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COMPUTE!

SEPTEMBER
1989

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The Leading Magazine
of Home, Educational, and
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PETER SCISCO

We'll carry the information age with us—in our pockets, purses, and briefcases

Let's get small. Seems a lot of folks in the computer business are adopting Steve Martin's non sequitur from the early 1980s. But this time it's no joke. Little computers have a big future, whether they're serious productivity tools or fun-and-games machines.

By now you've probably read about Sharp's Wizard, a wallet-size personal organizer. (OK, so it's one of those big, trucker wallets, the kind with all the chains and clips and snaps.) Now when you hit the road, you can carry phone numbers, memos, and sundry other informational gems, all in an easy-access, nifty, eye-catching piece of hardware. And, thanks to companies like Traveling Software, those little notes you enter into your Wizard can be uploaded to your personal computer. It works the other way, too—from desktop to coat pocket.

Sure, you could write all that stuff down in a daybook. But what's the fun in that? Devices like the Wizard and Casio's B.O.S.S. and even Franklin Computer's spelling checkers aren't substitutes for paper. They *are* paper—the paper of the 1990s.

When did this rush to Lilliput begin? The television I watched as a kid was the size of a small refrigerator. I could see the dull orange glow of vacuum tubes through the ventilation slots. When the picture went out, my Dad would unscrew the back of the set, remove the tubes, and we would drive over to the drugstore and stick them, one by one, into the diagnostic machine. Today you can get a TV that's smaller than a paperback book; Sony even has a VCR-TV combo that's about the size of a cordless phone.

Transistors, chips, silicon, and ingenuity. When my dad told me about the giant IBM computers, huge monoliths that covered an entire wall, I imagined slowly spinning tape wheels, blinking lights, the low hum and the dull glow of tubes. I wondered how they ever found the faulty tube when the computer broke down.

Progress dwarfed us. Little electronic gadgets sprang up everywhere. Hand-size football games. Thumb-size digital clocks. Computer makers started using phrases like *small footprint*, as if the future we were tracking had left some mark that we might follow. When Intel's 80386 chip found its way into personal computers in the mid-eighties, PC pundits talked of putting mini-computer power on the desktop. No one bothered to ask whether we needed that kind of power; it could be done, and so we

would darn well use it if we wanted to keep our grip on the ragged edge of technology.

Small is big. Big is small. It's a brand of technological newspeak with a difference: These products carry a real message. And that message is that in the coming years we'll be carrying the information age with us—literally. It will travel in our pockets, purses, briefcases, and book bags. Hand-held scanners and copiers have been around for a few years now. A company called Reflection Technologies has developed a tiny monitor that, when worn on a headset, projects a full-size display in front of the user. We can probably expect to see miniaturized fax machines. And what about laser discs? Already we have palm-size audio CD players. Can miniature CD-ROM readers for laptops be far behind? Imagine your son or daughter taking an entire library of books to college—packed neatly into one slim attaché case.

Little computers aren't relegated just to business or education, though. They're also designed for fun—no matter where we are. Both Nintendo and Atari plan to market portable videogame systems this year. And before them, several companies manufactured hand-held arcade games that are now sold as stocking stuffers in Radio Shack, Toys "R" Us, and hundreds of other retail outlets.

Some of us might cringe at the thought of kids playing *California Challenge* or *Mario Brothers* during the family camping trip. After all, an LCD screen can't compete with the view from Mount Washington in New Hampshire or Hanging Rock here in North Carolina. (Some kids might think otherwise.) And the thought of someone playing a game while driving down the freeway (Atari's game system has a cigarette-lighter attachment) would make anyone weak in the knees. But the point of these portables is that, if you're hooked on arcade entertainment, you never have to leave home without it.

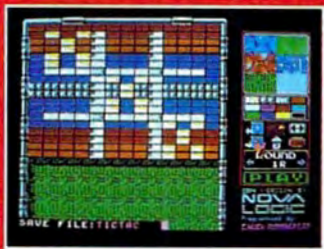
All these miniature electronic devices give new meaning to the phrase *You can't take it with you*, a perfectly good adage shot to hell. Maybe that's also part of the message that these gadgets are sending. We have to rethink and reconsider the ways in which we operate in these days of instantaneous communications, annotated information, and technobabble obfuscations.

Another adage: *It's a small world*. It's a small future, too. You're holding it in the palm of your hand. □

RAGE!

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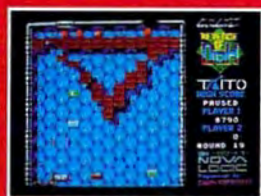


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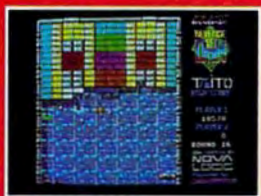
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news & notes

The Old Soft Show

Last year's entertainment software sales were rather lackluster, but there was no hint of malaise at CES in June, and no lack of new titles either.

Accolade took a shot at role-playing adventure games with *Conspiracy: The Deadlock Files*, a graphics adventure featuring digitized photos; *The Third Courier*, an espionage game set in Berlin; and *Don't Go Alone*, a mystery game that has you battling ghosts in a haunted house. The company maintained its stand in the sports arena with *Hardball II*, *The Cycles* (motorcycle racing), and *Heat Wave* (powerboat racing). To round out the new offerings, there's *Eye of the Storm*, a Vietnam-battle helicopter simulation.

Taito's *Arkanoid II* prom-

ised to be a smash, with its built-in construction set, moving blocks, Ad Lib-board sound, and other surprises for pod-and-block heads. *Qix*, *Rambo III*, and *Target Renegade* were also among Taito's planned arsenal.

Spectrum HoloByte put the pedal to the metal in its street-racing simulation. *Vette* brings the streets of San Francisco to your screen using the same 3-D solid modeling techniques found in the company's *Falcon AT* game. You can choose any route as you race from one point to another, dodging trolleys, pedestrians, and city traffic. *Bullitt* was never like this.

Origin showed *Omega*, a battle game in which players program cyber tanks and then

send them out to fight. The game will be available on a variety of computer platforms, allowing players to fight across operating system lines via modem. MPS Technologies (formerly MicroProse) also showed its tank game, *M1 Tank Platoon*. With this simulation, players command a group of four tanks rather than the lone rogue tank offered in other tank games. The company also planned to release *Sword of the Samurai*.

For its part, Brøderbund showed its new *Carmen Sandiego* and *Print Shop* packages. It also previewed a bundled package: *Bank Street Writer Plus*, *Where in Europe Is Carmen Sandiego?*, and *Type!*, all titles in The Family Software Library. Under affiliated la-

bels, you can expect to see *Licence to Kill* (arcade adventure), *Ancient Land of Ys*, and *Murder Club* (both role-playing games).

Electronic Arts blew the whistle on two sports games (*John Madden Football* and *Lakers vs. Celtics and the NBA Playoff*), a jet-fighter game (*F-16 Combat Pilot*), and a martial-arts game (*Budokan*). Epyx countered with *Revenge of the Defender*, *Ishido* (a strategy game that calls for ordering "runic tiles"), *Snow Strike*, *Project Neptune*, *California Games II*, and *Purple Saturn Day* (kind of an intergalactic Olympics).

All in all, it looks like we computer users are in for a lot of fun for the rest of the year.

— Peter Scisco

So Where's Carmen This Time?

Carmen Sandiego and her gang of international thieves are on the loose again. In this caper, she has stolen a time machine, so you not only have to find out where she is, but when too.

Where in Time Is Carmen Sandiego? is the fourth release in Brøderbund's Carmen Sandiego geography/detective game series. Designed to bring history to life by letting you experience it, this program has you working for the Acme Detective Agency once again. But instead of chasing Carmen around the world, you chase her through time periods ranging from 400 A.D. through the 1950s.

"People are always suggesting where to send Carmen next," said Jenay Cottrell, a Brøderbund spokesperson. "The most common request was to send her into space, but there really wasn't enough

information to do that. So we went with the second-most-popular request, time."

The series teaches geography and history by letting players travel across the world and through time gathering clues as to Carmen's location. Clues include topography, historical events, languages, cities and countries, and people and events. With over 1500 locations described in each game, there's a lot to learn.

"This is our best-selling series," Cottrell explained. "All three programs are consistently in the top ten in the school market."

The programs are so well liked that Brøderbund has a large file of letters containing praise and suggestions. Because the letters showed that kids especially liked the detective aspects of the game, the designers played up that part



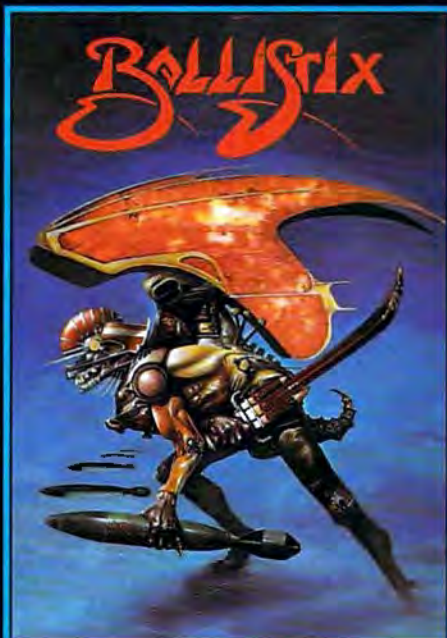
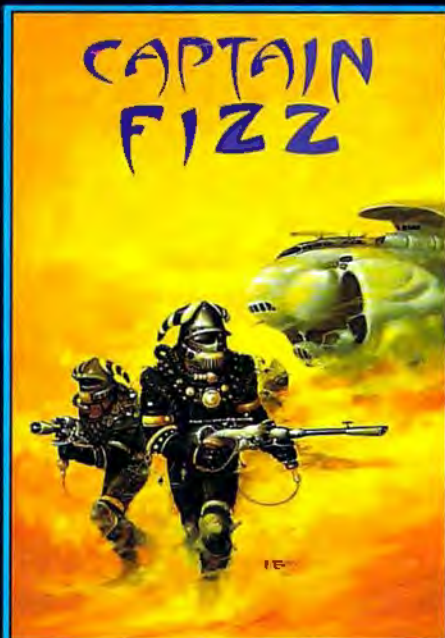
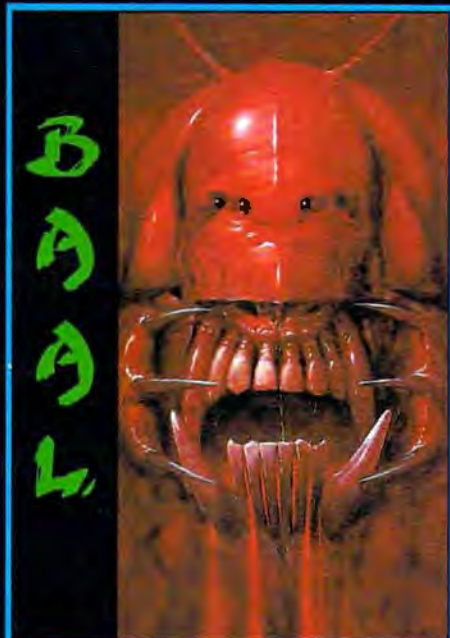
in the latest release. For example, when you start *Where in Time Is Carmen Sandiego?*, you have to find your way through the Acme Detective Agency's building as you go to work in the morning and eventually locate a cup of coffee before you begin tracing Carmen's trail.

Where in Time Is Carmen Sandiego? is slated to ship this month for IBM PC and compatibles and the Apple II. Both versions will carry a pricetag of

\$44.95. The MS-DOS version supports CGA, EGA, and VGA graphics. School editions, with a teacher's guide and backup disk, will be available for \$54.95; and a lab pack with a teacher's guide and five sets of disks will retail for \$109.95.

For more information, contact Brøderbund Software, 17 Paul Drive, San Rafael, California 94903; (415) 492-3200.

— Denny Atkin



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Screen Shots from the Atari ST version
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CAPTAIN FIZZ Meets The Blaster-Trons

The message is simple: co-operate or die! It's double fun and double trouble all the way in Captain Fizz, the most exciting simultaneous two-player game you and a friend are ever likely to play. It's a whole new world of split-screen, high-speed action, as both of you take on the nasty Blaster-Trons infesting the planet Icarus.

Yup, it's a tough mission alright, but you might just win out with the right blend of co-operation, courage, laser-hot reflexes, tactical sense . . . and brains. The action is fast and furious in Captain Fizz, but if you can't work out the right tactics you'll both be dead meat.

There are 22 levels of savage and relentless action to battle through before you reach your objective, the central computer that's causing the evil infestation. You'll never get there, though, unless you put your heads together and co-operate; your buddy can't do it on his own, and neither can you. This is one program where even the easy games are hard. So remember — united you stand, but divided you fall . . .

Warning: this game is impossible to beat on your own.

Two joysticks required for two-player game.
Screen shots taken from the Atari ST version
AVAILABLE NOW ON THE PSYCLAPSE LABEL

BALLISTIX It's a whole new ball game!

Sick of silly old soccer? Tired of pathetic pinball? Then you need a dose of *Ballistix* - the fastest, wackiest, toughest ball game yet to appear on a computer. *Ballistix* just explodes with excitement, puzzles and an amazing 130 different screens of frenetic action.

The aim of the game is simple; score more goals than your opponent to win the match. Doing it is a different matter as splitters fill the screen with dozens of balls, tunnels hide them from view, bumpers bounce balls all over the show, fiendish red arrows speed them up to almost impossible velocity, magnets pull them away from your control, and much, much more.

Ballistix is incredibly flexible, too. You can play against the computer or another player, set the speed if you can't stand the pace, define where the balls are fired and their velocity, rack up bonuses that will get you extra goals and then, at the end of an exhausting game, set your name in pride of place on the high-score table. And it's all played to the accompaniment of a throbbing sound-track and a crowd that applauds your every goal.

Ballistix is definitely not a game for wimps. It's tough, fast, challenging and incredibly competitive - in fact, it's just the kind of game you like.

Two joysticks required for two-player game
Screen Shots are from the Amiga version
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So Real It Could Almost Kill You

If you look closely enough into Accolade's crystal ball, you'll see the future of home computer games.

Conspiracy: The Deadlock Files, Accolade's first graphics adventure, features more than 500 digitized photographs of New York. If you've ever been to the Big Apple, you'll recognize Trump Tower and Saint Patrick's Cathedral among the

landmarks.

"We chose to do *Conspiracy* this way because we found a young man who had put together a technology that created on a PC something similar to CD-I-based games," said Shelly Safir, manager of product development at Accolade.

Even though the graphics are fascinating, you won't have time to do much sightseeing,

a murder charge and uncover a conspiracy aimed at overthrowing the U.S. Government. Don't worry if it seems that somebody is following you. It's just the FBI, the CIA, and the KGB. All those digitized graphics add a striking sense of realism and urgency to the chase.

Although you might expect this program to take up a lot of disk space and RAM, Safir said it would probably be a six-disk game and would require only 512K of RAM.

"The challenge was finding a good compression routine, and we think we've found one," Safir said.

In VGA, the uncompressed graphics are very sharp, but the game is also compatible with lower-resolution

cards, including CGA and Hercules graphics cards. Tandy owners will be able to take advantage of Tandy's 16-color card and sound chip. *Conspiracy* also works with the CMS sound board and the Ad Lib board.

"We're taking a big step in the direction of interactive movies with this product," said Safir. "We're opening doors not only for Accolade, but for the whole entertainment industry with a new approach."

The PC version will retail for \$49.95 and is due to be released in the third quarter of 1989. For information, contact Accolade at 550 South Winchester Boulevard, Suite 200, San Jose, California 95128; (408) 296-8400.

— Heidi E. H. Aycock

Dauids and Goliath

It seems as though Nintendo has the home videogame market sewn up, having sold over 7 million game consoles last year alone. But if Sega and NEC have their way, the hot request this holiday season won't be for more Nintendo cartridges, but for a new 16-bit game system.

Both companies will be introducing game consoles this fall based on 16-bit microprocessors. They'll have to make the advantages of their machines well known, though, since the retail prices for both consoles will be around \$200—twice that of the Nintendo Entertainment System.

Neither company is taking a chance on an untried system. The Sega 16-bit system, called Genesis, is marketed in Japan as the MegaDrive. And NEC's entry, the TurboGrafx-16, is Nintendo's number 1 competitor in Japan, where it is sold as the PC Engine.

The Sega Genesis system uses a 68000 microprocessor (like the Amiga, Macintosh, and Atari ST). It has stereo sound, a palette of over 500 colors, and two independently scrolling game fields to provide a 3-D perspective. An op-

tional Power Base Converter lets Genesis use the over-80 cartridges available for the 8-bit Sega Master System.

The NEC TurboGrafx-16 console uses a 16-bit custom graphics processor with 64K of 16-bit video RAM. Its six-voice stereo sound can be enhanced using the Turbo-Booster peripheral, which allows you to hook TurboGrafx-16 into your home video and audio equipment.

The biggest marketing advantage of the Sega and NEC systems over the Nintendo may not be the improved speed, graphics, and sound. Both companies are releasing a variety of innovative peripherals to accompany the game consoles that may help them stand out.

Along with the Power Base Converter, Sega is releasing a special modem for its system. The TeleGenesis modem will allow two players to

play games against each other on separate systems, connected by phone. For instance, two players in different cities could play *Tommy Lasorda Baseball* against each other. One player would view the action from the pitcher's mound; the other would see the game from the batter's box.

Peripherals for the TurboGrafx-16 include the Turbo-Tap adapter, which allows up to five players to play a game simultaneously, and the TurboGrafx-CD player. Besides being able to play standard music

CDs, the TurboGrafx-CD player also lets users run more elaborate games, complete with CD-quality soundtracks. With a storage capacity of 550 megabytes, the CD player gives programmers storage equal to 2000 game cards, letting them create games with complexity and detail surpassing those available on personal computers.

Will parents pay twice as much for a game machine with better graphics, sound, and expandability, or will Nintendo corner the market again this Christmas? It should be an interesting holiday season, as the first shots of the Second Videogame War ring out.

— Denny Atkin



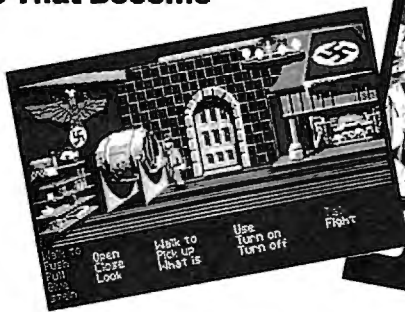
Reel to Real: Movies That Become Computer Games

This summer's burst of sequel blockbuster movies is turning into fertile ground for software producers who are emerging with new games to match the moneymaking films.

"It's the big screen, then it's the computer screen," said Melinda Mongelluzzo of Activision.

The concept isn't new, but with this summer's boon of films, it could become a habit. *Ghostbusters II*, *Licence to Kill*, *Indiana Jones and the Last Crusade*, *Batman*, and *Star Trek* all have games to accompany them. Due out this fall is a game to accompany *Nightmare on Elm Street 5: Dream Child*.

After the movie *Ghostbusters* was released in 1984, Activision developed its *Ghostbusters* game, which sold more than 2 million copies.



Keeping in stride, *Ghostbusters II* is en route.

Although software producers pay a good deal of money to get the licensing rights to the films, they're gambling that the games will more than pay for themselves. Most licensing agreements demand that the games follow the story line of the movie, which seems to be the case for most of this summer's packages.

In Lucasfilm's *Indiana Jones*, you guide Indy as he searches for his father and

fights Hitler's Nazis for the Holy Grail. As James Bond in *Licence to Kill*, you fight a ruthless drug lord in all the typical action-packed scenes.

It takes more than great arcade action to make a game a hit, however. As Jenay Cottrell of Brøderbund, which distributes the software version of 007, said, "Naturally it helps if the movie is successful."

Even past successes prove popular. Brøderbund has had a

hit with its *Star Wars* game, although the movie is a decade old.

If these software sequels are successful, we might see a whole new crop next summer. Then, if your friends ask you if you've seen the latest boffo blockbuster smash, you can say *No, but I've played the game.*

— Jeff Sloan



Fear of Flying with Laptops

When a terrorists' bomb exploded on Pan Am Flight 103 over Lockerbie, Scotland last December, it riveted world attention on what passengers could carry on board. Air-traveling laptop-computer users are just starting to feel the impact.

Once just another carry-on, the laptop's maze of wires, circuits, and chips present a thorny technical problem to airport security agents: how to distinguish between what's an essential part and what's a terrorist's tool.

"Everybody's hyper about anything being brought on an airplane anymore," said John Galipault, president of the Aviation Safety Institute.

John Farrar, a spokesman for the Federal Aviation Administration, said banning laptops and other electronic equipment is a consideration.

Secretary of Transportation Samuel Skinner announced in June a new policy requiring all U.S. air carriers

with flights originating in Europe and the Middle East to step up inspection of electronic equipment, including laptops. Any equipment that doesn't pass inspection won't be allowed on the aircraft. At that time, no policies had been announced for domestic flights.

Galipault said that banning laptops on domestic flights would create an incon-

venience. Terrorists have had the most success on international flights, he said.

Naturally, laptop-computer makers are keeping a wary eye on what the government does and how airlines deal with the situation.

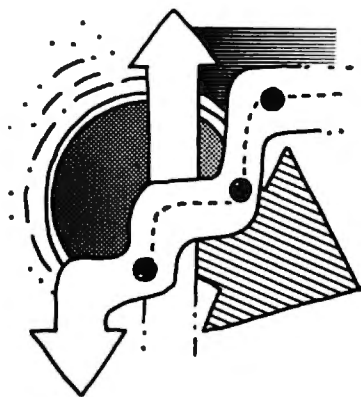
"We've been trying not to take it terribly seriously," said Keith Comer of Toshiba. Comer hopes that if laptops do

come under increased scrutiny, users could simply boot up the computers during airline security checks.

The airlines themselves are responsible for security. But they've adopted a wait-and-see attitude, looking for some word from the government that concerns laptop-computer policy.

— Jeff Sloan





gameplay

ORSON SCOTT CARD

Bytes, Camera, Action: Play the Hero in Movie-Quality Games

Picture this: You're watching a terrific action movie, only instead of biting your nails and hoping the hero makes the right choice, *you* must make the right choices.

Don't go into that room, you think, go into this one—and the commando does it.

That would be the perfect melding of film and computer game: Games that tell complete stories. Games with real characters in them. Games that have a beginning, a middle, an end.

It's the holy grail of many game designers: to create an interactive movie.

Why not? We're working with a TV-sized screen, aren't we? *Gone with the Wind* may not look so grand in a 13-inch display, but it's still *Gone with the Wind*. And animated feature films such as *Cinderella* are surely within reach.

But game designers face some limitations that film animators don't. With computer games, each new background scene means another 20K or 60K; each new animated character eats up great dollops of memory. And that translates into RAM, into disk space.

In a few years, we'll be buying our games on CD. That's the day the shackles come off, the day when we'll start seeing feature-quality animated games.

But if you want to glimpse the future, there are some programs that already get close to the goal of movielike games.

Of course, Sierra always deserves a nod if only because it was the first to produce animation with character and style, animation that's a pleasure to watch for its own sake. But Sierra isn't alone anymore for several reasons.

1. The new guys are reaching beyond Sierra's cute look, trying for more realistic art.

2. They're getting away from the puzzle-game mentality; the player makes choices instead of guesses.

3. Instead of relentlessly using the same side-on view that Sierra uses, new animators constantly shift between long shots and closeups, overheads and profiles.

4. A lot more *kinds* of things can happen. It isn't just picking up things and setting them down.

Take Cinemaware's *Rocket Ranger*, for instance. I've found five completely different arcade-style action sequences within it: flying with a rocket pack, a dogfight with Nazis, sharpshooting, a night passage through

antiaircraft fire, and a hand-to-hand slugfest.

Best of all, *Rocket Ranger* is highly interactive—the player has a great deal of control. You aren't being forced through a sequence of arbitrary puzzles. The game requires strategy as well as skill.

Mindscape's *Hostage: Rescue Mission*, on the other hand, is much more linear. As you prepare to rescue the hostages being held inside the embassy, first you have to knock out the sharpshooters, then land on the roof and crash through the window, and finally machine-gun the terrorists room by room as you make your way down to the basement of the embassy.

What *Hostage* lacks in interactivity, however, it makes up for in velocity. The game moves along at a pretty good clip, and you *do* have a few meaningful choices, especially since you can switch from one character's point of view to another's.

Rocket Ranger, alas, is constantly being interrupted by screenfuls of text (too often the same text you've already read a half-dozen times before). Yet I don't see how they could have managed without the narration, since *Rocket Ranger* is trying to tell far more of a story than is *Hostage*.

In short, in both games the designers had to make tradeoffs to get the effects they wanted. *Hostage*'s designers were going for a thriller, a caper. The details had to be real, and they were.

Rocket Ranger's designers, on the other hand, wanted you to feel as if you were caught up in a Buck Rogers or Commando Cody serial, trying to save the world from evil. They succeeded admirably, in large part because they took the story seriously, even though they surrounded it with delightful hokumlike decoder wheels and rocket packs. (I've got to admit, I fell in love with this game the way I fell in love with sci-fi 30 years ago.)

With superb animation and movielike effects, these two games pretty much define what *interactive movie* means in mid-1989.

They may not keep that lofty position for long, however, because the guys on Skywalker Ranch are putting such startling touches into the latest offerings from Lucasfilm Games that I laughed with delight when I saw and heard them.

But that's for my next column. For now, it's enough to say that *Hostage* and *Rocket Ranger* are both compelling, challenging games—and tantalizingly close to being interactive movies, too. □

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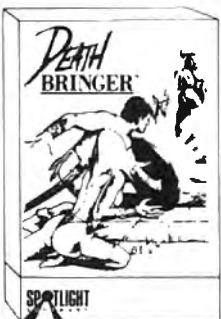
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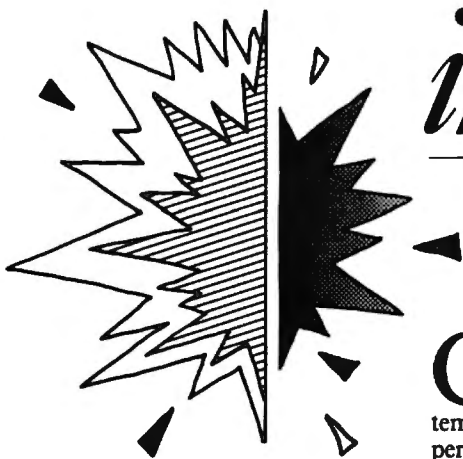
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impact

DAVID D. THORNBURG

Video Whizzes and Musical Mavens: Don't Overlook Your Most Useful Money-Making Tool

Computer enthusiasts often find themselves putting more and more of their extra cash into improving their systems. But there are ways you can make your personal computer pay you back. Last month we explored ways to make money with your home computer, focusing on applications involving words and numbers. Of course, home computers are used for many tasks other than word processing and number crunching. This time we'll take a look at some ways to supplement your income using graphics and music applications.

If you have a flair for photography or making videos, a graphics-based computer system can complement your talents and be the basis for a fun, profitable business.

