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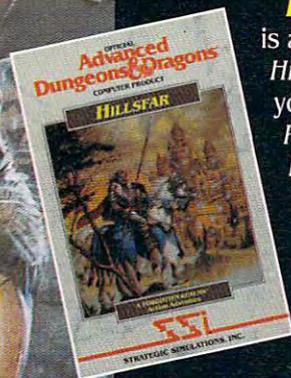


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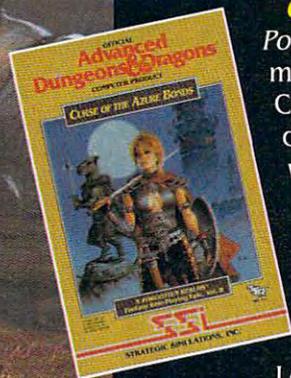
can be enjoyed by itself. However, the beauty of SSI's **FORGOTTEN REALMS**™ epics is that they are intricately woven together. The more you play, the more you'll discover the glorious wonders of this mystical domain.



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COMPUTER

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1989

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The Leading Magazine
of Home, Educational, and
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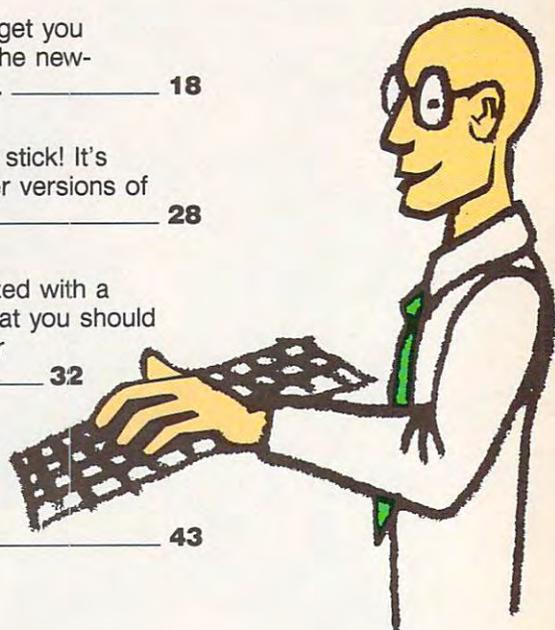
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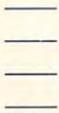
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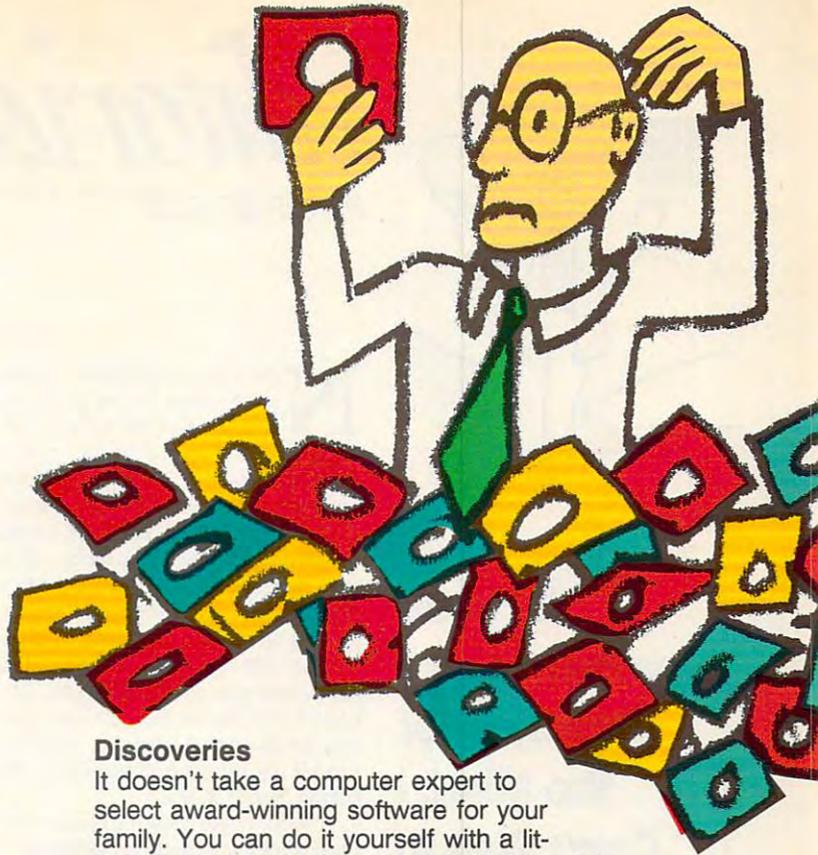
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Take your personal computer, mix it with a healthy dose of original ideas, stir in some hard work, and make your bread at home. | *David D. Thornburg* _____ **13**



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If Home Computers Are Bicycles for the Mind, I Can't Wait to Board the Plane.

editorial license

PETER SCISCO

New voice. New lines. By way of introduction, let me give you a brief history. I've been involved with computers for several years, on several different levels. As a reporter for a computer trade journal, a freelance journalist covering everything from PC software to mainframe communications, and a technical writer documenting IBM minicomputer software applications, I've managed to keep a hand in, and an eye on, what passes as the Information Age. Like you, I have opinions, ideas, and plans. And, like you, I'm excited to be a part of the liveliest computer magazine on the newsstand. So, with that said, I'm taking my first steps as *COMPUTE!*'s editor. Some shoes.

Well, to paraphrase Nancy Sinatra, these shoes are made for walking . . . which I did, donning the editorial leather the third week of May and scooting out for the western skies of sunny San Diego and the annual Software Publishers Association Symposium.

Steve Jobs got things going with some not-so-gentle digs at Microsoft, which he said was "freaking out" over NeXT's cozy relationship with IBM. Seems Jobs' NeXT computer was doing some freaking out of its own, with a couple of system crashes during the demo run. But give the man his due: Jobs handled the situation with aplomb, graciously answering questions from the crowd as his black box (that must really bring back memories) rebooted.

Microsoft's Bill Gates, who took home the SPA's Lifetime Achievement Award (at the age of 33!), cleanly fielded Jobs' criticisms. And he got a few laughs himself when he promised not to run a demo. But he saved the bulk of his remarks for a succinct overview of why some hardware platforms have become phenomenally successful (the IBM PC, the Apple II, the Macintosh) while others have not (like the Amiga and the DEC Rainbow). Software developers, faced with meager resources and 40 different computer platforms, took the obvious shortcut to survivability: It's easier to support 2 platforms than 40.

All of this is history, of course. But what struck me later were the similarities between two ostensibly different perspectives. What Jobs claims for the NeXT (raw power, voice and sound integration, object-oriented programming, consistent user interfaces), Gates also claims for the MS-DOS platform as it evolves to the 80386 chip and incorporates graphic interfaces, laser disc technology, and parallel processing.

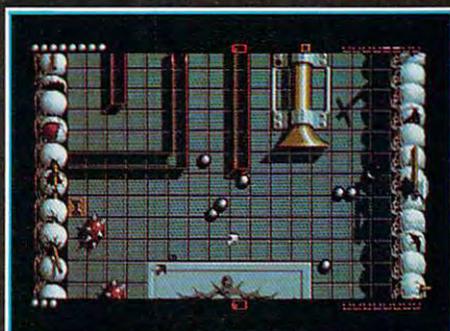
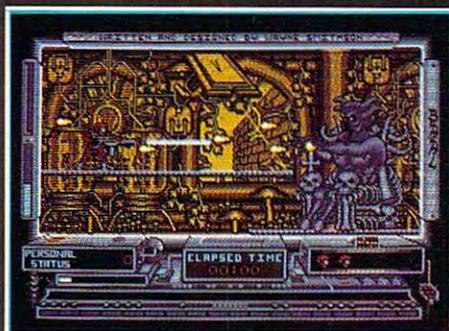
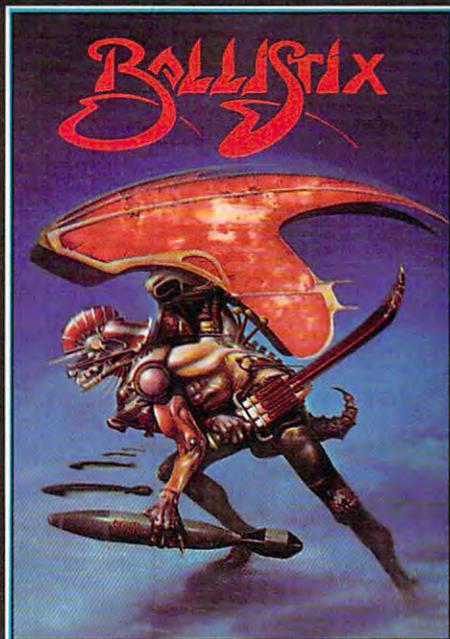
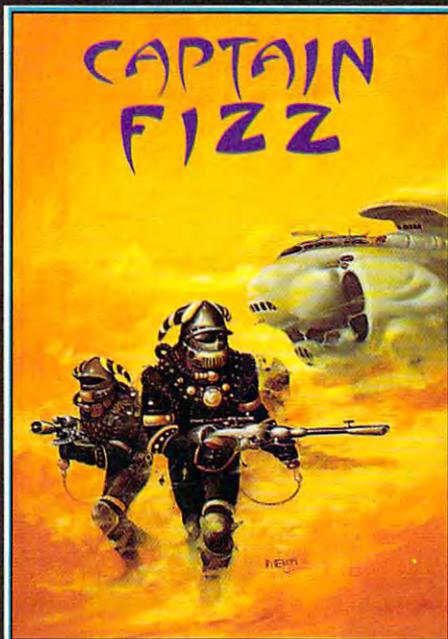
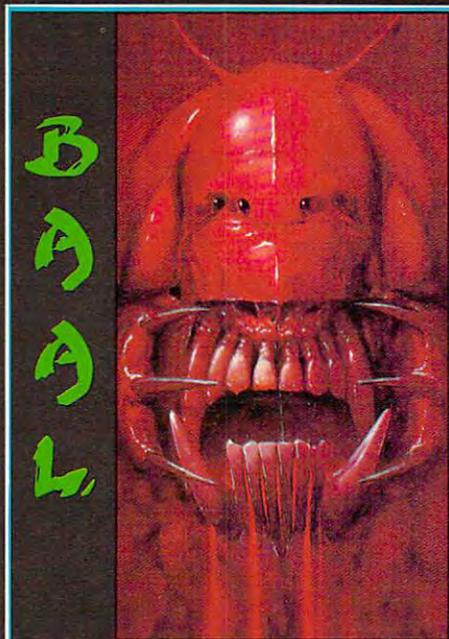
Beneath the posturing (who is the revolutionary and who the old guard?) lies a common vision of personal computing in the 1990s. It's a world in which you can write your own personalized software, with little or no programming experience. It's a world in which electronic mail is enhanced by voice notes. It's a world in which the works of the human imagination—including yours—are immediately accessible as part of personal, hypertextual databases.

What does all that mean to home computer enthusiasts? Well, if you subscribe to the idea of trickle-down technology, what succeeds in the business world eventually finds its way into our living rooms, home offices, and dens. The 80286-based MS-DOS computer and the Macintosh are good examples. Unfortunately, some would argue, trickle-up technology rarely succeeds. Even Gates, who argues that the Amiga is a top-notch piece of engineering, concedes that it seems unlikely to penetrate the business or home market in great numbers here in the United States. (Overseas is a different story. The Amiga enjoys immense popularity in Europe, and many American software companies stand to make a lot of money by developing Amiga products for that market. American Amiga owners can hope that those products make their way here.)

So, from two computer pioneers waving separate banners comes a hint at what computing during the dawn of the twenty-first century will look like. But, like all pioneers, neither Gates nor Jobs can imagine what new frontiers lie ahead. Entertainment systems like Nintendo, Sega, and NEC's TurboGrafx-16 are forcing computers out of the home office and into the living room. Interactive video and audio systems are no longer an engineer's fantasy. VCRs, microwaves, cars, and even telephones have taken the fear out of microchips. A home computer is no longer an exotic plaything, no longer science fiction posing as science fact. The personal computer is, as Jobs said many years ago, a bicycle for the mind.

Think, for a moment, of your grandparents. They were born in a world in which flying was a dream, yet they lived to see a man walk on the dusty surface of the moon and return to Earth. Two of the early pioneers of flight, Wilbur and Orville Wright, built bicycles before constructing the plane that tossed them into history from the sandy dunes at Kitty Hawk.

If home computers are bicycles for the mind, I can't wait to board the plane. □



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As leader of the ultimate battle fighters, your quest is to invade BAAL's domain, fighting off his monstrous demonic beasts to retrieve the War Machine... but... you must kill BAAL in the process.

Can you succeed? There is no option... the alternative is literally 'Hell on Earth'.

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.

Yep, 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 Its 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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news & notes

The Envelope, Please

Black tie, sequins, hermetically sealed envelopes, magic tricks, and nervous prize winners came together in late May for the Software Publishers Association's annual rite of peer recognition: the SPA Excellence in Software Awards.

Emceed by television personality Harry Anderson, nearly 1000 attendees cheered the winners of the prestigious award. Leading the 89 nominated companies were Adobe Systems (*Adobe Illustrator 88*), Spectrum Holobyte (*Tetris*), Symantec (*Q & A*), and Brøderbund (*Carmen Sandiego* and *ShufflePuck Cafe*).

In the entertainment field, *Tetris* broke away with three awards, including Best Entertainment Program. MicroProse took Best Simulation with its *F-19 Stealth Fighter*, while Mediagenic's CD-ROM

version of *The Manhole* walked away with honors for Best New Use of a Computer.

In a more serious vein, *Adobe Illustrator 88* scored big as Best of the Best, which capped its votes as Best Business Application: Graphic or Display Orientation and Best Graphics in a Graphics Product. ("A good place to have good graphics," Anderson quipped.) Symantec won Best Business Application: Numeric or Data Orientation, Best Multifunctional Program, and Best Multi-User Product for its *Q & A*; the company's *GrandView* package also garnered an award.

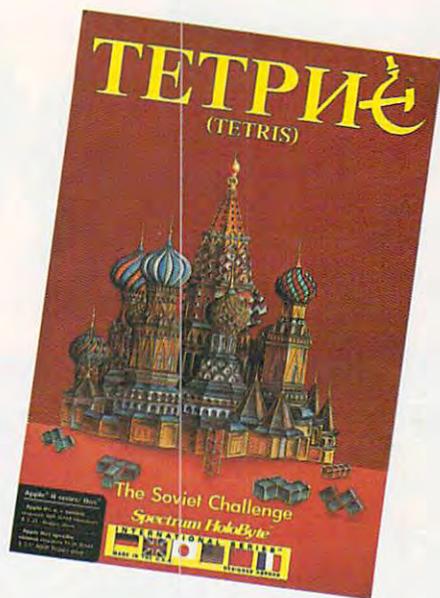
Brøderbund's *Where in Europe Is Carmen Sandiego?* took home the Best Social Studies/Science Program award as well as the Best Home Learning Program

award. The company's *Calculus* program was voted Best Junior High/High School Program.

All in all, 41 categories ended up on the final ballot. New to this year's balloting were Critic's Choice Award,

which went to Lotus's *Agenda* (Business), *Tetris* (Consumer), and MECC's *World GeoGraph* (Education). The Critic's Choice Awards are decided by members of the trade and the general press.

— Peter Scisco



Still Life with Computer

You've seen paintings by Van Gogh. You've seen mobiles by Calder. This summer, go to The Computer Museum in Boston and check out kinetic sculptures and poly-dimensional works by computer artists.

"Computer Art in Context: SIGGRAPH '89 Art Show" opened June 30 and will run through September 5.



© 1988 Barbara Nessim

The difference between computer art and other art is the medium, not the image.

Using a computer, an artist can produce a picture with the same sort of realism that you find in the style of Rembrandt or the same kind of abstraction that you find in the style of Picasso. But the materials are different.

"There are a lot of things about working with a computer that are not inherent with traditional media," said Barbara Nessim, whose picture, "Thoughts on the Moon," is in the show.

"There's the lack of a tactile surface. You don't have to worry about erasing too much," she said.

The exhibit features more than 50 works, including two-dimensional pieces, interactive environments, and animation. For example, Lillian Schwartz will show a computer-controlled

sculpture that constantly changes. She'll also show a mobile that she co-designed with the winner of the 1978 Nobel Prize in physics.

Schwartz started creating computer art in the late 1960s, and she is considered a pioneer in the field. "The computer is essential to me," she said. "It's the only tool I use. It's just an incredible medium. If I just sit in front of it, something else happens."

Admission to The Computer Museum is \$5 for adults, \$4 for students and senior citizens. Museum hours are 10 a.m. to 5 p.m. daily. On Friday evenings, the museum stays open until 9 p.m. and admission is half price.

For more information, call (617) 423-6758.

— Heidi E. H. Aycock

Amiga Isn't Perfect

More and more, it seems, IBM compatibles and the Macintosh are riding down the mainstream of computing, while the Amiga and the Atari ST are drifting down distant tributaries.

WordPerfect Corporation recently announced that it was cutting back Amiga software development because of poor sales. This came as a blow to Amiga enthusiasts who were hoping to see more big-name software for their machines.

Company officials initially halted all new software development for the Amiga. They also cut the seven-person development staff to two people who would be responsible for fixing bugs on released products. The company canceled development of *PlanPerfect*, a spreadsheet that was in beta

tests, and it halted work on future Amiga versions of *WordPerfect* and *Library*.

"Over the existence of the Amiga group, we've lost nearly \$800,000," said Lynn LeBaron, manager of Amiga development at WordPerfect.

Company officials thought that Amiga users wouldn't be satisfied without a graphic user interface. That interface would have been developed in *WordPerfect* 6.0, but sales wouldn't support the programming staff.

When news of the cutbacks leaked, hundreds of Amiga users called the company and left online messages saying they would be satisfied with a program like IBM *WordPerfect* 5.0.

LeBaron said the compa-

AN INTUITION INTERFACE OR THE FUNCTION I

WordPerfect gives you the option of menus or direct commands from the function keys.

With a single click of the mouse you have access to seven pull down menus, many of which are completely accessible from the function keys. The cursor movement and range highlighting is done with the mouse.

The function keys are labeled with a color that is color coded for easy identification and is placed above the function keys.

Black represents the key itself. Green represents the function key. Blue is invoked with the Alt key. Red is invoked with the Ctrl key.

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ny reevaluated its position. As a result, there are three programmers working on a new version of *WordPerfect*. The company doesn't, however, plan to finish *PlanPerfect* or a new version of *Library*.

Amiga users still upset

over the cutback should count their blessings. Poor sales resulted in WordPerfect cutting back all new development for the Atari ST last year, leaving only one programmer in the group to fix bugs.

— Denny Atkin

Here's the Pitch

Don't take the commentator's word for it. When a pitcher puts that special twist on the ball, rely on a computer to show you just how special that twist is.

"I was watching a baseball game that didn't have a whole lot of action, a real pitcher's duel," said aeronautical engineer Mike Harris. "There must've been a reason why the

pitchers were dominating the hitters. So I thought it would be nice to get a better look at the pitches."

So he designed SuperVision, a computer system that tracks the trajectory of the pitch. To show how much the pitch moves, a reference ball is shown beside the real ball. The reference ball represents a pitch thrown at the same speed

and in the same direction but affected only by gravity. The difference between the two throws determines the amount of *stuff* on the pitch. The system also displays the ball's position in the strike zone.

Could computers eventually replace umpires?

"We don't see that happening," Harris said. "The umpires do much more than

call balls and strikes, and they do a darn good job."

Harris added, "If anything, our system increases your respect for what umpires do."

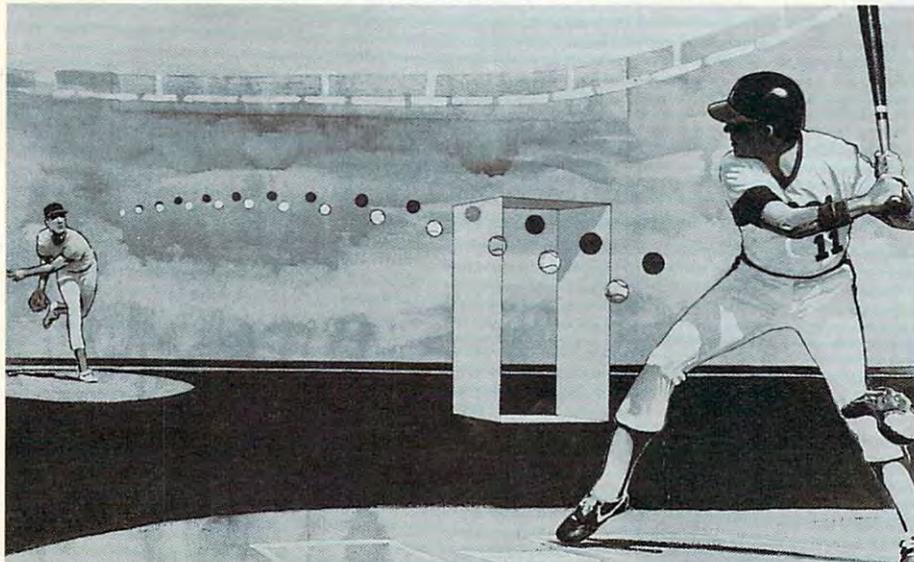
SuperVision uses two to four video cameras and two IBM PCs. The cameras record the flight of the ball while one PC performs digital image processing as the other translates the image into a graphical representation of the pitch. The graphics can then be superimposed over a video replay of the pitch.

ESPN has already used SuperVision for college baseball broadcasts, and Harris's company has approached the networks televising Major League Baseball.

From a baseball team's perspective, SuperVision could be a training tool.

SuperVision's capabilities are not limited to baseball. Harris has thought of other possible applications, especially in the sports world. He is already considering uses for golf and tennis.

— Mickey McLean >



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news & notes

Print Shop Redux

Brøderbund has given new life to the venerable *Print Shop* by releasing a new version for the IBM PC and compatibles and by announcing plans for a new Apple II version.

On the MS-DOS side, *The New Print Shop* will work with three new graphics libraries: *Sampler Edition*, *Party Edition*, and *School and Business Edition*. Brøderbund has discontinued the original *Print Shop*, *Print Shop Companion*, *Graphics Library 1.2*, and *Holiday Edition*.

Spokesperson Jenay Cottrell said Brøderbund released the new edition in response to customer and dealer feedback collected over *Print Shop's* five-year life. Although the company didn't conduct any formal research, it did gather information from letters, retailers (through its sales staff), and Brøderbund employees who use the package.

Cottrell agreed that *Print Shop* users had probably become more sophisticated. That

sophistication, coupled with a rise in hardware capabilities, let the company add features to the package that couldn't be added before. "With a package like this, your imagination is the limit," she said.

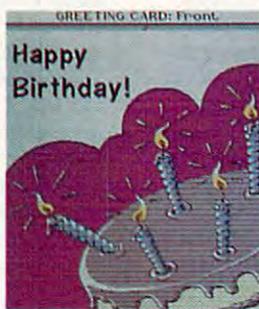
Improvements to *Print Shop* include EGA support, a more flexible interface, and multiple fonts and graphics on a page. The IBM version, which should be available by

the middle of August, will list for \$59.95. The Apple II version, scheduled for a fall release, will sell for \$49.95.

There are also school editions planned for both versions. The companion graphics libraries will each sell for

\$34.95 (IBM) and \$24.95 (Apple). If you order the new version within 90 days of buying the original *Print Shop*, you can upgrade for free. Otherwise, upgrading to the new package will set you back \$20.00. To order, you can call Brøderbund at (800) 999-3256.

— Peter Scisco



The Great Computerized Road

Considering a new car purchase, but don't feel like driving all over town and dealing with salesperson after salesperson just to check out the new models? No problem. Just sit down at your personal computer and pop in Buick's *Dimensions* disk.

Available for Macintosh and IBM PC and compatible computers with at least 512K of memory, potential car buyers can use *Dimensions* to examine the entire Buick product line—without ever leaving home.

Narrow your choice of models after you've compared appearance, features, and price. If you still can't make up

your mind, try out some of the options simulated in the program, including the touchscreen Electronic Control Center and even the remote-controlled door locks.

After you've made your decision, calculate the damage to your wallet by using the program's built-in pricing spreadsheet. You can even print a window sticker to take with you to the car lot.

To test drive the free *Dimensions* disk, write to Buick Motor Division, c/o Tuar, P.O. Box 354, Flint, Michigan 48501. Specify Macintosh, IBM 3 1/2, or IBM 5 1/4-inch disks.

— Denny Atkin

Now from NRI comes the first course of its kind . . . anywhere!

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to take advantage of today's opportunities in electronic music technology.

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No Hablo Machine Language

"I would like to go to the airport," you tell the taxi driver. He looks confused, until the computer in your hand repeats the phrase in fluent Castilian Spanish.

Once the province of science fiction, instant translation using a computer is now a reality. The Voice Computer, from Advanced Products and Technology, is a hand-held device that takes a word in one language and repeats it in another.

Using voice recognition, synthesized speech, and artificial intelligence techniques, the Voice Computer recognizes and translates 35,000 spoken phrases. The phrases were selected with travelers in mind.

Language translation is only one use for the Voice Computer, said Jack Russell, marketing manager for APT. The company plans to release a business scheduler cartridge with which you manage a cal-

endar, expense register, and Rolodex simply by talking to the computer. The computer talks back to you, confirming your entries. APT is also negotiating with major software companies to add voice-control capability to their applications.

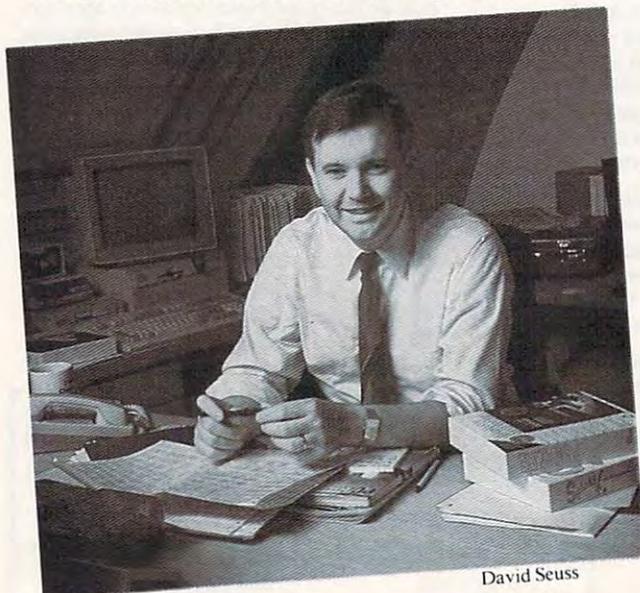
The three-pound device comes with an internal microphone and speaker; a 160 × 128 pixel, supertwist LCD screen; a serial port; a rechargeable battery; and two cartridge ports. A Spanish translation cartridge will be available when the computer is shipped. French and Japanese cartridges will follow.

The Voice Computer retails for \$2,000, and each language cartridge costs \$300. For more information, contact Advanced Products & Technologies, 15444 NE 95th Street, Redmond, Washington 98052; (206) 883-8297.

— Denny Atkin



Is That Spin-Board or Spring-aker?



David Seuss

Two of the leaders in low-cost productivity software have joined forces. In early May, Spinnaker Software and

Springboard Software announced plans to merge, and they expect to make it official by the end of June.

Springboard has published many home computer products, including *The Newsroom* and *Springboard Publisher*. Spinnaker is best known for its Better Working series of productivity software. A new, beefed-up version of *Better Working Eight-in-One* will be available during the summer.

"What consumers are going to get out of the merger includes an increase in the number of products being produced by Springboard," said David Seuss, CEO of Spinnaker Software. "What Springboard has lacked is a stable corporate platform from which to exercise its creativity and genius."

For the two companies, consolidation offers many advantages. Spinnaker can enter the desktop publishing market by virtue of Springboard's po-

sition in that field. Also, the merged company can focus on the MS-DOS and Macintosh platforms without diverting resources away from one or the other market.

The new company will be called Spinnaker Software, and Springboard will become the Springboard Publishing Group, a division of Spinnaker. John Paulson, Springboard's vice chairman, will head the new division. Spinnaker, which had been a private company, will go public by merging with Springboard.

Like the old Spinnaker and Springboard, the new Spinnaker Software will focus on the home-office and small-business market. The company will rely on Springboard's close relationship with the education market as well.

— Heidi E. H. Aycock

The Check's in the Computer

Many people *plan* to use their computers to balance their checkbooks, but they find it's more trouble than it's worth.

Try again. Recent agreements between CheckFree and the publishers of three personal finance programs make electronic banking even easier than traditional methods.

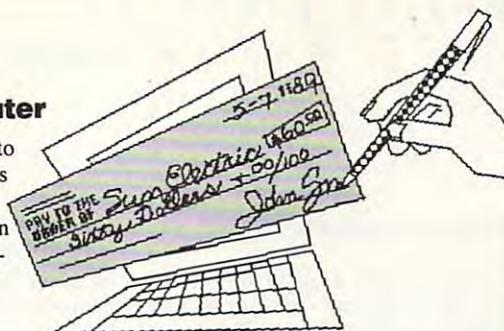
Look for online check-payment capability in Intuit's *Quicken* and two of MECA Ventures' packages, *Andrew Tobias' Managing Your Money* and *CheckWrite Plus*. No more hassling with tractor-fed checks or copying information from your computer screen into your checkbook—the programs use CheckFree to electronically transfer funds from your checking account.

"In addition to managing their finances, consumers will now be able to pay all their bills without having to bother with writing or printing checks or stuffing and stamping envelopes," said Pete Knight, President of CheckFree.

CheckFree uses the Federal Reserve to transfer funds, so it should work with most bank accounts. You pay \$9 per month for 20 checks.

"We added CheckFree to give users even more versatility," said Mary Fleming, a MECA spokeswoman. "This will provide users with a way to manage all their finances from their computer."

All you need is a modem-equipped per-



sonal computer and one of these programs that support the service. In addition to the Intuit and MECA programs, CheckFree also offers its own financial-management software.

MECA said the version of *Andrew Tobias' Managing Your Money* and *CheckWrite Plus* supporting CheckFree will be available in early fall. Intuit has not announced when the new version of *Quicken* will be available. If you use these programs, contact the companies for upgrade information.

Quicken retails for \$49.95 and is available from Intuit, 540 University Avenue, Palo Alto, California 94301; (415) 322-0573. *Andrew Tobias' Managing Your Money* (\$219.98 for PC and compatibles; \$149.95 for Apple II) and *CheckWrite Plus* (\$49.95) are available from MECA Ventures, 355 Riverside Avenue, Westport, Connecticut 06880; (203) 226-2400.

