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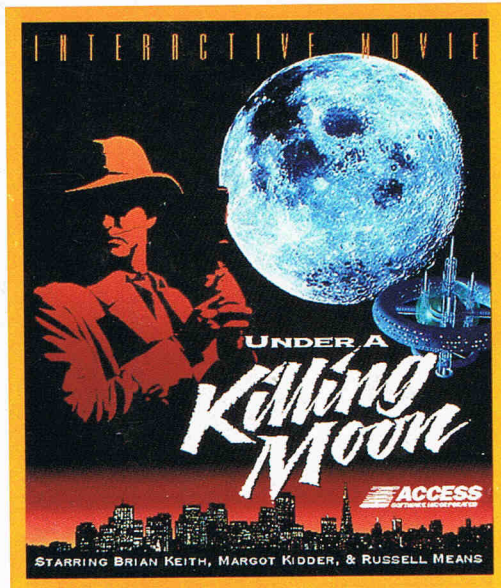
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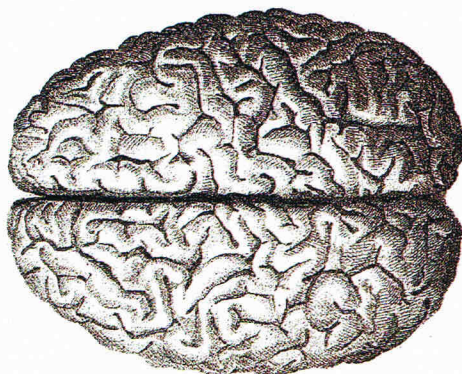


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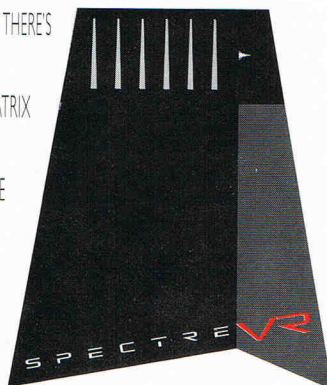
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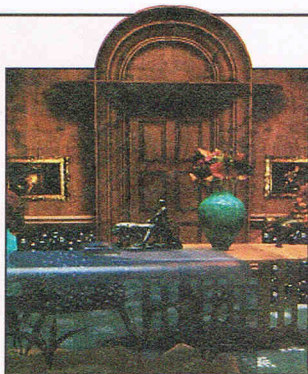
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Las Vegas in November means COMDEX, and it's a three-ring circus, or more appropriately, a three-sided wrestling match. In one corner are 2200 exhibitors; in another corner are 170,000 attendees; and in the far left corner, almost out of sight, are 2000 cabs. People come to COMDEX for the 2200 exhibitors, but it's the cabs they wind up really wanting. That's Fall COMDEX in a nutshell, and it's a prescription for disaster. Unless you play your cards right, you can spend the entire week of the show in a cab line or a series of cab lines. Some people do. And if you ever get out of a cab line, chances are you'll wind up in another line.

For those of us who did manage to get out of the lines long enough to stroll the convention floor, there was a lot to see. One of the show's big announcements was Borland Office 2.0 (Borland International, 408-438-8400). Borland has bundled WordPerfect 6.0 with its own Quattro Pro for Windows and Paradox for Windows (both of which won COMPUTE Choice Awards for 1993) and produced a stellar suite. Borland and WordPerfect are also working on an integrated application language to tie the individual applications in the suite together.

At the Sands, Best Data Products (818-773-9600) was showing its super ACE card, which uses a DSP chip to support 16-bit sound, 14.4 modem communications (including faxing), voice mail, plus a SCSI CD-ROM port. Look for more all-in-one cards like this in 1994.