For example, you can use an Apple IIGs with the new video-overlay card to create professional special effects on home videos. Your personal computer gives you a distinct advantage over those who work only with video equipment. Using tools like Brøderbund's *VCR Companion*, you can create titles and special effects that can be edited into videos of weddings, anniversaries, and birthdays. You'll need a spare VCR with decent editing capabilities to make truly professional programs, but if you're really devoted to your craft, you've probably already invested in good equipment.

Apple's video overlay card can mix computer graphics with traditional video to produce some spectacular effects. One of these is called *chroma key*. You start by creating a video in which the action takes place in front of a monochrome background. When you play back the video through the overlay card, your image will appear superimposed on a computer graphic background. This capability opens the doors to a lot of exciting applications.

If you have a flair for the fine arts, you can sell high-quality color prints of your video creations at art fairs to supplement your income. While it's possible to get fairly decent photographs from the front of your monitor, you are much better off borrowing or renting a video printer. These special cameras perform electronic color separation of graphic images by exposing the film one color at a time from a very high-quality monitor. Once your images are on 35mm film, they can be enlarged to any size.

If you are very enterprising, you can create live pieces by digitizing an image of the customer and then performing video magic with the aid of your favorite paint program and color printer.

The availability of low-cost video digitizers and heat-transfer printer ribbons can also put you in the custom T-shirt business. Capture faces with your computer, add a message to the picture, print it, and iron the result onto a white shirt.

I've tried a variation of this idea using a Macintosh: Create a hand puppet outline onscreen. Capture the image of a child's head using MacVision. Paste this image where the puppet's head should be and print the image with a special ribbon designed for heat transfer. The parent can iron this image onto any piece of cloth and make a puppet with the child's face on it.

If your talents run to riffs and your strength is in sonatas, you can team up with MIDI-based synthesizers and your computer to become a one-person band. Whether you perform live or in a studio, there are many ways that your musical skills can bring in some money.

First, as a performing musician, you can take your place in line for club dates and parties. However, if spending your evenings at the Fern Room of the Bye-dee-Bye Motel isn't your cup of tea, here is another idea.

Many local producers of radio, videotape, and audiotape programming need short musical segments they can use to separate portions of their programming or to help set moods. Listen to the soundtrack of any TV show to see how often this is done. They typically use libraries of prerecorded music that contain minute-long segments of many musical styles.

Unfortunately, the customer only has a choice of using these recordings unmodified or not at all. You can't do much editing once music is on a CD or tape. On the other hand, if you were to compose a variety of short selections and record them using a piece of sequencer software, the customer (who would need a MIDI rig) could play the music back with any combination of instruments, at any tempo, and in any key. Scan the professional music magazines and you'll get an idea of just how large this market is.

I offer all these only to get you started thinking of your own ideas. If you've thought about using your computer as the basis of a new part- or full-time business venture, I hope these ideas provide the spark you need to get started.

Remember, though, that your success in any business isn't determined by the technology you are using. It's purely a function of your personal skills and your dedication to making your project work. □

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Letters

Where's the Weather?

Your editorial in the December 1988 issue of *COMPUTE!* mentioned two weather information services, namely the *Accu-Weather Forecaster* offered by Metacommet and WeatherBank's *WeatherBrief*. I have been unable to find the companies' addresses or phone numbers at my local library. If you could help me, I would appreciate it very much.

Harold Frank
Hayden, ID

For the *Accu-Weather Forecaster*, try contacting Metacommet at P.O. Box 31337, Hartford, Connecticut 06103; (800) 782-5661. For *WeatherBrief*, contact WeatherBank at 2185 South 3600 West, Salt Lake City, Utah 84119; (801) 973-3148.

Homework

I am a housewife and have at home a computer, a modem, and a printer, among other hardware. I am very interested in working out of my home using my computer. I wonder if you could supply me with names of companies who offer jobs to people working with a computer at home. This would help me very much.

Ana J. Robles
North Lauderdale, FL

We can't give you a list of companies, but we can suggest a few resources that may help you. First, a very good book called Working from Home, by Paul and Sarah Edwards, not only explains the ins and outs of a home business, but it also lists some references for exploring computer careers at home. Second, an organization called American Home Business Association may point you in the right direction. Third, if you subscribe to a telecommunications service, look for a home-business special interest forum. For example, CompuServe has a Work-at-Home Special Interest Group. Fourth, check the want ads and the temporary agencies in your area. And last, but not least, take it upon yourself to contact companies for whom you'd like to freelance—write letters, send samples of your work, and get your name out in the field.

PC-Write's Right

I read with interest your buyer's guide to 44 word processors in the May 1989 *COMPUTE!*. It was a significant effort and deserves some applause.

I was sorry, however, that it didn't offer 45 word processors. Your guide missed a word processor that has more than 500,000 users across the United States, that the *PC World* and *Lotus* magazines estimate holds 5 percent or more of the word processing market, and that regularly appears as a favorite on magazine surveys of word processing use. You missed *PC-Write*.

Better luck next time.

Bob Wallace, President
Quicksoft (publishers of PC-Write)

We try to make our buyer's guides as complete as possible, but sometimes, in the interest of space, we must cut products from the list. We certainly recognize the place of PC-Write in the word processing market, and we've covered it in our September feature on shareware.

A Learning Experience

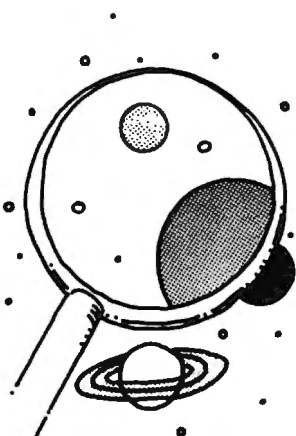
I would like to commend you and your entire staff for the fine magazine you put out. I have been computer-literate for a number of years—in terms of programming languages. Unfortunately, when it came to computer hardware, I was as dumb as they come. For example: I specifically looked for a computer with a 5¼-inch drive because it would obviously have more storage than a 3½-inch drive. I didn't know an 80286 from R2D2.

I tried several magazines and all but yours talked way over my head. By reading *COMPUTE!*, I have educated myself about the history of personal computing, the possibilities and limitations of hardware, as well as what is to come. I equally appreciate your dedication to getting the most out of older computers and orphans. In my days of computer ignorance, I had also purchased a Timex Sinclair 1000 and a TRS-80 hand-held PC. I now have hope that they can be used for something other than dust collectors.

William Eric Summers
Hallsville, MO

discoveries

DAVID STANTON



Mind Travelers: Explore the World Through Your Computer

It started at the office. My Mac was exchanging data with his Atari 1040 ST at an incredible 19200 baud. Once we got past a few rough spots, things began to move smoothly and we found ourselves with time on our hands.

"Check out Brunei," said he. "They have the highest per capita income in the world."

He had seen the new software on my desk—a geography thing. Well, what else would a couple of self-respecting mind travelers do? We powered up the Apple IIGS and began our world tour even as the Mac and Atari continued their high-speed dialogue.

Brunei. He knew more about it than I did. He located it on the northern coast of the island of Borneo. The entire country covered maybe two pixels of the computer's world map. "Point at it and click your mouse once to select a country," advised the software manual. That worked fine for the United States. It took considerable care with Brunei.

We pulled down a menu and chose Data Card. Total land area: 2226 square miles. Primary exports: petroleum, petroleum products, and natural gas. Population: 241,000. Total newspapers in circulation per 1000 people: 0. Daily per capita intake of calories: 2594. Oh, yes! Per capita income: \$17,570.

Outside, fluffy snowflakes fell nonchalantly, covering everything with a two-inch blanket of white. My watch calendar read May 9, and no amount of tapping would change its mind. Our grass badly needed mowing, but we wouldn't be doing it today. "What's the climate like there?" I inquired with more than academic interest.

Another trip to the menu bar, a couple more mouse clicks, and a climate map of Asia appeared. According to the color key, Brunei is a tropical rain forest. Its Data Card claims an average January temperature of 81, an average July reading of 83.

We finished our work and my friend left. I wondered, "Does Brunei really have the highest per capita income?" I could wait no longer to check. Mouse walk, menu bar, click, click, and the screen listed all countries with average per capita incomes above \$17,570. Several nations qualified, including the United States at \$17,600 and Nauru at \$20,000. None of the other 176 nations could top Nauru.

This 8.2-square-miles island in the South Pacific claims 8000 residents and a

total population density of 987.8 people per square mile. They mine and export phosphates. If the database is right, each person consumes 233 million BTUs of energy, but the country produces none. People apparently don't fight there either, military expense per capita: \$0.

What country has the highest per capita military expense? Do you know which nation has the most motor vehicles per 1000 people? How about the highest literacy rate?

MECC's *World GeoGraph* (Apple IIGS with 768K RAM, \$139) answers these questions and thousands more like them. The program boasts 40 living maps, an almanac-like database with extensive search-and-compare capabilities, a graphing utility, and the ability to select data and create customized reports.

As a research tool for geography class, it has no peers. Most important of all, though, it's just plain fun to play with.

Do you see a country that you don't recognize? Click on it. Then open its Data Card for more information. Would you like a head-to-head comparison of several nations on specific categories of data? Select each one to be included. Then create graphs to compare them on any features available in the database. Want to save your place or export your findings to a text file? No problem.

Because it permits a nonlinear approach to geography, *World GeoGraph* encourages you to learn in your own way. Most of us, after all, prefer asking our own questions and discovering our own answers. As a tool for encouraging self-motivated exploration, *World GeoGraph* is a state-of-the-art software package.

Not everyone, of course, has an Apple IIGS. That's not the point. What matters is that this program, along with others like it, demonstrates how increased computing power can and certainly will be used in the future. Suppose, for example, that it had 4000 maps instead of 40. Suppose it was delivered on CD-ROM and included 100 times as much data.

By the way, San Marino has more motor vehicles per 1000 people than any other nation in the world—833. The United States ranks second with 714. According to *World GeoGraph*, the literacy rate in the United States is 96 percent. Thirty-two countries do better than that; 23 of those claim a perfect score. And the country with the highest per capita military expenditure? Qatar. □

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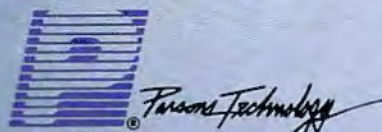


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When it comes to schools, we want nothing but the best value for our tax dollars. We want every possible academic and athletic program. We insist on outstanding teachers. We demand the most up-to-date facilities and equipment. We want perfection: we're satisfied with nothing less.

If your teenager has trouble completing written assignments, word processing software can help. If your second grader falls behind in reading, vocabulary and reading-comprehension programs can assist. To encourage creativity in an uninspired seventh grader, try graphics software, a music package, a text adventure, or a computer-based chess tutor. Software can help you brush up on a foreign language and even give your preschooler a little extra edge.

When it comes to providing opportunities for learning, it's tough to beat a personal computer combined with carefully selected software. Put an excellent system within reach of anyone from age 3 to 83 and things start happening. The more a family uses its computer, the more uses it discovers. And the more a family learns about its equipment, the more it will want to know.

But these benefits don't come easily. They require a significant investment of time, money, and planning. Inadequate equipment simply won't do. Without good software, even the best hardware falls short. Without family support and encouragement, even the best software/hardware team inevitably fails. To be successful with home computing, a family must take a serious interest in the project.

So think: Is your family computer-aware or is the information revolution passing it by? Do you have the hardware necessary to wring maximum educational benefit from today's and tomorrow's technologies? Does your software make the grade? Gather the family around, turn the page, and take our short test—discover where you stand on your home-learning report card. ▸

Making the Grade

A real education requires more than regular class attendance and participation in a few extracurricular activities. Parents who want their children to excel must provide a home environment that encourages learning. A critical component of that environment should be a well-equipped family computer. It can be the best home tutor you and your children ever met.

David Stanton

Test Your Computer's Home-Learning Potential

1. With which of the following operating systems is at least one member of your family familiar? Check as many as apply.

- A. Amiga
- B. Apple II
- C. Atari ST
- D. Commodore 64/128
- E. IBM or compatible
- F. Macintosh
- G. Other (Count only one unlisted system.)

2. Is your home computer compatible with those your children use at school?

- A. Yes
- B. No
- C. We have no computer.
- D. We have no children.

3. Which of the following best describes your monitor?

- A. 40-column (or less) monochrome
- B. 40-column (or less) color
- C. 80-column monochrome
- D. 80-column color
- E. Television set

4. What type of printer do you use at home?

- A. Dot-matrix or ink-jet graphics printer
- B. Daisywheel printer
- C. Laser printer
- D. None

5. Which of the following computer peripherals do you own? Check as many as apply.

- A. Joystick
- B. Mouse
- C. Voice synthesizer
- D. Modem
- E. Hard disk drive
- F. Muppet Keyboard or equivalent
- G. Graphics tablet
- H. Video digitizer
- I. MIDI-interfaced musical instrument
- J. Other (please specify)

6. How much do you know about software? To find out, match each of the following popular products with its software type.

- A. The Print Shop
- B. Lotus 1-2-3
- C. Word Perfect
- D. Microzine
- E. PFS:Professional File
- F. King's Quest series
- _____ 1. Adventure game
- _____ 2. Database
- _____ 3. Education
- _____ 4. Graphics
- _____ 5. Word processor
- _____ 6. Spreadsheet

7. How many commercial software packages does your family own?

- A. None
- B. 1-5
- C. 6-11
- D. 12 or more

8. Do you coordinate software purchases for your children with the subjects they're studying at school?

- A. Never
- B. Sometimes
- C. Often
- D. Always

9. Which of the following types of software are included in your home library?

- A. 80-column word processor
- B. Arcade-style game
- C. Graphics utility or paint program
- D. Text or graphics/text adventure
- E. Spreadsheet
- F. Database
- G. Telecommunications software
- H. Educational programs

10. What percentage of your family members over seven years old can name at least one word processor or other writing package? (Spelling checkers, grammar checkers, desktop publishers, and writing motivators for young children are acceptable.)

- A. 0-25
- B. 26-50
- C. 51-75
- D. 76-100

11. What percentage of your family members can type?

- A. 0-25
- B. 26-50
- C. 51-75
- D. 76-100

12. How many members of your family use a computer at work, school, and/or home for at least three hours per week?

- A. None
- B. Less than half
- C. Half or more
- D. All of us

13. Do you compute with your children and/or encourage them to work together with siblings and friends?

- A. Never
- B. Sometimes
- C. Often
- D. Always

14. How many hours per week is your home computer in use?

- A. Less than 2
- B. 2-6
- C. 7-12
- D. Over 12
- E. Don't own one

15. Is there at least one individual in your family who has taken a serious interest in computing?

- A. Yes
- B. No

16. Does anyone in the family belong to a computer club or user group? (Count school groups, local organizations, even distant clubs that serve their membership by mail.)

- A. Yes
- B. We don't belong to a formal organization, but we frequently work together with friends.
- C. No

17. How many different computer-related magazines does your family read regularly? Ask everyone. Count every magazine that any member reads at least once every two or three months.

- A. None
- B. One or two
- C. Three or four
- D. Five or more

A Hard Look at Your Home Hardware

With so many computers available, selecting the right one isn't easy. Some computer buyers pay too much attention to ads, to salespeople, or to associates and not enough attention to their own needs. In the end, the wisest approach is to learn as much as possible before spending a dime.

Find out which computer will be easiest for you to learn and use. See if it can run the software you'll use. Determine if it can grow with your family. Confirm its reputation for dealer and third-party support. If you can answer these questions, you'll have a good chance of picking a computer that will live up to your expectations.

Question 1: Take one point for each checkmark (maximum: seven points).

If you compute at work, you know the importance of having compatible equipment at home. Compatibility means the freedom to work in the office or in the den. It reduces hardware and software frustration and enhances your productivity.

Few adults would willingly move back and forth between two entirely different operating environments. And they shouldn't expect their child to. If home education is your primary goal, purchase equipment your children already understand or be prepared for disappointment.

Question 2: If you answered A, take six points. Response B gets you four, but don't blame us if Johnny would rather nap than compute. No computer? No points. No children? Take five if your machine is compatible with what you use at work; otherwise, take zero.

The perfect monitor for home use is probably a high-resolution color model capable of displaying clear 80-column text. Educational software often requires color to achieve its full impact; most word processors, spreadsheets, and database applications need an 80-column screen.

Early PETs could display only 40 columns. The TI-99/4 delivered just 28 characters per screen line. Those machines worked fine when connected to a television set, but times have changed. If your computer or its monitor can't handle 80 columns of text, it's time to upgrade.

But don't think that all 80-column displays are equal. VGA monitors, for example, make CGA models look primitive. Since computer users spend hours staring at their screen, it pays to have the best. Anything less will take its toll in eyestrain, headaches, and general discomfort.

Question 3: Something is usually better than nothing, so you get three points for A and four for B. Take five for C and six for D. Since the family TV set delivers unacceptable output and restricts computer use to rerun season, response E isn't worth anything.

A computer and a printer make a powerful home-learning team. With a quality graphics printer, you can publish a family newsletter, make personalized greeting cards, create certificates of merit, print program listings for debugging, write and revise reports for school, produce overheads for business presentations, make banners, design your own letterhead, and produce impressive résumés.

For most situations, a quality graphics printer should do the job. A daisywheel printer is great for business correspondence, but it can't handle graphics. A good dot-

matrix printer, on the other hand, does an acceptable job with text and supports graphics as a bonus.

If you want the best text and graphics output you can get, consider a laser printer. They're expensive, true, but, if you've got the money, they're well worth it.

Question 4: For A, take five. Response B earns four. Laser printers are state-of-the-art, so C gets you six points. Every computer should have its own printer. If yours doesn't, get one soon. Right now, though, D is worth nothing at all.

Specialized input/output devices increase any computer's versatility. Voice-synthesis products allow children to hear what they've written. Voice output also helps the blind and visually handicapped. Touch screens simplify computer use for those who can't type. And what proud would-be pilot would consider keyboarding a jet fighter when a joystick is available?

If you want to send an image across the country in seconds, you can digitize it with a graphics scanner or a video



digitizer. Then use your modem and telephone line to send it to any other modem-equipped computer in the world.

If you haven't considered a hard disk drive, you should. On Apples, Ataris, and Amigas, they're very handy. For Macintosh and MS-DOS users, they're becoming a necessity.

Question 5: Chances are that your family will not need all these devices, but you will need some of them. Take one point for each checked item, but not more than six points total.

Evaluating Your Software Library

Without software, hardware is nothing. To get the most out of your hardware, you must know as much as possible about the software it can run.

The list in question 6 includes classics and recent favorites. Each one has set an important standard in its field. Some are available for only one operating system, while others come in several different versions.

If you own an IBM or compatible, you might wonder why you should care about products that run on the Apple II, the Macintosh, or the Amiga. The answer is simple: How else can you be sure that your favorite music program is still the best available for any machine? How else can you know if your IBM incarnation of *Word* matches its Macintosh counterpart?

Question 6: The answers from 1 to 6 are F, E, D, A, C, B, respectively. Give yourself one point for each correct response.

Knowing about software isn't enough. You have to

own some of those great packages. Every computing family needs a library of powerful applications, exciting educational programs, and stimulating games. What counts most isn't numbers, but quality.

Question 7: You marked A? You guessed it! No software—no points. Response B counts as four points, C is worth five, and D gets you six.

Educational programs and other special-purpose items should be carefully selected to address the needs and interests of specific family members. Ideally, children should use the same word processor at home as they use at school. Other software packages should be selected to support and



augment school coursework. The right software can provide extra practice or additional challenges, depending upon each student's needs.

Question 8: You don't get any points for A, but count two for B, three for C, and four for D.

A properly planned software library begins with a powerful but uncomplicated word processor, a spreadsheet capable of handling family finances, and a general-purpose database. Arcade-style games give you a pleasing recreational break and are an excellent way to introduce reluctant beginners to computing.

Question 9: Add up your checkmarks and take one point for each, but no more than six total points.

Everyone old enough to write should have at least a passing knowledge of word processing and its potential benefits. Programs like *Children's Writing and Publishing Center* and *Cotton Tales* make writing fun for elementary-school children. For students in junior high and above, try a word processor with an integrated spelling checker and a thesaurus.

Question 10: Response A earns nothing. Responses B, C, and D rate four, five, and six points, respectively.

The People Connection

People who lack effective typing skills usually find computing difficult. Point-and-click devices help, but they don't solve the problem. Fortunately, there are excellent typing tutorials available for all popular computers. With them, anyone can learn the basics within a few hours.

Question 11: Score four for B, five for C, and six for D. Take zero for A—and start practicing.

Versatility makes computers the perfect tool for everyone. The same IBM PS/2 that can teach counting to a three-year-old can crunch numbers for a CPA. Susie can publish her sixth-grade report about New Zealand on the

same Apple IIGs that Mom uses to write her novel. The Amiga that runs Dad's *Dynamic-CAD 2.3* by day can loosen up with *DeluxePaint II* at night.

Question 12: Score zero for A, four for B, five for C, and six for D.

Computing should be a social activity, especially for young children. Kids like to share their excitement. They need someone to recognize their successes and to provide encouragement when they encounter difficulties. Don't send your kids away to play with the computer; play with it yourself and invite them to join you.

Question 13: Count zero for A, four for B, and six for C or D.

An idle home computer is no computer at all. Parents who ignore the machine can hardly expect their offspring to embrace it. Children, after all, learn by example. If you believe computer technology is useful, use it. If you don't, invest in videotape rentals and a few cases of popcorn instead.

Question 14: Response D earns you six points; C gets you five. Take four for B and zero for either A or E.

School Ties

When parents and teachers combine resources, children learn more. Parents who know what their children are studying can more easily reinforce the teacher's efforts. Teachers who know something about a student's home life can better address that student's needs. Effective communication between parents and teachers is critical to an excellent education.

When you add a home computer to that formula, the potential benefits of home/school cooperation increase dramatically. But to ensure maximum results, there are a few steps you can take to get things started.

Talk to the teacher about your child's strengths and weaknesses. Request a frank assessment of reading, writing, and math skills. If your child is performing above or below grade level, find out exactly where he or she stands in each skill area.

Ask the teacher what specific material is being covered in class. Ask your child which pages the class is currently studying in its textbooks, and look the material over.

Tell the teacher about any special interests your child has demonstrated at home; inquire about interests the teacher may have noticed at school.

See if the teacher can recommend any specific software titles to bolster your child's classwork. If the teacher can't help, maybe a computer coordinator, computer lab technician, computer instructor, or another educator can make suggestions.

Schools receive hundreds of software catalogs each year. Many districts also have software guides that tie program titles to the specific skills they address. Ask at your school if those resources are available for your use. If they are, search for programs that offer challenges but aren't so hard they discourage learning. If your school doesn't have such resources, write to several educational publishers and request your own catalogs.

Find out how the teacher feels about using word processing software. Some teachers encourage its use, while others find it inappropriate for some situations. If your school uses a particular word processing program, you may want to purchase the same one for home.

Perhaps your child's teacher can suggest additional ways that a home computer can help your child achieve academic success. Ask and listen.

Home computing needn't be difficult, but it's never easy. At one time or another we all need some assistance from someone who knows. Without that help, it's easy to become overwhelmed by modems and communications settings, operating systems and system configurations, unfamiliar hardware and new software. Ideally, someone in each family should take enough interest in computing to become a local "expert."

Question 15: Response A counts six. Give yourself nothing for B.

User groups and computer clubs can also help. The knowledgeable computer enthusiasts who gather there will eagerly provide advice and encouragement to anyone who asks. If you don't already belong to one, join. Or set up your own informal group.

Question 16: Take six for each A and B. If you answered C, take no points and start looking for computer-using friends.

It's difficult for anyone to keep up with all the rapid changes in the world of personal computing. But you can stay current by reading computer magazines. The more you read, the better prepared you'll be to take full advantage of new developments in hardware and software.

Question 17: Response A gets you nothing. Responses B, C, and D count as three, four, and five points, respectively.

Figuring Your Grade

OK. It's time to look at report cards. Before reading further, calculate your total score and write it down. Double-check your math and your answers—be certain you've been honest with yourself.

If you scored a 90 or higher, you get an A. (Did anyone score that high?) Anything above 80 rates a B (above-average effort). A tally of 65-79 is a respectable C, which

isn't bad, considering that about 70 percent of American families don't even own a computer. No computing family should have scored lower than a C.

But no matter how your family performed, this report card isn't permanent. It's merely a rough measure that you can use to track your progress. What does matter is that you recognize your responsibility for your children's education and then do something about it.

In 1983, the National Commission on Excellence in Education released its report on the state of education in the U.S. Few documents about America's schools have



been more widely quoted than this study, "A Nation at Risk." In the report, the Commission makes it clear that parents have the right to demand the best from our schools and colleges. But with that right, the report continues, comes a double responsibility: Not only are you, as a parent, your child's first and most influential teacher, you are also the base from which your child's ideas about education and its significance begin.

If you accept that responsibility, and if you believe in the educational potential of the home computer, then you should make every effort to make the family computer a wellspring for your child's voyage into discovery. □

David Stanton is the computer coordinator for the Bolivar School District in Bolivar, New York. He writes *COMPUTE!*'s "Discoveries" column, in which he addresses the important issues of educational computing in the classroom and the home.

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General Ledger Report	YES	YES	NO	NO
Accountant's Trial Balance	YES	NO	NO	NO
Net Worth Computation	YES	NO	YES	YES
Inquiry Reports				
Check and/or Deposit Register	YES	YES	YES	YES
Account Analysis	YES	YES	YES	YES
All Transactions with Party	YES	YES	YES	YES
Cash Requirements Forecast	YES	YES	YES	YES
Aged Invoices Payable	YES	NO	YES	YES
Reports Export to Lotus or Quattro	YES	NO†	YES	YES
Graphics	YES	NO	YES	YES
Bar Charts	YES	NO	YES	YES
Pie Charts	YES	NO	YES	NO
Fiscal Year Support	YES	NO	YES	YES
Optional Password Protection	YES	NO	NO	YES
Financial Calculator	YES	NO	YES	YES
Prints Amortization Schedules	YES	NO	YES	YES
Prints Accumulation Schedules	YES	NO	YES	YES
Mail List Manager	YES	NO	YES	YES
Prints Address Labels and Index Cards	YES	NO	YES	YES
Prints Telephone Directory	YES	NO	YES	NO
Mail Merge with Word Processor	YES	NO	YES	YES
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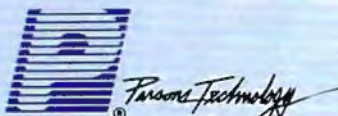
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////// **beginner's luck**



BUYING YOUR FIRST COMPUTER

Choosing your first computer is serious business. Here are three picks that won't do you wrong.

Neil Randall and Jim Fuchs

COMPUTE! examined three computers last April that are ideal for beginners. Those computers—the IBM PS/2 Model 25, the Apple IIc Plus, and the Tandy 1000 SL—all fit the bill, but they're only three of many possibilities. This time around, we look at three more: the Commodore Amiga 500, the Apple Macintosh Plus, and the HeadStart III.

For those who've been computing for several years, calling these "beginning" computers seems almost unbelievable. Back in the good old days, starter computers had an absolute maximum of 64K memory (with 16K and 48K very common), few people had disk drives and, until the popularity of the Commodore 64, color and sound were almost unheard of. Now we have an Amiga 500, with 512K of memory, 4096 colors, and an 880K disk drive standard. We have the Mac Plus, with one megabyte of memory and an extremely friendly user interface. And the HeadStart III rolls out with one megabyte of RAM, VGA graphics, and access to thousands of software packages.