For more information on CheckFree, contact CheckFree, 720 Greencrest Drive, Westerville, Ohio 43081; (614) 898-6000.

— Denny Atkin

Find It Online

Tired of wading through hundreds of newspaper ads every time you want to buy something? Next time, just sit down at your computer and log on to The People's Electronic Exchange.

You'll find online classified ads for real estate, computer equipment, cars, and matchmaking.

"The service has an indexing capability which allows you to conduct a structured search for precisely what you're looking for," said Karse Simon, president of parent company U.S. Information Services.

If you were moving and needed a new home, for example, you could search for a three-bedroom house priced under \$150,000 in your new hometown. You could narrow the search further by specifying ranch-style, swimming pool, or other characteristics.

For \$5 per call plus 50 cents per minute, you can search for your dream car or place ads selling your old clunker. Besides the current offerings, Simon said the service will soon add the Job Registry and the National Breeder's Registry.

If you want more information, call the U.S. Information Services at its voice num-

ber, (201) 685-1900.

Now that you've done business, try having fun: Check out CompuServe's new Challenge Board. You'll find a directory of people who want to play modem-linked games. The board supports four games: Microsoft's *Flight Simulator III*, Electronic Arts' *Modem Wars*, Spectrum Holobyte's *Falcon*, and Interstel's *Empire*. Electronic Arts' *688 Attack Sub* will be added soon.

"Members can use Challenge Board to find modem-gamers in their towns to avoid the long-distance charges incurred when playing someone in another city or state," said Randall Klein, CompuServe's games product manager.

When you throw down the gauntlet at someone's electronic feet, CompuServe automatically sends a challenge to the prospective opponent's online mailbox. If a player accepts your challenge, you exchange phone numbers and arrange a time to do battle.

For more information on this and other CompuServe services, call (800) 848-8199, or (614) 457-0802 in Ohio.

— Denny Atkin □

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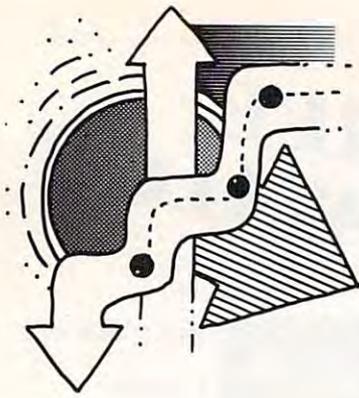
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Games for Girls: Fun Without Bloodshed

gameplay

ORSON SCOTT CARD

I'm going to review a game that doesn't exist.

We held my son's 11th birthday party at the local roller rink, but Geoffrey and his friends couldn't keep their eyes off the videogames.

So, I poured quarters into their hands and off they went. My 8-year-old daughter, though, wasn't interested. "Those games are all so boring," said Emily. "Why don't they have any games for girls?"

"What kind of game do you want?"

She wasn't much help, not at first. "A fun one," she said.

Then I remembered that for the last six months or so she's been binging on several book series for kids her age, most recently, *The Babysitters Club*, written by Ann M. Martin and published by Scholastic/Apple.

And Emily's not alone. These books are selling hundreds of thousands of copies to girls all over America. The premise of the books is highly social: Six girls, between 11 and 13 years old, form the *Babysitters Club* so that parents can call just one phone number to reach a lot of babysitters. So, the club is a business, but it's also a source of friendship and adventure.

Adventure, but not violence. The girls take care of little children, keep them safe; and if they do their jobs well, the girls rise within the club to higher and higher offices. So, the stories have a competitive aspect—but the characters *never* perpetrate violence.

So, I said, "What about a game based on the *Babysitters Club*?"

Immediately Emily's face brightened. Now I was talking about a game based on stories that she really cared about. She was full of ideas. Every time she skated around the floor, she'd come back and tell us a new one.

Here are some of the best:

All games start in Claudia Kishi's room because she has her own phone. A call comes in—it might be the Pike family, with eight kids, or it might be the Newtons, with a very well-behaved little boy, Jamie, and a baby, Lucy. At first, you should probably take the easier Newton job.

At the Newton's, the parents give you a list of instructions, which you can recall to screen anytime. When the parents leave, you must follow those instructions: Keep the kids safe, busy, and quiet until bedtime, and then put them to bed.

Not all the kids are as nice as Jamie Newton. Every now and then you'll have to sit with Jackie Rodowsky (if you read "Cal-

vin & Hobbes," you know what he's like). He's the kid who steals your homework or plugs up the toilet or climbs out the window or spells out your name in grape juice on the living room carpet. I can't wait to see the graphics on the one where the Rodowsky kid slides down the bannister and takes a flying leap into a table with a vase.

Right when everything is going wrong, you suddenly cut away to a scene in which the parents are sitting in a restaurant, and the mom says to the dad, "I'm worried about the kids. I'm going to call." Or—horror of horrors—"I don't feel well. Let's go home now."

If the Newtons come home and find you haven't done well, you'll get paid less and the others in the club will know you need more training.

Of course, the parents will be fair, taking into account how rotten their kid is and comparing you to other babysitters. If you're completely irresponsible, you're out of the club. If you have everything shipshape, however, you'll get a bonus, and you might rise to a higher rank in the club. If you handle a crisis—a fire, a child drinks detergent, a stranger comes to the door—you gain even more status. Then, you're ready to take on even tougher babysitting challenges.

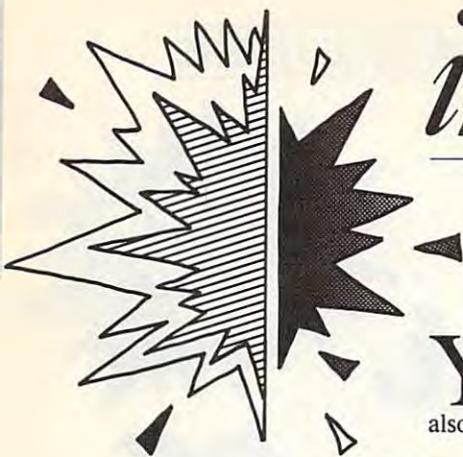
For help, you *can* call one of the other sitters. If one of them comes over, you have to split the babysitting money with her, and if she's still there when the parents come home, you gain no rank in the club and the other girl gets all the money.

Eventually, you can be president of the *Babysitters Club*, not to mention that you can accumulate a nice pile of cash in the process.

Don't doubt for a second that this is a game that girls would respond to. There's no violence and only a little physical danger now and then. But there's a lot of comedy and a strong sense of responsibility. Since the *Babysitters Club* books are a hit series, we know that girls love these stories. They'd be just as delighted to act them out in a videogame as boys are to act out their Rambo-esque fantasies.

And, just in case, the game designers might even include a couple of boy characters in the option screen at the beginning. There are actually male children in this world who would have more fun playing in a domestic comedy than in a holocaust.

So there it is—a rave review for the best game for girls ever designed. Too bad it doesn't exist. □



impact

DAVID D. THORNBURG

With a Personal Computer and Some Original Thinking, You Could Be Rolling in the Dough

Your home computer can easily track your personal finances, but that machine underneath your fingertips can also provide you with a source of income.

Of course, some business activities require special training or certification. Playing *Life & Death* doesn't make you a surgeon. In all cases, it's important to check whether you need a business license in your local community before starting a company. You may also have to register with the county and state to secure a resale permit; and it may be necessary to get a Taxpayer ID from both the federal and state government before starting your business. Fortunately, these tasks take only a few minutes.

Once you've finished the official paperwork, you may want to generate some paperwork of your own. Most high-quality personal computers, equipped with the right software, support the creation of elegant documents such as wedding announcements, posters, flyers, and greeting cards. If you have a laser printer (or have access to one), there are a lot of business opportunities you can explore. Use your sense of style, blended with an understanding of page layout, and your computer will be earning its keep right from your desk.

For example, if your neighbors are planning a garage sale, you might offer them a package consisting of a huge banner announcing the sale and 100 flyers for advertising. To save time and money, and to reduce the wear on your printer, you can create one master flyer, and then take it to your local instant press and have copies printed.

Or how about creating customized greeting cards for your friends and neighbors? As with the flyers, you can have the copies printed professionally. Lay out the card as four equal-size panels; then have the design reproduced on $8\frac{1}{2} \times 11$ inch paper. Fold twice, and your card is done. Your professional service, coupled with a short lead time, can bring a lot of business to your computer.

Here's some more food for thought. Surprise a restaurant owner with a computer-generated rendition of the house menu. If the menu changes daily, no problem. Quick turnaround is what you sell.

Find local groups that need someone to maintain their membership lists and to generate labels for mailings. Providing that service is a good way to generate cash. Once you've created the initial database, maintaining the list is fairly easy.

If you possess a flair for writing, contact local small businesses to see if they need such a service. Your ability to provide their printer with camera-ready copy is definitely an asset. You'll want to charge on a time-and-materials basis because most of your work will consist of revisions.

Another avenue you might explore is a will-writing service. You can use a commercial software program to help you create wills for clients, or you could create them yourself with a word processor.

Similar to the greeting-card idea are personalized fairy tales for children. Using a large typeface, you can create easy-to-read books that include the names of the child as well as his or her friends, pets, and relatives.

If words aren't your forte, perhaps facts and figures are. There are plenty of opportunities in the personal finance field for making money with your computer. Many homeowners have little idea how they're doing financially. The end of the month often surprises them with unexpected bills and little cash to cover.

With the aid of your home computer, you could create a personal bookkeeping service. Depending on what software package you use, you could even offer check-writing services for monthly bills. Track your clients' income and expenditures for several months and then offer to teach them how to manage their cash flow.

As you become more proficient at handling money, you might consider offering your services to small companies that are organized as sole proprietorship. Your county clerk's office probably has a list of such companies in your area. From a client's Schedule C (pulled from the federal tax form), you can create a simple recordkeeping tool. Couple that with the client's ledger, and you can present to that business a clear picture of how well it's operating. As an added benefit, you can organize information for the client's tax returns and use that information to earn an added profit.

If you've got the expertise, you could even set up a tax service. Many tax programs are available, and there are thousands of people who would love to have someone else help with their returns.

These are only a few suggestions that can help you make money with your personal computer. Next month I'll explore this topic further, with an eye toward making money with graphics and music. In the meantime, you can probably start your own money-making plans. □

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Letters

Family Trees

Please send me the names of any good genealogy or family tree programs for the Macintosh. I'd like to see if anyone out there knows of these programs. Thanks very much.

Ron Madaras
San Leandro, CA

Family trees seem to grow well in Macintosh soil, so there's a veritable forest of choices. For a HyperCard genealogy program, try HyperFamily-Tree from Lesiter Productions, 15 Hill Boulevard, Mechanicsburg, Pennsylvania 17055; (717) 697-1378. Check the classified ads in any Macintosh-specific magazine for other possibilities. Also, if you have a modem, you can probably find some public domain or shareware genealogy programs on a telecommunications service.

That Darn Cat

I recently bought *Street Cats* for my Amiga 2000. The game booted and ran a few times, with some difficulties, then finally refused to run. The dealer tried my copy and another copy on an Amiga 2000 in the store. Same problem—it didn't run or it crashed shortly after takeoff. I have since checked with other dealers and the story is the same—*Street Cats* runs on the Amiga 500 but not on the 2000.

That's a real pity because the game has excellent play value and excellent graphics, as well as a nonviolent plot. It looked like it was a very worthwhile purchase for our family, both for our 13-year-old and our 9-year-old. But we had to return the game. We'd still like to get *Street Cats* if and when it runs on the Amiga 2000.

Tom Schwarzkopf
Nepean, Ont., Canada

You're right. Street Cats and the Amiga 2000 don't get along, and Epyx has no plans to revise the program. So, the company has extended this offer to anyone who has bought Street Cats for an Amiga 2000: Send Epyx your copy of the game and Epyx will exchange it for another game of your choice.

FORTRAN Still Lives

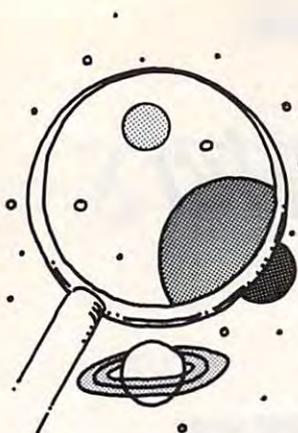
As a programmer for a small contractor for NASA, I have to comment on what you said about FORTRAN in "Learn How to Program" (May 1989). I have been using FORTRAN as my main programming language for over a decade, and I do not think that it is dead, as this article implied.

You said, "And don't expect employers to knock down your door when they find out you speak FORTRAN." That might be true, but if you are applying for a scientific or engineering position, do not expect employers to knock on your door if you do not speak FORTRAN. On the computer system that I work with almost exclusively, a DEC VAX 11/785, there are only two compilers, PASCAL and FORTRAN. Most of the scientific computers here at NASA have FORTRAN and another language. If you do not speak FORTRAN, you might have problems developing software in the technical world.

I wish a national magazine like yours would have expanded on the uses of the major programming languages, including FORTRAN and COBOL, instead of trying to make jokes about them. In that way, if students were going into a science or engineering field, they would know what the language looks like and get a beginner's understanding of the language, not a fear of it. Including short examples of a program written in each language would have been extremely informative and would have given a flavor of each.

Donald Richardson
Hampton, VA

You're right. FORTRAN is a good language to know if you're going into the scientific and engineering fields, as our article says. But relegating a computer language to the world of science and engineering doesn't imply that it's dead. It only means that people learning to program at home may want to consider their options when they choose which language to study. If you want to write a game or customize a database, FORTRAN might not be your best choice.



discoveries

DAVID STANTON

How to Give Your Family's Software of the Year Awards

Last spring, while the brown lawns turned green again under the showers of April, while the trees began to bud and the chickadees and hummingbirds returned to our yards, our hearts turned to love. But our computer magazines turned to the "Best of 19--" awards.

Every year, readers eagerly await each magazine's annual list. For those who need good software, these articles provide invaluable guidance. Few of us can afford to buy bad products, especially at \$50 per package, and none of us has enough free hours to test everything.

Usually the magazines' selections are made by panels of editors, writers, educators, business people, programmers, software publishers, and others who know computers and use them extensively.

The award winners are inevitably excellent programs, but that doesn't necessarily mean they'll be a hit at your house. The experts, after all, don't know you or your family. On knowing your family, you are the expert, and, with a little effort, you can become the expert on software for your family. Here are a few suggestions for selecting educational programs that will likely spend more time in your disk drive than on your shelf.

First, look for programs that deliver large doses of entertainment. Home computing must compete for attention with television, baseball, Nintendo, and just plain loafing. Boring software will never win the contest, no matter how much you want to help your children improve their math skills or raise their SAT scores or memorize states and capitals. Most people won't voluntarily use software that doesn't interest them, and forcing a child to do so always proves counterproductive.

Whenever possible, choose versatile products that the whole family can use and enjoy. One good word processor or a simple desktop publisher can satisfy your grade-schooler as well as your grandmother. One outstanding paint program can provide unlimited fun for preschoolers and semi-professional artists alike. Junior can keep track of his coin collection with the same database management system that Mom uses to store recipes. If everyone in your family uses the same set of applications, you'll save money, reduce learning time, and encourage cooperation.

Read software reviews carefully. *Too slow*, commented one reviewer, speaking of a long-awaited desktop publishing program intended primarily for schools. The words

were italicized for emphasis.

As it happened, our school had previewed that same package. The concept was great. The features list was impressive. The advertising was enticing—even honest, since it didn't promise speed. However, the program operated so slowly that it had no practical use. The name of the program doesn't matter since the company's new version runs faster. The point here is that people who carefully read that review saved themselves hours of tedium and well over \$100. Enough said?

When choosing software for young children, look for something they can handle without extensive adult supervision.

Also, consider programs that can be used either alone or with two or three friends. Kids like to work together. They want someone to notice their successes, and they need someone to provide occasional help and encouragement.

Buy from a publisher whose products you know and trust. One of my favorites is Brøderbund (17 Paul Drive, San Rafael, California 94903-2101; 415-492-3200). Everyone knows *The Print Shop* and the Carmen Sandiego series. *SimCity*, a recent release, is an intriguing political-science simulation. Too bad Brøderbund continues to charge extra for backups and still copy-protects its products.

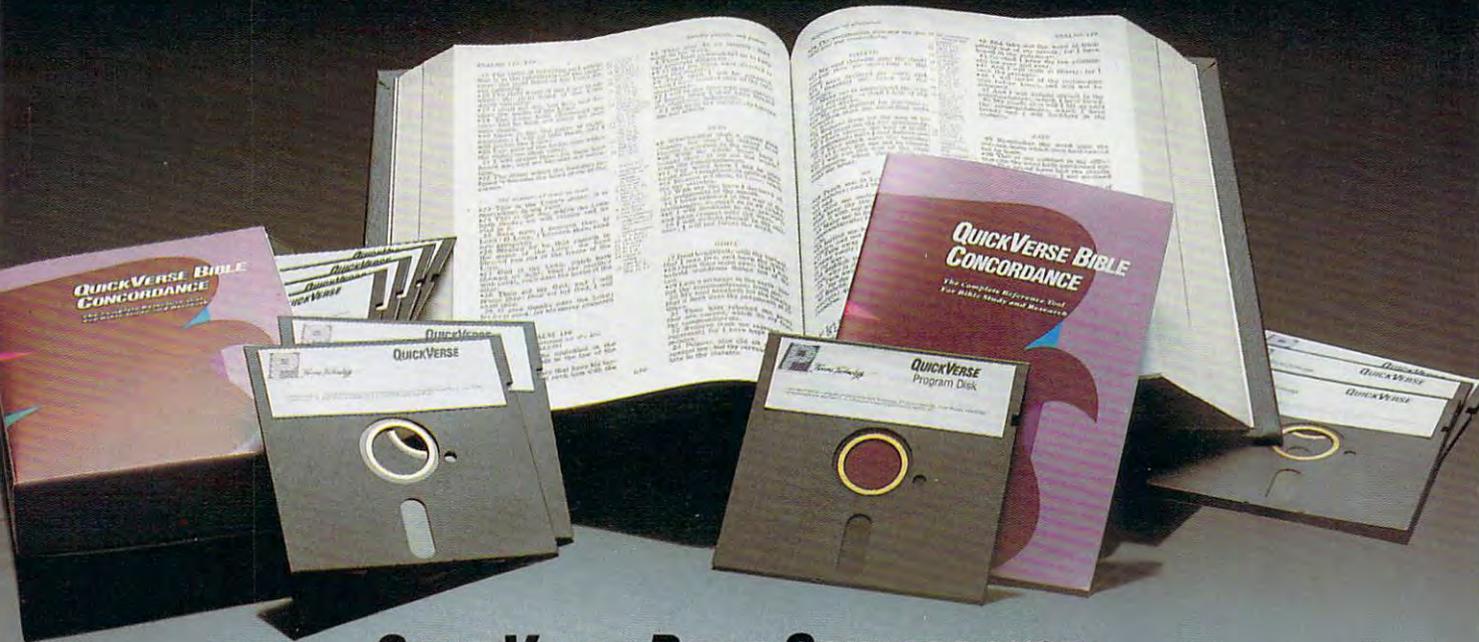
One company that treats its customers right is Sunburst Communications (39 Washington Avenue, Pleasantville, New York 10570; 800-431-1934). It includes a backup in every package, and it offers free updates. Sunburst publishes a broad range of titles and supports most popular computers.

MECC (3490 Lexington Avenue North, St. Paul, Minnesota 55126; 800-228-3504; 800-782-0032 in Minnesota) has been producing educational software longer than most schools have owned computers. Like Sunburst, MECC's packages work equally as well at home as in school. Past columns have mentioned software from Davidson (3135 Kashiwa Street, Torrance, California 90505; 800-556-6141) and Scholastic (2931 East McCarty Street, Jefferson City, Missouri 65102; 800-541-5513).

It doesn't take a computer expert to select award-winning, disk-drive-spinning educational software for your family. All it takes is a little time and thought. □

David Stanton can be contacted via CompuServe (72407,102) or by mail at P.O. Box 494, Bolivar, New York 14715.

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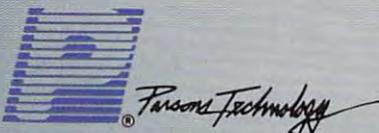


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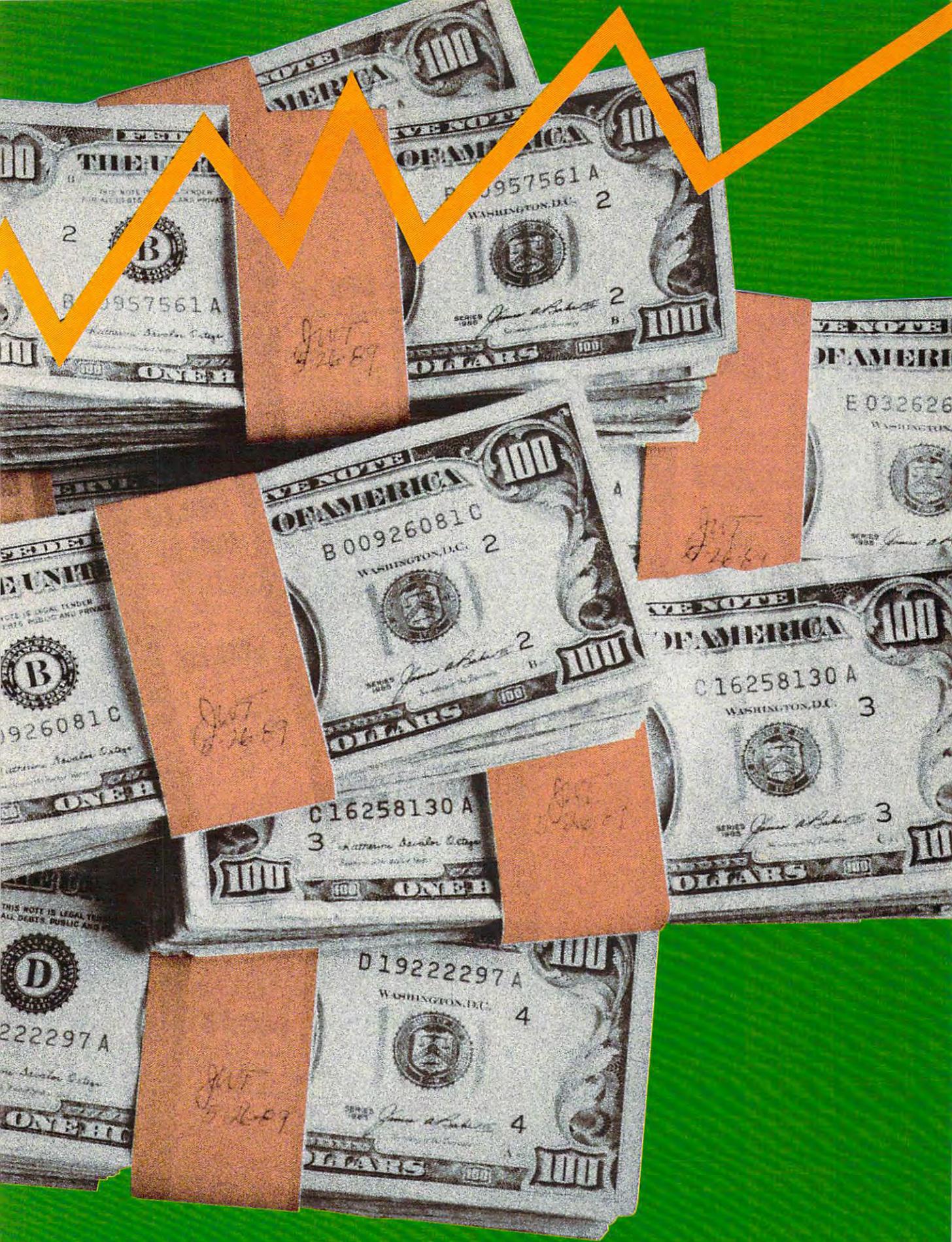
The Buck Starts Here

We all want it. The big bucks, the pot of gold. So make it the new-fashioned way: at home with your computer.

The most liberating benefit the personal computer has brought to us is the freedom to earn our keep without punching the clock. Jobs like consultant, tax preparer, and word processor have replaced line foreman, factory hand, and stevedore. In numbers unequalled since the dawn of the Industrial Revolution, workers are going home to mind the store.

If that's your dream—to work for yourself—then take stock of your skills and find your place. But before you make the jump from that 9-to-5 grind, make sure you have the tools you need to fly. If your home computer spends most of its life at the end of a joystick or crunching numbers for the boss, then give it your own agenda and seize the day. Open up a worldwide mail-order business or stick close to home and run a computer-repair service. Whatever you decide, investigate the possibilities, weigh the opportunities, and plan for the necessities. Then switch on your computer and take the money and run.





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Computer Consultant

Your neighbors demand to know which computer they should buy. The late-night phone call is from a friend who can't get his word processor to print subscribed footnotes in Old English Italic. The boss drafts you to set up the new office computer—on your own time.

If your computer knowledge has made you a slave to anybody who knows the difference between silicon and Silly Putty, why not put that skill to work and make a few extra bucks? There are ample opportunities for part-time consultants who assist with purchase decisions, hardware and software installation, and computer training. All you need is a plan, your knowledge of computers, and a little spare time.

First, you'll need clients. Don't rely on finding any by accident. Advertising your services on employee or university bulletin boards can be effective, but the best way to build a clientele is to contact local computer stores and work out an arrangement. Point out that your low-cost setup and training for home and small-business customers could close some extra sales. Although many stores already offer setup and training, these services are often geared toward businesses. A computer store doesn't have the time or staff to teach every customer how to use MS-DOS or *WordPerfect*. Once you've sold the store on the idea, have some business cards printed and leave them for salespeople to give out with each system sold.

Also important in establishing a client base is knowing how to approach your customers. Always investigate their specific needs; then write a contract spelling out exactly what services you will perform, establishing your rate for the services, and estimating how much time you'll spend on the project. The contract can eliminate many possible conflicts.

To set rates, call area computer stores and training schools to find out what they're charging. If stores charge \$25 per hour for training, you can charge \$15 per hour and probably average \$45–\$200 per client. Your low rates will make your services attractive, and you'll still profit because you don't have much overhead. If you get referrals from a computer store, of course, you may have to give it a percentage of your fees. You can also alter rates depending upon the customer (give an individual a small discount over your business rate, for example). But be careful—if Client A finds out Client B got a better deal, you could lose referrals.

Consulting work consists largely of two parts: system setup and training. Setup is straightforward: connecting system components and expansion cards and installing software. Before any setup, always look over a list of the components in your client's system and make sure it's complete. A customer who buys an impressive 80286 system complete with VGA monitor, high-speed letter-quality printer, 2400-baud modem, and top-of-the-line word processing software won't be too happy if he or she has forgotten to buy a copy of MS-DOS.

Training is tougher than installing. You'll encounter people with a variety of levels of expertise, and the time you'll need to spend training will vary depending on the customer's experience.

There are some basic rules, however. Don't presume that the student knows things that you consider basic. For example, don't assume that your student knows to hit the Return key at the end of each command entered. You should also develop a lesson plan for each session and have your students practice on their own time. The tutorial sections in software manuals work well for practice assignments. You can also use beginner's texts for specific software packages (look in a local bookstore). Purchase copies for yourself and your students, and include the cost in your training fees. This also leaves your students with a handy reference when the training is over.

After you've completed the job—whether setup, training, or both—leave some business cards with your clients and ask them to mention you to friends and associates. You'll be surprised by how many referrals you'll get this way. Before you know it, you'll be so busy you'll have to turn away jobs.

— Denny Atkin



Words for Money

For many people, turning ideas into words is as difficult as turning lead into gold. With a little help from a computer, though, you could be the local literary alchemist.

Just like Jane Hairston Romani. She's a freelance writer and business communications consultant who wouldn't trade her home business for any other job. She prepares press campaigns for corporations, writes articles, and lays out publications.

To start and run a successful business like hers, you need two things—a good computer and a good reputation.

A good computer is fast and forgiving. Adjustments are simple; mistakes are easy to fix. "The computer can do stuff a lot faster and better in a lot of ways—more precise, which, when you're billing clients per hour, can save a lot of money," says Romani, who lives in Carrboro, North Carolina.

A good reputation gets you jobs. Romani started freelancing while working full time for the University of North Carolina. "My very first pieces I didn't get paid for," she said. "I did anything to get a clip and start a portfolio. You need to get your name out."

Now that she's established her business, Romani charges between \$35 and \$45 per hour, depending on how much research and original writing she does. For straight

layout—integrating text and graphics, plus simple copy editing—she charges the lower rate. If you're interested in establishing your own word processing service, you'll have to check out the rates in your area. As a rule of thumb, typing manuscripts fetches \$12 per hour or \$3 per double-spaced page. Turning jumbled handwritten notes into deft prose often brings more.

Romani has equipped her office with a Macintosh Plus and a Jasmine 50-megabyte hard drive. She also spent nearly \$5,000 on a laser printer. Her LaserWriter IINT, though expensive, helps define Romani's professional image. "If you're serious about your business, you have to invest in good equipment," she says. "If you send out everything laser printed, it just looks better. People think *This looks sharp. She must be sharp.*"

For software, Romani uses *Microsoft Word*, *PageMaker*, *Excel*, and *SuperPaint*. Although *Excel* is an excellent spreadsheet program, Romani uses it most often to create accurate charts and graphs. Because these packages are available on PCs and Macintoshes, Romani's files are compatible with both worlds.

Finances are a big problem for any home business, and desktop publishing is no exception. Romani categorizes most of her business expenses as postage, long-distance calls, and supplies. She also pays someone to help with her taxes. "The first thing I'd say to someone starting out is hire an accountant," she says.

When you work at home, you quickly get familiar with terms like *cash flow* and *debt burden*. "My accountant told me you lose 47 percent of everything you make," Romani says. That figure accounts for taxes, the social security contributions that double when you work for yourself, and overhead (usually low for home offices, but still a factor). Your expenses grow along with your business. You'll find some clients are slow to pay, and some don't pay at all. That's a problem you need to prepare for. "Sometimes you have a cash-flow problem, but I've never gone hungry," she said.

Beat the cash-flow problem by starting out slowly. There's plenty of demand for straight word processing and résumé design. Instead of an expensive laser printer, you could settle for a daisywheel (for text only), a 24-pin dot-matrix, or a Hewlett-Packard DeskJet (the latter two will let you print graphics). You might consider printing drafts on a nine-pin dot-matrix printer and then taking your disk to a laser-printing service for the final product. Check the yellow pages for copy centers and printers that provide this option. Often it's expensive (about 75 cents per page), but if you can figure the cost into your fee, you'll do all right.

