

83 COMPUTIST

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Readers Data EXchange

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

What is a softkey, anyway?

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

Commands and control keys

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

6 ctrl P

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

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

Software recommendations

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

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

Super IOB and Controllers

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

Reset into the Monitor

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

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

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

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

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

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

Recommended literature

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

Typing Applesoft programs

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

```
10HOME:REMCLEAR SCREEN
```

The LIST will look like:

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

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

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

Typing Hexdumps

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

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

```
CALL -151
```

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

```
3D0G
```

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

Typing Source Code

The source code is printed to help explain a program's operation. To enter it, you need an

"Assembler". Most of the source code in older issues is in S-C Assembler format. If you use a different assembler, you will have to translate portions of the source code into something your assembler will understand.

Computing checksums

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

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

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

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

Correct the lines where the checksums differ.

Writing to the RDEX editor

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

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

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

How to get a free library disk

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

sending source code files, and you are not using the S-C Assembler, send them as normal text files.

When to include a printed letter

Don't include hardcopy (printout) unless:

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

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

Writing to get help

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

How to get mail

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

How to write to RDEX authors

When writing to one of the RDEX authors. Write your letter and seal it in an envelope. Put your return address, the authors name (as it appears in RDEX) and the correct postage on the envelope. Put this envelope into another and send it to RDEX. We will put the correct address on your letter and mail it for you. Check to the right of the authors name to see if the author is writing from a foreign country and include the proper postage.

Help Line

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

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

Marc Batchelor, 6025 Coker St., Cocoa, FL
32927

Rich Etarip, 824 William Charles Ct. #2, Green
Bay, WI 54304-4018

The BBS

(Bulletin Board System)

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

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

Our editorial policy is that we do NOT condone software piracy, but we do believe that users are entitled to backup commercial disks they have purchased. In addition to the security of a backup disk, the removal of copy-protection gives the user the option of modifying programs to meet his or her needs. Furthermore, the copyright laws guarantee your right to such a DEPROTECTED backup copy:

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

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

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

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

United States Code title 17, §117

Editorial Notes

High-tech news and tidbits

As reported in "Look Japan", a Japanese magazine printed in English;

A solar powered air conditioner made by Sanyo. During the summer months, 60% of the power requirements are supplied by the sun. It reportedly will save \$30 per month on your electric bill. The cost? \$11,100.00 each. Hmm...

A neat device (from a not entirely new idea) will allow apple (the edible kind) growers to sort apples by taste instead of by size and color. The device uses infrared light reflection/absorption to determine the sugar content, firmness and acidity of apples.

A neat idea, however, I don't really have problems with apples. But if they could rework it to test watermelons, now that would be something.

Too much IBM?

No. But some of our readers are going to write nasty-grams to me for the amount of IBM related text in this issue. To save you some postage, let me remind you of the editorial policy on material sent to RDEX: "First-In-First-Out". I print it as I receive it (unless the author requests otherwise).

Also contributing to the "Too much IBM" problem is the large Product Monitor (this is the Christmas issue after all) and a large program listing in Rob Fiduccia's article.

But don't worry, I've got enough material for the next two issues. You'll get enough "II" info in issue #84 to satisfy your cravings for another few weeks and issue #85 won't be far behind it.

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The PRODUCT MONITOR

RATINGS

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

Good King Saur-Kraut looked out on his feet un-ee-ven.

(1951 version from Walt Kelley's Pogo)

Ah, tradition. The carollers are back; so, it must be getting close to Christmas. No doubt you've already decided to give *Computist* subscriptions to several computer user friends—I'm not sure what Chuck has planned for the Favorite Bombs and Bugs Video or the Swim Suit Issue—but, that still leaves picking gifts for established readers and developing your own Most Wanted Goodies list. No problem. #83 and your collection of back issues is a treasure trove of product reviews and comments from Apple and PC users across the U.S.A. and around the world. Right here, 3-18 inches from your nose, is a veritable Santa's Bag of gift ideas and recommendations! "Gosh! It sounds like I barely have to think. What luck!" Tsk, tsk; too true. Just read, buy, relax, and enjoy the season.

At The Adventurer's Inn

"Would you care to sign the register? ... My goodness, it has been a while. Welcome back. As you can see from our 'Quests for Hire' board, the demand for your special skills is greater than ever!"

Gateway to the Savage Frontier

★★★

\$49.95 for CGA-VGA 640K PC

Strategic Simulations

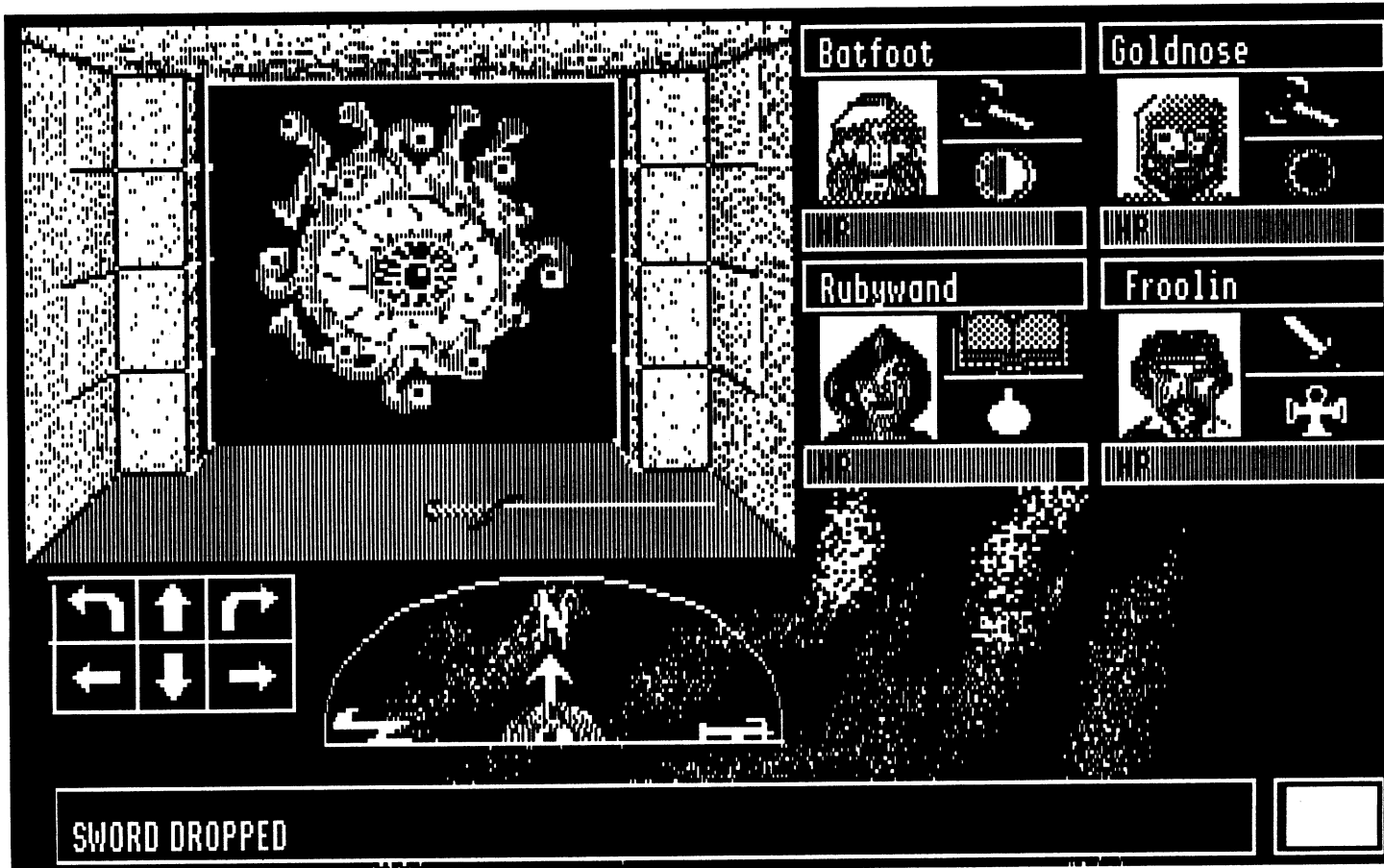
"The problem here is an invasion of the Savage Frontier. Specifically, agents of the Zhentarim Empire are plotting to open a pathway for their armies through the eastern desert using the focused power of the four Statuettes of Ascore. Your task is to locate the statuettes, bring them to Ascore at the eastern rim of the 'Frontier, and see that they are employed correctly. You must close the Gateway to the Savage Frontier!"

Sixth of SSI's highly successful "Advanced D&D" epics, *Gateway* starts you in a new region and a new series. The format is the one popularized in map/maze adventuring greats like "Pool of Radiance", "Azure Bonds", and "Champions of Krynn". Your party has

a 3-D forward view during exploration of town streets, buildings, and mazes. OR, via the "Area" option the party appears as an arrow on a bare bones walls-and-corridors map—not as pretty, but very helpful in mazes. Other

western seacoast. The statuettes are scattered among the nearly twenty cities and fortresses of the mainland and Western Isles. Many of these offer their own mini-quests—you may be asked to clear an area of trolls, rescue a princess, elim-

trap-drenched labyrinths of some earlier quests. Also expect a good story backed by another well-written "Journal" and, the 'bottom line', two or three weeks of solid, entertaining adventure. If new to "Advanced D&D" questing, *Gateway*



displays handle character options, buying and selling at the various shops, and encounters with special personages. For overland and river travel between cities, your party is an arrow on the multi-screen 'continent' map.

Hostilities produce SSI's LARGE, smooth-scrolling top-down view combat display showing individual characters and 'monsters' (enemy guards, skeletons, dragons, evil clerics, etc.) plus walls, bushes, streams, and other terrain features. With crisply colorful backgrounds, partially animated combatants, zipping arrows, flying fireballs, etc. all backed by AdLib/SB sound effects, just watching is fun. You can do just that by selecting "Computer Control"—the program will 'fight' more advanced characters well enough to defeat pissants—but, you won't want to. Combat is 'the test' and the pay-off for your character attribute choices, gains in Level, newly acquired spells, fancy weapons and armor (won, perhaps in earlier combats), and your own battle-honed expertise.

inate a medusa, etc.—and most contain at least one monster-packed maze. Add numerous touches of 'local color', and a cast of worthy arch-foes (like Ceptienne, the sorceress who's picture graces the game box); the result is a large, varied gamescape with much to discover and much to do.

Gateway offers more 'story' (i.e. via text messages) than usual for "Advance D&D", better continuity, and ample in-game clues. By the time the new Clue Book (\$12.95) finally arrived, both my dad and I had reached the 'final test' without a hitch. (HINT, not in the CB: the key to success in Valgammon's "Gauntlet" is to maintain Invisibility for at least one character.) The Clue Book is nice to have. On town maps you will find all of the shops, banks, training centers, etc.; and, in mazes, you will be less likely to pass up juicy prizes. But, to the credit of *Gateway*'s designers, you do not need 'the book'. With up-front clues, freedom from unavoidable killer traps, and a smoothed-out version of the

to the *Savage Frontier* is the best introduction you could wish for. If a veteran, you are certain to appreciate this 'pay-off' for hard-won expertise.

Eye of the Beholder

★★★

\$49.95 for CGA-EGA 640K PC

Strategic Simulations

"So far, everyone who's read through this *Waterdeep* posting has had the same reaction: 'Uh, uh! No way!!' Frankly, I don't blame 'em. Sure, all it says is that the Council of Lords is offering a 'handsome commission' to any party willing to check out the town sewers and eliminate 'subversive elements'. It sounds like a stroll through the park; but, you and I know better: it's *Waterdeep*'s 'old trouble'. Obviously, Xanathar, the Beholder, is back!"

Indeed, he is! But, you won't know for sure until your party of four is well past the upper few levels of genuine sewer (a map is included) and into the ancient dwarven mine workings which constitute the real maze. Here the maps and hints supplied in the "optional" Clue Book (\$12.95) are very helpful. In fact, the CB is essential. The reason is not simply that mapping the other nine, mostly 32 x 32, levels is hard work. (It is; but, some adventure players enjoy mapping.) Nor, are the pressure plate (button, lever, moving-wall) puzzles too difficult—some are tough, but not too tough. The problem is that your 3-D forward view sometimes neglects to show important details (e.g. a button) on walls to either side. In a maze this large, you cannot very well examine every surface head-on; so, you need the Clue Book. (I did not, by the way, encounter any adventurer zombification situations. If you're alive, you can win.) Naturally, once you are in the maze, you are in 'for the duration'. The only way out is over Xanathar!

Like FTL's classic "Dungeon Master", EOB offers 'real time', 3-D view exploration and animated combat. This



Easy point-and-click control of movement, attack, spell casting, etc. makes running the show yourself too much fun. Better yet, the local arch-villain will often put in a taunting, gloating appearance just before some major showdown—hype guaranteed to sharpen defeat and sweeten any victory.

You begin at Yartar, a city roughly mid-way between the eastern desert and

already smooth, user-friendly interface, this is a game that 'works'!

On the Standard AD&D Hardness Scale, *Gateway* represents a "low-medium" challenge. Expect just a few "Champions"-class battles, no multi-combat 'attrition' situations of the "Pool" or "Silver Blades" variety (you can always find a place to rest between major combats), and nothing like the

means that you may spot spiders, hell hounds, guards, and other maze denizens from a distance, even from the side or behind, that you will see them turn, and that they become larger as they approach. Thanks to AdLib/SB sound, you will often hear them as well. For example, on the spider-infested fourth level, the characteristic chittering of the 8-foot tall monsters can be heard several 'squares' away, even through walls, and becomes louder the closer they get. **Very realistic!** and, in a darkened room with headphones, not just a little scary.

Combat occurs when you are in combat range—you'll see and hear the arrows, lightning bolts, etc.—and ends when one side or the other is destroyed. Running is another option; but, if you're the one running, you can usually expect to be pursued until you manage to close a door or reach a stairway. None of which, incidentally, demands anything like arcade expertise. Mouse point-and-click makes it easy to move, pull switches, pick up items, etc. and, with sensible delays, there's no need to rush choices in "real time" combats. You will, however, need to acclimate to the game's two-button mouse interface. No doubt the idea is to avoid cluttering the display with choice panels. Fine; but, dual-buttoning does promote errors which would not occur with more on-screen choices and a single button.

Not surprisingly, SSI draws heavily upon its D&D resources for characters, weapons, and spells. Thus, you can tailor your party via the usual choice of character races and classes along with emphasizing such attributes as Strength, Dexterity, Armor Class, and Hit Points. THACO, unfortunately, is never displayed, which makes it very difficult to determine the relative hit power of the weapons you find. (In fact, you will find it difficult to identify most items—another reason to get the Clue Book.) Mage and cleric spells are limited to medium power attack and defense, plus healing and food-making. This marks a real 'come down' for devotees of the arcane, particularly for players accustomed to powers like those available in "Bane of the Cosmic Forge", "Bard's Tale", or "Dungeon Master". Still, the scheme is nice if you appreciate having a rough balance between the importance of magical and mundane resources.

Since "Dungeon Master" is well known to so many readers, a few additional comparisons should help to bring its 'close cousin' into better focus. First, there's no question that DM offers better controls, delivers more puzzles, and that its puzzles are, generally, a good deal more complex. As to weapons and artifacts, DM wins 'going away'. The new SSI product offers a notably more varied, better organized scenario—you will not, for example, end the game wondering how a good wizard got split into two evil halves (or, maybe, it was two evil and one good!). Friendly maze dwellers, unknown in DM, help relieve the gloom, spark some interesting mini-quests, and a few will offer to join your party. Much the same goes for your enemies. Besides true monsters, these include drow elves who resist your intrusion into their domain, Kenku warriors protecting their eggs, and an arch mage henchman of Xanathar.

While DM earns a slight edge in monster graphics and combat sound effects, EOB is way ahead in variety of maze interiors, which range from Stan-

dard Sewer and Cold Stone to Mantis Green and Beholder Bizarre! The newer game also introduces a network of in-maze Portals. The first time you activate one make sure your amp is rev'd up; the visual-plus-SOUND effects are a guaranteed 'wipe out'! Finally, I prefer EOB's approach to character generation: the 'main guys' are your creations not pre-rolled.

For PC-only adventure gamers, SSI's **Eye of the Beholder** is the proverbial 'whole new experience'. If you've logged some Ilgstime and enjoyed "Dungeon Master", the Waterdeep commission already has your name on it. Either way, look forward to a long-playing, tough, high-realism challenge. 'Being there' is fun; and, of course, the Beholder is waiting!

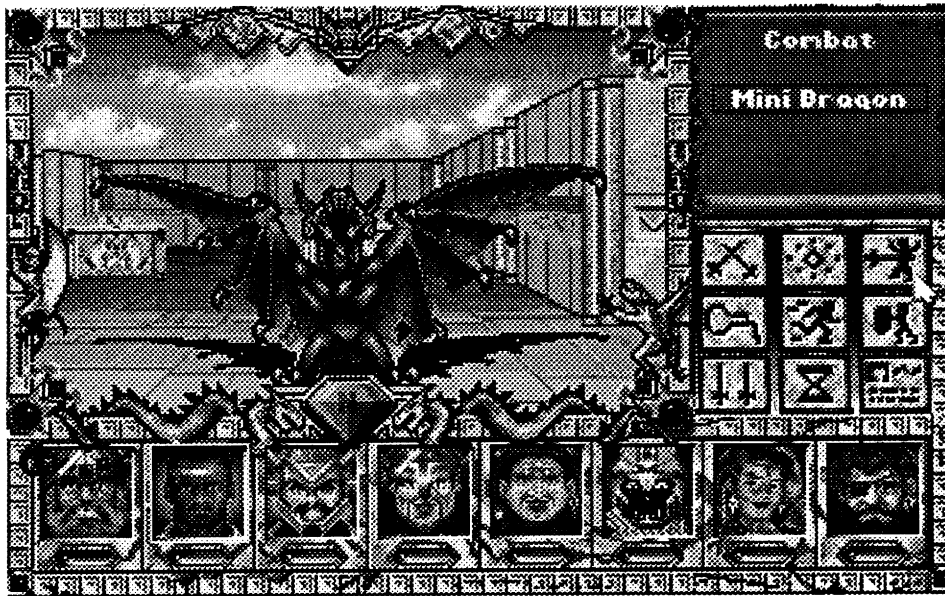
Might and Magic III: Isles of Terra

★★★★★

\$59.95 for EGA-VGA 640K PC

New World Computing

"After your last encounter we all kind of figured Sheltem would lay off. Yet, this plea from the citizens of Fountain Head states that someone calling him-



self 'Sheltem, Master of Science and Magic' is behind a scheme to eradicate all mortal life from the Isles of Terra. It has something to do with stirring up a ruinous war among the kings of Good, Evil, and Neutrality. Whatever, several strange golden pyramids seem to be focal points for Sheltem's power. Your quest? Bring the war to an end and crack the secret of those pyramids. Sounds like a long one to me; and I especially don't like the note at the end: 'Please be careful. Sheltem knows you are coming!'"

Well, what did you expect? From the moment your gang busted onto the Astral Plane back in the first "Might & Magic", this sort of show down was inevitable. Indeed, scarcely a minute into the **Might & Magic III** intro, Sheltem's cadaverous visage appears in nicely-animated 256-color VGA to deliver his warning in resonant tones via Sound Blaster. (Choosing the "AdLib-only" or "Roland-only" options sends music and effects to the sound board. You can barely hear the voice through a PC speaker. "Sound Blaster-only" delivers both. "Sound Blaster AND Roland", the best setup, uses SB for voice and Roland for everything else.) That is, the very first thing you will suspect about **M&M III** is that 'You are about to participate in a great adventure' which just happens to be a sound-graphics masterpiece!

Since the appearance of the first solid-color, 3-D forward view map/maze adventure (which was, I believe, "Alternate Reality: The City") the unspoken ideal has been full-scale adventuring with high-resolution, full-color, detailed 3-D forward views everywhere. This 'impossible to achieve' dream game would also include animated scene elements (e.g. torches, force fields, etc.) and, very important, present animated monster figures which would approach from a distance and 'act like real monsters'. Skeletons would move forward and clack swords to shields, mini dragons would flap wings and breath fire, Evil Archers would aim and fire arrows that would 'come out of the screen', ... AND you would hear everything! In fact, after making all of this work with 40-50 monster types on a LARGE gamescape, you would be sure to add ten or so nice pieces of background 'mood music'. If someone were to get this far, you'd have to admit that they have the makings for the best swords & sorcery computer adventure ever.

Might & Magic III starts with the makings for the best swords & sorcery computer adventure ever. When your party leaves Fountain Head you don't switch to a 'countryside map'; you walk out onto a road and see the countryside!

(Whereupon the background music changes to an upbeat 'questing tune'.) You continue on down the road—probably, you'll have to battle some orcs and goblins—or you can wander into the nearby woods, find a path through the trees, and discover... well, almost anything!

Ask yourself what you did the last time you actually departed a walled city in search of adventure. That is what you can do in **M&M III**! One notable exception concerns dropped items; once dropped, they're gone. On the other hand, your game wanderings are auto-mapped—press "M" to see the 16 x 16 map for the immediate region and get current X-Y coordinates—and, once your sorcerer learns Wizard's Eye, a

smaller map-view window opens in the display's upper right corner. (**Very helpful!** Unlike self-mapping, the 'Eye' remains active as you move and shows everything within a few squares of the party, whether or not you've been there.)

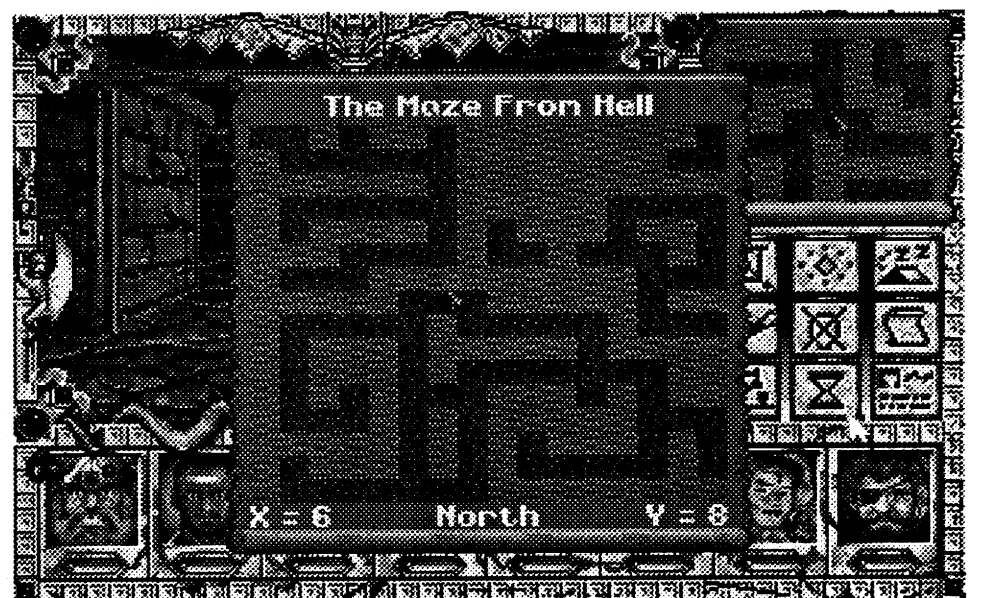
Other powerful exploration aids include a system of transport Portals, the Town Portal spell (which pops you from almost anywhere to the selected town), and Loyd's Beacon. The latter, lets you set a custom portal target (e.g. near a Might-enhancing fountain) and return to it whenever you wish. Still more mobility enhancing spells permit 1-9 'square' jumps, movement through barriers, water walking, and levitation! Predictably, with such powers at your disposal, the game designers do not fail to develop appropriately interesting challenges!

Indeed, fully half of **M&M III**'s challenge is exploration. The 96 x 64 'main map' encompasses five major land masses and several islands. Here you find forests, grasslands, swamps, (mountains, lava plains, snowscapes, and deserts) dotted with caverns, temples, (pyramids, shrines, monster outposts, magic fountains, gypsy wagons), and more. Many of the latter are entrances to sprawling underground mazes—to which you can add five cities and five castles and their underground labyrinths!

Aside from the weapons, gold, attribute enhancements, and other treasures you will acquire, diligent exploration yields information critical to successful completion of your quest. For instance, clicking the Scroll icon produces a highly informative passage from "Corak's notes" on the surrounding area. Then, there are wall postings, tavern rumors, stake-mounted talking skulls, magic crystal clues, tales told by inhabitants, ... all, to be sure, very helpful; but, it will gradually dawn that ultimate "success" entails a good deal more than you originally 'signed on' for!

First, you must have access to each town's resources (i.e. shops, temple's, spell-teaching guilds, inns, taverns, and training centers). This means, at the least, clearing out assorted ghouls, dragons, and other such nuisances. Then, always, someone you encounter is going to come up with a reason you absolutely must hack your way through the town's underground death pits.

Meanwhile, the king (whichever one of the three you choose to support) needs Orbs of Absolute Power 'in the worst way' to assure victory; logical, because Orbs are in the worst places! And... someone must free a pair of entombed arch mages, recover a unicorn's horn, help a princess find love, and, lest you forget, crack the core of Sheltem's 'weird science' pyramid complex! With, inevitably, so many 'irons in the fire', it is



fortunate that **M&M III**'s designers thoughtfully include two helpful displays you can view at any time. One (for each character) lists important achievements; and the other lists your party's 'Current Quests'.

This is NOT work for weaklings; which, of course, is just the way you like it! So, you take some extra time at the start to get the best possible Might, Intelligence, Speed, etc. rolls for each new character; and, routinely check each inn's For-Hire roster. (A party can have up to eight members: 1-6 'created' plus 0-7 hired.) Soon you discover magical Attribute-enhancing pools, dour talking heads willing to sell Skills, and the \$\$\$-making/Experience-boosting benefits of completing mini-quests and bashing monsters. There's a large selection of versatile Spells to master and a truly AWESOME array of Weapons, Armor, and Artifacts to find and try out. Great fun!; but, also, serious business. Hit power, toughness, skills, and magic user savvy all directly impact where you can go, what you can do, and whether or not you will get back! (Game Save, incidentally, is speedy; and, in case of the 'ultimate mishap', so is Restore.)

One thing's for sure, as one of the game's poetically inclined talking skulls might put it: "You won't get back without some flack"(!) **M&M III** combat looks very much like that found in "Dungeon Master" and "Eye of the Beholder". It works more like the combats of "Bard's Tale", "Dragon Wars", and "Cosmic Forge". This means you can fire arrows, cast Cold Rays, etc. at a distant enemy and, possibly, score hits; the monster can do the same. Interestingly, since you are still in 'exploration mode', you are free to cast any 'Portal, Beacon, etc. spells or even do a Game Save or Restore.

The situation changes once one or more monsters is in direct contact (i.e. within 'sword range'). Now, in 'combat mode', party members and monster(s) 'duke it out' (hack, slash, cast spells, etc.) until one side is vanquished or succeeds in fleeing. During the fray, the game displays variously sized blood, flame, lightning ... "splats" on your opponents to indicate degree of damage inflicted by each attack. A colored "jewel" beneath each character monitors general hit point status, while color of text in the 'opponents within range' list reflects status of each enemy (e.g. "Gargoyle" in red means the monster is nearly finished). Unlike DM and EOB, none of this is in "real time"—which suits me just fine. In fact, you are always entirely free to change equipped weapons, armor, and artifacts or, even, transfer items between party members!

"Sounds great! But, there has to be something wrong with the game; some bug, documentation foul-up, or, maybe, the mouse is glitchy, or you can't win without a "clue book", or displays are slow, or only one user can play. No game is perfect!" True. The picture on the **M&M III** box is the absolute pits! Sheltem looks like a wino who's just raided a K-mart "Masters of the Universe" exhibit. (After the surprising, if modest, success of weakies like "Galactic Gladiators" and "Shards of Spring", one would suppose that everyone knows what 'works' on a game box.)