None of these three computers will disappoint. All are solid machines, all have excellent capabilities, and all have a wide range of available software. Furthermore, all three have a proven track record as good beginning computers.

Commodore Amiga 500

The Amiga made its New York debut four years ago amid a flurry of excitement and, despite many ups and downs, it remains an exciting computer. The A500 comes with excellent stereo sound and dazzling graphics with a palette of 4096 colors—ideal for creativity software and games. Games manufacturers, in fact, often present the Amiga versions of their products first because the Amiga shows off the product better than any other computer.

The A500 is also the only mass-market multitasking com-

puter, meaning it can run more than one program at the same time. You can, for example, run a game in the background while you're working on a spreadsheet. Or you can format disks while using your word processor. If you've explored the benefits of multitasking, you've probably had a hard time readjusting to a single-tasking computer.

When you buy an A500, you must buy a monitor as well. It's possible to use a standard color television, but you need a special adapter and the results are far less impressive. Commodore's 1084S is the usual choice, a stereo RGB monitor with 640 × 400 pixel resolution.

The A500 consists of one unit containing the keyboard, the computer's innards, and the built-in disk drive. Also included are a power supply and a mouse, both of which plug into the back of the main unit. Having a separate power supply can cause a problem when you're placing your cables, especially since the A500 has no box to set the monitor on. Fortunately, the 1084S monitor comes with small legs that flip outward. Many owners rest these feet atop the back of the A500 and slide the unsightly wires into the gap between the monitor and the desktop.

At the back of the main unit are several ports. The parallel port lets you use a standard parallel printer, while the serial port is used to connect a modem or other serial device. Both ports use standard IBM-compatible cables. You plug your monitor cable into the RGB monitor jack and your mouse into the first mouse/joystick port. A second mouse/joystick port can be used for a joystick, while the last port holds the cable for an external disk drive.

Inside the A500's box is a Motorola 68000 microprocessor running at 7.14 MHz, the same chip that runs the Macintosh Plus and the Atari ST. The Amiga eases the processor's load by including three other chips, and these are named Denise, Paula, and Fat Agnus. Denise handles graphics, Paula takes care of sound and peripherals, and Fat Agnus looks

after animation. A fourth chip, Gary, controls the whole works.

Workbench, an icon-based user interface, comes with the A500. Also included are a host of programs, including Amiga Basic. Amiga Basic is a well-developed, sophisticated BASIC with solid documentation. It will suit the budding Amiga programmer for quite some time.

If you're buying an A500, you should consider two peripherals as well, especially if you want to run animation or painting software. The first is a second disk drive (using the Amiga with a single floppy disk drive can be extremely annoying). The second is a 512K RAM upgrade, easily installed inside the A500's box.

The Amiga 500 is the perfect first computer for anyone interested in creativity software and games. It's not as strong as the Macintosh for word processing or as easy to use, nor does it have access to the wealth of educational software available on the HeadStart III. But the price is good, and its graphics and sound are superb.

Apple Macintosh Plus

Apple's recent price cut on its Macintosh Plus finally puts the machine within the reach of first-time buyers. It's a viable alternative to the company's Apple II line.

Every claim Apple makes for the user-friendliness of its Macintosh line is well grounded. No other computer is as easy to learn to use. You operate the machine with a mouse. If you don't like using a mouse, don't buy a Macintosh. With the Amiga 500, you can get along without the mouse if you really want; with the Mac Plus, you can't.

The mouse on the Mac Plus has only one button, as compared with the A500's two-button mouse and several MS-DOS three-button mice. If you're a novice, using just one mouse button is extremely positive: You can't possibly become confused.

Another friendly Mac feature is its size. It consists of only two parts: The main unit (which in-



cludes the monitor) and the keyboard. The main unit takes up a mere 10 × 11 inch space on your desk. Furthermore, the unit weighs less than 17 pounds, which means you can move it around easily. The main unit contains the computer circuitry, the monitor, and the double-sided 3½-inch disk drive. At the back are ports for an external drive, a modem, a printer, and a special port for SCSI devices such as hard disk drives and tape streamers. New buyers should note that the printer and modem ports are *not* compatible with non-Apple equipment. (Special cables are available from third-party manufacturers, however, if you wish to use non-Apple peripherals.) The machine comes with a full megabyte of memory.

Also included in the package are disks containing systems tools,

utilities, and the much-vaunted *HyperCard*. By now, the Macintosh systems software has matured into a highly sophisticated package, and software developed for the Mac is almost always fully compatible with this software. Mac software is as close as the computer world has come to having a standardized interface, a feature that guarantees the machine's usability.

Clearly, no machine seems better suited as a buyer's first computer, but three factors make the Mac a bit less than ideal. First, despite the price drop, it's still fairly expensive. More expensive still are an external disk drive and a printer, both of which you'll almost certainly want to buy.

Second, if you're into playing computer games, you won't have the variety on the Macintosh that

you would on the Amiga or an MS-DOS machine. Educational software is also limited in quantity. Where the Mac shines is in desktop publishing, word processing, spreadsheets, and music software. There are several fine entry-level word processors and graphics programs for it.

Apple will eventually drop the Plus from its product line, making the powerful, new SE-30 its entry-level machine. Even so, the Plus is still a very good deal, and software will continue to support it (as will Apple itself).

HeadStart III

With the explosive growth and fierce competition of PC-compatible computers, microcomputers keep getting more powerful and less expensive. Nowhere is this more evident than with the HeadStart III. This 12-MHz, 80286-based IBM compatible's features include 1 megabyte of memory, a fast 32-megabyte hard drive, 5¼- and 3½-inch quad-density floppy disk drives, a VGA graphics card and monitor, a mouse, and three expansion slots.

Even with all that power, the HeadStart won't overwhelm you with a complex installation. HeadStart realizes that there are many new computer users who need special care and instructions. Accordingly, they've worked hard to produce clearly worded, easy-to-understand manuals. You don't need to use any tools or to set any DIP switches; just connect the cables for the mouse, keyboard, and monitor. Even an inexperienced

	Amiga 500	Macintosh Plus	HeadStart III
Software Format	Amiga DOS	Macintosh System	MS-DOS
Price	\$799	\$1,799	\$2,995
CPU	68000	68000	80286 8/12 MHz
RAM	512K	1MB	1MB
Keyboard	94-key integrated	80-key detachable	101-key detachable
Monitor	Optional	Included	Sold separately
Disk Drive	3½-inch	3½-inch	5¼- and 3½-inch floppy drives, 32-megabyte hard disk
Slots	1	0	3
Ports	Serial Parallel 2 Mouse/Joystick External drive	2 Serial Parallel Mouse	2 Serial Parallel Mouse
Colors	4096	Black-and-white	256

user can have it up and running in an hour or less.

Formatting the hard drive and installing the system's bundled software is also easy. (This computer comes with a huge collection of software, including *Publish-It!*, *Splash!*, *Framework II*, *Perspective 3D Graphics*, and more.) Simply put the first disk in the drive and turn on the computer. Follow the prompts to format the hard drive and install the software on it. You're given the choice of three operating environments: a beginner's environment, which displays a simple menu on the screen; an advanced user's environment, which features pull-down menus and memory-resident programs; and DOS, the environment we've all grown to love and hate.

The most exciting feature of the HeadStart III is its VGA graphics. While it can display up to 800 × 600 pixel resolution in 16 colors, its 320 × 200 pixel, 256-color mode will astound you. Pictures look like television transmissions. Best of all, the VGA board is compatible with EGA, CGA, MDA, and Hercules video adapters.

The 5¼- and 3½-inch disk drives are high-density, holding 1.2 and 1.44 megabytes of data, respectively. You can boot from any drive, a really thoughtful feature in this time of floppy disk transition. The 32-megabyte hard drive, formatted with a 1:1 interleave, is big and fast enough for any beginner.

Of course, the HeadStart does have flaws. None are major, but some are rather bothersome. For example: The expansion slots are stacked vertically rather than horizontally. This gives the HeadStart a low profile, but at a price: Expansion cards are difficult to install. This may not be a problem for beginners, but once you start exploring your expansion options, you'll rue the HeadStart design.

Also, because the HeadStart uses a serial mouse and has a serial port, an internal modem (if you add one) must be installed as COM3. Some telecommunications programs don't recognize this port. If you are planning on telecomputing, be sure the package you buy has this capability.



Another trivial problem is that when the machine boots from the hard drive, the 3½-inch drive is drive A, and the 5¼-inch drive is designated as drive B. This is backward from most PCs, but if you're a beginner, you'll get used to that order.

All things considered, the HeadStart III is an exceptional value, especially for new computer users. While its operating environment isn't as friendly as the Macintosh's, HeadStart has worked hard to make it easy for novice users. And its flaws are minor annoyances. It's no speed demon, but it's fast enough for the average computer user. A solid design, a workable environment, and bundled software make the HeadStart a good place to start.

Which One for You?

Any one of these machines is a wise choice. All are extremely usable, all have a good software base, all will carry a new user effortlessly into state-of-the-art home computing. All, furthermore, are reasonably priced.

In the end, you have to follow your heart. If you've seen *DeluxePaint III* or *Defender of the Crown* on the Amiga, and you know it's the machine for you, feel confident about buying it. If you

have always lusted after a Mac, if you buy Mac magazines just to read the software ads, pick up a Macintosh Plus. If you're convinced that MS-DOS represents the future of the personal computer, look seriously at the HeadStart.

Or, here's another solution: Mortgage the house, forget about the new car, forestall the landscaper till next year, and buy one of each. Then start figuring out ways your newfound computers can pay for themselves. □

Neil Randall teaches at the University of Waterloo in Ontario, Canada. He computes regularly on several platforms. Jim Fuchs is assistant technical editor at COMPUTE! Publications. Neither is a beginner, but you can't tell from their enthusiasm.

Manufacturers

Apple Computer
20525 Mariani Ave.
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H

J

Kids are key to America's future. And so are computers. By the year 2010, virtually every job in our nation will require some computing skills. That means preparing all of our youth today to take on technology tomorrow.

Studies show that our students are having a hard time in school. Their math and science scores are far below students in other countries. To excel in our high tech times, our kids need to catch on to computers. They're tools that can inspire them to think more independently. More creatively.

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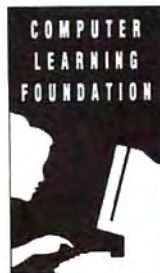
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There's a slight chill in the air and leaves are beginning to fall. The sun, like a tired tennis ball, hangs lower in the sky each day. That summer feeling is sinking, and there's nothing you can do about it, right?

Wrong. You can't stop the seasons from changing, but with your computer and the right software you can always recall a little fun and sun even after the leaves have turned brown.

So slip on your Day-Glo baggies and French sunglasses, and I'll tell you about some games that will make you forget about draining the pipes and putting chains on your ATV. Before you know it, you'll be hanging ten, lounging in your leisure suit, and swinging at your golf balls. You'll be living the life of the rich and famous—at least until dinner.

California, Here I Come

For a taste of the beautiful mountains, deserts, and beaches of California, Epyx's *California Games* is the next best thing to being there. Set in famous locations, such as Venice Beach and Yosemite National Park, the program features beautiful scenery and stiff challenges. Six games, including surfing, skateboarding, BMX-style bike riding, foot-bag juggling, roller-skating, and Frisbee flinging make up the package. One to eight players vie for trophies in individual events and overall com-

Can't you smell the suntan oil? Can't you just feel the sand between your toes? Grab your shades and beach towel. Slide one of these games into your computer—and enjoy an endless summer

Joey Latimer

petition. Not ready for the big test yet? *California Games* features practice events, too.

Being a Pacific Coast native, I chose surfing first. On the screen, a breaking wave appeared and, joystick in hand, I went for it all . . . several times right off the bottom of the screen. You earn points by taking as many risks as possible without falling off the board.

From water to cement, the ride's just as daring on wheels as it is on the waves. And if my

mom saw me skateboarding a real half pipe, she would surely say, *You'll break your neck!* It's like skateboarding up one side of a swimming pool and down the other. In real life, I'd be lying in a heap after one or two rides. Skateboarding on the computer isn't much different from reality except that it's the sprite—not your knees—that suffers. Using a joystick to control the skateboarder is no simple matter. You have a minute and 15 seconds—or three falls—to get up to speed and perform various stunts. Kick turns, hand plants, and aerial turns earn points. My practice round was so bad that I loaded a sprite editor and made a neck brace.

I thought BMX (bicycle motocross) riding would be easier, until I tried it. Training wheels aren't allowed, and raw courage is required. Taking off on the action-packed California desert course, I quickly ran into a tree stump, an old tire, and a log. I finally came to rest with my face in a mud puddle. The object is to perform

stunts and jump over obstacles while you speed through the course in the least time. Flips and 360-degree turns earn the most points. I made it through the course after several gallant tries, but my old Schwinn will never be the same.

Foot-bag juggling, according to the *California Games* manual, is the most laid-back event. All you have to do is jump around and kick a small beanbag into the air with your feet for a minute and 15 seconds. No problem, except for one thing: I can't even juggle a grapefruit for 20 seconds with my hands. But I tried and tried and eventually learned that juggling the foot bag relies mostly on timing. It also helps, by the way, if you can dance like Fred Astaire.

Roller-skating along Venice Beach can be a lot of fun, as long as you avoid the hazards along the way. A beach ball in the face can ruin your whole day, not to mention your recent nose job. Avoiding other obstacles, such as grass, sand, puddles, stray shoes, and missing pieces of sidewalk, will help you cover the course with the fastest time. Don't stop to rub suntan lotion on the muscle men, and you'll do fine.

Playing with a Frisbee is definitely one of the most popular pastimes in the Golden State. In *California Games*, you play within view of Yosemite's Half Dome. Throwing the flying disk seemed easy to me, but catching it took a little work. Much as you find in the real world, the trick is to run after the disk and make a stab for it at precisely the right moment. One nice thing about the computer park where you play—no dogs.

California Games is a great way to bring back that summer feeling, even if it's December and you live in Connecticut. Just remember to bring your sunscreen, baseball cap, and a round-trip ticket. Otherwise you may never come back.

The Perfect Spike

The real kings of the beach have been in California for years. Playing doubles volleyball on beaches from San Diego to Rio, they've carved a unique sport out of traditional team volleyball. Until the eighties, beach volleyball was relatively unknown and tournament audiences were small. But, heading into the nineties, prize money has grown as high as \$100,000 and two-on-two beach volleyball has become a big business.

Electronic Arts' *Kings of the Beach* volleyball game sets you up for the perfect spike without worrying you



Mini Putt



720°



Kings of the Beach

Leisure Suit Larry II



California Games

with the sunburn and sore feet. Using the keyboard, a joystick, or a mouse, you move players around the court and play like pros Randy Stoklos and Sinjin Smith.

Stripping to my best beach look, I signed in at the registration tent and then headed out to the practice court. Joystick in hand, I learned how to bump, set, spike, dig, and dive. Soon I was dancing around the beach, looking for a hot game. That was a mistake. Entering a match with the game set at the difficult mode, Stoklos and I were crushed because of my overconfidence and lack of experience.

I humbly returned to the practice courts and worked harder on my defense until I was ready again. Back at the match court, my partner and I finally got into a terrific game. We were down by one point with one point to go when—as usually happens when you're on a roll—the referee made an atrocious call. I was furious. But what can you say to a computer? Looking through the manual, I found a great feature: You can argue lame calls. Amazingly, when I argued, the referee reversed the call, and we went on to win.

If you really want to have some fun, smear on some coconut-scented suntan oil and play *Kings of the Beach* with a friend. You can practice or team up against either tough or wimpy opponents and play for the title. Remember not to argue too much with the referee, though; you might get a yellow card, or

you might get turned into a crazed sand gopher.

Of Nostalgia and Killer Castles

When I was a teenager, we would enjoy summer evenings at the miniature golf course by the freeway. The feeling comes back when I play *Mini-Putt* from Accolade. It's the first miniature golf game I've seen on a computer, and I must say that this is a summer game that translates well to bits and bytes. Many of the wacky features you might see on a real-life miniature golf course, such as windmills, castles, banked turns, and multicolored ramps, have been included.

As you play the *Mini-Putt* courses, you take the role of a character named Mini-Putt Pete. If you want to know what your computer self looks like, check the bottom of your screen. You'll find a picture of him putting on the green and, sometimes, breaking the clubs over his knee. The game is laid out in windows on the screen, including an overview and a closeup view for short

putts. You can practice an individual hole or play one of four courses: Traditional, Deluxe, Challenge, or Classic. To ensure accurate putting, use *Mini-Putt*'s meters for fine-tuning distance and lateral movement. Using the keyboard or a joystick and watching the meters, you can develop a consistent stroke and eagle-eye precision.

Even when your putting is up to par, the game still isn't over. The courses throw tons of obstacles in your way, just to frustrate you. On many holes, for example, there are hills and ramps. Arrows on the higher ground show which way your ball will roll to lower ground. As in real miniature golf, it took me a while to adjust after I hit a ball up a ramp and it came all the way back to me.

Color, animation, accuracy, and humor are all part of *Mini-Putt*. Holes like the Killer Castle are well designed and fun to play. It would be nice if you could play in teams, but, still, *Mini-Putt* takes me right back to those summer nights when I was hitting balls through windmills as the cars whizzed by.

A Place to Skateboard, Legally

Skateboarding is a great sport. I've been riding since my childhood neighbor, Joe Meyers, built one for me using a 2 x 4 and metal roller-skate wheels. Now, boards have advanced greatly, and kids are riding in previously unthinkable places—river beds, ramps, and sewer pipes. Because of the dangers of skateboarding, however, cities all over the country have outlawed riding in public places. If skateboarding isn't allowed in your city this summer, and if you're all wound up to ride, try Mindscape's *720°* skateboarding program.

720° dishes up some awesome scrolling graphics and rich colors as it turns your video screen into Skate City. It's a skateboarder's fantasy park, where you can skate on almost every surface. Using a joystick, you spin and twist on the board, practicing on surreal city streets and sidewalks. Your path is loaded with ramps, pools of water, street fighters, and Frisbees. There are multiple skill levels, and, when you're ready, you can compete in special events, such as the downhill, jump, slalom, and ramp.

To start, you have a time limit in which you must skate from the main park to one of the events. If you don't beat the clock, a swarm of killer bees attacks you. On the way, you can pick up loose dollar bills by skating over them and then use the money to buy new equipment like shoes, pads, helmets, and better skateboards. With better equipment, you become a better skater. If

you get lost, you simply skate to an *M* on the course, and a map pops up. To accomplish spins, jumps, slides, and headstands, you press the fire button and move the joystick in various combinations.

720° is easy enough for my 4½-year-old daughter, yet subtle enough for even the hottest computer-game whiz or skateboard fanatic. The great graphics, music, and competition make it a great software pick for a rainy day. Besides, where else can you skateboard these days?

On the Prowl Again

Somehow Larry found his way back from the Land of the Lounge Lizards and into my computer. In his first animated episode, the nerdy bachelor learned that big-city life can wreak havoc on a sensitive guy. Now he's new, improved, and back for more as he looks for love in several wrong places . . . again.

Looking for Love has it all: great graphics, topnotch sound, and a fun story line. Larry is a great character, and he's on a quest for the woman of his dreams, a woman he can settle down with, a woman who will wash his polyester suits and disco dance with him. Guide Larry through the streets of Los Angeles to the tropical paradise of a seaside resort.

Although the game is aimed at adults, Sierra has included a smut-control feature. You can tame the language of the game or liven it up. What more can you ask from a computer game? Playing *Looking for Love* is like acting in a Woody Allen movie, only it's set in California.

Using a mouse, a joystick, or the keyboard, you move Larry through the city, along the beaches, and so on. You give instructions by typing messages, and a text box appears in the center of the screen as soon as you hit a key. Access other commands through pull-down menus.

The IBM-compatible version I reviewed supports enhanced sound through add-on cards such as the Ad-Lib or the Roland MT-32. In addition, the game supports 16-color Tandy and EGA modes. Even in CGA mode, without an additional sound card, *Looking for Love* looks and sounds great. And don't let the leisure suit fool you; Larry's got a summer tan underneath. □

Joey Latimer plays music and games in Idyllwild, California, where it's almost always summer.

Where the Boys Are

Where can you find your own box of sunshine and sand?

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Most of us can't afford to ignore cheap software. There are exceptions—people who don't own computers, people who have deep, deep pockets, and people who can write their own programs. The rest of us, though, should keep our eyes fixed on one superb source of inexpensive software—shareware and public domain programs.

Shareware and public domain software have a tremendous advantage over commercial software—their cost. *Public domain* programs cost nothing because they aren't copyrighted, and *shareware* software sells for the price of a registration fee. By encouraging free distribution of their work, shareware and public domain programmers reduce packaging and marketing costs.

Make copies for your friends, your user group, your favorite electronic bulletin board. With few exceptions, all this is not only legal but also aggressively encouraged.

Any way you look at it, the result is a bonanza for consumers. Good or bad, public domain packages are a sure win because they're free. And shareware programmers do their best to deliver dependable products because they rely on satisfied customers for their income.

In exchange for payment, shareware users usually receive full documentation, information about future updates, and telephone or mail support. Some program authors will even customize their software by special request.

Furthermore, the shareware circle often has specialized, hard-to-find products. Many dedicated authors devote time to projects no traditional publisher would touch. Hard disk managers and virus-detection programs often fall into this category. Other popular examples include font creators,

WORLD

small memory-resident pop-ups for PCs, and a wide diversity of Macintosh and Apple IIGS desk accessories. Love, not money, drives the industry.

Try searching for words and phrases in the *Online Bible*, a disk collection of the entire King James Version (any donation—MS-DOS). Create personalized desktop Macintosh icons with *ICON Designer 3.0* (\$10). Or disassemble Apple IIGS program code and highlight ProDOS 8, ProDOS 16, and Toolbox calls with the *Nifty List* desk accessory (\$15—available on CompuServe, GENie, and AppleLink).

Does all this sound too good to be true? Well, don't worry. Some products really offer impressive value. Sure, there are a few disappointments, but so what? What have you got to lose but a little time?

Real computer aficionados enjoy searching as much as finding. To help with that search, we studied catalogs, scanned national telecommunications networks, tested software till our eyeballs burned, and picked the brains of some very knowledgeable people. In the process, we found some great shareware packages and even turned up a few noteworthy public domain programs. Consider our findings just a brief sample of what you could discover with a little effort.

MS-DOS—THE RIGHT STUFF

In both quality and power, business-related shareware for MS-DOS stands out above the rest. Many of these programs compare favorably with their most successful commercial counterparts. As usual, high quality costs, so expect to pay more for MS-DOS shareware applications than for those created for other operating systems. In addition,

powerful PC-compatible software often takes patience to learn. Beginners should proceed cautiously, perhaps choosing simplicity over sophistication.

Consider word processing, for example. Quicksoft's *PC-Write* (registration fee: \$89), is a professional-level program on a par with IBM's own *DisplayWrite 3*. *PC-Write* boasts a 50,000-word spelling checker, advanced mail merge, and extensive online help. As with its commercial cousin, *PC-Write* requires some getting used to, but you'll soon come to respect its versatility.

For beginners (and experienced writers who prefer simplicity to brute strength), it's tough to beat *Galaxy* (\$59.95). Its pull-down menus are so intuitive that you'll be editing and printing documents within minutes. *Galaxy* works well in all but the most demanding situations.

Lotus 1-2-3 fans will appreciate *As Easy As* (\$40), a Lotus look-alike spreadsheet with most of the commercial program's features and functions. Since it can read and write worksheets in *Lotus* version 1A and 2 format, *As Easy As* has the added advantage of file compatibility with the industry standard.

Experienced spreadsheet users might want to preview *QubeCalc* (\$70). This innovative program goes well beyond current standards by adding a third dimension to the typical spreadsheet environment. With 64 rows × 64 columns × 64 pages, its layout opens up possibilities that are just now becoming available in the most advanced commercial products.

Database-management systems have earned a reputation for complexity, but ease of learning separates Expressware's *File Express* version 4.0 (about \$40)

from the pack. Helpful menus and prompts make it easy to create files, enter data, and generate reports. Each database file can hold as many as 16 million records, and every record can contain up to 120 fields of 250 characters each. *File Express* is an excellent database choice; the program's author even grants schools free use of the software.

In addition, the MS-DOS shareware world offers a wide selection of programs that improve upon the sometimes frustrating DOS environment. RPG Software Farm's *Professional Master Key* (\$25) simplifies disk-management chores such as renaming, deleting, and undeleting files. Jim Hass's *Hard Disk Menu III* (\$25) is a user-configurable, menu-based DOS shell for intermediate and advanced users.

PC shareware doesn't ignore education either, but such software isn't its greatest strength. Preschoolers can study the alphabet, numbers, and shapes with *Amy's First Primer* (\$15). When they reach high school, students might want to try Professor Weissman's *Algebrax* (\$25). For studying the PC itself, Public Brand Software recommends a PC tutorial called *Tutor.Com* (\$15). It introduces novices to keyboard layouts, common DOS commands, subdirectories, and more.

APPLE II—LOOKING LAID BACK

Generally speaking, Apple II shareware costs less and is not as sophisticated as the best PC programs. The Apple shareware and public domain community seems more relaxed, more congenial. Don't expect to find an *AppleWorks* look-alike or an avant-garde spreadsheet or database. Do, however, expect to encounter many well-designed programs of all types—applications, utilities, games, and educational offerings.

Although strong business software isn't abundant, there are two noteworthy word processors. *Zipscrip II* (\$10) is a DOS 3.3 text editor that runs on everything from the base-model Apple II+ to the Apple IIGS. Another popular, though dated, favorite is *FreeWriter* (free), a ProDOS-based word processor written by the author of *AppleWriter II*.

If you're interested in telecommunications, find a copy of *Warp 6* (free). It's all the software you need to start your own small bulletin board system. Because of the program's local mode, beginners can gain online experience without even buying a modem. An Apple II and *Warp 6* are all it takes for you to create a completely func-

TEN SHAREABLE FAVORITES

Ask sysops, users-group librarians, and distributors to list their favorite shareware or public domain programs and they'll inevitably respond with caution. "No one can say what's best," chides one. "Each person has to look around and decide for himself."

Certainly no one could test everything available. Nor could any single individual anticipate the needs and preferences of others. Press them hard enough, though, and the experts will talk. When they do, these are a few programs they'll mention:

- **Krakout.** One of the most popular games for the Commodore 64.
- **CommTerm 3.** An easy-to-use Commodore 64 terminal program.
- **Story Writer.** A Commodore 64 writing program for children.
- **Copy All.** A slow but dependable Commodore 64 disk-copying utility.
- **Monopoly II** (shareware: \$10). A very enjoyable MS-DOS version of the popular board game (also called *Monopoly* version 6.2).
- **Sidewriter** (shareware: \$15). An MS-DOS utility that prints spreadsheets sideways.
- **Are You Ready for Calculus?** A PC-based precalculus tutorial available from Public Brand Software.
- **JoliWrite** (shareware: \$20). A handy word processing desk accessory from Paris, France (Macintosh).
- **Space Shuttle.** An *AppleWorks* database that includes information about all but the most recent shuttle flights (available on AppleLink).
- **JumpStart** (shareware: \$20). A versatile program launcher for the Apple IIGS. For managing hard disks, it's better than the Finder.

tional BBS simulation at home.