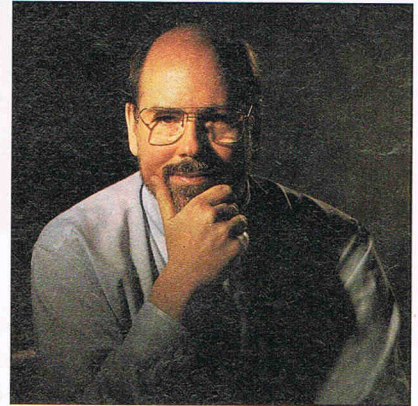
After a show like COMDEX, I have fistfuls of business cards to deal with. Pacific Crest (800-870-3391) is coming to my rescue with CardGrabber, a combination business card scanner and address book that plugs right into your parallel port. With Calera's OCR engine built in and its plug-and-play interface, CardGrabber looks like a real winner.

There were several notable notebooks at this year's COMDEX, but two that caught my eye are from Sharp (201-529-8100). The 8150 and 8650 are full-powered 33-MHz 486 PCs with 200MB hard drives and du-

al-scan passive and active matrix color screens, respectively. Both machines have excellent fit and finish, as well as crisp displays.

The best on-the-floor show at COMDEX was at the Micrografx booth. Micrografx (214-234-1769) was introducing Charisma at the show, and the company's presentation included a dazzling performance from a team of daredevil Rollerblade skaters. Charisma looked pretty good, too.

Power users should be interested in three products Landmark (800-683-6696) was showing at its booth: Landmark 3.0 (the newest version of the company's much-praised benchmark suite for Windows), DOS for Windows (a DOS-like command line interface for Windows), and WinProbe (a Windows diagnostic tool). All three seem



like worthy additions to any Windows user's toolbox.

One of the most unusual products at COMDEX comes from a company appropriately named Second Nature (503-221-1460). It was showing its superb collection of screen savers and wallpaper art, all based on artworks from well-known artists. Second Nature has several collections that feature art by Renoir, Monet, Audubon, Barbara Wallace, and many others. Also worth noting is the fact that Second Nature was formed to help support nonprofit organizations. The company donates all profits or 10 percent of sales (whichever is greater) to organizations such as the Nature Conservancy and the Audubon Society.

That's it for the latest Fall COMDEX. See you in a cab line. □

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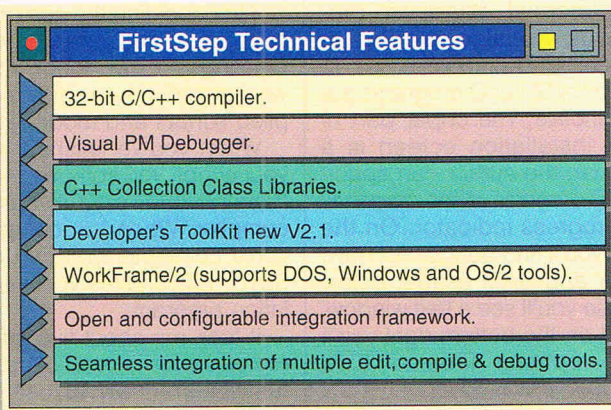
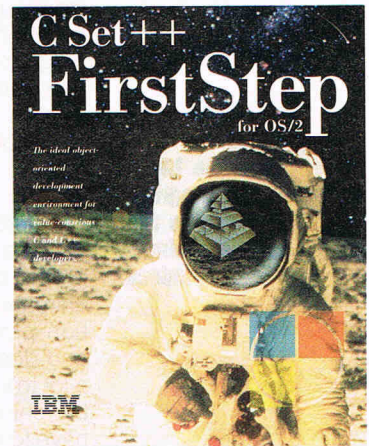
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# WINDOWS WORKSHOP

Clifton Karnes

## HOW TO INSTALL WINDOWS PROGRAMS

From a developer's point of view, installing software is a nightmare. And installing Windows software is *really* tough. In the old days, when programs consisted of a single COM or EXE file, you just copied the program from a floppy to your hard disk. These days, programs are much more complex and often consist of many files. In addition, today's programs often have to be integrated into your environment in just the right way for them to work properly.

