the 48K slave disk created in step 1.

C600G

[6] Save the device driver on the slave disk. Then, transfer the device driver to the ProDOS IOB 5.25 disk with either the Copy II+ Utilities or the ProDOS Users.Disk "Convert" program.

BSAVE DRVR.ISPT,A$1900,L$700 *Indoor Sports*
BSAVE DRVR.BOP,A$1900,L$700 *Balance of Power*

Note: The device driver from either of these programs may be used to deprotect the other. Even though they are from different ProDOS versions the device drivers are identical. I have used both interchangeably to produce working copies!

[7] Modify lines 2010 and 10010 of the ProDOS Swap Controller;

```
2010 BK = 1:LB = 279
10010 PRINT CHR$(4)"BLOAD DRVR.ISPT,A$1900"
```

and capture it to the ProDOS IOB 5.25 disk as either ISPT.PCON or BOP.PCON depending on your own preferences.

[8] Format a blank or otherwise unneeded disk (can be the device driver capture disk, if you like) with ProDOS as either /BOP for 'Balance of Power' or /ISPT for 'Indoor Sports'.

[9] Load ProDOS IOB 5.25 and install the controller made earlier. Make sure that the appropriate device driver file is on the ProDOS IOB disk.

LOAD PRODOS.IOB.5.25
EXEC ISPT.PCON *or BOP.PCON*
RUN

[10] Remove the ProDOS IOB disk, follow the prompts, inserting the disks in the appropriate drives and make the copy.

[11] The entirety of the protection on the original disk is in the ProDOS file. Replace it with the ProDOS of your choice and you have a totally unprotected copy! *Note: The "Balance of Power" disk contains a file called P8 which is a duplicate of the protected ProDOS file, and it can be eliminated also if desired.*

That's all it takes to deprotect these two programs. Many thanks are in order for Bill Jetzer for his ProDOS IOB 5.25 and for his "quit code" technique from the "Death Sword" crack in Computist #60. These things made it possible to examine and finally crack the above programs.

The next is not a crack but may be a partial answer to newcomer Lenny Nole's request for a softkey (Computist #63, page 9). The version that I have is ProDOS based and I don't know if this is true for his version.

Bitcopy for...

MasterType's Writing Wizard
(Mastertype's Writer)

Scarborough Systems

■ Requirements

☐ Apple IIe (128K to use), Apple II+ (to crack)
☐ A Bit Copier (Copy II+ Bit Copy, or others)
☐ A Sector Copier or whole Disk Copier (COPYA or others)

[1] Using any sector copier, copy the entire disk (tracks $0-$22 are in standard disk format).

[2] Using any good bit copier, copy track $23. If you use Copy II+ Bit Copy you will get an error #5 on this track the first time, but the program will run fine. Also, any subsequent copies made from this copy will not produce any errors.

This procedure can be made into a Copy II+ Parm for Autocopying, as follows:

[1] Select "Create Parm Entry".

[2] Type "MasterType's Writing Wizard" for the Name entry.

[3] Type "Scarborough Systems" for the By entry.

[4] Type (without quote marks) the following, on separate lines as shown. Use the "Return" key to move from line to line. Note the space between the comma and "sector copy" in the first line.

```
T0-T22, sector copy
T23
```

[5] Escape and select "Save Parm Entry" and save it to the Parm files Database.

This allows you to make as many backups as you need quickly and easily.

Softkey for...

Keyboard Kadet

Mindscape

■ Requirements

☐ Apple IIe (to use, can be cracked on a II+)
☐ Sector Editor with search capability

☐ COPYA
☐ 1 Blank Disk

The procedure given by Larry Rando (Computist #56, pg 31) did not work for my copy.

[1] Boot a DOS 3.3 disk and use COPYA to copy the disk.

POKE 47426,24
RUN COPYA

[2] Use your sector editor and scan for BD 8C C0 10 FB D1 48 D0 05 88 10 F4 18 60 C6 50 D0 98 38 60. Change the 38 (SEt Carry, or SEC) before the 60 (ReTurn from Subroutine, or RTS) to 18 (CLear Carry, or CLC) and write the sector back to the disk. I located this sequence on track $01, sector $0B. The value to change was located at byte $B5.

That's it! This is a Dinky DOS based disk that didn't have the same protection scheme as mentioned by Jim Bancroft (Computist #61, page 16). Another thing that I noticed about this program is that if ProDOS is active then "Keyboard Kadet" can't be started with PR#6. It will boot up to the title screen and then drop into the monitor. A **ctrl** ♂ **reset** reboot is the only way to start the program after ProDOS. It will start up from PR#6 if DOS 3.3 is active, however.

John Vreeland

This is my first letter since subscribing to COMPUTIST (with #57), and I've learned that there are better alternative methods to producing a working back-up for my valuable software that even Copy II Plus or Locksmith 6.0 can't touch. I'm not proficient enough yet to de-protect on my own, but I am learning more with each issue of COMPUTIST, and I'm starting to try to teach myself some assembly language so I'll know what LDA, LDY, STA, STY, etc. stand for and what they do. Ditto for the PEEKS and POKES.

IIgs Playing Tip for...

Leisure Suit Larry (3.½")
Sierra On-Line

Thanks to Mike Basford's IBM RDEX (COMPUTIST #61, pg 44) tip for Leisure Suit Larry, I found that by pressing OPTION-X on my IIGS bypassed those frustrating questions at the beginning of the game.

Softkey for...

NATO Commander 1.1
Microprose

I found almost the exact same byte sequence in Paul Dillon's softkey on Solo Flight (#60 p36), worked for NATO Commander at track $00, sector $02, bytes $3C-7D. There was one missing byte (09), in the middle so I just inserted the missing byte and moved the rest of the code until I found an EA (NOP), and put the last byte of Paul's softkey in it's place. Thanks, Paul.

Paul Arvin

Great magazine. I have a few comments for your readers. First, I purchased a copy of Tomahawk (IIgs) and ran into a major problem. When a helicopter was destroyed, the program would hang-up. I tried shooting at ground targets and the same thing happened. I called Datasoft and they said it only happened with 512K machines. The program is not that wonderful to go through any hassles for!

IIgs Playing Tip for...

Alien Mind
PBI Software

In the February 1989 issue of A+ magazine, a reader submitted sequences, selected from the Main Menu, that show two unseen graphics screens and a secret message. Type this:

Apple Mouse
Stereo Sound
Joystick
Mono Sound
Keyboard
Sound Off
About Authors

And this:

Sound Off
Keyboard
Mono Sound
Joystick
Stereo Sound
Apple Mouse
About Authors

And this:

Stereo Sound
Mono Sound
Sound Off
Joystick

Another reader of A+ submitted a way to jump from level to level without getting the passwords.

Typing the word "green" at any level jumps you to the next.

A+ and Incider magazine recently merged. You can subscribe (for $27.95/yr.) by writing to: Incider, P.O. Box 8987, Boulder, CO 80328

RDEXed

In Computist #64, some playing tips for Alien Mind were given. Here is the answer to the question, "What's a scale?" - CDEFGAB (A musical scale!). If anyone is really stuck with another clue, drop me a line.

Bitcopy for...

Where in the USA is Carmen SanDiego
Broderbund

I tried Keith's Bit Copy for "Where in the USA is Carmen SanDiego?" from Computist #64. My Copy II Plus version 8.3 has only parameters for Where in the World is Carmen SanDiego?. I tried creating a new parameter using his suggestions, and that did not work. I then did a manual bit copy of track 00 synchronizing tracks, and not keeping the track length the same. I then bit copied tracks 1.25 to 22.25 without synchronizing tracks. I did this because when I tried to copy the program synchronizing all tracks, it hung-up. This gave me a working copy but it was unreliable and would only work sometimes. I then used the sector editor to scan for the bytes Keith suggested (C8 D0 6C FC FF) and could not find them. Since Keith only changed 6C FC FF, I then scanned for 6C FC FF and found it at the end of track $00, sector $02. I tried changing 6C FC FF to 4C 58 B0 and wrote it back to disk. This gave me a reliable copy, (still copy protected) but useable.

Thanks again for the magazine.

Roger Etherington

IIgs Softkey Addendum for...

California Games
Epyx

The softkey in COMPUTIST #64 contains an error/typo and an ommission. On block $0FC: byte $09C should be changed from 90 to 80 (not 00) to provide a branch (BRA) around the following (JMP) instruction. Also byte $0CA must be changed from 0D to 00 to force a branch (BCC) to the next instruction. California Games is now deprotected.

Paul Giguere

It's been a long time since I wrote and think it's about time to share some info. Procrastination can be addictive. Anyways, here are a bunch of softkeys that I have compiled over the last few months. Most are ones I developed, but some were passed on to me from varied sources that would take too long to list.

I will be as specific as I possibly can, being one who likes to know HOW to deprotect a disk rather than just a quick patch to copy someone else's disk. I WILL NOT condone piracy in any way and have developed and acquired these patches to put MY software to hard drive or backup.

IIgs Softkey for...

California Games
Epyx:

A simple 1 byte change is all that is needed. The file /CALGAMES/OBJECT/CALIF. GAMES is the place to do it. Relative block 1 of this file contains a 90 03 D9 B2 00 (about $95 bytes into the program). Merely change the 90 (Branch Carry Clear) to an 80 (BRanch Always) and VOILA! Now put it on the Hard drive and don't wait as long for the different parts to load. (It STILL seems to take forever!)

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

IIgs Softkey for...

Last Ninja
Activision

The file /THE.LAST.NINJA/NINJA.SYS16 relative block 1 has to be changed. About $174 bytes into the program is 20 00 FB C4 00 00 90 25 which is getting a device number and branching on carry clear. Change to EA EA EA EA EA EA 80 25 bypassing the device number check and branching always.

Further along in the same block around $1B0 there is a call to read a bad block. I left in the call but changed the result. At $1BA there is a 90 C0 C9 27 00 that looks for the error code. Just change the 90 C0 to 80 05 to always branch to the code immediately following the check. Now put it on your hard drive.

Block	Byte(s)	From	To
$CD	$174	20 00 FB C4 00	EA EA EA EA EA
		00 90	EA 80
	$1BA-1BC	90 C0	80 05

IIgs Softkey for...

Mini-Putt Golf
Accolade

Sorry about how brief this one is, but it was passed over to me by a friend and I haven't had the time to analyze it.

Block	Byte(s)	From	To
$09	$DF	62	60

IIgs Softkey for...

Skate or Die
Electronic Arts

The file /SOD/SOD.SYS16 around byte $3D contains the sequence 22 00 20 00 AB C2 30. Merely change the 22 to AF changing the execution of a subroutine to a loading of the subroutine.

Block	Byte(s)	From	To
$09	$DF	22	AF

IIgs Softkey for...

Uninvited
Mindscape

Search the disk for F0 08 A9 80 00 (it will usually appear after a JSL somewhere and CMP $BEBB). In each case replace the F0 (BEQ instruction) with a 80 (BRanch Always instruction). I found it in 6 locations, all in the file UNINVITED.

I understand that similar, if not identicle sequences are found in both Shadowgate and Deja Vu as well, but since I haven't purchased the games I haven't been able to confirm this.

IIgs Playing Tip for...

Zany Golf
Electronic Arts

If you change byte $2B of block $7D from 05 to 00 you will ALWAYS advance to the "Mystery" level 10 upon completion of level 9. It's relative block 67 of the file CODE.

Keith

Notes on Discovery: A Nystrom Map Skills Program

This program is a series of disks which a teacher asked me to backup. After several trials, I finally noticed that it kept trying a read track zero during the middle of the load. I have seen this before on several educational programs, and was finally successful copying it with EDD IV. The program uses a commercial copy protection put out by a now defunct company called Double Gold. It uses several invalid raw disk bytes on track zero. The program will read the sector several times, and each time it reads it, the sector must be different. Some programs have an additional protection that requires that it be write-protected, but this program does not.

The two clues to suspecting that a program uses this method is that the original goes back to track zero several times in succession (the noisy clatter that your disk drive makes), and the copyright date is generally around 1985.

To make a copy, use EDD IV, select "change parameters", then select "preanalyze". Change 00=C8, then go back to the main program. Use all the normal defaults (no sync., nibble, nor bitcopy).

This should provide a working copy. I would suspect that Copy II Plus should have parameters to make a copy of this protection scheme. I will work on trying to figure them out.

W.D. Coalson

Would you like to use Diskedit on a SIDER for DOS 3.3 Double Volumes? If so, read on. Since my COPY II+ 6.0 would not work on the SIDER Hard Disk with DOS 3.3, I needed something that would un-delete files that I really needed. The result is listed here.

Warning: ALWAYS BACKUP YOUR VOLUMES BEFORE ATTEMPTING ANY CHANGES. Do this until you feel comfortable and are sure your changes are not disastrous.

Remember to use this only for the Double Volumes: use the normal Diskedit for the single volumes.