If you want *Print Shop* graphics or *AppleWorks* templates, you'll find plenty. Unique fonts and new and classic desk accessories for the IIGS are also readily available.

Some of the newest and most impressive programs run only on the Apple IIGS. The GS/OS environment and Apple's human-interface guidelines encourage programmers to use menu bars, windows, dialog boxes, and mouse input. Consequently, even the simplest shareware and public domain products look professional. Several such programs are available on national telecommunications services and from mail-order distributors.

FreeTerm GS, a freeware terminal emulator, works with the Apple IIGS modem port and a Hayes-compatible, external modem. It supports mouse control, autodialing, text capture, and XMODEM transfers. Although it doesn't have some of the advanced capabilities available elsewhere, *FreeTerm GS* is perfect for most telecommunications tasks.

With *CheapPaint* version 1.3 (\$10), would-be artists can doodle for hours. This version requires 768K of RAM. It switches between two paintings in memory and displays as many as 256 colors simultaneously. Many features included in the best commercial paint programs are also available in *CheapPaint*—Cut, Copy, Horizontal Flip, Invert, Paste, color printing, and more.

There's so much outstanding business software for the Macintosh that we hardly dare mention *Bird Race*

(public domain), a comical variation on the horse-race theme. The programmer calls it *curseware*. If you don't give copies to your friends, you'll be cursed. Its charm comes largely from *MacInTalk*, another public domain program that teaches the Mac to speak. "Hey, there! Why don't you race?" the program's track master encourages. "A photo finish!" he exudes after close contests. "Why don't you raise your bet?" he randomly cajoles. Useful? Probably not. Fun? Absolutely.

COMMODORE 64/128—GOING PUBLIC

Commodore people are helpful, generous, and loyal to their computer family. In their Commodore 64s and 128s, they have good machines and they're anxious to gain converts. Maybe that explains why most user-distributed software for the Commodore is still public domain rather than shareware.

On one hand, this means you can get some very good utilities, games, and educational programs absolutely free. On the other hand, the fact that public domain software may be legally modified and renamed leads to confusion. "Many *enhancements* are added to existing programs and there is no uniformity with respect to numbering subsequent versions," explains Alexander Priest, newsletter editor for the Bronx-64 Users Group. This adds a certain element of potluck to the Commodore game.

"We have not found a topnotch word processor for the 64 or 128 in

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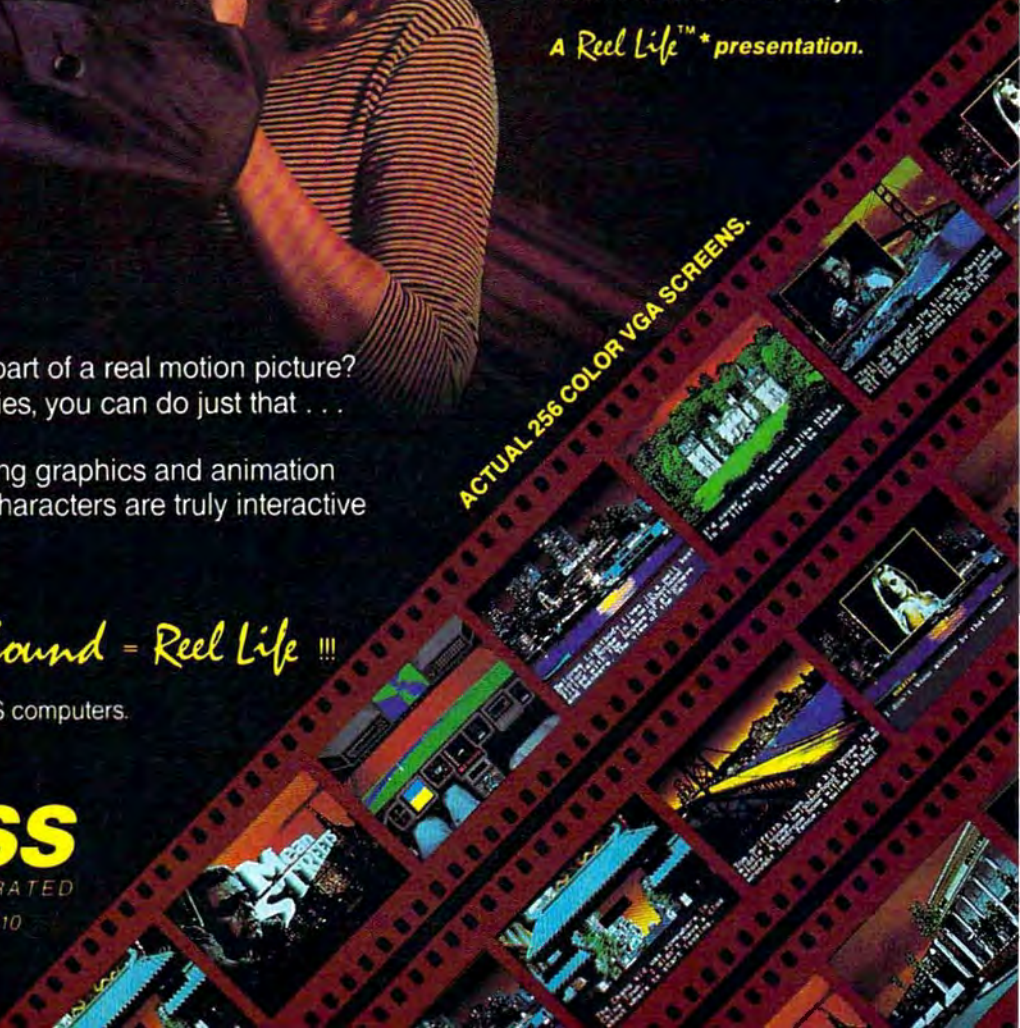
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the public domain or shareware field," admits Robert Cust of Lightspeed Software. Occasionally, he uses *QuickScript*. Q-Link currently offers *Writerswkshp.SDA*, a word processing program many people have found useful.

Commodore bulletin boards often

use Ed Parry's *EBBS 64* and *EBBS 128* (\$60). The programs can be configured to handle most hardware arrangements, and they support transmission rates up to 2400 bps. They offer plenty of versatility for sysops to personalize their boards and perform the usual file-maintenance duties.

DEPENDABLE SOURCES OF PUBLIC DOMAIN AND SHAREWARE

PC-SIG

PC-SIG claims to be the world's largest distributor of low-cost software for the IBM PC and compatibles. PC-SIG's shareware library includes more than 1000 disks. Like many distributors, PC-SIG charges a \$20 annual membership fee. Members receive a year's subscription to *Shareware Magazine*, special discounts on software, and initial technical support for all disks purchased.

1030 E. Duane Ave.
Suite D
Sunnyvale, CA 94086
(800) 245-6717

Public Brand Software

Public Brand Software, another popular PC shareware source, requires no membership fees. Call and request its free catalog. It's loaded with good suggestions. Furthermore, it includes complete descriptions and objective rankings of each entry.

P.O. Box 51315
Indianapolis, IN 46251
(800) 426-3475

Public Domain Exchange

For 8-bit Apple II's, Apple IIgs's, and Macintoshes, try the Public Domain Exchange. They charge a \$20 membership fee, but with it you get a thick, descriptive catalog and special discounts.

2074C Walsh Ave.
Dept. 644
Santa Clara, CA 95050
(408) 496-0624

Bronx-64 Users Group

The Bronx-64 Users Group is just one of many Commodore-authorized organizations that accepts both local and national members. The club publishes a monthly newsletter, runs its own BBS, and maintains a disk library. Except for an annual \$25 membership fee, access to all services is free. For public domain software, just send them a disk and a prepaid mailer. They'll send it back with the programs of your choice—no charge.

P. O. Box 523
Bronx, New York 10475

Classified Ads

Several smaller companies distribute shareware at very competitive prices, sometimes for as little as \$1.50 per disk. Although they cannot always offer extensive personal assistance, they do provide courteous and efficient service for those who know what they want. Check the ads and classifieds in *COMPUTE!* (or nearly any other computer magazine) for more listings. Some small companies are listed below.

California Freeware

1466 Springline Dr.
Palmdale, CA 93550
(805) 273-0300

Caloke Industries

Public Domain Software
P.O. Box 18477
Kansas City, MO 64133

Disks O'Plenty

7958 Pines Blvd.
Suite 270
Pembroke Pines, FL 33024

Lightspeed Software

P.O. Box 340427
Tampa, FL 33694-0427

Sizzleware

P.O. Box 6429
Lake Charles, LA 70606
(800) 356-2697

Several games are making the rounds on the network forums. *Desert* is a classic text adventure listed on CompuServe's CBMART game forum. When your car leaves you stranded in the desert, your problems have just begun. Getting out will take all the adventuring skill you can muster.

Another popular game on CompuServe is *Wheel of Fortune*. Graphics, sound, and color add interest to this classic. Since its first posting over a year ago, satisfied fans have uploaded word lists related to biology, math, states, 1987 trivia, and North American wildlife.

START LOOKING FOR SHAREWARE

No other source can match the national information services—like CompuServe, The Source, GENie, and the Quantum group of computer-specific networks (Q-Link, PC-Link, and AppleLink)—for locating shareware and public domain software. If you want the latest and best versions, you can have them up and running within minutes.

As a bonus, downloading over telephone lines provides a mystique that the United States Post Office just can't deliver. Dedicated telecomputists enjoy acquiring programs—downloading, decompressing, and testing—almost as much as they like owning them. Unfortunately, online charges mount quickly.

No matter. Check out the bulletin boards within your local calling area—they usually post several public domain and shareware files. Selection may be limited, but the price is always right.

If you don't telecommunicate, ask a local computer hardware or software dealer about user groups in the area. Such organizations maintain well-stocked libraries for their members. Expect to pay a copying fee between \$1 and \$6 per disk, but free advice and sound recommendations make the total package well worth the cost.

Commercial distributors provide another alternative. Reputable firms charge only a nominal fee for copying and handling (none of which, incidentally, goes toward payment of shareware registration fees), but this is often the easiest way to get started. Many such distributors have toll-free numbers and accept credit-card orders. Your order will usually arrive within a week.

If you don't collect shareware and public domain software, you're missing much of the fun of computing. What's important is not where you start looking, but *that* you start. □

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- EGA ARCADE GAMES #2 (252)** Snarts and Ega-Star Trek. Requires EGA.
- BOARD GAMES #3 (245)** Scrabble, Concentration, Boris, Seek & Sink. Needs color monitor.
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- PC-WRITE 3.02 (809-811)** (3 disks) New! Top rated w/spell checker.
- WORDPERFECT CLIPART (843, 844)** (2 disks) Over 180 great graphics.
- PRO-SCRIBE (822)** New! Really improves impact and clarity of your writing.
- WORDPERFECT MACROS (831)** for 5.0, (837) for 4.2. Over 70 great macros & templates.

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buyer's *guide*

Memory Expansion Boards

Memory expansion boards add random access memory (RAM) to your computer system, often increasing the speed, storage, and power of your machine. Some of the boards listed below add other features, such as a ramdisk, serial and parallel ports, and utility software. Looking through the charts, you'll find the name of each board, its features, and its price. Prices are rounded to the nearest dollar and are usually for boards without memory chips, but some boards are sold with chips included. Either way, we suggest that you verify the price before you order because of the daily fluctuations in price and supply. ▶

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9CM-053	\$339.95
9CM-082	\$399.95

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1430 VGA 14"	\$379.95
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Epson

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M1724L	\$529.95
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HR60	\$649.95
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HL8e	\$1869.95

Star Micronics

NX-1000	\$158.95*
NX-1000C (64C)	\$169.95*
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NX 1000C Color(64C)	\$219.95*
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NB24-15 24 Pin	\$545.95
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Atari, C-64, & IBM
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341 SL	\$599.95
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NEW

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If you are looking for a 24 pin dot matrix printer that is fast, quiet and delivers high performance, then your needs require the NEW Epson LQ-510. The LQ-510 provides maximum compatibility from Macintosh to IBM PC's and systems; 3X or AS 400 environments. Paper Parking is included for ease of document handling and print speeds are selectable from 180 cps draft to 60 cps for letter quality printing. Let your work leave a lasting impression with Epson's LQ-510.

\$319⁹⁵

Panasonic

Office Automation

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The 1180 by Panasonic offers you more than what you might expect in a low cost printer. With multiple paper paths, versatile paper handling, and front panel programmability through the EZ Set Operator panel, the 1180 is an excellent value. The 1180 also features 2 excellent print qualities: Near Letter Quality and Draft, with speeds up to 192 cps in Draft and 38 cps in Near Letter Quality plus crisp, clear graphics.

\$179⁹⁵

CITIZEN

Citizen 120 D

If you are seeking world renowned printer performance for your home, look no further than the 120 D. Your data processing needs are handled quickly at a print speed of 120 cps (draft) or 25 cps (NLO). The 120 D features 9 pin dot matrix print quality, standard parallel centronics interface and a 4K text buffer.

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1 OF 4

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- Built-in 5 1/4" Drive
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- Built-in Mouse/Joystick Port
- High Resolution Graphics



2105 A

- 12" Composite Monochrome Monitor
- Compatible with IBM, Commodore, Apple computers
- 80 Character (6 x 8 Matrix) per line with 25 lines 640 x 200 pixel

\$589⁹⁵*

* Quantities Limited
* Cables Optional

CITIZEN

180 D

- 150 cps Draft
- 29 cps NLO
- Graphics Capability
- Built-in Pull Tractor



PC's & ACCESSORIES

Osicom 88/10	.....	\$599 95
Osicom 286/12	.....	\$1299 95
Osicom 386/20	.....	SCALL
Laser Compact XTE 640K	.....	\$619 95
Laser Turbo XT Model II	.....	\$629 95
Mitsubishi MP 286L Laptop	.....	\$2495 95
Toshiba T-1000 laptop	.....	\$819 95
Toshiba T-1200 laptop	.....	\$1389 95
Commodore Colt PC XT	.....	\$669 95
Vendex VTI-33-XT	.....	\$729 95
Vendex VTI-55-AT	\$1199 95
Citizen Mate/12 AT	\$1359 95
Paradise Cards	SCALL
Everex Cards	SCALL

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ST 138R 30 meg RLL\$239 95
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1581 Disk Drive	\$179 95
Excel FSD 2+ C64 Drive	\$148 95
1802C Monitor C64	\$189 95
1084 Monitor	\$279 95
C1351 Mouse	\$34 95
1764 RAM C64	\$117 95
Colt PC	\$669 95
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Call for system pricing.
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Compatible with Apple Software

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COMMODORE

\$418⁹⁵

128 D

- 128K Std.
- 3 Mode Operation
- 1-64: Runs 64 software.
- 2-C 128: Faster, more memory for increased productivity 3-CPM: Uses standard cpm titles
- 1000's of software titles available



LASER 128

Take a look at the Laser 128 Apple-compatible computer, and beginning with its built-in disk drive and 128K RAM of memory, you start to feel that this machine was designed with you in mind.

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Apple IIc-IIe Compatible



Seagate

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- 720 K
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See complete listings under Toshiba Drives.

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micronics

NX-1000

\$158⁹⁵*

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Star's answer to 9 pin dot matrix printers. A soft touch control panel and Star's paper park feature solves your multi-document needs. 144 cps draft and 36 cps NLO give you high resolution 9 pin performance in an affordable package from Star.



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The Executive 88/10 is a powerful desktop computer with 10 MHz, 1 wait state speed and a small footprint which makes it ideal for a home or office workstation. This model comes standard with 640K RAM, a 360K floppy disk drive an enhanced 101 key keyboard and many more state of the art features. Call for more details on the special enhancements included with the Executive 88/10.

\$599⁹⁵

Monitor Optional

Executive 286/12

The Executive 286/12 is a high-performance 286 that is the ideal solution for today's demanding computing needs. Exclusive features for you include an EGA video controller, 12/6.25 MHz switch selectable, 1 wait state and 1MB RAM installed. If you are looking for a 286 based computer compatible with LAN systems, the Executive 286/12 will fill your need and expand as you grow. Call for more details on the special features included with the Executive 286/12.

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Monitor Optional

Executive 386/20

The Executive 386/20 is quickly becoming a trend setter in the 80386 based microcomputer field. The standard memory of 1MB is expandable to 8MB. Plus, you can use the 32 bit expansion slot for a total of 16MB RAM. Switch selectable 20/8 MHz with 0 wait state, Phoenix bios and 80387 supported numeric coprocessor slot makes the Executive 386/20 the obvious choice for serious business applications.

\$CALL

Monitor Optional

LASER

Turbo XT Model II

Outperform the conventional PC/XT competition with Laser's Turbo XT-II. The Laser provides everything you expect from an XT plus such standard features as 4.77/10 MHz speed, 102 key enhanced keyboard, security lock and a clock/calendar with battery backup. Laser's compatibility is guaranteed through a 150W power supply, four accessible drive slots, (1 360K 5.25 standard) 8 I/O expansion slots, parallel centronics and RS 232 interfaces, 640K RAM standard, (expandable to 1.6 MB) along with a CGA video card already installed. Introduce yourself to the new generation XT through Laser's Turbo XT-II.



\$629⁹⁵*

* Monitor Optional
FCC Class B Approved

LASER XTE

If you are about to pick a personal Computer for your home, office or school and you need to be one step ahead of the competition, choose the Laser Compact XTE. The Compact XTE features the same standard equipment as the Compact XT, however, 640K RAM and a monochrome/CGA/EGA video card is supplied. You won't beat its performance or extraordinary low price.



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MITSUBISHI

MP 286L Laptop

- 80286 Processor Running at 12 MHz or 8 MHz
- 640 KB RAM
- 11" Diagonal B&W Display
- Color Graphics Adapter
- 1.44 MB Capacity 3.5" Disk Drive
- Centronics Parallel Port
- 2 RS-232C Serial Ports
- 4 Expansion Card Slots
- MS-DOS 3.30
- GW BASIC 3.20
- Internal Speaker
- 1-Year Manufacturer's Limited Warranty



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TOSHIBA

T-1200F

The Toshiba T-1200 portable helps you move around. The T-1200 is easily customized to your personal work style thanks to 1MB memory, two 3.5"; 720K disk drives and a rechargeable battery pack. For further convenience, Toshiba includes MS-DOS 3.3, sidekick and disk cache utility software with your new T-1200. A 20MB hard drive and backlighting are also available. Put the future in your hands with Toshiba's remarkable T-1200.

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T-1000 Laptop

Pick up on the T-1000 and you'll go far. Give yourself desktop PC power wherever you need it. Toshiba's T-1000 includes 512K RAM, one built-in 720KB 3.5" disk drive supertwist LCD display with CGA capability.



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COMMODORE COLT PC/XT

\$669⁹⁵*



* Monitor Optional
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The Commodore Colt is a computer with all the built-in features you need. The Colt includes 640K RAM, CGA video support, two 5.25 360K disk drives, serial and parallel ports with three clock speeds (4.77/7.16/9.14 MHz). Plus, look at these Commodore extras: full size keyboard, clock/calendar with battery back-up, MS-DOS 3.2 and GW Basic 3.2 and Wordstar word processor. Try the Commodore Colt in your home or office and experience what a difference it will make.

CITIZEN

Mate/12 AT

World class competition in an 80286 PC/AT from Citizen. One MB RAM is standard, along with 2 serial and 1 parallel port, EGA video card and keyboard switchable 6.25/12.5 MHz for full PC/AT compatibility. Citizen also includes added features such as, switchable 150 watt power supply, 1.2 MB 5.25" floppy drive, MS-

DOS-GW Basic software to provide for your immediate computing needs. Leave the competition behind with the Citizen Mate 12 Plus.

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Our marketing staff is well-educated in the computer industry. They receive continuous formal training by our manufacturers which enables them to develop and maintain a high degree of expertise on the products they represent. Though our strict guarantee on providing only new merchandise prohibits free trial periods and a guarantee on compatibility, a wealth of knowledge is available to our customers to help with the purchasing decision. As thousands of people every week capitalize on our savings and services, we hope you too, will make Lyco Computer your first choice.

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* Atari & Commodore

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MEMORY EXPANSION BOARDS FOR IBM PC AND COMPATIBLES

Board	Company	Computer	Memory Added	Warranty	Price*	Comments
AT M-32 Byte Memory Board	ACER Technologies	IBM AT	Up to 2MB	1 yr.	\$729	Supports EMS 3.2
Mem16	Advanced Microcomputer Systems	IBM PS/2 Models 50, 60, 70	8MB	2 yr.	\$125	Supports EMS 4.0; includes driver program
Rampage/2	AST	IBM PC, XT	2MB	2 yr.	\$495 (256K)	Supports EMS 4.0; includes ramdisk and print spooler
Rampage 286	AST	IBM XT, AT	2MB	2 yr.	\$405	Supports EMS 4.0; includes SuperDrive, SuperSpool, and ramdisk
RampagePlus/286	AST	IBM AT	8MB	2 yr.	\$595	Supports EMS 4.0 and EEMS; includes SuperDrive, fASTdisk, SuperSpool print spooler; option to support MCA
1083	ATD	IBM XT, AT	2MB	2 yr.	\$99	Supports EMS 4.0; includes ramdisk and print spooler
BOCARAMAT	Boca	IBM AT	2MB	2 yr.	\$225	Allows up to 128K of conventional memory and 4MB of extended memory
BOCARAMAT Plus	Boca	IBM AT	8MB	2 yr.	\$225	Includes ramdisk, print spooler, diagnostics software, and software installation
BOCARAM.MCA 50Z	Boca	IBM PS/2 Models 50, 50Z, 60	2MB	2 yr.	\$245	Supports EMS 4.0; includes ramdisk, print spooler, memory driver, diagnostics software, micro channel support, and built-in translation RAM (TRAM)
BOCARAM30	Boca	IBM PS/2 Models 25, 30	2MB	2 yr.	\$175	Includes ramdisk, print spooler, and diagnostics software
BOCARAMXT	Boca	IBM PC, XT	2MB	2 yr.	\$175	Includes ramdisk, print spooler, diagnostics software, and software installation
CI-Sys 2-56	Chrislin Industries	IBM PS/2	2MB-8MB	5 yr.	\$1,480 (2MB)	Supports EMS 4.0 and extended and conventional memory; optional serial and parallel ports; daughterboard capabilities
IMME-578/2MB	Clearpoint Research	IBM PS/2	2MB	Lifetime	Call	Accepts 80-ns SIMM modules; compatible with IBM PS/2 models 50Z, 70, 80; corresponds to IBM part number 6450604
Mem-AT+	Computer Elektroniks	IBM AT	3MB	2 yr.	\$489	Supports EMS 3.2 and extended and conventional memory
MicroFour	Computer Elektroniks	IBM PS/2	4MB	2 yr.	\$399	Supports EMS 3.2 and extended memory; includes driver program
Multi-3AT	Computer Elektroniks	IBM AT	2MB	2 yr.	\$599	Supports EMS 3.2 and extended and conventional memory; includes serial and parallel ports, print spooler, and driver program
Multi-4AT	Computer Elektroniks	IBM AT	4MB	2 yr.	\$895	Supports EMS 3.2 and extended memory; includes serial and parallel ports and EGA
RAMFlex	Computer Elektroniks	IBM AT	8MB	2 yr.	\$595	Supports EMS 4.0 and EEMS; includes driver program
Super MicroFour	Computer Elektroniks	IBM PS/2	4MB	2 yr.	\$595	Supports EMS 4.0, EEMS, and extended memory; includes driver program
XRAM	Computer Elektroniks	IBM PS/2 Model 30	1MB-2MB	2 yr.	\$999 (1MB)	Replaces Riser card in machine with memory/Riser-card combination

*Price is for boards without memory unless otherwise noted. Because of variations in the market, please call the distributor for the current price of boards and memory.

Board	Company	Computer	Memory Added	Warranty	Price*	Comments
CPI-XMA	Computer Peripherals	IBM PC, XT, AT, PS/2 Model 30	2MB-4MB	2 yr.	\$2,495 (2MB)	Supports EMS 4.0; includes parallel port and memory-test program
PS/M8	Computer Peripherals	IBM PS/2 Models 50, 60, 80	8MB	2 yr.	\$499	Supports EMS 4.0
Diamond Plus	DFI	IBM XT	2MB	2 yr.	\$149	Includes ramdisk, print spooler, diagnostics software, serial and parallel ports, game port, clock, and calendar
MegaBit	DFI	IBM AT	2MB	2 yr.	\$139	Supports EMS 4.0 and extended memory
MEMO-2000A	DFI	IBM AT, PS/2 Model 30/286	2MB	2 yr.	\$139	Supports EMS 4.0 and extended memory; includes ramdisk, print spooler, and diagnostics software
MEMO-2000X	DFI	IBM XT, PS/2 Models 25 and 30	2MB	2 yr.	\$129	Supports EMS 4.0 and extended memory; includes ramdisk, print spooler, and diagnostics software
MF-3000	DFI	IBM AT, PS/2 Model 30/286	1.5MB	2 yr.	\$139	Includes serial and parallel ports; optional daughterboard adds 1.5MB
RAMBank-II	DFI	IBM PS/2 Models 50, 60, 70, 80	4MB	2 yr.	\$189	Supports EMS 3.2, extended memory, OS/2, and Micro Channel
Everex RAM 3000 Deluxe	Everex	IBM AT	3MB	1 yr.	\$228	Includes memory manager, ramdisk, print spooler, and software installation.
Everex RAM 8000	Everex	IBM AT	8MB	1 yr.	Call	Includes memory manager, ramdisk, and print spooler
Everex RAM 10000	Everex	IBM AT	10MB	1 yr.	\$399	Includes memory manager, ramdisk, and print spooler
RAM II 2000 or 4000	Everex	IBM PS/2 Models 50, 60	2MB or 4MB	1 yr.	\$399 (2MB), \$499 (4MB)	Supports EMS 4.0; includes memory manager, ramdisk, and print spooler
AT Aboveboard	Fivestar Electronics	IBM AT	Up to 3MB	1 yr.	\$149	Supports EMS 4.0
XT Aboveboard	Fivestar Electronics	IBM XT	2MB	1 yr.	\$99	Supports EMS 4.0
ATMEM300-SP	ICS Computer Products	IBM AT	3MB	1 yr.	\$249	Supports EMS 3.2 and extended and conventional memory; serial and parallel ports are optional
IDEAmax/MC	IDEAssociates	IBM PS/2 Models 50, 60	12MB	1 yr.	\$395	Includes two serial ports and one parallel port, ramdisk, print spooler, and swap utility
IDEAmax 30	IDEAssociates	IBM PS/2 Model 30	8MB	1 yr.	\$275	Supports EMS 4.0; includes ramdisk, print spooler, and swap utility
Supermax/EMS	IDEAssociates	IBM PS/2 Model 30/286	16MB	1 yr.	\$425	Includes two serial ports and one parallel port, ramdisk, print spooler, and swap utility
Supermax/MC	IDEAssociates	IBM PS/2 Model 50, 60	8MB	1 yr.	\$545	Includes two serial ports, ramdisk, print spooler, and swap utility
Supermax 30	IDEAssociates	IBM PS/2 Model 30	8MB	1 yr.	\$395	Includes two serial ports and one parallel port, ramdisk, print spooler, and swap utility
Above Board Plus	Intel	IBM AT, PS/2 Model 30/286	8MB	5 yr.	\$495	Supports EMS 4.0 and extended and conventional memory; offers multitasking; includes serial and parallel ports, ramdisk, and print spooler
Above Board PS/286	Intel	IBM PC, AT, PS/2 Model 30	512K-2MB	5 yr.	\$695	Supports EMS 4.0 and extended and conventional memory; includes serial and parallel ports, ramdisk, and print spooler

*Price is for boards without memory unless otherwise noted. Because of variations in the market, please call the distributor for the current price of boards and memory.