**In the 1990s, installation programs can be very complex animals indeed.**

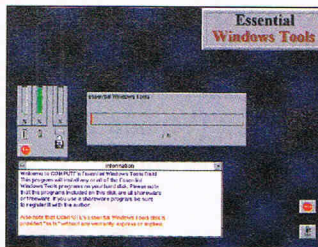
In the 1990s, installation programs can be very complex animals indeed. If an installation program runs correctly and does things right, there's a lot to keep track of and double-check. For example, you have to make sure that the user has enough disk space to install your program. You have to find out where the user wants to install your program, and you have to create directories, decompress files, create a Program Manager group and add icons to it—and all the while, you need to keep the user informed about the installation's progress.

Because installation software is so specialized, most developers and publishers don't write their own programs. They use an installation engine. There are several of these to choose from, but the ones you'll see most often are Microsoft Setup (which used to be available with many Microsoft language products but is now only available to developers upon request) and Stirling Software's InstallSHIELD.

I just finished writing a book, *Essential Windows Power Tools*, which features a disk of Windows utilities, and

I needed to create an installation program for the disk. I looked at Microsoft Setup, and although it seemed to be able to do everything I wanted, it required quite a bit of space on the installation disk (about 450K for the engine), it demanded some extra C programming, and it looked a little complicated in general.

From appearances, InstallSHIELD 2.0 (The Stirling Group, \$495, 800-374-4353) was easier to use and made a smaller footprint on the disk (about 150K), so I decided to try it first. I wasn't disappointed.



First, before talking about using InstallSHIELD, I should point out that you've probably seen the program but didn't pay much attention to it. I'd estimate that 75 percent of the commercial Windows programs available use the InstallSHIELD engine.

InstallSHIELD programs are distinctive. The upper part of the installation screen is a bitmap the author can specify. The center of the screen is a progress indicator. On the left you'll find gauges for hard disk and RAM usage, below these you'll see a text window, and on the bottom right you'll see buttons labeled Exit, Pause, and Help.

From a user's point of view, installing a program should be painless and transparent. You should have the option of installing the software where you want, and you should be consulted on all important decisions, but the program should supply you with intelli-

gent defaults for all of these. If the installation program does its job right, installation can be quick and easy.

With InstallSHIELD, you create a C-like script that the install engine reads. This script controls exactly what happens during an installation. Basically, you do five things with your script: Check to see if the user has enough hard disk space for the program, ask the user where the new program should go, install the program, build a Program Manager group with an icon for each program in the application, and give the user the option to view your readme file.

This may sound simple, but to take into account everything that can go wrong, there's quite a bit to do. The script for my *Essential Windows Tools* disk (which installs 14 programs) is 757 lines long.

Before you start creating your script, you need to decide whether or not you want to compress your source files. InstallSHIELD comes with its own compression utility (unfortunately DOS based) that gives excellent compression.

After deciding the compression issue, you're faced with creating your own script. You'll want to start with one of the supplied scripts and modify it.

When you've finished with your script, you compile it with InstallSHIELD's DOS-based compiler. When the compilation's complete, you can run SETUP.EXE and test your installation program.

It took me about five hours (spread over several days) to really learn how to use InstallSHIELD, and creating my first installation script (which was fairly complicated) took another five hours. When I needed to develop a second install script, however, the installation went very quickly. I created that installation disk in about two hours. □



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CPT02

Collecting patches, upgrading your XT, killing the lock keys, converting binary numbers in QBASIC, studying the Bible with CD-ROM, and changing colors in Windows Help

## In Search of Patch

In "Great Game Add-ins" (October 1993), Scott May lists a number of game manager programs and patches, but he doesn't say how people can get them.

Do you know whether anyone has created patches for Chuck Yeager's Air Combat?

NED AVEJIC  
CHICAGO, IL

Scott May says that most of the patches are available from the companies mentioned, if you're a registered user. The companies have bulletin boards from which you can download the patches, or (if you don't have a modem) you can request that they send the patch or patches to you on a disk.