[1] Run Diskedit (version 4.0).

[2] Press **ctrl reset** to Exit to BASIC.

[3] Delete lines 520 through 600 (DEL 520,600).

[4] Add the following lines: (lines 520 & 600 must keep same line #)

```
520 VTAB 22: HTAB 20 - PEEK (HF): GOSUB 320: IF
    KY > 15 THEN KY = SE: GOTO 620
540 IF NOT PEEK (HF) AND KY > 2 THEN 620
570 REM GET ANOTHER KEY
580 A1 = KY: PRINT N$;: GOSUB 320: IF KY > 15 THEN
    KY = A1: GOTO 620
590 A2 = KY: GOSUB 390
600 IF KY < 0 OR KY > 31 THEN PRINT G$;: GOTO 520
```

[5] Change the ‡15 to ‡31 in line number 1680.

[6] Get into the monitor (CALL -151).

[7] Change max sectors/track from $10 to $20 (870:20).

[8] Press **ctrl C** to get back to BASIC.

[9] Type RUN. This resets necessary pointers.

[10] Press 'X' to exit to BASIC so program can be saved.

[11] Save Diskedit to a Double Volume and run from there (SAVE DISKEDIT.HD).

That's all there is to it. Happy Snooping

Here are two ideas that may help COMPUTIST readers.

1. Can't find those books mentioned in

references? Try using your local Library's INTER-LIBRARY LOAN Department. I have recently gotten my hands on books loaned from libraries all over the state of Pennsylvania: town and college libraries. You shall see the results of this in a moment.

2. Get Don Lancaster's book "Enhancing the Apple IIe", (Book 1) and read and digest his chapter on disassembling other peoples code using magic markers. This was an immense help to me in an 80% disassembly of Apple's FID program.

I also viewed Bob Sander- Cederlof's Disassembler for the 65816 chip and saw something I wanted for DOS 3.3. EXEC this file, go to monitor, and list $B900. This, in conjunction with Lancaster's method, might be an aid to your disassembly of other peoples code, or cracking the protection schemes.

Make this an EXEC'able File.

```
CALL-151                    Go to Monitor from BASIC
C081 C081                   Read Mother/Write Card
D000<D000.FFFFM             Move DOS & MONITOR to LC
FE65:00 80                  Modify Monitor:point to our routine
C080                        Write protect Language Card
8000<F8D0.F961Mmove Monitor's INSTDSP to $8000
800C:80 80                  Reset pointers
803A:7E 80                  Reset pointers
8066:85 00                  Here starts our modification to the
8068:90 F0 20 8C 80 AA E8 D0  MONITOR's own
INSTRuction
8070:01 C8 98 20 DA FD 8A 20  DiSPlay routine.
8078:DA FD 20 98 80 60 A2 03
8080:A9 A0 20 ED FD CA D0 F8
8088:60 38 A5 2F A4 3B AA 10
8090:01 88 65 3A 90 01 C8 60
8098:A9 A0 20 ED FD A9 DB 20
80A0:ED FD A5 00 30 10 A9 AB
80A8:20 ED FD A5 00 20 DA FD
80B0:A9 DD 20 ED FD 60 A9 AD
80B8:20 ED FD A9 FE E5 00 85
80C0:00 A9 00 F0 E6
BSAVE B.BRANCH BRACKET,A$8000,L$00C5
```

If you list $B900 (B900L) from the monitor:

```
$B907   BPL   $B904          old way
$B907   BPL   $B904 [-03]    new way
```

Minus means branch backwards xx bytes not counting the last byte of the branch. Plus means branch forwards. No branch can exceed $7F bytes. This may not seem like much until you try to disassemble 10 or more sectors of other peoples code. Happy frustrating & expletive disassembling. Remember to reset Language Card's pointers to Instruction display each time you BRUN program.

Search for all Branches, JMP's, and JSR's

I recently purchased an EPROM burner card for making a better F8 ROM. In order to hide new routines in the old F8 ROM I needed to know what areas could be eliminated without complications from any JMP's, JSR's or branches to those areas. Thus, I developed this search routine that searches for all branches: forwards and backwards $80 bytes from that address, and all JMP's and JSR's to that address. This is done by:

```
2000G                       Run the program
B944                        Enter accessed address
B                           Search for Branches to this address
```

All branches to or within the range of plus and minus $80 bytes from the address will be printed, those branching directly to the specific address will be highlighted. Try 2000G, B942 then 'B'. Be aware that this program doesn't work miracles when branches are near page boundaries. And stay away from the I/O page, no closer than $BF80-C180.

To find all jumps (JMP) and jump to subroutine with return (JSR), to a specific address, choose "J". This will search the entire memory from $0000 through $FFFF (excluding $C000.C0FF) for any JMP or JSR to your specified address.

```
2000G                       Run the program
FDED                        Enter accessed address
J                           Search for all JMP/JSR's to it
```

All accesses to this address page will be printed and those that access the specific address will be highlighted. Try $00B1, $00B7, $03D0, $0801, $D000, or $FC58. Be aware that the program seems to take forever to find some accesses, so wait a reasonable time before exclaiming the program doesn't work. Other times, you need to **ctrl S** -it to pause the rapid listing.

A wonderous happening: since writing the program I have found it is also useful in deprotecting programs. This program will save hours of time searching areas of program that calls the questionable, or suspect, subroutines. Specifically, where in the protected program does it access the disk drive motor: $C08C? (such as the dreaded *nibble count*) or, is this subroutine accessed by any other part of the program? How do we find the nibble count? Change byte $20B4 from 4C to BD: (at location CHANGE4C+1)

```
20B4:BD                     Look for LDA C08C,X or LDA 0200,X
2000G                       Run program
C08C                        Any access to this address?
J                           (For heaven's sake don't choose B)
```

and watch all the accesses to the drive motor at $C08C appear. Write down, or get hard copy, so you can then check out each one for the devilish nibble count. *Catastrophe occurs if you choose B for branches here.*

Another tip, try this one:

```
20B4:9D                     Look for STA $0200,X
2000G
0200
J
```

This one searches for the accesses to the input buffer at $0200. Experiment with different opcode instruction bytes at $20B4 and see what you get. Also, search for accesses to $BA69 for the dreaded memory wipe-out subroutine.

The program is also valuable in general snooping around memory to learn the connections of and between subroutines in DOS and $D000 through $FFFF. SEARCH BJJ can also be converted and used practically anywhere in PRODOS. Try searching for jumps to $BF00 or $BE00.

If you have an assembler, then just type in the source code, assemble it, and BSAVE it. I used the S-C Macro Assembler. If you don't have an assembler, then type in the hexdump using CHECKBIN to assure proper checksums and typing. BSAVE the program with:

```
BSAVE SEARCH BJJ.O, A$2000, L$015E
```

To use it:

```
BRUN SEARCH BJJ.O, A$xxxx
```

I used xxxx as an address because the program is completely relocatable: it can be BLOAD'ed and moved, or BRUN at any area of memory that has enough free space (but try to locate it at the beginning of a page: 2000, 4000,7000, etc. so as to find and change byte B4). Page $0300 doesn't have enough room.

Further Suggestions:

The program works best in 40 column. You might also try getting hardcopy by typing **1 ctrl P** , and N then the start address.

```
1 ctrl P  N 2000G
```

Another suggestion is to use XFER.BOOT to put the protected program in Auxiliary memory, RESET to main memory, boot normal DOS, BLOAD this program, them move protected program to main memory to examine with this utility. Or you could do the reverse; move this program to the Auxiliary Memory, boot protected disk, RESET, and move utility to free area of memory to examine and search it. Happy hunting and keep destroying protection schemes.

Lastly, if anyone has any modifications and or revisions for this program please share them with all us Hardcore Readers. Experiment with this delightful utility, and discover the APPLE.

```
1010 * SEARCH BJJ Source
1030 * Created by W.D.Coulson 10/07/88
1050 * To use: Bload SEARCH FOR BRANCHES,A$XXXX
1060 * XXXX= any memory address with $15D (349) free bytes
1070 * To restart:XXXXG (your BRUN address) or 2000G
1080 * Enter address to see if it is accessed
1090 * Type either 'B' or 'J' for branches or JMP&JSR's
1100 * Any key toggles listing ON/OFF
1110 * Branches matching address are inverse highlighted
1120 * You may get hardcopy by 1^P N 800G
1130 * But hardcopy does not produce highlighting
1140 * WARNING: don't use $BF80 thru $C180 or disaster

1160 REF.ADR  .EQ $00,01      Reference address
1170 REF.ADRP .EQ $02,03      Plus 128 above address
1180 REF.ADRM .EQ $04,05      Minus 128 below address
1190 BRREL    .EQ $06         Branch relative number
1200 NUMBER   .EQ $07         Where $0100 is stored
1210 CNT      .EQ $08         Count
1220 PCL      .EQ $3A         Program counter
1230 A1L      .EQ $3C         Starting address -$80
1240 A2L      .EQ $3E         Ending address+$80
1250 KYBD     .EQ $C000       Keyboard
1260 STROB    .EQ $C010       Keyboard reset
1270 INSDS    .EQ $F88C       Instruction display
1280 PCADJ    .EQ $F953       Program counter adjust
1290 HOME     .EQ $FC58       Clears screen
1300 GETLN1   .EQ $FD6F       INPUT anything-no prompt
1310 COUT     .EQ $FDED       Prints 'A' reg to screen
1320 LIST2    .EQ $FE63       Lists 'A' lines
1330 A1PC     .EQ $FE75       Put A1 in PC
1340 SETNRM   .EQ $FE84       Print normal text to screen
1350 SETINV   .EQ $FE80       Print inverse text to screen
1360 GETNUM   .EQ $FFA7       Puts # in A2 then A1
1370 ZMODE    .EQ $FFC7       Enables INPUT-PUT in A1

1390          .OR $2000
1400          .TF SEARCH BJJ.O

1420          LDY #00
1430          STY CNT         Reset counter
1440          LDA #"A"        Print 'ADDR=$'
1450          JSR COUT
1460          LDA #"D"        This code could be
1470          JSR COUT        shorter, but not
1480          JSR COUT        relocatable
1490          LDA #"R"
1500          JSR COUT
1510          LDA #"="
1520          JSR COUT
1530          LDA #"$"
1540          JSR COUT
1550          JSR GETLN1      Get input - no prompt
1560          JSR ZMODE       Set mode
1570          JSR GETNUM      Put input in A1
1580          LDA A1L         Put address in REF.ADR
1590          STA REF.ADR     The one we want searched
1600          LDA A1L+1
1610          STA REF.ADR+1
1620          LDA #"B         Print 'B/J?'
1630          JSR COUT
1640          LDA #"/
1650          JSR COUT
1660          LDA #"J
1670          JSR COUT
1680          LDA #"?
1690          JSR COUT
1700 GETKEY   LDA KYBD        Get answer B or J
1710          BPL GETKEY
1720          BIT STROB
1730          CMP #"J
1740          BEQ JSR.JMP.LO
1750 * Branches - fall through to branches
1760 MINUS80  CLC             Clear carry for addition
1770          LDA REF.ADR
1780          ADC #$80
1790          STA REF.ADRP
1800          LDA REF.ADR+1   Add 128 ($80) to addr
1810          ADC #$00        For branching +128
1820          STA REF.ADRP+1
1830 PLUS80   SEC             Set carry for subtraction
1840          LDA REF.ADR
1850          SBC #$80
1860          STA REF.ADRM    Subtract 128 from addr
1870          LDA REF.ADR+1   For branching -128
1880          SBC #$00
1890          STA REF.ADRM+1

1910          JSR HOME        Clear screen
1920          LDA REF.ADRM    Put REF.ADDR-128 in
                              A1
1930          STA A1L         Put REF.ADDR+128 in A2
1940          LDA REF.ADRM+1
1950          STA A1L+1
1960          LDA REF.ADRP
1970          STA A2L
1980          LDA REF.ADRP+1
1990          STA A2L+1
2000          LDA #5
2010          STA CNT         Conditional ±
2020          BNE MAIN

2040 JSR.JMP.LO               LDA CNT
2050          CMP #$00
2060          BNE JSR.JMP.HI
2070          INC CNT
2080          LDA #0          Put $0000 in A1, $BFFF in A2
2090          STA A1L
2100          STA A1L+1
2110          LDA #$FF
2120          STA A2L
2130          LDA #$BF
2140          STA A2L+1
2150          BNE MAIN

2160 JSR.JMP.HI
2170          LDA #$00        Put $C100 in A1,
2180          STA A1L         $FFFF in A2
2190          LDA #$C1
2200          STA A1L+1
2210          LDA #$FF
2220          STA A2L
2230          STA A2L+1
2240          INC CNT

2260 MAIN     LDX #$01        Set A1PC to read my adr not
                              direct
2270          JSR A1PC        If addr specified, put in PC
2280 LOOP     LDY #0          Set counter index
2290          LDA (PCL),Y     Get opcode byte
2300 CHANGE4C CMP #$4C        =JMP $XXXX 4C XX XX
2310 * Change the 4C to BD to find LDA $C08C,X
2320          BEQ HNDL.JSR.JMP
2330          CMP #$6C        =JMP(XXXX) 6C XX XX
2340          BEQ HNDL.JSR.JMP
2350          AND #$0F        Knock off high nibble:
2360 * All branches end in 0's
2370          BEQ CHKHINIB    If it ends in 0, handle it
2380          BNE NOBRNCH     Not 0, exit & go next addr
2390 CHKHINIB LDY #0          Reset counter to zero
2400          LDA (PCL),Y     Get byte again
2410          CMP #$20        =JSR $XXXX 20 XX XX
2420          BEQ HNDL.JSR.JMP
2430 * Knock off lo nibble
2440          AND #$F0        #%00010000 All br's=odd#'s:
                              10,30,50
2460          ROR             #%0000 1000 If br: then odd
2470          ROR             #%0000 0100 Move it into
2480          ROR             #%0000 0010 carry for testing,
2490          ROR             #%0000 0001 handle it if odd
2500          LSR             #%0000 0000 (1) carry
2510          BCS YES.BR      Branch if carry set
2520 * Fall through to No Branch
2530 NOBRNCH  LDX #0          It was not a branch
2540          JSR INSDS       Get len of INSTRN sq as to
2550          JSR PCADJ       adjust PC to point to next
2560          STA PCL         instruction address
2570          STY PCL+1

2590 DONEYET  LDA PCL         Test if finished yet
2600          CMP A2L
2610          LDA PCL+1
2620          SBC A2L+1
2630          BCC LOOP
2640          LDA CNT
2650          CMP #$01
2660          BEQ JSR.JMP.HI
2670          RTS             End program

2690 YES.BR   LDA CNT
2700          CMP #$05
2710          BNE NOBRNCH
2720          CLC             Get branch relative ±
2730          INY
2740          LDA (PCL),Y     Get byte
2750          STA BRREL       Store # in branch relative
2760          BMI MINUS       Temporary storage
2770 PLUS     INC BRREL
2780          INC BRREL
2790          CLC
2800          LDA PCL
2810          ADC BRREL
```

```
2820            CMP REF.ADR          Is it equal?
2830            BNE BR1
2840            LDA #$00
2850            BEQ INVERSE          ...always
2860 MINUS      SEC
2870            LDA #$00
2880            SBC BRREL
2890            STA NUMBER
2900            DEC NUMBER
2910            DEC NUMBER
2920            SEC
2930            LDA PCL
2940            SBC NUMBER
2950            CMP REF.ADR
2960            BNE BR1
2970            BEQ INVERSE
```

```
2990 HNDL.JSR.JMP
3000            LDA CNT
3010            CMP #5
3020            BEQ NOBRNCH
3030            INY
3040            INY
3050            LDA (PCL),Y
3060            CMP REF.ADR+1        Same hi byte?
3070            BNE NOBRNCH
3080            DEY
3090            LDA (PCL),Y
3100            CMP REF.ADR
3110            BNE BR1 Not addr, but same page so print
                        it anyway
```

```
3140 INVERSE    JSR SETINV           Set inverse text
3150 BR1        LDA #1               Disasm this one instruction
3160            JSR LIST2            Disassemble
3170            JSR SETNRM           Set normal vid anyway
3180 BR2        LDA KYBD             See if keypress
3190            BPL DONEYET          No
3200            STA STROB            Yes, clear it
3210            CMP #$8D
3220            BEQ BR4
3230 BR3        LDA KYBD
3240            BPL BR3
3250            STA STROB
3260            CMP #$8D
3270            BNE DONEYET
3280 BR4        RTS
```