Even with simpler projects, you'll need a powerful word processor like *Microsoft Word*, *XyWrite*, or *WordPerfect*. The automated features in these programs are as vital to a small, efficient word processing service as they are to a full-blown communications business like Romani's.

Romani's advice to freelancers: "The thing is market-

ing. You just have to market yourself all the time. Milk your contacts for all they're worth. All you need are names. All you need to say is, 'Joe Smith gave me your name,' and that will get you in the door."

— Heidi E. H. Aycock



Taxes

The woes of the confused, frightened taxpayer provide a fertile market for the savvy entrepreneur. And your computer is the ideal tool for setting up shop. Computers (along with the appropriate software) make wonderful tax-prep associates: They love to crunch numbers, file information without complaint, and wait patiently through the inevitable early-going stumblings. Promoting your machine from gaming pal to business partner also allows it to earn its keep, garnering you added deductions.

While there's no required certification for setting up your own tax service, it does require planning and preparation. Those beleaguered taxpayers are counting on your know-how to save them money—but not at the cost of an IRS audit. As a paid preparer, you're only in violation of the law when you knowingly put down false numbers on a return. You aren't liable for any mathematical errors or for mistakes in interpreting the law. And you aren't responsible for any fees or interest penalties charged to your client (most professional firms do offer to cover any mistakes, however). But audited clients aren't inclined to give you referrals. If you want to build a flourishing business, take the time to learn the complete ins and outs of tax preparation.

You can learn the rules of the tax game by attending the seminars provided nationwide by companies like Jackson Hewitt and H & R Block. Seminars usually cost from \$50 to \$75 (including books and materials). A typical course might run for three hours twice a week and be offered from September to December. You'll learn how taxes work and the rules that govern them. You'll also get experience preparing mocked-up returns, assisted by seasoned preparers. After completing the course, you should be able to tackle almost any individual's tax return.

Now comes the tough part—finding clients. Make it easy on yourself and advertise by word of mouth and referrals. Put up notes in your office building. Ask friends if they or someone they know would like help on their returns. Don't forget: Always ask for referrals every time you get a new client. Avoid buying newspaper ads—the last thing you want to do is spend money before you make any. Your business will start off slowly, but, if you

do a good job, you'll get good referrals, and then your name will start getting around. Soon the clients will be coming to you.

Your income will vary, depending on the number of clients and the complexity of their cases. Large firms like Jackson Hewitt use certain guidelines for setting charges: If a client comes in with a shoebox full of receipts that need substantial organization, for example, Hewitt charges \$35 an hour (it rarely takes more than one hour to organize). Hewitt then sets fees for each part of a return, which can vary up or down depending on the complexity of the entries and the complexity of the form and schedules necessary. As a rough approximation, expect about \$50 per return. Set rates you think are fair, and keep in mind that charging less than the competition will make you more attractive to potential clients.

Once your rates are set and you've found a few clients, you'll need a reliable software package. The selection available is quite extensive. Each package offers almost all the individual forms and prints returns that the IRS will accept. Some programs even include state tax forms. Before you shop, list the features important to your business and then choose a package that offers as many of them as possible. The average price is about \$50 per program, and annual updates average another \$25 per year. A note of caution: Tax laws tend to be changed toward the end of the year, and that means your update may become out of date rapidly.

Running a home-based tax-preparation service is no cinch. It takes study, plus a healthy investment of time and money, before you see a large return. But taxes change almost annually, and more and more people have neither the time nor the energy to prepare their own returns. The market is there. If learning what makes the IRS tick appeals to you, then take a course, find an initial client or two, buy some appropriate software, and get down to business. You might even propel yourself into a higher tax bracket.

— Adam Starkweather



New Money from Old (Computers)

Selling used computers is a lot like selling used cars: There's a market for them, but only rarely will you find a machine that becomes an investment. There's money to be made, but probably not enough to retire on. And there's always hope.

Sonny Monosson, owner of the American Used Com-

puter Company, has been in the used computer business since 1968. But he doesn't deal in used personal computers. When it comes to dealing in used PCs, Monosson says, "It's a winning game for the buyer—not the seller. There is a marketplace, but for the amount of work you go through, I don't see you making much money by the end of a year." During his 21 years in the business, Monosson has seen an average 25 percent turnover rate per year in used-computer brokerages. But don't let that figure discourage you. You can still make money if you're willing to invest the time and effort.

Some businesses have years of information stored in old TRS-80s, Commodore PETs, or CP/M machines. The cost of converting that information and buying an entirely new system is, for a small organization, often more expensive than replacing a worn-out computer or finding another disk drive.

If you want to start such a search-and-salvage operation, you'll need to know what makes computers work and how to put them together. Finding out what's broken in a PC (especially if it won't function at all) is difficult. But once you locate the malfunctioning part, it's usually simple to replace.

Most major personal computer components, especially for standard machines like the IBM PC, can be obtained from mail-order outfits. For orphaned machines, however, you'll have to look a little harder. Until you establish a reputation and build contacts, locating used equipment won't be easy.

Start by looking in your newspaper's classifieds under the used-computers or office-equipment section. Also, most major cities have some community computer magazine or user group newsletter with a classifieds section. Keep an eye peeled for ads from electronics stores and warehouses, which often stockpile old computer "junk" where you can find those rare, but still valuable, computer orphans.

By all means, though, don't limit yourself to buying and selling orphaned computers or outdated equipment. There are other ways you can put older systems to work. They can be upgraded by means of adding more memory, accelerators, and fancy displays, and then be resold at a profit.

For example, a Macintosh Plus sells for about \$1,200. A used one should go for around \$800 (even if you paid \$2,300 for it). You can add memory to the Mac Plus for less than \$400. Add another \$400 for an accelerator. For \$1,600, you've created a competitive and useful computer. You could even go into business upgrading Macintoshes without ever buying a used computer; many current Macintosh owners are willing to pay for such a service, which is cheaper than Apple's own upgrade policies.

Upgrading an IBM PC or compatible isn't as profitable. Before dropping in an accelerator card, you must consider memory requirements and hard disk speed, as well as the ability to use the specialized expansion slots on the faster machines. With new AT clones going for as

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10 More Ways to Make Money with Your Computer

Rake in some cool cash . . . Take your lead from the ice cream man, whose chimes are heard every summer evening across suburbia. Pack up your computer and a good variety of arcade games, get your hands on a gas-powered electrical generator, and cruise the neighborhoods as a traveling arcade hall. Every kid who got a book rather than a Nintendo last Christmas will crash your truck, eager to try out *Bad Dudes* for a dime a pop.

Don't call me; I'll call you . . . Put a new twist on those aggravating computer phone calls that ring you up every time you sit down to eat. Set up your computer with an autodial modem and voice transmission; then start calling every number in the book. For best results, use a message like *If you don't want me to call again at three in the morning, send one dollar to [your address]*.

Gameplay Database . . . Set your home computer as a Nintendo file server/database to track the games available in your neighborhood. Since you can't stop the flood of plastic cartridges and your kids can't keep up with which friend has just bought what, you might as well help out and make a little change, to boot. It will also give you the chance to show them something their Nintendo can't do.

You Ain't Nuthin' but a Hound Dog . . . Become the most popular telephone number in the book when you set up your computerized Elvis Movie Concordance on your PC. Immortalize, annotate, and glorify every phrase, song, twitch, and sneer in an extensive interactive database that traces the king of rock-'n'-roll through the glitz of Hollywood. *Now, was he Lucky Jackson in Viva Las Vegas, or was that Girls, Girls, Girls?*

SWNMWD Hoping to Meet GLBWBH . . . OK, Miss Lonelyhearts it isn't. But with some clever Artificial Intelligence software, some provocative graphics, and a couple of candles, you can set up your own Computer Simulation Dating Service. An hourly rate of \$3 will bring in a steady stream of customers too inept to attempt dating with real humans. Imagine sitting across the table from a VGA image of Ms. or Mr. Right, stimulating conversation, and the promise of never having to hear: "Thanks for the steak. If you take me home now I might be able to catch 'Dallas.'"

His Third Eye Was a Little Rounder . . . Judging from the supermarket tabloids, a UFO lands in the United States about as often as McDonald's flips a

burger. So, why not offer a Computer Alien-Face Identification Composite Service for those whose encounters have been a little too close? With a drawing and paint program, you can come up with a likeness from eyewitness descriptions which you can then print, suitable for framing or for a needlework pattern.

He's Mutt, Out of Jeff . . . Most pets in this country aren't the purebred Bluepoints and Spaniels that walk off with the blue ribbons at those high-tone cat and dog shows. So why not set up a Heinz-57 Computer-Generated Genealogy for mutts, mongrels, and alley cats? Being able to trace a one-eared tomcat back three generations to a trash can outside of Clara's Diner in Poughkeepsie, New York, can bring new appreciation and pride from the owner—something any pet owner would be willing to pay for.

Can You Say That Again? . . . If you've ever traveled outside of your own region of the country, you've discovered that it's impossible to understand the natives. But hit the RV camps with your Personal Computer Native-Speech Translation Service and you're bound to bring in the bucks. Link such phrases as *Ite, iff n thet's wutchoo wont* to the standard American *I can certainly see your point, but I must disagree with the premise of your argument*. A must-have for every brave American wanderer.

MTV is the Nietzsche of the 90s . . . Hardly a parent alive understands the subtle messages that captivate their children for hours in the form of music television. A PC-based MTV Video Interpreter could prove a gold mine for that audience. Users can enter such data as *David Lee Roth in a grass skirt, surrounded by gyrating Roller Derby queens*, which their computer analyzes according to precise psychological and cultural standards and then provides the insight necessary for communicating to vidhead teens.

Built for Comfort, Not for Speed . . . Four out of three Americans are fighting the battle of the bulge, so why not set up your computer as a Tub-o'-Lard Simulator? Your customers simply enter the food they're dying to eat, and the onscreen graphic of their body swells like a birthday balloon. If Richard Simmons can make money peddling colored cards to eager eaters, then you should clean up quick with this baby.

— Peter Scisco

little as \$1,500, it's often cheaper to buy a new machine than it is to upgrade. Monitor your costs and keep an eye on the break-even point. If you have a buyer, explain the cost of your upgrade service. Don't sell yourself short: Any deal you make can benefit both of you.

One of the questions buyers are sure to ask is *How about a warranty?* Your safest bet is to sell "as is." However, if you're selling some old dinosaur or a souped-up used computer, you might want to provide some form of warranty—replacement, repair, or refund. That kind of policy will enhance your reputation and build a strong referral base.

Making money in the used-computer market is yet another entrepreneurial niche in this wacky industry. To succeed, you need to work hard and do your research. And remember: As long as computer makers keep pushing the technology beyond the edge, there will be perfectly good used and orphaned computers looking for a decent home.

— Dan Gookin



Direct Marketing

Direct marketing is still one business you can start in your spare time, and one that's custom-made for a personal computer. With the help of your computer, you can easily gather and analyze customer information that you can apply to your business. Computers improve order processing, help analyze advertising success, enhance list management, and cut mailing costs.

You should probably start with an AT-class computer (or comparable platform if you're not using MS-DOS, say a Macintosh SE or an Amiga 2000), a hard disk, a printer, and software to track orders. A high-end computer can process information quickly; a hard disk is essential since your customer list and orders will grow rapidly (you hope) beyond the capacity of floppy disks. A fast, reliable printer is crucial because of the high volume of printing required for bulk mailings. For speed, you may want to splurge on a laser printer. Not only is it fast, but it can also help you produce your own advertising, letterhead, invoices, and shipping labels.

A computer makes it easy to test advertising and target your marketing efforts. You can select by ZIP code; income; purchase volume, date, frequency, or product; hobbies; or any other characteristic for which you've collected data. For example, you can sell the names of your customers who own a computer and also a VCR to a company making software-training videos.

To track advertising, list a department code as part of your address in each advertisement to indicate where and

when the ad appeared. When the orders start coming in, you can use your computer to add up the money received from each ad you've placed.

Bulk mailing rates are much lower than first class, so a good computerized system can reduce labor and postage costs by printing presorted labels or envelopes. The computer can also help you merge two or more lists and purge duplicates. That will keep you from annoying your customers with duplicates of your catalog.

Finding the software to do all these tasks can be difficult and expensive. Whether you buy existing software, hire programmers, or patch a system together yourself, it's a time-consuming project. A number of programs are specifically designed for managing a mailing list, and you may find one that suits your needs.

If you decide on a do-it-yourself system, select a general-purpose relational database that has single-user and network versions (for the day when your business outgrows your single computer) and includes a database programming language. Don't use a spreadsheet or word processor as your database. You'll soon reach their limitations and then have to transfer the data to a real database—a waste of time. Compare that with a relational database, in which you can keep your customers in one file, orders in another, and inventory items in yet another, linking the data files when necessary. The database should be capable of producing form letters and labels automatically from your customer list, based on any criteria you desire. (Borland's *Paradox* fits this description, as do many other relational databases.) Be prepared to spend time learning how to use the database or to spend money for someone else to run it for you.

If you're bootstrapping your mail-order business from a cold start, don't expect instant success. Investigate the seasonal nature and selling life of your product line. Read at least one book about the direct-marketing business, like William A. Cohen's *Building a Mail Order Business: A Complete Manual for Success* (2nd edition, 1985, John Wiley & Sons, New York). Ironically, you're probably better off not buying a direct-marketing book by mail.

If you're the creative force behind the business, don't feel you must do everything. Hire data-entry and order-fulfillment staff. Hire artists to produce art and advertising (use students looking to fill a portfolio if you want to save some money and are willing to experiment).

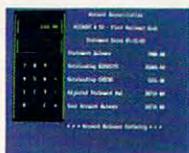
Spend your time either creating or seeking out your next product and analyzing the results of your efforts. With hard work, bright ideas, and a solid hardware/software combination, you just might get rich in the direct-marketing business. But even if you don't, you might find you like working for yourself better than punching the company clock.

— J. Blake Lambert □

Denny Atkin, Heidi Aycock, Dan Gookin, Blake Lambert, and Adam Starkweather figure to buy out Donald Trump once they've made a killing with their home computers.

MONEYCOUNTS 6.0

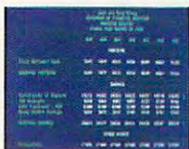
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Manufacturer	Parsons Technology	Intuit, Inc.	MECA Ventures, Inc.	Monogram Software, Inc.
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Account Balancer	YES	YES	YES	YES
Automatic Error Finder	YES	NO	NO	NO
Accounts Can Be Added When Entering Transactions (Data)	YES	YES	YES	NO
Budgeting	YES	YES	YES	YES
Variable Budgeting By Month	YES	NO	YES	YES
Financial Reports				
Actual Financial Results	YES	YES	YES	YES
Month and Year to Date	YES	YES	YES	YES
All Months On One Report	YES	YES	YES	YES
Budgeted Financial Results	YES	YES	YES	YES
Actual Compared to Budget	YES	YES	YES	YES
Actual Compared to Prior Month	YES	NO	NO	NO
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
Check Writer	YES	YES	YES	YES
Prints Laser Checks	YES	YES	YES	NO
Prints Any Pin-Feed Check	YES	NO	YES	YES
Personal Income Tax Estimator	YES	NO	YES	YES
Pop-up Note Pad	YES	NO	YES	YES
Pop-up Math Calculator	YES	NO	YES	YES
Capacity				
Total Number of Accounts Per File	999	300	**	120
Total Number of Open Transactions	100,000	65,535	**	4,000

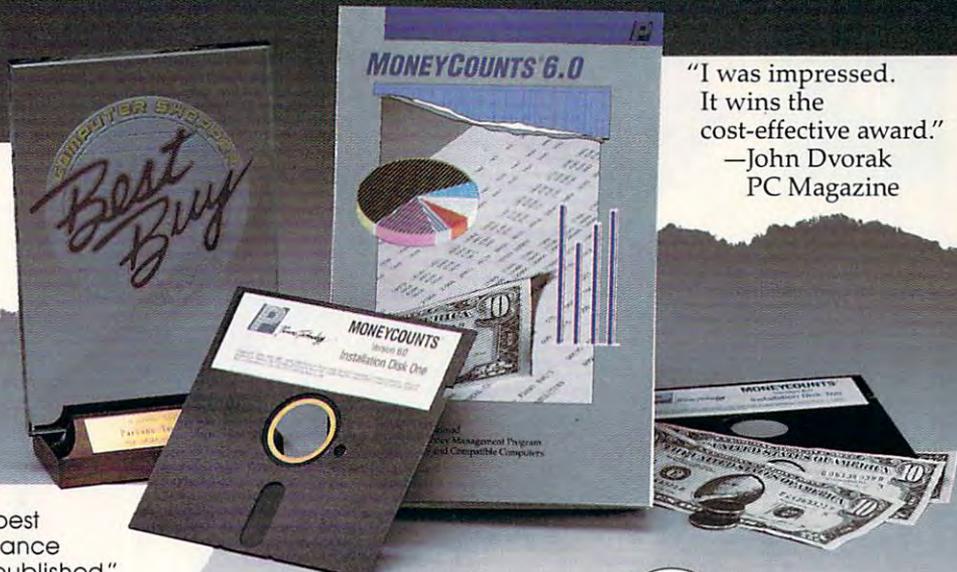
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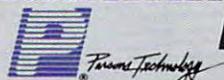
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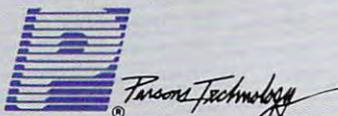
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Tom Netsel

Take me out to the ball game, and I'll show you a baseball simulation for every fan. Just as some fans would rather take a bat and tap the clay off their cleats, step into the batter's box, and tag one over the left field fence, other fans would rather call the shots from the dugout. So whether you want arcade action or you prefer to examine the strategy behind the intentional walk, there's a computer baseball game warming up in your bullpen.

Since baseball means different things to different fans, simulations differ, too. So, step up to the plate and take a look at some of the disks of summer that have *home run* written all over them. You'll probably find a pennant winner in this computer league that you'll vote the MVP—Most Valuable Program.

The Facts and Figures

Baseball and statistics go together like hotdogs and a home game. It doesn't matter whether a player knocks one out of the park or goes down swinging, a scorekeeper takes note. Every pitch, swing, hit, catch, or error is recorded and analyzed, and *Pure Stat Baseball*, from Software Simulations, keeps

Batter up! Whether you'd rather wear a player's jersey, a manager's jacket, or an owner's tie, there's some great action in this season's lineup of baseball simulations.



track with the best of them.

In this strategic simulation, you direct the game from the bench. Manage any team from the 1985 season, any of eight classic teams of yesteryear, or a team that you've created from a list of All Stars. Call up Babe Ruth from the 1927 Yankees and add

him to the 1961 lineup with Maris and Mantle to see what kind of a season the three might have had together. Additional team and stadium disks are also available.

You can play against the computer or another player, or let the computer play against itself. A computer-versus-computer game without graphics is a fast way to create stats for a new team.

The fun starts when you enter the dugout and begin calling the shots. *Pure Stat Baseball* stores your team's statistics for the season. It tracks how well each batter does against a right-handed pitcher or a southpaw and how pitchers fare against right-handed batters and lefties. Each player's fielding and base-running abilities are also taken into account.

Prior to each play, a Score/Play Selection screen presents the batter's and pitcher's statistics, and those of any base runners. Call for the batter to hit and run, swing away, lay down a bunt—any of seven options. If your runner's Base Running Ability (BRA) exceeds a fielder's Throw rating, the runner's chances of stealing

a base increase.

When your team is on defense, have the pitcher fire one down the middle or try to grab a piece of the corner. Check the batter's stats, then place your fielders accordingly. Should you play them aggressively, bring in the corners, or guard the line? It's up to you.

Save the results of any game and add them to your statistics disk. After each game, *Pure Stat Baseball* automatically updates each player's statistics. Print out your players' year-to-date performance stats at any time, and use them at the end of the season to pick your most valuable player.

Graphics are simple by today's standards, but look for improvements in *Pure Stat Baseball II*, due for release this summer. *PSBII* promises enhanced graphics, a different field perspective, more windows for additional onscreen information, and improved two-player capabilities.

Statistically Speaking

Micro League Sports has also upgraded its award-winning baseball strategy game and now offers fans *Micro League Baseball II*.

As manager of any of 25 Major League championship teams and World Series winners, you set the line-ups, choose pinch hitters, and send in a relief pitcher whenever you feel your starter needs help. Player stats for all teams are at your fingertips, and these guys play to their potential—or better if you manage them well.

Compete with another player or challenge *MLB's Baseball Buddha* for solo competition. You call the offensive and defensive shots from the dugout, and your players do the work. There's no eye-hand coordination needed. Have your pitcher throw any of six different pitches and direct the infield accordingly. One key pitch represents an entire at-bat. When your team is up, give the batter and runners their signals. Let the batter swing away, or turn the game around with a surprise bunt.

It's the bottom of the eighth inning, and the score is 0-0 in a 1955 game between the Brooklyn Dodgers and the Washington Senators. The Dodgers are up; left fielder Sandy Amoros is at bat. The manager calls for a surprise bunt. Amoros lays it down the third-base line and beats the



throw to first. Pitcher Don Newcombe hits a sacrifice bunt, moving Amoros to second. That brings up lead-off batter Jim Gilliam. The manager calls for a Swing Away with Aggressive Running. Gilliam pops a Texas Leaguer over second. Washington's center fielder pegs Gilliam at first, but Amoros scores the winning run from second.

From a press-box view of the field, you call the plays and watch the action unfold. A window at the top of the screen provides the play-by-play commentary. Other windows show who's at bat and who's on deck. The graphics and animation are great, but, by turning off these features, you can play a game in 60 seconds (if you need a box score for stats).

MLBII includes a box score and stat compiler disk, variable stadium factors, pitcher stamina, and bullpen activity. Injuries, rain, and other acts of God may even surprise you during a game. And if one of your players disputes an umpire's call, your player could be ejected.

Using the General Manager/Owner's disk, you can trade and draft players, update stats, or even create your own fantasy teams with players from any team and era. Season disks, World Series teams, and franchise-history disks are also available.

Duke of Earl

In *Earl Weaver Baseball*, when the ump yells "Play ball!" you have more options at your fingertips than Orel Hershiser has pitches. Not only do you pick the teams, establish a batting order, and name a starting pitcher, you also select the stadium ground rules.

That's just the beginning. Do you want to manage the team, play and manage, or let Earl Weaver call the shots while the computer moves the

players? Are you ready to start in the majors, or would a minor-league, semipro, or sandlot game suit you better?

If reality is what you want, select a full-program league game that permits injuries. If a player is hurt making a bad slide, he could be out for several games, so have a substitute ready and a statistics disk on hand to record the action. Keep your pitchers warmed up, too, because starters can't pitch back-to-back games and even the best ones get tired.

As general manager, you can draft, trade, and even clone players to create the team you want. Full stats are available on all players. Review them onscreen or print them.

The number of options in this game is almost overwhelming, but purists will love it. After you've made your choices, you're presented with an overhead view of the field and another view from the catcher's perspective. A pitcher/batter scoreboard at the top of the screen shows the stats for these players, and the main scoreboard keeps track of innings, runs, hits, balls, and strikes. You even get a radar gun to clock pitches and instant replay to examine close calls.

Call the pitch by giving three commands: type, speed, and curve; the part of the strike zone you're aiming for; and then the pitch itself. Other options include a pickoff, an intentional ball, or a pitchout. Check the wind so you can position your fielders properly. Fielders try to catch any ball hit their way, but they'll hold it until you tell them where to throw it.

When at bat, press the swing or bunt key to take a backswing and then release it to take a cut at the ball. Timing is important. A defensive-and-offensive menu helps you plan your playing strategy, but if you're in doubt about how to handle a certain play, ask Earl for advice. He's there to help in this outstanding strategy/arcade simulation from Electronic Arts.

Do the Hustle

If you want to test your baseball savvy as well as your fastball, *Pete Rose Pen-nant Fever* lets you wear the manager's jacket and the owner's wingtips.

From the front office you can draft rookies and purchase free agents, but don't go broke in the process. Tal-

ent isn't cheap, and fans won't pay to watch losers. It's up to you to manage the finances and still build a top team if you want a shot at the pennant. And you thought owners just sat in box seats and fired managers.

As manager, you have to decide on a starting lineup from the 24 players the owner gives you. Pete Rose himself is on your team, and you'll probably need his help. It's up to you to check out the other players' stats. Need a power hitter in cleanup or a left-handed pitcher with a good sinker? Each player is rated for power, hitting ability, and speed. Pitchers are ranked according to speed, control, stamina, and pitching specialties. But even computer players are human. You can't use the same pitcher in every game. Players get injured, they retire, and others just don't work out. You must make substitutions, bring up reserves, and call the shots from the dugout.

Out on the field, you combine the roles of player and manager. You pitch the blistering fastball, pinch hit the winning run. You call the pitches—all 23 of them. And when your team is at bat, you decide to bunt, make contact, or go for the towering homer.

Pennant Fever's graphics and perspective are realistic. The normal view is from behind the batter, but once you contact the ball, that view changes to one of eight "camera positions" around the field. Move the fielder in to scoop up a grounder or to shag a fly ball; then fire it to the proper base. Use a joystick, keyboard, or mouse to make your selections.

If you need a break from all the action, let the computer play. It hits, fields, or runs as well as your players' stats allow. That's part of *Pennant Fever's* appeal. You control every aspect of the game from the front office down to play on the field, and the amount of involvement is up to you.

Suppose you don't care about leagues, stats, or designated hitters. *Pete Rose Pennant Fever* is still a good choice. You can always play an Exhibition Game.

Split the Seams

When you're at the plate with a bat clenched in your hands, you don't care about the pitcher's lifetime ERA. You just want to smack the ball. That's what *HardBall* from Accolade is about—playing baseball.

You've probably never heard of the players who make up the All-Stars and Champs. They each have statis-

tics, but their numbers are secondary to the action. You control one team and a friend or the computer controls the other as you play.

HardBall is pure arcade. While it's possible to make substitutions, bring in new pitchers, and change the lineup, this game is for players. *HardBall* puts you on the field where the tobacco juice hits the dust.

As the man on the mound, you have a variety of pitches at your command (unless your name is Atkins; then you've got nothing but fastballs). Each pitcher has a distinctive style, so it's a good idea to scout them out. Frisina, for example, throws a lot of junk, but Euler has a good screwball.

Select a pitch with the joystick, mouse, or keyboard; then decide

where to throw it. Hurl it high and inside, down the middle, or low and outside—any of nine different areas around the plate. The batter tries to read the pitch and swings accordingly.

It takes time to develop a good batting eye because the game is viewed from behind the pitcher and to his right. If the batter tags one, the screen shifts to left or right field as seen from the press box. The player in the best position to field the ball starts to flash and you move him to make the catch or scoop up the grounder. Once he has the ball, tell him where to throw it. A small overhead view of the field helps you keep track of runners.

Controlling the action is simple. When your team is up, your batter can either swing or bunt. If men are on base, they can steal or go for extra bases. On defense, position your fielders right or left, and have your infield play normally or go for the double play. The action is pure and simple, although throws from the outfield float in with maddening slowness.

HardBall has been around since 1985 and lacks the glitter and flashing lights of some of its teammates, but don't overlook this bargain. It's for the person who wants to step up to the plate, hit a few balls, and have fun.

Isn't that what baseball's all about? □

Tom Netsel is an assistant features editor with *COMPUTE!*. He used to live near the Minnesota Twins' spring-training facility. That's as close as he got to the Majors.



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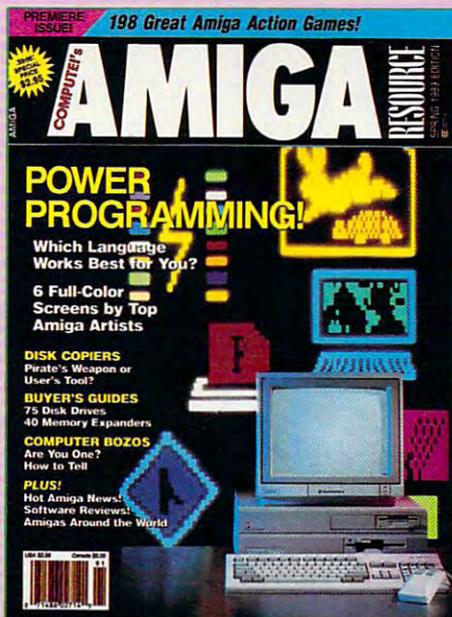
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David Stanton



FLOPPY FRUSTRATION...

Floppy drives just don't cut it. Not if you want a machine that performs quickly and unobtrusively. Not if you need a computer that delivers consistent, dependable assistance without creating unnecessary distractions. An effective computer should serve you, not slight you. Few computer devices can ensure that level of efficiency as can a hard disk drive.

Hard drives offer many advantages over traditional storage devices. They can store all your favorite software in one place, making each program easily accessible from a menu-based shell. They improve your productivity by loading and saving applications much faster than floppies. They practically eliminate disk swapping and the resulting floppy frustration. (Except for backing up your data—you will need floppy disks for that.)

If you don't own a hard disk drive, you don't know what you're missing. So to clue you in, we've selected four typical units for an in-depth look.

MacCrate/20—An External SCSI Drive for the Macintosh

Crate Technology's MacCrate/20 is a 20-megabyte external hard disk drive that connects to any Macintosh Plus, SE, or Macintosh II through the SCSI (Small Computer System Interface, pronounced

scuzzy) port. In the box you'll find everything necessary for quick and hassle-free installation: cables, software, and a clear, uncomplicated owner's manual. Setup takes approximately 15 minutes.

Since it sits neatly under a Macintosh Plus or SE, the MacCrate/20 conserves desk space while raising the Mac's screen about 3½ inches. Its zero-footprint dimensions and platinum-colored steel cabinet blend perfectly with any Macintosh and most peripherals. Inside, a Seagate drive mechanism and a cooling fan assure maximum dependability. Crate Technology's two-year warranty provides further protection.

The MacCrate/20 has an extra SCSI port for chaining other SCSI peripherals. To help avoid ID conflicts, three sets of pins and jumpers let you change the MacCrate/20's SCSI ID from its usual 6 to any other available number from 0 to 7. If you own an Apple Scanner, another hard drive, or any other combination of SCSI devices, some simple adjustments will put you in business.