In an early-release **M&M III** version, I did encounter several bugs: a 'square' near the pyramid on map F-2 where the game would hang, failure to

record the meeting with Brother Delta in Wildabar, and one or two others. A call to New World produced a later version and the bugs were gone. (Alas, since the errors become embedded in any Save, users who switch to the new version will have to start a new game.) So far, Gorbash (who is a bit further along in the game) has uncovered only one, very minor, for-sure bug in the new version—an unimportant 'square' could not be entered from one direction. (My guys are all around Level 60, and I haven't found any bugs worth mentioning.) Glitchy mouse? No; but, response quickness is slightly below optimum and buttoning could be more positive. Slow displays? Not at all. Need a "clue book"? Nope! Limited access? Uh, uh; any number of users can play and save their games. In an adventure of this size and complexity, such a dearth of flaws is astonishing.

According to an on-the-box sticker, it has taken New World just five years to move from **M&M I** to the beauty, realism, mystery, humor, long-playing challenge, and excitement awaiting you in the Isles of Terra. Unbelievable! The game comes with fold-out directions card, 17" x 13" Isles of Terra map, and a nicely written and illustrated 32-page scene-setter "Journal of Corak the Mysterious". Through nearly a month of absorbing, highly entertaining play, no one has seriously considered moving the map from its place on the main computer table. No one would dare! As to what happens when our 'dream game' designers start with the makings for the best? If they finish the job right, my guess is you get **Might & Magic III** and a whole new dimension in Swords & Sorcery questing!

Arachnophobia



\$49.95 for CGA-VGA 640K PC
(Sound Source recommended)

"This one is really weird. Somehow, seven or eight towns back in the U.S. have been nearly wiped out by a plague of mutant South American spiders. These are big, poisonous, MEAN mudsuckers! Your mission is to locate and destroy the Queen Spider in each town. Often, too, you will have to destroy the local breeding center, an egg sack. The pay's not great; but, whoever volunteers—there's just one opening—will be supplied with standard exterminator gear, a 'Bugometer', and a van. If you pull it off, you're a shoo-in for all the big talk shows."

Featuring responsive joystick control and colorful side views of room interiors, **Arachnophobia** starts "easy"

and finishes "tough". "Easy" means you can enter a home, (school, etc.), walk from room to room and sprit the moderately slow, passive spiders with impunity. "Tough" means you better know where the nearest First Aid kit is located—you can't carry it with you—because if the bugs leaping at you from the floor don't score a few hits, the ones zipping along the ceiling will. Queens are worst of all, never easy and always fast! In tough towns, nothing short of a blowtorch will stop one. (You make a torch using a spray can and matches you've found in the current town—don't waste it on pissants!)

While much of the challenge is pure arcade, you won't get far in bug busting without strategy. First, the sooner you find the local queen, the better. If you're not ready to finish her off, you can leave the room, find needed supplies, and return. (Leaving the entire building lets you replenish your insecticide supply. It also re-populates the building.) Each town has fifteen or so multi-room sites to search; so, you're as likely to stumble upon the egg sack as the queen. Either way, you're in luck (!), because, once the egg sack is eliminated, your trusty Bugometer kicks in and guides you to the chief meanie. When she is eliminated, the town is "cleared"! A newspaper display announces the achievement, you are the town hero, and (after remembering to save your game) it's off to the next assignment.

Arachnophobia's genuine B-movie 'suspense music', effects, and voice tracks do, as advertised, show off Sound Source to good advantage—in fact, enjoying the game in silence is nearly unthinkable. Add attractive, nicely-animated graphics plus a clever "Guide on Spider Eradication" manual, and you have roughly 10-20 hours of authentic bug blasting entertainment.

Martian Memorandum

★★★★ PG-13

\$59.95 for VGA 640K PC

Access Software

"Say, weren't one of you in on that 'Countdown' caper? Well, this business over at Terraform, circa 2039, could be right up your alley. Terraform is a big West Coast company which manages and owns a large chunk of the Martian colony. The boss has a missing daughter, Alexis, he wants found. What makes the whole thing kind of fishy is that the old man really seems more concerned about some mysterious Martian artifact the girl took. He has millions, more power than the President, piles of Mars art, and he's ready to unload a bundle to

recover some Martian nic-nak? Pretty strange!"

For sure, and **Martian Memorandum** just keeps getting stranger and more involved until, with luck and a nice dose of smarts, everything makes perfectly good sense. You (Tex Murphy, private eye) start by following a few leads (e.g. a note found in Alexis's room, info you squeeze from a girlie mag photographer she worked for, etc.) and soon find yourself in a radio-active junkyard, a Central American jungle, in bed with the boss's secretary, and at the grisly murder scene of (who else?) the boss! And that's before you locate the secret rocket base (of the artifact thieves?), sneak aboard the ship, arrive on Mars, and REALLY get into the case!

Utilizing Access's trademark digitized video and voices technique—you get moving, talking images of real actors and actresses—MM employs full-color VGA and AdLib/SB (or AdLib/SB PLUS Roland) sound to put you face to face with nearly thirty characters. Some respond freely with information on each click-selected topic or person; others need to be approached 'just so' by making the correct responses—you click on a phrase or sentence—for 3-6 rounds of conversation. Occasionally, you will find that offering some item (e.g. pictures, a rose, etc.) makes all the difference. Mainly, the key is staying 'in tune' with your Marlowe-like private eye persona and having a 'feel' for the character being interviewed.

Muffing an exchange soon terminates the conversation ("Beat it, creep!") and you will have to try again. The game is a bit deficient when it comes to supplying in-conversation cues and recovery opportunities; but, with just three or four moderately tricky interviews to get past, the inconvenience is minimal. Each successful meeting adds to your knowledge and to the list of items/persons you can ask others about. One thing leads to another; and, since facial expressions and voicing closely track conversation content, you soon find yourself involved with real people on a real case. In no time, you are Tex Murphy, private eye! (This realism and one somewhat spicy episode explain the PG rating addendum.)

For on-site investigations the game uses a variety of beautifully drawn screens to place your action figure in each scene. Here, user-friendly point-and-click lets you move around, work controls, and pick up items, free, usually, of time or hazard pressure. When you do encounter an action situation, minimal arcade skills will get the job done, so long as you've got the needed items and use them correctly. For example, in Big Dick's Casino, you thread a web of 'invisible' laser beams criss-crossing a mined corridor to reach BD's safe—not too difficult IF you're wearing laser goggles and riding a hoverboard. (Not too easy, either; which is why you'll want to make good use of MM's speedy, multi-position Game Save/Restore.) There's also a temple, a power plant, ruins of the first colony, and much more to explore before, at last, you find Alexis and uncover the monstrous plot of ...!

Supplied with manual on six 1.2MB diskettes (or optional 3.5 media) the newest Access release sends you to Mars and sends the standards for action-mystery adventuring into orbit! This is very absorbing stuff and not just a little con-



volved; yet, everything 'fits' so well, you may never need to call upon the in-program hint facility. You don't have to worry about piles of memory-refreshing notes, either. You won't be able to stay away long enough to need them! Expect to be challenged, intrigued, and, definitely, delighted by **Martian Memorandum**.

Wonderland

★★★

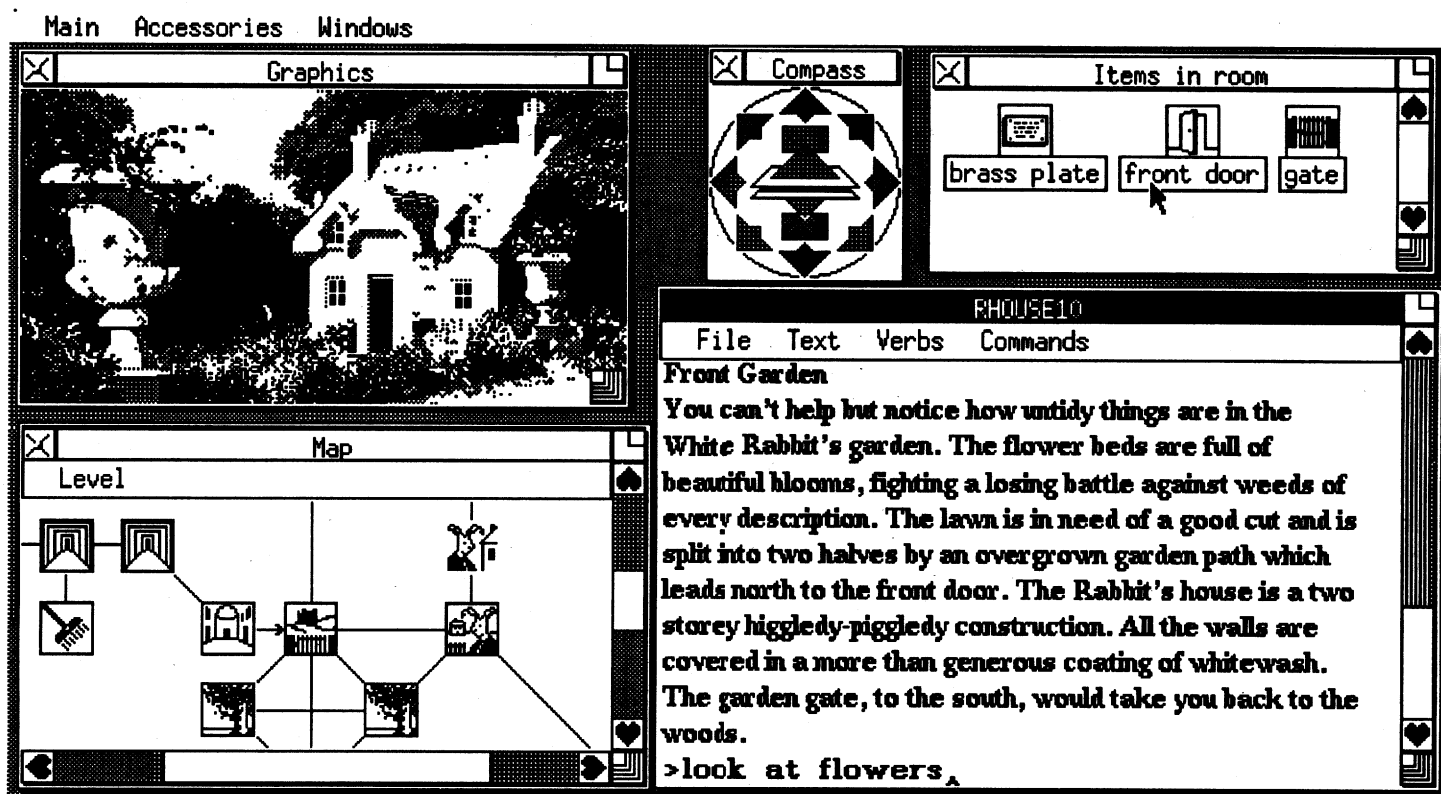
\$59.99 for CGA-VGA 640K PC)

Virgin Mastertronic

As Alice in Virgin Mastertronic's version of the classic fantasy, your objective seems simple enough. You want to get out of wacky, insane Wonderland. The 'catch'—appropriately wacky in itself—is that Alice will be **forced** out, the moment you commit a serious game error. For instance, should Alice drink a 'Get Bigger Potion' when standing in a mouse-sized room, she bumps her head, wakes up, and you (the player) are out of business. (Embarrassing, but no great problem thanks to unlimited Game Saves and easy Restores.) So, the **real** challenge is to exit Wonderland according to Wonderland rules—a lot more fun, since you'll get to meet Wonderland characters (like the White Rabbit), explore several fascinating places, experiment with magical items, and solve a few puzzles!

Wonderland is a Magnetic Scrolls creation featuring their very flexible, but slightly cumbersome, text-with-pictures format. In the preferred 640 resolution mode, you can have simultaneous resizable, movable windows for Text, Inventory, items in the current Room, a local Map of explored 'rooms', a Compass, and a colorful, nicely drawn VGA Picture for the current location. Often, the latter will be partially animated (e.g. chairs dance, curtains billow in the breeze, etc.). AdLib/SB sound, chiefly music, is good but decidedly scarce. (The claimed Roland support did not work.) Cumbernomeness shows up chiefly at the beginning of each session, where you must reset several window options, and during explorations; to save time, picture updating is not automatic except for new locations.

While verbose, easy-reading prose is the main output medium, required keyboard input seldom goes beyond a simple sentence. In fact, you can usually avoid typing anything by making use of mouse point-and-click options for movement and actions. Clicking an item on the picture or clicking an item's icon in the Inventory or Room windows produces a drop-down mini-menu of clickable commands such as "Look", "Open",



"Wear", etc.. Simple! Just to make sure no one gets lost in window 'nuts and bolts', all program features are covered in an illustrated 66-page manual.

You may get lost in **Wonderland**; but, probably not. A small fold-out map supplies a helpful overview of major points of interest; and, a fairly comprehensive built-in Hint facility means you're usually within a few mouse clicks of getting un-stuck from sticky situations. Easy? Not exactly; but don't look for an especially difficult challenge, either. Expect a week or so of mini-puzzles, woodsy paths, quaint residences, and curious characters—all presented via fine artwork and well-written prose. This is laid back authentic Wonderland adventuring guaranteed to breath a touch of Summer into the coldest Winter night. If you don't believe me, just ask the White Rabbit; or, better yet, ask ____!

Stunt Driver

★★★★

\$49.95 for CGA-VGA 640K PC

10MHz speed, minimum, recommended

Spectrum HoloByte

I'm fairly sure that watching the infamous chase sequence in "Bullit" ruined my driving for a week. If Spectrum's **Stunt Driver** had been around the first time I saw the movie, I could have ripped through a few ramps, 360 loops, and banked hairpin turns at Big Al's Stunt Course and been thoroughly 'vaccinated' against street driving macho.

Stunt Driver's high-realism 3-D from-the-'cockpit' view and AdLib/SB sound put you THERE, on each obstacle-packed course to race the clock or 1-3 computer competitors for a place in

the Top Ten Drivers roster. Additional view options include "back window", "from above", etc.; and, up to 32 cameras can line each course ready to record those spectacular moments for playback, analysis, gloating, and ribbing: "Gosh, it kind of looks like you took that ramp a little too fast", "Wow! So that's what happens when you slow down in a loop." (What happens is that you 'come unglued' from the top of the loop and experience a front-row-seat, tumbling-landscape demo of gravity at work.) Moderately awesome; even, 'bone-chilling'; the sim is, almost, too realistic!

The other side of "realism" is control. You will find KB and mouse options to handle steering, throttle, and braking; but, as usual, the best way to handle 'the fast stuff' is joystick. **Stunt Driver's** smooth, natural-feeling stick controls go a long way toward making difficult stunts both doable and fun. (It doesn't hurt to start at "Trainee" Level, with automatic shifting, either!)

As you may have guessed, any simulation which can put you in a tumbling, flipping auto in something approaching real time is going to give your system a pretty good workout. For 256-color VGA, Spectrum recommends at least 25MHz. At 20MHz you're good for 16-color VGA; and, for players running a 10-16MHz system, the recommendation is EGA. After experimenting with full VGA at 12MHz, I can assure you these limits are 'for real'. Interestingly, at 12MHz and VGA 256 I did not notice any slow-down in action. I did notice a slight 'gappiness' in the animation and a serious decline in controllability. Evidently, the program tries to maintain action speed by cutting out display frames and reducing the frequency of control sampling. At EGA resolution (the setting I use), 12MHz delivers both smooth animation and responsive controls.

Often, especially in adventure games featuring detailed artwork, one look at the max-color VGA displays makes playing the EGA version unthinkable. **Stunt Driver's** screens are a bit prettier in full VGA—noticeable, mainly, in 'cockpit' detailing—but, from EGA up, all are attractive. This is not a game where 256-color VGA makes an astonishing difference in player enjoyment.

The software includes five courses, your own pre-defined 'stock' vehicle, 'enemy' autos (VW Bug, IROC/Z, and Porsche 911), and opponents which, at Expert Level, drive smarter and display distinct personalities—and that's just

'for starters'. On the principle that, after all, "Too much is never enough", Spectrum adds a Course Design utility. You just click-and-drag icons for road sections, 360 Loop, Ramp, Oil Slick, Repair Station, Grandstands, Drawbridge, etc. onto a blank 14 x 14 grid, place your cameras, pick a scenery background, and viola!; you have a new 3-D view course good for roughly 2-5 minutes per lap.

Not "too much"? That's why Spectrum also includes a configure-your-own-car utility. In Config Editor you can start with one of several cars (e.g. Shelby Mustang, MG, etc.) and, then, adjust every major performance variable from collision damage resistance and max speed through air/road friction effects and tire grip. You can also set global variables such as gravity strength and garage repair rate PLUS set max speed and "pugnacity" of opponents. Now, that, I think, may be "too much"!

There is "driving" and then there is "driving ACTION". Supplied with Controls Card and "Big Al's Institute of Stunt Course Driving" manual, **Stunt Driver** delivers the track-warping realism, competition, and design challenge you've been looking for. Plug in the stick, rev up the amp, and go for it!

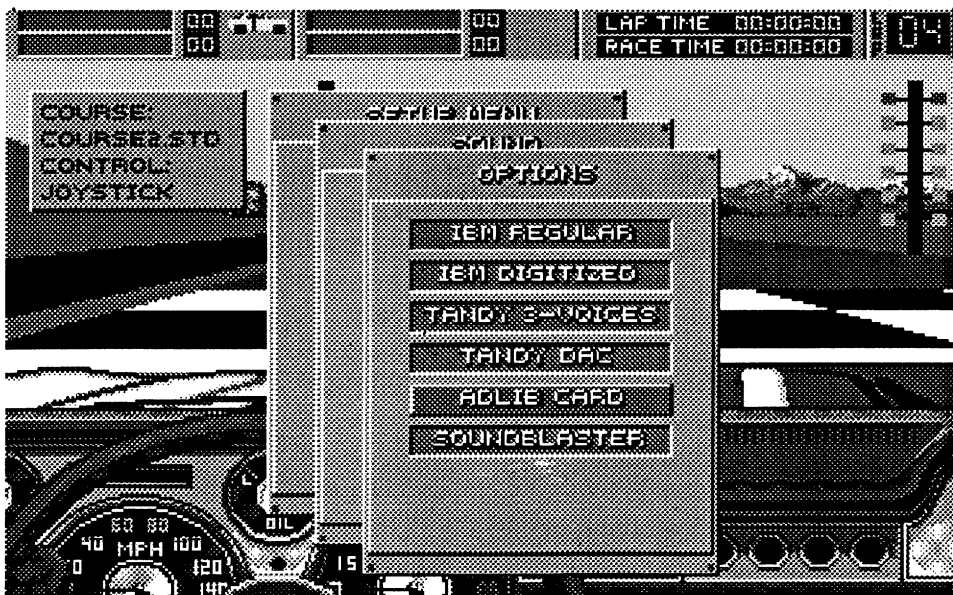
Mickey's Colors and Shapes: The Dazzling Magic Show

★★

\$49.95 (\$69.95 with Sound Source) for CGA-EGA 512K PC

Walt Disney

Starring Mickey and Minnie, Disney's **'Magic Show'** dazzles pre-school computists with three brightly colored animated acts backed by music, voices, and effects from Sound Source. In Act I, you use the flexible KB overlay (supplied) to help select the shape and color of items for Mickey to juggle. In Act II, you start with one of several backgrounds and pick objects (according to shape and color) to add to the "Magic Picture". Pressing the "Print" key outputs the picture to your printer in ready-to-color B&W coloring book format. Finally, Act III challenges you to help Mickey find an animal for his hat trick. Color and shape keys determine which object in the scene to remove in your search for the hiding animal. Throughout, a narrator voice and on-screen highlighting help



you connect each keypress to shape and color names for the object selected.

Like "Mickey's 123's" and "ABC's", 'Magic Show' is nearly guaranteed entertainment. Unlike the earlier products, it's relatively simple, short-play activities mean that, to maintain interest, active participation of and encouragement from a parent or older sibling is going to be essential. 'Magic Show' can be fun; but, it does 'look educational'.

Okay; so, what about Educational benefits? First: anytime you can get a 2-5 year-old involved with using a computer, some useful skills development (e.g. eye-hand coordination) is bound to occur. Second: 'becoming acquainted with using a computer' is, in itself, a valuable outcome; AND, using the computer to "make pictures" might, as Disney claims, encourage creativity. (But, then, the same goes for drawing, water color painting, building with blocks, and Play Doh modeling.) Finally, just about any child + parent working-together activity is a cinch winner. As to 'content' specifics: learning the names of colors and shapes is less an achievement than an indicator of certain aptitudes. When you are 'ready', you do it with little or no effort. It should not be confused with more fundamental learning.

Put on a Magic Time Hat and think back to your own childhood. There. Now you can see that the most important thing about colors is that they help to describe the things you see and to discriminate among them. You learn to see that a red rose 'looks different' than a pink rose, that your yellow shirt is prettier than a plain old white one, etc.. In fact, you knew the 'main stuff' about colors long before you got their names straight. The same is true of shapes. You found out about those, chiefly, by handling every object you could get your hands on. (A set of variously shaped blocks is THE single best tool for 'learning shapes'.) Eventually, you did get "purple", "triangle", and the other names right. It was easy. It did not require a computer program.

'Magic Show' probably will, as advertised, help teach the names of colors and shapes to a 'ready' pre-schooler. So will Kaptain Kangaroo, kindergarten, and a walk in the park to see the brown squirrel, green trees, and circle of toadstools. In short, don't look here for special help in some area critical to educational growth. If you boot up 'Magic Show' do it, mainly, for fun.

The Lemon Tree

*Lemon tree very pretty
and the lemon flower is sweet;
But the softwares on de poor lemon
is not ready to compete.*

Snow, blizzards, record-breaking lows— no problem! Even as global warming tightens its icy grip upon the land, PM's wonderful Lemon Tree bursts forth with another bountiful harvest.

As everyone knows, beginning with "Pool of Radiance", SSI has pioneered one of the very best map/maze adventure gaming formats around. Also, by now, 'everyone' has learned to be wary of the company's D&D theme products which depart from the POR format. **Dragons of Flame** (© \$39.95 for CGA-EGA 512K PC) wants to place you in command of up to ten characters (Tanis,

Raistlin, etc.) from TSR's **Dragonlance** stories. I say "wants" because a combination of awkward inventory/exploration commands, clumsy real-time controls, and poorly managed side-view combats makes this all but impossible. Frequently, you will find yourself unable to score a hit even as hero and monster figures overlap on your screen!



Both the PC and C-64 versions offer attractive displays and decent sound. With or without the \$7.95 Clue Book, neither offers a playable quest.

According to the manual **Gold of the Aztecs** (© \$49.95 for CGA-VGA 640K PC) took five years of development on seven Macs and seven Amigas. I believe it. U.S. Gold's new arcade-adventure delivers more than 80 hazard-packed, smoothly animated VGA screens plus Adlib/SB or Roland effects and music. There's even a scenario intro (four pages in the manual) to explain how you, Bret Conrad, come to be battling your way through the jungle strangled ruins and caverns of forgotten Aztec ruins.

Natives, monsters, climbing, swinging, jumping challenges ..., and great looks— **Gold** does so much right; how could its designers possibly overlook 'details' like a continuous hit points display and Save Game option? Bad enough; but the cruncher is the game's limited, non-intuitive joystick control which simply refuses to deliver the moves you need when you need them. Since the the second button is unused (and the fire button is for shooting), action options come down to walking, jumping, ... movements or drawing and using your weapon from a standing, stationary position. You cannot walk or duck with your pistol drawn, aim and shoot from a crouch, etc., etc.. Some treasures are best left undisturbed. The Aztecs can keep their gold.

Award Notice!!!

(Ta-ta-taaa-ta-taaa)

I hereby present the 1991 **Programming Anomaly of the Year Award** to the "Aztecs" project team, 7 Macs, 7 Amigas, and associated trainee play testers. (True, a few members of the Academy argued that "No Game Save in a high-difficulty 80-frame arcade" AND "No movement with drawn weapon" went beyond the Anomaly criterion. The majority, however, appreciated the obvious and easy-to-fix nature of the two features and how thoroughly they skewered the product.) Also known as "The Thexder No-Joystick Control Memorial Trophy", this splendid memento (a torpedo-shaped monolith) is nowhere more richly merited.

[WARNING: As always, should evidence reach PM offices of tampering to remove the cited anomalies (e.g. in some fawning attempt to curry a four-star rating), this award will be withdrawn, notice published, and all rights and privileges accruing to said award forfeited.]

Indeed, too often the rule seems to be: "If it looks pretty, 'print it'." This can

result in reams of first-rate 'suitable for framing' animated artwork, plus colorful, cleverly-written manuals, and AdLib/SB or Roland music— all wrapped around a game design which has never been critically play tested. Thus, Virgin Mastertronic continues to churn out Synergistic Software bomblets built around their "War in Middle Earth" strategy/adventure format.

In **Spirit of Excalibur** (© \$49.99 for EGA-VGA 640K PC), King Arthur has just died and it falls to you, Lord Constantine, to undertake a series of five quests aimed at restoring unity and order to the kingdom. While the game is a faster, more attractive, and smoother running challenge than "Middle Earth"/Iigs, both the animated close-up combats and mini-figure battles retain the trade mark 'hands-off' feel. The same applies to your adventuring exchanges with other characters. For example, at one point a resident sorceress offers to join your party. If you refuse, too bad. You can meet her again at the castle but cannot add her to your group. A Clue Book (included) helps avoid such errors at the price of a somewhat reduced challenge. Nothing, however, gets around the bother of tracking constantly changing game status—you must scroll around the 16-screen map and do 'Magnifies' to check the progress of various groups moving around in real time. Doable? Yes; but, more tedium than fun and, for sure, no way to run a kingdom.

Fast Frames, Updates, etc.

Calendar Crafter ★★★★★

Talk about a "timely gift"! When better to receive a first class calendar maker than just before the beginning of a new year? With MECC's **Calendar Crafter** (\$89.00, for 768K Apple IIs), you can start by loading-in one or more 'Important Dates' sets— like "U.S. Holidays", "Moon Phases", and "Historical Events"— add your own events, (e.g. birthdays, anniversaries, local holidays, etc.), tack on graphics, and print your custom creation in color or black & white. Page formats include week, month, 2-month, full year, ...— all available 'plain Jane' or with heading and "special week" graphics, variable-size dates area, and choice of fonts, grid formats, and seven languages. Natural-

ly, you can save your calendars to disk, create custom 'Important Dates' files, edit existing files, and edit the icons associated with any event. MECC includes a backup diskette, illustrated 63-page manual with ideas for school classroom projects, and puts it all in a loose leaf binder with space to keep samples of your creations. Basically, if it's a calendar, the odds are you can make it, and make it right, with **Calendar Crafter**!

Mickey and Minnie's Fun Time Print Kit ★★★

Need some help getting ready for the holidays? Disney's 'Print Kit' (\$19.95 for 640K CGA-VGA PC) is ready to rope-in those younger computists for making all the posters, banners, place mats, letterheads, and invitations you'll be able to handle. They could even do the Christmas cards! Just pick out your printer from the large selection and Mickey and Minnie will guide young users, step-by-step, through project after project. Attractive and, with point-and-click menus, easy to use, 'Print Kit' features forty Mickey & Minnie graphics covering major holidays, birthdays, sports, school, ... plus twenty frames and six fonts in 3-5 sizes each. Supplied with 37-page illustrated manual, the package includes both 3.5" and 5.25" diskettes.

Sound Bytes

The predicted reviews of sound products is in the works; but, lest you miss out on any 'just right' gift ideas, here are a few sound snips:

Since Creative Labs introduced its new "Pro" model, the tried and true standard **Sound Blaster** board (for PC) plus cables and software is an even better deal at \$169.95. It handles sound chores for all of those games, etc. boasting "AdLib/SB" support plus offering speech for the ones utilizing SB's digitized voice output channel. Naturally, there's lots more (like digitized input); but, remember, this is a "snip"!

Software isn't supposed to go up in price; but, AdLib's **Visual Composer** has, just a tad. The explanation: it's the for-AdLib/SB music composer EVERYONE uses, even Sound Blaster owners! \$99.95 gets you the diskette, manuals, and the best product for the job.