SEARCH BJJ.O

```
2000: A0 00 84 08 A9 C1 20 ED      $CEA1
2008: FD A9 C4 20 ED FD 20 ED      $8D25
2010: FD A9 D2 20 ED FD A9 BD      $43B6
2018: 20 ED FD A9 A4 20 ED FD      $1854
2020: 20 6F FD 20 C7 FF 20 A7      $9827
2028: FF A5 3C 85 00 A5 3D 85      $DD6F
2030: 01 A9 C2 20 ED FD A9 AF      $97C5
2038: 20 ED FD A9 CA 20 ED FD      $976F
2040: A9 BF 20 ED FD AD 00 C0      $D0BC
2048: 10 FB 2C 10 C0 C9 CA F0      $ABB3
2050: 33 18 A5 00 69 80 85 02      $244E
2058: A5 01 69 00 85 03 38 A5      $B7D8
2060: 00 E9 80 85 04 A5 01 E9      $9351
2068: 00 85 05 20 58 FC A5 04      $A201
2070: 85 3C A5 05 85 3D A5 02      $EC78
2078: 85 3E A5 03 85 3F A9 05      $B5B5
2080: 85 08 D0 28 A5 08 C9 00      $E3AC
2088: D0 12 E6 08 A9 00 85 3C      $48D9
2090: 85 3D A9 FF 85 3E A9 BF      $65C2
2098: 85 3F D0 10 A9 00 85 3C      $06F8
20A0: A9 C1 85 3D A9 FF 85 3E      $CD8A
20A8: 85 3F E6 08 A2 01 20 75      $C034
20B0: FE A0 00 B1 3A C9 4C F0      $F83E
20B8: 6D C9 6C F0 69 29 0F F0      $B929
20C0: 02 D0 11 A0 00 B1 3A C9      $D760
20C8: 20 F0 5B 29 F0 6A 6A 6A      $6E85
20D0: 6A 4A B0 1D A2 00 20 8C      $E3A0
20D8: F8 20 53 F9 85 3A 84 3B      $E2F6
20E0: A5 3A C5 3E A5 3B E5 3F      $D6CC
20E8: 90 C7 A5 08 C9 01 F0 AC      $FA99
20F0: 60 A5 08 C9 05 D0 DD 18      $8CA1
20F8: C8 B1 3A 85 06 30 11 E6      $D6F1
2100: 06 E6 06 18 A5 3A 65 06      $8AA2
2108: C5 00 D0 32 A9 00 F0 2B      $ED2E
2110: 38 A9 00 E5 06 85 07 C6      $A05E
2118: 07 C6 07 38 A5 3A E5 07      $5FB9
2120: C5 00 D0 1A F0 15 A5 08      $A2C0
2128: C9 05 F0 A8 C8 C8 B1 3A      $B3DD
2130: C5 01 D0 A0 88 B1 3A C5      $E53C
2138: 00 D0 03 20 80 FE A9 01      $19D9
2140: 20 63 FE 20 84 FE AD 00      $79BA
2148: C0 10 95 8D 10 C0 C9 8D      $0B4A
2150: F0 0C AD 00 C0 10 FB 8D      $B1E0
2158: 10 C0 C9 8D D0 82 60         $8E9A
```

Happy Hunting

Modify Copy II+ 6.0 for Easier Formatting

This article is fashioned after Bill Wilson's in COMPUTIST, #60, page 24, third column. He modifies version 8.3 to allow for less key stroking to format many disks. I tried his modification, but to no avail. The message printing routines are much different than in the newer version. The older 6.0 version JSR's to $A746 which is a JuMP table, which ultimately pulls the return address from the stack, prints ASCII characters just after the JSR $A746 code, then returns to code just after the $00 end of line marker.

Remember to make a copy of COPY II+ first, don't do this to your original disk.

1. Boot COPY II+ 6.0.
2. Choose COPY (BIT).
3. Choose SECTOR EDIT.
4. R for read, then 06, then 0F, for track 6 sector F.
5. Using I-J-K-M, move cursor to byte F8.
6. You should see: 4C BD 62.
7. Move cursor to the BD.
8. Type the letter H for HEX to enter hex changes.
9. Type A8 and press **return** .
10. Type 42 and press **return** .
11. Press the ESCape key.
12. Press the W key for WRITE to disk, **return** , **return** to accept defaults.

That's it for the changes. Now to use it, boot up and choose FORMAT: either DOS or ProDOS, and the drive you want. When formatting is complete the program jumps right back to the formatting routine. Two presses of the letter Y will format the next disk. Remember to change disks or sides before pressing the letter Y.

The Hardcore Computists

The Hardcore Computists are readers who are cooperating to write novice level articles under a single 'nom de plume'. If you find these articles useful, please write and encourage them to continue. . . . . .RDEXed

Copy Protection for the Beginner

Part 1: Tools of the Trade

In the old days the COMPUTIST published only 5 or 6 softkeys per issue. Now you get 40 to 50, but a lot of the details have disappeared. All too often the advanced users just poke and change items giving no explanation as to the how and why of what they are doing. This apparently has lost a few (most) of the beginners. This series will give the basics upon which the beginners can build their skills and become the Elite of tomorrow. To follow along, it is strongly suggested that you locate as many "tools of the trade" as possible. These articles will deal with specific softkeys and the theory of deprotection. Some of the material will have already been presented in past issues. Where possible, cross references will be given. Since back issues of the COMPUTIST are available they should be ordered, for a complete guide.

Before you can attempt any softkey, you must have certain items. The following is a list of items that I have either used or reviewed. You will not need all the items on the list, but Super IOB 1.5, a sector editor and a fast copy program are recommended.

COMPUTIST The ultimate deprotection tool. Where else can you draw on the resources of thousands of users all interested in the same subject.

Super IOB 1.5 Written for the computist, this excellent and flexible copy program is capable of doing most of the grunt work for you. The controller writer will create the driver for Super IOB and makes the deprotection game easier. The controller portion tells Super IOB what to copy and how to do it.

COPY II+ There exist several different versions of this program. Its strong point is that it allows you to read either ProDOS or DOS 3.3 disks. The sector editor is also nice. Another useful function is that it will catalog a disk and show hidden characters or deleted files.

WATSON My sector editor of choice. When picking an editor be sure it will allow you to search for a string in either HEX or ASCII, follow a file (that means read a file in the order it would be read into memory). Watson will do this for you.

DARK This disk recovery system is great at locating track/sector lists on the disk.

BAG OF TRICKS II When trying to figure out the header and data prologs and epilogs this little wonder does all the work for you. It does have one drawback. It does not work all the time, but when it does work it does all the work for you.

COPYA The original whole disk copier. Since this program will copy only the simplest of disks, it was the source of the term "COPYA". However, since its introduction, many people have learned how to modify it and include it as a requirement for their softkeys.

LOCKSMITH 6.0 This program has several useful utilities in it. For example, the fast copy section will show what areas of the disk are readable. On the unreadable sectors, it shows whether the header or data nibbles were unreadable. It also has a nice compare function to display the differences between two disks.

NMI Stands for Non-Maskable Interrupt. What that means is when you boot a protected disk and want to break out of the program, the NMI should allow you to go directly to the monitor. I use the old integer card. You just toss a switch and press reset. If it is possible to break out, you will. Another way out of protected programs is with a copy card such as a Wildcard. This was originally a memory saver. You would press a button and save the entire memory. The Wildcard then writes a routine to restore the entire contents back in the computer and jumps back into the program. You can also wire a 100 ohm resister to a switch and wire the switch to a slot in the APPLE. Between the NMI pin and the ground pin. Then when the switch is thrown, NMI time. (This was long since a NMI is real important)

DEMUFFIN This memory resident transfer program has worked wonders over the years. I used this utility in my first deprotection. I still try it even today. The differences between Advanced Demuffin, Demuffin Plus, and Demuffin are not worth going into here.

BAD/BAPD Beneath Apple DOS and Beneath Apple ProDOS. These are my bibles. You can learn to crack without these books but it will not be easy. The DOS is described and mapped as to where it is located and what it does. These are easy to read, but understanding will take several readings.

6502 TUTOR There are several good manuals on how to read and write in assembly. Assembly Lines is considered one of the better books on the subject. You have to know some assembly to softkey (notice the word 'some'). You do not have to be great at it, but if you cannot read what you are looking at, it is impossible to decode it.

APPLE REFERENCE MANUAL Shows what is where inside your Apple's memory. It also gives a nice detailed description of the softswitches for graphics display.

MESSIAH/MORIARITY These programs are suppose to emulate a wildcard. They work only on an Apple II+, and I have never seen them work. Always be leary of anything that sounds to good to be true. Cracking at the touch of a button?

SENIOR PROM This is an item that I do not have. It has gotten rave reviews from users in the past. From what I do know it will copy a range of memory from a volatile memory location to a safe area for examination. If it works as described, it would be a nice addition to your arsenal. It does not work on the GS.

CALCULATOR One of the items I purchased that has paid for itself many times over. This is useful in converting those poke statements to hex to find out what the pokes are doing. Mine was under $20.