Crate Technology includes disk-management software with its hard drives. The first time you run MacCrate SCSI Utility Software (version 3.1), it automatically recognizes its host, searches and identifies all attached SCSI units and IDs, and displays that information. If you're insecure about installing a hard disk, you'll appreciate this extra



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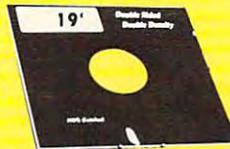
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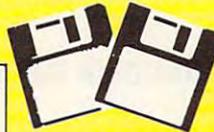


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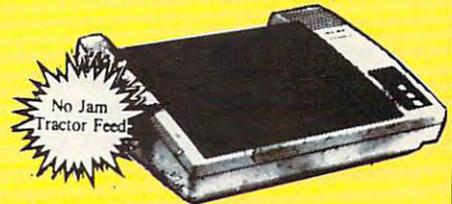
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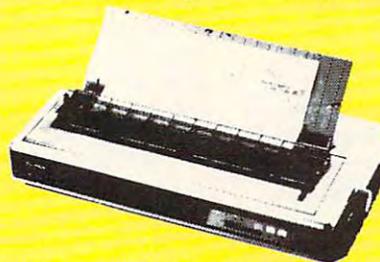
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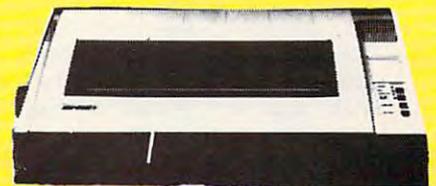
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assurance. The software also handles initializing, formatting, verifying, and testing; and it lets you lock out bad blocks that might develop on the disk's surface. Unfortunately, the program doesn't include a partitioning utility, which is useful for dividing one physical drive into two or more logical drives.

To use a MacCrate/20, you'll need System 3.2 or later and Finder 5.0 or higher. Also, only files compatible with the Hierarchical File System (HFS) will work properly. Some older programs intended solely for the Macintosh File System (MFS) environment may cause trouble.

The MacCrate/20 makes about as much noise as the Mac's own internal 3½-inch drive—nothing unusual nor especially objectionable. During several days of testing, the drive functioned perfectly in every situation and gave no reason to question its dependability.

Applied Ingenuity's Inner Drive

Unlike most Apple II and IIGS hard drives (which are usually external systems), the 20-megabyte Inner Drive hides inside an Apple IIGS where few would think to look: It replaces the standard power supply.

What you get are an improved power supply, a Western Digital hard disk drive mechanism, and a fan—all inside one sealed case. Along with that comes an ST-506 interface card (a non-SCSI controller popular in the MS-DOS world), one double-sided sheet of mimeographed documentation, and a warranty registration card.

To install the drive, you must remove Apple's own power supply and insert Applied Ingenuity's drive in its place. Although this is no job for timid souls, it doesn't demand any electronics expertise. The controller card fits into any available expansion slot, but slot 7 works best and avoids conflicts with

Tips for Selecting Your First Hard Disk Drive

Selecting your first hard disk drive can be a traumatic experience. With so many models and such a wide range of prices, making a final choice may seem impossible. Overcome your purchaser paralysis by answering a few simple questions:

• Do I want an external or an internal model?

There are two types of internal hard drives: half- or full-height drives and hardcards. Internal hard disks require no additional desk space, cost less than external drives, and are more convenient if you frequently move your equipment.

External drives, on the other hand, often can be connected directly to built-in SCSI ports or other interfaces, which is handy if your computer lacks an expansion slot. Some external drives will even work with several different machines—something to think about if you're considering trading your Apple IIe for a Macintosh, for example.

• Which models are compatible with my computer and my software?

Hardware compatibility involves several factors. Internal drives are generally machine-specific. Even though some external drives will run on more than one computer model, it's best to buy one specifically intended for your equipment. That way, you'll get the correct utility software and avoid potential configuration problems.

Software compatibility also requires attention. Some Apple II drives support DOS 3.3, but most work only with ProDOS files. Some early Macintosh software causes trouble when loaded on modern hard drives. Some copy-protected programs can't be copied to hard disks at all. Don't worry about it—but don't discard your floppy drives.

• How big a hard disk do I need?

Modern hard drives come in sizes from 20 to 600

(or more) megabytes. A 20-megabyte hard drive is equivalent to fifty-six 5¼-inch floppy disks (MS-DOS format, 360K double-sided) or twenty-eight 3½-inch disks (MS-DOS format).

When calculating how much storage you'll need, factor in a little extra room just in case. Larger-capacity drives cost more, but one 40-megabyte drive costs hundreds of dollars less than two 20-megabyte units.

• What about access time and data-transfer rates?

A major reason for buying a hard drive is speed. Manufacturers routinely list speed-related data in their ads. *Access time* refers to how long it takes for the read/write head to move across one-third of the platter.

Data-transfer rate is a measure of how fast a drive delivers data to the computer. Actual transmission speeds are affected by many factors. Even the slowest hard drives can deliver data faster than an Apple IIe can process it. Furthermore, transfer rates slow as repeated deletes and saves force long files to be stored on noncontiguous sectors and tracks.

• How can I get a good deal?

Expect to pay \$300–\$900 for a 20-megabyte hard disk (depending on your computer and whether you're buying an internal or an external unit). At those prices, comparative shopping pays big dividends.

Once you've selected an adequate capacity and the type of hard drive, comparing products and prices should be easier. If you want a few milliseconds faster performance, you'll have to pay for it. Most drive mechanisms are produced by a few well-established manufacturers; so, consider things like warranty, availability of service, and the supplier's reputation for support. You do have one benefit: Hard drives are usually very dependable.

other peripherals. Allowing for a few minor missteps, the entire installation process takes less than half an hour.

Each Inner Drive arrives preformatted as a single GS/OS volume. In addition to the necessary System Files and Finder, the disk contains a park-heads utility and other utilities for formatting, partitioning, and performing other housekeeping chores.

The Inner Drive's fan is surprisingly quiet. Disk accesses are very quick and almost inaudible. For testing, we used an Apple IIGS with an Inner Drive, an external SCSI hard drive, and the usual floppy drives. We passed files around and moved from one drive to another without a hitch. In every situation, the hardware performed flawlessly.

Not so the documentation. Although it covers enough to get everything up and running, it includes no technical data at all. Furthermore, the warranty card mentions a one-year limited warranty but fails to explain its terms and conditions. Be sure you write down the company's address and phone number—the warranty card is the only place they're mentioned. Good hardware deserves better written support.

In the past, Applied Ingenuity products have been sold only by mail. But company representatives say their products will be available through local dealers this summer.

The Plus Hardcard 40 from Plus Development

Two types of internal drives dominate the IBM PC and compatible hard disk market: front-mounted half- or full-height models and card-mounted units. The first type fits into a system unit cutout where a second floppy drive might otherwise go. Card-mounted drives slide into an expansion slot inside.

The Plus Hardcard 40 is a card-mounted drive that will work in most IBM PC XT- and AT-class compatibles. According to Plus Development, it's also compatible with most COMPAQ computers, including the portables and the top-of-the-line Deskpro 386/25. However, the Hardcard won't operate in IBM's 80286 and 80386 PS/2 models equipped with Micro Channel Architecture. And, because the Hardcard 40 requires a full-size (13-inch) 8-bit or 16-bit expansion slot, it won't fit into some small-footprint computers.

The Hardcard 40 arrives preformatted as two volumes of 20 megabytes each. For special situations, the disk can be divided into as many as four volumes, and volume sizes can be modified as necessary. Both controller and drive mechanisms are mounted on the same board, so installation requires little more than slipping the card into place. If you already own a hard drive, you may have to adjust an onboard jumper to configure your Hardcard 40 as a second drive. Certain computers need a few additional hardware and software modifications, which are outlined in the manual.

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Hard Facts

If you've been computing for a while, you probably remember the clumsy and slow cassette drives that preceded floppy disk drives. Well, once you try a hard disk drive, you'll wonder how floppies ever survived this long.

Recent price declines have put hard disks within reach of many computer owners. This sampling of products can provide a springboard for your own investigations. If you're planning on buying a hard disk, consider it a guide through coming hard times.

Companies Mentioned

Applied Ingenuity

14922 Ramona Blvd.
Unit M
Baldwin Park, CA 91706
(800) 346-0811; (818)
960-1485

Inner Drive—\$499
Hardware compatibility:
Apple IIes
Software compatibility:
ProDOS 8, ProDOS 16,
GS/OS

Crate Technology

6850 Vineland Ave.
Building M
N. Hollywood, CA 91605
(800) 543-5808; (800)
549-9994 (in California)
MacCrate/20—\$545
Hardware compatibility:
Macintosh Plus, SE,
Mac II
Software compatibility:
HFS-compatible Mac-
intosh software

Great Valley Products

225 Plank Ave.
Paoli, PA 19301
(215) 889-9411
Impact A500-HD SCSI
Subsystem with Seagate
20-megabyte hard
drive—\$775
Hardware compatibility:
Amiga 500
Software compatibility:
Runs with Kickstart V1.2
ROM but requires
Kickstart V1.3 as a boot
disk

Plus Development

1778 McCarthy Blvd.
Milpitas, CA 95035-7421
(800) 826-8022; (408)
434-6900
Plus Hardcard 40—\$995
Hardware compatibility:
IBM PC XT, AT, and most
compatibles with a 13-
inch, 8-bit or 16-bit
expansion slot
Software compatibility:
MS-DOS 3.0 or later

Hardcard 40's software includes PlusCache, a disk-caching program. Since PlusCache recognizes expanded and extended memory, once installed, it loads automatically and runs transparently.

The Impact A500-HD SCSI Subsystem

Amiga 500 owners take heart: The Impact A500-HD SCSI Hard Disk Subsystem from Great Valley Products is actually a case with a built-in SCSI interface, a two-megabyte Fast RAM expansion card (with 0K installed), and room for installing a hard disk drive. Several brands of hard drives (Miniscribe, Rodime, Conner Peripherals, Quantum, Seagate) will fit the subsystem, with capacities ranging from 20 to 100 megabytes.

Adding RAM to the Impact involves inserting

16 one-megabit DRAMS and removing a jumper. Since the autoboot feature works only with version 1.3 of Kickstart ROM, version 1.2 users have two alternatives: They can upgrade to version 1.3, or they can disable the autoboot feature and access the hard disk after booting from a floppy.

The Impact unit draws its power from an independent power supply and plugs directly into the Amiga 500's expansion connector. An external DB-25 connector located on the back of the drive supports additional SCSI peripherals.

The GVP Installation Diskette includes software to handle initializing, formatting, and partitioning the drive. In addition, the GVP utility program will copy itself to a hard disk volume and create the 3½-inch floppy HD Boot disk required with version 1.2 of Kickstart.

Great Valley Products also offers a line of hard drives for the Amiga 2000. □

David Stanton writes *COMPUTE!*'s "Discoveries" column, and he is the computer coordinator for the Bolivar, New York, school district. He uses an Apple IIgs with a 63-megabyte CMS 63 hard drive.

Hard Disk Drives: How Do They Work?

Although they hold a certain mystery, hard drives are pretty similar to floppy drives. Both store information on round magnetic platters. Both require a drive controller (an electronic circuit board that controls the unit) and a drive mechanism. Both drive mechanisms have a motor to spin the disk and an actuator arm that moves a read/write head to specific locations on the disk's surface.

Floppy and hard drives even handle data similarly. The formatting process divides the disk's surface into tracks and sectors (sometimes called *blocks*). A catalog track maintains a record of where each file has been written and directs the read/write head to that location as necessary.

A hard disk can hold much more data than a floppy disk because its rigid metal plates permit increased data density. A single hard disk often consists of several platters stacked one above another. A 60-megabyte drive with three plates, for example, would have six storage surfaces and six read/write heads.

Unlike a floppy disk, a hard disk is usually permanently fixed inside its case. In fact, hard drives are sometimes called *fixed drives*, especially in the MS-DOS world. Thus, a 20-megabyte disk drive unit can never accommodate more than 20-megabytes of data. Once the disk is full, new files can be added only after deleting old ones.

Hard drives are often noisier than floppy drives. Two factors account for this: First, a hard drive spins constantly; second, external hard drives usually include a built-in fan for constant cooling.

From a user's standpoint, hard drives pose no special problems. Once a unit is installed and formatted, it performs just like any other drive except that it's faster and more efficient.

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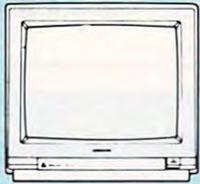
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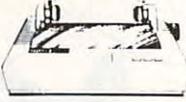
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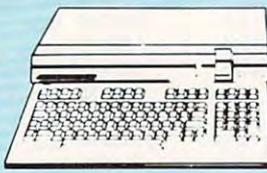
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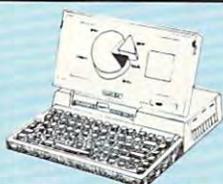
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buyer's guide

Sports Games

The crowd chants your name. It's crunch time and . . . you're standing on the foul line with a chance to ice the game . . . you're at the plate with the go-ahead run at third . . . you're just one ace away from the Wimbledon trophy. Can you do it? If you have the guts to go for the glory, take a look at these game simulations and live out your greatest sports fantasy.

BASEBALL

Championship Baseball

Solid Gold Software
Distributed by Mediagenic
Amiga: \$39.95
Apple II: \$14.95
Commodore 64: \$14.95

In this baseball simulation, the user controls the action—hitting, pitching, catching, running the bases, and sliding. Split-screen graphics allow players to view the plate and the whole field at the same time. The game offers a four-division, 24-team league.

Computer Statis Pro Baseball

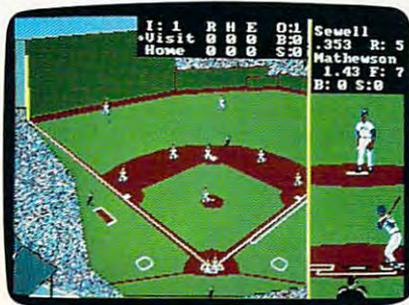
Avalon Hill
Commodore 64: \$35.00

This game uses actual major league baseball player statistics. As the manager, the user chooses the lineups and makes substitutions; as a baseball player, he or she takes part in the action—hitting, pitching, fielding, and stealing bases. Major league season disks are available separately.

Earl Weaver Baseball

Electronic Arts
Amiga: \$49.95
IBM PC and compatibles: \$39.95; version 1.5 supports EGA

Earl Weaver and Eddie Dombrower co-authored this baseball simulation, which allows users to experience many aspects of



Mathewson pitches to Sewell in the IBM PC version of *Earl Weaver Baseball*.

the game, from playing ball to building a stadium. The arcade-like play mode uses hi-res graphics and sound to pit two teams against each other, including some of the All-Star teams from 1901–1975. Users can also take the role of manager and consult with Earl Weaver to set lineups, trade and draft team members, or relieve pitchers. Managers can also build their own All-Star teams and keep the statistics using the built-in compiler; there are 90 statistical measurements. Game play-

ers can play in one of the 26 major league parks or design their own ball park. Instant replay (in three speeds), slow motion, and freeze frame help to simulate actual TV coverage. Separate data disks are also available.

Full Count Baseball

Lance Haffner Games
Apple II: \$39.99
Commodore 64: \$39.99
IBM PC and compatibles: \$39.99

Full Count Baseball is a baseball strategy and simulation game in which the player manages the team. The game includes 26 teams from the most recent season and 52 past National and American League teams. Each team offers 17 batters and 12 pitchers. Players can use the teams provided or build their own teams through drafting and trading. As manager, the player can choose the lineups, batting order, bunts, sacrifices, steals, and more. The game takes into account variables such as player statistics, fielding range, speed, platooning, and the effect of the ball park. A stats compiler automatically records player and team statistics, and a box score can be printed at the end of the game. Play options include player vs. the computer manager, two-player, and autoplay. Additional team disks can be purchased for \$14.99. >

**Caroline D. Hanlon
and Mickey McLean**

HardBall!

Accolade
Amiga: \$44.95
Apple II: \$14.95
Apple IIs: \$44.95
Commodore 64: \$14.95
IBM PC and compatibles: \$14.95; 384K required for Tandy; CGA, EGA, and Hercules supported

A baseball simulation, *HardBall!* offers a 3-D perspective of each field angle. Different screens provide the strategy selections for the managers. There are six pitches that can be thrown by left- or right-handed pitchers, and players appear in large-sized graphics.

Micro League Baseball I

Micro League Sports
Apple II: \$39.95
Commodore 64: \$39.95
IBM PC and compatibles: \$39.95; CGA required
Players can manage actual big-league players in this baseball simulation. Teams can be selected from the current season or from previous seasons. Additional team disks are available, including all major league teams from the past six seasons, World Series and All-Star teams, and star players from the history of a particular franchise. The actual players play up to their potential based on their statistics and can play better if managed properly. Two players can go head-to-head or one player can compete against the computer. A box-score/stat-compiler disk can be purchased separately.

Micro League Baseball II

Micro League Sports
IBM PC and compatibles: \$49.95; CGA required
This updated version of *Micro League Baseball I* includes the Box Score, Stat Compiler, and General Manager disks.

Pete Rose Pennant Fever

Gamestar
Distributed by Mediagenic
Commodore 64: \$34.95
IBM PC and compatibles: \$44.95; 512K required; CGA, EGA, and Tandy 16-color supported
Players assume the roles of player, field manager, and general manager in this baseball simulation. One or two players can participate in building an expansion franchise over a span of ten seasons. Players draft rookies, purchase free agents, and then put them on the field to perform. The action on the field—batting, fielding, pitching, and base running—is controlled by the player.

ProChallenge Baseball

JBE
IBM PC and compatibles: \$39.95; CGA required
This officially licensed computer baseball game features ten different game and help screens and complete player lineups from all 26 major league teams. Players can choose from 18 defensive formations and 20 offensive signals as they call all of the shots as manager. The game also features a slow-down feature, allowing users to match the speed of the game to the speed of the computer.

Pure-Stat Baseball

Software Simulations
Distributed by MicroProse
Apple II: \$39.95
Commodore 64: \$39.95
IBM PC and compatibles: \$39.95; monochrome or CGA required

This statistical-replay baseball simulation can be played with one or two players. Individual statistics determine the outcome of the game. Players can choose from every team of the 1985 season in addition to eight classic teams from the past and present. You can also trade players between teams to form a dream team. A stat keeper compiles all player statistics and calculates batting averages and ERAs. Statistics can be printed out at any time. The computer can play a game without graphics in three minutes. Players can choose from three different stadium locations. An optional stadium disk is available for \$19.95. A 1987 team disk sells for \$19.95, and a create-a-team disk is \$14.95.



The pitching count, batter's average, field position, and scoreboard are all displayed on the screen in *The Sporting News Baseball*.

The Sporting News Baseball

Epyx
Apple II: \$39.95
Commodore 64: \$39.95
IBM PC and compatibles: \$39.95; 512K required; CGA, EGA, and Hercules supported

In this simulation, players can compete against each other or against the computer, or they can set the computer to play itself. Multiple screens provide a variety of views of the action, and all the action is influenced by the actual statistics and capabilities of the ball players. Batters can hit and run, bunt, or pull the ball. Other plays include stealing the bases, pick-offs, and brushback pitches. Teams can be chosen from 26 major league clubs, or players can create their own teams from a field of over 100 famous All-Stars. The game includes color graphics and ball-park sound effects.

Steve Garvey vs. Jose Canseco in Grand Slam Baseball

Cosmi
Commodore 64: \$14.95

Grand Slam Baseball is a simulation game that includes high-resolution graphics and ball-park sound effects. A scrolling screen gives the user a television-like view of the action. Players can choose from a regular baseball game or a variation in which only grand-slam home runs can score points for their team.

Street Sports Baseball

Epyx
Apple II: \$19.95
Commodore 64: \$19.95
IBM PC and compatibles: \$19.95; CGA required

This game is played on a neighborhood diamond made from trash-can lids and old tires, and the players are neighborhood pals. There are 16 players to choose from, and each has an individual level of skill in hitting, fielding, and throwing. Players also have to be able to avoid tree stumps, bushes, and puddles. The pitcher can throw four balls: fast, slow, right curve, and left curve. There's a split-screen view of the field, with one screen being a bird's-eye view. For one or two players.

The World's Greatest Baseball Game, Enhanced

Epyx
Apple II: \$19.95
Commodore 64: \$19.95
IBM PC and compatibles: \$19.95; CGA and EGA supported

One or two players can manage and control or just manage a baseball team, using one of the 75 teams provided for creating a team. Players include actual World Series and All-Star teams, teams from the 1984-1985 season, classic players, and current stars. Actual statistics for players are included. The game includes trading functions and trivia questions.

FOOTBALL

4th & Inches

Accolade
Amiga: \$44.95
Apple IIs: \$44.95
Commodore 64: \$29.95
IBM PC and compatibles: \$39.95; 384K required for Tandy; CGA, Hercules, and Tandy 16-color supported
Macintosh: \$44.95; 512K required

4th & Inches features three screens: a scrolling football field, a statistical screen that shows the players' performance and personal records, and a play menu from which to choose offensive and defensive plays. The game incorporates 22 players, the football, and the ball's shadow. The view of the field is from the press box with the action following the player with the ball. The players' energy

levels decline as the game progresses. The game is for one or two players. The *4th & Inches Team Construction Disk* allows players to create their own teams. The disk retails for \$14.95.

GFL Championship Football

Gamestar
Distributed by Mediagenic
Amiga: \$44.95
Apple II: \$39.95
Commodore 64: \$34.95
IBM PC and compatibles: \$42.95; CGA required

This football simulation is played using an on-the-field perspective. The action takes place on the field, where the player is actually running plays and taking hits.



It's first down on the 36 yard line in *John Elway's Quarterback* from Melbourne House.

John Elway's Quarterback

Melbourne House
Distributed by Virgin Mastertronic
Apple II: \$29.99
Commodore 64: \$29.99
IBM PC and compatibles: \$29.99; CGA and Hercules supported

Based on the arcade game of the same name, *Quarterback* requires strategy and playing ability. Players must call the plays and then carry out the action on the field. Features include a choice of all 28 NFL teams, arcade-style graphics and animation, and digitized sound effects.

NFL Challenge

XOR
IBM PC and compatibles: \$99.95; 320K required; monochrome or CGA required

NFL Challenge, licensed by the National Football League, features characteristics of players from all 28 NFL teams including the ability to pass, run, receive, and block. Two players play against the computer. The computer can also play against itself. The program incorporates injuries, substitutions, and fumbles according to NFL statistics. The *1988 Season Disk* containing statistics, skill ratings, and team rosters for the NFL 1988 season is available for \$24.95.

PRO Challenge

XOR
IBM PC and compatibles: \$49.95; 320K required; monochrome or CGA required

This scaled-down version of *NFL Challenge* features two equal All-NFL teams. The program includes weighted characteristics such as a player's ability to pass, run, receive, and block along with his weight, height, speed, and experience. Each player has a selection of 27 offensive and 14 defensive plays. Fumbles, interceptions, and penalties occur according to NFL statistics. The game features modes for one and two players, as well as a computer-vs.-computer mode.

Pure-Stat Football

Software Simulations
Distributed by MicroProse
Commodore 64: \$39.95
IBM PC and compatibles: \$39.95; monochrome or CGA required

One or two players can participate in this football simulation. The performance of the players is determined by speed, power, and catching ability. Users determine their own playing parameters and call all the shots from the sidelines. Players control the quarterback and receivers on offense and one key player on defense. A 1987 team disk sells for \$19.95, while a create-a-team disk is \$14.95.

Street Sports Football

Epyx
Apple II: \$19.95
Commodore 64: \$19.95
IBM PC and compatibles: \$19.95; 512K and CGA required

Players choose from nine neighborhood guys to make up teams that play on a city street or construction site. Obstacles include oil slicks, trash-can lids, puddles, and parked cars. Plays can be selected from a computerized playbook, or players can design a street playbook of their own. There are advanced and beginner levels of competition.

Super Sunday

Avalon Hill
Apple II: \$35.00
Commodore 64: \$19.99
IBM PC and compatibles: \$19.99; CGA required

With this statistics-based game, each player enters the offensive and defensive plays for his or her team and then watches as the game is played. There are 20 Super Bowl teams to choose from, and season disks for the champions are available separately. The game also contains solitaire and autoplay options. Also available are *General Manager's Disk*, for \$30; *Champion Disk*, for \$20; and season disks for the years 1984-1987, for \$20 each.

3 in 1 College & Pro Football

Lance Haffner Games
Commodore 64: \$39.99
IBM PC and compatibles: \$39.99

As the coach in this pro-football strategy game, the player can choose from 14 offensive and 6 defensive plays, call timeouts, use the two-minute drill, and compare scouting reports. The game can automatically compute individual and team statistics and provide a scoring summary at the end of the game. The stats compiler can record statistics for every team and player plus past schedule results for each team. The game includes 176 college teams, 28 NFL teams, and 14 USFL teams. Additional team disks can be purchased for \$14.99.

TV Sports Football

Cinemaware
Amiga: \$49.95; 512K required
Apple IIs: \$49.95

TV Sports Football offers more than 28 football teams and a 16-game schedule with postseason playoffs. It also contains pre-game warmup shows, broadcasters, cheerleaders, fans in the stands, and a halftime show with a marching band. You can call the shots as the coach or play on the field as a quarterback, running back, or wide receiver. You set up the offense and the defense based on individual and team statistical records. *TV Sports Football* includes arcade action on the field, color graphics, and animation. The game is designed for one or two players competing against each other, for one player against the computer, and for computer against computer.



Fans are part of the action, too, in the Amiga version of Cinemaware's *TV Sports Football*.

The World's Greatest Football Game

Epyx
Apple II: \$19.95
Commodore 64: \$19.95; joystick required

This football-strategy game lets one or two players coach as well as play a game of football. Players can use the playbook or design their own offensive and defensive plays and then take part in the execution of those plays.

BASKETBALL

Basketball: The Pro Game

Lance Haffner Games
Apple II: \$39.99
Commodore 64: \$39.99
IBM PC and compatibles: \$39.99

In this simulation, the player can coach an NBA or ABA basketball team, choosing the starting lineups, substitutions, shot selections, passing, and offensive and defensive styles of play. Statistics on individuals and whole teams for an 82-game season can be maintained with the stats compiler, and a summary of each game can be printed when the game is finished. The program includes 23 current NBA teams plus more than 100 great teams of the past. Additional team disks are available for \$14.99.

Basketball Challenge

XOR
IBM PC and compatibles: \$39.95; monochrome or CGA required

Players act as coach in this five-on-five real-time college-basketball simulation. One or two players can compete or the computer can play itself. Players' characteristics are weighted according to height, weight, position, and skill ratings. Players can select from 20 college teams. Player fatigue, substitution, jump balls, and fouls all contribute to the game's outcome.

Courtside College Basketball

Lance Haffner Games
Commodore 64: \$39.99
IBM PC and compatibles: \$39.99

The player can coach Division I college-basketball teams as they compete for the championship with this strategy game. Options include lineup, substitutions, shot selections, passing, defensive and offensive styles, and the 45-second clock. Statistics for each player include rebounding, passing, defense, shooting ability, and overall-contribution factor. The stats compiler maintains statistics for individual players and the whole team, and a summary can be printed to the screen or a printer at the end of each game. Players can play against a friend or the computer, or they can watch the computer play itself. The game includes 286 teams from the most recent season plus 70 all-time-great college teams. Additional team disks are \$14.99.

Dr. J and Larry Bird Go One-on-One

Electronic Arts
Apple II: \$14.95
Commodore 64: \$14.95
IBM PC and compatibles: \$14.95; CGA required
Players can become either Julius Erving or Larry Bird in this one-on-one action game.

Fast Break

Accolade
Commodore 64: \$29.95
IBM PC and compatibles: \$39.95; 384K required for Tandy; CGA, EGA, Hercules, and Tandy 16-color supported

This three-on-three basketball game features full-court action from a television perspective. Players can choose offensive and defensive plays and can substitute players. The game is played under professional rules with three-pointers and slam dunks. For one or two players.



Another slam dunk in Electronic Arts' *Jordan vs. Bird: One on One*.

Jordan vs. Bird: One on One

Electronic Arts
Commodore 64: \$29.95
IBM PC and compatibles: \$39.95; 384K required for Tandy; CGA, EGA, VGA, and Tandy 16-color supported

Superstars Larry Bird and Michael Jordan battle on the court in three special events. Players can see who's the best in the One on One battle, the Slam Dunk Competition, and the Three-Point Shootout.

Magic Johnson's Basketball

Melbourne House
Distributed by Virgin Mastertronic
IBM PC and compatibles: \$39.99

A translation of the coin-op arcade game, this two-on-two basketball game pits one or two players against each other on the basketball court. Individual contest winners can go on to challenge Magic Johnson in a game of one-on-one. Players' statistics are updated at the end of each game. The package includes a color poster of Johnson.

NBA

Avalon Hill
Apple II: \$39.95
Commodore 64: \$39.95
IBM PC and compatibles: \$39.95; CGA required

Players can control basketball players of the past and present in this statistical basketball computer game. Users pick the starting lineups and send in substitutes. The program includes 20 great teams from the past and a stat keeper that keeps track of how well each team is doing. The game features three playing modes: head to head, solitaire, and autoplay. The autoplay mode allows the same teams to play several games in a row. Additional season disks are available for \$20 each.

Pure Stat College Basketball

Medalist International
Distributed by MicroProse
Apple II: \$39.95
Commodore 64: \$39.95
IBM PC and compatibles: \$39.95; CGA, EGA, and RGB supported

This animated five-on-five basketball game simulation is based on statistics. One or two players can compete, or the computer can play itself. Coaching strategy and player statistics determine the outcome of each game. Players can choose from 20 all-time-great college teams. Users can also create their own teams by entering statistics. Team statistics can be reviewed or printed at any time. Optional team disks are available. Separate tournament disks sell for \$19.95 and a create-a-team disk retails for \$14.95.

Slam Dunk

Virgin Mastertronic
Commodore 64: \$9.99
IBM PC and compatibles: \$14.99; CGA required

This simulation of two-on-two basketball features slam dunks, lay-ups, and ally-oops. The program also keeps track of player statistics.

Street Sports Basketball

Epyx
Amiga: \$39.95; 512K required
Apple II: \$19.95
Commodore 64: \$19.95
IBM PC and compatibles: \$19.95; CGA or Hercules required

One or two players compete in this neighborhood-style basketball game. The court is set up in a schoolyard, alleyways, or a park, and three players for each team are chosen from ten neighborhood dribblers. Much of the strategy involves how well each player has put together his or her team and how well the hoop shooters can avoid local obstacles such as oil slicks and fences. ▸

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SOCCER

International Soccer

Microdeal
Amiga: \$39.95

Team colors, wind, rain, and a night-play option add to the realism of this computer soccer game. Onscreen referees decide the plays, and an electronic scoreboard keeps the score. For one or two players.