"MIDI" stands for "Must I Do It?" and, if you absolutely must have authentic instrument sound, the answer is Yes! Bite the bullet, shell out a small fortune, and go MIDI with something along the lines of Roland's LAPC-1 for PC. Now, you're set to access the playback, recording, AND extensive music composition features of Passport's **Trax for Windows** for just \$99.00. (One DOES, of course, have Microsoft's "Windows 3.0", doesn't one?!) Much like AdLib's "Music Composer" and EA's "Instant Music"/Iigs, **Trax** employs an easy-to-use 'graphical' composition format (e.g. bar length = note duration). Again, there's lots more..

With **Trax** installed, you will certainly want to give your Roland a good workout and, in the process, thoroughly 'wow' any visitors. Easy! Check out the three pure-MIDI 'blow-'em-away classics on **Big Band Jazz Vol. 2** ("Bandstand Boogie"/Les Elgart, "Four Brothers"/Woody Herman, "Leap Frog"/Les Brown) and, then, three more on **Big Band Jazz Vol. 3** ("In the Mood"/Glen

Miller, "How High the Mountain"/Les Brown, "Tuxedo Junction"/Glenn Miller). From PassPort, the price is \$29.95 each.

One of the best things about IIGs shareware and similar 'shoe string operation' products is that the creator/supplier is often willing to deluge the purchaser with valuable information, programming ideas, and source code! **Sound Studio** is a super-res program for loading, playing and editing sounds. From P. J. James, you will get the program, docs, and TML Pascal source code on 3.5" media for \$20.

Music Sequence Maker and PlaySeq, from Paul Gauthier let you convert any "Music Studio" or compatible song into a form directly accessible for playback in your programs. For \$35 you get the TML Pascal source code for both utilities (plus C source for Playseq) and plenty of nuts-and-bolts documentation.

3200-Color Rumor?

Not exactly. First, more-than-256-color picture showers for IIGs have been around for some time. Second, with many of the major software vendor/developers concentrating on PC products, it is entirely believable that a group of IIGs programmers might develop their own 3200-color painter utility. According to a BBS posting "the group" is Dream World Software; and, at least one local IIGs user confirms that **DreamGrafix** (\$104.95 postpaid in U.S. for 1.25MB IIGs) really exists. When/if Dream World is willing to 'lay it on the line' and send in a copy for review, I'll let you know the results.

The Lost Journals of M&M III

"Half our gold!", moans your thief, "for a few singed papers from the 'Lost Journals'?! OF COURSE they were sealed in a 'genuine Dragonhide pouch'! When I sold 'em, mine came in 'genuine Manticore'. There ARE no 'Lost Journals', Dummy. THAT's why they're called 'lost'!" Meanwhile, your sorceress has already run an obsidian blade through the pouch seal; and everyone crowds around to see how badly "the rube" got taken...

The first sheet, riddled with thousands of small brown-rimmed holes, must have come from a folio which took a direct Sparks hit. Still, you are able to make out the the following:

"... recognized by the town Portals are HOME, SEADOG, DOOMED, FREEMAN, and REDHOT. ... other routes, since Igmo discovered AIR, FIRE, WATER, and EARTH.

"I hate to think how much unnecessary damage we have taken walking through electric arcs, acid ... blades, and other maze hazards. Today Morgaine experimented with her Jump spell and ... except for hazards placed just before closed doors, all could be avoided!

"... incident with quicksand, we soon learned to cast Levitate before venturing into the murky lands surrounding Swamptown. ... guarded by a mighty Minotaur! ... would have finished us. Fortunately, the Speed, Might, and other benefits of the magical waters were still working ... able to reach a nearby maze and enter using a golden key carried by our newest party member, a sorcerer named Raven.

"... countersign to unlock Whiteshield's main treasure chest

turned out to be a name Gorbash found in the castle's dungeon. ... 5 million gold (!) will come in very handy. ... '9 + 14 = ?' ... for the chests in Dragontooth. ... Goo-Goo explained his answer ... from 24-hour to 12-hour clocks. So, '23' becomes ... This time we found an incredible ... million in gold!

"... the pyramid and have confirmed the rumors; THIS is where to find Ultimate Orbs in abundance! ... from strange crystals. These include MIRROR, CHAIR ... TOMORROW, ECHO, EYES, ... TEARS. ... not seem to be destinations. SLy thinks they're passwords or perhaps answers for ...

"... via a Water Walk spell and continued our castle explorations at Greywind. ... Wizard's Eye revealed some likely looking chambers surrounded by walls. ... could Teleport right through! ... piles of weapons, armor, ... Now that Igmo is a 'Master Merchant', we are certain to profit handsomely on sale of anything we don't keep!"

The second sheet is gold leaf! Unfortunately, several sword cuts and dents from some bashing weapon have rendered many sections unreadable:

"... believe the difference a few skills make! ... got Swimming in the Fountain Head maze, we can move freely across lakes and streams. With Pathfinding and Mountaineering, Batfoot and Mool guide us through dense forests and rugged mountains which, only yesterday, seemed impenetrable. ... gold, powerful weapons, ... in only a few days of mountain exploration!

"... our Quatloo coins. The 'casino' in the Slither Cult Stronghold pays off with nice attribute boosts, but only for moderately lucky players. We saw what happened to one unlucky gambler. Not pretty!

"... spells for exploration. ... Levitate to defeat pitfalls like those in the Moo caverns and Etherealize to move through hazards backed by walls or ... dare to go almost anywhere with just two 'Beacon casters. ... one set to the Strength fountain and the other set to our current 'forward' position.

"... made it to Blistering Heights ... battle a den of demons to obtain membership in the Eagle Guild. ... lucky that we had already obtained some measure of Fire protection from one of the enchanted statues. ... Guild offers the best spell selection yet.

"... once again becoming 'burdened' with ancient artifacts of Good, Neutral, and Evil. I suggested we stop at a local inn and store them with some temporary hiring ... decided, instead, to take the time to 'cash in' the items at Whiteshield, Blood Reign, and Dragontooth castles. ... back off and reapproach the priest several times. ... some reason (ceremony?), he accepts artifacts from only one person each time.

"... met with the king expecting to bargain for possession of our two Ultimate Orbs. He simply took them! While the Experience pay-off was quite handsome, I'm not entirely comfortable with our new 'ally'."

The third sheet is oddly punched along both sides. Though exhibiting large irregular holes typical of an acid attack,

what little remains is remarkably crisp and clear:

```
"C:\M... SAVE00.MM3 ...
0008D0: NAME ...
0008E0: SEX, RACE ...
0008E4: MIGHT (base) ...
0008F6: AGE ADDITION (00 restores
char. natural age) ...
002E6F: YEARLO, YEARHI (change
to reduce natural age of all)"
```

Evidently, the next sheet was a paper someone folded and carried in a pocket for easy access when visiting shops:

"Approx. materials order for hit power and protection

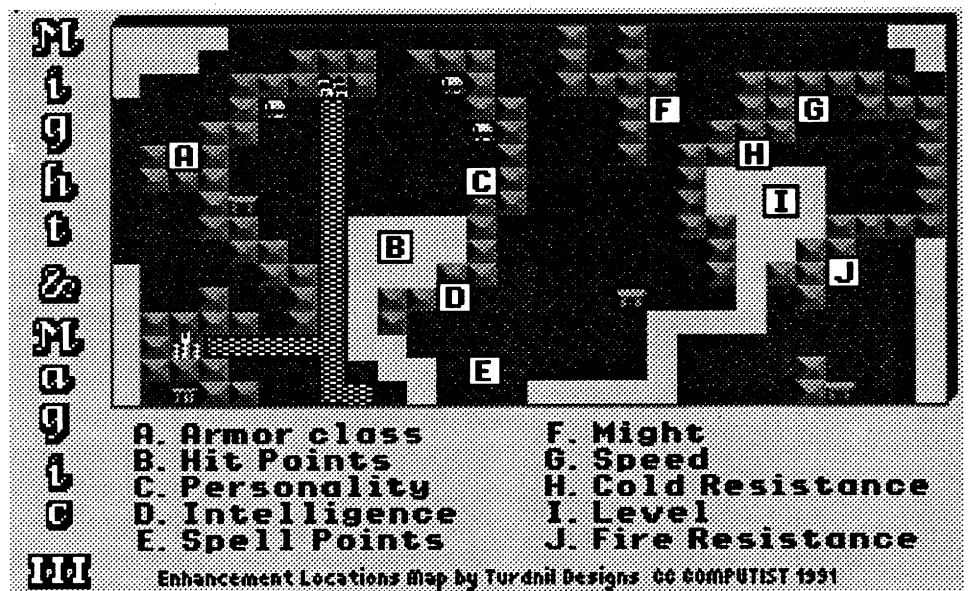
Wood (junk)	Quartz
Brass	Gold
Bronze (mainly junk)	Platinum (nice!)
Glass (same as plain)	Ruby
Iron, Crystal	Sapphire
Silver, Lapis, Pearl	Emerald
Amber	Diamond
Steel, Ebony (Solid)	Obsidian (best!)

"Some mage terms for special-power items

Warrior Ogre Thunder Photon: +Might
 Wisdom Genius Knowledge Sage: +Int
 Clover Winners Chance Gamblers: +Lk
 Friendly Holy Leadership: +Pers
 Quick Fast Velocity: +Speed
 Exacto Accurate Sharp: +Accuracy
 Armored: +extra AC
 Troll Life Vampiric: +HP
 Looter Pirate Stealth: +Thief skill
 Kinetic Power Dense: +Energy dmg/rst
 Cryo Freezing Frost: +Cold dmg/rst
 Pyric Seething Fiery: +Fire dmg/rst
 Dyna Static Flashing: +Elec dmg/rst
 Venomous Toxic: +Poison, Acid dmg/rst
 Mystic Ectoplasmic: +Magic dmg/rst
 (Spell name): user can cast the spell

"Must remember to have Rubywand recharge our Gold Frost Clover Crossbow of Sparks. +Luck, +Cold damage, and +resistance to Cold attacks still work but only one Sparks casting is left. Rumors of a powerful Duplicate spell persist. ... good Silver weapons & armor at Swamptown ... good Steel stuff at Blistering Heights"

What there is of the last sheet still retains good detail—fortunate, because it is chiefly a map labeled "Enhancement Locations":



"Day 44, at Fountain Head (cont)
 "... after our close brush with disaster in the Moo temple, and take a few days of R&R; so, I have decided to finish these notes. Typical of the fountains, wells, and similar surface sites scattered throughout the Isles, the boosts obtained at those near Fountain Head ('A'-'J') are temporary. Except for Hit Points and Spell Points, the gains (higher Might, Speed, AC, etc.) disappear upon each new dawn. Sleeping immediately erases all gains,

including HP and SP. Thus, when setting out on a difficult challenge, we have learned to get a good night's rest and visit each enhancement location as early after sunrise as possible. Casting Teleport and Beacon spells, our mages can greatly reduce traveling time between each site so that, frequently, we have most of a day for questing with fully enhanced powers.

"Turdnil's Tour

"This afternoon we made an important discovery about the order in which one visits the enhancement sites. A local scholar, Binro de Turdnil, stopped by the inn, saw our map and suggested that having an advanced Level (obtained at 'I') might pay off at the other sites. Froolin was so excited by the idea that he offered to abandon his pitcher of ale and handle the transportation magic for a quick tryout. It works! True, only two attributes, HP and SP seem to benefit; but the effect upon these is little short of awesome!!! Instead of just one boost, our enhanced Levels permitted multiple accesses at the HP and SP locations. Froolin has worked out a new site visitation route ending with 'I', 'B', 'D', and 'E'. He calls it 'Turdnil's Tour'. Our scholarly friend was quite pleased by the honor."

"Well," your thief concedes, "if these are fakes, they're the best I've ever seen. Anyway, it's easy enough to check most of the info." Your sorceress nods and regards you with new respect. "You know," she says, "it just could be you're not as dumb as you look."

Beholder Lore

We turned into an unexplored branch and almost walked into an enormous gray spider! It was worrying at something in its back and, so, was slow to react. Rubywand wasn't. She uttered the first syllable of a Fireball spell but had to stop when Mothnose rushed forward! "Poor old thing," he muttered deftly plucking out a festering hellhound fang. A few mumbled cleric cures and the monster was soon as good as new! Well, Fred (the spider's name) was so grateful he imparted an extremely valuable bit of information:

"I see you have the Repulser Wand, which means you're going after the Big Boss downstairs. Maybe you've already guessed that a straight-forward battle is out of the question. I can't tell you how Xanathar might be destroyed, but I do know this: you must get him out of the entry room, down a hallway and into his throne room. So far, every party encountering the Beholder has tried to push him down the hall—NOT a good tactic. If a fireball from an entry room vent doesn't get you—there's a light

beam trigger about mid way down the hall—Xanathar almost surely will. Your best chance is to push him far enough back into the first room so that you can get to the hallway and make a dash for the throne room— don't worry, he'll follow! Jump to your left the moment you exit the hall, turn, and you'll be in position. IF the Wand user lives, you may be able to push the Beholder to his doom."

Spellbreaker Break ★★

Third in Infocom's legendary "Enchanter Trilogy", **Spellbreaker** (for 64K Apple II) casts you as the new leader of the Circle of Enchanters— owing to your brilliancies in **Enchanter** and **Sorcerer**— facing an ominous new threat to the very existence of magic. The all-text adventure easily earned three stars after my dad and I enjoyed many hours of challenging play. However, we had not finished the game and have, since, discovered a fairly significant bug! At some point in the adventure you will need an item (one of the cubes) obtained from a hermit at the cliff top. To get there you must stop an avalanche via the GIRCOL (time freeze) spell scroll. If you have used up the scroll to handle some earlier problem, you are likely to, eventually, find yourself 99% of the way through the adventure with no hope of winning!

I finally checked the Clue Book— something I have never before done for one of the "Enchanter" adventures. Its comment about wasting GIRCOL (on page 6) is "Bad Move". No kidding! With luck, you may have to replay 'only' 80% of the game to correct the error you committed due to an ESP deficit. This sort of thing isn't supposed to happen in an Infocom product. If you need GIRCOL to solve the cliff puzzle, you should not be able to waste it somewhere else. **Spellbreaker** remains a fine adventure; and, now that the bug has been exposed, you can avoid the problem. Still, such flaws weaken the trust essential for enjoyment of puzzle-intensive adventuring. ("I've gotten this far. There MUST be a solution!") Hence, the new rating.

The Games: Winter Challenge

Accolade's new 'Challenge' (\$54.95 for EGA-VGA 640K PC) arrived near deadline time; and, I haven't had a chance to give it a thorough testing. However, the Winter Olympics at Albertville, France are very near; and, Baywoof, a hard-core Olympic-style fanatic, gave the package such a good recommendation that it seems like a good idea to say: "Check it out"

Pro Tennis Tour II ★★★★★

It hasn't been all that long ago that UBI's first tennis sim walked away from the nets with 1st Prize winnings. Fortunately, 'just' being #1 wasn't good enough! For starters, the new **Pro Tennis Tour** (\$39.95 for CGA-VGA 640K PC) offers three surfaces (clay, grass, or hard court), side-switching, and practice using PTT's unique programmable ball machine. Setups include Davis Cup, Grand Slam, and custom tournaments or individual matches played against computer players or a second human (who can use the second joystick). With a suitable adapter, up to four players can compete in doubles. Very nice! Expect other niceties (e.g. 3 difficulty levels) But, the biggest improvements are crisper, more attractive graphics, AdLib/SB

sound, and an even more responsive, 'faster' feel. (Kind of like going from a 'soft' wooden racket to one of the new carbon filament types.) Toby, our resident sports sim tester has even managed to win a match; and, thus, pronounces **Pro Tennis Tour II** the best Tennis ever!

Next

As I recall, we are scheduled for a new year (something between 1990 and 2000) any day now. It should be interesting.

Deck us all with Boston Charlie; walla, walla, wash and Kalamazoo.

...
(They're still going strong.)

Vendors

Access Software: 4910 W. Amelia Earhart Drive, Salt Lake City, Utah 84116
atten: Susan Dunn/Steve Witzel (800-800-4880/ 801-359-2900)

Accolade: 550 S. Winchester Blvd., Suite 200, San Jose, CA 95128
atten: Melinda Mongelluzzo (408-985-1700)

Ad Lib: 220 Grand-Allee East, Suite 960, Quebec, QC, Canada G1R 2J1
atten: Jill Carette (800-463-2686)

Brown & Wagh: 130D Knowles Drive, Los Gatos, CA 95030
atten: LouAnn Meir (800-451-0900) ref. Creative Labs/Sound Blaster

Center for Gifted and Talented: University of Houston/University Park Farish Hall #123, Houston, TX 77004
atten: Theresa Monaco

Creative Labs: 2050 Duane Avenue, Santa Clara, CA 95054
atten: PR/mktg. (800-544-6146/408-986-1461) ref: Brown & Wagh

Dreamworld Software: P.O. Box 830, Iowa City, IA 52244-0830
atten: PR/Mktg. (319-338-6491) ref: Dream Grafix

Electronic Arts: 1450 Fashion Island Blvd., San Mateo, CA 94404
atten: Lisa Higgins (415-571-7171/orders: 800-245-4525) atten: Marci Galea ext.541

P. Gauthier: 67 Sleigh Road, Westford, MA 01886 (508-692-4706)

Infocom: 125 Cambridge Park Drive, Cambridge, MA 02140 (800-262-6868)

Interplay Productions: 3710 S. Susan, #100, Santa Ana, CA 92704
atten: Anita Lauer (714-545-9001; orders: 800-969-GAME)

P.J. James: 5705 Adamstown Road, Adamstown, MD 21710 (301-831-1042)

Janklow Bender: 257 Park Avenue South, New York, NY 10010
atten: Kim Adamo/Susan Kornick (212-475-8030) ref. Disney

MECC: 3490 Lexington Avenue North, St. Paul, MN 55126 (800-228-3504; in Minnesota call 800-782-0032; in Canada call 800-263-9677)

Mediagenic/Activision: 3885 Bohannon Drive, Menlo Park, CA 94025
atten: Kelly Zmak (415-322-0260) ref. Infocom

Microsoft: 1 Microsoft Way, Redmond, WA 98052
atten: Marilyn McKenna (800-541-1261)

New World Computing: 20301 Ventura Blvd., Suite 200, Woodland Hills, CA 91364

atten: Scott McDaniel (818-999-0607) dist. Electronic Arts

Passport Designs: 625 Miramontes St., Suite 103, Half Moon Bay, CA 94019
atten: Anastasia Lanier (415-726-0280)

Spectrum-Holobyte: 2061 Challenger Dr., Alameda, CA 94501
atten: Liz Rich (415-522-0107)

Strategic Simulations Inc.: 675 Almandor Ave, Sunnyvale, CA 94086
atten: Dee Lowe/ Linda Blanchard (408-737-6800) dist: Electronic Arts

Ubi Soft: 511 Sir Francis Drake Blvd., Suite C, Greenbrae, CA 94904
atten: Leila Emadin (415-332-8749) dist: Electronic Arts

U.S. Gold: 550 S. Winchester Blvd., San Jose, CA 95128
atten: Caryn Mical (408-246-6607) ref: Accolade

Virgin Mastertronic: 18001 Cowan Street, Suite A, Irvine, CA 92714
atten: David Luehmann (orders: 800-VRGIN07/ 714-833-8710)

Walt Disney Computer Software: 500 South Buena Vista, Burbank, CA 91521
atten: Kirk Green (800-688-1520 orders, 818-567-5360) ref: Janklow-Bender

Waggner-Edstrom: 6915 S.W. Macadam Avenue, Suite 300, Portland, OR 97219
atten: Isabel Boucq (503-245-0905)

Gunther W Roth France

☺ I'd really like to see some programming tips and pointers for the IBM PC. I know how to handle the Apple but I don't understand the IBM.

NoReturnAddr

☺ I have tried to contact the following firm:

TEVEX
4205 First Ave Suite 100
Tucker, GA 30084

But I got back my letter with "Address Changed" marked on it. Does anyone know their new address? Any help would be appreciated.

Rich Etarip WI

Softkey for...

Lunar Leepers Sierra On-Line

Requirements:

Apple II+ at least 48K
2 blank disks
Sector editor

This is an extensive softkey for Lunar Leepers by Sierra On-line which uses 'SPIRADISC' protection and is very difficult to copy. However, we won't have to worry about the disk format because all parts of the game can be captured by boot code tracing. The boot code trace steps are identical to those in the Jawbreaker softkey.

This game has three parts to it: the title program; the main game program; and the second level of game play. The softkey basically consists of three sections:

-Boot code tracing the disk 3 times to get each of the three sections as a normal DOS file

-Writing these 3 files to a normal disk using the RWTS

-Writing individual loaders for each of these three program sections as well as a routine to write the high scores to disk

The first step will be initializing each of the blank disks and labeling them DISK 1 and DISK 2. DISK 1 will be used for saving each program section as a file and DISK 2 is the disk we will

write the game to with the RWTS. Disk 2 will contain no directory.

After the disks are initialized and labeled, we're ready to begin boot code tracing the disk. The first part we will capture is the title program.

The Boot Code Trace

Boot trace thru boot 2.

CALL-151 enter monitor if not already in monitor

9600<C600.C6FFM move boot 0 to RAM

96FA:98 modify

9801:4C 59 FF boot 0

9600G boot disk

9800<800.8FFM move boot 1 to modify

9833:98 make changes

98EB:98 to boot 1

9870:59 FF so it will exit into monitor

9600G boot disk

B464:4C 00 B0 \$B464 usually exits to game loader

B000:28 18 A9 59 8D 48 03 routine to patch \$59 \$FF over the JMP

:A9 FF 8D 49 03 60 to the start of title program

C0E9 turn on the disk drive if it's not on
B800G execute boot 2

The title program is now loaded in and occupies memory from \$6000 to \$9FFF. We want to save this file as a normal DOS file but first we have to move it to 'safe' memory, reboot and save the file.

2000<6000.9FFFM

(insert DISK 1)

C600G

BSAVE TITLE, A\$2000, L\$4000

Well, I hope you're ready to boot code trace again! This time we'll capture the main game program. Insert the Lunar Leepers disk and repeat step 1.

At this point, the game still isn't loaded in but we have easy access to their loader. A simple \$309G will load in the game but first we have to change it so it will return control to us.

332:59 FF

309G

5. The game is now in memory and runs from \$800-\$9000. Before rebooting to save this section, move page \$8 so does not get overwritten by rebooting. Then, reboot DOS, enter monitor, move page \$8 back and finally save the game program.

9000<800.8FFM

(insert DISK 1)

C600G

CALL-151

800<9000.90FFM

A964:FF

BSAVE GAME, A\$800, L\$8800

Now it's time for the final boot code trace. Once again insert Lunar Leepers and repeat step 1.

This time we are capturing the second level of the game. This can be loaded in by \$30DG but first, change the JMP \$800 to JMP \$FF59.

340:59 FF

30DG

This section was loaded into memory in two parts. The first runs from \$800-\$1FFF and the second from \$5200-\$70FF. Again, move page \$8 to page \$90 for rebooting and then reboot and save.

9000<800.8FFM

(insert DISK 1)

C600G

CALL -151

800<9000.90FFM

BSAVE LEVEL PART 1, A\$800, L\$1800

BSAVE LEVEL PART 2, A\$5200, L\$1F00

And that's it for softkey section 1. To begin section two, first enter The following routine at \$B700. This routine is for writing the game sections directly to the disk using the RWTS.

**B700:A9 02 8D F4 B7 A5 00 8D
:EC B7 A5 01 8D ED B7 A5
:02 8D F1 B7 A5 03 8D E1
:B7 A9 00 8D F0 B7 4C 93 B7**

```
B700:A9 02 LDA #02
B702:8D F4 B7 STA $B7F4
B705:A5 00 LDA $00
B707:8D EC B7 STA $B7EC
B70A:A5 01 LDA $01
B70C:8D ED B7 STA $B7ED
B70F:A5 02 LDA $02
B711:8D F1 B7 STA $B7F1
B714:A5 03 LDA $03
B716:8D E1 B7 STA $B7E1
B719:A9 00 LDA #00
B71B:8D F0 B7 STA $B7F0
B71E:4C 93 B7 JMP $B793
```

Now type 'B700L' and compare to the listing to make sure everything was entered correctly.

Next, make the following changes so the tracks and memory pages are written in order instead of backward.

**B7A6:EE
B7AC:EE**

Now it's time to write the title program to DISK 2. First, with DISK 1 still in the drive:

BLOAD TITLE

(insert DISK 2)

CALL-151 If not already in the monitor

Next, we have to enter track, sector, where to read from, and number of memory pages into locations \$00-\$03 for the writer at \$B700. Then, execute \$B700 to write to DISK 2.

00:01 0F 20 40 *trk, sct, start pg, pg cnt*
B700G

(Insert Disk 1)

BLOAD GAME

(Insert Disk 2)

00:06 0F 08 88 *trk, sct, start pg, pg cnt*
B700G

(Insert Disk 1)

BLOAD LEVEL PART 1

BLOAD LEVEL PART 2

(Insert DISK 2)

Remember, this section is in 2 parts so to keep things simple, write it in 2 parts.

00:0F 0F 08 18

B700G

00:11 0F 52 1F

B700G

Section 2 of the softkey is now completed. DISK 1 is no longer needed. Now you can do the final section.

Insert Disk 2. Track 0, Sector 1 is where boot stage 2 is located on a normal disk. We will patch in a routine here to read in the title program at boot. Begin typing at byte 0 on the sector:

Trk	Sct	Byte	From	To
00	01	00	??	A9 01 8D EC B7 A9 0F 8D ED B7 A9 60 8D F1 B7 A9 40 8D E1 B7 A9 00 8D F0 B7 8D EB B7 20 93 B7 A9 03 8D F1 B7 A9 B7 A0 E8 20 B5 B7 4C 00 60

While we are on this sector, we also have room to put the routine to load in the game after the title page is run. Enter this at byte \$2E:

Trk	Sct	Byte	From	To
00	01	2E	??	A9 06 8D EC B7 A9 0F 8D ED B7 A9 08 8D F1 B7 A9 88 8D E1 B7 20 93 B7 4C 00 08

Also, on this sector, we can fit the routine to write the high score sector to the disk when a high score is achieved. The sector containing the high scores is included in the title program and can be found on Track 4, Sector A and loads into \$9500. Enter the following at byte \$48 of Track 0, Sector 1:

Trk	Sct	Byte	From	To
00	01	48	??	A9 02 8D F4 B7 A9 04 8D EC B7 A9 0A 8D ED B7 A9 95 8D F1 B7 A9 B7 A0 E8 20 B5 B7 CE F4 B7 60

Before writing this sector back to this disk, you need to edit a few bytes so the read routine reads the tracks forward the same way we wrote them, and to make sure the IOB begins reading at boot-up and not writing.

Trk	Sct	Byte	From	To
00	01	A6	??	EE
		AC	??	EE
		F4	??	01

Now write the sector back to the disk and then read Track 0, Sector 0 and set the pointer at byte \$60. This is the boot 1 sector that loads into \$800 as well as \$B600 and it has available space for data. The final routine to enter is for reading in the second level of play which is in two parts.

Trk	Sct	Byte	From	To
00	00	60	??	A9 0F 8D EC B7 A9 0F 8D ED B7 A9 08 8D F1 B7 A9 18 8D E1 B7 20 93 B7 A9 11 8D EC B7 A9 0F 8D ED B7 A9 52 8D F1 B7 A9 1F 8D E1 B7 20 93 B7 4C 00 08

After you write the sector back to the disk, we're ready for the final step! The original disk accesses addresses in page \$03 for all of its loading. Now, we could scan the disk and look for all the JSRs and JMPs to page \$03 addresses and change them one at a time, but it would be a lot easier to just patch in the appropriate JMPs to our respective loading routines. Foreexample, when Lunar Leapers wants to load in the main game program, it goes to \$309. So, if we put a JMP \$B72E (which is our game load routine) at \$309, it will load like normal.

The title page loader at \$B700 has already been written to load Track \$5, Sector \$F into \$300. All we have to do is patch in a few JMPs to our routines in this sector and write it back. Read Track \$5 Sector \$F and enter the following at byte 0:

Trk	Sct	Byte	From	To
05	0F	00	??	EA EA EA EA EA 4C 00 B7 EA 4C 2E B7 EA 4C 60 B6 EA 4C 48 B7

Write the sector back to the disk

Boot it up! If you followed all steps carefully and made no errors, everything should work just like the original—BUT—this disk can be easily backed up! One thing to remember, don't write protect the disk because the game writes high scores to the disk.