TRACKSTAR I first saw the Trackstar in use by another deprotector. My old method to find which track was accessed was to remove the drive cover and watch the head move. This hardware is nice in that it gives a graphic display of track and half track access.

DOS 3.3 SYSTEM MASTER There are several useful utilities on this disk. COPYA, MUFFIN (necessary to make DEMUFFIN), and FID. I use COPYA as much as I do Super IOB 1.5. If all that is necessary is to ignore the checksums, COPYA is easier to use than writing a controller. MUFFIN and FID are memory resident programs that will copy files from one disk to another.

It is suggested that you acquire as many tools as possible in your fight against copy protection. Even if you do not know how they are all used at this time, you never know when some writer will put as a requirement some utility that you passed up.

Part 2: The RWTS... using the swap controller

I'm going to be keep this simple, as it is written for the computer novice. We will be dealing with DOS 3.3 and *not* ProDOS. I will not explain in full, if at all, anything that does not need to be known in order to use the Swap Controller. If you find this article to be helpful, write in to let us know, and articles like this one will continue to be written. If there is anything you would like to learn about, let us know about that also.

If you have a protected disk that gives you an Applesoft, (]), prompt after it reads the first couple of tracks, get it out. We will try to deprotect it later. You will also need 2 blank formatted disks, a way to get into the monitor, The DOS 3.3 system master disk, Super IOB version 1.5 and either the New Swap Controller or the Swap Controller in order to try to deprotect the disk. You should also have Copy II Plus, although you may not need it.

What does RWTS stand for? What does it do? How is it used? What is the Swap Controller? How is it used? There have been a large number of softkeys sent in that are geared around using captured RWTS with the Swap Controller. In recent issues, there have been many sent in by Mr. Jack R. Nissel. However with all due respect to Mr. Nissel and the others, nobody has explained in detail what is being done. Especially so that a beginner can understand it. I can accept not wanting to give a long detailed explanation in addition to sending in several pages of softkeys, so instead of several pages of softkeys here is the explanation in detail.

RWTS stands for Read Write Track Sector and that is exactly what it is used for, to read or write information to each sector on each track. It is a part of the disk operating system, (DOS). On a normal, unprotected disk the RWTS is standard. That is why you can copy DOS from any unprotected 3.3 disk to any other unprotected 3.3 disk and have it work, (as long as the BOOT programs are the same, or by changing the BOOT program name).

On a protected disk, however, the RWTS is modified to read the data that has been changed by the protection scheme. The protection may be nothing more than changing Address Prologues from the normal D5 AA 96 to AA D5 96, or it may be something much more complex. Whatever the change, the RWTS must be told about it, so it knows how to get the information off of the disk while reading it, or put the information onto the disk while writing it.

This is where the Swap Controller comes in. Since a normal RWTS cannot read a protected disk, what the Swap Controller does

is use the modified RWTS from the protected disk to read the information from that disk and then uses a normal RWTS to write the information back to a normal DOS disk. In order to do this we must first capture the bad guy, (the modified RWTS), move him to a spot in memory where he will be safe, then get normal DOS into memory so that we can save the modified RWTS to a normal DOS disk as a Binary file, where it can be read by the Swap Controller.

Let's look at a few things first. Boot a normal DOS 3.3 disk and when you get to the Applesoft prompt (]) press **ctrl reset** or **ctrl C** . This should stop the booting process and give you the Applesoft prompt. If it doesn't, then open the drive door at the Applesoft prompt. Now enter CALL-151 and press **return** this will take you into the monitor and the Applesoft prompt will be replaced by the monitor prompt (*). Now enter B800L and press return. You should see the following on the screen.

```
B800: A2 00     LDX #00
B802: A0 02     LDY #02
B804: 88        DEY
B805: B1 3E     LDA (3E),Y
B807: 4A        LSR
B808: 3E 00 BC  ROL BC00,X
B80B: 4A        LSR
B80C: 3E 00 BC  ROL BC00,X
B80F: 99 00 BB  STA BB00,Y
B812: E8        INX
B813: E0 56     CPX #56
B815: 90 ED     BCC B804 [-13]
B817: A2 00     LDX #00
B819: 98        TYA
B81A: D0 E8     BNE B804 [-18]
B81C: A2 55     LDX #55
B81E: BD 00 BC  LDA BC00,X
B821: 29 3F     AND #3F
B823: 9D 00 BC  STA BC00,X
B826: CA        DEX
```

Now enter "L" and press return. You should now see:

```
B827: 10 F5     BPL B81E [-0B]
B829: 60        RTS
B82A: 38        SEC
B82B: 86 27     STX 27
B82D: 8E 78 06  STX 0678
B830: BD 8C C0  LDA C08D,X
B833: BD 8E C0  LDA C08E,X
B836: 30 7C     BMI B8B4 [-7C]
B838: AD 00 BC  LDA BC00
B83B: 85 26     STA 26
B83D: A9 FF     LDA #FF
B83F: 9D 8F C0  STA C08F,X
B842: 1D 8C C0  ORA C08C,X
B845: 48        PHA
B846: 68        PLA
B847: EA        NOP
B848: A0 04     LDY #04
B84A: 48        PHA
B84B: 68        PLA
B84C: 20 B9 B8  JSR B8B9
```

What you see is a partial dissassembly of DOS, starting at memory location B800, this was loaded into memory from the disk when you booted it. If you want to learn more about this code I suggest you get a copy of "Beneath Apple DOS" by Don Worth and Pieter Lechner. Now let's reboot your computer (by turning it off for 3 seconds) with no disk in the drive, then while the drive light is on press **ctrl reset** you will still get the Applesoft prompt. But now if you go into the monitor, enter B800L and press **return** , you will see:

```
B800:00 00      BRK 00
802:00 00       BRK 00
804:00 00       BRK 00
806:00 00       BRK 00
808:00 00       BRK 00
80A:00 00       BRK 00
80C:00 00       BRK 00
80E:00 00       BRK 00
810:00 00       BRK 00
812:00 00       BRK 00
814:00 00       BRK 00
B816:00 00      BRK 00
B818:00 00      BRK 00
B81A:00 00      BRK 00
B81C:00 00      BRK 00
B81E:00 00      BRK 00
B820:00 00      BRK 00
B822:00 00      BRK 00
B824:00 00      BRK 00
B826:00 00      BRK 00
```

Once again enter "L" and press **return** . You will see:

```
B828:00 00      BRK 00
B82A:00 00      BRK 00
B82C:00 00      BRK 00
B82E:00 00      BRK 00
B830:00 00      BRK 00
B832:00 00      BRK 00
B834:00 00      BRK 00
B836:00 00      BRK 00
B838:00 00      BRK 00
B83A:00 00      BRK 00
B83C:00 00      BRK 00
B83E:00 00      BRK 00
B840:00 00      BRK 00
B842:00 00      BRK 00
B844:00 00      BRK 00
B846:00 00      BRK 00
B848:00 00      BRK 00
B84A:00 00      BRK 00
B84C:00 00      BRK 00
B84E:00 00      BRK 00
```

This is because the information loaded into this location when we booted the normal DOS 3.3 disk was destroyed when we rebooted and no new information has been put into memory at that location.

Boot the protected disk that was referred to at the beginning of this article. At the Applesoft prompt, press **ctrl reset** . If the disk stops booting and you have an Applesoft prompt, enter the monitor (CALL -151). Once in the monitor, enter B800L and press **return** . If DOS is loading into it's normal location, you should see something that probably resembles what you saw when you booted the normal DOS disk.

Now on to the deprotection of your disk. First boot your DOS 3.3 system master disk and when the disk has finished booting you will have an Applesoft prompt. For each of your blank disks, enter the following and press **return** after each line.

NEW *clears any Applesoft file in memory*

INIT HELLO *this formats your disk with a normal DOS 3.3, that will boot an Applesoft greeting program that is named HELLO and puts a file on the disk that is named HELLO.*

DELETE HELLO *this deletes the file named HELLO but it does not change the greeting program that the disk will look for. In other words, the disk will still look for, and try to boot a file named HELLO.*

You have just created a slave disk with no hello. Now boot your protected disk and when you see the Applesoft prompt, press **ctrl reset** . This should stop the boot and give you an Applesoft prompt. If this does not work, try booting the disk, and at the Applesoft prompt, press **ctrl C** or open the disk drive door.

When you have stopped the booting process and are at the Applesoft prompt, enter the monitor as shown earlier in this article. Enter B800L and press **return** . If you see what appears to be similar to what you found when you booted the normal DOS 3.3 disk you can proceed to the next paragraph. If you find what you saw when you booted your computer with no disk in the drive, then you either did not let the disk boot long enough to get the protected DOS into memory, or the protected DOS is loading in at a different location in memory. In this case, reboot the disk and make sure that you see the Applesoft prompt before you stop the boot process. If you still don't see the protected DOS at B800, then find another protected disk and try again. There is a way to find out where the protected DOS is loading in memory, but for this article, to keep it simple, we want a disk that loads DOS into it's normal location.

Now that we have the protected DOS (with its modified RWTS) loaded into memory, we want to be able to save it as a file to a normal DOS 3.3 disk. To be able to save it, we have to get normal DOS 3.3 into memory and then save it to a normal DOS 3.3 disk with a BSAVE command (BSAVE is used to save a Binary file). We have a problem though, if we boot a normal DOS 3.3 disk, we will lose the protected DOS that is now in memory (remember what happened when we booted a normal DOS 3.3 disk and then rebooted the computer). So what we have to do is move the protected DOS to a location in memory that will not be disturbed when we boot a disk that has a normal DOS 3.3. To do this, we will use the memory move command that is built into your computer. Enter the following from within the monitor:

1900<B800.BFFFM *this takes all of the information that is stored in location B800 thru BFFF and moves it to start at location 1900. The "M" at the end of BFFF means it is a memory move. This location will not be disturbed when we boot a normal DOS 3.3 disk.*

Now put in one of your blank slave disks that you formatted earlier and boot the disk by entering:

C600G *Tells the computer to boot the disk in slot 6.*

Once the normal DOS is loaded into memory it will look for a file named HELLO to run. When it doesn't find it, the boot will stop and you will get the Applesoft prompt along with the message "FILE NOT FOUND". Now that we have normal DOS in memory, we can save the protected DOS to the blank disk in your drive. From the Applesoft prompt enter the following and then press **return** . For the sake of this article I will call the program I am going to deprotect "Invaders from the Moon". You should use the title of your program.

BSAVE RWTS.INVADERS FROM THE MOON, A$1900, L$800

This saves the RWTS under the file name RWTS.INVADERS FROM THE MOON starting at location 1900 (A$1900) with a file length of 800 bytes (L$800). If you remember, 1900 is where we moved the start of the protected DOS from location B800.

Your drive light should come on and the RWTS will be saved as a binary (B) file to your blank disk.

You should now boot your Super IOB disk and install the New Swap Controller or the Swap Controller. The disk will boot to the point where the Super IOB program looks for the RWTS file. It will then stop and you should see on the screen 'BREAK IN LINE 10010' and the Applesoft prompt. Enter the following and then press **return** :

LIST 10010

If you have used the New Swap Controller you will see:

```
10010 PRINT CHR$ (4) "BLOAD RWTS.XXX,A$1900"
```

You must change this to look for the name that you saved the RWTS file under. Enter the following and then press **return** :

```
10010 PRINT CHR$ (4) "BLOAD RWTS.INVADERS FROM
    THE MOON,A$1900"
```

If you have used the Swap Controller you will see:

```
10010 IF PEEK (6400) <> 162 THEN PRINT CHR$ (4)
    "BLOAD RWTS.13,A$1900"
```

You must change this to look for the name that you saved the RWTS file under. Enter the following and then press **return** :

```
10010 IF PEEK (6400) <> 162 THEN PRINT CHR$ (4)
    "BLOAD RWTS.INVADERS FROM THE MOON,
    A$1900"
```

Note: In Applesoft BASIC you do not have to worry about spaces between words or numbers EXCEPT when the words or numbers are within quotation marks. So when typing the line 10010, be sure to type RWTS.INVADERS FROM THE MOON just as it was saved.

After you have changed the line, put in the disk that you saved the protected RWTS to, enter RUN and then press **return** . Super IOB will read the protected RWTS and then ask you to put in your Super IOB disk again. Put the Super IOB disk in, press **return** , and follow all of the prompts. When asked by the controller if you want to format or initialize your blank disk, press the 'N' key. If all goes well Super IOB will make a copy of your original that will work with no additional changes needed.

Boot the copy you just made. If after it starts to boot, it stops and the message "FILE NOT FOUND" comes on the screen, it means that the greeting program it is looking for is not on the disk. If you remember, we formatted the disk to look for a greeting program called HELLO. Most of the time that is what the greeting program is called, but sometimes software manufacturers will call it something else. This is where Copy II Plus comes in. Copy II Plus has an option to change the boot (Hello) program on an unprotected DOS 3.3 disk. Use this option to change the greeting program to the name that is needed by DOS to boot the disk.