Board	Company	Computer	Memory Added	Warranty	Price*	Comments
AT Extended Memory Board	Legacy Technologies	IBM AT	3MB	1 yr.	\$199	Supports EMS 4.0 and extended and conventional memory
PCEMS Board	Legacy Technologies	IBM PC, XT	3MB	1 yr.	\$149	Supports EMS 4.0 and conventional memory; also supplies memory expansion for PCjr
Ready RAM	Longshine	IBM XT, AT	2MB	1 yr.	\$87 (XT), \$95 (AT)	Supports EMS 4.0 and EEMS; includes ramdisk, print spooler, utilities
MGB235 EMS Aboveboard	Magitronic Technologies	IBM PC, XT	2MB	1 yr.	\$99	Supports EEMS; includes driver program
EasyTalk EMS	Megahertz	Toshiba laptops	1MB	1 yr.	\$999 (1MB)	Supports EMS 3.2; includes 300-/1200-baud modem, EMS ramdisk, and communications software
EMS 5150T	Micro Mainframe	IBM XT, Tandy 1000 series	2MB	1 yr.	\$200	Includes connector to add second daughterboard, ramdisk, and print spooler; uses standard 256K chips
MB-18-DH	Micron Technology	IBM AT	1MB-2MB	2 yr.	\$875 (1MB)	Supports EMS 4.0 and extended memory; includes ramdisk, print spooler, and RAM diagnostics software
MB-28-DH	Micron Technology	IBM AT	2MB-4MB	2 yr.	\$1,395 (2MB)	Supports EMS 4.0 and extended memory; includes ramdisk, print spooler, and RAM diagnostics software
MB-48-DH	Micron Technology	IBM AT	4MB	2 yr.	\$2,495 (4MB)	Supports EMS 4.0 and extended memory; includes ramdisk, print spooler, and RAM diagnostics software
JustRAM/AT16	Monolithic Systems	IBM AT	512K-16MB	5 yr.	\$2,068 (2MB)	Includes memory manager, ramdisk, print spooler, disk cache, and diagnostics software
JustRAM/ATZ	Monolithic Systems	IBM AT	2MB-8MB	5 yr.	\$1,721 (2MB)	Supports EMS 4.0 and extended and conventional memory; includes ramdisk, print spooler, and disk cache
Concentration	Newer Technology	IBM XT, AT	32MB	N/A	\$770	Supports EMS 4.0 and extended and conventional memory
LIMfile	Newer Technology	IBM XT, AT	8MB	N/A	\$790	Supports EMS 4.0 and conventional memory; an optional daughterboard adds 8MB
4 Megger	PC Tech	IBM PC, XT, AT	256K-4MB	90 days	\$198 (256K)	Supports EMS 3.2; works in 8- or 16-bit bus
16 Megger	PC Tech	IBM XT, AT	2MB-16MB	90 days	\$395	Supports EMS 3.2; offers 16-bit transfer for expanded and extended memory
286 RAMRacer	PC Technologies	IBM PC, XT	1.5 MB	2 yr.	\$445	Supports EMS 4.0 and EEMS; includes driver program
SUPERAM	Piiceon	Compaq 386 Models	4MB	1 yr.	\$3,199 (4MB)	
Liberty-PC	Quadram	IBM PC	2MB	2 yr.	\$300	Includes ramdisk, print spooler, PolyWindows Desk Plus desktop-management software, and five-year limited warranty on 2MB board
Quadboard-AT	Quadram	IBM AT	3.5MB	1 yr.	\$500	Supports EMS 4.0; includes serial and parallel ports; compatible with Liberty-AT

*Price is for boards without memory unless otherwise noted. Because of variations in the market, please call the distributor for the current price of boards and memory.

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Here's What You Get...

- 8 Or 12 Mhz Switchable Turbo
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- Phoenix BIOS
- Dual Floppy/Hard Drive Controllers
- PS/2 Compatible Mouse Port
- 1 Parallel and 2 Serial Ports
- Built-in Math Co-processor Slot
- DOS Included
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Board	Company	Computer	Memory Added	Warranty	Price*	Comments
Quadboard PS/Q	Quadram	IBM PS/2 Models 50, 60	4MB	1 yr.	\$595	Supports EMS 4.0 and extended memory; includes serial and parallel ports and memory driver; switch-selectable Micro Channel ID
QuadEMS+I/O	Quadram	IBM PC, XT	1MB	1 yr.	\$655	Includes serial and parallel ports, battery-backed clock, and software installation; daughterboard option adds 1MB
QuadMEG PS/Q	Quadram	IBM PS/2 Models 50, 60	4MB	1 yr.	\$395	Supports EMS 4.0 and extended memory; includes ramdisk, print spooler, and memory driver
Quiksand Memory Expansion Board	Star Gate Technologies	IBM AT	Up to 2MB	1 yr.	\$226 (8-10 MHz); \$299 (12.5 MHz)	Supports EMS 3.2 and extended memory
Memory Companion/PC	STB Systems	IBM PC, XT, AT, PS/2 Models 25, 30	2MB	2 yr.	\$200	Supports EMS 4.0; includes PC Accelerator utility
RapidRAM 2	STB Systems	IBM PS/2 Models 50, 60	2MB	2 yr.	\$399	Supports EMS 4.0 and extended and conventional memory; includes RapidMAP memory manager
RapidRAM 2/8	STB Systems	IBM PS/2 Models 50, 80	8MB	2 yr.	\$1,495 (2MB)	Supports EMS 4.0 and extended and conventional memory; includes RapidMAP memory manager
Memoplus-A.4	Suntek Information	IBM PC, AT, PS/2 Models 25, 30	2MB	1 yr.	\$135	Supports EMS 4.0 and extended and conventional memory; includes RMS memory management, ramdisk, and print spooler
Memoplus-X.4	Suntek Information	IBM XT	2MB	1 yr.	\$125	Supports EMS 4.0 and conventional memory; includes RMS memory management, ramdisk, and print spooler
JRAM AT2	Tall Tree Systems	IBM AT	2MB	1 yr.	\$349	Supports EMS 4.0 and extended memory; uses 256K chips; offers optional laser printer and scanner port
JRAM AT4	Tall Tree Systems	IBM AT	8MB	1 yr.	\$399	Supports EMS 4.0 and extended memory; includes ramdisk and print spooler; offers optional laser printer and scanner port
JRAM3	Tall Tree Systems	IBM XT	2MB	1 yr.	\$269	Supports EMS 4.0 and conventional memory; includes ramdisk, print spooler, and option to add laser printer port or serial and parallel ports
Captain 286	Tecmar	IBM XT, AT	4MB	2 yr.	\$575	Supports EMS 4.0 and extended and conventional memory; includes serial and parallel ports and a utility to switch between expanded and extended memory
MicroRAM	Tecmar	IBM PS/2 Models 50, 50Z, 60, 70, 80	2MB	2 yr.	\$350	Supports EMS 4.0, EEMS, and extended memory; provides 8MB of extended memory or 2MB of expanded memory; serial and parallel ports are optional
Low Profile Megamem	Veritek	IBM XT, AT	2MB	2 yr.	\$161	Supports EMS 3.2; includes driver program
1 Megabyte Memory Expansion Module	Wells American	IBM AT	1MB-4MB	1 yr.	\$995 (1MB)	Supports EMS 4.0 and extended and conventional memory; includes serial and parallel ports; memory is self-installing

*Price is for boards without memory unless otherwise noted. Because of variations in the market, please call the distributor for the current price of boards and memory.

MEMORY EXPANSION BOARDS FOR APPLE II SERIES

Board	Company	Computer	Memory Added	Warranty	Price*	Comments
GS-RAM	Applied Engineering	Apple IIgs	256K-1.5MB	5 yr.	Call	Fully DMA-compatible; includes disk-caching program, diagnostics utility, <i>AppleWorks</i> expander program, and six RAM banks
GS-RAM Plus	Applied Engineering	Apple IIgs	1MB-6MB	5 yr.	Call	Fully DMA-compatible; includes disk-caching software, diagnostics utility, <i>AppleWorks</i> expander program, and six RAM banks
GS-RAM Ultra	Applied Engineering	Apple IIgs	256K-4MB	4 yr.	Call	Uses the new 256K × 4 chips; plugs into ROM sockets
Ram Express	Applied Engineering	Apple II+ and later models of IIc	256K-1MB	5 yr.	Call	Includes diagnostic test and <i>AppleWorks</i> enhancement software; can be used as electronic disk drive; optional clock available for \$59
Ram Factor	Applied Engineering	Apple IIe, II+, IIgs	256K-1MB	5 yr.	Call	Increases internal limits of <i>AppleWorks</i> 2.0 or later; plugs into any I/O slot except slot 3; includes built-in RAMDrive software to create a ramdisk; optional battery-backup device available for \$179
RamWorks III	Applied Engineering	Apple IIe	256K-1MB	5 yr.	Call	Includes <i>AppleWorks</i> printer buffer, <i>AppleWorks</i> enhancement software, and self-diagnostics software; plugs into IIe auxiliary slot; RGB color option available for \$129; 512K or 2MB piggyback also available
XRAM Ultra III	Applied Engineering	Apple IIc	256K-1MB	5 yr.	Call	Includes diagnostic test, <i>AppleWorks</i> expander software, built-in clock, CP/M mode, and 20-year autorecharging battery
ZRAM Ultra I	Applied Engineering	Apple IIc	256K-512K	5 yr.	Call	Includes <i>AppleWorks</i> expander program and diagnostics software
ZRAM Ultra II	Applied Engineering	Apple IIc	256K-1MB	5 yr.	Call	Includes <i>AppleWorks</i> expander program, diagnostic test, built-in clock, and 20-year autorecharging battery
MultiRam CX	Checkmate Technology	Apple IIc	256K-512K	5 yr.	\$219 (256K)	Includes <i>AppleWorks</i> expander program and ProDOS and DOS 3.3 ramdisk software
MultiRam CX Plus	Checkmate Technology	Apple IIc	512K	5 yr.	\$359 (512K)	Adds 512K to the MultiRam CX for a total of 1MB extra memory; available in one package with the MultiRam CX for \$629
MultiRam Plus	Checkmate Technology	Apple IIe	256K-4MB	5 yr.	\$279 (256K)	Adds as much as 4MB of nonvolatile memory to the MultiRam RGB card; battery-backup option available
MultiRam RGB	Checkmate Technology	Apple IIe	1MB	5 yr.	\$239 (256K)	An 80-column memory card with <i>AppleWorks</i> expander and Apple-compatible RGB video output
MultiRam IIe	Checkmate Technology	Apple II	64K-768K	5 yr.	\$199 (256K)	Supports 80-column and double-hi-res displays; includes <i>AppleWorks</i> expander and ProDOS and DOS 3.3 ramdisk software

*Price is for boards without memory unless otherwise noted. Because of variations in the market, please call the distributor for the current price of boards and memory.

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Music

Pianoman 2.2	MS 101	Turn your computer keyboard into a piano keyboard... lots of fun!
PC Musician	MS 102	Compose, save and play your own music... instrumental and accompaniment.
Christmas Songs	MS 103	Play your favorite Christmas songs... instrumental at any time of year.

General Applications

Mail Master	GE 101	Quick and efficient mailing list manager for both letters and labels etc.
Life Master	GE 102	Use the power of math and statistics to improve your letters earnings... Power principles.
City Desk	GE 103	Desktop publishing... simple but effective for smaller applications.
Family History	GE 104	Genealogical records and reporting package.
Genealogy On Display	GE 105	CD-ROM! A complete package... ideal for beginners.
Home Inventory	GE 106	Keep track of what you own... ideal for insurance records etc.
Personal Finance Manager	GE 107	Automatic budgeting, savings, investments, checking etc... Comprehensive package.
Membership System	GE 108	Necessary material for clubs... societies etc.
Real Estate Management	GE 109	For real estate... you need it!
Astrology	GE 110	Plan your life by the stars and planets... good luck!
Checkbook	GE 111	Complete checkbook manager for home business with online help... recommended.
Dr Data Label	GE 112	New 1.1! Another powerful mailing list manager with customisation of labels etc.
FastBooks	GE 113	CD-ROM! Personal finance manager for checking, saving, budgeting, payments... comprehensive.
Travel Distances	GE 114	Programs to calculate US and worldwide travel distances.
Act Astronomy	GE 115	CD-ROM! Fully featured program performs calculation and provides physical and orbital data and MP3!
Recipes	GE 116	CD-ROM! Great database for your recipes... comes complete with reading menus... MP3 included!
Fair Field	GE 117	Complete financial analysis and record of funds and by major list... best choice!
Movie Database	GE 118	Store and browse with about your favorites... comes with reading collection.
Members	GE 119	A 3-in-1 utility which will keep your special thoughts hidden from others... best!
Assisted Agriculture	GE 120	A ready-to-go collection of useful decision-making aids for the farmer.
Crossword Creator	GE 121	Create your own puzzles... any difficulty and words to education also.
Stress & Shock	GE 122	Stress test and personality analysis.
Horseracing	GE 123	Horseracing for enthusiasts.
Weight Control	GE 124	Programs for losing weight.
Catalist	GE 125	CD-ROM! Very comprehensive mailing list application... superb!
Select-A-Catalog	GE 126	What to look for... description, ratings and application processes.
Personal Post	GE 127	Create customized ads from a variety of choices... fun for the budding lawyer!
Home Bartender Guide	GE 128	How do you mix a drink... you'll love these computer recipes!
NovelWriter	GE 129	CD-ROM! Evaluate text for the current business content.
Future Teller	GE 130	Various programs for "telling" the future... lots of fun!
MyRhythm	GE 131	Calculate and print your own monthly chart.
Health Risk	GE 132	Diagnose your ailments and recognize your predisposition to common problems.
Vision Type Library	GE 133	Calculate your type library with this super dedicated database package.
Little Black Book	GE 134	Creates pocket-sized address books and prints them... convenient!
Guides/A-Assistant	GE 135	Plan your garden with the help of your PC!
Vehicle Management System	GE 136	Predict auto repairs, track MPG and lots of other useful auto-related aids.
Landlord V2.03	GE 137	Rentor management software... keep it simple but effective!
NOTES	GE 138	New version "99" Membership and Duration Tracking System... excellent dedicated package.
Computer Dictionary	GE 139	Calculate exposure times for photo printing... substitute of optics... by!
PC Bill Master	GE 140	Another checkbook manager... excellent quality with sophisticated features... multiple accounts etc.
GenStat	GE 141	Y1.0! Not another good checkbook program... with on-screen check... format and local functionality... stellar!
Britler's Keeper 4.1	GE 142	CD-ROM! A really excellent personal package... with charts, reports and up to 15,000 names!
TimeStar 2.00	GE 143	Time management system and desktop for Windows 2.0 or greater... Must have the MS Windows to run!
Booklist!	GE 144	Super mortgage and interest calculation program... with payments... simple to use and interactive!
Highlight Engineering Pack 1-Best LAM1	GE 145	Calculator Circles Area Perimeter 1.4 Health Spring... Trigonometry... Statistics... Conversions... V.I.E.F!
Checkbook Assistant 1.2.35	GE 146	New... easy windowed mailing list manager with up to 14 separate databases... needs hard disk.
Video Librarian 2.1	GE 147	Very popular and user-assisted checkbook management system from Amr Software... recommended!
Book Writer	GE 148	Another fully featured utility for keeping track of your loans and printing labels etc.
Video Number Generator	GE 149	Calculate your local collection and magazine references with this super dedicated database.
Little Number Generator	GE 150	Clear and powerful database for helping you choose on the money.
Little Number Wheeler	GE 151	New version... accommodates any style... "best" for... parameters! Get it with GE 150!
PC Label 2.41	GE 152	Latest version of this popular and well-embraced package for use with worksheet-like games.

Graphics

PC-Key Draw	GR 101	14 disks! New version 3.51 with "HyperDraw" of this magical drawing program with tutorial... handy and many more! 4-in-1... recommended!
Simplex	GR 102	New VGA program with Windows like cards.
Fractalizer	GR 103	Here is VGA painting program... simple but effective.
3-D Imagery	GR 104	Color and frame package... include... more... scale... by etc.
Animable	GR 105	Double animated graphics on your PC for a variety of uses.
DrawCAD	GR 106	CD-ROM! The best there is for 3-D wireframe with all conceivable options.
Iconvert	GR 107	Business graphic icons... for Windows... PrintShop... MacPaint... 8.0 and others!
Printshop Graphics	GR 108	3 additional features over 200 additional pages... needs PrintShop.
Printmaster Graphics	GR 109	3 additional features for PrintMaster.
Printshop Graphics II	GR 110	Another 500+ images for the PrintShop program.
Printmaster Graphics II	GR 111	CD-ROM! Another 500+ images for PrintMaster.
Ventura Clip Art	GR 112	CD-ROM! Over 1000 business subjects for Ventura Publisher.
Database Publisher	GR 113	Compile and print a catalogue of up to 1000 items.
EGA Tropical Fish	GR 114	For anyone with Home 3D... this is great... very professional! EGA, VGA AND VGA!
Image-3D V2 & MegaDraw 1.3 USA	GR 115	Great scene and graphics... requires for EGA/VGA... with Office source generated!
Ventura Publisher Taster	GR 116	CD-ROM! Packaged with address and instruction for 10... recommended for all users.
WYSIWYG Clip Art	GR 117	11 disks! An absolute wealth of art for PageMaker and WordPerfect 5.0 in PC format... 200 disk set.
Orbit Classics	GR 118	Seven vibrant space drawing programs from... with 100+ commands! Output to HPGL, Postscript, HP Laserjet and dot matrix printers.

Utilities

Desk Commands	UT 101	Superior and more fully featured than SubEdit... a must!
Eraser Utilities	UT 102	Change modes on Eraser and compares with own utility... useful package.
Rotamaster	UT 103	Make your PC compatibility menu... driven with multiple password... useful package.
MaskMaker	UT 104	Get back those deleted files... No! No! No! No! Utility.
Licentastic Banner	UT 105	Design and print those large banners... hundreds of uses at home and work!
Loan Utilitarian	UT 106	An assortment of utilities and forms for you... lucky... user owners... great value.
DOS Tutorial	UT 107	Master DOS with this app... needed.
Soft River Shell	UT 108	Easy DOS mastery from a menu.
Batch File Tutorial	UT 109	Learn and make a batch file... for networking... Time saved and very useful!
DOS Tips	UT 110	CD-ROM! Advanced DOS tutorial.
Slide Writer	UT 111	Free software on your printer... includes source code.
Homebase	UT 112	CD-ROM! Desktop organizer... database... MP3 calendar... with... calendar... desktop etc.
Speech	UT 113	Get your PC to talk... fascinating program.
DOS Help	UT 114	Command help when using a menu when using DOS.
PowerDraw	UT 115	Support hard disk menu program with windowing.
Diskette Label	UT 116	Create labels and stickers for both 5.25 and 3.5 disks... various programs.
PC JR Survival Kit	UT 117	A MS-DOS for PC 2 owners... RAM disk... updates... best value... programs and more... instant display of installed files with keyboard scrolling etc... MP3 included!
All	UT 118	CD-ROM! From of SubEdit... Superior and more fully featured than SubEdit... a must!
Er-Copy-Life	UT 119	Great! At floppy duplicate... SUPER PROTECT... useful for many purposes... reads disk to zero!
Max-Memo	UT 120	Free the menu system for both beginner and advanced... used by a large IBM company... customer system etc... LAN.
Desktop	UT 121	A special desktop with all the really useful features... doesn't clog up memory with things you don't use!
Disk Wipe 1.31	UT 122	Free up hard disk space... manages... online control... screen... useful... graphics... and a bonus... award!
Mass Mail 1.52	UT 123	Another... faster... but... more... memory... needed... loads... impressive... features... needs... a computer!
PRINTER/PC/MS/2.1	UT 124	Get more space from your laptop... CD-ROM! FOR IBM... 1.3MB... 1.4MB... 1.6MB... DOS 1.1 or greater.
Disk Mail	UT 125	1 and 1/2 version of this great file compression... ideal... for... hard... disk... use!
Disk Mail 1.1	UT 126	New... directory... management... program... from... Microsoft... nice... windows... and... simple... functional... features!
Disk Mail 1.3	UT 127	Good... DOS... shell... with... excellent... windowing... and... mouse... support... by... this... user!
Home-Matic 4.0	UT 128	The... HATS... version... of... this... amazing... package... from... RC... 1... requires...
CaseMail	UT 129	Really... useful... utility... for... creating... useful... reply... cards... and... address... labels... A... must... for... sending... letters!

Security And Hacking

Security	SH 101	Best... program... for... checking... passwords... encryption... etc... 10... disks... plus... from... home... savings!
Unprotected I	SH 102	More... personal... copies... of... protected... software!
Unprotected II	SH 103	CD-ROM! More... work... to... do!
Unprotected III	SH 104	Unprotected... Software... protection!
Unprotected IV	SH 105	More... programs... that... you... can... protect!

Programming

"C" Tutor	PR 101	CD-ROM! Complete "C" Tutor with examples... ready to compile... very good and comprehensive!
Chasm	PR 102	Full featured... user... supported... DOS... assembler... with... labels... -get a new one!
P-Code Pascal Compiler	PR 103	Auto Pascal P-Code compiler... written as an... extended... subset... of... Pascal!
PC Professor	PR 104	Good... BASIC... tutor!
Basic Program Generator	PR 105	Write... programs... from... menus!... Good... for... small... business... database... type... applications!
Swiss Army Knife	PR 106	If you're in BASIC... you'll... LOVE... these... tools... -recommended!
Turbo Pascal Tutor	PR 107	Learn... how... to... use... this... great... development... package... -recommended!
"C" Compiler	PR 108	CD-ROM! Complete... programming... environment... source... complete... samples... etc... really... great... value... here!
ADN Tutor	PR 109	Interactive... ADN... tutor... requiring... HD... or... 3.5... floppy... -professional... quality!
ADN Tutor	PR 110	A... very... high... resolution... binary... calculator... -a... must... for... serious... programmers!
Design 1.31	PR 111	Fast... nice... flexible... system... generator... and... documentation... system... from... University... Research... Inc.
Personal App 1.2	PR 112	Numerical... control... programming... language... for... engineering... design... and... plotting!

Religion

The Bible 1	RE 101	10 disks! King James Old Testament!
The Bible 2	RE 102	CD-ROM! King James New Testament!
WordSearch	RE 103	CD-ROM! Memory... resident... cross... reference... search... package... -them... resident... with... public... in... RP!
Bibleman	RE 104	Quality... Bible... quiz... program... -recommended!
Isaiah 1.1	RE 105	Memory... resident... version... to... provide... an... inspirational... New... Testament... message... for... each... day!
The Great Exchange	RE 106	Slide... show... for... ISA... cards... comparing... their... value... to... the... value... of... the... Bible... message!
Daily Bread 2.00	RE 107	More... refreshing... food... for... the... soul... with... just... 10... Bible... passages!

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MEMORY EXPANSION BOARDS FOR AMIGA

Board	Company	Computer	Memory Added	Warranty	Price*	Comments
Alegria 2MB	Access Associates	Amiga 1000	512K-2MB	90 days	\$249	External board
Alpha Board	Alphanetics	Amiga 500, 1000	2MB	90 days	\$700	External board
Alpha Board	Alphanetics	Amiga 2000	2MB	90 days	\$700	Internal board
ASDG 2M	ASDG	Amiga 1000	Up to 2MB	18 mo.	\$399	External board
ASDG 2MI	ASDG	Amiga 2000	Up to 2MB	18 mo.	\$399	Internal board
A501	Commodore Business Machines	Amiga 500	512K	90 days	\$200	Internal board
A2058	Commodore Business Machines	Amiga 2000	2MB-8MB	90 days	\$799 (2MB)	Replaces A2052 RAM expander
AX1000	Comspec Communications	Amiga 1000	1MB	1 yr.	\$775 (1MB)	Includes nonvolatile ramdisk; external board
AX2000	Comspec Communications	Amiga 1000	2MB	1 yr.	\$1,239 (2MB)	Includes nonvolatile ramdisk; external board
RE2000	Comspec Communications	Amiga 2000	2MB	1 yr.	\$199	Consumes one-sixth the power of other boards; internal board
512K RAM Extension Card	Datel Computers	Amiga 500	512K	90 days	\$70	Internal card that includes battery-backed clock/calendar
Impact A200-SCSI/RAM(2/0) Controller	Great Valley Products	Amiga 2000	2MB	1 yr.	\$360	Internal board that includes SCSI hard disk controller, external SCSI connector for seven devices, and 50-pin ribbon cable
Impact A500-HD/RAM Controller	Great Valley Products	Amiga 500	2MB	1 yr.	\$795	External box includes power supply, hard disk drive, SCSI connector for seven devices, and software driver
Grand Slam	Interactive Video Systems	Amiga 2000	256K-2MB or 2MB-8MB	1 yr.	\$450	Internal board that includes parallel and serial ports and SCSI disk controller; RAM chips available in 256K or 1MB increments
Micromegs	M.A.S.T.	Amiga 500	512K	1 yr.	\$169 (512K)	Internal card that includes battery-backed clock; card is about half the size of the A501 card
Minimegs	M.A.S.T.	Amiga 500, 1000	512K-2MB	1 yr.	\$199	External card; features zero wait states, autoconfiguration, and low power consumption
Insider for A1000	Michigan Software	Amiga 1000	1MB	90 days or 1 yr.	\$150	Internal board
8-UP!	MicroBotics	Amiga 2000	512K-2MB	120 days	\$199	Internal board
Starboard2	MicroBotics	Amiga 1000	512K-2MB	120 days	\$339	External board
Starboard2/500	MicroBotics	Amiga 500	512K-2MB	120 days	\$339	External box; includes power supply
Starboard2/SB2000 (Adapted)	MicroBotics	Amiga 2000	512K-2MB	120 days	\$339	Internal board
PPI 1000	Palomar Peripherals	Amiga 1000	2MB, 4MB, 6MB	6 mo.	\$930	External box; includes interface for two disk drives with up to 40MB and a battery-backed clock
Exp-512	Progressive Peripherals and Software	Amiga 500	512K	90 days	\$80	Internal board; includes battery-backed clock/calendar
Exp-1000	Progressive Peripherals and Software	Amiga 500	1MB	90 days	\$300	Internal board
Exp-8000	Progressive Peripherals and Software	Amiga 500	8MB	90 days	Call	Internal board; requires additional power supply

*Price is for boards without memory unless otherwise noted. Because of variations in the market, please call the distributor for the current price of boards and memory.