Keith Van Eron's Pro Soccer

Medalist International
Distributed by MicroProse
Commodore 64: \$34.95

Pick your favorite team and play both indoor and outdoor soccer with this game. You can play a Major Indoor Soccer League (MISL) schedule and organize a World Cup Tournament. Up to 16 players can compete in the World Cup Tournament, with each player controlling a separate team. Variables such as wind, wet turf, and rebounds off the boards, as well as a slow-motion instant replay after each goal, enhance this smooth-scrolling game. The package includes a manual with soccer tips and a history of the World Cup and MISL.



Miami takes on Baltimore in *Keith Van Eron's Pro Soccer* for the Commodore 64.

MISL Soccer

Mindscape
Commodore 64: \$34.95
IBM PC and compatibles: \$39.95; CGA required

Players can assume the roles of player, coach, and general manager in this simulation game based on the Major Indoor Soccer League. Coaches can choose lineups and make substitutions. The General Manager can attempt to build a successful MISL franchise by drafting and trading players. The onscreen players can attempt headers and assorted kicks. For one or two players.

Street Sports Soccer

Epyx
Apple II or IIGs: \$19.95
Commodore 64: \$19.95
IBM PC and compatibles: \$19.95; 512K and CGA required

Another in the Epyx line of street-sports games, *Street Sports Soccer* enables players to take part in a fast, street-style soccer game. Players first choose a field either in a park or on a city street and then recruit a three-member team from the neighborhood kids. Each character has his or her own personality and skills for heading the ball, executing shots, and controlling passes. There are few rules and no uniforms or sportsmanlike conduct. Teams can play each other or play the computer with a time or points limit.

Superstar Soccer

Mindscape
Commodore 64: \$34.95
IBM PC and compatibles: \$39.95; CGA required

In *Superstar Soccer*, the player can perform as soccer player, coach, or owner and manager. As center or goalie, the player can run, shoot, pass, and even get injured. As the coach, the player calls the plays and sends the team to training camp. The owner/manager trades and recruits team members. One or two players can compete against the computer or each other.

World Trophy Soccer

Virgin Mastertronic
IBM PC and compatibles: \$49.95; CGA required

One or two players can compete in this simulation of competitive soccer action.

ICE HOCKEY

Hat Trick

Capcom
Commodore 64: \$29.95
IBM PC and compatibles: \$29.95; CGA required

Players compete head to head in this ice-hockey game. Each player controls a goalie and a player on the ice. *Hat Trick* is based on the Bally arcade game.

International Hockey

Artworx
Apple II: \$19.95
Commodore 64: \$19.95
IBM PC and compatibles: \$19.95; CGA required

The fast action of hockey is recreated in this game for players ages 8 and older. *International Hockey* includes body checks, fighting penalties, puck passing, graphics, and sound effects such as crowd noise, organ music, and digitized speech. One or two players can compete on three skill levels.

Powerplay Hockey: USA vs. USSR

Electronic Arts
Commodore 64: \$24.95

The U.S.A. and the U.S.S.R. face off in one-on-one competition or five-on-five team play in this hockey game. There are three levels of play and a wide range of offensive and defensive moves, including full-speed slap shots, body checks, and drop passes. Fights on the ice result in penalties for either team. A stat screen at the end of each period shows the attempted and completed shots for each player.



The U.S.A. and the U.S.S.R. battle it out in *Electronic Arts' Powerplay Hockey: USA vs. USSR*.

Superstar Ice Hockey

Mindscape
Amiga: \$49.95; 512K required
Apple II: \$39.95
Apple IIGs: \$44.95
Commodore 64: \$34.95
IBM PC and compatibles: \$39.95; CGA required

One or two players can face off against each other or the computer. In this multilevel game, the player can be the owner and general manager, trading and recruiting players or sending the team to a training camp. As head coach, the player can set and change the lines and plan the strategies. Or, the player can act as goalie or center and play on the team. This simulation allows for two-on-two, four-on-four, or six-on-six games. A team can compete against 19 other teams in four divisions for up to nine seasons.

GOLF

California Pro Golf

Virgin Mastertronic
Commodore 64: \$9.99
IBM PC and compatibles: \$9.99; CGA required

California Pro Golf features an 18-hole golf course complete with hazards. Players have touch-sensitive control of the shots and a choice of clubs.

Jack Nicklaus' Greatest 18 Holes of Major Championship Golf

Accolade
Commodore 64: \$29.95
IBM PC and compatibles: \$49.95; 384K required;
CGA, EGA, Hercules, and Tandy 16-color
supported

Jack Nicklaus' Greatest 18 Holes of Major Championship Golf is based on the recently released videotape from the ABC Sports Video library. This golf simulation features Nicklaus's favorite 18 holes of major championship golf along with two additional Nicklaus-designed courses. Players can compete against up to three other human opponents, a computerized Jack Nicklaus, or a variety of computerized men and women. Other features include a choice of Skins scoring or stroke play; pro, men's, or ladies' tees; wind intensity and direction; and uphill or downhill lies. An accessory disk, *Jack Nicklaus Presents the Major Championship Courses of 1989*, is available for \$19.95.

Leader Board

Access
Amiga: \$39.95; joystick required
Commodore 64: \$19.95

One to four players can simulate an actual game of golf on one of these 18-hole courses. Players choose their clubs, distance, and type of shot. There are three levels of difficulty, and the computer calculates the handicaps and scores. Tournament Disk #1 and Executive Tournament Disk, which are additional course disks, are included with the package.

Mean 18

Accolade
Amiga: \$44.95
Apple IIs: \$44.95
IBM PC and compatibles: \$44.95; CGA, EGA, Hercules MGA, and Tandy 16-color supported
Macintosh: \$44.95; 512K required

With this golf game, one to four players can play famous golf courses such as Pebble Beach, St. Andrews, and Augusta. The courses include a driving range and a putting green. Using the Golf Course Architect Set, players can design their own courses, complete with sand traps, water hazards, and trees. Players compete against other computer golfers in online tournaments by using *Mean 18* on the Computer Sports Network. Additional course disks are also available. *Course Disk II* sells for \$19.95. A package including *Course Disk III* and *IV* and one including *Course Disk V* and *VI* retail for \$34.95 each.

World Class Leaderboard

Access
Amiga: \$44.95
Apple II: \$39.95
Commodore 64: \$14.95
IBM PC and compatibles: \$44.95; CGA or Tandy
16-color required
Macintosh: \$49.95

Three famous 18-hole golf courses are reproduced in this golf game. Players can tee off at St. Andrews, Doral, and Cypress Creek. A fourth course, the Gauntlet Country Club, was especially designed for this program. The game also offers a printout of the scorecard, an editor to rearrange the holes, a top view of each hole, a practice putting green, and driving ranges. Additional course disks are available. *Famous Courses Disk, Volume I* contains Harbour Town, Sunningdale, Dorado Beach, and a course designed by Access, Pine Ridge. *Volume II* includes Pebble Beach, Muirfield, Colonial Country Club, and the Access course Glenmoor Country Club. Additional course disks are available for \$19.95 each.



One of the holes on the *Famous Courses Disk Volume I* for Access's *World Class Leaderboard*.

World Tour Golf

Electronic Arts
Amiga: \$39.95; 512K required
Apple IIs: \$39.95
Commodore 64: \$14.95
IBM PC and compatibles: \$14.95; CGA required

Players can choose from 12 of the world's greatest golf courses or become an architect and design their own course. Courses include St. Andrews, Pebble Beach, Augusta National, and Shinnecock Hills. The program also includes a championship course made up of the world's most difficult holes. One to four players can participate, with a choice of either match or medal play. Players can also compete against up to three computer golfers and set characteristics for each. Split-screen animated graphics give both an overhead view and a golfer's-eye view of the hole. In addition to normal hazards, players will encounter random weather conditions each time they play. Players can also practice on the driving range and the putting green.

TENNIS

Grand Slam

Infinity Software
Amiga: \$49.95; 512K required

Players can compete in the Big Four of the world Grand Prix tennis circuit in this action sports game. The competition starts on the clay courts of Paris and the French Open and then moves on to the grass of Wimbledon. After Great Britain, it's on to New York and the U.S. Open, followed by the Australian Open down under. Players choose a wood, metal, or graphite racket, with corresponding stringing tension for different levels of play. Each opponent has unique playing styles and characteristics. Players can even confront the umpire to protest questionable line calls. The game provides players with a championship draw to chart progress in Grand Slam events. Other features include digitized sound and 3-D graphics.

Serve and Volley

Accolade
Apple IIs: \$39.95; 512K required
Commodore 64: \$29.95
IBM PC and compatibles: \$39.95; CGA, EGA, Hercules, and Tandy 16-color supported

Serve and Volley requires players to use correct ball placement, timing, and stroke selection. Users can choose from three difficulty levels and three court surfaces. Game activity can be viewed from a full-court perspective with action windows. Players must first select a serve type and then hit volleys, forehands, backhands, smashes, and lobs. The game offers match or tournament play against the computer or for two players against each other. Each tournament or match can be saved and resumed.

BOXING

Fight Night

Accolade
Apple II: \$14.95
Commodore 64: \$14.95

This boxing game requires strategy as well as skill. It includes a boxer construction set.

Sierra Championship Boxing

Sierra On-Line
Apple II: \$14.95
Commodore 64: \$14.95
IBM PC and compatibles: \$14.95; CGA required

Some of boxing's most famous bouts can be recreated with this game, or players can create new matches using a list of 50 former or current boxers. As trainer, the player plans a strategy and determines height, weight, stamina, and best punch for the contender. In the arcade mode, players can fight each other or the computer. Two manuals explain the art and strategy of boxing and the history of the sport. ▸

Star Rank Boxing II

Gamestar
Distributed by Mediagenic
Apple II: \$34.95
Commodore 64: \$29.95
IBM PC and compatibles: \$34.95; CGA required

Two players can play each other or one player can challenge the computer in a battle for the boxing title. Each boxer must defeat four challengers on the way to the championship; challengers become more skillful as the match progresses. In the exhibition bouts, boxers can fight in the welterweight, middleweight, or heavyweight class, with up to five boxers in any one class. Players create a training regimen for their boxers and improve their skills in blocking and ducking punches, throwing crosses, jabbing, uppercutting, and taking body shots. A tale of the tape containing the boxer's statistics and record appears before each fight.

T.K.O.

Accolade
Commodore 64: \$29.95
IBM PC and compatibles: \$39.95; CGA, EGA, Hercules, and Tandy 16-color supported

This arcade-style, split-screen boxing game features a first-person perspective, allowing players to get a feeling of being in the ring. Players can use both offensive and defensive maneuvers, including dodging and ducking punches. When hit, each boxer's face shows the damage sustained, including black eyes, fat lips, swollen cheeks, a bruised forehead, and a cut jaw. For one or two players.

MISCELLANEOUS

Downhill Challenge

Broderbund
Amiga: \$29.95
Apple IIs: \$29.95

In this interactive ski-racing simulation, the players compete in downhill, slalom, giant slalom, and ski jumping. There are separate runs for beginning, intermediate, and advanced skiers. Action appears in 3-D animation.

Final Assault

Epyx
Amiga: \$49.95
Apple IIs: \$44.95
Atari ST: \$49.95
Commodore 64: \$39.95
IBM PC and compatibles: \$39.95; CGA required

Thrill seekers can practice climbing some of the world's most treacherous peaks with this mountain-climbing game. Mountain climber Eric Escoffier provided design assistance for the rock faces, glaciers, crevasses, and chasms found along the trails. Players must choose which supplies to backpack from over 50 items. Onscreen variables include temperature, time, altitude, and physical state of the climber. There is a training course before the climb, and a safety guide is provided.

Indoor Sports

Mindscape
Amiga: \$49.95
Apple II: \$29.95
Commodore 64: \$29.95
IBM PC and compatibles: \$29.95; 384K required for DOS 3.2 or higher

This sports package contains four different indoor games—air hockey, table tennis, bowling, and darts. Players can compete against each other or the computer. The program includes 3-D graphics and animation.

Kings of the Beach: Professional Beach Volleyball

Electronic Arts
IBM PC and compatibles: \$39.95

Designed with the assistance of beach volleyball champions Sinjin Smith and Randy Stoklos, this simulation sets you in the midst of international two-on-two beach volleyball matches. With a human or computer partner, try to win three games on beaches in Rio, Australia, Hawaii, Chicago, and San Diego. If you make it through all 15 matches, you'll be the King of the Beach. Practice the fundamentals of spikes, bumps, and sets on one of three courts, or participate in a winner-take-all game on the match court. The program incorporates the style and moves of Smith and Stoklos as well as other members of the Association of Volleyball Professionals. A package containing both 5¼- and 3½-inch disks is also available for \$44.95. □

Publishers' Names and Addresses

For more information about the sports games listed here, contact the publishers listed below.

Access Software
545 W. 550 South
Suite 130
Bountiful, UT 84010

Accolade
550 S. Winchester Blvd.
San Jose, CA 95128

Artworx
1844 Penfield Rd.
Penfield, NY 14526

The Avalon Hill Game Company
4517 Harford Rd.
Baltimore, MD 21214

Broderbund
17 Paul Dr.
San Rafael, CA 94903-2101

Capcom U.S.A.
1283-C Mountain View/Alviso Rd.
Sunnyvale, CA 94089

Cinemaware
4165 Thousand Oaks Blvd.
Westlake Village, CA 91362

Cosmi
415 N. Figueroa St.
Wilmington, CA 90744

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404

Epyx
P.O. Box 8020
600 Galveston Rd.
Redwood City, CA 94063

Gamestar
Distributed by Mediagenic
3885 Bohannon Dr.
Menlo Park, CA 94025

Infinity Software
1144-65th St.
Suite C
Emeryville, CA 94608

JBE
869 Younge St.
Suite 110
Toronto, Ont.
Canada, M4W 2H2

Lance Haffner Games
P.O. Box 100594
Nashville, TN 37210

Medalist International
Distributed by MicroProse
180 Lakefront Dr.
Hunt Valley, MD 21030

Melbourne House
Distributed by Virgin Mastertronic
711 W. 17th St.
Unit 9G
Costa Mesa, CA 92627

Microdeal
576 S. Telegraph Rd.
Pontiac, MI 48053

Micro League Sports
2201 Drummond Plaza
Newark, DE 19711-5711

Mindscape
3444 Dundee Rd.
Northbrook, IL 60062

Sierra
P.O. Box 495
Coarsegold, CA 93614

Software Simulations
Distributed by MicroProse
180 Lakefront Dr.
Hunt Valley, MD 21030

Solid Gold Software
Distributed by Mediagenic
3885 Bohannon Dr.
Menlo Park, CA 94025

Virgin Mastertronic
711 W. 17th St.
Unit 9G
Costa Mesa, CA 92627

XOR
7607 Bush Lake Rd.
Minneapolis, MN 55435

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MS-DOS

The king is dead. Long live the king. That was the message Intel delivered at Spring COMDEX. What's difficult is figuring out just who the old king and the new king are.

Intel clearly thinks the old king is its 80286 microprocessor and the new king is its 80386, especially in that chip's latest, faster-than-a-speeding-bullet 33-MHz incarnation. What's confusing the issue is Intel's new superchip—the i486—also announced at COMDEX.

The i486 is a lot like the 386 models (which are now called the 386DX, for the full 32-bit screamer, and the 386SX, for the 16/32-bit burner), except that the new chip is bigger and faster—two to four times faster, according to Intel.

This chip's sensational speed comes from three things: an 8K on-chip instruction-and-data cache, 80387-math-coprocessor-compatible floating-point circuits built directly on the chip, and a blistering clock speed of 33 MHz.

Performance like this doesn't come easily. To put all this functionality on one chip, the i486 needs a whopping 1.2 million transistors. Intel achieved this amazing degree of transistor packing by using the same patented one-micron CHMOS IV technology on the i486 that made its i860 the first chip in history to break the

one-million-transistor barrier.

Getting back to old king and new king, what is the i486? The crown prince? It's not that simple. According to Gene Sumrall, vice president and founder of Cheetah, a company famous for fast systems, the 486 is the new king and the old king is—are you ready?—the 386 chip.

The reasoning behind Sumrall's view is easy to see if you take a close look at the 486 from a system's point of view. With its on-chip cache and floating-point hardware, it's cheaper to build a powerful, high-end system around the 486 than around the 386, which requires extra chips to achieve the same performance.

And the low end, where most of us do our daily computing? That's no longer going to be the domain of the 286. According to Sumrall, the 386SX, Intel's bargain-basement version of the full 32-bit 386, will win the hearts and minds of the budget-conscious.

In case you can't wait to get your hands on an i486 and you're wondering just how much one costs, the chips are \$950 each and are available only in lots of 1000. With tax, postage, handling, and a small tip for Intel, that adds up to a cool million.

Battle Chess

This game isn't for the squeamish. When you boot up *Battle Chess* (Interplay Productions, 1575 Corporate Drive, Costa Mesa, California 92626; 714-549-2411; \$49.95), you're treated to a three-dimensional chess board populated by realistic-looking twelfth-century kings, queens, knights, bishops, rooks, and pawns.

When you indicate a move (with a mouse, joystick, or keyboard), your piece walks to its destination square. If

that square is occupied, a battle ensues.

Each piece has his or her own way of fighting. Knights do battle by decapitating each other. First, the losing knight has his arms chopped off. Armless, he tries to kick his opponent, but has one of his legs whacked off. He hops around until the enemy knight bashes him to the ground, where he finally crumples and dissolves. Somebody at Interplay has been watching tapes of *Monty Python and the Holy Grail*.

Perhaps *Battle Chess*'s most surprising weaponry is wielded by the king who, despite his twelfth-century attire, packs what looks like a laser gun.

Although *Battle Chess* may not beat *Chessmaster 2100* (though it has beaten me a few times), it's certainly a creative twist on traditional chess. If you don't faint at the sight of blood, it's definitely worth a closer look.

Graphic Power

Graphing programs are quickly becoming one of the hottest categories of PC software. On almost every top 10 software list, you'll see at least one—usually one that offers three-dimensional graphs.

Recently, Three-D-Graphics released a graphing program destined for greatness: *Perspective Junior* (Three-D-Graphics, 860 Via de la Paz, Pacific Palisades, California 90272; 213-459-7979; \$149.95). Before going any further, let me say that there's nothing junior about this package: It's 100-percent power from start to finish. And it's a masterpiece in ease of use.

To create a graph with *Perspective Junior*, simply enter your data into the data manager or load the info di-

rectly from your spreadsheet (*Junior* supports WKS and WK1 files as well as several other popular spreadsheet formats).

Next, select your graph type from 13 three-dimensional or 8 two-dimensional options. Hit Enter and your graph pops onto the screen. After you've found a graph you're happy with, you can tweak it to give it just the look you want.

The most dramatic way to customize your graph is to alter its viewing angle. If you don't like the predefined angles, rotate the graph along its axes for just the look you want. You can also adjust colors, the size of your graph's elements, and dozens of other variables.

All of *Perspective Junior's* features are controlled with function keys. Navigating the program with function keys is easy, but it can be slow. Mouse support would be a big plus for this package.

That lack notwithstanding, *Perspective Junior* is a beautifully designed piece of software.

One Ringy-Dingy

All modems have one thing in common: They're set up to dial the phone at a snail's pace. If you're making local calls, you may be able to put up with those seven slowly spaced beeps, but long-distance calls, especially those that need an extra digit or two for an outside line or a long-distance service number, can drag on and on. But things don't have to be that way.

Your Hayes-compatible modem probably has the ability to change the speed at which it dials the phone. A value in one of the modem's internal registers—S11—controls the number of milliseconds between pulses, and thus the modem's dialing speed. The smaller the number in the register, the faster the modem dials.

You can change the value of the S11 register while you are in your communication program's terminal mode by giving the command `ATS11 = 35` (your modem's

manual may have a range of appropriate values for its implementation of S11). This isn't always convenient, though. After all, you may not be using your modem for communications; you may be using it to dial the phone with *SideKick* or some similar program.

DOS to the rescue. With the MODE and ECHO command, you can send a string directly to your modem. Here's what to type:

```
MODE COM1: 1200,n,8,1
ECHO AT$11 = 35
>COM1:
```

Unfortunately, some modems advertised as Hayes-compatible don't implement the S11 register, so they can't change their dialing speed. If your modem doesn't dial faster after you execute these lines, it probably can't power-dial. Also, if you're using a serial port other than COM1 or a baud rate other than 1200, be sure to use the appropriate values in the command string.

The first time you dial the phone after changing S11, you won't believe the difference. And if you get hooked on warp-factor-5 dialing, you can put this command string in your AUTOEXEC.BAT file, sit back, and let your modem do the running.

— Clifton Karnes



Before we get to the new releases this month, let's take a look at some older software that's available at bargain

prices. Just as there are discount places for practically any item, mail-order companies offer substantial discounts on software ranging in age from ancient to relatively recent. For a machine like the Commodore 64, this software is both plentiful and cheap, yet often of extremely high quality.

The following prices come from a magazine advertisement placed by Software Discounters of America, although many of these packages are discounted at retail stores and other mail-order houses as well. Among the bargains you'll find are Accolade's *Ace of Aces* and *Hardball*, \$9.88 each, and Activision's *Hacker I*, *Hacker II*, and *Shanghai* for the same price. Avantage's two *Spy vs. Spy* adventures are \$9.88 combined, as is Broderbund's *Arcade Game Construction Set*.

Also checking in at \$9.88 are *King of Chicago, S.D.I.*, and *Sinbad* (Cinemaware); *Arctic Fox*, *Instant Music*, *Marble Madness*, *Seven Cities of Gold*, *Heart of Africa*, and *Ultimate Wizard* (Electronic Arts); *On Court Tennis* and *Star League Baseball/On Field Football* (Gamestar); *AwardWare* and *Sesame Street Print Kit* (Hi Tech Expressions); *Hitchhiker's Guide to the Galaxy* (Infocom); *Perry Mason* (Telarium); and *Certificate Maker* and *The Newsroom* (Springboard).

In addition, there's a wealth of even cheaper products. *Loderunner* and *Karateka* (Broderbund) are \$6.88 each, as are all the entries in Spinnaker's Easy Working series. Spinnaker's *Dark Tower*, *Learn to Spell*, *Railroad Tycoon*, and *Story Machine* are each \$4.88. Most of these packages still stand up as superb products, and many received highly complimentary reviews in the pages of *COMPUTE!* and *COMPUTE!'s Gazette* (I know, because I've reviewed a bunch of them). *Heart of Africa* and *Seven Cities of Gold*, for example, are brilliantly conceived games, and the children's software from Hi Tech Expressions and Spinnaker is truly a great deal.

Software Discounters of America can be reached at P.O. Box 111327, Blawnox, Pennsylvania 15238; (800)

225-7638, outside Pennsylvania, or (800) 223-7784, in Pennsylvania.

Better Soccer

Soccer is the most widely played sport in the world. The reason is simple: To play soccer, all you need is a ball. Any field anywhere in the world, combined with a couple of rocks signifying goalposts, will serve as a playing surface. Just get the ball, don't touch it with your hands, and try to kick it into the goal.

Soccer is also extremely difficult to simulate on computers. Commodore's *Championship Soccer* from several years back was a great little game, but it had little to do with the real sport. Now comes *Keith Van Eron's Pro Soccer* (Microplay/MicroProse, 180 Lakefront Drive, Hunt Valley, Maryland 21030; 301-771-1151), and the results are better. It's still not great soccer, but it's getting better all the time.

Actually, *Pro Soccer* is two games in one. On side 1 of the disk is the indoor version of the game. This simulation is actually closer to reality than the outdoor game that's on the flip side. As a dedicated soccer purist, I'm fundamentally opposed to the indoor game, so I'll give it short shrift here. Instead, it's on to side 2 and the excitement of the World Cup.

The 1994 World Cup will be held in the U.S. The World Cup puts the best players in the world on the field for their home countries, and the winning country celebrates wildly. *Pro Soccer* simulates the World Cup by setting up the many-nation tournament accurately and then showing the results of the games you don't play yourself.

You can choose to play for one country, while a friend chooses to play for another. This way, you might get to play each other later down the line. If you want this to happen, choose nations like Brazil, the U.S.S.R., or Italy because countries like Oman, Canada, the U.S., and Mexico get knocked out early. ▶

While *Pro Soccer* doesn't emphasize the team aspects of the game enough, gameplay is good. It does suffer from what I call the "fatal pixel" problem: Against lower-level computer opponents, the goalie cannot stop the ball if it's shot from one of two places on the field. But a World Cup tournament plays quickly, and just trying to reach the finals is good, solid entertainment.

One red-letter warning: Don't save a game to the master disk. I did that once, and the program would no longer load.

Change of Scenery

Test Drive, Accolade's product for people who realize they'll never be able to afford a Porsche, is one of the most popular driving games ever. Not surprisingly, the company has released a sequel. *Test Drive II: The Duel* picks up where the original left off, this time letting you race against either the clock or a computer-controlled supercar.

The scenery in this sequel is much improved. *Test Drive* had you hold tight to a treacherous mountain road, and eventually the repetitive view became a bit boring. In *Test Drive II*, the scenery changes from mountains to forests and even to deserts, and the roads contain such niceties as oil slicks, fallen rocks, potholes, and oodles of traffic.

The two cars included in the package are the Ferrari F40 and the Porsche 959. As in the original game, you can shift gears yourself or have the computer shift for you. Unlike the original, however, you aren't restricted to these two cars or even to the scenery. Accolade promises a series of car and scenery packages to prevent the product from ever getting stale.

The Supercars is the first car package. Included here are an 1988 Lotus Turbo Esprit, a Ferrari Testarossa, a Porsche 911 RUF (an ugly little yellow thing), a Lamborghini Countach 5000S, and a relatively inexpensive 1989 Corvette ZR1. Each has its own peculiarities

in steering and acceleration.

The first scenery package is *California Challenge*. Fire it up and head down the West Coast from Oregon to Mexico. Redwoods, mountains, the Golden Gate Bridge, the freeway—it's all here, and all ready for you to tackle, with the police right on your tail. Signs tell you when you've arrived at Monterey, Big Sur, San Diego, and a host of other well-known places. More challenging than the scenery included in the *Test Drive II* package, *California Challenge* adds a bit of realism as well. For more information, contact Accolade, 550 South Winchester Boulevard, San Jose, California 95128; 408-296-8400.

Grab Your Putter

Hole-in-One Miniature Golf (DigiTek, 8910 North Dale Mabry, Executive Center, Suite 37, Tampa, Florida 33614; 813-933-8023) is easy to play and offers a wide variety of challenges. This game is definitely one of the more appealing mini-golf packages.

The game includes four different courses. A tutorial leads you through the kinds of holes you can expect. The Classic course contains some "normal" holes but then veers into the animated and the unexpected. Holes on the Intermediate course range from interesting to nearly impossible, and the Expert course confirms that the game's designers saw no point in sticking to the real world. There are some fascinating shots to make here, and none are remotely easy.

Menagerie is the last course. Here the overhead view is replaced with a 3-D view. One of the most interesting features in several of these holes is simply finding the hole; in one instance, it's in the bottom of a boat.

This is a fine game for all ages. It does have a rather unusual problem, though. In a very friendly gesture, DigiTek included a means of taking back your shots, right back to the point where you set up the ball. I found myself relying on it completely, to the point where the holes became too

easy to play. If you do get this game, don't use this feature—it just spoils things.

—Neil Randall

APPLE II

No IIGs Plus

No news isn't always good news. That's proven true for the long-rumored Apple IIGs Plus, the updated and upgraded computer everyone expected this spring.

Most people figured that the May AppleFest in Boston would be the perfect opportunity to announce the newest incarnation of the Apple II line. It wasn't.

AppleFest came and went, all without any significant hardware news from Apple. Sure, the company trotted out the Apple Video Overlay Card, a genlock board announced almost a month earlier. It even dragged out a new System for the IIGs, one that supports AppleTalk. But no new machine.

John Sculley, head of Apple, has been quoted as saying that a new Apple II CPU will be introduced in 1989. It's time to question that claim. As reported in last month's column, the future of the Apple II line itself is in some doubt. No matter how strongly Apple's public relations people reject the rumor, clues continue to pile up: traditional Apple II developers abandoning the machine in favor of MS-DOS, educators taking stock of their loyalty to Apple computers, the leading Apple II magazine folding, and now no new IIGs for at least another four months.

If the IIGs Plus (or whatever it ends up being called) does make it out, it won't be

Good Sounds. Is that what the *GS* in Apple's IIGs stands for? If so, the *Good* can quickly turn into *Great* with a new software package from Electronic Arts. The three-in-one *Instant Synthesizer* puts a four-voice polysynthesizer, a sound digitizer, and a sound editor in the hands of any IIGs owner.

Instant Synthesizer uses a visual interface, perfect for the graphics-intensive IIGs. You can use the program to create new music, manipulate music you've already written, expand the number of instruments in programs such as *Instant Music* (also from Electronic Arts), and with the right hardware, even sample sounds.

An appropriate setup for an *Instant Synthesizer*-equipped IIGs is a low-cost MIDI keyboard, a MIDI interface (Apple sells one for around \$100, but third-party manufacturers offer others), and a sound-sampling card (Future Sound and MDIdeas are two popular boards). Although that may sound like a lot of hardware, the price is right; you should be able to put it all together for less than \$500. By adding *Instant Synthesizer*, you can turn an amateur's collection into something that will rival a low-end professional music system.

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Older Is Better

If you're in the market for a new Apple II computer or even a second Apple II for the kids or your spouse, you'll probably want a printer to complete the system. An Apple dealer will undoubtedly steer you toward the ImageWriter II, the standard dot-matrix printer for both Apple II and Macintosh computers.

But as long as you don't care for color printing (which the ImageWriter II does admirably), consider this alternative: an ImageWriter I.

Although the ImageWriter I was superseded by its faster, more attractive offspring, many people believe that the older printer is the better printer. The ImageWriter I is sturdier, handles tractor-fed paper with far fewer jams, and prints darker and cleaner than the ImageWriter II.

Even though the ImageWriter I does not have the near-letter-quality (NLQ) mode found on the II, its print quality is noticeably better. One exception is printing from *AppleWorks*: For really dark print with the ImageWriter I, an entire document must be set in boldface. But if you have a IIGS, the lack of an NLQ mode isn't a problem; you can select print quality from within most IIGS software.