There are times when other changes are needed in addition to or instead of changing the boot program, such as modifying the controller to copy the tracks $00, $01, and $02, or any one of them, in addition to coping the tracks it normally copies,($03 - $22). The reason the controller normally starts copying at track $03, is that the first 3 tracks ($00-$02) are where DOS resides and since we INITialized our blank disk, we have already put DOS on the disk.

We will try to cover all of the situations that you may encounter in future articles.

Here are some tips that may make using the Swap Controller easier for you.

1. If when running the Swap Controller or New Swap Controller the computer drops into the monitor, try entering 3D0G and pressing **return** . This will give you the Applesoft prompt. Enter RUN and press **return** . The controller should start again and possibly work properly. If it drops into the monitor again then you probably have not captured the modified RWTS. Try again from the beginning.

2. If the program that you are trying to deprotect is multi-sided and more than 1 side is protected, try using the protected RWTS that you captured to deprotect all protected sides. If you are using the Swap Controller, when it is done with the first side and you have the Applesoft prompt, enter RUN and then press **return** to start the controller again. If you are using the New Swap Controller, you must first put in the disk containing the protected RWTS file that you saved, then enter RUN and press **return** . In some cases, when you have more than one protected side, you may have to modify line 1010 in the controller so it will read and write starting from track $00.

3. Sometimes a software company will use the same protection scheme on many of their titles. You may find that the RWTS that you saved from one title by a particular software company will work for some other title by that company, especially if it was done in the same year (MECC is a very good example of this).

4. Make a Super IOB copy disk. First create a slave disk with no hello. Then copy Super IOB, IOB.OBJ and all of the regular controllers to that disk. Now, after you have moved a protected RWTS to $1900, boot this disk (it's a slave disk and won't mess up memory) and save the RTWS to it. When Super IOB reads the protected RWTS and prompts you to "INSERT YOUR SUPER IOB DISK AND PRESS RETURN", just press **return** . You won't have to reinsert the Super IOB disk. That's one less disk swap and a little time saved.

5. If you have several titles from different companies that you are going to use the Swap Controller or New Swap Controller on, capture all of the RWTS' first. After doing the first title, when you get the Applesoft prompt, change line 10010 to show the new file name of the next title, disk that has the RWTS files, enter RUN 10010 and press **return** . This does not always work, but it is worth trying.

In conclusion let us say that there are additional things that we have not touched on concerning the Swap Controller. One of the best ways to learn, is to try. I am sure that many, if not all, of the people sending in softkeys learned this way. Experience is the best teacher, so don't be afraid to make a mistake. If you can say that you learned something from that mistake, the time spent was worthwhile.

Jeff Hurlburt

The PRODUCT MONITOR

Ratings

- ★★★★★ ..... SUPERB
- ★★★★ ..... EXCELLENT
- ★★★ ..... VERY GOOD
- ★★ ..... GOOD
- ★ ..... FAIR
- ✋ ..... POOR
- ✋✋ ..... BAD
- ✋✋✋ ..... DEFECTIVE

Dungeon Master

$39.95 FTL Games

★★★★

■ **Requires:**

☐ 1M Apple IIgs
☐ one 3½" drive

Adventurer's Handbook
$11.95

Secrets of Dungeon Mastery
$12.95

★

Looking back to that fateful day it seems clear that your master, the Archmage Grey Lord, harbored only the best intentions: Release the Power Gem from its ancient resting place deep within his mountain stronghold and utilize its Mana to usher in a New Age of progress and enlightenment. Alas, in the excitement of the moment, Grey Lord, Fire Staff in hand, miss-spoke the Spell of Freeing. The resulting blast did not merely vaporized your bodies; it cleaved Grey Lord's personality in two and scattered yours to the four winds!

When things finally 'come together', Grey Lord's "Good" half informs you that Lord Chaos (GL's "Evil Side") has taken possession of the stronghold and sundry powerful artifacts, but NOT (yet) the knowledge of how to use the Fire Staff to free the Gem. Unless you can manage to retrieve the staff, Lord Chaos will eventually harness the Gem's awesome powers to create a 'New Age' of his own!

Typical of evil wizards, Lord Chaos likes to display favorite trophies of earlier, unsuccessful quests in a "Hall of Champions" which takes up most of Dungeon Level One. Here, rendered in full-color 3-D perspective super-res, are gray stone floors, ponderous walls 'decorated' with rings and sconces, ... AND, magically 'frozen' in mirrors (like framed portraits), twenty-four men and women of every race and many species. Human, lizardman, dog-like "bika", whatever, each is more or less skilled in the arts of Fighter, Wizard, Priest, and Ninja. Some still possess armor, weapons, magical artifacts, and supplies of food and water; others 'died with their boots on' and little else. Clicking on an image produces a complete skills and inventory display along with numbers for "Health" (hit points), "Stamina" (constitution), and "Mana" (magic points), plus seven additional attributes. There are no monsters and, presumably, anyone is free to come in and browse; but YOU, with "Good's" help, can restore any four heroes.

In a clever variation of the usual 'pre-designed' vs. 'roll your own' character options, "Dungeon Master" lets you either "resurrect" or "reincarnate" each member of your party. A resurrected character comes in 'as is'; for instance, Wuuf starts with "journeyman" fighter, "neophyte" priest skills. Reincarnation, on the other hand, resets your profession ranks to pre-neophyte, but increments several attributes a few points and (important!) permits renaming. On the 'down side', with four rankings and eleven attributes PLUS inventory goodies to weigh (for each hero), picking your guys involves more bookkeeping and just plain work than it should. The master Characters listing, supplied in the "Adventurers Handbook", belongs in the game package.

As you (i.e. the heroes you "influence") move through the dungeon, about 50% of the display shows the current forward view. Most of the remaining space is devoted to bar charts of vital character stats (e.g. hit points), 'action buttons' for movement, weapons use, and spell-casting, and icons to show items held. The dungeon, in fact, is a real-time, 'hands-on' environment in which direct manipulation of items and maze features plays a key role. For starters, though each character can wear or carry up to thirty items (more, if he or she carries a chest), you may drop anything just about anywhere you like. The program not only remembers each article, contents (if any), and its location, but also shows it (unless covered by other items) in full perspective! Considering the large variety of items and that the maze spans fourteen (mostly, 32 x 32) levels, this is an amazing achievement.

To "Dungeon Master"'s great credit, when you operate as though 'things work the way they should', you will seldom be disappointed. To pick up a helmet, you move a hand cursor to it and click. To wear it, you click-on a hero's full status/inventory display and move it to his/her head on the body outline. Drop the helmet and it reappears in the maze view; throw it and, it goes sailing down the corridor (or bashes into a door, or bonks a monster, etc.). Better still, you will HEAR almost everything thanks to spectacular, full-range sound effects.

Of necessity, such 'real-time realism' dramatically affects one's approach to maze obstacles and puzzles. For instance: as your party moves toward a portcullis at the end of a hallway, you step upon a pressure plate (click!); and the grating raises (clank, clank, clank, ...). But, when you step off to continue, the way begins to close again. Because this is real-time, if the distance is not too great, your party could dash for the opening. A better solution, however, might be to turn around and put something (e.g. a rock or extra sword) on the plate. In "Dungeon Master" such ideas work. Since the program knows that you know 'things work right', your party will encounter many intriguing little puzzles built around pressure plates, coin-operated barriers, locked doors, pits, switches, teleport fields, and other maze features.

Unlike virtually every other major adventure, "Dungeon Master" boasts no hospices, shops, temples, or "review boards". Instead, sleep restores depleted hit points, stamina, and magic power (at the cost of food and water). For poisonings and broken limbs there are priest-generated potions; and, should a character perish, you can search out an "Altar of Rebirth". Food comes, chiefly, from a few edible monster types; and 'stock' arms can be won in combat. Naturally, the fearsome "Hardcleave Ax", "Darc" armor, "Crown of Narra", spell scrolls, and other potent artifacts don't come easily; but winning them and exploring their powers is much of the fun.

Maze characters develop skills only by using them. Axing a monster increments fighter experience and shooting arrows benefits ninja abilities. Similarly, one casts spells to advance as a wizard; or conjures potions to improve priest standing. Even unsuccessful attempts produce gains—fair enough, since your actions always cost some food, water, and, for magic users, Mana. Advancements (e.g. "Artisan" to "Adept" wizard) are announced at the moment achieved—even during combat. These always produce some gains in hit points and stamina; but, (possibly, to nudge players away from over-specialization) growth in other areas depends upon which 'profession' is advanced. More ninja rank, for instance, is especially good for dexterity.

As might be anticipated in a design which does so many things right, combat is not a 'special situation'. If your party sights a group of mushroom-shaped "screamers" and reels off a fireball (poison cloud, throwing star, etc.), you are "in combat". Closing with the enemy lets fighters bring swords and maces into play; backing away gives your group a few 'free' distance shots. You can make a stand and 'duke it out'; fight an extended battle of attrition down a long corridor; or run for your lives! Everything functions the same as during 'exploration', including spectacular, expertly animated graphics and sound effects for 25 monster types. Purple worms rear up, expose a spine-filled maw, and growl; skeletons clank and swing swords; ... and THE dragon will turn your blood to water!

Boasting the usual attack, defense, and healing spells/potions which are the staple of any decent magic system, "Dungeon Master"'s also introduces some interesting new 'wrinkles'. As outlined in the manual, each spell is a group of 2-4 sounds. The first sound sets the power level and the others shape its function. "EE FUL", for example, is a medium duration torch spell; "EE FUL IR" is a medium power fireball; and "EE VI" produces a moderately potent health potion. There is a symbol for each sound; so, to form a spell, you just click its symbols. Knowledge of the twenty-five viable formulas and their functions is obtained from scrolls scattered throughout the maze, OR, to a limited extent, via experimentation. (Hint: when experimenting use the lowest power level—this conserves Mana—and stand away from walls to avoid any backblast.)

Fishing for flaws in big, complex adventures is supposed to be 'duck soup'; but, in this case, the catch has been very meager indeed. "Dungeon Master" allows saving just one game position per diskette (there is room for two); character selection is too cumbersome; and, on Level 2, a vital key's stoney color renders it nearly invisible on the stone floor. Some artifacts have functions which are overly difficult to pin down; and, almost certainly, the game would be better if bare-bones maps were included. (The clue books, naturally, arrived AFTER I was finished.) Finally, "Dungeon Master"'s scenario does seem to be plagued by a few niggling inconsistencies. A 'reading between the lines' approach to the manual text helps; but some questions are never quite resolved.

The "Dungeon Master" package includes an illustrated manual, keyboard commands card, and games diskette. (Games? Right. Pressing OPTION at the dungeon entrance switches to a neat little hunt-the-dragon Kid Dungeon adventure.) While the manual covers everything a player absolutely must know, both "Secrets of Dungeon Mastery" and the "Adventurer's Handbook" do make some worthwhile contributions.

Presented as the prosaic discourse of Edvarg the Unfailing, "Secrets' " offers, chiefly, survival advice targeted for maze game beginners. The book's most notable 'hard content' contributions, are some hints from an oracle and (much-welcomed!) functional descriptions of the more potent weapons and artifacts. For a detailed heroes listing, comprehensive spell information, monster descriptions, puzzle solutions, and maps, your choice is the " 'Handbook". Here, pages 2-3 and 8-13 are safe reading—indeed, they belong in the game manual. The remainder should be handled with care, lest you reduce a month of exceptional adventuring to just a few days. Since the maps are letter/number keyed (with key-matched puzzle solutions, etc. on a facing page), they may easily be copied and referenced without fear of spoiling the fun. (Map users should turn to page XVIII of the manual and add the following to the end of the scenario intro: "At his feet, a parting gift from the mage, was a sheaf of crude but serviceable maps!")

Beyond question, FTL's "Dungeon Master" belongs in any listing of "Absolutely the Best, Most Fun, Computer Adventures Ever". When you're not playing, it will have you pouring over maps during lunch and trading ideas with other players. When, at last, you can put aside such trivial matters as work, child care, school, and review writing, "Dungeon Master" is ready. In a dimmed room with the amp volume turned up, it just reaches out and grabs you!

Printer Muffler 80 and Printer Muffler 80 Stand

$59.95 and $29.95
by Kensington

★★★★

Like most computer users, you have probably put some effort into making your home computing area a moderately comfortable one in which to work and play. Why, then, do you tolerate that awful racket whenever its time to produce hardcopy? How often do you go without a helpful printout just to avoid having to put conversations, phone calls, or radio/TV listening 'on hold'?