Several of the patches are available on CompuServe (type go games to get to the area where they are) or on GENIE (type scorpia).

Scott says that he hasn't seen many things for EA games. The only things he's seen online for Air Combat are recorded flights.

## Hard Decisions

Do you think it's rational to buy a hard disk for an XT in good condition? Or would it be smarter to buy a new computer?

And, if it is rational, what kind of hard disk would you recommend?

CAROLE WILLETT  
ASHEBORO, NC

We would consider it highly rational to equip any working PC with a hard disk, if the work that computer is doing would be enhanced by a hard disk.

If you use the computer only for word processing, you might be able to find a full-featured word processor that will operate from a floppy, but you would be able to work

much more quickly, use more advanced software, and store many more files if you had a hard disk.

We subscribe to the belief that a computer is only obsolete when you're unable to find software for it and when the software you have is unable to satisfactorily do your work. So, there are many good reasons to keep and upgrade an XT.

On the other hand, you can buy a good 386 for less than \$1,000, so if your hard disk installation exceeds about half of that, you should consider buying a new computer and handing down or palming off the XT.

What kind of hard disk should you consider? Find out whether you have a hard disk controller in your computer. If you do, that will determine the least expensive installation. Have a technician look your machine over to determine whether you'll need to upgrade your BIOS. In fact, we recommend that anyone needing a hard disk installed—especially on an older machine—turn the whole operation over to a technician.

## The Killer Returns

Twice in the same week, we've received questions about killing the lock keys (Num Lock and Scroll Lock). The solution to this problem was published about two years ago, but because people might have trouble laying their hands on the issue that contained it, we're going to reprint it here.

From our infamous February/March issue of 1992, here's the response.

THE EDITORS  
GREENSBORO, NC

Enter this program using GW-BASIC to turn on Num Lock.

10 DEF SEG=(0)

20 POKE 1047, (PEEK(1047) OR 32)  
30 SYSTEM

To turn on the following conditions, replace 32 with the following values: Right Shift, 1; Left Shift, 2; Ctrl, 4; Alt, 8; Scroll Lock, 16; Caps Lock, 64; Insert, 128. To turn off the Num Lock key, use this program.

10 DEF SEG=(0)  
20 POKE 1047, (PEEK(1047) AND 223)  
30 SYSTEM

To turn off the following conditions, replace 223 with the following values: Right Shift, 254; Left Shift, 253; Ctrl, 251; Alt, 247; Scroll Lock, 239; Caps Lock, 191; Insert, 127.

## In a Binary Bind

I just noticed that QBASIC doesn't have an easy way to convert a binary number into a decimal number (or a hex number, for that matter). How about a simple subroutine that will convert a binary number to decimal?

JOHNNY HOLMES  
LOS ANGELES, CA

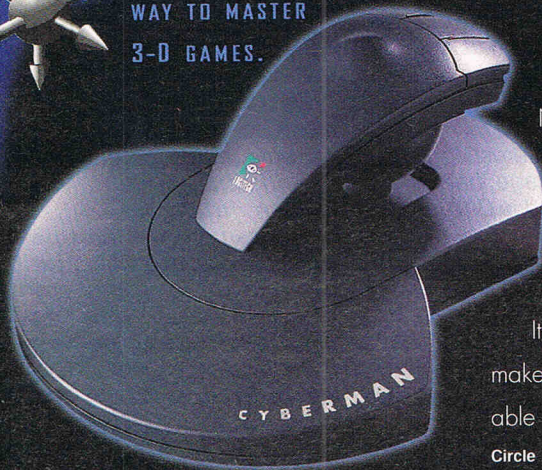
Here's a routine that will do what you want to do. Just send it a string in the variable `binary$`, and it will return the decimal value in the variable `decimal`. All error checking is up to you. Any number (or other character) in the string other than a 1 will be interpreted as a 0. If you place `abf1.3` in the string variable `binary$`, the subroutine will interpret this as 000100 binary, or 4 decimal.