Board	Company	Computer	Memory Added	Warranty	Price*	Comments
ProRAM 2000	Progressive Peripherals and Software	Amiga 2000	2MB-8MB	90 days	\$300	Internal board
Hurricane H1000	Ronin	Amiga 1000	1MB-4MB	1 yr.	\$600 (1MB)	Internal board for use with the H1000 accelerator board; includes adapter harness for power supply
Hurricane H2000	Ronin	Amiga 2000	1MB-4MB	1 yr.	\$600 (1MB)	Internal board for use with the Hurricane H2000 accelerator board
IN-500	Spirit Technology	Amiga 500	Up to 1.5MB	90 days	\$149	Internal board that installs under the radiation shield
IN-1000	Spirit Technology	Amiga 1000	Up to 1.5MB	90 days	\$239	Internal board that installs under the radiation shield; includes battery-backed clock/calender and installation disk
SIN 500-2	Spirit Technology	Amiga 500	Up to 2MB	90 days	\$200	Optional external power supply available
SupraRAM 512K	Supra	Amiga 500	512K	90 days	Call	Internal board that includes battery-backed realtime clock
SupraRAM 2MB	Supra	Amiga 500	2MB	90 days	\$180	Installs in SupraDrive SCSI interface
SupraRAM 8MB	Supra	Amiga 2000	8MB	90 days	\$199	Internal board
2MB RAM Expansion	Synergy	Amiga 500	512K-2MB	1 yr.	\$300	Plugs into the Synergy hard disk controller

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MEMORY EXPANSION BOARDS FOR MACINTOSH

Board	Company	Computer	Memory Added	Warranty	Price*	Comments
Apple 1MB Memory Expansion Kit	Apple Computer	Macintosh Plus, SE	1MB	Limited	Call	Requires dealer installation; order number M0218
Apple 2MB Memory Expansion Kit	Apple Computer	Macintosh Plus, SE	2MB	Limited	Call	Requires dealer installation; order number M0219
MacRAM	Applied Engineering	Macintosh Plus, SE	Up to 1MB	5 yr.	Call	
MacSpander	Checkmate Technology	Macintosh Plus, II, SE	2.5MB or 4MB	5 yr.	\$649 (2MB)	
MC2Ram	Clearpoint Research	Macintosh Plus, SE	1MB	Lifetime	Call	High- and low-profile SIMMs; available in 100-ns and 120-ns versions; 24-hour repair or replacement policy
MacSnap 2S	Dove Computer	Macintosh Plus, SE, SE/30	2MB	1 yr.	Call	A 2MB expansion kit that uses 1MB surface-mount CMOS SIMMs
MacSnap 2SE	Dove Computer	Macintosh SE	2MB	1 yr.	Call	Not expandable, but compatible with internal expansion cards
MacSnap 4S	Dove Computer	Macintosh Plus, SE	4MB	1 yr.	Call	A 4MB expansion kit that uses 1MB surface-mount CMOS SIMMs; compatible with most internal peripheral products
MacSnap 1024	Dove Computer	Macintosh SE/30	1MB	1 yr.	Call	A 1MB expansion kit that uses four 256K SIMMs
MacSnap Plus 2	Dove Computer	Macintosh Plus	2MB	1 yr.	Call	Not expandable
NSIM	National Semiconductor	Macintosh Plus, SE	1MB	5 yr.	Call	Available in sets of two SIMMs per package; four SIMMs recommended; surface mount
SIMMS	PSI	Macintosh Plus, SE	1MB, 2.5MB, 4MB	Lifetime	Call	Low-profile, surface-mount SIMMs; available in 80-ns, 100-ns, or 120-ns versions; fits standard SIMM socket
MultiSIMMs	Siclone Sales & Engineering	Macintosh Plus, SE	2MB	1 yr.	Call	Two 120-ns, 1MB SIMMs

*Price is for boards without memory unless otherwise noted. Because of variations in the market, please call the distributor for the current price of boards and memory.

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Silpheed

When you take the controls of a Super Air Fighter SA-08 Silpheed prototype, you take the hope of civilization with you.

In *Silpheed* you fly a single fighter craft through a blizzard of terrorist attacks, fighting off fleets of ships, collecting special weapons, struggling to save the free world from a reign of terror.

Most people will find *Silpheed* a tough challenge. Use the tips provided in the manual if you want to get past the first battle area. You may not get out of it with the help, either. This game takes practice.

Despite *Silpheed's* difficulty, even space-klutzes won't die right off the launching pad. You start with a shield, so you can take a few hits and keep flying. Some of the special bonuses fix your ship and add to your shield. Others even make you invincible—for a little while, anyway.

Silpheed is compatible with EGA, CGA, and Tandy 16-color graphics. It also supports the Roland MT-32, the Ad Lib music card, and the IBM music card. The theme music is practically overwhelming. Unfortunately, weapon fire and rocket sounds are limited to beeps and boops; all that beautiful sound is limited to mood music.

If you're looking for a new arcade challenge, try *Silpheed*. It's classic ar-

cade fun with a little more depth than you find in many action-oriented games.

— HA

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We Yanks will have to get used to sitting on the right side of the car, which is where your computer representation is located. Your navigator sits to the left, map in hand. Outside the windshield, the road winds into the distance. Use your joystick's fire button to clutch and the stick to shift gears (you can also use the keyboard, but it's not nearly as much fun). As you move through the gearbox, your computer image mirrors your moves, reaching for the stick.

If you damage your car, it will cost you several pounds to repair it. And the only way to get money is to win races or put yourself on TV for an interview (a test of your Rally race knowledge).

There aren't any police here, and there's no city traffic. All you have is your car, the road, a map, and the clock. When you're running the road from Harrogate to Carlisle, that's all you need.

— PS

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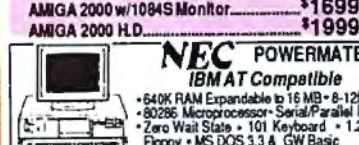
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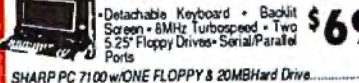
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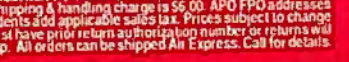
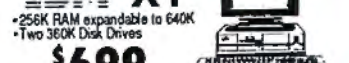
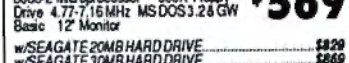
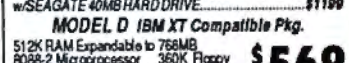
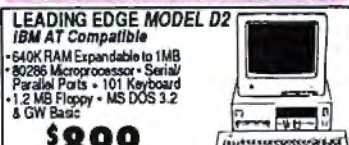
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LinkWay

Every once in a while, an innovative new product comes along that doesn't fit into established software categories. IBM's *LinkWay* is such a product—a blend of database, programming tool, desktop organizer, and a dash of hypermedia.

The manual refers to the program as a multimedia productivity tool.

LinkWay is a computer environment within which nonprogrammers can develop their own tutorials and other applications, customize those of others, and move among their collection of *LinkWay* programs (called *folders*) with surprising ease.

If you're familiar with *HyperCard*, you'll understand the general concept of *LinkWay*. Larry Kheriaty, *LinkWay*'s programmer, prefers to avoid the comparison, but acknowledges that the products have several features in common: Both provide a menu-based, mouse-controlled authoring environment; both employ similar metaphors (stacks of screen-sized cards on the one hand, and folders of screen-sized pages on the other); both allow graphics and text to intermingle on a single screen; and both support the freeform linking of cards and stacks or of pages and folders.

Teachers can use *LinkWay* to design self-paced tutorials, complete with branching for students who need more detailed explanations or additional practice. Businesses can create autorunning slide shows to demonstrate new products or to enhance presentations. Home users can produce folders to organize addresses, store financial records, or maintain budget data. Any information that can be imagined as a folder of interrelated pages is a good candidate for the *LinkWay* treatment.

The *LinkWay* disk includes several example folders to get you started. To Do List, for example, is a daily notepad folder for writing reminders. Mail List Manager prints mailing labels and even dials phone numbers using your modem. A ballot-counting utility and a compound-interest program show how a folder designer can use script buttons to incorporate calculations into a page.

Because *LinkWay* is part of IBM's Education Family of computer software, the disk contains numerous folders designed for teachers. Lesson Planner allows teachers to set term goals and refine them into monthly, weekly, and daily objectives. Flash Card includes arithmetic, spelling, and foreign lan-

guage tutorials; and it can be modified to accommodate other subjects. Gradebook, the weakest utility in the group, presents onscreen gradebook pages for names and grades. Unfortunately, it doesn't seem to perform any calculations, but an enterprising teacher could enhance it to include that capability.

LinkWay's strength, however, doesn't come from its built-in folders but from its potential as an environment for creating, linking, and running folders of your own.

The Calendar sample folder illustrates that potential well. Upon starting the folder you'll see a monthly calendar. On the right side of the screen are several action buttons. To move from September to October, click on the right arrow. A left-pointing arrow will move backward. Below the arrows, an AddRem button permits you to write short notes keyed to specific days. SeeRem lets you view reminders and DelRem deletes selected entries. Pointing and clicking on any date brings up a weekly memo page along with its notations. Click on Help and a dialog box pops up, complete with scroll buttons for lengthy explanations. When you've finished, the Main button returns you to the main menu.

The *LinkWay* text editor, a paint utility, and a selection of cut-and-paste action buttons simplify folder creation. Each page is designed separately and linked to other pages later. Once the folder is finished, you can run pages in order, search for specific pages using the Find option, or jump around among pages and folders.

The *LinkWay* package includes both 3½- and 5¼-inch disks. The manual claims support for CGA, EGA, MCGA, and VGA. However, the larger disks contain only CGA-mode files, while the smaller disks have files that support MCGA, EGA, and VGA modes, but not CGA graphics.

While this shouldn't affect anyone with an original IBM machine, it may cause trouble for owners of MS-DOS equipment from other manufacturers—users with CGA monitors and 3½-inch drives, for example. Those with access to both size drives can solve the problem by converting disk formats or manually copying necessary files. Others will still be able to design and run their own folders, but they may encounter error messages when attempting to access the program's tutorial and other folders written for unsupported graphics modes.

Overall, *LinkWay* is a quality product with the power to revolutionize the nature of MS-DOS computing. Whether it achieves that potential will

depend upon user support. If it can develop even a fraction of *HyperCard*'s following, *LinkWay* will be a guaranteed hit.

— David Stanton

LinkWay

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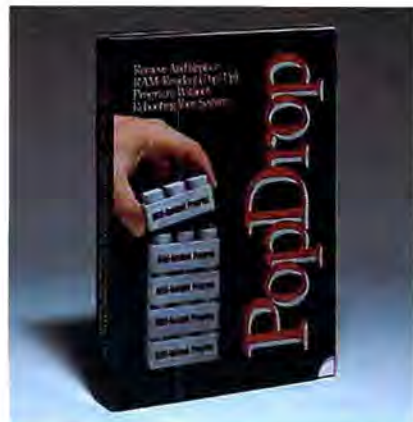
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Manage your memory-resident programs with ease by using *PopDrop*.

But each time you add another TSR, something else doesn't work. If you add the financial calculator, your notepad won't load. If you add the print spooler, your modem program locks up. If you add either of the games, you run out of memory.

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Then, you innocently try to load your industrial-strength application on top of everything else, and, uh-oh, you're out of memory.

Like *Oliver Twist*, you want *more*. But you're tired of the jigsaw puzzle where you try to fit in one piece only to see another piece jump out. You need help. You need *PopDrop*.

PopDrop works by dividing your memory into as many as 16 layers. When you first load *PopDrop*, it uses a small amount of memory (about 0.6K) to store the system status. Then, when you load your TSRs, they're loaded into layers on top of *PopDrop*, with a *PopDrop* layer (taking up 0.2K) placed between each TSR.

Now you can remove all the layers at a time (using the *popdrop clear* command), remove all TSRs above any layer (with the *popdrop #* command), remove all layers and *PopDrop* itself (with the *popdrop stop* command), temporarily make all or any combination of layers inactive (with the *popdrop i* and *popdrop i #,#* commands), and reactivate all or any combination of layers (with the *popdrop a* and *popdrop a #,#* commands).

You can also display a screen diagram with the *popdrop view* command. It shows each *PopDrop* layer, the name of each TSR (with DOS 3.0 or higher), the amount of memory used by each layer, the memory used, and the memory available. The *popdrop view* command can also act like a help screen. It lists the *PopDrop* commands and offers the option to run any of them with a single keystroke.

If you would like to dig a little deeper into the inner workings of combining TSRs, you can display a *hooks* diagram with the *popdrop hooks* command. RAM-resident programs use interrupt vectors to hook into DOS. If they don't follow the rules, or even if they do, there can be conflicts when programs write to the same address. *PopDrop*'s hooks diagram lists the vectors hooked by each program, allowing you to identify combinations where the loading sequence may be critical.

PopDrop is supplied in three forms: POPDROP.COM (the normal version), POPPRO.COM (a smaller version that displays only start-up and error messages), and POPDROP.SYS (for EMS, or Expanded Memory Specification). The package also includes an excellent disk-based tutorial which explains how to use the various commands and how to use the program with batch files. The tutorial also has a questions/problems section that covers special situations, such as how to use

PopDrop with DOS-shell, network, and terminal-emulation programs.

To give *PopDrop* a workout, I tried it on my PC-compatible laptop. I like the RAM-resident program, *No-Squint Laptop Cursor*, which makes the cursor more visible on an LCD screen. It works fine in *XyWrite*, where I need it most, but it crashes *Tetris*. With *PopDrop*, I was able to make *No-Squint* inactive, load *Tetris*, quit *Tetris*, make *No-Squint* active again, and return to *XyWrite*—all with no problems. *PopDrop* worked equally well with other combinations of TSRs and applications.

PopDrop is a useful utility for those of us who like to stuff as much as we can into our PCs. It uses only a small amount of memory and has a good mix of features. While *PopDrop* might be easier to use if it were also a memory-resident program, even in its present form it makes life with DOS a bit more manageable.

— David English

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DeluxePaint III

Among Amiga paint programs, *DeluxePaint* remains the standard by which the others are judged. It's the essential tool in the Amiga artist's palette; indeed, many Amiga owners bought their machines just to run *DeluxePaint*. But programmer Dan Silva and Electronic Arts refuse to rest on their laurels. *DeluxePaint III*, the latest incarnation of the old workhorse, sports a welcome facelift and adds some amazing new capabilities, including easy-to-use animation.

DeluxePaint III still has all the features that made earlier versions so popular. Many of the features, such as the polygon tools, airbrush, text tool, and area fill, have been enhanced. New brush-tool options let you pick up part of your picture and draw or erase with it; warp, resize, rotate, outline, or recolor it; or wrap it on any polygon. Best of all, every tool works faster than its

DeluxePaint II counterpart.

Pull-down menus control file handling and screen format; custom brush options like flip, rotate, and bend; and effects such as smear, blend, and smooth. Special features include perspective, a complex, keyboard-driven system for tilting any brush or screen to create the illusion of spatial depth, and stenciling, for masking selected colors or areas so they can't be painted over. There's also a spare screen for thumbnail sketches and support for superbit-map pictures up to 1008 × 1024 pixels in size.



Animation is a breeze with *DeluxePaint III*.

DeluxePaint III adds support for Extra Half-Brite mode. With Half-Brite, you can use an additional 32 colors in the lo-res and the interlace resolutions, which are half as bright as your primary palette colors (get it?). Desktop video fans will be glad to hear that *DeluxePaint III* lets you paint directly on the overscan area of the screen—the area that would normally be occupied by a black border. The Fill tool has new options as well, including translucent tinting and a wrap fill feature that takes the current custom brush and warps it to fit any shape.

DeluxePaint III also offers something really new: the power to paint in the fourth dimension, time. Using *DeluxePaint III*'s animation tools, you can create moving demonstrations, presentations, and simulations—not to mention Roger Rabbit-style cartoons.

DeluxePaint III animation uses a process called *page flipping*. If you've ever buzzed through the pages of an animation flip book, you'll understand the concept. You create a series of pictures using the standard painting tools. When the sequence is finished, the frames are stored in memory. To run the animation, you tell *DeluxePaint III* to flip through all the frames in sequence at a predetermined frame rate—up to 30 frames per second.

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CARD GAMES (109) Canasta, hearts, draw poker & bridge.

STRIKER (110) Defender-like game "Top Gun" in space.

FLIGHTMARE (112) Futuristic fighter pilot game. (Requires color graphics adapter.)

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ROUND 42 (120) Better than Space Invaders. 42 levels.

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KEYDRAW CAD SYSTEM (1001, 1002, 1065, 1066) (4 disks) Popular. Also uses mouse. (Requires color graphics.)



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MORE DOS TIPS (1318, 1323) (2 disks) More about DOS.

HELP DOS (1326) On line DOS help with menus. Includes DOS dictionary of terms and a hints menu.

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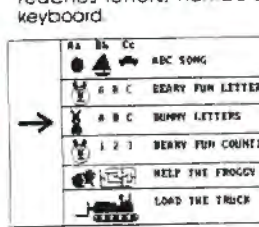
THE BIBLE (3307-3308) (2 disks) New Testament. King James version.

WORD WORKER (3309-3310) (2 disks) Bible search program. New Testament. King James version.

BIBLEMAN (3330) Excellent Bible quiz program.

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AMY'S FIRST PRIMER

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PC-TOUCH (204) Learn typing.

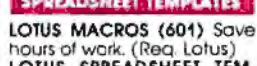
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BEGINNING SPANISH (211) Tutorial.

SPANISH II (232) Sequel.

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FACTS 50 (239) Geography lessons for U.S. Nice graphics.



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DeluxePaint III's animation tools are easy to master. From the Anim menu, you choose the number of frames in your animation. Then you paint on each frame in turn. Frames can be cut, copied, and pasted in any sequence. Using the Anipainting feature, frames are stepped as you move the mouse, automating the animation process. You can also use small animations as brushes by creating an animation, selecting Animbrush, and then picking up the whole animated area as a custom brush. Animbrushes can be used like regular brushes, but with some spectacular results.

One of the slickest features of *DeluxePaint III* is that it automatically performs many difficult jobs for you. This includes moving an object smoothly across the background; zooming in and out along the z-axis; and executing complicated turns, swoops, spins, and orbits in any combination of the three spatial dimensions. You can make a brush do stunts that would make Chuck Yeager turn in his pilot's license. The key to these tricks is the Move box, which integrates *DeluxePaint III*'s custom-brush, perspective, and animation tools in one easy-to-use requester. This feature opens up opportunities for using *DeluxePaint III* to generate animated titles and logos for desktop video.

When you've created your cartoon masterpiece, you can play it forward, backward, or in a loop. Animations are saved in the Aegis-Sparta ANIM file format, which the majority of Amiga animation programs can read. You can load your *DeluxePaint III* animations into other programs or play them with the player utility supplied by Electronic Arts.

There are still some things I would have liked to see in *DeluxePaint III*, including support for the Amiga's hold-and-modify (HAM) mode, automatic scrolling of superbitmap screens, and multiple, resizable windows. Nevertheless, *DeluxePaint* remains the best paint program for the Amiga. Now, with animation added, it's also the best animation program.

— Steven Anzovin

DeluxePaint III

For . . .
Amiga (1MB of RAM needed for animation)—\$149.95

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Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
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Keith Van Eron's Pro Soccer

If you've ever wanted to experience the thrill of playing soccer without bruising your kneecaps, *Keith Van Eron's Pro Soccer* may be the game for you. Drawing on the expertise of superstar player Keith Van Eron, Microplay brings the excitement of both indoor and outdoor soccer to your computer screen.

Getting started in the game is easy, thanks to the quality of *Pro Soccer*'s documentation. Within its pages are detailed game instructions, historical background, and playing tips—all enhanced by numerous photographs and diagrams.



Miami goes for the goal in *Keith Van Eron's Pro Soccer*.

Pro Soccer features two games. Side 1 of the disk contains the indoor program, and side 2 holds the outdoor game. Both sides are self-booting, so disk swapping isn't a problem.

The indoor soccer game is faster paced and played on a much smaller field. Although the indoor goal is smaller, scoring is easier. Simply draw the goalkeeper away by bouncing a shot off the side wall. Retrieve the ball before the goalkeeper can grab it and then rush to the goal before he can double back.

Choose one of 16 teams in the outdoor version (6 in the indoor game) and you're ready to hit the field. Each team may be controlled by a human or the computer, allowing as many as 15 of your friends in on the action. You can compete in the World Cup (outdoor) or All-Star (indoor) tournaments or in league play, which allows you and your friends to compete over an extended period of time, with the computer keeping track of each player's record. The two-player option pits you against a single human opponent. You can save games and tournaments in progress.

league standings, and Control Panel settings to disk.

Using Control Panel options, you select the length of each match; toggle on instant replays of goals; determine how much curve you want in your banana kicks; choose between perpetual good weather or an occasional, very convincing downpour; allow the computer to determine the active player, or control this feature manually; and turn music on or off. My advice is to kill the music until you're more comfortable with the game. The dramatic, synthesized sounds can't help but speed up the pace, which early on will favor your computer opponent, who isn't bothered at all by the quick tempo.

Both games are played across vertically scrolling screens representing overhead views of each stadium. The playing areas are attractively drawn, and the competitors are clearly rendered. Players, goalposts, and the ball appear three-dimensional. *Pro Soccer*'s animation is excellent—all objects move smoothly across the screen.

Players automatically dribble whenever they make contact with the ball. You make kickoffs, goal kicks, corner kicks, and throw-ins by pressing the joystick button. During the heat of battle, you can tackle and make four different shots: the straight and low volley, the lofting chip shot, the backward scissors kick, and the curving banana kick. Unfortunately, you can't hit the ball with your head or execute many other kicks and traps described in the documentation.

Tackles and chip shots are easy. Other plays are more difficult because they require holding down the joystick button and then immediately moving the stick—frequently in the opposite direction. Control response is often slow and sometimes nonexistent. Even when things work out, your momentum and pacing may be disrupted, and you could find yourself vulnerable to having the ball stolen by an opponent. Since the direction you need to move the joystick is relative to the direction in which your player is moving, many times you will have no idea which shot you are calling up. As a result, you might choose not to select the banana and scissors kicks—even though they are the best for fooling the opposition's goalkeeper—because they are the most difficult to execute.

It's tough to determine the position of your players on the field, particularly in the outdoor game, because only part of it is visible at any time. You'll often find yourself passing blindly to off-screen teammates or not knowing if

your goalkeeper is in place until the last moment. Fortunately, after a pass, someone is usually nearby to maintain your team's possession. Keeping track of the goalkeeper is more of a stumbling block. Microplay should add a split-screen option that shows the field and player locations on a small part of the game screen.

Pro Soccer really shines as a two-player game, where the control problem affects each player equally. As a single-player contest, it is mildly disappointing. Even so, because of its multiplicity of options, superb graphics and animation, and exciting and realistic gameplay, *Keith Van Eron's Pro Soccer* has the potential to become a software classic.

— Len Poggiali

Keith Van Eron's Pro Soccer

For . . . Commodore 64/128—\$39.95

From . . . Microplay Software
Distributed by MicroProse
180 Lakefront Dr.
Hunt Valley, MD 21030
(301) 771-1151

art images. These graphics can be flipped, giving the kids even more choices. Also, you can change the colors of the clip-art images (but not of the background).

After finishing the graphics, the child types the story's text in the only font offered by the program. Text is placed below the picture on the first



Create illustrations easily using *KidWriter Gold's* clip-art library.

page. There's only enough space for seven lines, but on other pages children can select a blank background and fill the entire screen with text. By including small graphics in the text area, children can create rebus stories. When all the text and graphics are in place, kids can add a musical score to each page. The program randomly selects a different tune for each page; it doesn't allow the author to choose a specific tune.

Children can save finished stories to disk and then load the tales again to read them or show them off. However, you must be sure to format a data disk before your child begins working on a story. There's no way to do this once the story is started—if you don't have a data disk available, all of the work will be lost. Stories can also be printed and made into a book.

KidWriter Gold is a fun, motivating story-writing program for kids. It offers a wide enough variety of graphics and background scenes to illustrate most children's creations. With the aid of a mouse, even younger kids can easily write and illustrate simple yarns. Spinnaker has created a very useful tool to encourage writing in children.

— Nancy Rentschler

KidWriter Gold

For . . . Apple IIgs—\$49.95
IBM PC and compatibles—\$39.95

From . . . Spinnaker Software
One Kendall Sq.
Cambridge, MA 02139
(800) 826-0706

Several years ago, Spinnaker made a splash with the original *KidWriter*. Using this program, children created stories and added graphics to their text. While these graphics were very simple and blocky, the software was exciting and innovative, and it inspired kids to write. Now Spinnaker has done it again with *KidWriter Gold*. This update includes a larger collection of more realistic and colorful clip art.

KidWriter Gold comes on two disks and can be installed on a hard drive. The hard drive option makes the program much easier for children to operate because they won't have to swap disks as they create their masterpieces.

Children can choose from many backgrounds for their storybooks. Backgrounds include a desert, a castle, a moonscape, and some mountains. There are enough of these detailed and colorful scenes so that the graphics won't limit the child's choice of plot.

There are ten categories of pictures to add to the background selected, including people, monsters, dinosaurs, transportation, hearts, and stars and planets. Each category has 10–20 clip-

Hillsfar

As the latest *Advanced Dungeons & Dragons* computer adventure, *Hillsfar* is a dramatic departure from typical adventure games. While all the standard elements have been included—hit points, dragons, mazes, and monsters—this time they've been crafted into a highly entertaining, action-oriented fantasy that could open up the role-playing genre to whole new legions of orc-slaying followers.

Instead of assembling a party of adventurers whose unique skills must be perfectly complementary to ensure advancement, you begin your *Hillsfar* quest by creating a single character. This involves selecting the character's race (dwarf, elf, human, gnome), gender, class (cleric, fighter, magic-user, thief, or a combination), and alignment (good, neutral, or evil). When you've finished, the computer assigns random values for your adventurer's strength, intelligence, wisdom, dexterity, constitution, and charisma. Finally, you name your character and set out for *Hillsfar*.

Instead of being plopped down in the middle of a monster-infested



Hillsfar offers entertainment and challenge for adventurers of many kinds.

countryside, you're given a horse and are put on the road to the city of Hillsfar. You must guide the horse down the obstacle-strewn road using your joystick to speed up, slow down, duck under low-flying birds, and jump over obstacles like puddles and tree stumps. Mistime your jumps once too often and you'll find yourself walking to town. The animation and joystick response in this sequence are first-rate.

Once you reach Hillsfar, an on-screen map provides a bird's-eye view of the entire town while a first-person perspective is shown in a smaller window. Your character is represented on the map by an arrow that can be moved

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around the city using your joystick. As you play, your adventurer's status and inventory are listed beside the map, along with the time of day. Time is important because many of the city's buildings are open only during specific hours. Even when they're locked tight, however, there are many ways for the skillful adventurer to get in.

Besides using brute force, special knock rings, and magic, you can hire nonplayer characters who have the ability to pick locks. When picking a lock, you're shown a set of ten picks and a closeup of the tumblers within the lock. You must select the picks in the correct order to get the tumblers to drop within the time limit. Fail, and you could set off a dangerous trap or simply be denied entry.