Finding an ImageWriter I won't be easy. Your best bet is to scout classified advertisements in the computer or office-equipment sections of your local newspaper. Even then, you'll rarely see a printer advertised by itself. Instead, look for people selling entire Apple II or Macintosh systems. Owners of early Macintosh computers are your best bet—people who bought an original 128K Mac or even a 512K Macintosh usually purchased an ImageWriter I.

Give them a call and ask whether they're willing to sell the printer separately. A good price for an ImageWriter I in good condition is \$100–\$150.

You may have to refurbish the printer somewhat (general cleaning, especially of the platen), but the printers hold up remarkably well. One thing to check before you hand over your cash, however, is how well it handles single sheets. An older printer may have lost the ability to tightly grab the paper as it rolls under the platen.

Tangled Up in Blue

Adventure games take time. Lots of time. They may offer an escape to a new and exciting fantasy world, but if you don't have hours to spare (and patience to match), you're likely to be disappointed.

Origin, known for its immensely popular Ultima series, has just introduced an Apple II adventure that the company is hoping will appeal to those thousands who would never have thought of delving into a dungeon. *Tangled Tales* is an off-the-wall graphics adventure that pits your main character, a struggling apprentice wizard, against all kinds of surprises. Liberally sprinkled with an offbeat sense of humor, the game features an easy-to-use interface that keeps parser frustration to a minimum. No more typing in *Get book* and finding out that the program only recognizes the phrase *Grab book*.

The *Tangled Tales* screen offers two small windows—one with a close-up look at your general surroundings and the characters you meet and the other with a bird's-eye view of your location—as well as a row of icons that form the foundation of the adventure's commands. Press the space bar (or joystick button) to activate the command row, and then an arrow key to move the pointing hand to the appropriate icon. You can even bring up another set of icons by moving the hand pointer to the switch at the far right.

With an icon selected, *Tangled Tales* presents a narrowly defined list of possible actions or commands. When you run into a drunk in the nearby pub, for instance, you

can greet him, say good-bye, or buy something from him. That's it. Simplicity at work.

The tale in *Tangled Tales* is simple enough—you've really screwed up by using up all your master's magic dust. In a snit, he wiped your spell book clean. To fill it again, you'll have to complete three assignments.

Along the way, you'll meet strange folks (including, of all things, a California surfer), battle evil and nasty creatures (the typical lot of goblins and the like), and explore the city, forests, and underground worlds. The humor is unusual, a bit sophomoric in places, but never insulting or overdone. Not as funny as something like *Zak McCracken*, perhaps, but still worth a grin or two.

With its unique interface, *Tangled Tales* doesn't need everything that other adventures dish out. I may not have the patience for most adventures, but I do for this one.

Tangled Tales carries a price tag of \$29.95. For more information, contact Origin, 136-B Harvey Road, Londonderry, New Hampshire 03053; (603) 644-3360.

—Gregg Keizer

sive animation features.

The program's painting tools now include a brush map option that allows you to create landscapes from any brush; a stencil tool to prevent you from painting over any selected color; cycle color drawing (but, inexplicably, no way that I've found to create color-cycled animations); an air-brush tool; a unique pantograph tool for copying the pixels from any area of the screen to any other; and HAM animation.

Whereas the original version of *Photon Paint* offers just one alternate or scratch page, version 2.0 lets you create as many alternate pages as your computer's memory can hold (probably not more than ten in a one-meg machine). This opens the way for page-flipping animation.

You don't have as much animation control as with *DeluxePaint III*'s animation tools; there's no anim-paint tool or automatic brush-moving tool, for example, and I had trouble playing the sample animation—a running horse—successfully on my one-megabyte A2000. But those of you with more memory should be able to create and play really stunning animations in HAM mode, which *DeluxePaint III* can't do. *Photon Paint* saves animations in the ANIM format, the emerging standard for Amiga animation files supported by *DeluxePaint III* and all Aegis products.

The program still lacks some notable features. Most irksome are the absence of an index in the manual and the fact that there's no tool for clicking on a color in your picture and making it the current foreground or background color. Surely someone at MicroIllusions has tried and failed to match a HAM color on the screen and knows what I'm talking about. And, though it's not the program's fault, HAM isn't an ideal screen mode for painting. It's awkward and slow, and the strange fringing and other artifacts that can occur between dissimilar colors force you to compromise in your choice of palette.

Nonetheless, *Photon Paint 2.0* is definitely the premier HAM paint program on

AMIGA

MicroIllusions has fired the latest salvo in the HAM paint-program war with the recently released upgrade to its popular paint program. *Photon Paint 2.0* (\$149) has all of the tools that made the first version popular with Amiga artists, along with some very impres-

COMPUTE! *specific*

the Amiga right now, and it should be in the toolkit of any serious Amiga artist. It remains to be seen whether NewTek can offer more functionality with the upcoming version of its HAM editor, *Digi-Paint III*, which should be on the shelves by the time you read this.

If you want more information on *Photon Paint 2.0*, contact MicroIllusions, 17408 Chatsworth Street, Granada Hills, California 91344; (818) 360-3715.

Healthy Amigas

Viruses are still a concern to any Amiga owner who swaps public domain or shareware disks or downloads programs from bulletin boards. Two new antiviral vaccination programs can help you keep your Amiga and your software in good health.

Virus Infection Protection (Discovery Software International, 163 Conduit Street, Annapolis, Maryland 21401; 301-268-9877; \$49.95) inoculates uninfected disks against invasion by copying the disk's vulnerable boot block (where most known Amiga viruses do their dirty work) to a protected file. If a virus invades the disk's boot block, VIP will alert you as soon as you load the disk and will replace the infected block with a copy of the original, clean boot block from the protected file, eliminating the virus. VIP will not "cure" an already infected disk that hasn't been treated in advance; it can only be used as prevention—but that's the best way to handle any disease. The program is simple to use, with a full Intuition interface and, admirably, versions in five languages. There are even little stickers to use to identify your protected disks.

Anti-Virus, from DevWare (10474 Rancho Carmel Drive, San Diego, California 92128; 619-673-0759; \$39.95), is a set of utilities that helps you protect uninfected disks, detect a virus on infected disks, and restore health to sick disks. Like VIP, it should be used before your disks are infected.

The utilities include *vInstall*, which alerts you to the presence of a virus in the boot block of your disk by displaying a picture immediately after startup. If the picture is corrupted or doesn't appear, the disk is infected. The *vCheck* program alerts you if the boot block of any disk is not a standard AmigaDOS block or one of the antivirus blocks. *vCat* is used for protecting games and other programs that use nonstandard boot blocks. *vCat* saves any uninfected boot block to a separate catalog disk and then restores it to the original disk, writing over any virus, with much the same system used by VIP. Additional utilities let you do a safe warm reboot, view the hex and ASCII contents of a disk's boot block, and tackle Trojan horse infections.

Both of these programs should be part of your Amiga medicine chest.

Battle of the Baby 3-Ds

Several of the major developers of 3-D modeling and animation software have announced plans to release low-priced versions of their software. Byte by Byte (Arboretum Plaza II, Suite 150, 9442 Capital of Texas Highway North, Austin, Texas 78759; 512-343-4357) is shipping *Sculpt-Animate 4-D Junior*, a program for less than \$150 that includes a subset of capabilities culled from the company's prolevel *Sculpt-Animate 4-D* (\$495).

Not to be outdone, Byte by Byte's main competitor, Impulse (6860 Shingle Creek Parkway, #110, Minneapolis, Minnesota 55430; 800-328-0184) is planning an under-\$100 baby *Turbo Silver* (which regularly lists for \$200). Perhaps the biggest news is that Octree Software (311 West 43rd Street, Suite 804, New York, New York 10036; 212-262-3116) will be offering a consumer version of the breathtakingly overpriced *Calligari* (\$2,000), which has the most intuitive object-building interface of any 3-D program

I've seen. The rumor is that this is *not* the version that Electronic Arts was working on in secret for a couple of years.

These companies figure that inexpensive programs will help broaden the 3-D user base. The thinking is that the average Amigan would prefer to get his or her toes wet with junior 3-D software before shelling out the big bucks for high-end versions. There will be generous upgrade policies all around, so if you're fascinated by the amazing universe of 3-D computer art, one of these programs is the best way to start.

Tales from West Chester

Everyone has a favorite Commodore story. One I heard recently involved a local area network card, designed by Ameristar, that makes the Amiga compatible with the widely used Ethernet standard. Apparently, CBM has had this product in finished form for a year but has never released it, much less announced it.

One developer, who has been working on a product to connect Amigas to DEC computers, was stunned to discover the Ethernet card installed and linking several Amigas at Commodore's booth at Spring COMDEX. When he questioned CBM officials, he was told the card was never announced because "there weren't any applications for it." Dear Commodore: If you don't tell developers about your products, how can they support them?

On the other hand, Commodore is obviously doing something right. Irving Gould, CBM chairman, recently announced that the company is planning to build another manufacturing plant in Germany to meet the target of \$1 billion in annual sales by 1992. Foreign markets account for 70 percent of Commodore sales, with some 750,000 Amigas in Germany, the U.K., Canada, and Australia. That means there are only about 250,000 Amigas in the U.S.; no wonder CBM is concentrating

its efforts overseas and most larger Amiga developers are scrambling to go multinational.

Another rumor out of West Chester is that CBM is working on an Amiga hypertext program somewhat like Apple's *HyperCard*. However, it won't be the interactive, multimedia stunner that the Amiga deserves, nor does Commodore plan to give the program away with new systems the way Apple does. Watch this space for more on "AmiCard" as tidbits surface.

Write to me with information of interest to the Amiga community in care of *COMPUTE!*, 324 West Wenderover Avenue, Suite 200, Greensboro, North Carolina 27408.

— Steven Anzovin

MAC

The word *finally* came to mind. You could almost hear the sighs of relief that settled over Redmond, Washington, when, at last, *Microsoft Word 4.0* was ready to be shipped. The new version seems to be worth the wait.

You've heard the rumored list of new features before, but, just in case you've forgotten during the long, cold, *Word-less* winter, let's take a quick look at the upgrade. These are highlights after a short tour around a real-live copy of 4.0.

As far as the interface goes, the new version is as easy to use as the older ones. You can tailor any of the menus

and command keys to suit your own tastes. If you never use indexing, just wipe it off the menu. If you'd like to assign Command-Option-8 to the Save As command, go ahead. The process is easy because of a special dialog box.

With all the new features, you might be surprised that there aren't two rows of menus. But the screen is still tidy and well organized. And, thank goodness, Microsoft resisted the temptation to use nested menus. They may be popular right now, but they're a pain to wrestle with.

For basic word processing, *Word* still offers some of the best tools. My favorite among the new ones is a simple Do It Again command under the Edit menu. It repeats the last command you issued. So, you can set a first-line indent for one paragraph, click on the next paragraph that you want to change, choose Again (or use the Command-A key equivalent), and the format is applied again. This command works for changing fonts, type sizes, styles, and so on.

There are other more powerful, more spectacular additions: easier formatting, better graphics handling, editable page preview. *Word* has a new way to create tables without tabs. Now tables are more like spreadsheets than text. This offers many advantages. For example, long entries wrap within their cells instead of pushing everything to the next line.

Improved outlining will attract some users, and the bundled copies of *SuperPaint*, *Word Finder*, and *AutoMac* will attract others. Through QuickSwitch, a souped-up version of the old Switcher utility, you can link a graphic in a *Word* document with the *SuperPaint* file in which that graphic was created. Microsoft calls this a *warm link* because, when you change the graphic in the *SuperPaint* file, you can automatically update the graphic in the document.

Best of all, Microsoft says that the upgrade still requires only 512K RAM. *Microsoft Word* retails for \$395. Upgrades are available to registered users of any version of *Word* for \$75. If you bought the program after May 1, 1988, you're eligible for a free up-

grade, or, if you reserved an upgrade by July 15, 1988, your upgrade will cost only \$50.

For information, contact Microsoft at 16011 NE 36th Way, Box 97017, Redmond, Washington 98073-9717; (206) 882-8080.

Animating Macs

Maybe you've heard of *Studio 8*, the high-end paint program that's all the rage in the fantastic world of the Macintosh II. Electronic Arts has brought some of the fantasy down to our level, and they've included some new features, too.

Studio 1 is a black-and-white paint program with animation features. If you've seen how *DeluxePaint III* works on the Amiga, you'll find *Studio 1* familiar, because the same people were involved in both projects.

You'll find the expected paint tools—shapes, image distortion, and fill patterns—but you'll also find the unexpected. For instance, the text tool creates objects instead of bitmaps, so you can edit text more easily than you can in most paint programs. Object-oriented text also prints at PostScript quality, so the edges of your text are clean and sharp, not jagged and blurred.

For detailed work, blow up your image at 300 dpi resolution. You can create interesting special effects and textures at this level, sharpening edges, smudging borders, and etching intricate patterns.

Beyond the paint features, you get animation. You can bring your graphics to life and move them into the third dimension. Creating animation in *Studio 1* is like creating a cartoon flip book. You string together a succession of images that, when played back quickly, move smoothly like a movie. Advanced features, like *tweening*, which automatically creates a progression of frames based on a first and last frame which you define, offer powerful options. The tweening features work with two- and three-dimensional action and distortions like bending and twisting.

For beginners, Electronic

Arts has included animation templates. With these templates, you draw an object and turn it using a rotation template instead of using complicated commands. Once you're comfortable with the basics, you can use the commands for more complex animation routines and even save these new routines as templates.

Studio 1 saves files in PICS format and S1AN format. PICS is becoming popular in many programs, and S1AN is a special high-speed, compressed format developed by *Studio 1* designers. A special *HyperCard* animation driver links *Studio 1* to Apple's popular program.

Electronic Arts calls *Studio 1* "Animation for the rest of us." It could very well be your entry into the world of moving pictures.

Look for *Studio 1* this summer; it's supposed to ship at the end of June at a price of \$150. If you want more information, contact Electronic Arts, 1820 Gateway Drive, San Mateo, California 94404; (415) 571-7171.

Font Facts

For a long time, Macintosh people were the only personal computer users who could see different fonts on their screens. This was one of the criteria for a WYSIWYG display. But changing fonts doesn't mean understanding them.

To delve a little deeper into the field of fonts, pick up a new book called *The Macintosh Font Book*. It's a well-written, detailed study of typefaces. You'll learn the proper terminology for talking about type. Font installation, screen fonts, printing fonts, PostScript, and font utilities are all explained. Author Erfert Fenton even gives tips on how to work economically with a printing service. When you're done with the book, you'll understand how the Macintosh works with typefaces, which is good information for desktop publishers and Mac fans alike.

Beyond the Macintosh-specific information, the book explains how fonts are de-

signed. The author has included samples of so many typefaces, you'll wonder how to choose the right ones to buy. Once your appetite is whetted by the options, you'll learn to sort through the myriad possibilities and choose the best ones for your purposes.

The Macintosh Font Book is clearly written and packed with useful information. Unlike many computer books, every page is directed at the same reader. You don't find one section for experts and the next for beginners and so on. If you want to learn about fonts on the Macintosh, you'll want to read this book all the way through.

The Macintosh Font Book retails for \$23.95. For information, contact Peachpit Press, 1085 Keith Avenue, Berkeley, California 94708; (415) 527-8555.

Business Bits

Still suffering from the expensive dynamic RAM chips that it bought last fall, Apple reported a 44-percent increase in second-quarter sales over figures from the same quarter in 1988. But Apple also reported a 29-percent decrease in income compared to second quarter 1988. More sales. Less income. Strange, huh?

If, in fact, the DRAM chips are the real culprits in this odd imbalance of sales and profits, Apple should see better numbers in the next few quarters. Now that the company can build Macs with cheaper memory chips, it should be able to capitalize on the increased sales.

The company said demand was particularly high for SE/30s, which are the 68030-powered SEs, and the Mac IIcx, the streamlined Mac II. Neither machine falls neatly into the home market, but there are some hobbyists out there willing to take out a loan for a top-notch graphics computer or a high-speed number cruncher.

Perhaps the rumored new low-end Macintosh will arrive to save us from the businesscrats.

— Heidi E. H. Aycock ▸

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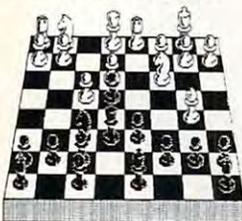


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The World of Atari Show, in Anaheim on April 22 and 23, was well attended and enthusiastically supported by users and developers. About 7000 people packed the main exhibit hall of the Disneyland Hotel. Everywhere you looked, you could find valuable interaction and interesting developments.

You could also find new faces. Sierra On-Line showed up for its first time. Well-known for the King's Quest series, Sierra had a low-key presence in the ST world for some time. An excellent attendance in the booth bodes well for future shows.

Codehead Software, maker of *G+Plus* and *MultiDesk*, was showing off its newest product: *Hotwire* replaces your ST desktop because you can start any program with a single keystroke.

Old faces were at the show, too. Antic Software, maker of the Cyber series, displayed a whole range of recent releases, including *Cybersculpt* and *Cybertexture*, more tools for working with 3-D shapes easily. The company also pushed *GFA-BASIC* and told people that the compiler was on its way.

MichTron had a large booth at which it showed its older games and some new ones, as well as its new flagship package, *HiSoft BASIC* and *WERCS*. *WERCS* is an excellent Resource Construction Set that works with *HiSoft BASIC*.

Astra makes some of the most rugged hard drives in the industry, and exhibitors were showing the *long gray line* of utility boxes, including a printer switch, monitor selector,

MIDI switch box, drive switch, and RS-232 switch.

Of course, Supra and ICD were also present. ICD displayed an excellent tape drive for backing up hard disks. This unit runs your programs from the backup tape, and it backs up a hard drive in just a few minutes. It's so fast, people might actually use it. The software bundled with the tape drive is menu-driven and easy to use.

Seymour Radix exhibited an interesting device for backing up hard drives, too. It allows you to back up your hard drive data to a VCR. The backup rate is considerably slower than the streaming tape drive, and the reliability of the backup could be a problem—witness the amount of noise visible in many recordings.

Atari's World

In a large corner booth, almost impossible to approach, Atari peddled its wares and pushed its products. According to Sig Hartmann, Atari is making a concerted push into the U.S. market this year. It has stepped up production, and, with the increasing supply of DRAMs, the company has a plentiful supply of STs to sell. Atari's primary hurdle is distribution; it must attract enough distributors to move the machines. It's encouraging that Atari recognizes and addresses the problems. The company also recognizes the need to make the public aware that Atari offers "power without the price." As an example, Hartmann mentioned the Mega 4 with a hard drive, laser printer, and plenty of software (including desktop publishing software) for \$3,999.

Sam Tramiel also had some encouraging remarks. He showed a fully working STACY, the ST laptop. It's the size of a medium-size briefcase. The STACY has a fold-up monochrome screen and a trackball instead of a mouse. It runs on batteries, but Atari hasn't announced how long the charge will last. The model Tramiel brought had two 720K disk drives, but a hard

drive model will be available.

Tramiel also mentioned the TT. Atari's compatible 68030-based machine. (The 68030 is the same chip that runs the Mac SE/030.) Prototypes are in developers' hands, according to Tramiel, and we should be seeing the machine later this year. Atari will also produce the HOTZ Box, a remarkable musical instrument that allows people with no musical knowledge to play as though they were old hands. The HOTZ Box has multiple keyboards, and the price may start as low as \$300.

Introducing new, high-quality products and enhancing existing ones are the lifeblood of a successful computer company. To pull this off, the developers have to be happy and they have to be making money. Recently, some of the most respected developers in the Atari ST market have turned elsewhere in order to stay afloat. With the larger number of STs becoming available and a new aggressive stance by Atari, we can hope those companies will come back to support the ST.

New Gadgets

Gadgets by Small (40 West Littleton Boulevard, #210-211, Littleton, Colorado 80120; 303-791-6098) took the wraps off Spectre GCR, the newest version of David Small's Macintosh emulator. Selling for about \$300, it performs the excellent-quality Macintosh emulation that users have come to expect, running such landmark programs as *HyperCard*, *PageMaker*, and hundreds of others. Many of these programs have no equal in the ST world.

In addition, the Spectre GCR can read and write Macintosh disks at full Macintosh speed. It has overcome one of the major objections that users have had about Spectre—the fact that software moved through a special format before it could be used. The only alternative was to use Data Pacific's Translator One, which is limited to about one-tenth full Macintosh speed be-

cause it plugs into the MIDI port. Spectre owners can trade their original cartridges for \$100 credit on the purchase of the Spectre GCR.

Power Peddlers

Upgrade boards that speed up your ST are more common than they used to be. The JRI Jato board sold for \$200, but installing it is for experts only. You must unsolder the 68000 CPU and replace it with a socket for Jato's 16-MHz 68000. Contact JRI at P.O. Box 5277, Pittsburg, California 94565; (415) 458-9577.

Fast Technology (14 Lovejoy Road, Andover, Massachusetts 01810; 508-475-3810) displayed its speed-up board (\$399-\$450), also built around a 16-MHz 68000. It has a compact design which also requires you to remove the existing 68000 CPU. Fast Technology's board includes an extra chip that makes the board compatible with peddito II. The board includes very fast cache RAM so that it isn't limited by the speed of the RAM chips in the ST.

If you need high-quality printouts, check out the product that Imagen demonstrated. Ultrascript (\$299), a PostScript clone, lets programs with PostScript drivers print in very high resolution. Ultrascript works best on a laser printer, and you can find support for Atari's laser printer, Epson's dot-matrix printers, and HP's popular Deskjet. You can also buy 35 different fonts for Ultrascript.

The current crop of ST programs don't generally include PostScript drivers, but the developers are scrambling to include such drivers in their next upgrades. The list of Ultrascript-friendly programs includes *Fleet Street Publisher* (MichTron), *WordPerfect*, and *TouchUp* (Migraph). The advent of true PostScript printing really puts the ST into the professional world of printing.

Contact Imagen at 2650 San Tomas Expressway, Santa Clara, California 95051; (408) 986-9400.

— David Plotkin □

////// **fast** *looks*

Animate Art, Build Burgs, Cruise the Deep, Duel with Roads, Pump Up DOS, Sound Off, Clean Up Words, Hassle-Free Homework, Pop Up Figures, Gold Hunt, Spin Globes, and Plan Planes

Each month, "Fast Looks" offers up snapshots of some of the most interesting, unusual, or important software and hardware for the IBM PC and MS-DOS, Commodore 64/128, Apple II, Amiga, Macintosh, and Atari ST lines of personal computers. Get the last word on what's new—here, fast, first.

Clip3D

No, these aren't leftover film clips from the Super Bowl halftime show. It's a program that takes clip art into the third dimension.

Many programs let you manipulate two-dimensional clip art. With a three-dimensional modeling program, however, you can manipulate an object in three dimensions. See a table through the eyes of an ant or from the vantage point of a high-flying eagle. Adjust the lighting to simulate the gray of twilight or the bright white of high noon.

You can do all this and more with any of the eight Clip3D packages. Each includes a modeling program and over 100 three-dimensional clip-art objects to rotate, stretch, and squeeze. The modeling program is easy to use and comes with two excellent booklets.

If that isn't enough for you, Clip3D also adds the qualities of matter and antimatter (shades of "Star Trek" and "Mr. Wizard"). You can use antimatter objects to drill holes, round edges, remove unnecessary parts, emboss objects, and carve out indentations.

The eight Clip3D packages are titled according to subject matter: *Fonts, Messages, Accents, Geography, People,*

Lifestyle, Recreation, and Business. Any one of them would be an excellent way to familiarize yourself with the possibilities of three-dimensional modeling.

— DE

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You've broken the course record for all three layouts from *Jack Nicklaus' Greatest 18 Holes of Major Championship Golf* and you need a new challenge. Accolade comes to the rescue with invitations to play the courses that are hosting three major golf tournaments this year in *Jack Nicklaus Presents the Major Championship Courses of 1989*.

On these three courses, you'll try to beat the scores the real pros put on the scoreboard this summer. Oak Hill, in Rochester, New York, and host of this past June's U.S. Open, is a classic Open course with narrow fairways. This year's British Open will be played at Royal Troon, in Scotland, where you'll typically encounter high winds that may help or hinder your drives. The third test, 1989 PGA host Kemper Lakes, in Hawthorn Hills, Illinois, may be the toughest layout of the three. Water comes into play on 11 holes and the record on the actual course is only 70. Accolade has done an excellent job in recreating the difficulties of these three courses on disk.

Before you can play, this supplemental course disk requires you to match a hole on the screen with one from a course sheet. Many of the holes look alike, making the selection process a game in itself. ▶

Playing against the Golden Bear is no different on these championship links than it was on the original three courses. If the real Jack Nicklaus could consistently shoot in the 50s like he does in this game, he could win the Grand Slam every year.

— MM

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Thunder Blade

The city is surrounded by hundreds of enemy tanks, planes, and ships, all bristling with the latest hi-tech weaponry. Your job is to destroy them. Single-handedly. Using one helicopter.

Luckily, you aren't flying a typical Army-surplus troop chopper. In Sega's *Thunder Blade*, you take to the skies in a heavily armed, hyperfast flying machine that makes Airwolf look like the Wright brothers' Flyer. The detailed graphics, nonstop sound effects, and incredibly fast scrolling landscapes will have you checking your computer for a quarter slot.

As you move from stage to stage, the landscape and the perspective change, offering both overhead and rear views as you dodge buildings in the city or try to sink enemy submarines in the harbor.

Thunder Blade is a superb adaptation of the coin-op game, taking maximum advantage of each computer's graphics and sound capabilities. If you're looking for an arcade game that will push both you and your computer to the limit, check out this one.

— DA

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Electronic Arts Mouse

As a result of its entertainment and creativity software, Electronic Arts has a lot of experience with input devices, and that experience shows in this elegant, effective, yet somewhat pricey mouse.

The cost of the mouse may be misleading—it comes bundled with *DeluxePaint II*, arguably the best of the PC paint programs. In addition, the mouse sports some software extras that make it attractive.

It's attractive for its own sake, as well. Its black color differentiates it nicely from Microsoft's snow-white rodent. It fits my hand and rolls smoothly. While Electronic Arts insists the device needs no mouse pad, I found it to be more effective on a pad than off.

The mouse driver is Microsoft-compatible. In addition to *DeluxePaint II*, the package includes mouse-control software, keyboard emulators, and a nice macro program. I had no trouble using the mouse with a variety of programs. Button click is firm and provides the tactile response I like. The package includes both 9-pin and 25-to-9-pin connectors.

The inclusion of *DeluxePaint II* mitigates the mouse's price somewhat, but I'd like to see the device given a chance to stand on its own, at a lower price.

— KF

IBM PC and compatibles—\$149.95

Electronic Arts
1810 Gateway Dr.
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(415) 571-7171

Contributing to "Fast Looks" this month were Denny Atkin, David English, Keith Ferrell, and Mickey McLean.



Art & Film Director

Take notice, Hollywood! The next Bullwinkle or Bugs Bunny could come not from the studios in western Los Angeles, but from a home computer anywhere in the world. A pair of paint and animation programs called *Art & Film Director* make it easy to create lifelike cartoons in your den and send them straight to videotape.

Film Director is the more elaborate of the two, partly because animation is more complex than painting. It adds a new dimension to graphics: time. You create not one picture, but a series of them, link them together, and define their movements. The difference between painting and animation is the same as the difference between a dummy and an android or a plant and an animal.

To start building your own master-

piece, you devise a backdrop for the action, giving the scene depth and sense of place. Then you assemble the moving figures, creating a set of parts and plugging them together like Tinkertoys. You merge these into *groups*, which you manipulate as a whole. The body parts of a man, for instance, might constitute a group. Using groups, you can move a part of the man, such as his hand, without repainting the whole image for each movement. Next string groups together into single cycles of movement, such as the trot of a horse. And finally, link these strings into *frames*, which are like stills in a movie reel. Combine the frames, set them rolling, and you have a film.



Breathe life into your animation ideas with *Art & Film Director* from Epyx.

Film Director also loads music files, adding sound effects to your film frame by frame. You can preview the sound or shorten it to fit a frame.

Like most animation programs, Film Director automatically generates frames between pictures, a process called *tweening* that saves you from a lot of rote labor. You begin with one first and one final image, then tell the program how many intermediate frames to generate.

Film Director is an engaging program, but if you're an animation novice, it takes time to master. Beyond the innate complexity, the onscreen commands are not always obvious, and the procedures can be oddly Byzantine. At any one time, only three menus line the top of the screen. Hence, to work with a group, say, you must transform the Edit menu into the Design menu, click on the Group command to generate the group toolbox, and then, often as not, click on an instruction in the toolbox to generate a dialog box with the command you want. Film Director also tends to be extra solicitous of your welfare, possibly because of the opacity of some commands, and it often flashes a dialog box explaining what your action will do and asking if you still wish to do

it. These are small flaws in an otherwise resplendent program, and you get used to them.

The paint program, Art Director, is alone worth the price of admission. It is, in some ways, the foundation of the duo, where you create images and then easily shift them over to film director. Yet it's no mere supporting player, but a versatile piece of software itself.

It has a wealth of features—too many to note them all here. You'll find all the requisite options, including line-drawing tools, zoom views, shape tools, paintbrushes, and paint cans. Art Director's straight-line option works with other features. For instance, use the straight line with the large eraser and it will mow down a swath of unwanted color.

Art Director also has more unusual features. For instance, it can wrap images around an imaginary 3-D cylinder or place them inside or outside a sphere. The perspective command orients your work to a vanishing point, enhancing 3-D effects. The program rescales or stretches a selection and distorts part of it into another shape.

The program's color controls are

also distinctive. For instance, it lets you scrape through the image on one canvas to display another beneath, an attractive way to reveal a new scene in animation. It can merge two colors at their border, so you might fuse the hue of a tree and a roof to suggest swaying boughs. It lets you sprinkle pixels of darker or lighter tint onto a color, and it can outline images in any hue you like.

Art Director offers you a myriad of brushes. Not only can you cut brushes in rectangle, oval, pattern, or freehand shapes, but you can also summon a host of commands that automatically create new brushes. For instance, the text command generates not actual text, but a text brush. You then click wherever you like, and the text appears. It's like rubber-stamping the screen.

This approach has merits and drawbacks. It confers great freedom, lets you drag or multiply images easily, and helps you place them precisely, especially if you use the numerical coordinates. On the other hand, if you merely want to rescale or stretch a graphic, the new image clings to the brush anyway, giving you an annoying flypaper sensation. It would be nice if

you could simply turn off this feature, as you can turn off certain warnings.

Both programs have abundant shortcuts, and they come with two extras: Art Show, which displays your graphics in slide-show form, and Film Show, which runs films. In addition, a third disk, with fonts, music files, and sample graphics, rounds out the package. The documentation is generally clear and attractive, though at times a bit thin.