Softkey for...

Firebird

?

This softkey will instruct you on how to download Firebird onto a normal disk in a single file. Although I'm not positive, it's apparent that Gebelli software (Firebird) was affiliated with Sirius due

to the fact that the disk has almost the same boot code as many Sirius disks and that Nasir Gebelli wrote many games for Sirius. Even though the program accesses the disk for the title program, we can work around this with the help of the RAM card (64K is required for this softkey). Instead of worrying about loading in the title after each time the game is played, we'll move it into the RAM card and move it back down each time it is needed. The program must first be captured by means of boot code tracing.

Listed below is a cookbook method for the boot code trace. By tracing the boot code several times, I managed to shorten the actual process to a few minor steps. Normally I would go into detail and try to explain the boot code trace one step at a time but time is tight right now and so much more is learned by the 'trial and error' process. For a better understanding of this boot code, see the softkey for Gorgon. Now to begin....

CALL-151

9600<C600.C6FFM

96FA:98

9801:4C 59 FF

9600G

9800<800.8FFM

985C:01

9870:98

987D:A9 EA 8D 7E 05 8D 7F 05

:A9 59 8D 89 05 A9 FF 8D

:8A 05 4C 46 04

9600G

By following the steps properly, the game and title program should all be in memory. Firebird runs from \$800 to \$AFFF. Hi-res page 2 is completely unused and \$3300-\$3FFF of page 1 is also available for storage. The disk access routines can be found at \$B000 but they don't need to be saved. The title program exists at \$2000-\$32FF and is overwritten every time the game is played or the demo is run. We'll deal with that problem further on but right now, move \$8300-\$AFFF to the available space in the hi-res pages.

3300<8300.AFFFM

As always, page \$8 must be stored in a safe place so it is not lost during the re-boot. Move page \$8 and then insert a slave disk with NO HELLO program and re-boot. Then enter the monitor and move page \$8 back home.

8800<800.8FFM

C600G

CALL-151

800<8800.88FFM

Now comes the fun part. Several routines must be entered to make this game work the way we want. Throughout much of this code, you will find small gaps of blank memory between routines which can be used for other short routines. There are so many places our routines can be stored so there is no special significance to the addresses I chose for these routines.

Almost the entire page \$5F (which will be moved to \$AF) is blank so it can be considered a safe place to store a routine. Note that this does not necessarily prove true with all programs though. Before jumping to the start of the game, several things must be done.

- Move \$3300-5FFF back to \$8300
- Initialize the RAM card for writing
- Move the title program (\$2000-32FF) into the RAM card
- Restore several important zero page values
- Turn on the hi-res screen

The zero page values mentioned above were set during the boot routine but get overwritten by monitor use. To make things more difficult, the correct values are achieved by a checksum that the boot code does on itself. Any alteration to the boot code would cause incorrect values, hence, the program would not run. This is rather typical of Sirius software and in order to outsmart this little plan, you have to be a little tricky as well. I would go into detail but this little trick is explained in the Gorgon softkey. Remember, it's virtually the same boot code.

To continue on, enter a routine at \$5F80 to take care of the points mentioned above. The routine is too large for one entry line so enter it in two parts. (type carefully)

5F80:20 89 FE 20 93 FE A9 33

:85 D1 A9 83 85 D3 A2 2D

:20 60 57 AD 81 C0 AD 81

:C0 A9 F8 85 D1 85 D3 A2

:08 20 60 A7 AD 83 C0 AD

:83 C0 A9 20 85 D1 A9 D0

:85 D3 A2 13 20 60 A7 A9

:20 85 4E A9 0A 85 4F A9

:80 85 36 A9 0B 85 37 A9

:10 85 AD AD 50 C0 AD 57

:C0 AD 52 C0 AD 55 C0 4C

:A0 30

The above program calls a universal memory move routine that we are going to write at \$A760 (remember pages \$33-\$5F all get relocated to \$83-\$AF). Enter this routine at \$5760.

5760:A0 00 84 D0 84 D2 B1 D0

:91 D2 C8 D0 F9 E6 D1 E6

:D3 CA D0 F2 60

At the end of each game and demo mode, the program normally jumps to \$B000 to re-load the title program. This JMP can be found at \$7B28. Instead, we want to jump to a routine to move the program back down from the RAM card and JMP \$30A0 where it begins running. There is still room at the end of page \$5F (\$AF) for a short routine.

5FE0:A9 D0 85 D1 A9 20 85 D3

:A2 13 20 60 A7 4C A0 30

7B29:E0 AF

Finally, install a JMP \$5F80 at \$7FD and save the game.

7FD:4C 80 5F

BSAVE FIREBIRD, A\$7FD, L\$7B03

Softkey for...

Cribbage/Solitaire

Datamost

The protection on this disk is very basic and can be deprotected with just a few simple steps. The disk is a normal DOS 3.3 disk except that it contains a volume of 11 and the address epilogue mark has been changed from \$DE to \$DF. You can use any normal DOS copier for this but the copier must copy the disk volume. COPYA from the system master will work fine for this.

First, enter the monitor and change the RWTS to ignore epilog and checksum errors, then run COPYA.

B942:18

RUN COPYA

Once the disk has been copied, start up a sector editor.

Trk	Sct	Byte	From	To
00	03	91	DF	DE

Write the sector back to the disk. That's all there is to it.

Softkey for...

Snoggle

?

Snoggle was one of the very first Pac-Man games for the Apple. It was originally called Puck Man but the shapes were changed as well as the name. Even though it's a very old game and the protection is very basic, it was on the Most Wanted List so here's the softkey!

Get into the monitor to boot code trace.

CALL -151

Move the boot program to RAM so it can be modified for our needs. Then change it so it exits to \$9801 and make \$9801 JMP to the monitor.

9600<C600.C6FFM

96FA:98

9801:4C 59 FF

9600G

Snoggle's boot 1 is at \$800 so move it to our work area at \$9800. You'll see that it's a standard DOS 3.2 boot routine.

9800<800.8FFM

This boot routine must be modified to run at page \$98 and to jump to the monitor upon exit.

9805:98

9842:59 FF

9600G

Boot 2 is now at \$300 so move to \$9300 to modifications and change boot 1 to jump to our boot 2 at \$9301

9300<300.3FFM

9842:01 93

Boot 2 uses a universal indirect JMP (\$003E) for two different addresses. First it goes to \$25D to load from the disk and finally it goes to \$B700 which is the next boot stage. A few changes must be made to get around this.

9328:5D 02

9343:4C 59 FF

9600G

The final boot stage (at \$B700) is now loaded in and can be called directly from memory without going through the other boot stages again, but first, the X-register must contain the slot number times 10 which would be (\$60) for slot 6.

B6FE:A2 60

At \$B742 is a JSR \$6000 which is the title page and at \$B75F is a JMP \$4A77. This is the jump to the start of the game. Change this to jump to the monitor and patch 3 NOPs over the JSR to the title page since it only takes time and will not be saved. Finally, call \$B6FE to load in the game

B760:59 FF

B742:EA EA EA

B6FEG

The game should now be in memory and lives from \$800 to \$8A00 with hires page 1 available. Move pages \$6B-\$89 down to \$2100 and at \$2000, we'll write a memory move routine later.

2100<6B00.89FFM

Now move page \$8 to a safe place and reboot DOS with a slave disk containing NO HELLO program.

8000<800.8FFM

C600G

Enter the monitor and move page \$8 back home.

CALL-151

800<8000.80FFM

All that is left is writing the memory move at \$2000. This will move pages \$6B-\$89 back where they belong and start the game.

2000:A2 00 BD 00 21 9D 00 6B

:E8 D0 F7 EE 04 20 EE 07

:20 AD 04 20 C9 40 D0 EA

:4C 77 4A

Finally, patch \$7FD to jump to our memory move and save the game.

7FD:4C 0 20

BSAVE SNOGGLE, A\$7FD, L\$6303

Rob Fiduccia

MD

The first time I played an Ultima — I can recall that night so vividly, it's a sensation. I feel that's probably true for many avid adventures who have ventured into Richard Garriott's fantasy worlds.

My first destination was Ultima II's timeless lands and worlds, which I was visiting by a friend's Apple in Schenectady New York in 1982. As I explored long into the night, I lost all track of time and space, and it seemed as if I'd been there but only a few moments before I sensed a glow from behind me - until I finally tore my eyes from the screen, looking over my shoulder, I saw and felt the warm sun rising over the trees on the far side of the yard: I had played Ultima from sundown to dawn.

When I finally collapsed into bed, I felt like a wizard who wasted all power on a single battle; little to know I had many more ahead. As I woke in the morning there could be no denying I was different somehow.

I left my chambers to consume some food when I walked more certain, possessing a notion that I had done and could do something out-of-this-world. I had been so immersed in the myth and magic of Richard Garriott's epic fantasy I felt such satisfaction, nothing could rid it.

I now quest in Britannia, in Ultima V, desperately seeking Lord British. Though my knowledge has grown beyond proportions, I still have that same drive as the first enchanting night.

Ultima V. A game most have played. Sophisticated, complex, and a possession of such perplexity, I find I'm always playing it again, again, and again.

I enjoy fantasy. I love creating. I do what I can to appreciate both. I read when I can, I design I suppose to express myself. It's an art to me. So I wrote Ultima V DCS so I could create my own fantasy dungeons and fulfill that creative desire within me. I've got my reasons most find harm to except, hard to grasp. Never the less, I'm proud of what I do. I'm an artist who designs what my mind feels and thinks.

Ultima V Dungeon Copier v1.0

I most recently conjured up a new Ultima V DCS utility, "U5.DUNGEON.COPIER". I'm giving you the program so you can play mine and others creations with the use of Ultima V DCS. You won't be able to design a dungeon unless you own Ultima V DCS of course. But you'll be able to play small or large scenarios created with them.

If you purchase Ultima V DCS for \$41.00, you possesses mastery, power so limitless if used correctly it has no borders. It's quite clear what I mean.

I'm going to be mailing in dungeons for you to play if you have an Apple and Ultima V. If U5.DUNGEON.COPIER is used, you can venture them. You must understand that U5.DUNGEON.COPIER is a new utility of the Ultima V DCS collection. I'm giving it freely because I feel you could have fun playing dun-

geon scenarios; I might be wrong though. Those who have Ultima V DCS already have it. If you don't care to type the large file in (and don't get the library disk), write to me and send a disk so I can install it on it freely.

Type in the BASIC program and save it as: U5.DUNGEON.COPIER. Type in the DOS UTILITY at A\$300 and save as: BSAVE DOS UTILITY,A\$300 ,L\$37.

If you don't get the library disk, you'll need to type in the hex dumps of the files for the dungeon and save them as:

Level: name ,A\$8000,L\$300

Chamber: name ,A\$8000,L\$FF

(Do not rename the files so that scenario they can be played as intended to be played)

Note: All files dealing in any way with Ultima V DCS must be in DOS 3.3 format. This doesn't include the Dungeon disk though.

The program is self-explanatory. The only options useful to persons who don't own Ultima V DCS are making a file a chamber and making a file a level. Be sure to use a backup Dungeon disk too.

The program won't check the disk, so insert the correct one. And you may need to use a new Britannia disk if you've been victorious in a chamber and saved it to disk. To know if this has been, no monsters or treasure (contents) will be in the chamber when entered.

One other thing. Don't depend on viewing a gem 100%. The Gem Editor data is also saved to the level file. Don't necessarily believe what you see. It's part of the dungeon scenario.

If you need any help, requests or of the such, feel free to write to me at:

Rob Fiduccia

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Annapolis, MD 21401

U5.DUNGEON.COPIER

```
10 TEXT : PRINT CHR$( 21) :
NORMAL : HOME : SPEED=
255 : CLEAR
20 IF PEEK (768) < > 169
THEN PRINT CHR$( 4) ;
"BLOADDOSUTILITY,A$300"
30 CKB = - 16368 : RKB = -
16384 : DIM D$( 8) : TX =
0 : CODE = 0
40 DIM T( 8) , S( 16) , L1( 8)
, L2( 8)
50 AD = 32768 : J1 = 49186 : J2
= 49204
60 POKE 49186,175 : POKE
49204,69
70 FOR I = 1 TO 8 : READ
T(I) : NEXT I
80 DATA 27,0,28,29,30,31
,32,33
90 FOR I = 0 TO 15 : READ
S(I) : NEXT I
100 DATA 0,14,13,12,11,10
,9,8,7,6,5,4,3,2,1,15
110 FOR I = 1 TO 8 : READ
L1(I) : NEXT I
120 DATA 0,13,11,9,7,5,3,1
130 GOTO 170
140 REM ...RWTS...
150 D = 1 : SL = 6
160 POKE 789,S : POKE 779,D :
POKE 784,T : POKE 774,SL *
16 : POKE 799,Y - INT ( Y /
256) * 256 : POKE 804, INT
(Y / 256) : POKE 794, CODE :
CALL 768 : RETURN
170 FOR I = 1 TO 8 : READ
L2(I) : NEXT I
180 DATA 14,12,10,8,6,4,2,15
190 REM ...PROGRAM DATA...
200 FOR I = 1 TO 8 : READ
D$( I) : NEXT I
210 DATA "DECEIT", "DESPISE"
, "DESTARD", "WRONG"
```

220 DATA "COVETOUS", "SHAME", "HYTHLOTH", "DOOM"

230 DK\$ = "InsertDungeonDisk" : TR\$ = "InsertTargetDisk" : SK\$ = "InsertSaveDisk"

240 SC\$ = "Source" : TG\$ = "Target" : DN\$ = "dungeon" : CM\$ = "chamber"

250 LE\$ = "dungeonlevel"

260 HTAB 21 - LEN (DK\$) / 2 : VTAB 12 : PRINT DK\$

270 POKE CKB,0

280 K = PEEK (RKB) : IF K < 127 THEN 280

290 POKE CKB,0

300 POKE 49186,175 : POKE 49204,69

310 HOME : A\$ = "UltimaDungeonCopierv1.0" : HTAB 21 - LEN (A\$) / 2 : VTAB 2 : PRINT A\$

320 A\$ = "byRobertC.Fiduccia000004/2/91" : HTAB 21 - LEN (A\$) / 2 : VTAB 3 : PRINT A\$: POKE 34,3

330 A\$ = "SELECT:" : HTAB 21 - LEN (A\$) / 2 : VTAB 8 : PRINT A\$

340 HTAB 10 : VTAB 10 : PRINT "1)ChambertoChamber"

350 HTAB 10 : VTAB 11 : PRINT "2)LeveltoLevel"

360 HTAB 10 : VTAB 12 : PRINT "3)Chambertofile"

370 HTAB 10 : VTAB 13 : PRINT "4)FiletoChamber"

380 HTAB 10 : VTAB 14 : PRINT "5)Leveltofile"

390 HTAB 10 : VTAB 15 : PRINT "6)Filetolevel"

400 HTAB 10 : VTAB 16 : PRINT "7)DepartCopier"

410 POKE CKB,0

420 K = PEEK (RKB) : IF K < 127 THEN 420

430 POKE CKB,0

440 IF K = 155 OR K = 183 THEN TEXT : HOME : POKE 49186,246 : POKE 49204,70 : A\$ = "UltimaDungeonCopier" : HTAB 21 - LEN (A\$) / 2 : VTAB 12 : PRINT A\$: END

450 IF K < 177 OR K > 183 THEN 410

460 IF K = 177 THEN POKE J1,111 : POKE J2,70 : GOSUB 530 : GOTO 300

470 IF K = 178 THEN POKE J1,31 : POKE J2,65 : GOSUB 1220 : GOTO 300

480 IF K = 179 THEN ZY = 1 : POKE J1,111 : POKE J2,70 : GOSUB 1670 : GOTO 300

490 IF K = 180 THEN ZY = 2 : POKE J1,111 : POKE J2,70 : GOSUB 1670 : GOTO 300

500 IF K = 181 THEN ZY = 3 : POKE J1,31 : POKE J2,65 : GOSUB 2440 : GOTO 300

510 IF K = 182 THEN ZY = 4 : POKE J1,31 : POKE J2,65 : GOSUB 2440 : GOTO 300

520 :

530 REM ...Chamber to Chamber...

540 TX = 1

550 HOME

560 IF TX = 1 THEN HTAB 1 : VTAB 10 : PRINT SC\$ + DN\$

570 IF TX = 2 THEN HTAB 1 : VTAB 10 : PRINT TG\$ + DN\$

580 INVERSE

590 A\$ = "COPYCHAMBERTOCHAMBER" : HTAB 21 - LEN (A\$) / 2 : VTAB 5 : PRINT A\$: NORMAL : POKE 34,5

600 H = 2 : V = 12

610 FOR I = 177 TO 184 : HTAB H : VTAB V : PRINT CHR\$(I) : V = V + 1 : NEXT I

620 H = 4 : V = 12

630 FOR I = 1 TO 8 : HTAB H : VTAB V : PRINT D\$(I) : V = V

```

+ 1: NEXT I
640 POKE CKB,0
650 K = PEEK (RKB): IF K <
127 THEN 650
660 POKE CKB,0
670 IF K = 155 AND TX = 2
THEN POKE 34,4:AL = 0:
GOTO 530
680 IF K = 155 THEN POKE
34,3:TX = 0: RETURN
690 IF K = 178 THEN 640
700 IF K < 177 OR K > 184
THEN 640
710 IF TX = 2 THEN POKE 34,8
720 HOME
730 IF TX = 1 THEN HTAB 1:
VTAB 7: PRINT "SD:Ø" ;D$(K
- 176); "" :T1 = T(K -
176)
740 IF TX = 2 THEN HTAB 25:
VTAB 7: PRINT "TD:Ø" ;D$(K
- 176); "" :T2 = T(K -
176)
750 IF AL = 1 THEN 930
760 IF TX = 1 THEN HTAB 1:
VTAB 11: PRINT SC$ + CM$
770 IF TX = 2 THEN HTAB 1:
VTAB 11: PRINT TG$ + CM$
780 IF TX = 1 THEN HTAB 1:
VTAB 14: PRINT "(1-,
16ØorØALL)"
790 IF TX = 2 THEN HTAB 1:
VTAB 14: PRINT "(1-16)"
800 HTAB 1: VTAB 13: CALL -
868: HTAB 1: VTAB 13:
INPUT "CHAMBER:Ø" ;CH$
810 CH = VAL (CH$)
820 IF TX = 2 AND CH$ = ""
THEN POKE 34,8: HTAB 25:
VTAB 7: CALL - 868: HTAB
25: VTAB 8: CALL - 868:
GOTO 550
830 IF TX = 2 AND CH < 1 OR
CH > 16 THEN 800
840 IF CH$ = "" THEN POKE
34,3:TX = 0: GOTO 530
850 IF TX = 1 AND CH$ =
"ALL" THEN HTAB 1: VTAB 8:
PRINT "SC:ØALL" :AL = 1:
POKE 34,8:TX = 2: GOTO 550
860 IF CH < 1 OR CH > 16
THEN 800
870 IF TX = 1 THEN S1 =
S(CH)
880 IF TX = 2 THEN S2 =
S(CH)
890 IF TX = 1 THEN HTAB 1:
VTAB 8: PRINT "SC:Ø" ;CH
900 IF TX = 2 THEN HTAB 25:
VTAB 8: PRINT "TC:Ø" ;CH
910 IF TX = 2 THEN POKE
34,8: HOME : GOTO 930
920 POKE 34,9:TX = 2: GOTO
550
930 REM ...Do coping..
940 HTAB 21 - LEN (DK$) / 2:
VTAB 21: PRINT DK$
950 POKE CKB,0
960 K = PEEK (RKB): IF K <
127 THEN 960
970 POKE CKB,0
980 IF K = 155 AND AL = 1
THEN HTAB 1: VTAB 21: CALL
- 868: HTAB 25: VTAB 7:
CALL - 868: GOTO 550
990 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: GOTO
760
1000 IF AL = 1 THEN 1100
1010 T = T1:S = S1:CODE =
1:Y = AD: GOSUB 140
1020 HTAB 1: VTAB 21: CALL -
868
1030 A$ = "InsertØTarget
ØDisk" :HTAB 21 - LEN (A$)
/ 2: VTAB 21: PRINT A$
1040 POKE CKB,0
1050 K = PEEK (RKB): IF K <
127 THEN 1050
1060 POKE CKB,0
1070 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: GOTO
940
1080 T = T2:S = S2:CODE =
2:Y = AD: GOSUB 140
1090 POKE 34,8: HOME : GOTO
760
1100 REM ...Copy all
chambers...
1110 H = 13:V = 22
1120 Y = AD
1130 FOR I = 0 TO 15:T =
T1:S = S(I):CODE = 1:
GOSUB 140:Y = Y + 256:
HTAB H + I: VTAB V: PRINT
"." ;: NEXT I
1140 HTAB 1: VTAB 21: CALL -
868:A$ = "InsertØTargetØ
Disk" : HTAB 21 - LEN (A$)
/ 2: VTAB 21: PRINT A$:
HTAB 1: VTAB 22: CALL -
868
1150 POKE CKB,0
1160 K = PEEK (RKB): IF K <
127 THEN 1160
1170 POKE CKB,0
1180 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: GOTO
930
1190 Y = AD
1200 FOR I = 0 TO 15:T =
T2:S = S(I):CODE = 2:
GOSUB 140:Y = Y + 256:
HTAB H + I: VTAB V: PRINT
"." ;: NEXT I
1210 HTAB 1: VTAB 21: CALL -
868: HTAB 25: VTAB 7: CALL
- 868: GOTO 550
1220 REM ...Level to Level
1230 HOME
1240 INVERSE :A$ = "LEVELØ
TOØLEVEL" : HTAB 21 - LEN
(A$) / 2: VTAB 5: PRINT
A$: NORMAL : POKE 34,5
1250 HTAB 1: VTAB 10: PRINT
SC$ + LE$
1260 H = 2:V = 12
1270 FOR I = 177 TO 184:
HTAB H: VTAB V: PRINT CHR$(
I):V = V + 1: NEXT I
1280 H = 4:V = 12
1290 FOR I = 1 TO 8: HTAB H:
VTAB V: PRINT D$(I):V = V
+ 1: NEXT I
1300 POKE CKB,0
1310 K = PEEK (RKB): IF K <
127 THEN 1310
1320 POKE CKB,0
1330 IF K = 155 THEN TEXT :
RETURN
1340 IF K < 177 OR K > 184
THEN 1300
1350 TK = 34
1360 S1 = L1(K - 176):S2 =
L2(K - 176)
1370 HTAB 1: VTAB 7: PRINT
"SL:Ø" ;D$(K - 176)
1380 POKE 34,7: HOME
1390 HTAB 1: VTAB 10: PRINT
TG$ + LE$
1400 H = 2:V = 12
1410 FOR I = 177 TO 184:
HTAB H: VTAB V: PRINT CHR$(
I):V = V + 1: NEXT I
1420 H = 4:V = 12
1430 FOR I = 1 TO 8: HTAB H:
VTAB V: PRINT D$(I):V = V
+ 1: NEXT I
1440 POKE CKB,0
1450 K = PEEK (RKB): IF K <
127 THEN 1450
1460 POKE CKB,0
1470 IF K = 155 THEN POKE
34,5: HOME : GOTO 1250
1480 IF K < 177 OR K > 184
THEN 1440
1490 HTAB 25: VTAB 7: PRINT
"TL:Ø" ;D$(K - 176)
1500 S3 = L1(K - 176):S4 =
L2(K - 176)
1510 POKE 34,7: HOME
1520 HTAB 21 - LEN (DK$) /
2: VTAB 21: PRINT DK$
1530 POKE CKB,0
1540 K = PEEK (RKB): IF K <
127 THEN 1540
1550 POKE CKB,0
1560 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: HTAB
25: VTAB 7: CALL - 868:
GOTO 1380
1570 Y = AD
1580 T = TK:CODE = 1:S = S1:
GOSUB 140:Y = Y + 256:S =
S2:T = TK:CODE = 1: GOSUB
140
1590 HTAB 1: VTAB 21: CALL -
868:A$ = "InsertØTarget
ØDisk" :HTAB 21 - LEN (A$)
/ 2: VTAB 21: PRINT A$
1600 POKE CKB,0
1610 K = PEEK (RKB): IF K <
127 THEN 1610
1620 POKE CKB,0
1630 IF K = 155 THEN GOTO
1510
1640 Y = AD
1650 T = TK:CODE = 2:S = S3:
GOSUB 140:Y = Y + 256:S =
S4:T = TK:CODE = 2: GOSUB
140
1660 HOME : HTAB 25: VTAB 7:
CALL - 868: GOTO 1380
1670 REM ...Chamber file/
File chamber...
1680 HOME : INVERSE
1690 IF ZY = 1 THEN A$ =
"CHAMBERØTOØFILE"
1700 IF ZY = 2 THEN A$ =
"FILEØTOØCHAMBER"
1710 HTAB 21 - LEN (A$) / 2:
VTAB 5: PRINT A$: NORMAL :
POKE 34,5
1720 HTAB 1: VTAB 10: PRINT
"SelectØ" ;DN$
1730 H = 2:V = 12
1740 FOR I = 177 TO 184:
HTAB H: VTAB V: PRINT CHR$(
I):V = V + 1: NEXT I
1750 H = 4:V = 12
1760 FOR I = 1 TO 8: HTAB H:
VTAB V: PRINT D$(I):V = V
+ 1: NEXT I
1770 POKE CKB,0
1780 K = PEEK (RKB): IF K <
127 THEN 1780
1790 POKE CKB,0
1800 IF K = 155 THEN TEXT
:AL = 0:ZY = 0: RETURN
1810 IF K = 178 THEN 1770
1820 IF K < 177 OR K > 184
THEN 1770
1830 TK = T(K - 176):KK = K
- 176
1840 HTAB 1: VTAB 7: PRINT
"Dungeon:Ø" ;D$(K - 176):
POKE 34,7: HOME
1850 HTAB 1: VTAB 10: PRINT
"SelectØ" ;CM$
1860 HTAB 1: VTAB 13: PRINT
"(1-16ØorØALL)"
1870 HTAB 1: VTAB 12: CALL -
868: HTAB 1: VTAB 12:
INPUT "Chamber:Ø" ;CH$
1880 IF CH$ = "ALL" THEN AL
= 1: POKE 34,8: HOME :
GOTO 1920
1890 IF CH$ = "" THEN POKE
34,5: HOME : GOTO 1720
1900 CH = VAL (CH$): IF CH <
1 OR CH > 16 THEN 1870
1910 HTAB 1: VTAB 8: PRINT
"Chamber:Ø" ;CH$: POKE
34,8: HOME
1920 IF AL = 1 THEN HTAB 1:
VTAB 8: PRINT
"Chamber:ØALL"
1930 IF ZY = 1 THEN HTAB 21
- LEN (DK$) / 2: VTAB 21:
PRINT DK$
1940 IF ZY = 2 THEN HTAB 21
- LEN (SK$) / 2: VTAB 21:
PRINT SK$
1950 POKE CKB,0
1960 K = PEEK (RKB): IF K <
127 THEN 1960
1970 POKE CKB,0
1980 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: HTAB
1: VTAB 8: CALL - 868:AL =
0: GOTO 1850
1990 IF ZY = 1 THEN GOTO
2010
2000 IF ZY = 2 THEN GOTO
2220
2010 REM ...Make a chamber a
single file...
2020 IF AL = 1 THEN GOTO
2120
2030 Y = AD
2040 T = T(KK):S = S(CH -
1):CODE = 1: GOSUB 140
2050 HTAB 1: VTAB 21: CALL -
868: HTAB 21 - LEN (SK$) /
2: VTAB 21: PRINT SK$
2060 POKE CKB,0
2070 K = PEEK (RKB): IF K <
127 THEN 2070
2080 POKE CKB,0
2090 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: GOTO
1930
2100 PRINT CHR$(4) "BSAVEØ
C." D$(KK); "" ;CH;
",A$8000,L$FFF"
2110 HTAB 1: VTAB 21: CALL -
868: HTAB 1: VTAB 8: CALL
- 868: GOTO 1850
2120 REM ...Make a chambers
into a file...
2130 Y = AD:T = T(KK)
2140 FOR I = 0 TO 15:CODE =
1:S = S(I): GOSUB 140:Y =
Y + 256: NEXT I
2150 HTAB 1: VTAB 21: CALL -
868: HTAB 20 - LEN (SK$) /
2: VTAB 21: PRINT SK$
2160 POKE CKB,0
2170 K = PEEK (RKB): IF K <
127 THEN 2170
2180 POKE CKB,0
2190 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: GOTO
1930
2200 PRINT CHR$(4) "BSAVE
ØC." D$(KK) "/ALL,A$8000
,L$FFF"
2210 HTAB 1: VTAB 21: CALL -
868: HTAB 1: VTAB 8: CALL
- 868:AL = 0: GOTO 1850
2220 REM ...Make a file a
single file a chamber...
2230 IF AL = 1 THEN GOTO
2340
2240 PRINT CHR$(4)
"BLOADØC." D$(KK); "" ;CH;
",A$8000"
2250 HTAB 1: VTAB 21: CALL -
868
2260 HTAB 21 - LEN (DK$) /
2: VTAB 21: PRINT DK$
2270 POKE CKB,0
2280 K = PEEK (RKB): IF K <
127 THEN 2280
2290 POKE CKB,0
2300 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: HTAB
1: VTAB 8: CALL - 868:
GOTO 1850
2310 Y = AD
2320 T = T(KK):S =
S(CH):CODE = 2: GOSUB 140
2330 HTAB 1: VTAB 21: CALL -
868: HTAB 1: VTAB 8: CALL
- 868: GOTO 1850
2340 PRINT CHR$(4)
"BLOADØC." D$(KK) "/"
ALL,A$8000"
2350 HTAB 1: VTAB 21: CALL -
868
2360 HTAB 21 - LEN (DK$) /
2: VTAB 21: PRINT DK$
2370 POKE CKB,0
2380 K = PEEK (RKB): IF K <
127 THEN 2380
2390 POKE CKB,0
2400 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: GOTO
1930
2410 Y = AD
2420 FOR I = 0 TO 15:T =
T(KK):S = S(I):CODE = 2:
GOSUB 140:Y = Y + 256:
NEXT I
2430 HTAB 1: VTAB 21: CALL -
868: HTAB 1: VTAB 8: CALL
- 868: GOTO 1850
2440 REM ...Make level a
File...
2450 HOME :TK = 34
2460 IF ZY = 3 THEN A$ =
"LEVELØTOØFILE"