top:  
INPUT "binary number"; binary\$  
GOSUB binaryconverter  
PRINT decimal  
GOTO top  
binaryconverter:

# IMAGINE A GAMING DEVICE SO INTUITIVE IT'S LIKE NOT HAVING ONE AT ALL.

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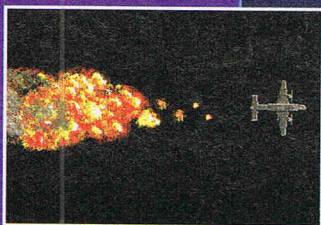
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## FEEDBACK

```

lenbin = LEN(binary$)
decimal = 0
FOR le = lenbin TO 1 STEP -1
decimal = decimal -
(MID$(binary$, le, 1) = "1") *
2 ^ (lenbin - le)
NEXT
RETURN

```

Here's a subroutine that goes in the opposite direction. Send it a decimal value, and it will convert it to a binary number in a string.

```

top:
INPUT "decimal number";
decimal
GOSUB decimalconverter
PRINT binary$
GOTO top
decimalconverter:
target = 0: binary$ = ""
DO UNTIL 2 ^ (target) > decimal
target = target + 1
LOOP
target = target - 1
FOR le = target TO 0 STEP -1
IF decimal - (2 ^ le) >= 0 THEN
decimal = decimal - (2 ^ le)
binary$ = binary$ + "1"
ELSE
binary$ = binary$ + "0"
END IF
NEXT
RETURN

```

## The Good Disc

In your article "The Bit, the Byte, and the Word" (April 1993), which reviews various Bible products, you omitted CD-ROM products such as The New Bible Library and CD WORD.

GEOFFREY M. WILLIAMS  
PRINCETON THEOLOGICAL SEMINARY  
PRINCETON, NJ

Thank you for drawing this to our attention. CD-ROM seems the natural format for the study of a large book such as the Bible.

Another interesting Bible-related package that should be mentioned is Bible Builder, an entertainment package designed to help children and adults learn Scripture and Bible stories. It's published by Everbright Software, P. O. Box 8020, Redwood City, California 94063; (415) 368-3200.

## Many Colors

How can I change the colors of Windows 3.1 Help so I can read it better? The letters are hard to read, and they have a light green color. I would like black letters instead and a bigger font size.

RAIMUNDO TORRES  
MIAMI, FL

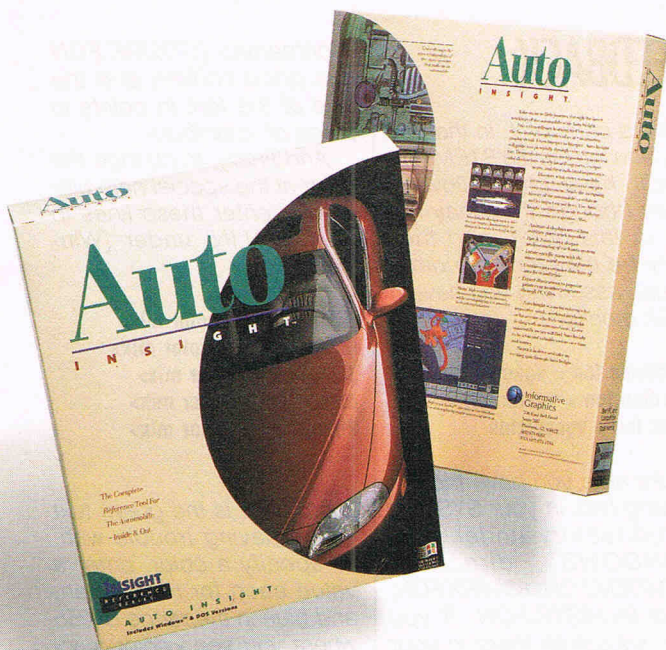
The green letters indicate hypertext links to other subjects. By double-clicking on green text, you'll be taken to other text, which will be mostly in your default Windows text color (though there may be some green words because help topics often contain hypertext links of their own).