Once inside, you'll find that most building interiors in *Hillsfar* are similar. The mazes are big, colorful, and loaded with chests containing gold and other goodies. You don't have to spend hours carefully mapping the maze and battling monsters. Instead, you run around scooping up as much booty as you can before the guards show up. Outrun them until you find the exit stairs and you're home free. The guards do occasionally catch you, but in most cases they'll simply take back what you tried to steal and toss you out on your ear. If they're in a bad mood, however, you may end up fighting for your life at the arena.

If you've grown accustomed to fighting your battles by repeatedly pressing A to attack your enemies with a battle axe or C to cast your favorite deadly spells, you're in for a big surprise when you reach the arena. Armed only with a staff, you'll fight a realtime battle by attacking and blocking against a single, fully-animated opponent. At last, you can have a fair fight without worrying about some level 5 magician on the opposite side of the battlefield frying your favorite adventurer with a Column of Fire spell.

Another interesting location in *Hillsfar* is Tanna's Target Range. Here, you can practice or compete for cash prizes by shooting at both stationary and moving targets with your choice of a sling, dagger, darts, or a bow and arrow. Besides shooting at the three targets that Tanna has set up, you might also consider aiming for the rats that scurry among the haystacks, the birds that occasionally fly past, or even the lone spectator who watches the competition. You may be surprised by the results. Again, the graphics and animation during this game-within-a-game are terrific.

While *Hillsfar* isn't the first role-playing game to include graphics animation or arcade-style sequences, it does a much better job of integrating these high-quality sequences into the story than many others do.

— Bob Guerra

Hillsfar

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Labels!

You walk into your local computer store and explain to the salesman that you need to print some mailing labels. He says he has just the program for you and then shows you a \$595 relational database. You explain that your needs aren't quite that complicated.

If you need a simple label-making program, *Labels!*, from POP Computer Products, may fit the bill. The program sets out to be easy, and it accomplishes that goal without sacrificing much functionality.

While the program can be installed on a floppy disk, it works best on a hard drive. The installation process is easy but slow, as you must answer several questions about your system's configuration. The installation program asks you if you want a PATH command pointing to the *Labels!* subdirectory placed in your AUTOEXEC.BAT file. It's best to answer *no* and do this manually, since the installation program will ignore any existing PATH commands and indiscriminately place it at the beginning of the file.

Before using *Labels!*, you can adjust the setup options. The first, Paper Stock, lets you define ten forms for printing your lists. Six envelope and two label forms have already been defined, but you can customize them. You can change the form name, printer driver and initialization codes, spacing and length, and whether or not to send form feeds.

Labels! has only one data file, but you can assign records to any one of 16 groups. The Groups option lets you assign names, such as Customers or Relatives, to each of the 16 lists.

Using the Grabber option, you can copy text from another program, such as a word processor, and paste it into a *Labels!* record. You can set a default path for the program you'll grab from most often.

Once you've completed the setup process, using *Labels!* is very easy. You enter text free-form, just as you want it to appear when printed, instead of typing in database-like fields. Records hold 255 characters, including the end-of-line and linefeed codes, and you're limited to 4000 records. Nonprinting notes may be entered between braces. The program will check for duplicate entries as you type.

You can search for individual records using wildcard characters. Searching is quite fast, but the program will only look at the first line of each record. There's also a browse feature, which displays the first line of each record. Records are sorted numerically and alphabetically without regard to case. You can import records from other programs, but only if they are stored in ASCII format.

Printing labels or envelopes is a snap. Select a single record, a group of records, or the entire file, and then specify the number of copies. You can print a test record to check form alignment and setup. Records can also be printed to a file on disk.

The manual is small but complete, and *Labels!* has excellent online help available from anywhere in the program.

Other than the problem with installing the PATH command in an AUTOEXEC.BAT file, the program performed without error, even catching and handling disk and drive errors. POP Computer Products also offers toll-free support, and I had no problems getting through. The technical support person I talked to was knowledgeable and pleasant.

The program lacks features found in more sophisticated mailing-list software, such as fields, extensive error checking, and larger record capacity. But if you need an easy-to-use, no-frills label-printing program, I certainly recommend *Labels!*.

— Vincent O'Connor

Labels!

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MS-DOS

What's smaller than a laptop, more powerful than a calculator, and able to forge a link with your PC? The hottest new class of PC peripherals: hand-held electronic organizers.

The hand-held craze started about a year ago with the Psion Organizer. Now, the idea has caught on with a vengeance, and these clever devices seemed to be everywhere at the Consumer Electronics Show.

There's the Sharp Wizard. This computer is about the size of a Day Runner notebook (3½ × 6½ inches) and about the same weight. It has a 16 × 8 character LCD screen and an array of built-in functions that include an appointment diary, a phone directory, a notepad, and a world clock.

In addition to its built-in software, the Wizard takes special software cards. There have been rumors of *Lucid 3-D* and *GrandView* cards, but the only ones available to date are a speller/thesaurus and a group of scheduling, planning, and billing applications. The Wizard's biggest drawback is its keyboard, which is small and follows an ABC pattern instead of the traditional QWERTY arrangement.

To make the Wizard talk to your PC, you'll need Sharp's special link software and hardware package, which sells for just over \$100. The unadorned

Wizard costs \$299.

Casio's B.O.S.S. (Business Organizer Scheduling System) is larger than the Wizard and has a QWERTY keyboard, but, unfortunately, it isn't a full-sized one. Built-in B.O.S.S. functions include a telephone directory, business-card library, notepad, and schedule. The B.O.S.S.'s screen is large for this class of machine—32 × 6 characters. The B.O.S.S. comes in three flavors, differing in available memory (32K–64K) and keyboard (membrane or full-action), with prices of \$220, \$240, and \$260.

To make the B.O.S.S. talk to your PC, you'll need Casio's \$110 *PC-Link* software, sold separately.

Largest on our list is the Laser PC3. This machine has a full-sized QWERTY keyboard on the outside and a full-fledged word processor, spelling checker, notepad, and calculator, plus 32K of memory, on the inside.

The PC3's small 20 × 2 screen is its biggest drawback, but with a price tag of \$279, you could probably learn to live with it. The software and hardware that link the PC3 to a PC (or to a Mac) is included with the machine, as is the newest version of *PC Tools Deluxe*.

Blue-Light Special

Do we really need a new line of low-end PCs? Mass-market king Emerson thinks so. In a surprise announcement at this year's Summer Consumer Electronics Show, Emerson chairman William Lane introduced a 10-MHz turbo 8088 XT, an 80286 AT, and an 80386SX, each proudly bearing the Emerson name. What's so different about these computers? Two things.

First, Emerson's PCs talk. They have a new 32-voice sound chip, custom designed

by Signetics, that gives them the power of speech. And this power is put to good use. Turn the machine on without the keyboard plugged in, for example, and you'll hear, *The keyboard isn't connected. Please insert the keyboard's connector into the proper input on the back of the computer case, or something similar.*

There's more. The Emerson PCs use proprietary algorithms to synchronize video with their sound. If you need help, a near-video-quality image of a real person appears in one corner of the screen and talks to you.

The new machines are scheduled for release in the first quarter of 1990. Pricing information was unavailable at press time, but rumors place the entry-level 8088 machine as low as \$599. For more details, keep an eye out at your local K mart for a blue-light special.

SHEZ

Compression is essential if you're uploading or downloading software, and it's very handy when you're trying to keep your disks from getting too cluttered. Compressing and decompressing files used to be simple, but things have changed.

Once upon a time, SEA (System Enhancements Associates) had the PC compression/decompression market all to itself with the original *ARC*. But competition soon surfaced in the form of PKWare's *PKARC*, a program that was compatible with *ARC* but that also offered some unique features. SEA sued PKWare, saying that, among other things, it owned the *ARC* extension.

PKWare lost the court battle, but it may have won the war. As ordered by the court, Phil Katz, the force behind PKWare, abandoned *PKARC*

and wrote an entirely new compression/decompression program called *PKZIP*. The new program is incompatible with *ARC* and uses the *ZIP* extension. Within a few weeks of its release, *ZIP* files had all but replaced *ARC* files on many BBSs, but the *ARC* extension persists on several systems, including most commercial services.

To make matters even more confusing, there's now a third program that's incompatible with *ARC* and *PKZIP*—the public domain *LHARC*. If you download software, you unfortunately need all three.

SHEZ to the rescue.

SHEZ (James Derr, 2425 Santa Cruz Court, Santa Rosa, California 95401; \$15 for disk and shareware registration) is a shell that makes it easy to maintain *ARC*, *PKZIP*, and *LHARC* files. You simply put these archiving programs somewhere *SHEZ* can find them and then forget about the differences.

SHEZ provides a single, consistent, mouse-driven interface for all three archives. You can view documentation files (you'll need a copy of Vern Bueg's *LIST*, though), you can run programs from inside archives, and, naturally, you can compress and uncompress files, too. Having three compression standards is a pain, but *SHEZ* makes life in the age of archiving chaos bearable.

SideKick's Pal

SideKick Plus has been getting all the press lately, but the original *SideKick* still has a lot going for it. It's flexible and easy to use, works on a floppy-based system, and coexists with almost any version of DOS. And now there's powerful help for its only weak link.

If you use *SideKick*, you've probably found its dialer, notepad, calculator, and ASCII chart all but indispensable. You may have given up on its calendar, however. It isn't that *SideKick*'s calendar is bad—it offers all the features of a standard desktop, page-a-day appointment calendar—it's that an electronic calendar

should be better.

PAL (*Personal Appointment Locator*, PAL Software, 51 Cedar Lane, Ossining, New York 10562; 914-762-5322; \$49.95 with printed manual; \$35.00 for disk only) turns *SideKick*'s lackluster date cruncher into a star. With *PAL*, you can set repeating appointments (for the first Tuesday of every month, for example), you can set reminders (appointments that appear on each daily report until you delete them), and, with *PAL*'s *PALARM*, you can set alarms that include features like snooze and warning (so an alarm sounds five minutes before your meeting). And, finally, you can use *PAL* to search your *SideKick* appointment files for any text and purge your files of old appointments.

Here's how *PAL* works: You use *SideKick*'s appointment module as a scratchpad. *PAL* reads your appointment file and analyzes it (*PAL* can read multiple appointment files, too).

It's important to realize that *PAL* doesn't alter your *SideKick* file; it just reads the information, interprets it, and presents you with a report.

You give *PAL* instructions by placing special codes in *SideKick*'s appointment calendar. For example, if you want an appointment to warn you with an alarm, you simply put an @ anywhere on the message line. When *PAL* reads the file, it sees that special character and passes the alarm information to *PALARM*. If you want advance warning (in minutes, hours, or days), you follow the @ with an appropriate number. To set repeating appointments, you place a special code sequence on the line with the appointment. *PAL* can handle an amazing array of repeating appointments, but, as mentioned above, repeating appointments won't appear in your *SideKick* file. This means that, after you start using *PAL*, you won't be able to see all your appointments without it.

If you use *SideKick* and scheduling is important, *PAL* is indispensable. It transforms *SideKick*'s puny appointment calendar into a power tool.

— Clifton Karnes

64 & 128

The Commodore 64 has always been shrugged off by serious computer users as a game machine. Implying that this makes the computer useless is ridiculous. To me, the computer's primary role is entertainment. Long after word processors, databases, spreadsheets, and other serious applications have faded into distant memory, computers will still be entertainers. Why? Because North American society inevitably turns technology into entertainment technology whenever possible. Look at film, television, and automobiles.

The upshot of all this is that we should be proud of the entertainment value of our computers. The Commodore 64 was the first home computer to bring strong sound and graphics into the home, and those features lend themselves well to entertainment applications. Even now, almost seven years after its introduction, the 64 remains one of the primary entertainment computers. And, even though its graphics are no longer state-of-the-art—Amiga, Mac II, and VGA surpass it, as will the new 16-bit game machines when they come out—it remains one of the best machines to actually play games on.

The Improved Word

When I purchased my Commodore 64, I didn't realize that word processing software would take over my life, just as games did. I didn't know that learning new word processing

packages could pack a kick all its own.

And the kick has lasted. Like many people, I started with *WordPro 3 Plus*, complete with its fatal global-operations command. Then I moved on to *PaperClip*, then to *SpeedScript*, then to *Fleet System*, then to *Paperback Writer*, and on and on and on. Late in the game, I discovered *Word Writer 64* from Timeworks, but, despite its strong features, it never made much of a dent in my word processing life. But now *Word Writer 4* has renewed my interest in new word processors.

Word Writer 4 is a complete word processor. It doesn't create footnotes, indexes, or tables of contents, but does everything else you'd want it to do. Unlike GEOS word processors, it's not WYSIWYG; however, its text-preview mode lets you see almost exactly how your document will look. It's a solid, serviceable word processing program.

Word Writer 4 contains all the standard word processing features and many extras. For instance, it lets you save a macro. (A macro is a collection of commands that you can execute by pressing one key combination.) Unfortunately, *Word Writer 4* lets you create only one macro, but, if used properly, it can be extremely timesaving.

Timeworks has also added bookmarks. (A bookmark saves your place in a file so that you can return to that spot just by pressing a key.) You can only move forward, however, and I wish that you could move back to the last bookmark, too.

Word Writer 4 also offers good document conversion for *geoWrite* files and *PaperClip II* documents. Underlining, boldfacing, and tabs usually survive the conversion, but more esoteric commands don't. In these cases, *Word Writer 4* puts a bookmark near the unrecognized commands. Then you can find them easily and delete or change them as you wish.

The program also includes an outliner, a spelling checker (85,000 words), and a thesaurus (60,000 words). The spelling checker and thesaurus

work well and are complete. The outline processor is useful as an organizer, but, like most outline processors attached to word processors, it tends to be less useful the more you use the program.

Word Writer 4's strongest improvement is its output. The package includes eight fonts, serif and sans serif, ranging in size from 9 points to 72 points. You can apply many styles to the type, including underlining, boldfacing, italics, superscripts, and subscripts. You can type and print in text mode or font mode, depending on whether you want speed or quality. The program also allows you to use GEOS fonts, but they don't print in as high quality as the *Word Writer 4* fonts.

Considering *Word Writer 4's* quality and Timeworks' guarantee that it will buy you a different package if you find one you like better at a cheaper price, you can hardly go wrong picking up this package.

Word Writer 4 retails for \$29.95. For more information, contact Timeworks at 444 Lake Cook Road, Deerfield, Illinois 60015; (312) 948-9200.

Living-Room Arcade

Taito has found a way to keep you out of the arcades: It has brought *Sky Shark*, *Renegade*, and *Operation Wolf* into your home.

Sky Shark is a faithful conversion of the arcade game. You must pilot a World War II P-40 fighter plane through enemy lines, blowing up everything you see, including enemy aircraft, ships, and ground installations. There are five missions to complete, and many bonuses that increase your firepower and survivability.

Operation Wolf is an extremely gory game. As in the arcades, you play a commando on a rescue operation against terrorists. You start by blowing away bad guys in the enemy camp. Fire up your machine gun and toss your hand grenades. Then it's off to jungle hideouts, and eventually to the rescue plane. All the while, you're shooting and being shot at, and the body count is enor-

mous. Graphically, the game is extremely strong, but this is a mixed blessing. If anything, the graphics are *too* good: Many games emphasize killing people, but few show them collapsing into bloody heaps as this one does.

Renegade leads you out of the forest and into the big city, where you take on street gangs. Like *Operation Wolf*, *Renegade* is somewhat gory. You begin by battling punks in a subway station, and they are extremely difficult to beat. So difficult, in fact, that I quickly became discouraged and stopped playing. Eventually I went back to the game and progressed further, but I would have appreciated an easier beginning.

If you didn't like the arcade versions, you won't like these games on the Commodore 64/128, either. But there's a lot of play here and a wealth of saved quarters.

Sky Shark and *Operation Wolf* retail for \$29.95 each, and *Renegade* retails for \$14.95. For information, contact Taito at 267 West Esplanade, Suite 206, North Vancouver, British Columbia, Canada V7M 1A5.

Game Overload

For more abstract, less violent fare, try Epyx's newest game, *Mind-Roll*. In *Mind-Roll*, you navigate a little ball across the terrain of ten bizarre planes, trying to get through each as quickly as possible.

You complete a plane by reaching the finish line or by performing certain tasks. On plane 2, for example, you must roll the ball over keys in the proper order to open doors and get to other keys. Teleports help you find other sections of the maze. Plane 3 features an electric sea that saps your strength, plane 5 is a puzzle, plane 9 has cubes that you must knock out, and so on. It's all very strange, and some of it is extremely hard, but, all in all, this is an entertaining game.

Mind-Roll retails for \$29.95. For information, contact Epyx at 600 Galveston Drive, Redwood City, Califor-

nia 94063; (415) 368-3200.

This month's fantasy role-playing entry is *Demon's Winter*, the latest offering from SSI (675 Almanor Avenue, Sunnyvale, California 94086; 408-737-6800). Created by the same group that gave us *Shard of Spring*, *Demon's Winter* sets you on a quest to avenge evils against your people. The game is something of a cross between *Bard's Tale* and *Ultima*, with a healthy dose of *Quest-tron* thrown in. In an interesting departure from the norm, you can become a visionary or a scholar, fantasy classes rarely seen in this genre. Also, priests and shamans may call on their deities, who can be very helpful to the party. It's an interesting system and one well worth experiencing.

Even with these strengths, though, *Demon's Winter* is unsatisfactory. The graphics are only fair, and moving from place to place is clumsy. What this system needs is an overall gameplay system as good as some of the individual subsystems. Without that improvement, *Demon's Winter* is not a serious challenger to the major players in the field.

Demon's Winter retails for \$49.95.

— Neil Randall

windows, menus, and mouse.

Reach for the Stars has its roots in classic science fiction—the kind where vast fleets of dreadnoughts battle for control of the space lanes and the stars. Four empires laser-blast their way to galactic dominance; empires not played by a human are computer-controlled. Production plays a big part in *Reach for the Stars*. You don't need a degree in economics to succeed, but you will have to balance expenditures and decide how to best spend your sometimes scanty resources. Should you create clouds of scouts to scatter hither and yon, or mass an unstoppable fleet? And don't forget to allocate some production points to keep your people happy, or they'll riot and generally cause trouble back on the home front.

Pull-down menus make it easy to select commands, and overlapping windows open to show you such information as your ships' locations, the state of any planet, the course of space battles, and more. Those windows, unfortunately, often cover much of the star map, forcing you to close the windows (a slow process on the IIGS) to see where your forces are and where they should be sent. (A nice printed map helps alleviate the problem.)

Reach for the Stars hasn't changed any in its move to the IIGS—it has just become better looking and easier to operate. You'll still need to spend a lot of time and thought if you want to be Emperor of the Known Universe.

Contact SSG at 1747 Orleans Court, Walnut Creek, California 94598; (415) 932-3019 for more information. *Reach for the Stars* retails for \$45.

Watch Your Money

Fact is, *AppleWorks* dominates the Apple II application market. If there's a standard user interface on the Apple II, it's the file-folder metaphor of *AppleWorks*.

Add-ons and add-ins have proved invaluable in extending the lifespan of the integrated program: Everything from

APPLE II

One of the oldest, but yet one of the most popular, science-fiction games has made it to the IIGS. *Reach for the Stars*, an SSG game long available for the Apple II (and many other computer systems), now takes advantage of the IIGS's

spelling checkers to tax preparers works in, or with, *AppleWorks*. A recent addition to the list is *Alpha Check*, an easy-to-use personal finance manager that operates from inside *AppleWorks*.

This \$39.95 program can automate much of your household (or small-business) finances, although its main purpose is check writing and tracking. Compared to *Quick-En*, the most popular personal financial package for the Apple II, *Alpha Check* has an amazing number of features. It can prenumber and predate checks, automatically fill out the long-hand dollar amount, update the check register to keep the correct balance, and then print out the check complete with the payee name for proper addressing. *Alpha Check* can also generate reports using *AppleWorks*' database, transfer data to the spreadsheet, keep track of tax-deductible items, and print mailing labels.

Alpha Check isn't a financial panacea, though. The program's documentation is horrible. Not only are there significant omissions (instructions on using some of the program's features are just not included), but what is there is often so poorly written that it's impossible to follow. More disturbing is that with an extra press of the Escape key, something easily done in *AppleWorks*, you'll find yourself back at the Main Menu screen. To return to *Alpha Check*, you must reload the *Alpha Check* data file. Of course, this isn't really *Alpha Check*'s fault—the program is, after all, a highly customized *AppleWorks* database file—but it is a good reminder that not everything works best from inside the integrated software.

With some work, patience, and experimentation, however, *Alpha Check* can easily grow on you. It may not be as polished as its commercial competitors, but its price is certainly right. And if you're a dedicated *AppleWorks* user, you'll find that its familiar operation outweighs its quirks.

For more information about *Alpha Check*, contact its publisher, ACTAsoft, at 19700 Wells Drive, Woodland Hills, California 91364; (818) 996-6731.

Zip It

Zip Technology, makers of the once long-delayed Zip Chip for the Apple II, used Boston's AppleFest to announce its newest accelerated microprocessor replacement.

The new Zip Chip model runs at 8 MHz, eight times the normal speed of the Apple II+, IIe, or IIc microprocessor and twice the speed of the original 4-MHz Zip Chip. Replacing the Apple's standard microprocessor with the new, faster Zip Chip is as easy as opening the computer case, removing the old CPU, and pushing in the Zip. Nineteen variable speed options are available in the 8-MHz Zip Chip; speed settings are done from the keyboard.

The 8-MHz Zip Chip retails for \$199, compared with \$149 for the original 4-MHz model.

Zip Technology also preannounced its Apple IIGS accelerator board, the Zip-GS. Not yet available for release, the \$299 board will, according to Zip, increase the speed of the IIGS by as much as 300 percent. The 8-MHz Zip-GS will also accelerate up to two megabytes of memory in the IIGS; Zip-GS provides 150 speed settings.

For more information about the 8-MHz Zip Chip and the Zip-GS, contact Zip Technology at 5601 West Slau-son Avenue, Suite 190, Culver City, California 90230; (213) 337-1313.

System 5.0

The biggest announcement at Boston's AppleFest was System 5.0 for the IIGS. The new system software will be most appreciated by educators, as it operates over the AppleTalk network; home users will like it for its faster speed and performance.

Large sections of the Apple IIGS Toolbox have been revised for System 5.0, and these changes have doubled the computer's speed. Development should be easier and faster as well, since 5.0 includes a resource manager and a text

editor. An improved SCSI manager will mean faster communication with both hard drives and CD-ROM drives.

The primary enhancement of System 5.0, however, is its ability to work under AppleTalk. System 5.0 replaces the AppleShare IIGS WorkStation Software formerly needed to run AppleTalk on a IIGS. Sharing data files, printers, and other peripherals is easier with System 5.0. More information about the network is available and network resources are more easily accessed with the new software. System 5.0 even makes it possible for a IIGS user to boot the computer from the network, making disk drives unnecessary on an AppleTalk-linked IIGS.

More information about System 5.0, its availability, and its price, can be obtained from your local Apple dealer.

—Gregg Keizer

also crucial. They can be sharpshooters, they can rappel down the walls and smash through the embassy windows, or they can fight their way up from the street.

You must learn how to predict the movements of the terrorists, who tend to be consistent about how they lurk behind doors, use hostages as shields, and so on. No negotiation is possible with these guys—it's kill or be killed, so shoot fast. I would have appreciated the option to talk with the terrorists, or at least trick them; after all, very few real-world hostage situations end in a violent firefight. You aren't given any easy weapons like tear gas, stun grenades, or offers of free plane tickets to Beirut, either. You can only move on to a higher rank and more difficult missions by securing all the hostages or killing all the terrorists without losing any of your own team.

Hostage is one of the better Amiga combat games. The menacing musical score and dark-toned graphics are good, and the premise is fresher than the typical sword-slasher or alien-blast epic, even if the action is similar. If you thrill to the cinematic counterterrorist exploits of Chuck Norris and Sylvester Stallone, you'll love *Hostage*.

Viking Has Landed

One of the things that's hampered the Amiga's usefulness as a desktop publishing and CAD workstation is the lack of large-screen, high-resolution displays. The standard Amiga monitor flickers in the high-resolution interlace mode, and it's not big enough to show a full page of text, much less the two-page spread required for desktop publishing.

Commodore is well aware of these problems and has had a large-screen monitor, the 2024, under development for more than a year. However, if you don't want to wait on Commodore, another solution to the problem is available now: the Viking I, a 19-inch monochrome, 1008 × 800 pixel display from Moniterm (5740 Green Circle Drive,



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55343; 612-935-4151; \$1,995).

The Viking uses a card that plugs into an expansion slot in an A2000 or A2500. The card sends four or six separate screens that are combined into one by a special chip in the Viking (you need to run the prerelease AmigaDOS 1.4 utilities supplied on the included Jumpstart disk for the system to work). This makes for a big, solid display that's great for desktop publishing and CAD. Try animation or even typing text, though, and the display tears up annoyingly.

Not all software works with the Viking 1, but Gold Disk's *Professional Page* and *Professional Draw* do, as do *WordPerfect* and *Aegis Draw 2000*. Most other software, except games and a few applications that use custom screen formats, will default without problems to one of the standard Amiga resolutions. Software compatibility with the big-screen mode should improve with the release of Commodore's Enhanced Chip Set and AmigaDOS 1.4 later this year. Until then, the Viking 1 is the only high-resolution game in town. If you are serious about desktop publishing on the Amiga, you should definitely check it out.

PostScript for All

There's no match for the smooth, clean, high-quality printout you get from a PostScript laser printer. Unfortunately, there's no match for the \$3,000 price tag either, so casual Amiga desktop publishers are usually forced to settle for jagged output or spend \$2-\$5 per page to have their DTP files printed at a service bureau.

Now comes a cheaper solution from Pixelations (P.O. Box 547, Northboro, Massachusetts 01532; 508-393-7866). *PixelScript* 1.1 (\$149, formerly known as *PrintScript*) is a software-based PostScript interpreter that runs on your Amiga. It takes PostScript output files from any Amiga DTP program and prints them on non-PostScript printers.

The advantage of using

PixelScript is that you get smooth, clean fonts and line-drawing, free of the "jaggies" associated with bitmap output. But the best thing about the program is that it will output to any Preferences-supported printer. You can put together a printer setup with *PixelScript* and the Hewlett-Packard DeskJet Plus printer for well under \$1,000 that creates output almost indistinguishable from that of a \$5,000 laser printer. Output on a 24-pin Panasonic 1124 at 180 dpi is excellent, and 9-pin output is good enough for draft work.

Two things you'll need to really take advantage of *PixelScript* are time and memory. Single pages take from about ten minutes to just over half an hour to print. And while the program will run with only one megabyte of memory, it's much happier with two megs or more.

Pixelations should be shipping *PixelScript* 1.1 by the time you read this. The update adds a full Intuition interface, automated installation, *ARexx* capability, Encapsulated PostScript capability, and support for *City Desk 2.0*, *PageStream*, and *WordPerfect*.

PrintScript owners should contact the company for upgrade details.