```



```
2470 IF ZY = 4 THEN A$ = "FILE0TO0LEVEL"
2480 : INVERSE
2490 HTAB 21 - LEN (A$) / 2:
VTAB 5: PRINT A$: POKE
34,5: NORMAL
2500 HTAB 1: VTAB 10: PRINT
"Select0" ;LE$
2510 H = 2:V = 12
2520 FOR I = 177 TO 184:
HTAB H: VTAB V: PRINT CHR$(
I):V = V + 1: NEXT I
2530 H = 4:V = 12
2540 FOR I = 1 TO 8: HTAB H:
VTAB V: PRINT D$(I):V = V
+ 1: NEXT I
2550 POKE CKB,0
2560 K = PEEK (RKB): IF K <
127 THEN 2560
2570 POKE CKB,0
2580 IF K = 155 THEN POKE
34,3: RETURN
2590 IF K < 177 OR K > 184
THEN 2550
2600 S1 = L1(K - 176):S2 =
L2(K - 176):KK = K - 176
2610 POKE 34,5: HOME : HTAB
1: VTAB 7: PRINT "SLV:0"
;D$(K - 176)
2620 IF ZY = 3 THEN HTAB 21
- LEN (DK$) / 2: VTAB 21:
PRINT DK$
2630 IF ZY = 4 THEN HTAB 21
- LEN (SK$) / 2: VTAB 21:
PRINT SK$
2640 POKE CKB,0
2650 K = PEEK (RKB): IF K <
127 THEN 2650
2660 POKE CKB,0
2670 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: HTAB
1: VTAB 7: CALL - 868:
GOTO 2440
2680 IF ZY = 3 THEN GOTO
2710
2690 IF ZY = 4 THEN GOTO
2820
2700 END
2710 REM ...Level to file...
2720 Y = AD:T = 23:S =
8:CODE = 1: GOSUB 140
2730 Y = AD + 256
2740 T = TK:S = S1:CODE = 1:
GOSUB 140:Y = Y + 256:CODE
= 1:T = TK:S = S2: GOSUB
140
2750 HTAB 1: VTAB 21: CALL -
868: HTAB 21 - LEN (SK$) /
2: VTAB 21: PRINT SK$
2760 POKE CKB,0
2770 K = PEEK (RKB): IF K <
127 THEN 2770
2780 POKE CKB,0
2790 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: GOTO
2620
2800 PRINT CHR$(4) "BSAVE0
L." D$(KK) ",A$8000,L768"
2810 HTAB 1: VTAB 21: CALL -
868: HTAB 1: VTAB 7: CALL
- 868: GOTO 2440
2820 REM ...File to level...
2830 PRINT CHR$(4) "BLOAD
0L." D$(KK) ",A$8000"
2840 HTAB 1: VTAB 21: CALL -
868
2850 HTAB 1: VTAB 10: PRINT
"Select0dungeon0to0save0to:"
2860 H = 2:V = 12
2870 FOR I = 177 TO 184:
HTAB H: VTAB V: PRINT CHR$(
I):V = V + 1: NEXT I
2880 H = 4:V = 12
2890 FOR I = 1 TO 8: HTAB H:
VTAB V: PRINT D$(I):V = V
+ 1: NEXT I
2900 POKE CKB,0
2910 K = PEEK (RKB): IF K <
127 THEN 2910
2920 POKE CKB,0
2930 IF K = 155 THEN POKE
34,5: HOME : GOTO 2440
2940 IF K < 177 OR K > 184
THEN 2900
2950 KK = K - 176
2960 POKE 34,7: HOME
```

```
2970 HTAB 1: VTAB 8: PRINT
"TLV:0" ;D$(KK)
2980 S1 = L1(KK):S2 = L2(KK)
2990 HTAB 21 - LEN (DK$) /
2: VTAB 21: PRINT DK$
3000 POKE CKB,0
3010 K = PEEK (RKB): IF K <
127 THEN 3010
3020 POKE CKB,0
3030 IF K = 155 THEN HTAB 1:
VTAB 21: CALL - 868: HTAB
1: VTAB 8: CALL - 868:
GOTO 2850
3040 Y = AD:T = 23:S =
8:CODE = 2: GOSUB 140
3050 Y = AD + 256
3060 T = TK:S = S1:CODE = 2:
GOSUB 140:Y = Y + 256:T =
TK:S = S2:CODE = 2: GOSUB
140
3070 HTAB 1: VTAB 21: CALL -
868: HTAB 1: VTAB 8: CALL
- 868: GOTO 2850
```

Checksums

```
10-$47B3 1040-$63D9 2070-$09B3
20-$83BC 1050-$E357 2080-$9FAB
30-$F7F0 1060-$F7E9 2090-$19E2
40-$B0CC 1070-$AF55 2100-$7BD0
50-$A798 1080-$7A89 2110-$331D
60-$5940 1090-$1688 2120-$77A0
70-$427A 1100-$903D 2130-$0692
80-$406E 1110-$5322 2140-$2D2F
90-$C868 1120-$2148 2150-$F49C
100-$1C0A 1130-$1817 2160-$DA34
110-$7F4F 1140-$8405 2170-$119F
120-$1EA8 1150-$9D1B 2180-$F547
130-$E62E 1160-$2232 2190-$45E2
140-$24A5 1170-$CD9C 2200-$BF58
150-$3047 1180-$3791 2210-$6006
160-$7902 1190-$90E9 2220-$0833
170-$A53A 1200-$10D0 2230-$E0C0
180-$215C 1210-$F470 2240-$1DCB
190-$6EE7 1220-$B8F3 2250-$A5E7
200-$15E8 1230-$5A0A 2260-$96D4
210-$8BA6 1240-$DEBE 2270-$FF7C
220-$3257 1250-$43C8 2280-$3927
230-$99E3 1260-$6DDB 2290-$16FF
240-$786E 1270-$CBB3 2300-$597C
250-$D59D 1280-$BFOA 2310-$6DAA
260-$0821 1290-$B57E 2320-$7337
270-$38FF 1300-$0832 2330-$28F8
280-$5BF7 1310-$FE59 2340-$5D9B
290-$6D49 1320-$CD25 2350-$329B
300-$AC09 1330-$A9E4 2360-$8808
310-$5333 1340-$4CDA 2370-$FE42
320-$083A 1350-$0C94 2380-$36CD
330-$F411 1360-$D4CA 2390-$8A97
340-$A35E 1370-$7142 2400-$B7BB
350-$CA43 1380-$E5BD 2410-$5BB1
360-$3F5C 1390-$C921 2420-$B5FA
370-$B52E 1400-$0EE2 2430-$DC35
380-$EA9B 1410-$40EB 2440-$8542
390-$B8C5 1420-$26E8 2450-$94B0
400-$161F 1430-$A6BA 2460-$28CB
410-$2CA1 1440-$9136 2470-$E3D2
420-$40C0 1450-$52E2 2480-$A521
430-$204E 1460-$0FEE 2490-$6583
440-$D57B 1470-$7315 2500-$BDCE
450-$945E 1480-$6E11 2510-$9F65
460-$45CF 1490-$8F80 2520-$B957
470-$9324 1500-$B15C 2530-$042E
480-$0508 1510-$B96C 2540-$3944
490-$7F82 1520-$A915 2550-$654E
500-$31C2 1530-$93A9 2560-$B7F7
510-$9640 1540-$F9E5 2570-$C47E
520-$EF45 1550-$482A 2580-$2A28
530-$D62F 1560-$83CA 2590-$3490
540-$FFC2 1570-$7257 2600-$58B8
550-$3891 1580-$D106 2610-$1422
560-$A21A 1590-$9FAA 2620-$3422
570-$A957 1600-$D9D5 2630-$83B6
580-$C844 1610-$79D1 2640-$8DEF
590-$E4A3 1620-$75DE 2650-$0AEC
600-$6469 1630-$ABBB 2660-$EE15
610-$FCF0 1640-$2D48 2670-$662A
620-$7BE8 1650-$B8A6 2680-$DC32
630-$88E7 1660-$F9C1 2690-$C1E2
640-$9E2A 1670-$A80F 2700-$C315
650-$A5F6 1680-$9610 2710-$A251
660-$89EB 1690-$E52E 2720-$1874
670-$F5FE 1700-$2FDE 2730-$BB8E
680-$0ED6 1710-$4E1D 2740-$F38C
690-$5CD5 1720-$65D3 2750-$BB24
700-$D6AA 1730-$FCA3 2760-$B9DD
710-$F62B 1740-$AA3F 2770-$5ED6
```

```
720-$E5F9 1750-$D6C3 2780-$660F
730-$BA89 1760-$3CA6 2790-$A20E
740-$5BEB 1770-$CF19 2800-$0C92
750-$B21C 1780-$EB54 2810-$025F
760-$8771 1790-$82CB 2820-$826C
770-$2842 1800-$6F14 2830-$ACE1
780-$0965 1810-$C0B9 2840-$2ED8
790-$6E1D 1820-$B5F2 2850-$6C10
800-$AA54 1830-$16D0 2860-$E1CA
810-$EA4D 1840-$3F09 2870-$055E
820-$CE6A 1850-$0950 2880-$9DDC
830-$3DFE 1860-$F087 2890-$15EF
840-$0587 1870-$70ED 2900-$8844
850-$08C1 1880-$6F53 2910-$9A9A
860-$F013 1890-$5270 2920-$0A3B
870-$F345 1900-$A9A3 2930-$030A
880-$1D13 1910-$0509 2940-$64B6
890-$1BCB 1920-$5C5C 2950-$D5E1
900-$EE9E 1930-$02F9 2960-$7D03
910-$A219 1940-$1C9B 2970-$E5C1
920-$8FE9 1950-$2496 2980-$B1DE
930-$08AE 1960-$F620 2990-$8C48
940-$B818 1970-$985D 3000-$D7D3
950-$1447 1980-$561D 3010-$0B0A
960-$2062 1990-$6220 3020-$FAB1
970-$521D 2000-$0B7E 3030-$9933
980-$46B5 2010-$09DC 3040-$5B51
990-$E011 2020-$F71E 3050-$DF9D
1000-$89DF 2030-$FDFE 3060-$8D6A
1010-$A3C9 2040-$17C1 3070-$B9A9
1020-$0BBE 2050-$2988
1030-$2D67 2060-$C9E0
```

DOS UTILITY

```
0300:A9 00 8D EB B7 A9 00 8D $689F
0308:E9 B7 A9 00 8D EA B7 A9 $39BD
0310:00 8D EC B7 A9 00 8D ED $90D4
0318:B7 A9 00 8D F4 B7 A9 00 $DA09
0320:8D F0 B7 A9 00 8D F1 B7 $7009
0328:A9 B7 A0 E8 20 D9 03 90 $2FD0
0330:05 AD F5 B7 85 06 60 $41DF
```

L.DECBIT

```
8000:8D 09 A7 20 48 A7 8D 08 $EB80
8008:A7 20 48 A7 8D 07 A7 20 $19A1
8010:48 A7 8D 06 A7 60 A5 A8 $090A
8018:C9 00 D0 07 A5 A9 C9 AC $2B10
8020:D0 01 60 18 60 F0 52 48 $BF40
8028:48 C9 08 D0 06 68 A9 32 $854A
8030:4C 6B A8 29 F0 C9 60 D0 $36F7
8038:19 68 29 0F C9 08 B0 09 $3A39
8040:29 07 18 69 10 AA 4C 68 $7864
8048:A8 29 07 18 69 13 AA 4C $58DB
8050:68 A8 C9 B0 D0 0C 68 48 $4E48
8058:29 0F F0 06 68 A9 28 4C $BC6B
8060:6B A8 68 4A 4A 4A 4A AA $1551
8068:BD 81 A8 20 03 E0 C6 F8 $D4CD
8070:20 61 A7 A9 FF 81 AA 68 $FEF1
8078:60 20 61 A7 A9 FF 81 AA $B613
8080:60 A0 2B 2D 2C 24 18 FF $4587
8088:28 25 00 2A 2A 29 2F 22 $85E6
8090:2A 34 20 20 33 32 32 C9 $39AA
8098:B0 90 05 C9 E0 B0 01 60 $FEA6
80A0:4C E9 A7 00 A9 07 8D A3 $26F7
80A8:A8 AC A3 A8 B9 EF A8 18 $1CCA
80B0:6D 08 A7 85 F8 B9 F7 A8 $4E23
80B8:18 6D 09 A7 85 F9 20 61 $3016
80C0:A7 A1 AA D0 24 20 AD A7 $8629
80C8:90 1F B9 EF A8 18 6D 06 $94E8
80D0:A7 29 07 85 AC B9 F7 A8 $10E3
80D8:18 6D 07 A7 29 07 85 AD $FB8C
80E0:20 55 A7 20 25 A8 20 97 $7E99
80E8:A8 CE A3 A8 10 BB 60 FF $4B39
80F0:00 01 FF 01 FF 00 01 FF $14CB
80F8:FF FF 00 00 01 01 01 20 $E511
8100:B0 C0 B0 B0 B0 B0 00 B0 $0D09
8108:00 10 00 00 00 B0 00 C0 $1D89
8110:B0 B0 00 B0 00 61 00 B0 $5013
8118:F2 B0 00 C0 B0 C0 B0 B0 $8993
8120:20 B0 00 00 00 B0 F1 B0 $23AA
8128:B0 B0 B0 B0 00 B0 00 B0 $13BA
8130:B0 50 00 80 00 B0 D0 B0 $0342
8138:B0 B0 F0 B0 51 B0 62 B0 $E6B5
8140:B0 B0 B0 00 00 00 00 00 $86CD
8148:B0 B0 B0 00 B0 B0 B0 00 $A67D
8150:00 B0 00 00 B0 41 B0 00 $43E7
8158:00 B0 D0 B0 B0 B0 B0 $9B77
8160:10 B0 83 B0 51 83 10 B0 $F5DA
```

```
8168:B0 B0 83 83 B0 83 B0 B0 $8427
8170:00 B0 B0 83 83 83 B0 52 $1171
8178:B0 B0 B0 B0 B0 B0 B0 B0 $8161
8180:B0 B0 B0 B0 B0 B0 B0 B0 $1171
8188:B0 B0 B0 B0 B0 B0 B0 B0 $8161
8190:B0 B0 B0 B0 B0 B0 B0 B0 $1171
8198:B0 B0 B0 B0 B0 B0 B0 B0 $8161
81A0:B0 B0 B0 B0 B0 B0 B0 B0 $1171
81A8:B0 B0 B0 B0 B0 B0 B0 B0 $8161
81B0:B0 B0 B0 B0 B0 B0 B0 B0 $1171
81B8:B0 B0 B0 B0 B0 B0 B0 B0 $8161
81C0:00 00 00 00 00 00 00 00 $51B1
81C8:00 00 00 00 00 00 00 00 $8161
81D0:00 00 00 00 00 00 00 00 $51B1
81D8:00 00 00 00 00 00 00 00 $8161
81E0:00 00 00 00 00 00 00 00 $51B1
81E8:00 00 00 00 00 00 00 00 $8161
81F0:00 00 00 00 00 00 00 00 $51B1
81F8:00 00 00 00 00 00 00 00 $8161
8200:00 00 00 00 00 00 00 00 $51B1
8208:00 00 00 00 00 00 00 00 $8161
8210:00 00 00 00 00 00 00 00 $51B1
8218:00 00 00 00 00 00 00 00 $8161
8220:00 00 00 00 00 00 00 00 $51B1
8228:00 00 00 00 00 00 00 00 $8161
8230:00 00 00 00 00 00 00 00 $51B1
8238:00 00 00 00 00 00 00 00 $8161
8240:00 00 00 00 00 00 00 00 $51B1
8248:00 00 00 00 00 00 00 00 $8161
8250:00 00 00 00 00 00 00 00 $51B1
8258:00 00 00 00 00 00 00 00 $8161
8260:00 00 00 00 00 00 00 00 $51B1
8268:00 00 00 00 00 00 00 00 $8161
8270:00 00 00 00 00 00 00 00 $51B1
8278:00 00 00 00 00 00 00 00 $8161
8280:00 00 00 00 00 00 00 00 $51B1
8288:00 00 00 00 00 00 00 00 $8161
8290:00 00 00 00 00 00 00 00 $51B1
8298:00 00 00 00 00 00 00 00 $8161
82A0:00 00 00 00 00 00 00 00 $51B1
82A8:00 00 00 00 00 00 00 00 $8161
82B0:00 00 00 00 00 00 00 00 $51B1
82B8:00 00 00 00 00 00 00 00 $8161
82C0:00 00 00 00 00 00 00 00 $51B1
82C8:00 00 00 00 00 00 00 00 $8161
82D0:00 00 00 00 00 00 00 00 $51B1
82D8:00 00 00 00 00 00 00 00 $8161
82E0:00 00 00 00 00 00 00 00 $51B1
82E8:00 00 00 00 00 00 00 00 $8161
82F0:00 00 00 00 00 00 00 00 $51B1
82F8:00 00 00 00 00 00 00 00 $8161
```

C.DECBIT1

```
8000:FF FF 4F 4F 44 44 44 4F $6F9D
8008:4F FF FF FF 4F 4F 44 44 $6FA3
8010:44 44 44 4F 4F FF 4F 4F $AC42
8018:B1 44 44 44 44 44 B0 4F $5F92
8020:4F 4F 44 44 44 94 95 96 $03F4
8028:44 44 44 4F 4F 84 44 44 $7560
8030:44 90 44 44 44 84 4F 4F $0D94
8038:4F 4F 4F 44 44 44 4F 4F $86D3
8040:4F 4F 4F 91 85 4F 4F 99 $6FB3
8048:4F 4F 85 93 4F 4F 44 44 $6E61
8050:44 44 44 44 44 44 44 4F $F5E4
8058:4F 4F 44 44 44 44 44 44 $D112
8060:44 4F 4F FF 4F 4F 80 44 $9661
8068:8B 44 82 4F 4F FF FF FF $C93F
8070:4F 4F 4F 4F 4F 4F 4F FF $E927
8078:FF 05 04 06 04 05 06 01 $D223
8080:01 01 00 00 00 05 06 04 $3DAC
8088:05 07 03 06 07 07 08 08 $7D78
8090:08 05 06 04 05 07 03 06 $71AC
8098:07 07 08 08 08 05 06 04 $051C
80A0:05 07 03 06 07 07 08 08 $C5C8
80A8:08 60 60 64 64 70 70 70 $3742
80B0:70 01 01 01 01 00 00 00 $5158
80B8:00 14 94 26 86 54 16 96 $B30E
80C0:58 49 49 69 69 00 00 00 $E97C
80C8:00 56 56 46 66 00 00 00 $0B56
80D0:00 99 4F C6 C6 00 00 00 $E6E4
80D8:00 46 56 46 66 00 00 00 $3446
80E0:00 66 56 46 66 00 00 00 $4654
80E8:00 00 00 00 00 00 00 00 $A614
```

80F0:00 00 00 00 00 00 00 00 \$4654
 80F8:00 00 00 00 00 00 00 00 \$948E

C.DECEIT2

8000:FF FF FF 63 61 61 61 61 \$CAFC
 8008:64 FF FF FF FF 63 65 05 \$C44C
 8010:05 4C 05 60 FF FF FF 63 \$2208
 8018:65 89 05 05 05 05 62 64 \$B6C1
 8020:FF FF 60 4C 05 05 05 05 \$4E89
 8028:05 4C 60 FF FF 62 64 05 \$BBBB
 8030:05 05 05 05 05 62 64 FF \$4612
 8038:FF 60 05 4C 05 05 05 05 \$5FC6
 8040:05 60 FF 63 65 05 05 05 \$BDBB
 8048:05 4C 05 05 60 FF 60 4C \$EFE8
 8050:05 05 05 05 05 63 65 \$D806
 8058:FF 62 64 4C 05 05 05 05 \$33B6
 8060:4C 60 FF FF FF 62 64 05 \$6FF8
 8068:05 05 05 63 65 FF FF FF \$AA01
 8070:FF 60 05 05 05 05 60 FF \$2CC1
 8078:FF 05 04 06 04 05 06 02 \$04A4
 8080:01 01 00 00 00 08 09 09 \$AA8E
 8088:0A 0A 0A 05 04 06 05 04 \$65EB
 8090:06 05 04 06 04 05 06 08 \$AB7A
 8098:09 09 0A 0A 0A 02 01 01 \$BB2A
 80A0:00 00 00 05 06 04 05 06 \$BBBC
 80A8:04 1E 6C D0 D0 D0 D0 \$FF17
 80B0:D0 9C 00 00 00 00 00 00 \$A709
 80B8:E0 35 42 71 84 87 38 44 \$FD34
 80C0:37 35 00 00 00 00 00 00 \$D73D
 80C8:15 13 00 00 00 00 00 00 \$9C87
 80D0:00 C9 00 00 00 00 00 00 \$8D31
 80D8:00 57 00 00 00 00 00 00 \$4C98
 80E0:00 67 00 00 00 00 00 00 \$5DF9
 80E8:00 00 00 00 00 00 00 00 \$4DA9
 80F0:00 00 00 00 00 00 00 00 \$5DF9
 80F8:00 00 00 00 00 00 00 00 \$291F

C.DECEIT3

8000:FF FF FF D2 D0 FF D1 D3 \$2D13
 8008:FF FF FF FF FF D2 D0 D2 \$6C26
 8010:41 D3 D1 D3 FF FF FF D2 \$2576
 8018:D0 D2 D0 45 D1 D3 D1 D3 \$BOCF
 8020:FF D2 D0 D2 D0 45 45 45 \$D595
 8028:D1 D3 D1 D3 D0 D2 D0 45 \$5C20
 8030:45 45 45 45 D1 D3 D1 D2 \$6B70
 8038:D0 45 45 45 45 45 45 45 \$6919
 8040:D1 D3 D1 D3 FF DE 5E 45 \$7841
 8048:5F DE FF D2 D0 D3 D1 D3 \$E4FE
 8050:FF 45 45 45 FF D2 D0 D2 \$A2F5
 8058:D1 D3 D1 FE C4 C4 C4 FE \$21D8
 8060:D0 D2 D0 FF D1 D3 FF 44 \$329D
 8068:44 44 FF D2 D0 FF FF FF \$C498
 8070:D1 FE 44 44 44 FE D0 FF \$AFB4
 8078:FF 05 05 05 05 05 01 \$EE4E
 8080:01 01 01 01 01 05 05 06 \$7B4B
 8088:05 06 07 05 04 04 03 03 \$9750
 8090:03 05 04 06 04 05 06 09 \$5AE0
 8098:09 09 0A 0A 0A 00 00 00 \$1114
 80A0:00 00 00 00 00 00 00 00 \$41D4
 80A8:00 00 00 00 00 00 00 00 \$1114
 80B0:00 00 00 00 00 00 00 00 \$41D4
 80B8:00 00 00 00 00 00 00 00 \$1114
 80C0:00 00 00 00 00 00 00 00 \$41D4
 80C8:00 52 52 52 00 00 00 00 \$1A82
 80D0:00 EC ED EE 00 00 00 00 \$8056
 80D8:00 4A 6A 5A 00 00 00 00 \$DF00
 80E0:00 5A 5A 5A 00 00 00 00 \$288E
 80E8:00 00 00 00 00 00 00 00 \$A8EE
 80F0:00 00 00 00 00 00 00 00 \$288E
 80F8:00 00 00 00 00 00 00 00 \$6E74

Krakowicz

**The Basics of Cracking
 Part 9**

Boot Code Tracing RFD 1985

This is the other half of the boot-tracing episode—it's probably not hazardous to your health to read this before you look at part 8, but it'll make more sense to read Part 8 first if you're not intimately familiar with the subject. The

theory (?) was all in Part 8; this is just an example, with a lot of disassembled code, of the use of boot-tracing to look at (but not really to Krack) a not-too-unusual disk: RDF 1985 from those fun-loving war game freaks at SSI. This loader/DOS appears to be the successor to RDOS 2.1, which was the late unlamented operating system that kept so many disks from being unprotected for so long.