The solution is to put your dot matrix paper whacker in a separate room—a small plastic one! Rendered in Apple platinum, Kensington's "Printer Muffler" for Imagewriter II-size machines measures 20" x 18" x 7" with four foam-padded walls and snugly fitted see-through lid to lock in the noise. For easy printer access, rear pivots and supports hold the opened lid up and out of the way. Cutouts in the back panel match power and I/O connectors, with ample slotting and guides for smooth paper entry and exit. Featuring easy snap-together, screw-joined setup, this is sturdy stuff which can, in an emergency, support the weight of a (carefully placed) IIgs monitor.

"Muffler"'s companion stand consists of a rugged, close-fitting base and four rubber-footed snap-in legs. The base is lined with foam and slotted, apparently to allow bottom feed for printers with this option. (Yet, Kensington's ads continue to specify "for use with back-feeding printers only"?) Adding 1.5" of height, the base supplies rigidity—and, with the weight of the printer, stability—to the entire structure. As compensation for your printer's larger footprint, snapping-in the four legs yields a handy 3½" space for paper storage beneath the printer.

To test manufacture claims of 75% to 85% noise reduction, I sampled sound level directly in front of the enclosure + base (without legs) while doing a document dump on an Imagewriter II. With the muffler closed, levels averaged about 10 dB lower than when the enclosure was raised away from the base—that is, the unit works as advertised. Other trials show that normal-level conversations are impaired, at most, only slightly as close as two or three feet to a working muffled printer.

Obviously, in the office or classroom—any place, in fact, where comfort impacts productivity—"Printer Muffler" will pay for itself in just a few days. At home? The first time you raise the lid during a multi-page printout you'll wonder: "How did I put up with THAT for so long?!"

Instant Music by B. Campbell
$49.95 (supplements, $29.95)
Electronic Arts

■ **Requires:**

512K Apple IIgs
one 3½" drive
Second drive recommended.

This nifty, not-so-little package from Electronic Arts, has to rank near the top in the Under-reviewed Software Sweepstakes. "Instant Music" is a composition/playback medium which represents music graphically (long notes show as long strips, etc.), with color-coding to identify up to four instrument sources per selection.

Presented in 320-mode super-res, IM's screen offers a zoomable 'piano roll' music display, point-and-click mouse entry, cut-and-paste editing, slidebar instrument range and volume controls, and 'buttons' to adjust tempo and access such advanced features as guides for pitch and rhythm. On-disk are nearly twenty instruments (e.g. piano, trumpet, marimba, steel drum, electric bass) plus several jazz, rock, folk, and classical selections. (Your own stuff can be saved here or on a separate diskette.) With 36 pages of documentation and up to 64 measures allowed per composition, there is plenty of help and loads of 'space' for developing your musical ideas.

Unfortunately, IM does not let you program volume adjustments or single-instruction tempo changes—a serious limitation which is shared by just about every other piece of IIgs music software. IM can accept "IFF" instrument/sound files from "Music Studio", "Instant Synthesizer", and "Music Shapes", so long as they are something less than 64K in length. (The program always maintains a small "default" sound in the 64K Sound RAM.) The majority of IM's own instruments offer fair to good accuracy, depending upon whether or not notes fall inside an optimal 1-2 octave range.

Rating a solid "decent" for composition, IM's great attraction lay in one SUPER feature unavailable anywhere else. At any time during playback, you can take over one of the instruments and 'mouse-jam' with the group. The program will make sure your improvisations are in-key and on-rhythm (or, you can 'dance' among several keyboard-selected rhythm patterns). INSTANTly, you'll sound great!!! Guaranteed. (Note: if you disable all program helps, the guarantee is void.) To make sure your hall-rocking pursuits don't get bogged down, supplement diskettes (e.g. "It's Only Rock 'n' Roll", "Hot and Cool Jazz") come packed with more songs and additional instruments. (Hint: try jamming "Orange Sun" with a 3-note steel drum lead at, say, 30 watts per channel.) Creativity tool, entertainer, and 'unwinder', one of the big reasons you bought a IIgs was to run "Instant Music"!

FAST FRAMES, UPDATES, ETC.

Lost Stars

If the single-star ratings for "Impossible Mission II" and "Jinxter" (Issue #66) seemed oddly at variance with the review texts, the explanation is simple. Somewhere between TEXT file and publication, several stars disappeared into a mysterious black hole. Both games rated three-stars.

Battery Time

Is your IIgs more than two years old? If so, it's time to start calling around for a replacement "Bat RAM" battery. (Incredibly, many Apple dealers do not stock this item.) The 3.6 volt lithium cell delivers about 30 months of service and then craters. Unless you want to risk a period of Control Panel forgetfulness, don't expect voltage checks to supply any warning.

To make the replacement yourself: first note current Control Panel settings. Now, remove the power supply, mark the "+" lead on the board, and snip the leads as close to the old battery as possible. (WARNING: Lithium is hazardous stuff; dispose of the old cell with care.) Connect the new battery's leads, solder, make sure nothing sticks up too far, and replace the power supply. Restore settings, update the clock, and you're done!

So What!

Regrettable, some stuff that comes into the vast Computist "Product Monitor" department offices gets mislaid. Some months ago, So What Software's Bill Stephens did, indeed, reply to my "ICONIX" review. ("ICONIX" is So What's system for letting programmers employ super-res text and graphics from standard AppleSoft BASIC.) It turns out that, due to an oversight, the "ICONIX" sent for review was a beta version with problems (e.g. loss of files during SAVE, loading errors with some paint programs, etc.) long since fixed. In the (generally, very favorable) review I said that "PaintWorks Gold" would not load BIN type picture files; not so, it will. PWG would NOT load the BIN files produced by the beta "ICONIX". This means that So What's fixed version should be compatible with all IIgs painters except "Graphics Studio".

Climbers Only

It's all very well for a simulation to be accurate; but, somewhere along the line, the simulated activity needs to be entertaining too. Epyx's mountain climbing game ($44.95, for 512K IIgs) delivers plenty of authenticity: choice of nearly fifty items to be carried or worn, climbing and survival problems related to weather and terrain, etc.; but, also, a rather clumsy joystick + keyboard + mouse user-to-action interface. I made it through the Training climb—after discovering an undocumented requirement to press ESC to move things along—with no great desire to tackle one of the six for-real trails. IF you can bring a strong enthusiasm for climbing to the game, its scenery and attention to detail might just get you 'there': sloughing through snow fields, leaping crevasses, hanging from a tether against an ice wall, or glued to a rock face. Any player, however, who waits to be swept off his/her feet, will end up as a base camp couch potato.

TOO Zany?

This year's "Computist Award for Gross Spectacle in an Opening Sequence" goes to Electronic Arts for its "Zany Golf" ($39.95, for 512K IIgs). Just maybe, the intro is worth the price of the game. Happily, with ten holes featuring the same classy art work, superb animation, and great music, you won't have to decide. "Zany Golf" is a sound/graphics masterpiece.

Using the game's 'stretchable pool cue' to aim and power shots, 1-4 players mini-putt their way through multi-screen holes boasting windmills, bouncing hamburgers, a giant pinball machine, and other obstacles just as wacky. As if aiming and shooting here were not challenge enough, YOU get to operate the fans, wiggle the flippers, etc.. Fun? You bet!—UNTIL, somebody pulls the plug! Proving, once again, that a good beta tester is worth his or her weight, "Zany Golf" was released with a flaw big enough to putt a watermelon through. Instead of simply recording strokes and allowing each player a chance at every hole, "Zany' " designers employ a weird bonus/debit scheme. Use up your allotment (all too easy), and you're out! In a multi-player contest, anyone without regular access to the game, soon ends up as a discontented watcher.

Lacking both a "Hole Practice" option and best scores "Hall of Fame", "Zany Golf" definitely conveys an impression of being 'not quite done'. It's 'not quite golf', either (more like "Golf Quest"—too bad there isn't a Game Save). Fortunately for the single player, each hole IS a genuine gem, good for many entertaining replays.

The Happy Mouse

Here's another piece of valuable info for your Mouse Care file. Extensive tests using Moustrak's fine pads indicate that the fast, easy-to-clean plastic-surfaced pads force more frequent mouse cleaning than do cloth-topped models. Evidently, the smooth, non-absorbent surface promotes the transfer of grime and hand oils. Suggestion: if you like plastic, give your pad a good spray-cleaner wipe every three or four sessions.

Stuff

I am, even yet, still collecting "Best New Stuff" votes from BB's and user groups. However, since the Computist voting is closed, the winner of the drawing can be announced: Raymond Ross of Reno, Nevada. His prize choice was "Alien Mind" for IIgs. (Special thanks to all who participated in the voting!)

More Awards

When school opens this fall, teachers can be 'loaded for bear' with a whole new set of Apple II-generated make-your-own awards. "Education" ($24.95) greatly expands Baudville's "Award Maker Plus" library, adding four fonts, ten borders, and over one-hundred graphics. Awards cover subject matter, extra-curricular activities, school personnel, sunday school, general achievement, and much, much more; AND "Education" multiplies your awarding 'punch' by permitting title substitution. If it's "educational", or even remotely school-related, you'll find it in this two-diskette set (one diskette, on 3½" media). Revolution

The Missing Upgrade

Spring has long since sprung and my predicted "significant IIgs upgrade" has yet to materialize. The problem, according to Western Design Center's Bill Mensch, is not available hardware—65816's have been tested above 12 Mhz and the '832 will soon be ready for prototyping—the problem, he says, is that Apple is not particularly interested in an upgrade, or, even, in preserving the II series!

Unbelievable? Not at all. Neither Commodore nor IBM were willing to upgrade their lower priced lower profit lines; if Apple lets the II stagnate into obsolescence, it will be following a well-worn trail. Elimination of the II line would free the company of any remaining hacker/experimenter influence, cure a chronic case of microprocessor schizophrenia (65xxx vs. 68xxx), and release resources currently devoted to II series development, production, and marketing. Finally, speculation aside, one has only to look at what the company has done—or, more precisely, NOT done—to support its IIgs...

NEED: Traditionally, upgrades are forced by the competition. By fall of last year, it was clear that lower prices for VGA resolution IBM clones posed a serious threat. The II series would be in serious trouble, I reasoned, if Big Green did not soon introduce a MAJOR IIgs upgrade. The bare bones requirement has to be something around 8 MHz speed, with a mod to access display memory at current "fast" speed, AND access to 640 x 480 16-color graphics. More sound RAM, a second display block, better disk I/O, and a multi-color TEXT mode would be nice; but, obviously, without speed and graphics parity, the IIgs isn't even in the ball game.

Such demands are not, as some like to claim, merely a product of users losing out in 'my computer is better than yours' contests. For many applications, it is now possible to define something like speed and resolution 'absolutes': there is such a thing as "not fast enough" or "not enough detail", whatever the competition is doing. Today, no super-res word processor or desktop publisher runs "fast enough" on the IIgs—the user is always conscious of trading away speed for "power"—; nor can the user obtain anything like an accurate on-screen view of many fonts. "WYSIWYG" just isn't possible with only 200 lines of vertical resolution.

Similar considerations apply with respect to many utility, scientific, and entertainment applications. The worry is that continued incompatibility with VGA-developed 'control panels', windowing setups, and artwork will slow the release of IIgs versions; and that, increasingly, speed may become a disqualifier. No one, in short, is talking about 'gilding the lily'; the focus is upon such mundane concerns as decent 'productivity applications' comfort levels and continued access to new products.

Now, as you read this, it is summer; IIgs sales are on a double-digit slide, and, assuming there is no last minute upgrade announcement, the II line IS in serious trouble. Just how serious became obvious to me when a fellow IIgs devotee, Baywoof (a.k.a. "the Boardbasher"), confessed that he was dumping his Apple and moving to an IBM. He figures that, for the price he can still get for his IIgs stuff, he can buy a complete VGA color '386 clone system. I've seen his numbers; and, at worst, the difference is probably less than three or four hundred dollars!—this for a three or four times speed increase, twice the hard disk storage, faster floppy access, lower peripherals prices, easier upgrades, larger software base, and much better graphics. (BUT, he will, for now, have to give up IIgs-quality sound. Ha!) Anyone still inclined to accept the pomp and glitz of Apple group festivals at face value need only peruse a recent "Computer Shopper". With luck, somewhere in a few hundred pages of IBM clone ads and product reviews, you will find Don Lancaster holding forth in the the three or four pages of what qualifies as the "Apple" section.

"Wait!", you cry, "what about the 'New II in '89' promised at last winter's 'Fest? or reports of a plug-in upgrade?" So far, the only evidence of a "New II" is yet another addition to the malingering IIc series and some talk of a "New IIgs" with in-ROM operating system smarts and on-board MIDI. As for Apple's plug-in upgrade, this is rumored to be a bridge board to partial Mac compatibility. That is, for a few hundred dollars, you may soon be able to turn your IIgs into a Mac Jr.! (Gosh, wasn't it just a few months ago that IBM carried off a Fortune Worst Marketing Blunder of the Decade Award for its PC Jr.?)