It's easy to change the color of these hypertext links (and other specialized text in help files) but not as easy as changing the colors in the rest of Windows. Let's cover that first; then we'll get to hypertext.

You can change the background color in the window, if you want, to increase the contrast with the letters. Double-click on the Main program group, then double-click on Color (the icon looks like a collection of crayons). You'll see a window that contains a mock display of all the elements that might appear on your Windows screen—windows, buttons, menus, and so forth. Click on the element you want to change, and click on the button marked Color Palette. You'll see an array of available colors. The default color of the element you clicked on will be highlighted. Click on a different color to change the color of that element.

Be careful. It's entirely possible to design a color scheme that's completely unworkable—white on white, for example.

You can change the type size of almost everything except the text in Help (if any readers know how to change the size of the type in Help, please write to us). Call up SYSTEM.INI into Windows Write or Notepad.



# Car & Driver

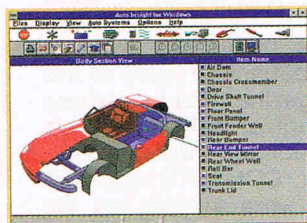
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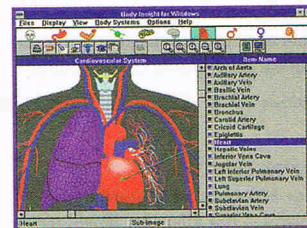


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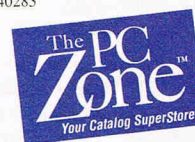


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## FEEDBACK

Save a copy of it. In the first section of the SYSTEM.INI, you'll have the following lines (though they may not be in this order, and they may be mingled with other lines), assuming you have a VGA monitor.

```
oemfonts.fon = vgaoem.fon
fixedfon.fon = vgafix.fon
fonts.fon = vgasys.fon
```

Make sure you have the following files in your SYSTEM subdirectory under your WINDOWS directory: 8514OEM.FON, 8514FIX.FON, and 8514SYS.FON. If you do, substitute them in your SYSTEM.INI for the VGA fonts.

```
oemfonts.fon = 8514oem.fon
fixedfon.fon = 8514fix.fon
fonts.fon = 8514sys.fon
```

The 8514 fonts are larger than the VGA fonts. The size of the fonts is adjusted to make them appear about the same size regardless of the kind of display you have. The 8514A monitor packs more pixels in the same area, so its fonts have to be bigger to be read easily.

Save the SYSTEM.INI file and start up Windows. All your menus will have large-size type in them. If you want, try other FON files in these lines, but remember to save a backup of your unchanged SYSTEM.INI because some font combinations will prevent Windows from starting.

To change the size of the type that appears under the icons, insert these lines into your WIN.INI file under [Desktop]. Once again, make sure you save a backup of your unchanged WIN.INI just in case this doesn't work or you make a typing error.

```
ICONTITLEFACENAME=
<fontname>
ICONTITLESIZE=<number>
```

In this example, place the name of the font in place of

<fontname> (COURE.FON is a good choice) and the size of the font in points in place of <number>.

And finally, to change the color of the special help elements, enter these lines in your WIN.INI under [Windows Help].

```
IFJumpColor=<color mix>
IFPopupColor=<color mix>
JumpColor=<color mix>
MacroColor=<color mix>
PopupColor=<color mix>
```

JumpColor is the green text you're having trouble with. To specify a color, enter a value each for red, green, and blue in the range 0-255 where you see <color mix> in the example above.

If you enter 0,0,0, the text will be black and indistinguishable from the other help text. But if you enter 0,10,0, it will be a rich, dark green that should be easier to see, and yet it will be clearly different from the rest of the text.

Microsoft has a collection of Windows utilities for people who have trouble with input devices (mice, keyboards, and so forth). It's under the name APSDL.EXE on the Microsoft bulletin board (206-936-6735).