These are dandy programs with potent, unusual features. They just might have you spending more time than you ever imagined at the computer, fitting characters together and spurring them across the screen.

— Dan McNeill ▸

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SimCity

When I'm stuck at a traffic light for more than 30 seconds, I find myself cursing the city planners, their children, and their children's children. Since I started playing *SimCity*, though, I've learned to respect the people who lay out our roads and zone our city blocks.

SimCity is a simulation of town growth. As mayor and city planner, you start with some raw land, a few bulldozers, and a budget of \$15,000. If you handle it right, you end up with a booming megalopolis.

To get from bare land to teeming boulevards, you zone areas for three types of development: residential, industrial, and commercial. Next, you add roads and mass transportation so that the people in the residential areas can get to the jobs in the industrial areas and to the shops in the commercial areas. By setting tax rates, you can continue to grow. (For every action you take toward growth, your funds have an opposite reaction.)

Once you've set up some zones and a transportation system, the city map comes to life. A train travels along your mass-transportation lines. Bottlenecks clog the highways if your roads are badly planned. The Sims, who inhabit your city, build houses, factories, churches, and football stadiums.

During the entire process, you have to budget carefully and balance your city's expenses against a tax burden that the Sims can bear. In an Evaluation window, the Sims will let you know whether you're still popular or whether you're headed for municipal infamy.

Besides the intriguing and complex game premise, *SimCity's* other strength is its interface. On the Macintosh, the controls are very simple. Each element of the game has its own window. To see any element, like a map or the city budget, you summon it from the Windows menu. A toolbox along the side of the screen holds zoning icons, building icons, and transportation icons.

The only interface feature missing from the Macintosh version is an Undo command. Maxis Software claims that such a command would encourage too much cheating. The bulldozer is a sufficient substitute because it only costs one dollar to flatten your mistakes.

On the Amiga and the Commodore 64, the interface is equally ingenious and simple. (The Amiga version does include an Undo command.)

Even though *SimCity* is complicated, the game runs quickly. In fact, you

rarely have to wait long before your actions take effect. You can even accelerate the passing of time.

The game's documentation is well-written and easy to understand. The manual and the addendum teach you how the interface works, of course, but they also teach you how the model works—how *SimCity* figures out what effect a new commercial zone will have on that slum across the tracks and what effect a new stretch of railroad track will have on those pollution problems. Beyond game information, the manual even discusses the history of city planning, and the addendum lists city-planning books for children. I've never run into more useful game documentation.



Walk a city block in the mayor's shoes when you play *SimCity*.

And I've seldom run into more entertaining game options. Possibly, the feature that first attracted me to *SimCity* was the Godzilla option. Yes friends, you and your citizens can play host to Godzilla—or another, less glamorous disaster like an earthquake or a tornado. You can request these catastrophes from a menu, or you can wait for them to come as seemingly random acts of some divine being. Each disaster further complicates your work as a city planner.

Perhaps you'd like the challenge of working on a real city model. *SimCity* has eight built-in scenarios. You could restore order to Hamburg, West Germany, after the firebombing raids of World War II. When you finish in Europe, travel to Boston, where a nuclear meltdown rips the municipal fabric of Beantown. There's a futuristic Rio de Janeiro devastated by floods and a contemporary Detroit bullet-ridden by crime.

Each time you play the game, whether it's to repair an existing city or to create your own, you'll find that *SimCity* changes. The game randomly generates terrain when you start a new town, so different problems present themselves. With an add-on package called *SimCity Terrain Editor*, you can

design your own landscape.

SimCity is no arcade game. It's no action-packed adventure. Don't bother with it if you want mindless battles with impersonal aliens. *SimCity* is an intelligent game with the challenge of a riddle, the novelty of a hypothetical question, and the charm of an engrossing story.

— Heidi E. H. Aycock

SimCity

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688 Attack Sub

In the hushed waters of the sea, your 688-class nuclear submarine stalks four unsuspecting Libyan oil tankers. But they're not alone. You've identified a Soviet Kirov-class destroyer, and your ace sonar operator thinks he's found a superquiet Kilo attack submarine close by.

You pace nervously.

Check the navigation board to see which blips have been identified. The last unknown contact was a school of mackerel. Check the radio room for orders, the status board for the condition of your sub. You'd like to use the periscope, but it could tip off that Kirov. Once you've found your enemy, you can fire torpedoes. In the meantime, you just wait and hope the enemy doesn't find you first.

688 Attack Sub, from Electronic Arts, is riveting. Besides being a blast to play, this simulation of a modern nuclear attack sub is one of the best-looking games I've seen. Crew members appear as digitized photos of actual people. And since there's not a great deal of screen detail to constantly update (as there would be with a flight simulator), there's more memory available to create finely detailed control-panel screens. *688 Attack Sub* graphics will certainly reset the industry standard.

The sound is good also, even if all you have is the basic PC internal speaker. The audio portion of the game will

depend on your computer setup. An AdLib Board plays the nice title music but still relies on the internal speaker for sound effects. A Covox Speech Thing will play the music and the improved sound effects.

The game can be controlled with a mouse or with keyboard commands. The mouse interface works well, but I found using the keyboard cumbersome. Moving to any of the eight screens with the Function keys is easy enough, but from there the system slows down. The Tab key cycles through the various stations, which is fine for word processing, but with enemy torpedoes bearing down on you, every second counts. There are one-key shortcuts to some of the stations, but without a keyboard overlay to point them out, they're easy to forget. A joystick interface should have been included.

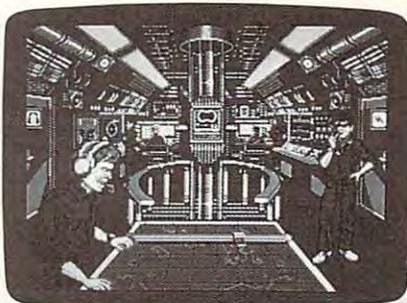
The manual is disappointing. It does a good job of stepping you through the first scenario, but it's light on information after that. More detail on tactics and missions would have been helpful. I guess Electronic Arts had to save something for the *688 Survival Guide* it's selling for \$12.95.

I was also disappointed because there were so few missions. Having gone to all the trouble of creating seven game areas, from the Atlantic to the Barents Sea, Electronic Arts would have been smart to place several missions in each. But you're limited to only ten missions. The good news is that several can also be played from the Soviet side in a fast, Alpha-class sub. This brings the total to 16 possible missions.

These missions, by the way, are strictly pass/fail. You either complete the mission and receive praise from your superiors or fail and face their wrath. There are no points awarded, no promotions, and no medals.

Back on the positive side, Electronic Arts has included another feature, one which may become an industry standard: direct, head-to-head modem play. In six missions, you can take one side, and through a modem, a friend can take the other. One of you gets a 688 and the other gets the Alpha. This feature brings a whole new life to worn-out missions. Several missions even favor one side to allow for varying player abilities. In the training mission, both players command U.S. subs and compete against each other to sink the most ships. Once the configuration problems associated with any modem transaction are overcome, the game plays well in this mode.

The U.S. commander has a definite advantage over the Soviet counter-



688 Attack Sub recreates the tension and excitement of submarine warfare.

part when it comes to weapon selection. Soviet Alpha subs are armed only with Type 53 torpedoes. The U.S. 688 sub has Mk 48 torpedoes as well as Harpoon, Tomahawk, and Sea Lance missiles. These, however, are not available on all missions. To speed up gameplay, the range for all torpedoes has been decreased from 40 to 10 miles. While this does throw a lot of real-life SSN tactics and strategy out the window, it also makes for a fast-paced game.

Not only has a great deal of attention been paid to simulating the various ships and subs, but the ocean environment is also modeled with equal detail.

Variations in water temperature and density create thermal layers, gradients, and shadow zones, all of which can be used to your advantage. The Contour Imaging Display gives you a 3-D image of the ocean bottom. Enemy sonar operators will have a hard time finding you when you use this system to sneak safely along in a deep ocean trench or behind a submerged mountain range.

688 Attack Sub scores a direct hit with its great graphics, engrossing enemy encounters, and marvelous modem option. In fact, a few forays into the depths of modern underwater warfare may be enough to sink your aging fleet of flying games.

— Richard Sheffield ▸

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The Duel: Test Drive II

Helmet. Goggles. Scarf. Gloves. Software. Now you're ready to take to the road with Accolade's *The Duel: Test Drive II*. In this sequel to *Test Drive*, you can choose to race against the clock or the computer and its car.

In the basic game, choose between a Ferrari F40 or a Porsche 959. The same selections are available for the computer's car if you desire head-to-head competition. Built-in scenery is limited to one road, which includes a jaunt through the countryside and a winding path through the mountains. Five more hot cars and a Northern California road course can be added with *The Supercars* and *California Challenge* data disks.

After you've selected your cars and scenery, the fun begins. First, choose the level of difficulty. Lower levels have slower speeds for your computer opponent, the police, and traffic, as well as fewer cars to contend with. But you also have fewer chances to score points. The first four levels put your car in autoshift mode (sort of like having automatic transmission). Other levels require you to do the shifting yourself, which is what sports-car driving is all about. But manual shifting can be complicated, especially on the keyboard. A joystick not only makes shifting easier, but also adds realism, particularly in expert mode, which models the joystick movements after the car's actual gearshift pattern.

You begin each journey with five lives, and you're rewarded with an extra life when you reach a checkpoint. A score screen lets you know how well you're doing against the clock or your opponent and tells how you rate against the best recorded time for that section of road. Like the original *Test Drive*, the program praises or berates your driving ability while you gas up.

Besides traffic and your opponent, you also must contend with the police and road hazards. You can lose lives by wrecking the car, sustaining too much damage from road hazards, blowing your engine, or missing the checkpoint and running out of fuel. Hit a police car and the jig is up.

Your car's cockpit features a steering wheel with a dot in the center to help you stay on the road, a speedometer and a tachometer, a radar detector, a trip meter and a clock that counts down to the next checkpoint, a gearshift display, a rearview mirror, and three dots at the top of the screen that show where you are in relation to your oppo-

nent, the police, and the next checkpoint. Signs along the road alert you when you're a mile from the next filling station but, going by the odometer, the signs are really posted about two-tenths of a mile from the station. So keep your foot near the brake.



Pull over or fly? You've broken the speed limit in *The Duel: Test Drive II*.

Should you find yourself in the middle of a record-setting race and discover it's time to do some real work, you're out of luck; there's no save-game option. But you can pause the action.

Long before you can take to Accolade's highways and byways, however, you have to set up the game. If you have a floppy disk system, be prepared to spend most of the game swapping disks, especially if you're using the supplemental scenery and car disks. You can install the game on a hard disk, cutting down on disk swapping considerably. But even then, you'll still need the program disk to boot up the game. You can also create what Accolade calls a "Play Disk," which you can place on either a hard disk or a floppy disk. With a Play Disk, you can create custom races between your favorite cars on your favorite stretch of road.

Unfortunately, setting up the Play Disk isn't easy. In fact, getting your car on the road at all could be a problem unless you read the manual, front to back. This is not a game you can boot up and play right out of the package. The game doesn't get along with memory-resident programs; Accolade recommends that you check your AUTOEXEC.BAT file for menu programs, utilities, and disk-caching programs and that you remove them if the game doesn't load properly. The company also suggests that you check the CONFIG.SYS file for device drivers that might interfere with the game. If you don't read the documentation, the complicated and time-consuming installation process could frustrate you.

The availability of additional scenery disks is a major improvement over the original *Test Drive*. A one-road

course gets pretty monotonous. The one problem I had with *California Challenge*, the first scenery disk released, is that you're only teased by the Golden Gate Bridge as you approach San Francisco. If you thought you'd be racing along the hilly, trolley-car-laden streets in the city by the bay, you'll be disappointed.

That's not to say you don't get plenty of realism in this worthy sequel. You can almost feel the impact of a crash as your windshield shatters and your front end crinkles up to the firewall. The sensation you get when your car spins off a cliff and crashes below could be traumatic, but remember—this isn't real life. It's more like a Road Runner cartoon, and, like Wile E. Coyote, you'll be back on the road in no time, ready to give chase.

—Mickey McLean

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The Supercars: Test Drive II Car Disk and *California Challenge: Test Drive II Scenery Disk* each cost \$19.95 (Amiga, Apple II, and IBM) or \$14.95 (Commodore). A 3½-inch IBM disk (for the main game and the supplemental disks) costs another \$5.00.



DOS Power Tools

You've had your computer for a while now. You can crunch the family budget without crashing the system. Moving data back and forth within the confines of your integrated software package is a snap. And just the other day, you wrote a macro for your word processor. You may be wondering if there's something more you can accomplish with your IBM PC compatible.

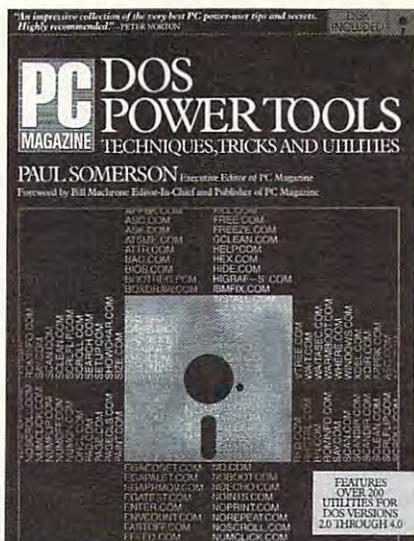
There is. Handling software applications with ease is just your first step toward productive computing. If you want to squeeze all you can out of your silicon sidekick, you'll have to learn some of the intricacies of DOS. That's where *DOS Power Tools* can help.

www.commodore.ca

This bulky book/software combo packs a ton of information in its 1275 pages. Author Paul Somerson uses a conversational yet intelligent style throughout. His writing will appeal not just to novices, but also to power users who want to gain that extra edge over their computer. Anyone who wants to learn more about the PC operating system will find all that's needed between these covers.

The book is divided into five parts. "Getting up to Speed" discusses the history of DOS (learn the story of the backlash!), talks about disk organization and hard disk maintenance. With hard disks the fastest-selling addition to home computers, Somerson's detailed tips and explanations are noteworthy. He also devotes ample time to hex numbers and keyboard tricks, and allots an entire chapter to chips and memory (learn the difference between *extended* and *expanded*!).

Part 2 discusses DOS tools—in particular, EDLIN, DEBUG, and drivers like ANSI and VDISK. EDLIN, the DOS line editor, is especially handy for editing batch files. Even more useful are the pages about VDISK.SYS, which provide step-by-step instructions for



Pack your PC with power using *DOS Power Tools* and its utilities.

creating a ramdisk.

When you're ready, you can delve into the technically complex secrets of PC power in part 3. Start with a chapter about batch techniques (you won't get far in DOS without learning to write batch files), and then move through an

extended overview of the DOS environment (uncover the mystery of the *master environment block*!) to a discussion of screens and how to harness the EGA video mode on your PC.

The "Favorite Tips" section is probably the first one most users—power and neophyte alike—will turn to. Leading the tips is advice about the DOS command RECOVER.COM (erase it from your hard disk). That's good advice, especially for novice users who might think they can actually *recover* a lost file with this demonic DOS monster.

More specific advice is given about XCOPY (faster than the old standby, COPY), FDISK (for partitioning hard disks larger than 32 megabytes—which the book maintains can't be supported by DOS; take a look at version 4.0, folks), DOS filters, and myriad other DOS commands that can make your computing life easier and more effective.

But *DOS Power Tools* goes further than offering advice and tips that can make you a power user. The book also comes with a disk chock-full of DOS utilities that enhance and improve your operating system. Dubbed *The Utilities That DOS Forgot*, these 200-some-odd



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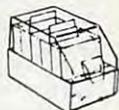


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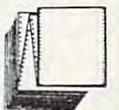


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programs range from quick fixes to full-blown TSR programs like calendars and hex calculators.

Particularly nice is the memory-resident address, phone number, and name database (with autodial) called **CARDFILE**. I have another memory-resident phone book, but it's always bungling itself up whenever I try to access it from *Microsoft Works* (which is several times a day). **CARDFILE** works cleanly and effectively—just what I want in a TSR database.

Other programs you'll find on the disk include DOS editors and a program called **DECIDE**, which works much like those novelty eightballs (the ones with the glass window in the bottom) in helping you make decisions.

I wish I could say that this is the only DOS book you'll ever need. But because of its sheer bulk and complexity, it probably isn't, and that's unfortunate—especially when you consider the price. But after you've outgrown your introductory DOS book and you're ready to journey into Microsoft's operating system, this book may be the best map money can buy. And the utilities make fine traveling partners.

— Peter Scisco

a stereo system and a joystick port compatible with existing PC joysticks.

Installing the ISS board in a PC XT compatible posed no major problems. I simply removed the computer's cover and slid the board into a free slot. You can change the board's three jumpers to set joystick sensitivity, joystick enable, and sound-board port address, but I left them at the factory settings. Using an RCA-to-RCA patch cord, I connected the sound output of the ISS board to my stereo system, and then I plugged a Kraft Premium II joystick into the joystick port. (According to Innovation, you can achieve a pseudostereo effect by using two ISS boards at once and plugging one into each side of your stereo. I guess I'll hold out for the real thing.)

Besides the ISS board, Innovation sent me two floppy disks of sample programs for use in testing. One disk was loaded with several BASIC programs, including a joystick test and sound programs converted from the *Commodore 64 Programmer's Reference Guide*. The other disk contained audio examples from MicroProse's *F-19 Stealth Fighter*.

When I tested the board with the modified Commodore 64 programs, I was astounded to hear my PC playing samples that rivaled any 64 output. Further investigation revealed that the only difference between the programs' listings was the address assigned to the SID chip.

Seeing that Commodore 64 programs required little conversion to run on a PC, I converted my Commodore 64 music programs to text files and then sent them via modem to my PC. With very little modification, they ran fine on the ISS board. Aside from the starting address of the SID chip, all I had to change was the BASIC program lines for formatting the song titles on the screen. (One thing I noticed was that the songs played almost twice as fast when I switched my PC's speed from 4.77 to 8 MHz. To avoid that problem, you could add a delay loop to the Commodore programs.)

With my music demonstration out of the way, I moved on to some games. The *F-19 Stealth Fighter* sampler was designed to run directly from DOS. By pressing different keys (1 for music, 2 for voice, 3 for bomb, and 4 for rocket), I was able to experience the kind of professional multivoice sounds one would expect from MicroProse. I was especially impressed with the digitized voice that exclaimed, "Stealth bomber cleared for takeoff" when I pressed 2.

The joystick port of the ISS board worked well. I played several of my fa-

vorite games as I normally would. With the joystick-sensitivity jumper set at Normal on the ISS card, the joystick worked pretty much the way I was used to. When I set the jumper to low sensitivity, some games actually worked better. But when I set the jumper on the high position, the stick became too touchy for most of my games.

Even with the limited amount of software I was able to test on the ISS board, I have to agree that it operates as Innovation claims it should. Other software manufacturers besides MicroProse are writing products to support the board. That's the kind of backing Innovation needs if it wants to set a standard for sound on the PC and compete with established sound-board maker AdLib.

For users who don't need the speech capability of an Echo board or the professional music capabilities of a Roland card, Innovation's board might be just the ticket. PC users may soon expect sound from their computers that's more on par with what's heard from Commodore 64 and Amiga machines. And any product that addresses that demand should be on sound footing.

— Joey Latimer

DOS Power Tools

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Innovation Sound Standard

You'll never hear an IBM PC bring the house down at Carnegie Hall. The tiny speaker and one-voice capability reign as the IBM standard, even as color displays have greatly enhanced the computer's visual appeal. The Commodore 64 has always outplayed Big Blue and its pals with its sound-synthesis chip (the three-voice SID chip) and built-in joystick ports. Now that sound quality is coming to PC users.

The 8-bit Innovation Sound Standard (ISS) board, developed jointly by Innovation Computer and MicroProse, attempts to carve out a new standard in sound hardware for the PC. The ISS board bypasses the existing speaker and audio circuits in the PC and includes an RCA-type output jack for connection to



RightWriter

There is a problem of a severe nature in our pickle division. It is clear that our current dilling system will not cut the mustard. We may possibly need to move on this reasonably quickly. To start, it would be advantageous to see if a new formula is do-able. (This should be looked into at once.

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REVIEWS

from all major word processors; you won't have to reformat your files to use it. When you run the program, it determines which word processor you're using and reads the selected file. It then creates a new file in your word processor's format and marks errors or adds suggestions. It's up to you to decide which suggestions to act on or ignore.

So what can *RightWriter* do for you? Take a look at its analysis of this review's first paragraph (original in roman, explanations in boldface, and suggested replacements in italics):

There is a problem of a severe nature in our pickle division.

Wordy. Replace *problem of a severe nature by severe problem*

It is clear that our current dilling system will not cut the mustard.

Consider omitting: *It is clear that*

Cliché: *cut the mustard*



RightWriter will analyze your writing style according to guidelines that you can define yourself.

We may possibly need to move on this reasonably quickly.

Redundant. Replace *may possibly by may*

Weak: *reasonably quickly*

To start, it would be advantageous to see if a new formula is do-able.

Replace advantageous by simpler helpful or good?

Not a word. Replace *do-able by can be done*

(This should be looked into at once.

Is this parenthesis closed?

Passive voice: *be looked*

At the end of the file, *RightWriter* offers a summary that defines which grade reading level would be required to understand the text (in our example, it was fifth grade). It also offers some overall suggestions, like *The writing can be made more direct by using the active voice, fewer weak phrases, fewer clichés, and more positive wording.*

If I were to follow *RightWriter's*

suggestions, I'd rewrite the paragraph to read:

There is a severe problem in our pickle division. Our current dilling system is not adequate and we need to move on this quickly. To start, it would be helpful to see if a new formula is possible. Look into this at once.

A definite improvement; the paragraph's meaning is much clearer.

RightWriter checks for noun/verb agreement; incomplete sentences; run-on sentences; misused verbs, pronouns, and articles; wrong verb forms; misused words; possessive use; repeated words; and capitalization. The program is a real stickler on passive voice constructions and long run-on sentences. It uses more than 4000 rules to seek and destroy 12 types of grammar errors, 21 style blunders, 22 word-usage mistakes, and 13 punctuation problems, including unclosed quotation marks and parentheses.

RightWriter's biggest advantage over similar programs is its flexibility—it doesn't expect everything you write to be technical or formal. It allows you to choose from categories like General Business, Manuals, Proposals, Technical Documents, and even Fiction. *RightWriter* also tailors its comments to reflect the education of your audience, with General Public, High School, and College levels. You can also customize the program's dictionary to add words it would otherwise mark as "uncommon." Additional custom dictionaries for specialized users are available as options.

RightWriter is most proficient at discovering long, complex sentences, and this is especially important if you want to avoid long, rambling sentences such as the one you're reading now.

WordPerfect 5.0 users will find *RightWriter* extremely well integrated. To run it, you simply press a special hot key that saves the file, leaves *WordPerfect*, runs *RightWriter*, and then returns you to *WordPerfect* to display the marked-up copy. Another hot key saves the file again, automatically removes all comments, and then returns you to *WordPerfect* with the clean text onscreen.

Unfortunately, with all it can do, *RightWriter* offers little help to those who need it most. The only mistakes *RightWriter* found in the following paragraph were *gonna* and *ain't*:

I was gonna <<Colloquial: gonna>> go to the store, but I ain't <<Colloquial: ain't>> now. And everyone are going running afterwards. It's not what you say its what you does.

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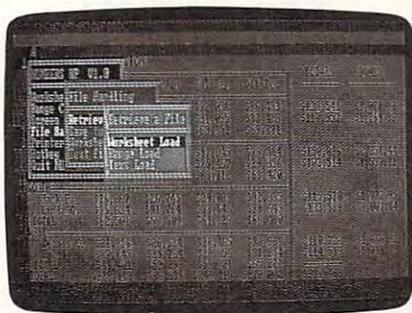
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REVIEWS

tucks away neatly in your computer's unused RAM. Instant availability, ease of use, and Lotus 1-2-3 compatibility make *Numbers Up* suitable for many situations.

This electronic spreadsheet distinguishes itself from its numerous competitors with its pop-up abilities. Like *SideKick*, it waits in your PC's memory until you need it. It can coexist comfortably with most (though not all) memory-resident programs. When its time comes, *Numbers Up* overlays the current application at the touch of the ALT-N key combination. When you've finished with it, press the ALT-N toggle again to close the spreadsheet window and return to your original application. Such seamless cooperation is a boon for any personal computer user.

Beginners will find *Numbers Up* quite easy to learn. A command line at the bottom of the screen provides easy access to Help displays, user-designed macros, and other important features. Drop-down menus further simplify the process of designing and manipulating files, but you can opt for keyboard commands. In either mode, everything pro-



With *Numbers Up*, spreadsheet calculations are right at your fingertips, guesses logically and smoothly.

This application, though a pop-up, is no kid's toy. It supports spreadsheets as large as 64 columns \times 999 rows, sufficient capacity for most on-the-fly number crunching. With both *Numbers Up* and a standard spreadsheet in memory, you can jump between files effortlessly. Another unexpected but handy feature is a simple procedure for creating and activating user-defined macros. You can also select your own screen colors for maximum readability.

On the whole, *Numbers Up* offers surprising power and versatility. In addition to the usual features, it provides many advanced capabilities, such as a

Worksheet Protection option that prevents accidental changes to selected cells or to the entire worksheet. With its Split Screen function, two work-sheet segments can be displayed side by side. Although it takes a little practice, you can even copy blocks of data between *Numbers Up* and any word processor, database, or other spreadsheet.

The program also boasts a limited measure of compatibility with 1-2-3 files. It can read and write short 1-2-3 documents in 1A, 2.0, and 2.1 formats, so you needn't waste time switching between full-fledged applications for small jobs. This is not to say that *Numbers Up* is a 1-2-3 clone. The programs operate differently, and neither supports the advanced features of the other. User-defined macros, for example, do not transfer correctly.

For greatest efficiency, you should copy *Numbers Up* to a hard disk. From there it can be configured to load automatically. Running it on floppy drive systems requires more patience and some compromises. When fully loaded, *Numbers Up* hogs 120K of precious memory but performs quite quickly. You can sacrifice speed and save memory by using the program's Swap mode,

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which switches files from the disk or from memory above MS-DOS's usual 640K maximum. Set up this way, *Numbers Up* takes an amazingly small 12K, leaving the rest for other pop-ups or applications. Unfortunately, this approach requires that the program disk remain in the drive at all times—OK for dual drives, but impractical with single-drive systems.

All things considered, *Numbers Up* is a solid program that will meet the needs of many people. Home users should find it sufficiently powerful for maintaining budgets, keeping tax records, or performing other accounting tasks likely to arise. It should even be adequate for many home businesses. And in a corporate setting, *Numbers Up* can serve as a quick and easy alternative for those occasions when more powerful applications aren't required.

— David Stanton

Numbers Up

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Horn. Whichever route you take, once you reach Sacramento, the adventure continues as you struggle to strike it rich. Besides gold, your adventure might just turn up your long-lost brother, Jake.



From your humble beginnings in Brooklyn Heights, New York, set your sights on fortune and join the Gold Rush.

As the game starts, Brooklyn Heights is rife with talk about huge discoveries of gold in California. By talking to the people you meet on the street, you not only learn of the gold strikes, but also discover clues as to the places you should visit and the things you should do before leaving town. For instance, you'll run into your banker, who tells you to check on your accounts. A real estate agent suggests that the two of you can work something out if you need money. You run into your boss and a man from the local hardware store. From all these encounters, you learn to withdraw your money from the bank, to buy supplies for the trip, to quit your job, and to sell your house.

Such hints initially make *Gold Rush* easy, even if this is your first adventure. However, there are a few dangers, even in Brooklyn Heights. First, although it's 1848 and cars have yet to be invented, the streets are heavily trafficked by horse-drawn carriages. Walk in the middle of the street and you're bound to be run over. On the other hand, if you stick too close to the edge of the boardwalk (to avoid the carriages), you can slip and end up in the river. Your biggest enemy in Brooklyn Heights, however, is time.

The game opens with mere rumors of the California gold discovery, but after several minutes it's interrupted by a special bulletin confirming the discovery. The gold rush is on. Suddenly, the prices of supplies and transportation to the west skyrocket. Even your good neighbor, Leonard, begins charging double for the steamship tickets he sells. About the only thing that goes

down in value is your house: Seems suddenly there are a lot of houses up for sale as people begin heading west. Even the grocer decides to close up shop—if you haven't bought any food for the trip, you're out of luck.

The exact combination of supplies you'll need for your trip to California depends on the route you take. To prevent malaria as you travel across Panama, you'll need a mosquito net. A long trip around Cape Horn without fresh fruit can result in your dying of scurvy. If you decide on the overland route, you'll have to choose the right type of animal to pull your wagon.

During much of your journey, the computer takes over and controls the action. These animated travel sequences are occasionally interrupted by messages that describe the areas you are traveling through and the experiences of other early-American travelers. While these messages can be interesting, they're not crucial to solving the adventure and can be suppressed by pressing a function key.

All in all, *Gold Rush* is entertaining, somewhat educational, and a terrific escapade for first-time adventure game players. But hard-core fans of Sierra's 3-D adventures may be disappointed by the game's simplicity. Most players should be able to reach Sacramento the first time they play and solve the entire adventure after only two or three sessions. And if you've already been spoiled by the double-hi-res graphics featured in newer Sierra games like *Looking for Love* and *Police Quest II*, *Gold Rush's* standard hi-res graphics may be a letdown.

The game's graphics are more noticeable at the start of the game because once things get rolling it's easy to get caught up in the adventure. Sierra's usual attention to animation goes a long way toward making the story realistic. When Jerrod looks through a family photo album, for example, he actually stands there and turns each page. When he withdraws his money from the bank, you watch as the teller opens the drawer, takes out several bills, and hands them to Jerrod.

Gold Rush comes with an 88-page booklet, *California Gold: The Story of the Rush to Riches*. This independently produced volume not only provides a wealth of background information but also serves as copy protection. Before you begin playing, you are asked a question about the gold rush and are directed to a specific page and line from the book. Fail the test, and Jerrod is lynched.

Provided you avoid that ignoble



Gold Rush

The year is 1848. The place is Brooklyn Heights, New York. Jerrod Wilson, a journalist with a home, a good job, and friends, finds himself drawn westward by rumors of gold, to a place called California.

With the latest 3-D adventure from Sierra, you get your own chance to experience the California gold rush. Take on the role of Wilson as you seek fortune at the end of the frontier—if you can first complete the perilous journey.