Approaching this disk as we would any other, we enter the monitor and set the first breakpoint by typing:

```
9600-C600.C6FFM
96F9:59 FF
9600G
```

After the beep, and COE8 to turn off the disk drive, listing from \$0801 gets us the following:

```
800LLLL
0801:A6 2B LDX $2B
0803:8E 1F 02 STX $021F
0806:A9 02 LDA #$02
0808:8D 20 02 STA $0220
080B:18 CLC
080C:08 PHP
080D:BD 8C C0 LDA $C08C,X
0810:10 FB BPL $080D
0812:49 D5 EOR #$D5
0814:D0 F7 BNE $080D
0816:BD 8C C0 LDA $C08C,X
0819:10 FB BPL $0816
081B:C9 AA CMP #$AA
081D:D0 F3 BNE $0812
081F:EA NOP
0820:BD 8C C0 LDA $C08C,X
0823:10 FB BPL $0820
0825:C9 B5 CMP #$B5
0827:F0 09 BEQ $0832
0829:28 PLP
082A:90 DF BCC $080B
082C:49 AD EOR #$AD
082E:F0 20 BEQ $0850
0830:D0 D9 BNE $080B
0832:A0 03 LDY #$03
0834:84 2A STY $2A
0836:BD 8C C0 LDA $C08C,X
0839:10 FB BPL $0836
083B:2A ROL
083C:85 3C STA $3C
083E:BD 8C C0 LDA $C08C,X
0841:10 FB BPL $083E
0843:25 3C AND $3C
0845:88 DEY
0846:D0 EE BNE $0836
0848:28 PLP
0849:CD 20 02 CMP $0220
084C:D0 BD BNE $080B
084E:B0 BC BCS $080C
0850:A0 00 LDY #$00
0852:A9 00 LDA #$00
0854:85 47 STA $47
0856:BD 8C C0 LDA $C08C,X
0859:10 FB BPL $0856
085B:29 55 AND #$55
085D:0A ASL
085E:85 46 STA $46
0860:BD 8C C0 LDA $C08C,X
0863:10 FB BPL $0860
0865:29 55 AND #$55
0867:05 46 ORA $46
0869:45 47 EOR $47
086B:85 47 STA $47
086D:99 00 10 STA $1000,Y
0870:C8 INY
0871:D0 E3 BNE $0856
0873:BD 8C C0 LDA $C08C,X
0876:10 FB BPL $0873
0878:29 55 AND #$55
087A:0A ASL
087B:85 46 STA $46
087D:BD 8C C0 LDA $C08C,X
0880:10 FB BPL $087D
0882:29 55 AND #$55
```

```
0884:05 46 ORA $46
0886:45 47 EOR $47
0888:F0 02 BEQ $088C
088A:D0 A4 BNE $0830
088C:4C 00 10 JMP $1000
```

A few things are worth pointing out before we continue the trace. Notice that the early part is an adaptation of the boot ROM code: if the carry bit is clear, it's looking for D5 AA B5 to read in the address field (some things never change), if the carry is set, D5 AA AD is being sought for the data field prolog. After verifying the volume, track, and sector (\$832-\$846), we read in a single "pseudo-sector" in 4+4 nibblizing, storing it at \$1000. If the checksum is right (\$888), then we jump to 1000 to continue the boot. If you've been keeping up, you know the next series of monitor instructions to set breakpoint #2:

```
96F9:01 08
9659:20
088C:4C 59 FF
9600G
```

The code loaded into page \$10 is:

```
1000:D8 CLD
1001:D8 CLD
1002:A9 00 LDA #$00
1004:8D F2 03 STA $03F2
1007:A9 E0 LDA #$E0
1009:8D F3 03 STA $03F3
100C:49 A5 EOR #$A5
100E:8D F4 03 STA $03F4
1011:A9 4C LDA #$4C
1013:8D D0 03 STA $03D0
1016:A9 00 LDA #$00
1018:8D D1 03 STA $03D1
101B:A9 BD LDA #$BD
101D:8D D2 03 STA $03D2
1020:AD 1F 02 LDA $021F
1023:8D D3 03 STA $03D3
1026:A9 01 LDA #$01
1028:8D D4 03 STA $03D4
102B:A9 03 LDA #$03
102D:8D 20 02 STA $0220
1030:A9 BD LDA #$BD
1032:8D 99 10 STA $1099
1035:18 CLC
1036:08 PHP
1037:BD 8C C0 LDA $C08C,X
103A:10 FB BPL $1037
103C:49 D5 EOR #$D5
103E:D0 F7 BNE $1037
1040:BD 8C C0 LDA $C08C,X
1043:10 FB BPL $1040
1045:C9 AA CMP #$AA
1047:D0 F3 BNE $103C
1049:EA NOP
104A:BD 8C C0 LDA $C08C,X
104D:10 FB BPL $104A
104F:C9 B5 CMP #$B5
1051:F0 09 BEQ $105C
1053:28 PLP
1054:90 DF BCC $1035
1056:49 AD EOR #$AD
1058:F0 20 BEQ $107A
105A:D0 D9 BNE $1035
105C:A0 03 LDY #$03
105E:84 2A STY $2A
1060:BD 8C C0 LDA $C08C,X
1063:10 FB BPL $1060
1065:2A ROL
1066:85 3C STA $3C
1068:BD 8C C0 LDA $C08C,X
106B:10 FB BPL $1068
106D:25 3C AND $3C
106F:88 DEY
1070:D0 EE BNE $1060
1072:28 PLP
1073:CD 20 02 CMP $0220
1076:D0 BD BNE $1035
1078:B0 BC BCS $1036
107A:A0 00 LDY #$00
107C:A9 00 LDA #$00
```

```
107E:85 47 STA $47
1080:BD 8C C0 LDA $C08C,X
1083:10 FB BPL $1080
1085:29 55 AND #$55
1087:0A ASL
1088:85 46 STA $46
108A:BD 8C C0 LDA $C08C,X
108D:10 FB BPL $108A
108F:29 55 AND #$55
1091:05 46 ORA $46
1093:45 47 EOR $47
1095:85 47 STA $47
1097:99 00 10 STA $1000,Y
109A:C8 INY
109B:D0 E3 BNE $1080
109D:BD 8C C0 LDA $C08C,X
10A0:10 FB BPL $109D
10A2:29 55 AND #$55
10A4:0A ASL
10A5:85 46 STA $46
10A7:BD 8C C0 LDA $C08C,X
10AA:10 FB BPL $10A7
10AC:29 55 AND #$55
10AE:05 46 ORA $46
10B0:45 47 EOR $47
10B2:F0 02 BEQ $10B6
10B4:D0 A4 BNE $105A
10B6:EE 99 10 INC $1099
10B9:AD 99 10 LDA $1099
10BC:C9 C0 CMP #$C0
10BE:F0 06 BEQ $10C6
10C0:EE 20 02 INC $0220
10C3:4C 35 10 JMP $1035
10C6:A9 BA LDA #$BA
10C8:85 00 STA $00
10CA:A9 BC LDA #$BC
10CC:85 01 STA $01
10CE:A9 01 LDA #$01
10D0:85 03 STA $03
10D2:A9 00 LDA #$00
10D4:85 04 STA $04
10D6:A9 06 LDA #$06
10D8:85 05 STA $05
10DA:20 D0 03 JSR $03D0
10DD:A9 F0 LDA #$F0
10DF:85 36 STA $36
10E1:A9 FD LDA #$FD
10E3:85 37 STA $37
10E5:4C 00 BA JMP $BA00
```

The early part from \$1002-\$102D sets up the \$3D0-\$3FF region as vectors for the "DOS" calls to be made, then stores \$BD in \$1099 for the page number to begin loading in the next portion of the boot. After that, the code from \$80C-\$847 is mirrored to load in the next stage. The three lines at \$10B6-\$10BF indicate that the load continues until pages \$BD, \$BE, and \$BF have been loaded, then quits at page \$C0. You would normally expect to find a "JMP \$BD00" as the exit point from this stage of the boot; instead there is a "JMP \$BA00" at \$10E5. The reason is that lines \$10C6-\$10DA call the newly-loaded loader routine at \$BD00 through the vector at \$3D0. By looking at the setup for that load, we can learn a little about the loader. The important parts of any loader routine are the destination page, the length of the load, and the track and sector to begin loading from. In this case, the first and last destination page are loaded into locations 0 and 1, and the track and sector in 4 and 5. After that, a call to the \$3D0 vector jumps merrily up to \$BD00, which is the "RWTS" routine for this program.

We can view all of that by setting the next breakpoint at \$10E5 and rebooting for what is hopefully the last time:

```
086F:20
088C:4C 00 10
10E5:4C 59 FF
9600G
```

Since the exit point said jump \$BA00, lets look at that code:

```
BA00:D8 CLD
BA01:4C 00 BC JMP $BC00
BA04:A5 8D LDA $8D
BA06:9E ???
```

The rest of the page is of no interest, so let's follow the jump to \$BC00:

```
BC00:AD 00 08 LDA $0800
BC03:C9 EA CMP #$EA
BC05:D0 0D BNE $BC14
BC07:A2 05 LDX #$05
BC09:BD BE BC LDA $BCBE,X
BC0C:95 00 STA $00,X
BC0E:CA DEX
BC0F:10 F8 BPL $BC09
BC11:20 D0 03 JSR $03D0
BC14:AD D7 BC LDA $BCD7
BC17:D0 48 BNE $BC61
BC19:AD 81 C0 LDA $C081
BC1C:A9 00 LDA #$00
BC1E:8D F2 03 STA $03F2
BC21:A9 BC LDA $BC
BC23:8D F3 03 STA $03F3
BC26:A9 19 LDA $19
BC28:8D F4 03 STA $03F4
BC2B:A9 00 LDA $00
BC2D:8D 11 03 STA $0311
BC30:A9 00 LDA $00
BC32:8D 13 03 STA $0313
BC35:A2 05 LDX #$05
BC37:BD AC BC LDA $BCAC,X
BC3A:95 00 STA $00,X
BC3C:CA DEX
BC3D:10 F8 BPL $BC37
BC3F:20 D0 03 JSR $03D0
BC42:A9 00 LDA $00
BC44:8D 12 03 STA $0312
BC47:20 00 A8 JSR $A800
BC4A:EE D7 BC INC $BCD7
BC4D:AD 12 03 LDA $0312
BC50:C9 02 CMP #$02
BC52:F0 70 BEQ $BCC4
BC54:A2 05 LDX #$05
BC56:BD B2 BC LDA $BCB2,X
BC59:95 00 STA $00,X
BC5B:CA DEX
BC5C:10 F8 BPL $BC56
BC5E:20 D0 03 JSR $03D0
BC61:AD 12 03 LDA $0312
BC64:D0 5E BNE $5CC4
BC66:A9 25 LDA $25
BC68:85 03 STA $03
BC6A:A9 00 LDA $00
BC6C:8D 10 03 STA $0310
BC6F:2C 10 C0 BIT $C010
BC72:A2 06 LDX #$06
BC74:A9 80 LDA $80
BC76:95 F6 STA $F6,X
BC78:CA DEX
BC79:10 FB BPL $BC76
BC7B:AD 50 C0 LDA $C050
BC7E:AD 54 C0 LDA $C054
BC81:AD 57 C0 LDA $C057
BC84:AD 09 03 LDA $0309
BC87:F0 06 BEQ $BC8F
BC89:AD 52 C0 LDA $C052
BC8C:4C 92 BC JMP $BC92
BC8F:AD 53 C0 LDA $C053
BC92:A9 00 LDA $00
BC94:8D 14 03 STA $0314
BC97:8D 07 03 STA $0307
BC9A:20 00 65 JSR $6500
BC9D:AD 11 03 LDA $0311
BCA0:D0 8E BNE $BC30
BCA2:AD 12 03 LDA $0312
BCA5:C9 01 CMP #$01
BCA7:F0 1B BEQ $5CC4
BCA9:4C 00 E0 JMP $E000
BCAC:A8 TAY
BCAD:BB ???
BCAE:00 BRK
BCAF:01 01 ORA ($01,X)
BCB1:00 BRK
```

```
BCB2:A8 TAY
BCB3:BB ???
BCB4:00 BRK
BCB5:01 13 ORA ($13,X)
BCB7:00 BRK
BCB8:A8 TAY
BCB9:BB ???
BCBA:00 BRK
BCBB:01 15 ORA ($15,X)
BCBD:00 BRK
BCBE:08 PHP
BCBF:14 ???
BCC0:00 BRK
BCC1:01 03 ORA ($03,X)
BCC3:00 BRK
BCC4:A2 05 LDX #$05
BCC6:BD B8 BC LDA $BCB8,X
BCC9:95 00 STA $00,X
BCCB:CA DEX
BCCC:10 F8 BPL $BCC6
BCCE:20 D0 03 JSR $03D0
BCD1:20 00 A8 JSR $A800
BCD4:4C 54 BC JMP $BC54
```

Finally, here's the meat of the program. \$BC00 is a test to see if it's the first time through—location \$800 is 01 the first time, so we transfer the 5 values found at \$BCBE-\$BCC3 into locations 0-5, then call the loader routine, and pages \$8-\$14 are loaded from track 3, sector 0. At \$BC1C-\$BC2B, we set the reset vector to return to \$BC00 (and restart the game) whenever reset is pressed (the reference manual tells you how on p. 37; it's p. 82 in the //e manual). Next, pages \$A8-\$BB are loaded from T1, S0, and the game begins in earnest.

Ordinarily, this is about as far as boot-tracing can take you into the organization of a disk. Just for the exercise, however, let's pretend we really want to find out what gets loaded into pages \$A8-\$BB before the game starts. The breakpoint goes in...

```
10E5:4C 00 BA
1099:20
10BD:23 Unless you know it's safe, keep
BC47:4C 59 FF the # of pages the same
```

The JSR \$A800 at \$BC47 is not quite the same as the exit point, but we want to see what that code looks like before it has a chance to unscrunch a picture or whatever else it is going to do. Also, notice that the code at \$BC54 and at the alternative destination of \$BCC4 both load over pages \$A8-\$BB. If necessary, we could continue with this process, putting a breakpoint after each load, until we have examined, saved, or altered every accessible part of the program.

So much for the "easy" part—now the hard work begins. We have learned about all we need to know about the loader, but now we have to find a way to put all of this into a format which uses standard DOS 3.3 files (Unlikely, unless we can use DOS on the language card, considering that all of these files load right over the middle of DOS), or convert the 4+4 nibbled sectors into standard DOS 3.3 sectors (also not too easy, considering that we only have 3 pages for the "DOS").

In conclusion, you should be aware that the techniques described here work equally well on a IIe. (I held out for almost 8 months, but now I can contend that all the typos in this episode are the result of having funny keys like "[|" on an Apple keyboard after 5+ years of typing on good old Apple II S/N 3603). Stay tuned for an example which is a little more complicated than this one,

and requires changes in the boot-trace technique. Also in the wings are (what else) hardware modifications to the IIe (no mother board surgery, I promise) to allow krakroms, hard resets, and kreative Kracking use of the 64K 80-column board.

Gary Rohr AZ

Softkey for...

ABM

Muse Software

I tried about a year ago to de-protect ABM, without much success. When I saw the softkey in issue #79, I decided to try again. The article said to use the tape I/O routines in BASIC to save the programs on cassette. I knew I couldn't do this, since neither my Franklin, nor my LASER 128, come equipped with a cassette port. However, I decided to find out what I could.

The Protection

I booted ABM on my Franklin and hit ctrl C. When the BASIC prompt appeared, the system immediately hung. I hit ctrl-reset once, which started a re-boot, then again to stop the boot process. I attempted a catalog of the disk, without any success. I tried the same thing on my Laser 128 and was pleased to find that the ctrl-C dropped me into BASIC, where I was able to CATALOG the disk. The following files are on the disk:

```
*A 002 HELLO
*A 026 ABM
*A 011 ADJUST
*B 002 BKUP.CONTROLS
  B 002 CONTROLS
*B 034 PIC
```

I attempted several methods, to get the files copied off the original disk. The first method I tried was to re-locate the code which occupied \$800-8FF, boot a disk which had the HELLO program deleted, move the code back to it's original location, update the zero page bytes for starting location and program length, then save the programs to a normal DOS 3.3 disk. I repeated this for all of the programs, and noticed that the ABM disk in the article had it's RWTS in the standard location, while I had nothing at all from \$B800-BFFF. This made determining the length of the binary files a bit difficult until I located the RWTS. I managed this by referencing Page 3, where \$3D9 was a jump to the RWTS and \$3E3 was a short subroutine to locate the input parameter list. After copying all of the files, I ran the HELLO program, the ADJUST program, and finally the ABM program—the screen went blank, and the computer died.

After deciding that this method didn't work, I tried to find out more about the ABM disk. Using Copy II Plus nibble editor, I counted the number of sectors to see if this was another of those 18-sector disks. What I found was really odd - 13 sectors?? Why would anyone alter DOS to hold less data?? It didn't seem to make any sense until I remembered that DOS 3.3 didn't always exist—there was a predecessor. What was it called?? How many sectors did it have?? This was long before I could afford my first computer, but I figured that "Beneath Apple DOS" would have the answers I sought. In chapter 2, "The Evolution of DOS", I discovered that there weren't 16 sectors per track until DOS

3.3, the previous versions had 13 sectors!

I read through all my old Computist magazines (another bit of history—COMPUTIST used to be a real nice magazine) and learned all I could about DOS 3.2. I found that a program called MUFFIN was commonly used to copy programs from a DOS 3.2 disk to a DOS 3.3 disk by swapping the RWTS(s), much the same way that SUPER IOB does when using the SWAPCONTROLLER.

Again, referencing my OLD Computists, I created a DEMUFFIN PLUS, and copied all of the files from the original disk to a normal DOS 3.3 disk. When I tried to run the programs, I had the same problem.

I decided that what I really needed to do was create a controller for SUPER IOB that would read a protected DOS 3.2 disk and write to a normal DOS 3.3. I managed to find an article in Issue #71 that sounded like exactly what I wanted, so I set up the controller and tried running it. It copied the first 3 tracks just fine. Then it copied one sector from track \$03 and quit when trying to read sector \$17? After some further research, I was able to determine that the sector numbers on the disk were double what the sector # actually was. So, if you read sector \$0C, you'd get sector \$0C, but the RWTS parms would indicate that you had read sector \$18. The FASTCOPY option on SUPER IOB reads an entire track by setting the highest sector #, reading it, decrementing the number in the RWTS parm for the next sector #, and reading it. Since an invalid sector # is returned, the succeeding read fails.

With this knowledge, I set out to write my own controller, and successfully copied the sectors from the original disk to the normal DOS 3.3 disk. Guess what happened when I tried running the program, yep, it crashed and burned. Since I knew every sector on the original disk was on the de-protected disk, I knew there had to be something different somewhere, but where? I loaded ABM from the original disk and listed it.

```
1 CALL 2064
2 PLOT CALL PLOT V TAB( PLOT
  0 TAB( PLOT T TAB( SPEED=
  PLOT 9 ILLEGAL QUANTITY X
  OVERFLOW B
264
```

When I loaded ABM from my de-protected disk and listed it, the first two lines were OK, then lots of garbage. The CALL 2064 transfers control to a program at \$810 - so I disassembled the de-protected version and compared it to the original. There were hundreds of differences between the two.

Using DISKEDIT, and the captured RWTS, I was able to determine that what was on the original matched the sectors on the de-protected disk. This could only mean that it was somehow being altered when it was loaded in the normal DOS 3.3 environment. Since the program was really a binary file, I decided to alter the catalog attributes, and see if it would load properly as a binary file - which it did. However, the program then crashed when attempting to call the protected RWTS, which of course wasn't there. After changing a few addresses, the program ran fine

Step-by-step

1. Boot DOS 3.3.

2. Mark 2 blank diskettes "DISK A" and "DISK B".

3. Insert DISK A. Initialize DISK A and delete the greeting program

INIT HELLO
DELETE HELLO

4. Insert DISK B. Initialize DISK B and delete the greeting program

INIT HELLO
DELETE HELLO

5. Boot the original ABM diskette and interrupt the boot when the BASIC prompt "]" appears. On my Laser 128 I use ctrl-C. On my Franklin I use multiple ctrl-reset(s).

6. Insert DISK B and boot.
PR#6

7. Save the ABM RWTS to DISK B.
BSAVE ABM.RWTS, A\$7800, L\$800

9. Boot a DOS 3.3 Master disk that loads Integer BASIC and select Integer.

INT
10. Insert DISK B and reload ABM.RWTS

BLOAD ABM.RWTS
11. Enter the monitor and initialize the Programmers Aid relocation feature.

CALL -151
D4D5G

12. Disable DOS hooks.
9EE0G

13. Tell the relocation routine what we are moving and where it goes.

B800<7800.7FFF ctrl-Y *

14. Move the code.
B800<7800.7FFF ctrl-Y

Note: The Programmers Aid relocation routines will move code and also alter it to run at the new location. The monitor move routine moves code as data and does not alter the code. Be sure you keep track of which move routine you are using.RDEXed

15. Move the altered RWTS back to its original location.

7800<B800.BFFFF

16. Boot DISK B and save the altered RWTS.

C600G
BSAVE RWTS.ABM.A\$B800, A\$7800, L\$800

17. Copy these files from your Computist Starter Kit Disk to DISK B.

SUPER IOB
IOB.OBJO
DISKEDIT

18. Insert DISK B and load SUPER IOB.

LOAD SUPER IOB

19. Enter the following SWAP controller

Controller

```
1000 REM "ABM DOS 3.2 SWAP
CONTROLLER
1010 TK = 3:ST = 0:LT =
35:CD = WR:DOS = 13
1015 GOSUB 360: POKE
47459,24: GOSUB 360
1020 T1 = TK: GOSUB 360:
GOSUB 490
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 TK = T1: GOSUB 360:
GOSUB 490:ST = 0
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
"COPYDONE" : END
10010 PRINT CHR$(4)
```

Checksums

```
1000-$356B 1040-$2F54 1090-$C85D
1010-$5028 1050-$FB4D 1100-$B570
1015-$1F43 1060-$C9A3 10010-$14F5
1020-$0146 1070-$C1A6
1030-$1747 1080-$0F8D
```

20. Save the IOB program and the swap controller together then run the program.

SAVE COPY.ABM
RUN

21. Press any key when "INSERT SUPER IOB DISK" message appears. Insert original ABM disk and DISK A in proper drives. Answer SLOT and DRIVE questions, specify N to format question then press any key to start ABM copy to DISK A

22. After copy is complete, insert DISK B and run DISKEDIT.

FP
RUN DISKEDIT

23. Now we need to locate the ABM program on DISK A.

a. Insert DISK A. Read track \$11, sector \$0C.

b. Find the ABM catalog entry. The 3 bytes just prior to ABM are the track, sector and filetype. On my disk these bytes were 0B 0C 82. This means that track \$0B, sector \$0C is where the track/sector list starts. The 8x means that the file is locked and the x2 means that it is a BASIC program.

c. Position the cursor on the 82 and type E (for EDIT). Change the 82 to 04. This changes the filetype code to indicate a unlocked binary file. Then hit ESC to exit edit mode.

d. Type W (for Write) and hit RETURN 3 times to write the sector back to disk.

e. Read the track/sector indicated, just prior to the 82 (track \$0B, sector \$0C on my disk). This is the TRK/SEC list for ABM - mine starts with 0B0B at byte \$0C indicating that the actual ABM program starts on TRK \$0B SEC \$0B

f. Read this TRK/SEC next. You should see the start of the ABM "BASIC" program

g. We modified the catalog to indicate that ABM was now an unlocked BINARY file - not a locked BASIC file. Now we will change the file to BINARY format. Starting at byte \$00 - make the following changes:

From	To
FE 17 0B 08	03 08 FC 17
01 00 8C 32	EA EA EA EA
30 36 34 00	EA EA EA EA
00 08 02 00 8D	EA EA EA EA EA

h. Write sector back to disk

i. Type X to exit DISKEDIT

24. Fix the Hello program.
LOAD HELLO
110 PRINT: PRINT CHR\$(4)"BRUN ABM"

25. Save HELLO back to disk.
UNLOCK HELLO
SAVE HELLO
LOCK HELLO

26. Fix the Adjust program.
LOAD ADJUST
500 PRINT CHR\$(4)"BRUN ABM"

27. Save ADJUST back to disk.

UNLOCK ADJUST
SAVE ADJUST
LOCK ADJUST

28. Patch the ABM program.

BLOAD ABM
CALL -151

9B3:B7

was 77

9B8:B7

was 77

9BD:B7

was 77

9C2:B7

was 77

9C7:B7

was 77

9CC:B7

was 77

9D0:B7

was 77

9D3:BD

was 7D

BSAVE ABM, A\$803, L\$17FC
LOCK ABM

Enjoy!

Note: The HIGH SCORE is stored on track \$02, sector \$9, bytes \$80-82. It is read and written via RWTS calls from the ABM program. At \$99E the RWTS parms are set to read the sector and at \$9AF the parms are set to write the sector. To put ABM on a hard drive or a 3.5" disk, this code could be changed to BLOAD/BSAVE a binary file.

COREEDIT

Several months ago I was going through my back issues of Computist, looking for something interesting to do, when I decided to try capturing the LOCKSMITH 5.0 FASTCOPY.

The article talked about INSPECTOR/WATSON, and it's ability to display sections of memory - along with the ASCII equivalent. This sounded like a nifty utility to have - but I thought I might be able to make do with something I already have - DISKEDIT.

I use DISKEDIT for all my sector modifications - it's easy to use, and I like the way the data is displayed. Since DISKEDIT reads a sector into A\$900 and displays it from there, all I had to do was replace the sector READ/WRITE routine with memory move routines, and I'd have COREEDIT.

While COREEDIT does use a fair amount of storage itself (A\$800-2FFF) - there is still enough memory available to load in some pretty large files (i.e., 96 sectors).

To keep the changes necessary to a minimum, the COREEDIT display looks identical to the DISKEDIT display, except for the fact that T (for TRACK) is replaced with P (for PAGE). Naturally, the SLOT, DRIVE, and SECTOR values have no meaning.

To create COREEDIT:

1. Run DISKEDIT, then stop the program with ctrl-reset.

2. Make the following BASIC program changes

```
420 VTAB 22 : HTAB 14 -
PEEK(HF) : GOSUB 320
430 REM
440 REM
480 REM
520 KY=0 : GOTO 620
2260 VTAB 8 : PRINT "C O R E
E D I T V E R S I O N 1 .
0" : PRINT " COPYRIGHT
1991 (C) HARDCORE
COMPUTIST" : PRINT
2270 HTAB 5 : FOR X = 1 TO
32 : PRINT "-";: NEXT :
PRINT : HTAB 6 : PRINT "A
CORE EDITING UTILITY
PROGRAM"
```

3. Enter the monitor and edit the binary part of DISKEDIT.

CALL -151
840:A0 08
8A0:AD 1A 08 85 CB A9 09 85

8A8:CD A9 00 85 CA 85 CC A0

8B0:00 AD 22 08 C9 02 F0 08

8B8:B1 CA 91 CC C8 D0 F9 60

8C0:B1 CC 91 CA C8 D0 F9 60

DDA:A0

DC1:EA EA EA EA EA EA EA EA

DC9:EA EA EA EA

DDF:EA EA EA EA EA EA EA EA

DE7:EA EA EA EA EA EA EA EA

D7C:10

DD0:EA EA EA EA EA EA EA EA

DD8:EA

DF2:4C D9 0D

E003G

return to BASIC
start the program

4. Use the regular exit command and save COREEDIT.

X to exit COREEDIT
SAVE COREEDIT

That's it.

COPY II PLUS 9.0

Several months ago I was reading Computist Issue # 76 and saw an article concerning Copy][Plus 9.0. It mentioned that this release required an enhanced Apple IIe. I own both a LASER 128 and a Franklin Ace 2200 - both of which are supposed to be "Enhanced". When I ordered version 9.0, I requested that it be sent on a 3.5" disk so that I would have parms for both 5.25" and 3.5" protected disks. By the time it arrived, my 3.5" drive went out on my LASER, so I tried running it on my Franklin. When I did, I got the following:

COPY][PLUS 9.0 REQUIRES AN ENHANCED IIE OR LATER SYSTEM

Since I had an "Enhanced" system, I called Central Point Software to point out the small programming bug, and request an updated release. I was told that there was nothing wrong with their software - that I would have to call my vendor to request the proper ROM chips. Are they kidding?? Franklin hasn't been making computers for several years now!

Anyway, I decided that there must be a way of running COPY][PLUS 9.0 on my Franklin, so I set out to discover how. I won't go into all of the details on how I discovered the checks - just what they are.

Both the UTIL.SYSTEM and BITCOPY.SYSTEM files contain two checks to ensure that the system is an "Enhanced Iie". The easiest way to circumvent the checks is to:

1. Copy the COPY][PLUS 9.0 - 5.25" disk

2. Use the CORE DISK SEARCHER to locate the following HEX strings:

AD B3 FB

AD C0 FB

3. Each string should be found in two locations. Using DISKEDIT, change the strings as shown (on the copy disk).

From	To
AD B3 FB	A9 06 EA
AD C0 FB	A9 00 EA

That's it

CPR Agent Canada

Teacher Grading programs and Test Writing programs

Not too long ago our school invested in some grading programs to check out the feasibility of changing over our report cards to computer generated reports. We ended up with the following report programs:

Teacher's Marksheet
Gradebusters 1/2/3
MECC Grade Manager
Apple Grade Book
Teacher's Gradebook
Mark Manager
CSL Marks
Gradebook Deluxe

The clear winners were Teacher's Marksheet from a little one man company in Alberta called Software Spirit and Gradebusters 1/2/3 from Gradebusters. Of these two Teacher's Marksheet is by far the superior.

The program is \$50 from:

Harvey Brown
Box 825
Spirit River, Alberta T0H 3G0
Canada

Don't even bother with the others. They are a complete waste of time.