Shaky at the Top

If you want a sheltered berth in a safe corporate harbor, don't join the top management of a computer manufacturer. In May, Commodore president Max Toy announced his resignation to "pursue other interests." By most accounts, Toy fell victim to the well-known impatience of his boss, CBM Chairman Irving Gould. Apparently, Toy was not moving the corporate ship forward as quickly as Gould wanted, even though CBM has posted impressive financial and market-share gains during the year that Toy was at the helm. Tom Rizzo, CBM's eastern sales manager, left at about the same time as Toy. These personnel changes are expected to have no major effect on Commodore's plans for the Amiga.

Gould named Harold

Copperman, formerly of Apple's education division, as Toy's replacement. Copperman is just one of a flock of corporate defectors from Apple, which is having its own management problems. Many executives are fleeing Apple's organizational tempests to presumably calmer waters at Sun, Commodore, and even IBM. If I were these folks, however, I wouldn't jump ship without a life preserver.

Video Toaster News

The Video Toaster, NewTek's long-awaited encoder, genlock, frame grabber, and digital video-effects board, wowed the video professionals at the National Association of Broadcasters show in Las Vegas. Now being promised by reliable NewTek sources for October 1989—only about 18 months after its announcement, qualifying the Toaster as the most ectoplasmic third-party vaporware so far for the Amiga—the Toaster will probably be a must-have for desktop video producers. Beware, however, because the *software* to run the Toaster won't be available until the spring of 1990. You'll also need some extra goodies like a timebase corrector to manipulate taped video, as well as an Amiga 2000/2500. The base unit should cost \$1,595.

While NewTek may have the product with the highest profile, there are other competitors in the wings, notably some little-known video products from Europe, that may steal some of the Toaster's heat. There are several 24-bit color capture boards for the Amiga coming out, too; all this new hardware is going to change the Amiga desktop video and desktop publishing market in significant and unpredictable ways by the end of this year. NewTek's ultrasecret development team at its "Alcatraz" research facility will need to put in 20-hour days to keep on top of it all. For more information, contact NewTek at 115 West Crane Street, Topeka, Kansas 66603; (800) 843-8934.

— Steven Anzovin



MAC

Put on your thinking caps and take your smart pills. Apple has announced System 7.0, and it's sounding more and more like UNIX and OS/2.

That's not bad, because the actual operating environment will probably be as friendly as ever. However, the new System will likely require two megabytes of memory. It's also designed for high-end use—hooks for electronic mail, for example, and an affinity for the 68030 microprocessor.

One feature that will profoundly affect all users is the Interapplication Communication architecture. In English, it's a method for your programs to communicate with each other. You've probably seen how integrated packages work. IAC will create a similar environment, except you'll be able to issue commands to one program from another. For example: You're working on a budget proposal for your daughter's Girl Scout troop. You want to show how an increase in money-raising projects will affect the troop's camping opportunities. So from *MacWrite II*, in which you're writing your proposal, you request that *Excel* create a graph with last year's figures and copy it to the clipboard. Now you can use the graph in your proposal. Next, you request that *Excel* plug your proposed figures into the spreadsheet, create a new graph, and copy it into the clipboard. All the while, you've never left *MacWrite II*. It's a pretty nifty idea.

In this environment, it may be very convenient to work with small programs with limited features, more

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"When Americans set out to buy a car, they expect to kick the tires and take it for a spin. Yet they'll buy software right off the shelf without trying it first. Wouldn't you like to test the software on your own computer before paying for it? A marketing concept called "shareware" gives you the chance to actually test software before committing money to it. You are given a set amount of time to use it. If you continue using the software after that period, you are expected to pay the author a registration fee. In any case, you are encouraged to pass a copy to friends and colleagues so they can give it a try. Shareware can be found on computerized bulletin boards, on nationwide computer networks like CompuServe and distributed by companies like California Freeware." **Shareware: The Real Story** by Rob Rosenberger, reprinted, with permission, from CompuMag, June 1989 issue.

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like the original *MacWrite*. Because all programs will be linked dynamically, you won't need the monsters like *Word* to calculate columns of numbers and create complicated page layouts.

Call for Help

Pick up the phone and dial 900 and seven more numbers at random, and you might reach Nancy Reagan's Astrologer, an internationally acclaimed matchmaker, or a joke-of-the-century recording. You might also reach Support, a help line for Macintosh users.

Instead of a recording, a human voice answers the phone and refers you to other humans who can answer common and not-so-common questions. Consultants are tested carefully to be sure they know what they're talking about, and they're located all over the country.

You'll pay \$2 for the first minute and \$1 for each additional minute. That may sound expensive, but most calls take ten minutes or less. A visit from a consultant could run up a much higher bill.

Eventually, Support will be a 24-hour service, but for now it's open daily from 7:00 a.m. to 10:00 p.m., Pacific standard time. To reach Support, call (900) 860-HELP.

If you're interested in working as a consultant, contact Support at 888 Fourth Street, San Rafael, California 94901; (415) 453-7924.

Scuba Doo

Bring your Macintosh into your bathtub and you could complete the realistic feel of *MacScuba*, a dive simulator from Paradise Software. You could also electrocute yourself, so settle for the dry approach.

If I had ever been scuba diving, I could tell you how realistic *MacScuba* actually is. But I've never had the experience. I can tell you that many divers and some diving organizations reportedly rave about the game. I can also tell you

that once you have a grasp of how the game works, you'll probably enjoy it as an interactive adventure. I did.

Gathering treasure from a sunken pirate ship is the object of *MacScuba*. The catch is that you're limited to three tanks of air. So, you must learn to navigate underwater, protect yourself from carnivorous fish, and find your way through a labyrinthine ship—all on a limited supply of oxygen.

Navigating underwater is easy. Simply click on a direction icon (right, left, or forward) and then click on the fins icon to propel yourself. The interface isn't very comfortable, however, since you sometimes must click twice on the direction icon before the program recognizes your selection.

Protecting yourself from people-hungry fish isn't as easy. First you have to distinguish the dangerous fish from the benign. There's a database that you access by clicking on the goggles icon and then double-clicking on the fish that's staring you down. If you're arguing with a hammerhead shark, grab your knife, quickly. Many a good diver leaves an arm or a leg in that shark's mouth—at least in this game.

Finding your way into the ship is probably the most difficult part of the game, but a supplement to the manual offers tips. Once inside, you can easily get lost (especially if you forget to turn on your flashlight), so start drawing maps. When you find treasure, store it in your goody bag.

You can store *MacScuba* in your goody bag, too. Aside from interface problems, this is a good game. The graphics are excellent, especially the fish (which you learn to recognize after a while). The sound is also good.

If you're a real beginner, you might wish for more information in the manual. The program designers want you to experiment with everything, actively discovering how your equipment works. But this can be frustrating. For example, when I got a reverse image on my screen, I thought something was wrong with my Macintosh or with the program. I called for technical support. Nothing was wrong with the

game—my goggles were fogged.

MacScuba gives you an idea of what diving is like, but it doesn't pretend to replace certified training. The game is detailed and absorbing, and I recommend it.

It retails for \$49.95. For information, contact Paradise Software, P.O. Box 50996, Phoenix, Arizona 85076; (602) 893-8324.

You Again?

Pick up *Deja Vu II* and you'll find yourself lost in Las Vegas.

Not only are you lost again, but you're also in trouble again. Now do you see why they call it *Deja Vu*?

Another recurring theme in this sequel to *Deja Vu: A Nightmare Comes True* is a quality plot and a clever interface. If you're a fan of interactive fiction, you'll enjoy this game—it's full of wrong turns and secret meanings. But if you're new to the genre, the new *Deja Vu* is a good place to start.

To start with, you wake up hung over and miserable on the bathroom floor of a cheap hotel. You drag yourself to the bedroom and find a thug waiting to pass on some kind advice: If you don't pay Tony Malone the \$100,000 that you owe him, you won't live long enough to get your tattered trench coat dry cleaned. You've got 24 hours to pull together the cash. That's life in the 1930s.

Why you owe Malone and how (or whether) you pay him off is part of the puzzle. There's a gambling casino in your hotel where you'll find blackjack tables with barking dealers. But you have only \$12 in your pocket, not including your lucky quarter. And there's a train out of town; maybe you need to head out of Las Vegas to solve your problems. Maybe not.

The rest of the story is yours to discover.

Find your way around the game by clicking on commands and clicking on objects. Drag items to your inventory, and open objects by double-clicking. The interface is truly

intuitive, leaving all the serious thinking for figuring out the solution to the mystery.

Deja Vu II retails for \$49.95. If you'd like more information, call ICOM Simulations, 648 South Wheeling Road, Wheeling, Illinois 60090; (312) 520-4440.

More Holy Writ

If you liked *The Macintosh Bible*, try *The Macintosh Bible Guide to Microsoft Works*. It's a tutorial and reference book by Sharon Zardetto Aker. If that name sounds familiar, it's because she used to write this column. She has also written several other books and articles about the Mac, so she's a highly qualified resource.

The 400-page book will retail for \$20, and it's scheduled for an October release.

Aker is also working on the first update to the second edition of *The Macintosh Bible*, due out in the summer of 1989. People who bought the second edition are entitled to two free updates. Simply send the publishers your name and address.

For more information, contact Goldstein and Blair, Box 7635, Berkeley, California 94707; (415) 524-4000.

— Heidi E. H. Aycock

ATARI ST

With Antic Publishing's acquisition of *GFA-BASIC*, GFA's former distributors have developed some very powerful

Make Any Computer Do Exactly What You Want With McGraw-Hill's

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Each module includes an easy-to-understand guide PLUS a 5¼" floppy disk containing typical programs and interactive instruction that you can run on IBM PCs, PC compatibles and Commodore 64 and 128 computers for hands-on experience.

In the first Module, for example, when your sample program (Declining Interest Loans) appears on your screen, you'll find errors on certain program lines. You'll also see that the program is only three-quarters completed.

Now comes the fun part. You'll discover how this program is built, and in the process you'll learn how to identify and correct errors. And by the end of Module 1, you'll actually have completed this program yourself.

But there's more. Special graphics on your screen work in conjunction with the accompanying guide to amplify, illustrate, and deepen your understanding of software design principles.

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While the Series includes interactive disks that run on specific computers, everything you learn you can apply to any language or machine. Why is this possible? Because McGraw-Hill knows programming is far more than coding a program into the computer using a specific language. In the real world of computers, 95% of the programming process is carried out using design techniques that are independent of specific language or machine. It is this crucial 95% that you thoroughly understand and master in the Series.

Make no mistake. Almost all books and courses on "programming" teach you only the final 5% of the total programming process—namely, how to code in a specific language... information of little value if you don't know how to reach the point in the programming process when you are ready to code.

With the Series, however, you'll learn to create your own programs from scratch, even modify off-the-shelf programs. You'll learn enough BASIC and machine language to get you started on the remaining 5% of the programming process.

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The sample programs you work with throughout the Series are excellent learning tools. But they're more than that. By combining the sample programs onto one master disk, you'll have the start of your own personal software library. In addition to the programs you've written and modified throughout the Series, you'll also receive dozens of the most popular public domain and user-supported programs, such as data base manager, word processor, calendar generator, appointments reminder and much, much more.

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competition. MichTron (576 South Telegraph, Pontiac, Michigan 48053; 313-334-5700) is marketing *HiSoft BASIC* (\$99.95) and *HiSoft BASIC Professional* (\$159.95) in the United States. Both BASICs are virtually identical, except you can build libraries with the professional version if you know assembly language.

HiSoft is a compiled language and comes with an editor, compiler, and the necessary libraries. It incorporates all standard features of BASIC, as well as optional line numbers and DO, WHILE/WEND, and REPEAT loops. The DO LOOP can use the modifiers WHILE and UNTIL to specify loop conditions at either or both ends of the loop. Multiple-line IF statements, CASE SELECT, subprograms (similar to *GFA BASIC*'s PROCEDURES) and user-defined functions are supported. You can pass variables and constants to the subprograms and functions as parameters, and the functions can pass results back to the main program.

Interrupt programming (such as *GFA BASIC*'s ON MENU command) isn't supported, but full access to all GEM VDI and AES is. Some knowledge of GEM is required because the documentation doesn't attempt to make you a GEM programmer. The VDI and AES functions are stored in external libraries, and you only need to include them in programs that use those functions. These functions are simpler to use than unadorned GEM because HiSoft takes care of some of the nasty details, such as handles. Still, in order to install and use menus and dialog boxes and to receive GEM messages (window resized, slider box moved, and so on), you must set up and use the included AES functions. The manual included with HiSoft is excellent.

The WERCS

To complement *HiSoft BASIC* MichTron has also released a resource editor called *WERCS* (\$49.95). It's so intuitive that you'll hardly need

the manual. The program is menu-driven, and it supports a mouse.

Resource editors create resource files, which define menus, dialog boxes, and other GEM constructs. Once you have selected a tree type (such as Menu or Dialog Box), you can put various items (such as buttons, text, or icons) on the screen and change many of their attributes. Button shadows, text templates, and boxes are all simple to manage, and the procedures are very well thought out. You can name objects or let the program name them for you.

You can use *WERCS*' icon and graphics editor to design pictures for your dialog boxes. You can also import images from popular paint packages. *WERCS* saves files in several languages, including BASIC, Pascal, C, and assembly language. For example, if you select BASIC, the file will set the item names to numbers using HiSoft's CONSTANT statement. Once in your BASIC program, you can refer to the object by its name.

Overall, *WERCS* is far easier to use and is much more powerful than the DRI resource construction set.

Sound's Better

Better sound is on its way to ST owners. MichTron has updated its original ST sound-digitizing cartridge, *ST Replay*, and has released the improved version as *Replay 4* (\$129.95).

Besides digitizing sound, *Replay 4* lets you assign saved sounds to function keys. The software represents the ST's entire memory buffer on the upper portion of the screen. In that buffer, you'll see a graphic representation of any sound you call up from memory. Two mouse-controlled cursors specify the area you will be working in, and your commands affect only the area between the cursors. You can cut, copy, insert, and clear parts of the buffer, as well as reverse, fade in or out, and apply filters to the stored sound.

Of course, you can listen to the results, and a realtime oscilloscope helps you adjust

the volume properly for good-quality sampling. MIDI support lets you assign a sound effect in the buffer to a key on a MIDI keyboard.

Finally, an EFFECTS program demonstrates some special effects, such as echoes, reverb, and ramping. This package is easy to use and works quite well.

Putting on the ST

If you like miniature golf, take a look at the wild game of Putt-Putt that Electronic Arts (1820 Gateway Drive, San Mateo, California 94404; 415-571-7171) has brought to the ST. *Zany Golf* (\$39.95) brings nine unusual holes to the screen.

Each hole opens with an overall view of the layout, plus some hints. When you're ready to play, simply click the mouse button, and the hole appears on the screen. The high-resolution, simulated 3-D graphics are extremely detailed. Only a portion of the hole is visible on the screen, but you can scroll other parts into view.

To take a shot, place the mouse cursor on the ball, hold down the left button, and drag the cursor away from the ball as though you were taking a backswing. The direction and speed of the shot are determined by the distance and direction of your backswing. The physics of ball movement are very realistic.

The holes themselves are delightful. One hole works like a two-layered pinball machine: Your golf ball bounces off bumpers and drop targets, and you control flippers by clicking the mouse button. Another hole challenges you with fans that influence the path of your ball. The mouse controls the fans. Still another hole features magic carpets and a whole host of other surprises. Originality is this game's strong suit.

You start the game with some extra strokes, and each time you beat par, the unused strokes are added to your reserve. Alternatively, if you go over par, the number of reserve strokes decreases. The game ends when you run out of strokes.

As many as four people

can play. The only downside to *Zany Golf* is the long pause between holes as they load from disk. Otherwise, this is a superb game.

Other Greens

If you'd prefer a different, more traditional approach to miniature golf, consider *Hole-in-One Miniature Golf* from DigiTek Software (8910 North Dale Mabry, Executive Center, Suite 37, Tampa, Florida 33614; 813-933-8023; \$29.95). There are two courses, each with 18 holes. If you want to play course 2, you must complete course 1 at par or better. The holes are viewed from above, with varying shades of green indicating different levels. Up to four people can play, and the game keeps everyone's score on an automated scoreboard.

The 18 holes in each course are fairly standard fare, except for a few surprises (check out the magic hole). The graphics are good, with a lot of scenery, including trees, hot-dog stands, and streams. But the overhead view often makes it hard to tell how the hole is set up. In fact, in some cases, the path from the pad to the hole is invisible because it's hidden under a bridge.

The interface is strange. In most golf games, you move the pointer behind the ball (as if the pointer represented the golf club). However, in *Hole-in-One*, you move the pointer to the place you want the ball to go. This is certainly easier, but it's also less realistic. Also, the menus are concealed until you press the right mouse button.

Other features are odd, too. For example, if you retry a shot, you don't get the stroke back. So you spend two strokes for each shot you try again. Also, top scores aren't saved to disk. And an option called *Contour*, which shows you a side view of the hole, isn't available on some holes where it's needed.

Hole-in-One is a pretty traditional game of miniature golf. It's fun once you've learned how some of the difficult holes work.

— David Plotkin □

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With *Dinowars* and your Amiga, you can go back to a time when dinosaurs ruled the Earth. This interactive strategy game features fully animated arcade sequences and an encyclopedia with interesting facts about the prehistoric era.

The game features eight varieties of dinosaurs that pair off into two opposing armies. They fight for territory on a prehistoric battlefield. Two players can battle each other, or one player can take on the computer.



Prehistoric beasts rule the Earth in DigiTek's *Dinowars*.

Dinowars retails for \$39.95.

DigiTek Software, 8910 N. Dale Mabry, Executive Center Suite 37, Tampa, FL 33614
Circle Reader Service Number 200.

It's Out of This World

Now that you've dominated the athletes on planet Earth, it's time to head to Saturn for some interplanetary games. Epyx, the creators of *World Games*, *Winter Games*, *Summer Games*, and *California Games*, brings you *Purple Saturn Day*.

Each year on the ringed planet, athletes from around the galaxy gather to celebrate the Day of the Purple Dawning. In honor of this well-known holiday, seven space aliens and one earthling compete in a series of events. Each alien has a unique set of characteristics that evolve and change each year.

The four athletic events include Ring Pursuit, a slalom around Saturn's

rings; Brain Bowler, a mental race to open and close electronic gates; Tronic Slider, a slide across a Tronic playing field to gather energy globules; and Time Jump, a leap forward in time accomplished by shooting a cluster of sparks to gain energy. The winner receives a special prize from the Queen of Saturn.

Purple Saturn Day retails for \$39.95 and is available for IBM PCs and compatibles, the Amiga, the Commodore 64/128, and the Apple IIGS.

If you prefer a more down-to-earth game, Epyx has announced the sequel to *California Games*. *California Games II* is scheduled for release before Christmas.

You can compete in four new events: body boarding, jet skiing, skateboarding, and snowboarding. As with the original game, Epyx offers special promotional merchandise from several California companies. Available for IBM PCs and compatibles, *California Games II* will retail for \$49.95.

Epyx, 600 Galveston Dr., P.O. Box 8020, Redwood City, CA 94063
Circle Reader Service Number 201.

The Family That Computes Together . . .

In an effort to meet family computing needs, Broderbund has released *The Family Software Library*, which contains three programs in one package: *Bank Street Writer Plus*, *Type!*, and *Where in Europe Is Carmen Sandiego?*. Broderbund is marketing the package as a starter kit for families that have just purchased a computer.

Your family can learn basic typing skills with *Type!*. The program includes special exercises for children and an arcade game that teaches typing while you play. *Bank Street Writer Plus* (*Bank Street Writer* for the Commodore 64/128), a word processor designed for home use by children and adults, features a 60,000-word spelling checker and thesaurus. An on-disk tutorial is

also included. The third program, *Where in Europe Is Carmen Sandiego?*, teaches thinking skills while you absorb facts about geography, history, and culture. You play a detective in search of the notorious Carmen Sandiego and her gang of master thieves as they make their way across Europe.



The Family Software Library packs three popular Broderbund programs into one box.

The Family Software Library comes with a parent's guide that features ideas on family activities. Versions for the Apple II and IBM PCs and compatibles retail for \$99.95. The Commodore 64/128 version is \$69.95.

Broderbund Software, 17 Paul Dr., San Rafael, CA 94903-2101
Circle Reader Service Number 202.

European Battles Past and Future

One of two new war games from Strategic Simulations takes you back the battle in Europe during World War II while the other sends you into possible future conflict on the continent.

Relive every facet of World War II in Europe with *Storm Across Europe*. This strategic game for the Commodore 64 encompasses the entire conflict in Europe from 1939 to 1945.

As many as three players control the action while the computer controls either the Allies and/or the Russians. You can direct your armies to conquer territories and attempt amphibious landings. You can also launch U-boat campaigns in the Atlantic and carry out strategic bombing strikes against enemy production centers. The game also allows you to change scenarios and start-

**Mickey McLean
and Jeff Sloan**

new products!

Innovative Interface

Lucasfilm Games has announced the release of its first fantasy adventure game, *Loom*. The game's graphics interface relies on icons and music instead of text commands and menus.

Loom is set in the Age of Great



Bobbin's magic distaff is the key to Lucasfilm's graphics interface in *Loom*.

Guilds, a mythical time when shepherds, blacksmiths, and glassmakers ruled the world. The hero in the story is Bobbin, a member of the Guild of

Weavers, who must solve a conflict between good and evil. The Elders of the Guild have disappeared, and it's up to Bobbin to find clues to their whereabouts. When he finds a magic Weaver's distaff, the adventure begins.

A 30-minute audio drama, on audiocassette, included with the game, sets up the story's background. Available for IBM PCs and compatibles, *Loom* retails for \$59.95. Versions for the Amiga and the Atari ST are planned for release later this year.

Lucasfilm Games, P.O. Box 2009, San Rafael, CA 94912

Circle Reader Service Number 205.

the past ten races of 128 horses at the track and check track conditions, odds, statistics, and even the moods of the jockeys.



In *Horse Racing*, you can bet a bundle and still come out ahead.


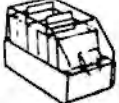






Historical Racing is a feature that lets you race some of the great horses of the past against today's champions. Additional modules expand the game with more tracks and other options.

Horse Racing runs on IBM PCs and compatibles, requires DOS 2.0 or later, and supports CGA, EGA, and

Bettor's Delight

With SportTime's new *Horse Racing*, you can spend money you don't have, pick that trifecta you've always wanted, and even pit the champions of yesterday against the winners of today.

Up to four players can play *Horse Racing*, competing against 16 or more computer opponents. You can study

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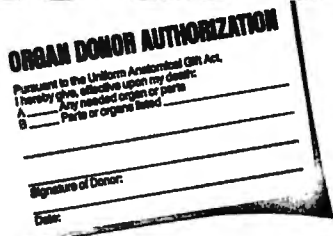
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VGA graphics. It retails for \$49.95.

SportTime Computer Software,
3187-G Airway Ave., Costa Mesa, CA
92626

Circle Reader Service Number 206.

More Interaction from Activision

Activision's popular program *the Manhole* isn't just for the Macintosh anymore. The new MS-DOS version adds color, enhanced graphics, and high-quality digital audio.

Originally a five-disk *HyperCard*-based program and later a CD-ROM product, *the Manhole* is an investigative adventure in a maze that leads up to the sky or down underground.

The program requires 512K RAM on IBM PCs, compatibles, PS/2, and Tandy 1000 series computers. It also requires MS-DOS version 2.0 or later and an EGA, VGA, MCGA, or Tandy 16-color monitor. A hard disk is recommended.

The retail price will depend on how many disks will make up *the Manhole*. The five-disk Macintosh version with *HyperCard* retails for \$59.95.

Also from Activision comes a new game for the Macintosh. *Cosmic Osmo* is the first animated fantasy-exploration program.

Osmo leads you on adventures through the solar system and to strange new worlds.

Cosmic Osmo requires one megabyte of RAM on a Macintosh Plus. SE,

SE30, II, or IIx. *HyperCard* is included on one of the six disks. The program retails for \$69.95.

Activision, 3885 Bohannon Dr.,
Menlo Park, CA 94025

Circle Reader Service Number 207.

Full-Service Laptop

Micro Express's Lyte-Byte 3400 laptop computer offers many of the options of expandability without any of the hassle of disassembling the computer.

You can add a math coprocessor, a 16-bit short expansion card, or you can increase the RAM from 1MB to 5MB—all externally.

The 15-pound 80286-based computer has a 3½-inch, 1.44-megabyte



You don't have to open the Lyte-Byte 3400 laptop to add expansion cards and memory.

floppy disk drive and a 40-megabyte hard disk. Other optional hard disks are available with as much as 100 megabytes of storage. A 5¼-inch floppy drive can be added externally.

You can replace the Lyte-Byte's 85-key keyboard with a full-sized keyboard for standard desktop use. The gas-plasma screen tilts over a 130-degree angle.

The Lyte-Byte 3400 is IBM PC-compatible and retails for \$2,995 from Micro Express.

Micro Express, 2114 S. Grand Ave.,
Santa Ana, CA 92705

Circle Reader Service Number 208.

Madden Hits the Screen

After years in the making, the ultimate game for armchair-quarterback strategist has arrived: *John Madden Football*, from Electronic Arts.

You can play *John Madden Football* in two modes: Strategy, which runs the plays you call as you watch from the sideline, and Action, which lets you call the plays and also get in on the game. You can set up the game in a variety of

modes including grass or AstroTurf, open or domed stadiums, rain or snow, and hot or cold temperatures.

The game was designed with Madden's playbooks, strategies, game philosophies, and offense and defense. There are 81 offensive and 81 defensive plays compiled from Madden's coaching career. The chalkboard allows you to diagram plays, à la Madden. It's also where you modify playbooks and edit your teams. On the field, as in real life, you can change plays at the line of scrimmage.

John Madden Football is available for the Apple II and retails for \$49.95.

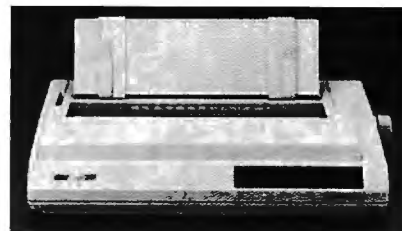
Electronic Arts, 1820 Gateway Dr.,
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Loaded Printers

Star Micronics' two new dot-matrix printers feature 14 resident fonts, up to 41K of buffer memory, and unique super-letter-quality printing capabilities.

The 24-pin, 15-inch XB-2415 and 10-inch XB-2410 printers are identical except for some memory and size restrictions in the smaller model. Each



No other dot-matrix printer has as many internal fonts as the XB-2415.

model prints 240 characters per second in draft elite mode and 80 cps in LQ elite mode.

Although the printers carry 14 fonts, the SLQ mode is available in two fonts, Times Roman and TW-Light. Optional font cards expand font capabilities. The printers produce a high-resolution graphics output with 360 × 360 dots per inch.

The larger XB-2415's buffer stores up to 20 pages; the XB-2410's 27K buffer stores 13 pages.

The printers are compatible with all major personal computers. The XB-2415 retails for \$999; the XB-2410, for \$749. A \$50 color kit is also available.

Star Micronics, 200 Park Ave.,
Suite 3510, New York, NY 10166

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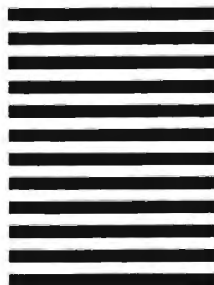


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