We have, long ago, passed the point where it makes any sense to talk about maintaining II series dominance in software markets. And, since schools must select computers with an eye to what students will use at home, Apple's much-touted education base is about to 'turn blue' as well. The question now is: how much of the current base of users and creative talent can be held while someone (Applied Engineering, Comlog, Laser, ?) puts together a significant, reasonably priced upgrade?

QUALITY CONTROL and SERVICE: Our II+ ran flawlessly for nearly six years before requiring a new power supply and keyboard IC replacement. A veteran of countless experimental mods, it continues to perform well. Our IIgs, on the other hand, is presently on its third motherboard! (Actually, it may be the fourth; it's hard to be sure. I do recall that one of the replacement boards didn't do anything, except short out the power supply.) The main problem is an apparently endless supply of sub-spec proprietary IC's (e.g. video and ADB controllers). So, why three (3) motherboards!? Well, Apple does not allow its local sales/service reps to replace soldered-on IC's. Should your ADB controller bomb (or, more likely, you finally discover that it has been sporadically malfunctioning all along), "repair" consists of swapping out the motherboard. If your warranty has expired, the cost is $270 plus your old board!

As to old complaints—a II series marketing strategy designed to create a toy image, high prices, slowness in releasing documentation, Mac exploitation of II events, etc., etc.—elaboration is hardly necessary. The record is one of studied insult, rapacious greed, sloppiness, and dismal neglect.

Let Them Eat Cake

Does Big Green management truly wish to be rid of the II? I doubt it. As security against future Mac troubles, the II series has proved to be priceless insurance. (Remember, it was the IIgs and solemn oaths to 'be true to our Two' that turned things around in '86.) The Apple Lords appear, instead, to have opted for the no-development-cost, string-the-user-along strategy perfected by Commodore in dealing with its 64/128 line. Unfortunately, the IIgs is priced against '386-class competition, not cartridge arcade machines.

In the long run, the biggest problem with this 'Mac in red, II gets fed; Mac in black, II gets sack' philosophy may be that it makes for remarkably poor PR. Scan through the message bases of a few local Apple BB's and what you find is the kind of mistrust and ill will that used to be reserved for 'The Phone Company'. There is, for some reason, a widespread perception that Apple is perfectly willing to sit on its hands while hefty user computing investments turn to mush. Now, what do you suppose is going to happen when many of these thousands of II owners and former owners are asked to suggest company, school, and university computer purchases? Somehow, Apple is managing to convert its most valuable asset into a fatal liability. (It's not nice to skimp on your II insurance premiums!)

Another Way

Anticipating that, whether by design or accident, Apple may be angling for a Mac-only strategy, several respected II series supporters have joined to combat the shift and develop alternatives. In our conversation, Mensch identified such "Working Group" participants as himself and other WDC personnel, Tom Weishaar, Mike Westerfield, and representatives from Applied Engineering and Comlog.

While his "preferred remedy" is to persuade Big Green stockholders to force II support, Mensch admits that the group is already exploring non-Apple options. Among these, the simplest calls for third-party development of a speed-up/graphics add-on. For an outlay "well below $500" you would retain access to current IIgs wares and enjoy the benefits of a new, higher performance standard. More dramatic cures call for Apple to 'spin off' an independent II products company or even sign away II rights to one or more established manufacturers.

When asked if a cloner (e.g. Laser) might launch its own super IIgs, Mensch steadfastly refused any comment. From Laser, Grant Dalke's response was a somewhat obtuse, carefully worded observation that, if such a product appeared to be feasible, Laser would announce it when it was ready. (Hmmmmm) "So, are you saying that no IIgs-like product is being developed?" Answer: "No comment". Well, the last time I got answers like these to questions like these was back in the summer of '85 when trying to pin down Bill Mensch about a 65816-based "IIx". IF Jim Hart's rumored 7.8MHz, 640 x 400 resolution, ... "IIgs+" actually exists, a reasonable guess is that it's sitting in Laser's labs.

Change

We have, it seems, reached the situation narrowly averted only three years ago. Hobbled by inept generalship and beset by swarms of power-packed IBM clones, the II world is moving to an inevitable consensus: Apple has lost the 'Mandate of Heaven'; II leadership is up for grabs. I believe most users would like to see the company rediscover its hacker/experimenter roots and become a 'serious player'; it had better. What remains of the Empire (fat, contented Macsville) is already scheduled for plundering by hordes of '486-based monsters.

The 'bad news' is that, as the battle over speed, graphics, disk I/O, and other needed advances heats up; it will, for a time, become difficult to present software designers with a 'standard II'. Clones, plug-in upgrades, and third-party motherboards (along with firmware and operating system mods) will add to the confusion; some established II suppliers will fold; etc., etc.. (It ain't gonna be pretty, Pilgrim.) Indeed, once it becomes clear what revolutionaries mean by having to "break eggs to make an omelet", more than a few users are sure to bail out and head for the relatively peaceful IBM clone realm.

On the positive side, just such a state of flux is most likely to produce fierce competition, lower prices, increased opportunities for developers, and significant leaps in performance. One way or another, you WILL get your upgrade. If all this sounds interesting-- even, like it might be fun-- then hang on. You have the 'right stuff' for the II Revolution!

Note: Bill Mensch's semi-informal "IIgs Working Group" plans one or more meetings this summer. To offer comments, ideas, etc., or to otherwise 'get involved', contact Andrew Hall at the address listed in "Vendors".

VENDORS

BAUDVILLE: 5380 52nd Street SE, Grand Rapids, MI 49508 (616-698-0888)

ELECTRONIC ARTS: 1820 Gateway Drive, San Mateo, CA 94404 (415-571-7171)

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

FTL GAMES: 6160 Lusk Blvd., C-206, San Diego, CA 92121 (619-453-5711)

KENSINGTON MICROWARE: 251 Park Avenue South, New York, NY 10010 (800-535-4242, in NY call 212-475-5200)

MOUSTRAK: 3047 St. Helena Hwy., St. Helena, CA 94574 (800-221-MOUS, in CA call 415-571-7171)

RAINBIRD SOFTWARE: 3885 Bohannon Drive, Menlo Park, CA 94025 (415-322-0412)

SO WHAT SOFTWARE: 10221 Slater Avenue, Suite 103 Fountain Valley, CA 92708 (714-964-4298)

IIGS WORKING GROUP: Andrew Hall (65816 Network), Western Design Center, 2166 East Brown Road, Mesa, Arizona 85203

Charles R. Haight

Group Buying Power

Some of our readers have called to ask about group purchases and I think it is a good idea.

It works this way:

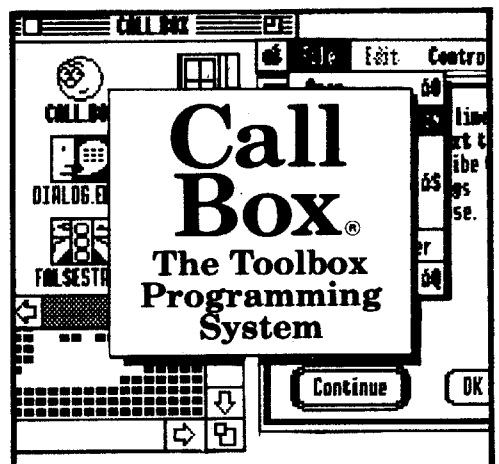
- You tell us what you would like to purchase. It should be something that many of us would be interested in.
- We total the number of readers who want the same thing and then we call the manufacturer and get the best price.
- We print the best price and the number of readers who requested the item.
- The readers, who requested the item, send their checks to Computist.
- When we get the required number of checks, we call in a bulk purchase for the item.
- When we receive the order we send the individual items to you.

Blinding Speed

The 8Mhz Zip Chip and the 10Mhz Rocket Chip are two of the hottest speed-up options available today. Just by way of example, the suggested list price of the 8Mhz Zip Chip is $199. My best price, so far, for a quantity purchase of 10 Chips is $150 each. Think what I could do if I called around saying I wanted to buy 100 Chips.

That's buying power and we can do it, if we do it together. If enough of you are interested in buying a plug in speedup Chip, then we can call the manufacturer and get a price quote for a quantity order.

If you've got the dollars and you're interested, send a postcard to me at Computist, today. Don't delay, this is something that we need to act on, right away.



WYSIWYG?

(What You See Is What You Get)

Four powerful **WYSIWYG** editors slash programming time dramatically for Assembly, C, Pascal and Applesoft BASIC programs, YES! . . . I said Applesoft, CALL-BOX includes the first full function Applesoft BASIC interface for the IIgs toolbox as well but let's talk about the editors first.

- Image Editor . . .
  Create Icons, Cursors, and Pixel images in either 640 or 320 mode.
- Window Editor
  Create Window templates with scroll bars, controls, etc. plus custom colors.
- Dialog Editor . . .
  Create Dialog templates using Radio buttons, Check boxes, Line edit items, text in various styles, etc.
- Menu Editor . . .
  Create Menu templates with keypress equivalents, checks, diamonds, Font styles, etc.

All editors output APW source code, Linkable object code or resource files to make the best match to your current development system. Everything is accessable from the CALL-BOX Editor shell that includes these editors plus File utilities, Configuration utilities, programmable application launcher and the BASIC interface.

The CALL-BOX BASIC Interface allows the Applesoft programmer to use Super Hi-Res via Quickdraw II, desktops, menu bars, windows, ports, fonts, dialog boxes, and the cursor linked task master system in the IIgs. This interface incorporates automated calls to minimize the code needed in your BASIC program and has added Long Call, Long Poke, Long Peek, and super array functions to bring Applesoft up to snuff with the additional memory in your IIgs.

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SO WHAT SOFTWARE
10221 Slater Ave Suite 103 Fountain Valley CA 92708

L Mowatt

Softkey for...

Managing Your Money v1.52
Andrew Tobias

I have seen unprotection schemes for "Managing Your Money" operating under DOS 3.0. I don't know why there should be a difference between that scheme and what is should be like under DOS 2.x. However in trying to unprotect this program, in order to exercise my full legal rights of making backup copies, I found significant differences between the DOS 3.0 scheme floating around BBS's and the one that eventually worked for me under MS-DOS 2.11.

```
RENAME MYM.EXE MYM.TMP
DEBUG MYM.TMP
E 0701          fill location 701-703 with NOP's (byte 90)
E 7B71          fill location 7971-7973 with NOP's (byte 90)
W                                          write to disk
Q                                                  quit
```

The first series of NOP's eliminates the call to drive A. The second eliminates checks to see if the right info was read:

Rolling Stone

Softkey for...

Managing Your Money (all rev)
Andrew Tobias

There are many patches that allow you to backup or run Manage Your Money from a hard disk. The ones I've seen are dependent on Rev 1.50 (i.e. they won't cut it on 1.52). The follow should work for almost all revs.

Needless to say, this should be used for backups and hard disks. MYM is a good program, and deserves to be paid for. Use it for piracy, and I will seek you out, and cut your bells (control-g, ascii 7) off.

Don't forget to only make changes to a backup.

```
REN MYM.EXE MYM.PGM
DEBUG MYM.PGM
S 0 L FFFF CD 13
0914:4ADE                                  note the 4ADE
U 4AAE          this is about hex 30 less than the 4ADE
0914:4AAE 07        POP  ES
0914:4AAF 80C330    ADD  BL,30
0914:4AB2 BE6E07    MOV  SI,076E
0914:4AB5 881C      MOV  [SI],BL
0914:4AB7 56        PUSH SI
0914:4AB8 8A9FC402  MOV  BL,[BX+02C4]
0914:4ABC 53        PUSH BX
0914:4ABD E82DFB    CALL 45ED
0914:4AC0 83C406    ADD  SP,+06
0914:4AC3 C3        RET    note address after the RET
0914:4AC4 E82B8A    CALL D4F2
...
0914:4AC7 B80001    MOV  AX,0100
0914:4ACA 50        PUSH AX
0914:4ACB E80086    CALL D0CE
A 4AC4          this is the address after the RET
0914:4AC4 RET                        you type the 'RET'
0914:4AC5                                 type a newline
U
0914:4ACE 1E        PUSH DS
0914:4ACF 07        POP  ES
0914:4AD0 BB9640    MOV  BX,4096  note the address
...
0914:4AD3 B95B0B    MOV  CX,0B5B
0914:4AD6 33D2      XOR  DX,DX
0914:4AD8 BF0500    MOV  DI,0005
0914:4ADB B80102    MOV  AX,0201
0914:4ADE CD13      INT  13
0914:4AE0 0AE4      OR   AH,AH
0914:4AE2 7425      JZ   4B09
0914:4AE4 4F        DEC  DI
0914:4AE5 75F4      JNZ  4ADB
0914:4AE7 B80002    MOV  AX,0200
0914:4AEA 50        PUSH AX
0914:4AEB E8E085    CALL D0CE
S 0 L FFFF 96 40                        search for it
0914:4AD1
0914:5063                                note this address
U 5053                    use about 10 less than it
0914:5053 0075D5    ADD  [DI-2B],DH
0914:5056 8346F803  ADD  WORD PTR [BP-08],+03
0914:505A 832E5C4909 SUB WORD PTR [495C],+09
0914:505F EBB3      JMP  5014
0914:5061 803E964053 CMP BYTE PTR [4096],53
0914:5066 74C6      JZ   502E     note this instruction
...
0914:5068 E983FA    JMP  4AEE     note this address
...
0914:506B 8BF4      MOV  SI,SP
0914:506D 8B7402    MOV  SI,[SI+02]
0914:5070 A0B601    MOV  AL,[01B6]
A 5068                                   use the address
0914:5068 JMP 502E                  and the instruction
0914:506A                                type newline to exit
U 5053                                      just checking
0914:5053 0075D5    ADD  [DI-2B],DH
0914:5056 8346F803  ADD  WORD PTR [BP-08],+03
0914:505A 832E5C4909 SUB WORD PTR [495C],+09
0914:505F EBB3      JMP  5014
0914:5061 803E964053 CMP BYTE PTR [4096],53
0914:5066 74C6      JZ   502E
0914:5068 EBC4      JMP  502E
0914:506A FA        CLI
0914:506B 8BF4      MOV  SI,SP
0914:506D 8B7402    MOV  SI,[SI+02]
0914:5070 A0B601    MOV  AL,[01B6]
W                                      Writing F5B0 bytes
Q
REN MYM.PGM MYM.EXE
```

Mike Basford

Softkey for...