We also checked out several test writing programs. The ones we looked at were:

Test Writer (best)
Test Generator
Test It! Deluxe
Testbankfile II

Of these four, Test Writer was the clear winner. We are not entirely happy with Test Writer, but it is far ahead of what comes in second place!

I would be happy to share details of these two experiments with other teachers who also may be looking around at good programs to help with their grading procedures and their test construction. Drop me a line via The COMPUTIST and I'll help you out as best I can.

Conversely, if there are other teachers out there who have tried some other programs and found a good one or SOME good ones, would you please send me your name and address so we can compare notes. Any communication on these two subjects would be greatly appreciated.

Softkey for...

Milliken Software

Milliken

A friend brought some Milliken disks over to have the protection scheme removed, so I dug out my back issues of COMPUTIST and found cracks for all of them in Issue #68. In fact, it took about 35 minutes to free up everything he had. He went away elated, but was back only a few days later. After his students at school had used the disks, one had gone down in the normal process of student misbehavior. In trying to make another backup copy, he discovered that the so-called "cracked" disk gave him a series of errors as Copy II Plus tried to read and fast copy it. Then, to his astonishment, the resulting copy ran perfectly! I frowned at this seeming ridiculous report and we went downstairs to the computer to have a look. The results will be important to other teachers caught in this little misunderstanding.

First of all, some Milliken programs ask for your name and/or your initials - they have a management module (to access it, press zero at the menu where you are asked to choose which program you would like to run) built in to keep track of the students who use the disk. After completing the activity, the program writes the results back to disk and retains the information for use by the teacher.

Now here is the problem. If you follow the crack on page 24 of Issue 68 (ignore epilogues and checksums, then sector edit Track \$00 Sector \$03 Byte \$42 from 38 to 18 and sector edit Track \$11 Sector \$00 Byte \$01 from F1 to 11) the problems with the READ routines are rectified (actually they are only bypassed, not really rectified) but the WRITE routine is left intact! Consequently, when the program writes any information back to the disk, it writes it in its original format (because the bytes in the RWTS were never changed to the correct DOS values) and errors result when you try to fast copy the disk.

Why does this not affect the way the program runs? It doesn't affect the program because we disabled the routine that would normally flag the data epilogue error - we changed the 38 (set the carry flag) to an 18 (clear the carry flag) in the READ routine. As a result, the program continues to run like a good deprotected copy should. But the next time you try to fast copy it, Copy II Plus gives you a good look at all the tracks where the program wrote information to the disk!

When I checked the disk over, it was easy to see what had happened. Correcting it, I thought, would be a simple matter of changing the values in the WRITE routine to the correct DOS values. Normally this would be the best way to go as many programs "prefer" the DOS that is already on the disk. But I had a little trouble with this as Milliken had not used DOS 3.3 or any other that I immediately recognized. Being the lazy person that I am, and being a fan of Pronto DOS, and seeing that the catalogue on Track \$11 looked pretty normal, I simply switched the entire DOS to Pronto DOS and changed the bootup file to BOOT (the first file in the catalogue) and the program then ran faster and smoother than did the original!

In retrospect, I noticed other cracks for Milliken in Issue #68, and thought to point them out as possible stumbling blocks. However, in doing some more homework, I discovered that not all of the Milliken programs write information to disk. Hence, the published crack is valid and workable. Disabling an error checking routine is often a quick and sneaky way around many time consuming problems. But we all know that it involves risks, and this is one of the times that we quite simply lost the bet!

Finally, I must warn everyone that the Milliken DOS has a routine built into it that checks the speed of your disk drive as it starts up. If your disk drive is operating at an "unsafe" speed, it so informs you and halts the program then and there. I'm not sure what an "unsafe" speed is, nor am I certain how a program can become damaged by the said "unsafe" speeds. I remember contemplating the same question with other Milliken programs that I had worked with before. In the spirit of true experimentalism, I checked out the routine once again. Sure enough, if your drive runs faster than 1 revolution in 198 milliseconds or slower than 1 revolution in 202 milliseconds, it pops the message. However, if you disable the checking routine and slow the drive down more than 202 m/rev or speed it up faster than 198 m/rev, there seems to be no appreciable change in the way the program operates. (I didn't go any faster than 196 m/rev nor slower than 204 m/rev. It seemed a bit redundant since almost no program

will operate outside those boundaries.) But I saw no evidence of the program actually undergoing any damage from this process. Being the suspicious person that I am, I tend to think that the routine is there as a means of ensuring that the copy protection scheme operates properly. But I have absolutely no evidence to back up such a suspicion. It is a certainty that if you replace the DOS as I have explained above, you will most assuredly wipe out this drive speed check as well. C'est la vie! My students have worked the disks over thoroughly in our computer lab and I have had no program crashes yet.

RAMUP - The "Cruising" Utility For RAM Cards

With the price of RAM chips declining steadily as they have been since last Christmas, it is finally a "definite possibility" to put more RAM in the computer and utilize some of those procedures that, up until now, have been mostly a dream. I have a Laser 128EX. It came with a RAM board built in and I finally "loaded" it. It holds a full meg and operating in the TURBO mode makes Appleworks hiss and snap with immediacy!

But the program that really deserves the attention is one that I have never seen mentioned in COMPUTIST - RAMUP. This program from Quality Computers was designed for computers with lots of RAM and/or a hard drive. And it is definitely worth the \$39.95 that I paid for it last year. (I misunderstood the purpose of the program, bought it, and had to leave it on my shelf until now!)

The real advantage that this program has, is that it allows you to configure your RAM memory however you want, save it to disk, then bring it back whenever you boot up your computer. Further, you can jump from one program to another at the press of a key. While experimenting, I loaded Copy II Plus, Smart Money, Quicken, and DB Master all into RAM. (By the way, there is a little "thermometer-type" representation in the upper right-hand corner that keeps you posted of how much RAM you have used and how much you have left.) When you QUIT one program you simply choose the next one that you want to work with from the menu, and away you go on the next program!

And loading them is very easy. For example, right now while typing this review I have Appleworks, Timeout Spell Checker, Timeout Thesaurus, and Copy II Plus all loaded into RAM. When I booted my computer, it took 2 minutes and 18 seconds to put it there. I saved this configuration to disk using RAMUP's special BACKUP utility. Then when I boot the computer again (with RAMUP in the drive) it simply automatically begins loading in this configuration. (The BACKUP utility stores the configuration AND the programs in a special fast loading binary format on your disks.) You can use whatever configuration you want. And RAMUP comes with the proper parameters built in for almost any ProDOS program you can find. Just in case you do find one that is not on their list, provision is made so that you can enter the proper parameters into the program to make it load just as fast as any of the others!

There are many more features that make it a very excellent bargain for anyone who has 1/2 meg of RAM or more (less than 1/2 meg makes it impractical to use the program since it occupies part of the RAM memory itself).

I find the program particularly fascinating as it is the closest thing that I have seen in Apple format to the DESQview multitasking program that I occasionally use in the IBM. And both are using 1 meg of RAM! Unfortunately, that is about where the similarities end!!

Now is there a hot-shot hardware hacker out there who can configure a battery backup to keep the RAM "hot" while the computer is shut down? Even a plug-in version would be welcome relief from having to load the configuration each time you want to use it in your computer.

Robin Locksley

MO

Playing Tip for...

Defender of the Crown

?

1. Hold down Option key while program loads. (For fun)
2. Hold down Shift, Option, Openapple when buying soldiers. (For some reason this doesn't seem to work when you first start a game. Play around awhile and then try it.)
3. Hold down Shift, Option, Openapple when using catapults.
4. To destroy walls fair and square the following sequence if suggested: Choose boulder, hold down the mouse button and count 10 clicks, release button. Next two boulders count 9 clicks and release. Next two boulders 8 clicks and release. Last boulder 7 clicks.
5. For fire count 12 clicks
6. For disease use the first two boulders (10 clicks and 9 clicks) then launch your bad meat counting 9 clicks.

Installing Defender of the Crown on a Hard Drive

Requirements:

Apple IIGS
Copy II Plus v. 9.1
Icon Editor

Note: The Big Red Computer Club, Norfolk Nebraska, (1-402-379-4680) sells icon editors. Call and ask for (GS-120) its \$3.50 including shipping.

Defender of the Crown has been unprotected for some time but it is also incompatible with system 5.04. If you have had the same experience as I, every time you attempt to load DOTC from the finder the screen locks up. This has something to do with the DOTC icons, why, I don't know, but you can fix it.

First you will need Copy II Plus. Load it up and choose Bit Copy 3.5. Next pick Auto Copy and choose "Defender of the Crown (HD)" and copy your original to a new disk. Now you have a copy that would boot from a Hard Drive, if the finder would recognize it, which it won't - yet.

Now boot up an Icon Editor, you will need to boot this from a system disk (I use 5.04). When the editor comes on line choose OPEN from the menu bar. Insert your new DOTC disk and click on Volume. Highlight DOTC and select OPEN. Next highlight ICONS and se-

lect OPEN. You will see 3 files, highlight DOTC.ICON and open. When the DOTC.ICON screen comes on line there will be 2 items, the DOTC icon and a blank generic icon file. Click on the blank icon and after it turns dark, go to the Menu Bar, choose EDIT and CLEAR. Now select FILE from the Menu Bar and choose SAVE. You have now removed the offending file that causes DOTC to crash when it loads under system 5.04. If you look you should have only one icon left called DOTC.

You are now ready to load DOTC to your Hard Drive. On the Hard Drive create a new folder called DOTC. Transfer the following 5 files to the new folder. From DOTC disk 1 (DOTC, ADDENDUM.RUN.ME, T, and SC1) and from disk 2 (SC2). IMPORTANT: Place your new DOTC.Icon into the main ICON folder. Ignore the other icons in this folder.

You should now have a DOTC that will boot under System 5.04. I would love to hear from someone to see if this works for you as well as it did for me. Good luck.

A final note, this doesn't have anything to do with the operation of DOTC, but you might want to try it anyway. After you have created your new DOTC folder on your hard drive and have the five folders loaded you might notice that the DOTC icon is not the correct color. To fix this create a new folder, place the DOTC file on it, open the folder - take out your color corrected DOTC file, place it back where you got it and trash the folder you just made.

Ron Powers

WI

Ⓢ I used D.E. Pelzer's article (issue #29) to deprotect "Microtype: The Wonderful World of Paws". The problem is that while it works on the IIe it doesn't run on a IIGs. Southwestern Publishing wants an arm-an-a-leg for a replacement. I'd appreciate any help on this. Call me (715-834-8676) or write to me direct at:

1607 Skeels Ave
Eau Clair WI 54701

CPR Agent

Canada

IBM Playing Tip for...

A10 Tank Killer

Dynamix

One of the most admirable qualities about Dynamix software is that it is not copy protected, at least none of the Dynamix programs I have seen are copy protected. No stumbling through a manual, no counting words, no peeking through idiotic pieces of cellophane to read "hidden" code words, no getting up to find a brighter light in the house so you can read the *%&#\$%&&#@* chart!! Patronize these people! They are listening to the computer operators, which is more than I can say for the company that put its arm around Dynamix, sacred Sierra!

Most Effective Weapons

1. Against Tanks - select Avenger 30mm cannon or MAVerick
2. Against Other Vehicles - Avenger, MAVerick, or ROCKeye cluster bomb (the ROCKeye is particularly effective if enemy vehicles are located within close proximity of one another)

3. Against Bridges, Bunkers, Buildings, or Installations - select LGB
4. Against Airstrips - select DURandal
5. Against Aircraft - select SIDewinder

Enemy Units

1. T-72, T-80 Main Battle Tanks - no threat to A10
2. BMP-2 Infantry Fighting Vehicle - no threat to A10
3. ACRV-2 Command Vehicle - no threat to A10
4. BRDM-3 Tank Destroyer - no threat to A10
5. ZIL-157 Truck - no threat to A10
6. SA-6 Gainful, SA-11 Gadfly SAM Launchers - serious threat to A10! These are mobile surface-to-air missile launchers that track A10 with a radar guidance system - chaff is sometimes effective - the SA-11 has a greater range than the SA-6
7. SA-9 Gaskin, SA-13 Gopher SAM Launchers - serious threat to A10! - mobile surface-to-air missile launchers that use infra red heat seeking systems - flares are sometimes effective - range is not as great as radar guided SAMs
8. Mi-24 Hind Assault Helicopter - no threat to A10
9. MiG-27 Foxbat Strike Fighter - serious threat to A10! - fires missiles that can damage A10 - engage with Sidewinders and the odd lucky shot with the Avenger

Getting Her Off the Ground

This is simple if you know how! Give her full throttle and pull back on the stick. When you have achieved enough speed it will lift off into the air. From there on it's easy too. You don't have to land if you don't want to. Pressing "Q" to quit after any mission automatically returns you to the base safely. However, if you wish to try your luck at "bounce and bob", line up about 4000 yards out, make adjustments with the rudder, drop the throttle back to about 4, come down to an altitude of about 100 feet, and then guide her in. The landing gear, etc. comes down automatically. Once down, throttle back to 1 and taxi into position.

Combat Tactics

1. Target - select target from the Strategic Map (press M during the simulation and the map appears on the screen). Toggle maps by clicking the arrows in the lower right hand corner of the screen. Use arrow keys to sequence through targets. To return to the cockpit view press F1. Stay low (MiGs are at a disadvantage at lower altitudes - fire a Sidewinder at them as quickly as you lock on.) and fly full throttle.

2. The Avenger works well on a line of vehicles. Come in low and start firing just in front of the line. Bank up and away and keep the crosshairs sweeping across the target as you go. If you miss some, open up to full throttle as you go past, continue for a few seconds, then slow down and bank around, come in again and finish the job!

3. The other weapons are even easier. Keep the target in the HUD (Heads Up Display) and sequence through targeted areas till you see the one you want come up in the TID (Tactical Information Display). Select your weapon. Move within range. As soon as the LOCKED signal is displayed, send it away! To get a good view of the impact, switch to one of the cinematic views (i.e. F8, F9, or F10). *Note: the lock-on range is smaller for

the LGB and Rockeye bombs than for the missiles.

Combat Tips:

1. Both the Avenger and the Maverick are designed to destroy tanks. You'll have to decide which to use. Experience will give you intuition. The Maverick is much easier but you have fewer of them than Avenger bursts. However, if you come in over some hill terrain and find yourself staring down a SAM launching site, you'd do much better to take it out with an Avenger shot than to try to lock on with a Maverick. Avengers are faster and less costly.

2. A10's can dogfight but they certainly weren't designed with that purpose in mind. If you stay low (even down to 150 feet or less) MiGs can't maneuver and you can easily get a lock-on to the venturesome fighter. But keep an eye on your terrain! And if you're out of Sidewinders, you best be a darn good flier! You can lead the MiG back to within the "umbrella" of a friendly SAM, in which case they usually get shot down.

3. Hind helicopters are a snap. Sidewinders always work, but with a little practice the Avenger is quick and effective. (Avengers seldom get a MiG.)

4. Handling SAMs? Stay low. The lower you can fly without running into hills and tall trees, the more chance you have against SAMs. Watch the RWR (RADAR Warning Receiver) as you approach a target. Stay out of range of the SAMs as long as possible. When a SAM has been launched at you, you will be so informed. If there are any hills close by, duck down behind one. If the SAM is radar guided (right light above blinking RWR) drop chaff. If it is heat seeking, drop a flare or two. Once these are away, practice your fancy maneuvers! It is possible to out-maneuver a SAM but I don't recall having done it more than once.

That should get you into the thick of the battle. Practice with this game makes it more and more thrilling. You begin to start keeping track of more of the variables without thinking consciously about them. And once you get intuitive, the action really begins to get "tactical". Good hunting!

IBM Playing Tip for...

Space Quest IV

?

Here are a few humble hints and some guidelines to help you get over the tough spots in this game.

Pink Rabbit?

- snare the hare (you'll need his battery later).
- rope is 1 screen east of the starting screen
- pick up rope; walk between 2 large red columns in upper right side of the screen
- choose rope from inventory window; click rope icon on the ground to use it
- when the bunny walks into the noose, click the hand on the rope to catch him

Skimmer?

- search skimmer by clicking icon hand on it
- open glove box; click eye on object inside (Pocket Pal Terminal!)
- click the hand to take it

Tank and Unstable Ordnance?

- * leave them alone!

Cyborg and Security Droid?

- cyborg is fairly harmless and blind! Just stay out of his way
- if the cyborg gets near you, he'll call the Security Droid
- there's no escaping the Security Droid

Dome?

- it is Sequel Police Headquarters
- catch a ride there via the ship that lands (can't get there on foot!)

Sewer?

- you must have a jar from the Sanitation Office
- choose jar from inventory window
- walk around the sewer until the slime oozes out of one of the grates
- quickly click the jar icon on the slime
- beat a very hasty retreat!

Getting out of the Sewer?

- there's a ladder about half way down the west side
- click hand icon on the ladder and climb up
- wait for the spaceship to land with the Sequel Police and wait for everyone to clear out before coming out from under the manhole cover
- click the walk icon on the street to exit the scene

Spaceship?

- it's the Sequel Police shuttle craft
- it travels to and from the dome
- to hitch a ride, wait till the Police have all dispersed (watch from under the manhole cover), walk to the ship, go to the open area just below the leg of the ship, and place the hand icon on the open area.
- this will gain you entrance into the landing gear compartment

Door to the Landing Bay?

- leave it closed!
- it can be opened by pouring green slime on it, but you can't get any further until later in the game
- besides, you'll probably be shot for your trouble at this point!

Avoid Getting Shot?

- steal a time pod
- wait for the second one to land
- wait for the Police to get out and go to the top of the screen
- stay close to the lower left part of the screen as you enter the bay area
- while the Police are distracted and talking to each other, quickly click the hand icon on the ship
- the door will open automatically and you'll get in safely

In the Time Pod?

- first you must pass the copy protection scheme!! (At least until we get this cracked! The chart is impossible to reproduce with a computer - unless you have a scanner, which I don't. Send me a note if you need it. I'll see that you get the information you need.)
- the User Identity Verification Pirate Protection Program Code is located in the Space Piston Magazine, in the Timebuster 2000SUX Road Test article by Y. Hugh Iotta (pages 8 and 9 of the magazine)
- note the symbols on the little screen above the keypad

- enter the coordinates - 6 digits and press enter - 6 more and press enter (what a space pain!!)

Avoiding the Sequel Police?

- exit the pod and walk immediately to the far west side of the butte
- after a very large shadow passes overhead, walk back to the pod
- take the stairway down
- a pterodactyl is waiting to "give you a lift"

In the Nest?

- search the Sequel Policeman's body
- do the search by clicking the hand icon on the body

Escape the Nest?

- click the walk icon on the hole in the bottom right side of the nest

Captured by the Latex Babes?

- there's no escape! Are you sure you want to?!!
- click the walk icon on the hatch to get in the sub

Get Rid of the Sea Slug?

- you must move quickly here
- when the slug wraps his tentacles around your legs, click the hand icon on the button on the arm of the chair
- then click the hand icon on the air tank (to the right of the chair) nearest you
- at light speed select the tank icon from the inventory window
- click the tank icon on the slug's mouth!

At the Mall?

- pick up Autobucks card (dropped by Latex Babes)
- get new clothes from the Big and Tall Alien store
- get to the New and Tall by going west on the walkway (from the top of the escalator)
- talk to the clerk at New and Tall
- buy a Generic Space Hero suit

Need More Money?

- go to the manager at Monolith Burger; if you are dressed properly, he'll give you a job
- SAVE YOUR GAME HERE!
- Earn as much money as you can - it will probably take several tries!!
- if you get fired, don't restore your game - just go back in and get hired again
- you must earn at least \$26.00
- be sure to pick up the cigar the manager tosses after you

The Autobucks Card?

- you need a disguise
- you need money (clean out Zondra's account)
- go to the Women's Clothing Store and talk to the clerk
- if you haven't already tried to use the ATM, the clerk won't help you!

Software Store Purchase?

- look in the bargain bin
- despite the myriad of merchandise, all you need is the SQ4 Hint Book!

Hint Book?

- you need 2 hints
- one is under the question about the "stupid timepod"
- the other is under the question about the Super Computer

At the Arcade?

- come here when you are finished everything else in the mall
- you can play MS. Astro Chicken if you wish but it is unnecessary; be sure to approach it from the left and click the hand icon on it to play it
- when you are finished everything, walk to the right rear of the arcade and wait for the Sequel Police
- when the Sequel Police show up, get out immediately by clicking the walk icon on the bottom right side of your screen
- note that the Sequel Police will not come if you are wearing a dress!!

Radio Shock?

- you must buy your PocketPal terminal adapter plug here
- to know which one to buy, you must look carefully at the Super Computer terminal in the dome on Xenon

Escaping the Sequel Police?

- go to the Skate-O-Rama and swim in the zero gravity area; you must also dodge laser fire from the Police while swimming
- start at the east entrance, swim up and across the top
- wait till you see both policemen coming to get you, then go down to the exit on the west side
- go straight to the arcade to steal a time pod
- click the hand icon on the pod at the arcade to enter it

Time Pod Destination?

- go to Ulence Flats
- copy down the coordinates for Xenon that are presently on the screen - you will need them later
- use the code found in the SQ4 Hint Book to get to Ulence Flats
- the entire code is not found in the hint book - 3 symbols are missing, but you should have them on the back of a gum wrapper that you picked up earlier in the game

At Ulence Flats?

- go to the bar, but be careful!
- the Monochrome Boys will throw you outside; then click the hand icon on their motorcycles and get out of here
- do not engage the Monochrome Boys again
- now that the M.Boys are out of the way, go back into the bar and get the book of matches off the counter
- that's all you need

Leaving Ulence Flats?

- get back into the time pod and enter coordinates for Xenon (the ones that were on the screen when you stole the pod)

Opening the Locked Door?

- pour green slime on it and click the hand icon on the door after the lock dissolves

Lasers in the Tunnel?

- you need a book of matches and a cigar butt
- choose matches from your inventory window; click the matches icon on the cigar butt; select the cigar butt from the window; click on OK
- click the eye icon on the keypad (close-up view)
- check out the angle of each set of laser beams

- enter the correct rotation angle for each set in order to get a straight up and down position

- now you can walk through with no problems

Rotation Angle Blues?

- with the beams in their original positions (you haven't monkeyed with them yet) and the flashing bar in the top window, press 156 on the keypad and hit enter.
- the second set needs 024 entered in the keypad and the third set gets a 108 entered in the keypad
- is this too easy yet?

After the Tunnel?

- this is the Super Computer and you're inside it!
- if this is your first visit here you want to make it a very fast one!
- at intervals along the walkway there are boxes (terminals for the Super Computer)
- click the eye icon on the first box you come to and get a closeup view - this is what the adapter must look like that you want to buy at Radio Shock
- if this is your first visit, you should now exit this area the same way you came in and do it pronto!
- the only way to avoid the Security Droids is to move quickly

Inside the Super Computer?

- use your PocketPal to access the Super Computer - you will then be able to monitor the position of the Security Droids such that you will be able to evade them
- your goal here is to get to the Programming Chamber and start the formatting sequence that will in turn erase Vohaul from the Super Computer memory - then you can rescue Roger Jr.

Using PocketPal?

- choose the PocketPal icon from the inventory window; click the icon on one of the terminals along the walkway
- you now have a bird's eye view of the inside (you are the flashing grey rectangle, flashing blue or green octagon is a dreaded Droid!)
- click on the power button to exit this view and navigate the walkway such to avoid the Droid(s).
- if your PocketPal won't work:
 1. you need the battery from the bunny (click the eye icon on the bunny, click the hand icon on the battery, select the battery, and click the battery icon on the PocketPal)
 2. you need the adapter plug from Radio Shock
 3. you need to exchange the adapter plug at Radio Shock for the correct one!

Programming Chamber?

- to get there, start from the tunnel door, walk north one screen, and west one screen. Descend the left stairway one screen, wait for the droid to appear from the right, then go north again to the top of the stairway. Then proceed one screen east, one screen south, and then walk west to the chamber.
- to get inside you'll need the Space Quest IV Hint Book - the one you got from the bargain bin at the software store. Check under the problem that begins with "I'm in a room outside the Programming Chamber...." Here you'll find the codes that you need to get into the programming chamber.
- once inside, you are interested in only the Droid icon and the Brain icon.

Point the icon to the Droid icon, drag it to the toilet and release the mouse button. Presto! The Security Droids are toast. Next point the icon on the Brain icon, drag it to the toilet, and release the mouse button. Presto again! The formatting sequence begins and destroys Vohaul! (The counter in the lower left corner tells you how much time you have left to rescue Roger Jr.)

**** NOTE! - Whatever you do, don't put the SQ4 icon into the toilet!**

Roger Jr.?

- he is three screens east, one north, and one west to the stairway from the programming chamber. Descend either stairway, and go west to the glass elevator. Get off at level 3, go one screen north, one east, and then north again into Vohaul's chamber.

- you can rescue Roger Jr. now (if you have initiated the formatting sequence!). Go to the edge of the platform and a bridge will extend to Roger Jr.'s platform. Cross on the bridge, use mouse or arrow keys to fight Roger and force him back into the beam. When he is caught in the beam, descend the ladder on the left side of the platform, come back up, (a disk will now be in your inventory), click the disk icon on the disk drive and a menu will appear. Click BEAM UPLOAD and Vohaul will be uploaded into the Super Computer. Click DISK UPLOAD and Roger Jr. will be uploaded into the Super Computer. Click on Roger Jr.'s name, then on BEAM DOWNLOAD and Roger Jr. get downloaded and reunited with his body! Finally Vohaul gets formatted and everyone lives happily ever after! - maybe!

The RENO Cracker

IBM Softkey for...

BattleHawks: 1942

Lucasfilms

If you have this game and enjoy playing it, you already know about the nuisance of the passive protection system employed. At my "workstation" finding a particular floppy involves a major search. Finding a part of the program documentation is usually a lost cause. And by the time I find it there's little time left for playing games.

Fortunately removing the nuisance question is relatively simple! Ain't it always; when someone tells you how to do it?

The question comes right after you have selected a mission and accepted your plane and are ready to go. It involves looking up a picture of a Japanese plane in a certain attitude (like climbing to the right, right wing low, incoming about 2 o'clock). Above each plane picture (there are 15 scattered through the book) is a word having no relation at all to the plane picture.

The easiest way to defeat this particular system is find the words on the disk and replace them with all zero's. Then when the question comes up on the screen; just hit return (giving a zero entry) and the program will continue on it's merry way. Be advised that the old "correct" entries can no longer be used since they will give you an incorrect identification and dump you into the old training mode! One quick return is the only correct response after this patch.

First make a DISKCOPY of disk 1. (It's a standard DOS disk and not copy protected.) Do your patching on the copy

IBM Softkey for...

Carrier Command

?

Well, another doc check. At least they were explicit about it. It can be removed like most by a small change.

For Norton users search the file CARRIER.EXE for the byte pattern C2 00 74 AB and change the 74 AB to 90 90.

DEBUG method. DEBUG is assumed to be in the current path or dir.

REN CARRIER.EXE CARRIER.ZAP
DEBUG CARRIER.ZAP
E FBB9 90 90

W

Q

REN CARRIER.ZAP CARRIER.EXE

IBM Softkey for...

Where in the U.S.A. is Carmen Sandiego?

Broderbund

This file will tell you how to remove the copy protection from CARMEN.EXE in "Where in the U.S.A. is Carmen Sandiego?" by Broderbund.

1. COPY "Where in the USA is Carmen Sandiego?" disks to a new subdirectory.

2. Copy DEBUG.COM to the new subdirectory.

3. Patch CARMEN.EXE using DEBUG.
REN CARMEN.EXE CARMEN.ZAP
DEBUG CARMEN.ZAP

E 3C7C 90 90

E 3C7F EB 05

E 3C99 90 90

E 3C9C EB 05

E 3CA5 04

E 3CC4 90 90

E 3CC7 90 90 90 90 EB 07

E 3CD7 04 90 90 90

E 3CEC 90 90

E 3EAA EB 05

W

Q

REN CARMEN.ZAP CARMEN.EXE

You should be able to run CARMEN from hard disk, or any other disk without the master disk in drive A. Now you can become the detective you've always wanted to be.