Before you can head for gold country, you must settle your affairs in Brooklyn Heights and collect the things you'll need to make your way west. Then you must decide whether to take the popular overland route to California, sail to Panama for a trek through the jungle to the Pacific, or travel by steamship all the way around Cape

fate, *Gold Rush* will give you a taste of a unique American adventure straight from the pages of history. It makes good use of the computer, blending entertainment and education in a challenging (at least for novice adventure gamers) scenario.

— Bob Guerra

Gold Rush

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wouldn't have to waste time redefining your search choices to return to Namibia when you use the program next.



Make your computer screen a portal to the world with *PC-Globe+*.

You can call up most data in tables, bar charts, or maps. When you look at data on the world, continent, or region maps, you can toggle the borders of the countries on or off. Either way the graphics are excellent.

The program is menu-driven, so your options are easy to access. There are so many ways to operate the pull-down menus that at least one is certain to please you. For example, to choose a country from the menu, you can use a mouse, the arrow keys, or the keyboard. If you use the keyboard, either type the number corresponding to your menu choice or type the first few letters of the country's name. *PC-Globe+* understands alternate spellings and even some archaic names; the United States, for instance, can be accessed by typing either *America* or *U.S.* The authors have given a lot of thought to this amiable program.

They have also given a lot of thought to *PC-Globe+*'s possible uses. They've provided many printing options and the ability to save information as ASCII files so data can be imported to other applications.

Besides its potential value for research, exploration, and fun, there are some other practical reasons to buy *PC-Globe+*. For example, let's say you want to know how far it is between your home town and DisneyWorld. You can quickly calculate the distance between any two cities. You can use *PC-Globe+* to convert currency, plan your travel itinerary, or stay on top of your international business concerns. For presentations, you can save, print, or display any map and give it a caption. Teachers will find that the data can fit many school subjects. Population figures could be used in math, statistics, social studies, geography, and other subjects. As far as content is concerned, you'll find that the software is accurate, moti-

vating, and challenging.

The program is not only useful, it's also technically perfect with no bugs, nothing unexpected. It cleverly capitalizes on the computer's capabilities. *PC-Globe+* really justifies using a computer, and I would be hard-put to suggest improvements. It's versatile, comprehensive, well designed, innovative, and thorough. To sum up, it would be a worthwhile investment for school projects, trip planning, business presentations—the list goes on.

— Kristen Sternberg

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PC-Globe+

Exploring the world wasn't cheap for Columbus, and it's even more expensive now. But with only a modest investment you can sail your computer to new and exciting places with *PC-Globe+*.

PC-Globe+ is a thorough geography resource—there's no better description for it. The program is so easy that you can load it and use it immediately without reading the manual; you may, however, wish to use online help for some of the features.

When you load the four-disk program, the screen shows a world map. You can bring areas of interest to the center of the screen by rotating the world. Using the program's database, you can call up information about 177 countries or compare information from several countries. You can also call up data on 1200 cities, many regions, and several related groups of countries (like NATO allies or developing countries). When you examine a particular country, you can look at its major cities, geographic features, population, age distribution, languages, ethnic groups, religions, health statistics, time zones, resources, agriculture, industry, exports, government, culture, tourism, and more. You can save search parameters when you leave the program. For example, if you were looking at Namibia and exited through the "Save Parameters/Exit" option, you

The Airplane Factory

Even if you're not Donald Trump, you can still put together your own fleet of aircraft. But don't stop there. As an add-on to *Chuck Yeager's Advanced Flight Trainer (AFT)*, *The Airplane Factory* lets you fly airplanes you build yourself—whether they're modeled after real-life aircraft or born in your imagination.

Setting up *The Airplane Factory* can be a little tricky, but the manual's adequate explanations will soon have you on the plant floor. If you boot *The Airplane Factory* first, you can then use it to load *AFT*. *The Airplane Factory* resides in memory behind *AFT*, so you can switch back and forth to test new designs. The program itself is menu-driven and easy to use.

The Drawing Board, the first menu choice, is the heart of the program. With it you can create an aircraft or modify an existing one, including the 14 different planes that *AFT* provides. If you're modifying an existing aircraft, the program presents you with a list of performance characteristics or equipment options. You can change a variety of items, from the number of seats to the amount of thrust. Modify an F-16, for example, and you might be able to rip the wings off if you increase the thrust and decrease the drag.

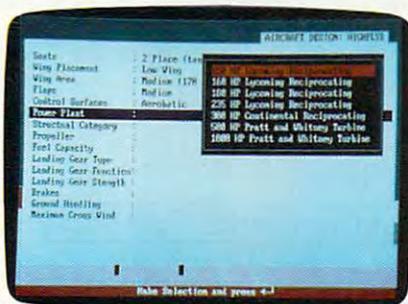
To give you a sense of what you

can accomplish: The Drawing Board provides seven completed aircraft that you can add immediately to your fleet. These include actual aircraft like the Cessna 152 and imaginary planes like the STOL Bush plane. Keep them as they are or modify them to suit you.

Although the program says, "Custom design your own plane!," this is misleading. First of all, you're limited to prop-driven aircraft—no jets. Anyone who wants to pound out the next Advanced Tactical Fighter is going to be disappointed. Secondly, you don't design aircraft as much as you assemble them by selecting options from particular categories.

The second menu item, Race, lets you choose an aircraft to fly in *AFT*'s race courses. If you want, you can modify the plane you're racing against—a nice feature for beginners who want to stack the deck in their favor. The Race feature also keeps track of your best times for all of the *AFT* races.

Because your flight line can only accommodate 20 aircraft, the Administration menu can be a great help. As your fleet grows, you'll have to mothball or scrap aircraft to make room on the flight line. The Administration



Modify performance features in *The Airplane Factory* to achieve a unique aerodynamic design.

function helps you maintain your fleet, keeps the active aircraft on the line and ready to go, and parks the inactive planes out back on the grass.

The *AFT* menu controls your interface with the *Advanced Flight Trainer* program. If you've just created or modified an aircraft, you can set it as the default selection and it will be ready to go when you boot *Advanced Flight Trainer*. Select Go Flying from the *AFT* menu and *AFT* will automatically load. If you want to make another change to the aircraft, you can get back into *The Airplane Factory* by selecting Return to

DOS from the *AFT* menu.

Serious *AFT* players (and there are plenty) and private pilots will benefit most from this program. *AFT* gamers can create a number of different aircraft to improve their race times. Design and flying skills are tested to the max. Private pilots can design or modify planes they fly or would like to fly. Want to see what a touch and go would be like in a Piper Cherokee Warrior? A couple of quick menu selections and you'll come close to finding out. Although *The Airplane Factory* won't appeal to everyone who owns *AFT*, those with a serious interest in either *AFT* or private aviation will welcome it as a fine addition to an already-great program.

— Richard Sheffield □

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new products!

Earl Improves

Electronic Arts has released an upgraded version of *Earl Weaver Baseball*, featuring a clearer, more isolated view of the pitcher and batter. By making the players larger in version 1.5, EA creates a television-style view of the game. Other improvements include support for 16-color and VGA graphics. A new, simpler keyboard interface has been designed so that you move more quickly through onscreen menus and custom game options.

Commissioner's Disk 1.5 and *MLBPA Player Stats—'88 Season* are also available. Using *Commissioner's Disk*, players can assume the general manager's role and draft players, schedule a league, sign free agents, and trade players. In addition to endorsing the product, Weaver offers advice on key decisions during the game.

Earl Weaver Baseball 1.5 is available for IBM PCs and compatibles and retails for \$39.95. A combination pack with 5¼- and 3½-inch disks sells for \$44.95. *Commissioner's Disk 1.5* and *MLBPA Player Stats—'88 Season* retail for \$19.95 each. Upgrades are available for \$17.00 plus \$3.00 shipping and the original manual cover.

Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404

Circle Reader Service Number 200.

Portable Ataris

Atari Computer has introduced Portfolio, a hand-held PC compatible. The one-pound unit runs MS-DOS 2.11 and has 128K of RAM, expandable to 640K.

Portfolio comes with a text processor, a spreadsheet with calculator, an appointment calendar with automatic alarm, and an address- and phone-list card. The phone list has a built-in automatic telephone-dialing function.

Credit-card-size 32K or 128K RAM cards replace disk drives, and, through a special port, you can exchange files with other PCs. Some software is included, and additional programs will be provided on ROM

cards. Portfolio has a 63-key IBM-compatible keyboard and features an eight-line × 40-character LCD display. It runs on standard AA batteries.



Atari's Portfolio is about the same size as a VCR tape.

Atari announced that Portfolio will retail for less than \$400.

The company has also released a new laptop computer, the Stacy. It's a 15-pound ST compatible with an LCD display subsystem, keyboard, trackball, drive, and battery pack.



The ST-compatible Stacy laptop from Atari has one megabyte of RAM.

Stacy features one megabyte of memory, a 3½-inch double-sided floppy disk drive, a built-in trackball, and a system speed of 8 MHz. A second floppy or hard drive can be added. A built-in monitor port connects the computer to any ST monochrome or RGB color monitor for desktop use. The system

has all the standard ST computer ports and interfaces, and it includes a DC input jack.

The Stacy retails for \$1,495.

Atari Computer, 1196 Borregas Ave., P.O. Box 3427, Sunnyvale, CA 94088-3427

Circle Reader Service Number 201.

Tanks, Accolade

Accolade has released the IBM PC and compatible version of *Steel Thunder*. This tank simulation puts you in command of four front-line U.S. war machines, including the M1A1 Abrams. The PC version features MCGA high-resolution graphics.

You can battle Russia's top combat armor in three theaters of operation, including Cuba, Syria, and West Germany. *Steel Thunder* features 24 missions that test both your day and night combat skills.

After selecting a tank, choose from six authentic weapon systems and an arsenal of nine ammo types, including TOW-2 missiles. As commander, you receive an overview of the crisis and an assignment from the General. You must also choose a gunner, a driver, and a loader from a personnel roster. Accolade has equipped each tank with realistic controls, gun sights, and a 360-degree view of the surrounding terrain.

The IBM PC version of *Steel Thunder* retails for \$39.95. A Commodore 64 version sells for \$29.95.

Accolade, 550 S. Winchester Blvd., Suite 200, San Jose, CA 95128

Circle Reader Service Number 202.

It's a Mystery

Davidson & Associates has released *Math Blaster Mystery*, a follow-up to *Math Blaster Plus*. Designed for children age 10 and older, the program features four learning activities covering several areas, such as word problems, positive and negative numbers, fractions, decimals, and percents. The program also develops inductive and deductive reasoning and helps students

Mickey McLean

determine the best strategy to solve a problem.

Hint screens encourage students to work through problems, and positive reinforcement and a printed certificate of excellence motivate students to succeed. Other features include an editor that lets you add your own math problems, student recordkeeping to track progress, and pull-down menus and icons that can be accessed with a mouse or keyboard.

Math Blaster Mystery retails for \$49.95 and is available for the Apple II series and IBM PCs and compatibles. The PC version contains both a 3½- and a 5¼-inch disk in the same package.

Davidson & Associates, 3135 Kashiwa St., Torrance, CA 90505
Circle Reader Service Number 203.

New HeadStart

HeadStart Technologies has introduced an IBM PC compatible with an animated icon-based operating environment. The HeadStart Explorer uses an 8088-1 processor, which switches between 9.54 MHz and 4.77 MHz. Standard memory is expandable from 512K to 768K. Explorer comes with one 3½-inch 720K floppy disk drive and with serial, parallel, mouse, and game ports. Graphics support includes CGA, MCGA, MDA, Hercules, and custom 16-color CGA emulation. Explorer is equipped with a fold-up 84-key AT-style keyboard.



The HeadStart Explorer features animated onscreen icons.

The HeadStart Explorer comes with built-in DOS, a graphics shell that shows your running programs and attached peripherals, a word processor, a calculator, a datebook, and a simple database with a preconfigured address

book and telephone directory.

The new unit features a system of external interfaces that let you add peripherals, memory, and accessories without ever opening the computer. The external interfaces accept custom peripherals such as a modem, a memory-expansion kit, a 5¼-inch floppy disk drive, and a proprietary 40MB hard disk cartridge.

Without a monitor, the HeadStart Explorer retails for \$599.

HeadStart Technologies, 40 Cutter Mill Rd., Suite 438, Great Neck, NY 11021

Circle Reader Service Number 204.

The Wizard of Sharp

The hand-held Wizard from Sharp Electronics puts many desktop functions in the palm of your hand. The 4 × 6 inch unit weighs eight ounces.

Wizard integrates several business tools, including an appointment diary, a calendar, a phone directory, a notepad, a calculator, and a world clock. A PC linkup accessory transfers schedules, phone listings, and documents between Wizard and personal computers.

The menu-driven unit has 32K of RAM that can be expanded to 96K with the addition of integrated circuit software cards. The phone directory stores as many as 700 names, office numbers, home numbers, fax numbers, and addresses. It can also cross-refer and sort listings. The memo function can be used as an electronic notebook and can file as many as 16 typed pages of information. You can keep your information private with one of more than 12 trillion passwords.

Wizard features LCD touch-screen technology which is used in conjunction with software cards. The unit operates on two lithium batteries with a backup battery that prevents memory loss for two years.

Wizard retails for \$299.

Separate software cards for Wizard include *Time Expense Manager* (\$119.99), *Thesaurus/Dictionary* (\$129.99), and *8-Language Translator for Travelers* (\$99.99).

Sharp has also introduced the Organizer Link, which includes all necessary software and hardware to link Wizard to a PC compatible. It retails for \$149.99.

Sharp Electronics, Sharp Plaza, Mahwah, NJ 07430-2135
Circle Reader Service Number 205.

ZSoft Brushes Up

ZSoft has introduced *PC Paintbrush IV*, an upgrade that includes several new image-processing features.

Seven new special effects include blend, smudge, gradient, tiling, tint, brightness, and contrast. The new version offers precise editing of gray-scale images. *PC Paintbrush IV* also supports outline and bitmap fonts, plus text formatting and automatic special effects with text.

Other new features include multiple windows; support for TIFF and PCX formats; 256 onscreen colors; user-defined palette style sheets for fast color selection; and an expanded toolbox.

PC Paintbrush IV requires an IBM PC or compatible with 640K, a graphics display, and a drawing device. The program retails for \$99.95. If you already own *PC Paintbrush*, you can receive an upgrade for \$35.00.

ZSoft, 450 Franklin Rd., Suite 100, Marietta, GA 30067
Circle Reader Service Number 206.

Creative Children

The power of the press belongs to kids, too. The Learning Company has released *The Children's Writing & Publishing Center*, a desktop publishing program for children ages 8-14. The program helps children create illustrated reports, stories, letters, and newsletters.



A colorful menu bar helps kids use *The Children's Writing & Publishing Center*.

A colorful menu bar makes the program easy for children. Features include a what-you-see-is-what-you-get display, simple page-format choices, online help, and a sample-letter exercise.

Young users can cut and paste text, use multiple font styles and sizes, use

www.commodore.ca

one- or two-column formats, and combine text with graphics. They may choose from more than 150 pictures included in the program or import graphics from other graphics libraries.

The Children's Writing & Publishing Center supports 16 colors on EGA and VGA computer systems. It also supports CGA and Hercules monochrome. You can use black-and-white or color dot-matrix printers with the program.

Available for the IBM PC and compatibles in 3½- and 5¼-inch formats, the program also supports the Tandy DeskMate interface. The package comes with a user's guide, which provides examples of reports, stories, letters, outlines, and newsletters. The consumer edition retails for \$69.95. A school edition, specifically designed for teachers, sells for \$89.95.

The Learning Company, 6493 Kaiser Dr., Fremont, CA 94555
Circle Reader Service Number 207.



Digital Vision has released Version 3.1 of the ComputerEyes system software.

Digitizer Upgrade

Digital Vision has announced an upgrade to the system software for ComputerEyes, a black-and-white video digitizer for the IBM PC and compatibles. The company has also released a new device driver for developers who want to add image-capture capabilities to their applications.

ComputerEyes scans images from any standard video source, such as vid-

eo cameras, VCRs, and videodiscs. The captured images can then be displayed using the PC's standard CGA, EGA, Hercules, MCGA, or VGA graphics capabilities with no additional hardware.

New features in version 3.1 include high-resolution 640 × 480 image capture, support for extended VGA modes, additional paint and desktop publishing file formats, and image-enhancement routines to smooth, sharpen, or make images halftone.

The complete hardware/software product retails for \$249.95. If you own old versions of ComputerEyes, you can upgrade for \$15.00.

The new device driver scans images directly into software applications. The driver package retails for \$100.

Digital Vision, 66 Eastern Ave., Dedham, MA 02026
Circle Reader Service Number 208.

3-D Space

Enter the 3-D world of space with *Dark Side* from Cinemaware's Spotlight Software.

Relying on strategy and puzzle-solving skills, you are a mercenary of the future trying to save the world from destruction. Lasers, shields, and a jet power pack are at your disposal as you infiltrate a heavily guarded military zone and destroy a doomsday weapon. During your journey in space, you'll discover hidden geographical secrets, learn to use a teleportation device, and solve the mysteries of the telepod crystals hidden throughout the military grounds.

Dark Side features Freespace, a scrolling 3-D system with a first-person point of view.

The game is available for the IBM PC and compatibles, the Amiga, and the Atari ST for a suggested retail price of \$39.95. A version for the Commodore 64 sells for \$29.95.

Cinemaware, 4165 Thousand Oaks Blvd., Westlake Village, CA 91362
Circle Reader Service Number 209.

¿Quien está en Grant's Tomb?

Now, in addition to entertaining, *Trivial Pursuit* teaches, thanks to Gessler Educational Software. Foreign-language software versions of the popular board game were recently released by the company. Designed by the creators of the board game and a team of computer programmers at Oxford University,

Trivial Pursuit is available in Spanish, French, and German. You can play the games alone or in groups.

The software editions contain over 3000 questions in categories such as People and Places, Science and Technology, and Art and Culture. The questions incorporate sound, music, and graphics; and the computer version plays like the board game.

The French, German, and Spanish versions of *Trivial Pursuit* are available for the IBM PC and compatibles and the Commodore 64 for \$39.95. The IBM PC version requires color graphics. French and Spanish versions are also available for the Atari ST.

Gessler is also designing foreign-language software versions of *Pictionary* and *Monopoly*.

Gessler Educational Software, 55 W. 13 St., New York, NY 10011-7958
Circle Reader Service Number 210.

Action and Adventure Comes to AD & D

Strategic Simulations has released *Hillsfar*, the first Advanced Dungeons & Dragons action-adventure game and the second AD & D computer game set in TSR's Forgotten Realms game world.

You create characters at the beginning of play or transfer one into the game from *Pool of Radiance* or its upcoming sequel, *Curse of the Azure Bonds*. The game can be played with only one character at a time, but any number of characters can be transferred into *Hillsfar* and sent on adventures in and around the city.

Hillsfar incorporates characteristics of adventure and action-style games. During the game, each character must successfully complete action-oriented events including archery, maze exploration, arena combat, lock picking, and equestrian contests. If the character is successful, rewards such as gold, experience, and magical items are rewarded. Some of the character's rewards can be transferred to *Curse of the Azure Bonds*.

The version for the Commodore 64 retails for \$39.95. An IBM PC or compatible version retails for \$49.95.

If you run into too many obstacles along your way, send SSI \$7.95 and it will send you a cluebook to guide you through the Forgotten Realms.

Strategic Simulations, 675 Al-monor Ave., Sunnyvale, CA 94086-2901
Circle Reader Service Number 211. ▶

Everything but the Bugs in Your Teeth

If you have *Pocket Rockets*, you can straddle the hottest cycle on the streets. Take it for a spin on a tough race course, or accelerate to a record speed down a quarter-mile drag strip.

In this fast-action game from Capcom U.S.A., you choose from a Suzuki Katana, Kawasaki Ninja, Honda Hurricane, or a Yamaha FZR. The game features authentic instrument panels onscreen for each cycle. True-to-life sights and sounds have also been incorporated into the game.

Pocket Rockets is available for the Commodore 64 (\$29.95) and will soon be released for the IBM PC and compatibles (\$34.95) and the Amiga (\$39.95).

While testing that new Kawasaki, you can save money with Capcom's mail-in refund offer. Refunds range from \$2.50 to \$10.00 on recent Capcom purchases, depending upon the number of games purchased. To receive the rebate, mail the special certificate to Capcom along with the UPC codes from game boxes and the cash register receipts. This offer expires December 31, 1990. Certificates will be packaged in all Capcom games released in 1989.

Capcom U.S.A., 1283-C Mountain View/Alviso Rd., Sunnyvale, CA 94089
Circle Reader Service Number 212.

For Home Workers

Dial Direct Response Marketing has introduced the Home Office Business Network (HOBN), an online computer network for home-based business owners. You can access HOBN via Minitel Services.

In addition to electronic mail and online conferences, you can get advice about your home business. Subjects such as marketing, tax reduction, sales, and finance are covered each month. The online service also runs advertisements for products and services geared toward the home-business market. Each month, you can enter contests based on ad content, and you can win home-office equipment.

In 150 cities, HOBN is a local phone call away. You pay no subscription fee and no minimum charge. The service costs \$10.20 per hour, and the charges can be billed to your credit card. If you own an IBM PC or compatible, Apple II, Macintosh, or Commodore 64, you can receive free terminal emulation and communications soft-

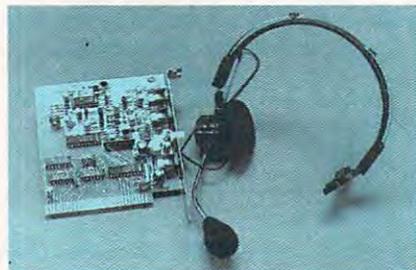
ware from Dial Direct Response Marketing.

Dial Direct Response Marketing,
44 Monterey Blvd., San Francisco, CA 94131

Circle Reader Service Number 213.

Converse with a PC

Covox's new Voice Master Key System lets you add voice commands and digitized speech to IBM PCs and compatibles. The system turns any series of keystrokes into voice-activated macros, speeding up many computer tasks.



PC users can literally tell their computer what to do with the Voice Master Key System from Covox.

The word recognizer can be used with CAD, desktop publishing, word processing, or other programs and games where voiced input speeds up your progress. In a desktop publishing program, for example, you can issue commands such as zoom or magnify by simply saying *zoom* or *magnify* without using the keyboard or a mouse. Voice-activated commands provide an interesting twist for many games, such as flight simulators.

The Voice Master Key System package consists of a half-size card, a headset, the software, and a manual. It retails for \$149.95.

Covox, 675 Conger St., Eugene, OR 97402

Circle Reader Service Number 214.

Play the Ponies

Thanks to *Daily Double Horse Racing*, you don't have to leave your PC to spend a day at the track. The game, from Artworx, features a full card of ten races.

A tabloid-size racing form provides race histories of 180 horses and 12 jockeys, covering nearly 400 races. With this information, you can handicap the races, taking into account the horse,

jockey, and track conditions. You can bet on straight wagers, parlays, quinellas, exactas, and daily doubles. *Daily Double Horse Racing* features fully animated 3-D scrolling graphics.

The game retails for \$29.95.

Artworx, 1844 Penfield Rd., Penfield, NY 14526

Circle Reader Service Number 215.

Improved Mac Spelling

Electronic Arts has released *Thunder II*, an updated spelling checker for the Macintosh. The new version works as a Control Panel device, making it accessible from within any application, including spreadsheets, databases, and electronic mail.

Thunder II catches errors in spelling, capitalization, punctuation, and double words. The program can work interactively, correcting mistakes as you type, or it can check completed documents.

Features include two complete dictionaries and user-defined supplemental dictionaries. The program can check documents at 100 words per second.

Thunder II retails for \$79.95. If you own *Thunder 1.1*, send Electronic Arts your original disk plus \$33.00 (including shipping and handling), and the company will send you *Thunder II*.

Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404

Circle Reader Service Number 216.

Hey, Pal

Miami Vice may have run its course, but Crockett and Tubbs still walk the beat in a new arcade game from IntraCorp.

Miami Vice, available on IntraCorp's Capstone label, offers eight levels of action, including a car chase featuring Crockett's Ferrari, a speedboat race to Stiltsville, and a search of a waterfront warehouse for an illegal shipment from Quito. The show's tropical backdrop is translated into colorful computer graphics.

Miami Vice is available for IBM PCs and compatibles with at least 256K and CGA or EGA graphics. The PC version, along with releases for the Apple IIe and IIGS, Amiga, and Atari ST, retail for \$39.95. A Commodore 64 version sells for \$29.95.

IntraCorp, 14160 SW 139th Ct., Miami, FL 33186

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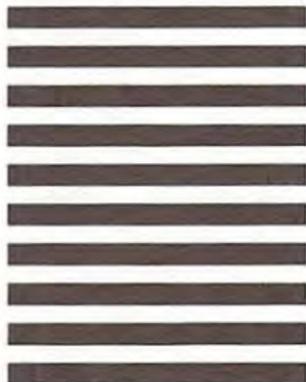
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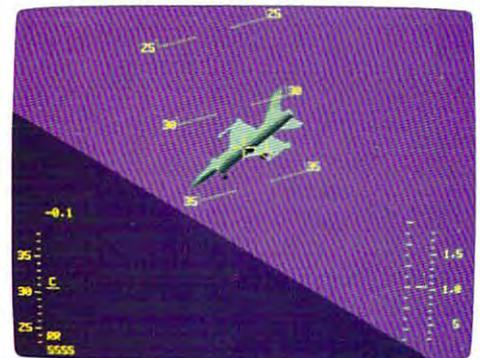
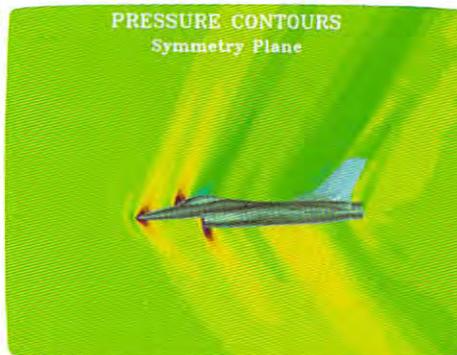
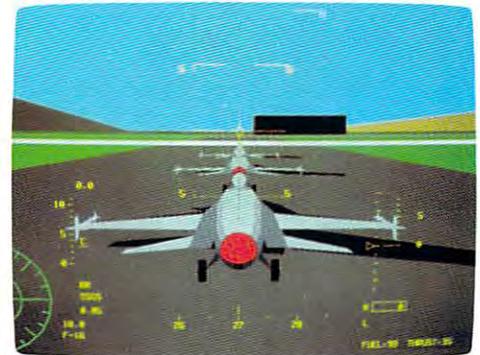
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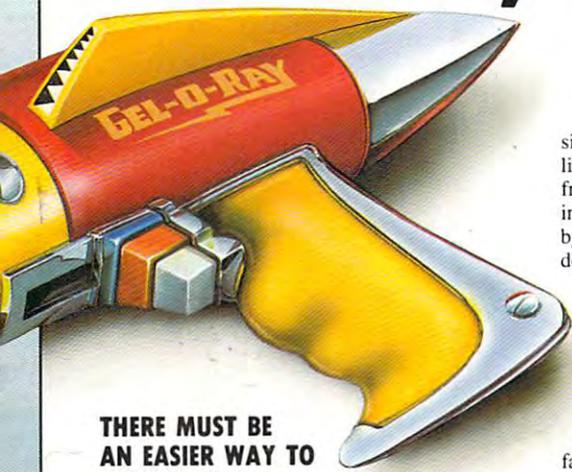
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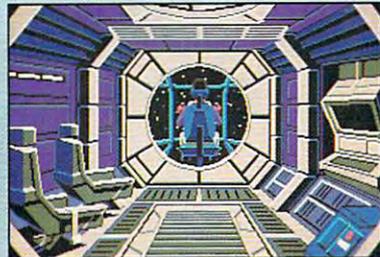
THERE MUST BE AN EASIER WAY TO MAKE A LIVING

There's never a moment's rest for galactic heroes, and when you're Roger Wilco, space-age swashbuckler and all-around nice guy, the thrills just keep on coming. It seems there's always some kind of dangerous mess to clean up.

This time it's those Two Guys from Andromeda, bestselling designers of Space Quest and Space Quest II, who have gone and gotten themselves foully abducted by the pesky pirates of Pestulon, those poaching parasites, those perverse perpetrators of petty mischief and putrid software.

If Roger can't rescue the two guys from the bowels of the Scumsoft Software stronghold, his days as a popular adventure game character are definitely numbered.

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But the Two Guys don't write games for sissies. If you can't stomach being picked up like so much trash by a wandering garbage freighter, stalked by giant rubbish rats, ground into hamburger in the belly of the Mog, zapped by a scorpazoid in the deserts of Phleebhut, or deep-fried like a chimichanga on the planet Ortega, you'd better play one of those 'nice' games. In Space Quest III, *The Pirates of Pestulon*, you're not likely to be shown any mercy.

LIFE'S NOT EASY FOR HEROES

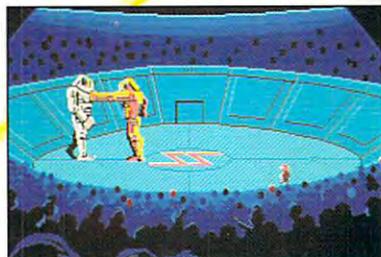
Real heroes thrive on danger, and space-faring broomjockey and freelance good-guy Roger Wilco is no exception. Is he afraid of being fried by lightning in a megathunderstorm? Is he afraid of landing in the trash shredder in the depths of the intergalactic garbage truck? Is he afraid of finishing the Belcher Combo plate at Monolith Burger? You bet your sweet asteroid!



Check out all the crazy and absurd junk, er, uh, treasures at Fester Blatz's wacky World of Wonders.

TRASH HEAPS OF PRAISE FOR OUR TWO GUYS

Game reviewers throughout the galaxy love Space Quest games: "...humorous and challenging...", "laugh-out-loud funny...", "genuinely entertaining...", "...A three dimensional graphic wonder..."



Battle for your life in the arena with the Nuke 'em- Duke 'em robots. He's down! He's up! This crowd is out for blood, and it might as well be yours.

HAVE YOU GOT WHAT IT TAKES? NOW'S YOUR CHANCE TO FIND OUT

But don't take *their* word for it -- blast off for adventure, challenge, and laughs with Roger Wilco and the Two Guys from Andromeda in Space Quest III, *The Pirates of Pestulon*.



ORIGINAL MUSIC FROM SUPERTRAMP'S BOB SIEBENBERG

Space Quest III features the best and most realistic sound of any Space Quest game. The exciting original music score and the more than two dozen realistic sound effects *must* be heard to be believed.