Lotus 123 v 2.01
Lotus Developement Corp.

This works if you are upgrading from a copy of version 2 that was unprotected using CopyIIPC, Disk Mechanic, or another program that unprotected version 2, by creating a file on your disk called 123.EXE. 123.EXE is a loader that, with a minor modification to the new 123.CMP, will load and run the new version of 123.

If you don't have ver. 2.0 cracked yet, simply use Unprotect from CopyIIPC, and tell it to copy 123.COM. This will produce the loader, 123.EXE automatically (don't you love those people at Central Point?).

I pulled this unprotect down from a BBS and it works fine. All I have done here is to edit the instructions to clean them up and make them, hopefully, more clear.

I just received the latest version of LOTUS 1-2-3, rel 2.01, I found that CopyIIPC v 3.03 and the version of Copywrite I had, would not copy the new protection scheme. Additionally, the "loader" program for vers 2.0 that CopyIIPC created (123.EXE), would not load the new version 123.CMP file. I kept getting "not enuf memory to load 123". I was impatient about waiting for v. 3.08 of CopyIIPC to dupe the file, so I started into alternatives.

I did some checking by disassembling the 123.EXE file created by CopyIIPC, to see what was going on. I found out that during the run of 123.EXE, it loads in 13 bytes from the 123.CMP file. It checks the FIRST byte of that data to see if it is a Hex 1B. If not, it assumes a bad copy, and jumps to code that says "too large for memory".

I looked at the 123.CMP of Vers 2.01 in debug, and found out that the serial number is the first thing in the file, then 200 bytes of zeros, then the actual program.

To unprotect v2.01, do the following:

1. Format a new diskette.
2. Copy all files from the new v2.01 System Disk to the newly formatted disk.

```
COPY A:*.* B:
```

3. Remove your original v2.01 System Disk and put it away.
4. Erase 123.COM from your copy.
5. Copy 123.EXE from your old unprotected V2 disk to the new disk.
6. Startup Debug.

```
DEBUG 123.CMP                    (the new V2.01 version)
```

7. Subtract 200 hex bytes from the CS register (DE6 instead of FE6).

```
R CX
:DE6
```

8. Write out the file.

```
W 300
```

I was actually surprised to find that the old 123.EXE loads and runs the new version correctly. Version 2.01 must have been encrypted with the same key as the old 2.0 version.

Be sure to not use your old 123.SET and 123.CNF files with the new version. I tried this, and while the program worked, some of the bug fixes were lost (I couldn't use negative arguments in @PV for example). It is best to run INSTALL and create a new 123.SET. (When running INSTALL, *DO NOT* select the option to install this on your hard disk! Just copy A:*.* down to your LOTUS subdirectory, being sure to replace all of the old files.) In fact, you should replace all of your v.2.0 program files with the new ones.

Marc and David Batchelor

Softkey for...

Print Shop (IBM Color Ver.)
Broderbund Software

■ Requirements

☐ Print Shop Disk (IBM Color Version)
☐ Debug (from DOS Disk)
☐ 5 Minutes

First, I would like to thank David G. Alexander for his in depth introduction to IBM copy protection (COMPUTIST #54). Without his article, we would have had no where to start. Following David's suggestion, we searched the disk for INT 13's. We found a plethora of them in the following files: PSINIT.OVR, PS.EXE, PARTY.DAT, PSHD.COM, and GREDIT.COM. Being experienced crackers from the Apple world, we immediately ruled out the font file (PART.DAT) as being a possibility. What we did find is that there were 4 CD 13's in PSINIT.OVR and 4 in PSHD.COM. These all had the same type of routine. This is the routine as pulled from one section of PSINIT.OVR:

```
02EF PUSH [BP-02]
02F2 PUSH [BP+04]
02F5 CALL 08EF     Entry To Protection Routine (INT 13's)
02F8 ADD  SP,+06
02FB TEST AX,AX
02FD JZ   0314                    If Zero, goto Bad Result
02FF MOV  AX,[BP-04]
0302 ADD  AX,008C
0305 PUSH AX
0306 PUSH [CF7D]
030A CALL FC39
030D ADD  SP,+04
0310 TEST AX,AX
0312 JZ   0319                  If Zero, goto Good Result
0314 MOV  AX,0000                              Bad Result
0317 JMP  031C
0319 MOV  AX,0001                             Good Result
031C RET
```

To fix this problem, we decided to switch results so that 0314 becomes the good result and 0319 becomes the bad. That way, the checksums are satisfied (yes, they checksum the heck out of the code). We also decided to return from the code at 08EF with the carry flag cleared just in case any other locations were accessing it.

The Fix

```
DEBUG
N PSINIT.OVR
L
S CS:100 400 85 C0 74 05Result should be XXXX.0310
E CS:315 01
E CS:31A 00
E CS:8EF F8 C3 11The 11 is just the complement to balance
the checksums
W
N PSHD.COM
L
S CS:199 D99 85 C0 74 05Result should be XXXX.0CA3
E CS:0CA8 01
E CS:0CAA 00
W
```

That should do it. You now have a completely cracked version of Print Shop.

UNK

Softkey for...

Sidekick v1.10A
Borland International

Many thanks to the individual who provided the procedure for version 1.00A. The only major difference between the two versions is the offset address of the instructions to be modified.

1. Using DEBUG on SK.COM, NOP out the CALL 8C1E at location 07CA.
2. Change the OR AL,AL at 07D9 to OR AL,01

That's it!

Before ZAP

```
78A7:07CA E85184    CALL 8C1E      →→→→
78A7:07CD 2E        CS:
...
78A7:07D8 59        POP  CX
78A7:07D9 0AC0      OR   AL,AL     →→→→
```

After ZAP

```
78A7:07CA 90        NOP            →→→→
78A7:07CB 90        NOP            →→→→
78A7:07CC 90        NOP            →→→→
78A7:07CD 2E        CS:
...
78A7:07D8 59        POP  CX
78A7:07D9 0C01      OR   AL,01     →→→→
```

Softkey for...

Sidekick v1.11C
Borland International

What follows is an unprotect scheme for version 1.11C of Borland International's Sidekick. The basic procedure is the same as that for version 1.1A with just location differences. So the only credit I can take is for finding the new locations!

This is (of course), provided only for legal owners of Sidekick!! Also, make sure you "Debug" a copy *NOT* the original!

```
DEBUG SK.COM
U 801
E 801
25E5:0801 E8.90                          Type the 90
E 802                      Do the same for 802 and 803
90
E 803
90                                              then
A 810
OR AL,01                              Press ENTER twice
U 801
```

You should then see (among other things);

```
XXXX:801        90   NOP
XXXX:802        90   NOP
XXXX:803        90   NOP
...
XXXX:8100C01    OR   AL,01
```

if not, type Q to exit; if so:

```
W
Q
```

For SKN.COM, SKM.COM and SKC.COM the unprotect is the same but at the following locations:

SK	SKN	SKM	SKC
801	7DF	76F	7BC
802	7E0	770	7BD
803	7E1	771	7BE
810	7EE	77E	7CB

To unprotect SKC.COM you would "DEBUG SKC.COM" and then replace any occurence of "801" with "7BC"; "802" with "7BD" and so on. Good Luck!

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Arkanoid ... *Taito*
Bad Street Brawler ... *Mindscape*
Beyond Zork ... *Infocom*
Bilestoad ... *Datamost*
Border Zone ... *Infocom*
Borg ... *Sirius*
Bouncing Kamungas ... *Penguin*
Boxing ... *?*
Bubble Bobble ... *Taito*
Bubble Ghost IIgs ... *Accolade*
Bureaucracy ... *Infocom*
C'est La Vie ... *Adventure International*
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Crime & Punishment ... *Imagic*
Darklord ... *Datasoft*
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Desecration ... *Mind Games*
Dig Dug ... *Thunder Mountain*
Dive Bomber ... *U.S. Gold*
Disk Optimizer System ... *Nibble Notch*
Dondra ... *Spectrum Holobyte*
Dungeon Master (IIgs) ... *FTL*
DROL ... *Broderbund*
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Evolution ... *Sydney*
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Force 7 ... *Datasoft*
Frogger ... *Main Street*
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Jane ... *?*
Joker Poker ... *Mindscape*
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National Inspirer ... *Tom Snyder Productions*
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Pig Pen ... *Datamost*
Pirates! ... *Microprose*
Platoon ... *Data East*
Phantoms 5 ... *Sirius*
Pool of Radiance ... *SSI*
Project: Space Station ... *Avantage*
Pulsar II ... *Sirius*
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Questron II ... *Electronic Arts*
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39 *Softkeys* •MIDI/8+ •Homeword v2.1 •Borrowed Time •Amazon •Speed Reader][•Discovery! •M-ss-ng L-nks series •Donald Ducks's Playground •Mastering the SAT •Copy][Plus 4.4C •Master of the Lamps •One on One •Bridge Baron •A.E. •Great American Cross-Country Road Race •Computer Preparation for the SAT •Castle Wolfenstein •Luscher Profile •Skyfox •Silent Service •Echo Plus •Swashbuckler •Randamn *Features* •Electronic Disk Drive Swapper •Abusing the Epilogues •Print Shop Companion's Driver Game *Core* •Keyboard Repair •Fixing the Applesoft Sample Disk

38 *Softkeys* •Cyclod •Alternate Realty •Boulder Dash I & II •Hard Hat Mack (Revisited) •The Other Side •F-15 Strike Eagle •Championship Lode Runner •Gato V 1.3 •I, Damiano •Wilderness •Golf's Best *Features* •The Enhanced/ Unenhanced IIe •Looking into Flight Simulator's DOS *Core* •Appavarex •Installing a RAM disk into DOS 3.3

37 *Softkeys* •Under Fire •Pegasus][•Take 1 (revisited) •Flight Simulator II v1.05 (part 2) •Magic Slate •Alter Ego •Rendezvous •Quicken •Story Tree •Assembly Language Tutor •Avalon Hill games •Dark Crystal *Features* •Playing Karateka on a IIc •Track Finder •Sylk to Dif *Core* •Breaking In: tips for beginners •Copy][Plus 6.0: a review •The DOS Alterer

36 *Softkeys* •Flight Simulator II v 1.05 •AutoDuel •Critical Reading •Troll's Tale •Robot War •General Manager •Plasmania •Telarium Software •Kidwriter v1.0 •Color Me *Features* •ScreenWriter meets Flashcard •The Bus Monitor •Mousepaint for non-Apples *Core* •The Bard's Dressing Room *APT* •Championship Lode Runner

35 *Softkeys* •Olympic Decathlon •Hi-res Cribbage •Revisiting F-15 Strike Eagle •Masquerade •The Hobbit •Pooyan •The Perfect Score •Alice in Wonderland •The Money Manager •Good Thinking •Rescue Raiders *Feature* Putting a New F8 on Your Language Card *Core* •Exploring ProDOS by installng a CPS Clock Driver

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26 *Softkeys* •Cannonball Blitz •Instant Recall •Gessler Spanish Software •More Stickybears •Financial Cookbook •Super Zaxxon •Wizardry •Preschool Fun •Holy Grail •Inca •128K Zaxxon •*Feature* •ProEdit •*Core* •Games of 1985 part I

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21	O	☐	O
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19★	☐	☐	☐
18	O	☐	O
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16★	☐	☐	☐
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8	O	☐	O
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6	O	☐	O
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