IBM Softkey for...

Colonel's Bequest

Sierra

This softkey will cause the fingerprint to be Celie's all the time, so when it lights up just hit enter! Use PCTools or other program and edit SCIV.EXE. Go to sector 68, offset 223, and change 75 to EB. That's it!

IBM Softkey for...

Continuum

Data East

To softkey Continuum, you need a hex string search utility program, such as the Norton Utilities. The code that needs to be changed is in the file PROGS.CC1 (filesize and datestamp are 163539 11-29-90 12:00p). There are three hex strings you will need to find and change.

Search for: 75 11 BF AB 24 2E 8B
Replace with: 90 90 BF AB 24 2E 8B

Search for: 75 11 BF D5 24 2E 8B
Replace with: 90 90 BF D5 24 2E 8B

Search for: 75 11 BF AB 24 2E 1B
Replace with: 90 90 BF AB 24 2E 1B

That's it! Any four symbols entered during the ID sequence will start the game.

IBM Softkey for...

Crime Wave

Access

To remove questions use PCTools or other edit program to edit CW.EXE. Go to sector 7, offset 307, and change CD 21 to 90 90. Then to sector 7, offset 314, and change CD 21 to 90 90. Then to sector 7, offset 416, and change 75 0D to 90 90. That's all there is to it.

IBM Softkey for...

Crimewave v1.1

Access

Search (a copy of) CW.EXE for 75 0D and change it to 90 90. That's all there is to it. Now when it asks you for a password, just hit return.

IBM Softkey for...

Curse of the Azure Bonds

?

Requirements:

Norton Utilities (or similar program)
A copy of the file START.EXE from your Azure Bonds disk A

First load START.EXE into Norton. Then search for the string 80 3E CC. This should take you to file offset 9BA hex. Go back to 9B5 hex this should be 9A (the first machine language code for a far call). Change the values of the bytes from 9B5-9B9 hex to 90's. Save the changes.

Now the program will skip the part where it asks for code letter, you now can put away that annoying code disk until needed for decoding messages in the game.

IBM Softkey for...

Dragon's Lair II

?

Here's a sure fire solution that worked for me. Hopefully you have a TEXT/HEX editor (I used PCTOOLS.)

Search DL2DISK2.DAT (on disk #2) for 75 01 CB 8C D3 and replace the 75 01 with 90 90. The screen will still be there, just enter any 5 digit number and you're on your way

IBM Softkey for...

Dragon's Lair

?

Use Norton utils, PCTools etc and search for the following byte patterns and replace them as shown.

Search for	Replace with
32 04 74 07 B8	32 04 EB 07 B8
7E 00 73 07	7E 00 EB 07
3B C3 74 14	3B C3 EB 14

That's it! Enjoy!

IBM Softkey for...

Dragon's Lair

?

Use PCTOOLS or other program and edit GAME.EXE. Go to Sector 29, offset 3 and change CD 21 to 90 90. Go to sector 29, offset 10 and change CD 21 to 90 90. Go to sector 29, offset 18 and change 74 to EB. Go to sector 29, offset 33 and change 73 to EB. Go to sector 29, offset 45 and change 74 to EB. That's it!

IBM Softkey for...

Earthrise

?

Well it looked like another simple doc check, but these guys are a little sneaky. The game program actually begins in the file SOL.EXE, but it is set up to exit to DOS if you try to run it. You must run EARTHRISE.EXE which then runs SOL.EXE. EARTHRISE.EXE was designed to make you think this is the program to tamper with. It overrides INT 3 and give you a "Mind your own business. It's a wild goose chase anyway" message. There is a decisive jump in EARTHRISE.EXE for the DOS exit routine, but altering the program at this point makes a "Security Violation" message appear upon playing. Also the program uses a JMP to decide your answer, not a JZ or JNZ or anything like that as shown below. It calls a routine which then uses a JMP to exit instead of a RET. But by eliminating the "you are wrong jump" in SOL.EXE this game is at your feet.

For Norton users, search SOL.EXE for the byte pattern E9 28 FD and change these numbers to 90 90 90.

DEBUG users follow the steps below. DEBUG is assumed to be in the current path or dir.

REN SOL.EXE SOL.ZAP
DEBUG cannot save .EXE
DEBUG SOL.ZAP
E 33AC 90 90 90

W

Q

REN SOL.ZAP SOL.EXE

Okay, you're all set. Just hit return when the doc check appears.

IBM Softkey for...

Escape From Hell

?

Better grab a microscope if you're haven't got a cracked version. This doc check asks about some monsters whose tiny pictures appear in the manual.

Since the portion to be altered is not in the first segment of the file you will have to use Norton, or another good editor. DEBUG won't work, unless someone knows how to find where DEBUG loads additional segments.

Below is a list of offsets of the byte to change in the file ESCAPE.EXE. Go to the following offsets one by one and change the bytes 75 05 at each offset to 90 90

offsets

14DFC

14E3A

14E78

14EB6

14EF3

14F1E

There are six possible types of questions the game can ask about a character and each has it's own routine. The above will fix all of the routines.

IBM Softkey for...

Earl Weaver's Baseball v1.5

?

Be sure to backup your the program disk before starting and use the back up for the softkey. Modify only the backup copy!

REN WEAVER.EXE WEAVER
DEBUG WEAVER Load program into
DEBUG
S 0000 FFFF 74 E3 Search for 1st protection pattern

xxxx:yyyy

The search will return one address. If more than one is returned this softkey may not work.

E yyyy 90 90 Edit the contents of the returned address

S 0000 FFFF 75 0D 3B Search for 2nd protection pattern

xxxx:yyyy

Again, the search will return one address. If more than one is returned this softkey may not work.

E yyyy EB 04 Edit the contents of the returned address

W

Writing XXXX bytes

Q

REN WEAVER WEAVER.EXE

Now try to run the new (Hopefully) unprotected version of Earl Weaver's Baseball. Just push ENTER when asked for secret codes.

IBM Softkey for...

F-15

?

Requirements:

DEBUG.COM (found on your DOS disk)

1. Start up DEBUG.

DEBUG

2. When you see the DEBUG prompt (-), insert your copy of F-15 into drive A: and enter the following command lines:

L 0 0 2A 1

F 99 L 10 20

W 0 0 2A 1

Q

When asked for your code just hit ENTER! To check your copy, after hitting ENTER for the code prompt, try to switch between weapons (try pressing 'M').

IBM Softkey for...

Gunship

?

To remove the read for original disk, use PCTools or other program and edit START.EXE.

Sct	Offset	From	To
52	296	CD 13	90 90
	306	75 02	90 90
	329	B9 00 06 8B	B8 34 12 BA
		16 36 49 0A	36 2F 8E DA
		F6 74 06	33 D2 90
	341	00 01	90 0D
	344	66	67
	348	CD 13	BE 93
	350	72 DC 9A 01 67 0F EB 04 03 97	
90	419	CD 21 73	90 90 EB
91	60	B4 3D CD 21	B0 06 90 90
95	204	00 43 CD 21	20 00 B1 20
	212	75 04	90 90
	249	00 44 CD 21 73 40 00 BA 40 00 05 B8 05 00	EB 04 90 90

To get rid of the ID question:

Sct	Offset	From	To
36	5	74	EB

That's it, no more question.

IBM Softkey for...

Caveman Ugh-Lympics

?

Use Norton to search SOS.EXE for 76 01 E8 BB 48 9A and change the E8 BB 48 to 90 90 90. Write the changed data and your done! No more look up screen!

unClassifieds

How to place an UnClassified Ad

Send a typed sample copy with appropriate instructions. (If possible, send text on a 5.25" Apple format disk.) Use up to 40 characters per line, we will adjust word wrap.

Special Graphics Instructions: The first three words of the first line are printed in bold for free. If you want other words bolded, use 5 characters less per line. Use 10 characters less per line if you have a lot of uppercase bold letters. Bold letters are wider than normal. If the typed copy does not show bold, circle the words you want bolded and, on the side, write BOLD. If you want a line centered, write CENTER next to that line. There is no charge for centering any line.

You must check your ad for errors, the first time it runs. Errors on our part will be corrected, then, for free. Errors or changes on your part will be charged a \$5 processing fee.

★★★★ New Rates (per line) ★★★★

Computist club member25¢
All others35¢

The minimum order is \$5.

- Our liability for errors or omissions is limited to the cost of the ad.
- We reserve the right to refuse any ad.
- Washington state residents add 7.8% sales tax.
- Send a check or money order (funds drawn on US bank only) for the entire amount to:

COMPUTIST unCLASSIFIEDS
33821 East Orville Road
Eatonville, WA 98328

TRADE YOUR APPLE SOFTWARE

Send your list of programs to trade. I have over 120 originals to trade.

Byron Blystone
PO Box 1313
Snohomish, WA 98290

WANTED

"Most Wanted List" Software

Need help to deprotect a disk Softkey hobbist is interested in acquiring copy protected software to deprotect. Good track record, many successful attempts. Original disk will be returned along with softkey for COMPUTIST. Especially interested in older software (pre-1988) but will give any disk a shot. System: Apple II+, 64K. Send disk to:

Rich Etarip
824 William Charles, Apt #2
Green Bay, WI 54304

Magazines Wanted!

"Electronic Games", "Electronic Fun", "Computer Games", "Video Games", "Video Gaming Illustrated", "Joystick", "Antic", "Analog", "Replay", "Play Meter", and many others.

Frank M. Polosky
PO Box 9542
Pittsburg, PA 15223

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Gunther W Roth	10
Unknown	21

Most Wanted

80 Ace of Aces	Accolade
65 Airheart	Broderbund
63 Alcon	Taito
74 Algebra Shop	Scholastic
63 Alien Mind	PBI Software
73 American History Explorer Series	Mindscape
75 Anchorman	Virginia Reel
74 Animals of the Past	Focus Media
72 Ankh	Datamost
73 Ant Farm	Sunburst
67 Aquatron	Sierra
69 Axis Assassin	?
63 Bad Street Brawler	Mindscape
73 Bank Street Beginner's Filer	Sunburst
73 Bank Street School Filer	Sunburst
80 Battle Chess II	Interplay
63 Beyond Zork	Infocom
65 Bilestoad	Datamost
69 Blue Powder - Grey Smoke	Grade
74 Birds - Trees & Flowers	Focus Media
63 Border Zone	Infocom
65 Borg	Sirius
67 Bouncing Kamungas	Penguin
66 Boxing	?
65 Bureaucracy	Infocom
67 C'est La Vie	Adventure International
69 Caverns of Callisto	Origin
69 Checker	Odesta
69 Chess 7.0	Odesta
81 Chessmaster 2100 IIe	Software Toolworks
75 Clue Master Detective	Leisure Genius
80 Colony (The)	Mindscape
63 Cosmic Relief	Datasoft
65 Crime & Punishment	Imagic
81 Crosscountry USA School Edition	Didatech
69 Crossword Magic v4.0	?
69 Cybernation	Nexa Corp.
74 Decimal Dungeon	Unicorn
74 Decisions Decisions: Colonization v1.0	Tom Snyder Productions
69 Delta Squadron	Nexa Corp.
67 Desecration	Mind Games

66 Disk Optimizer System	Nibble Notch
65 Dondra	Spectrum Holobyte
69 Dragon Eye	Epyx
69 Dueling Digits	Broderbund
68 D&D-Master Assistant vol2	SSI
62 DROL	Broderbund
67 Epoch	Sirius
74 Exploring Tables & Graphs Level 2 (SU)	Weekly Reader
67 Evolution	Sydney
67 Falcons	Piccadilly
68 Factastics Trivia	Daystar
75 Final Frontier	Softsmith
73 Fisher's Cove	Tom Snyder Productions
69 Flt Wars	Sirius
74 Fraction Action	Unicorn
69 Gemstone Healer	SSI
73 Geometric Supposer (the)	Sunburst
66 GEOS	Berkley Softworks
72 Galactic Gladiators	SSI
63 Gladiator	Taito
73 Goodell Diamond Caper	Tom Snyder Productions
66 GradeBuster 1 2 3	Grade Buster
61 Gutenberg Sr.	Micromation LTD.
65 Halls of Montezuma	Electronic Arts
80 Heat Wave	Accolade
67 High Orbit	Softsmith
67 Horizon V	Softsmith
75 Hunt for Red October GS	Datasoft
69 Impossible Mission	Epyx
62 Indoor Sports	Mindscape
68 Infocomics	Infocom
66 Jane	?
63 Joker-Poker	Mindscape
72 Kabul Spy	Sirius
71 Keyboarding Klass..Mastery Developement	Santa Barbara/Thunder Mountain
68 Kingdom of Facts	Simon & Schuster
72 Lane Mastodon	Infocom
67 Lancaster	SVS
72 Laser Force (IIgs)	Britannica
81 The Last Ninja (IIe)	Activision
75 L.A. Land Monopoly	Softsmith
66 Legacy of the Ancients	Electronic Arts
65 Lost Tomb	Datasoft
81 M-ss-ing L-nks: Classics old & new	Sunburst
74 Mammals - Reptiles & Amphibians	Focus Media
65 Manhunter New York IIgs	Sierra On Line
65 Mavis Beacon Teaches Typing (gs)	Software Toolworks
73 McGraw-Hill Problem-Solving Lvl 5&6	Tom Snyder Productions
67 Microwave	Cavalier
73 Mind Castle I	MCE Inc.
69 Minotaur	Sirius
63 Modem MGR	MGR Software
68 Mr. Pixel's Cartoon Kit	Mindscape
73 Mystery of Hotel Victoria	Tom Snyder Productions
63 National Inspirer	Tom Snyder Productions
75 Neptune	Softsmith
66 Observatory (The)	Mindscape
74 Ocean Life	Focus Media
66 Odin	Odessta
63 Operation Wolf	Taito
68 Pensate	Datasoft/Softdisk
69 Phantasie II	SSI
67 Phantoms 5	Sirius
67 Pig Pen	Datamost
74 Plants & Animals of the Desert	Focus Media
75 Prince of Persia (5.25")	Broderbund
67 Project: Space Station	Avantage
75 Promethean Prophecy (The)	Simon & Schuster

67 Pulsar II	Sirius
68 Pure Stat Basketball	?
62 Quadratic Equations II	Olympus Educational Software
81 Quarter Mile IIe	?
63 Questron II	Electronic Arts
68 Rails West	SSI
63 Renegade	Taito
67 Rescue Raiders	Sir Tech
67 Rings of Saturn - Level 10	?
63 Rocket Ranger (IIgs)	Cinemaware
69 Roundabout	Datamost
75 Russki Duck	Softsmith
63 S.D.I. (IIgs)	Cinemaware
62 Sea Stalker	Broderbund
67 Serpentine	Broderbund
74 Seven Cities of Gold	Electronic Arts
68 Skeletal System	Brainbank
63 Sky Shark	Taito
80 Sim City	Maxis
63 Sound Song & Vision	Advanced Software
67 Space Ark	Datamost
62 Spare Change	Broderbund
67 Spectre	Datamost
62 Speedy Spides	Readers Digest
67 Star Cruiser	Sirius
67 Star Maze	Sir Tech
63 StickyBear Math: Add & Subtract	Optimum Resources
68 Stickybear GS Versions 3.5	Xerox
80 Stormovik	Electronic Arts
67 Succession	Piccadilly
65 Superstar Ice Hockey	Mindscape
61 Superstar Indoor Sports	Mindscape
74 Surveys Unlimited	Mindscape
68 Talking Text Writer GS	Scholastic
68 Tangled Tales	Origin Systems
81 Test Drive IIe	Accolade
69 Tetris (IIe)	Spectrum Holobyte
72 Theatre Europe	PBI
74 The Other Side v2.0	Tom Snyder Productions
81 Think Quick! v1.2	Learning Company
65 Thunder Chopper	?
63 Ticket to Washington D.C.	Blue Lion Software
74 Time Explorers	Gameco
74 Time Liner v1.1	Tom Snyder Productions
68 Tomahawk (IIgs)	Datasoft
80 Tower Toppler	U.S. Gold
69 Track Attack	Broderbund
68 Triad	Thunder Mountain
72 Triango (IIgs)	California Dreams
68 Trinity	Infocom
73 Unicorn 5.25" software	Unicorn
73 Vincent's Museum	Tom Snyder Productions
68 Volcanoes v1.8	Earthware Comp. Services
66 War in the Middle Earth	Melbourne
80 Wayne Gretzky Hockey 2	Bethesda
67 Wayout	Sirius
63 Wings of Fury	Broderbund
63 Wizardry:Return of Werda	Sir-Tech.
68 Word Attack Plus (IIgs)	Davidson
65 Works (the)	First Star Software
67 Zenith	Softsmith

IBM Most Wanted

75 Empire	Intersil
72 GBA Championship Football	Electronic Arts
68 Graphitti	George Best Phillips Academy
63 Heros of the Lance	SSI
72 Kings Quest III	Sierra
72 Operation Wolf	Taito
72 Radio Baseball	Electronic Arts

#79•The Product Monitor•*Bitkeys*: Kabul Spy• *Softkeys*: ABM• Algebra 1-6• Cause and Effect• Chemistry: Series I• Computer Generated Mathematics Vol. 2• Cribbage• Designer Puzzles• Dungeon Master Assistant Vol. 2• Economics• Genesis• Gin King• Go• Graphmaster• Hard Hat Mack• Hi Res Computer Golf• Integer Arcade• Laser Bounce• Mammals Reptiles and Insects• Master Grades• Mickey's Crossword Puzzle Maker• Mind Benders• Missing Links• Non-Western Cultures• RoboCOP• Safari Search• SAT Score Improvement Series• Special Product and Algebraic Factors• Stickybear GS Talking series Talking Alphabet• Talking Opposites• Talking Shapes• Task Force• Teacher's Toolkit version 3.1• The Great Knowledge Race• The History of Europe• The Solar System• The Time Tunnel• Thief• TrianGO• US History• Wasteland• Water and Weather• Who Am I?• Word Problems for Algebra• Worksheet Generator• Writing Chemical Formulas• Your Body• Your Body: Series II• *Playing Tips*: Baneful Tales• Elite• *Mac Features*: Mac Hard Disk Ejection Fix• *Mac Softkeys and other Patches*: ABCBase• Animation Toolkit1• Aztec C 1.0• Aztec C version 1.00c• Championship Boxing• Chart• Checkminder• Cutthroats• Cutthroats alternate• Deja Vu• Desk Toppers• Dollars & Sense• Dollars & Sense alternate• Electric Checkbook• Excel• Excel alternate fix• Fact Finder 1.0• Factfinder• Fahrenheit 451• Feathers & Space• File• FileMaker• Filevision• Filevision alternate• Forecast• Frogger• FunPak• Gato• Grid Wars• Griffin Terminal• Haba-Comm• Haba-Comm alternate• HabaCheckMinder• Habadex 1.1• Harrier Strike Mission• Hayden Speller• Hayden Speller alternate• Hippo^C Level 1• Hitchhiker's alternate• Hitchhiker's Guide to the Galaxy• Home Accountant• Legacy• Lode Runner• Mac Fortran• Macattack• MacChkrs/Rvrsi• MacCommand• MacDraft 1.0• MacDraft 1.1• MacGammon/Cribbage• MacJack/Poker II• MacLabeler• MacMatch• MacPascal (version 1.0)• MacPoker• MacType• Master Type• Master Type alternate• Mouse Stampede• Multiplan alternate• Multip-

lan version 1.02• OverVue• PageMaker• PageMaker 1.0• Pensate• PFS• PFSFile/Report• PFS version A.03• Real Poker• Rogue• Sargon III• SkyFox• Smooth Talker• The Quest• Think Tank• Think Tank 1.1• ThinkTank 128• ThinkTank 512• Transylvania• Triple Play 1.0• Trivia Arcade• Trivia Fever• Typing Intrigue• Ultima][• Ultima III• VideoWorks 1.0• WellTris• Winter Games• Xyphus• *Features, Notes & such*: COPYA-able Questron II• How to make Thief into a BRUNable file• How to run Task Force on your hard drive• Making Genesis into a single BRUNable file• Making Hard Hat Mack into a single BRUNable file• Making PLATO software run on the Enhanced //e• Multi-Column Print Utility (MCP)• Notes on Battle Chess• Notes on Silent Service GS• Notes on Wildcard II card• Object Module Format (OMF)• ORCA/Disassembler Scripts• ORCA/Disassembler utilities• Other Notes• Running Teacher's Toolkit v3.1 (3.5") on a Laser 128• Task Force on a hard drive and Wings by Vitesse• The Basics of Kracking (part 5): Deprotection of Modified DOS disks• The Basics of Kracking Part 6: Mating Zone & Nibblizing Mysteries• Update on the Silent Service GS v925.01 crack• Xternal Commands for BASIC: CWD (Change Working Directory)• ONLINE• #80• The Product Monitor• *Features, Notes & such*: Add Copy II Plus file handling to your BASIC program• Comments on the Beginner's Book• Formatting 720K disks as 1.44M HD• How to SAVE hexdumps as CDA's• Logging ProDOS Drives• The Basics of Kracking (part 7)• The Basics of Kracking (part 8)• *Bitkeys*: Black Magic• Guild of Thieves• Gunslinger• King's Quest Series• Leisure Suit Larry• Man Hunter: New York• Police Quest• Realms of Darkness• Saracen• Sierra Boot Disks• Silicon Dreams• Space Quest Series• Ultima V• Wizardry Series• Xyphus• *Softkeys*: Ancient Art of War• Battle Chess• Bridge 6.0• Captain Blood GS• Dinosaur Days v1.0• Empire• Fahrenheit 451• Fay's Word Rally• GATO v1.3• Greeting Card Maker• Hostage• Keef The Thief• Magic Spells v2.0• Magic Spells v2.1• Mickey's Crossword

Puzzle Maker• Monsters and Make Believe v1.1• Pipe Dream• Pipe Dreams• Rear Guard• Rendezvous with Rama• Same or Different• Teacher's Tool Kit• Teacher's Tool Kit (IIC)• War of the Lance• Where in the USA is Carmen Sandiego?• WindwalkerGS• Windwalker IIe• *APTs*: Space Rogue• Wizardry III• *Playing Tips*: Countdown• Space Rogue• *IBM Softkeys*: Serve and Volley• Welltris
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Shop• Instant Survey• Micro Typewriter v4.0• Murphy's Minerals• Patterns• Picture Chompers• Probability Lab• Professor AI's Sequencing Lab• Stickybear Shapes (ProDOS 1.5)• Studymate (the grade booster)• Sun and Seasons• The Duel: Test Drive II• Time Navigator• Tomahawk• Windwalker• *APTs*: Where in Europe is Carmen Sandiego?• Where in the USA is Carmen Sandiego?• Where in the World is Carmen Sandiego?• Where in Time is Carmen Sandiego?• *Playing Tips*: Windwalker• *IBM Softkeys*: Crime Wave• Gauntlet II• Stunt Driver• Thexder II• Wing Commander• *IBM Reader Review*: Copyright and much more...
For a complete back issue list, send a 75¢ stamp to Computist.

Special Software Sale (while they last)

These software packages are NEW (shrink-wrapped except for the one copy of Sound Master that I opened in order to find out what it was). They're software packages that someone ordered and then canceled and we were unable to return.

SubLogic Scenery Disk 2 (Phoenix, Albuquerque & El Paso)

SubLogic

(All Apple II's) \$5.00

For use with Jet and/or Flight Simulator v2.0. Each scenery disk covers a geographical region of the country and includes major airports, radio-nav aids, cities, highways, rivers and lakes located in that region. Enough detail is available for either visual or intrumental cross-country navigation.

SoundQuest CZ Master

Sound Quest In

(Commodore Amiga) \$10.00

For use with the Casio CZ-101, CZ-1000, CZ-3000, CZ-5000 and other compatable synthesizers. Included are file management and bank editing features, patch mixing and random voice generation features. Compose and mix your own music using many of the package options available.

Send orders to Computist at the address listed on the Back issue order form below.

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2	<input type="checkbox"/>	<input type="checkbox"/>	24	<input type="checkbox"/>	<input type="checkbox"/>	48	<input type="checkbox"/>	<input type="checkbox"/>	72	<input type="checkbox"/>	<input type="checkbox"/>
Core2	<input type="checkbox"/>	<input type="checkbox"/>	25	<input type="checkbox"/>	<input type="checkbox"/>	49	<input type="checkbox"/>	<input type="checkbox"/>	73	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	26	<input type="checkbox"/>	<input type="checkbox"/>	50	<input type="checkbox"/>	<input type="checkbox"/>	74	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	27	<input type="checkbox"/>	<input type="checkbox"/>	51	<input type="checkbox"/>	<input type="checkbox"/>	75	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	28	<input type="checkbox"/>	<input type="checkbox"/>	52	<input type="checkbox"/>	<input type="checkbox"/>	76	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	29	<input type="checkbox"/>	<input type="checkbox"/>	53	<input type="checkbox"/>	<input type="checkbox"/>	77	<input type="checkbox"/>	<input type="checkbox"/>
Core3	<input type="checkbox"/>	<input type="checkbox"/>	30	<input type="checkbox"/>	<input type="checkbox"/>	54	<input type="checkbox"/>	<input type="checkbox"/>	78	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	<input type="checkbox"/>	31	<input type="checkbox"/>	<input type="checkbox"/>	55	<input type="checkbox"/>	<input type="checkbox"/>	79	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>	32	<input type="checkbox"/>	<input type="checkbox"/>	56	<input type="checkbox"/>	<input type="checkbox"/>	80	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	<input type="checkbox"/>	33	<input type="checkbox"/>	<input type="checkbox"/>	57	<input type="checkbox"/>	<input type="checkbox"/>	81	<input type="checkbox"/>	<input type="checkbox"/>
10	<input type="checkbox"/>	<input type="checkbox"/>	34	<input type="checkbox"/>	<input type="checkbox"/>	58	<input type="checkbox"/>	<input type="checkbox"/>			
11	<input type="checkbox"/>	<input type="checkbox"/>	35	<input type="checkbox"/>	<input type="checkbox"/>	59	<input type="checkbox"/>	<input type="checkbox"/>			
12	<input type="checkbox"/>	<input type="checkbox"/>	36	<input type="checkbox"/>	<input type="checkbox"/>	60	<input type="checkbox"/>	<input type="checkbox"/>			
13	<input type="checkbox"/>	<input type="checkbox"/>	37	<input type="checkbox"/>	<input type="checkbox"/>	61	<input type="checkbox"/>	<input type="checkbox"/>			
14	<input type="checkbox"/>	<input type="checkbox"/>	38	<input type="checkbox"/>	<input type="checkbox"/>	62	<input type="checkbox"/>	<input type="checkbox"/>			
15	<input type="checkbox"/>	<input type="checkbox"/>	39	<input type="checkbox"/>	<input type="checkbox"/>	63	<input type="checkbox"/>	<input type="checkbox"/>			
16	<input type="checkbox"/>	<input type="checkbox"/>	40	<input type="checkbox"/>	<input type="checkbox"/>	64	<input type="checkbox"/>	<input type="checkbox"/>			
17	<input type="checkbox"/>	<input type="checkbox"/>	41	<input type="checkbox"/>	<input type="checkbox"/>	65	<input type="checkbox"/>	<input type="checkbox"/>			
18	<input type="checkbox"/>	<input type="checkbox"/>	42	<input type="checkbox"/>	<input type="checkbox"/>	66	<input type="checkbox"/>	<input type="checkbox"/>			
19	<input type="checkbox"/>	<input type="checkbox"/>	43	<input type="checkbox"/>	<input type="checkbox"/>	67	<input type="checkbox"/>	<input type="checkbox"/>			
20	<input type="checkbox"/>	<input type="checkbox"/>	44	<input type="checkbox"/>	<input type="checkbox"/>	68	<input type="checkbox"/>	<input type="checkbox"/>			
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	Quantity	US, Canada & Mexico	All others
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	10 or more	\$3.00	\$5.00
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	6 to 9	\$4.00	\$6.00
	10 or more	\$3.00	\$5.00

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What's a library disk?

A library disk is a 5 1/4 inch floppy diskette that contains programs that would normally have to be typed in by the user. Documentation for each library disk can be found in the corresponding issue.

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