Do you have a question about hardware or software? Or have you discovered something that could help other PC users? If so, we want to hear from you. Call our special "Feedback" line: (900) 884-8681, extension 7010201 (sponsored by Pure Entertainment, P.O. Box 186, Hollywood, California 90078). The call will cost 95 cents per minute, you must be 18 or older, and you must use a touch-tone phone. Or write to "Feedback" in care of this magazine. Readers whose letters or calls appear in "Feedback" will receive a free COMPUTE baseball cap while supplies last. We regret that we can't provide personal replies to technical questions. □

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# INTRODOS

Tony Roberts

## THE CHOICE COMMAND

The CHOICE command included with DOS 6 adds an element of interactivity to batch files. With it, you can set up batch files whose courses of action depend on a user's responses to prompts.

For example, it's good to run Chkdsk or an equivalent utility each time you boot up your system. Today's larger hard disks put more programs and data at risk if undetected disk problems develop. So you include the Chkdsk command in your AUTOEXEC.BAT file, but sometimes you need to reboot the system repeatedly, and you know you don't need to check the disk each time.

The solution: Insert a CHOICE command into your AUTOEXEC.BAT file. CHOICE can be configured with a default, so if you don't reply to its prompt within a specified time, it will move on without operator intervention.

The command works in combination with the DOS ERRORLEVEL command. CHOICE asks the question; ERRORLEVEL evaluates the results.

To get an idea of how this works, enter *choice* at the DOS prompt and press Enter. You'll see a prompt that says [Y,N]. Now, if you press any key other than Y or N, the computer beeps and continues to wait for a response in the proper range. Once you press Y or N, the system moves on. If you don't give CHOICE any parameters, it uses Y and N as the default choices.

Now enter *CHOICE /C:abc Apple, Banana, or Cantaloupe?* In this case, the /C: switch tells CHOICE what keys—in this case A, B, and C—are valid. You also added some text, which CHOICE uses as the prompt for the user.

Once you've set up a ques-

tion for the user, you must interpret the response. This is where ERRORLEVEL comes in. When the user responds to a choice, CHOICE sets an error level in DOS. In the previous example, if the user pressed A, the error level was set to 1. If B were the choice, the error level would be set to 2, and so on. The error level numbers are set according to the order of the choices specified in the CHOICE command /C: switch.

In the first example, where no /C: switch was used, CHOICE used the default setting of /C:yn. This results in a response of Y setting the error level to 1 and N setting the error level to 2.

Immediately after issuing a CHOICE command, you test the results. You could include something like the following.

```
IF ERRORLEVEL 3 ECHO
CANTALOUPE
IF ERRORLEVEL 2 ECHO BANANA
IF ERRORLEVEL 1 ECHO APPLE
```

Notice the order of the IF ERRORLEVEL commands—from highest to lowest. ERRORLEVEL doesn't test for equality; it tests to see whether the error level is greater than or equal to the number specified. Therefore, if you reversed the order of the statements and tested first for error level 1, you'd get a true response and the system would echo APPLE even if B or C were pressed.

Now, let's see how to get some work done with CHOICE. First, we'll add the /T: switch. This causes CHOICE to pause for a response, then move on after a set amount of time.

To use the /T: switch, enter the default choice and the length of the pause in seconds (this must be between 0 and 99). For example, *CHOICE /C:abc /T:b,10 Ap-*

*ple, Banana, or Cantaloupe?* causes the computer to display the prompt as before, but if no response is entered within ten seconds, the computer uses B as the default choice.

To handle the original problem posed here—running Chkdsk—use this syntax.

```
CHOICE /T:y,5 Do you want to run
CHKDSK?
IF ERRORLEVEL 1 CHKDSK C:
```

Set up the CHOICE command properly with timers and defaults, and you can have a single AUTOEXEC.BAT file that allows plenty of flexibility. When you want to run your normal configuration, just turn on the computer and let it go. However, you could include choices to run Defrag or a virus checker, which you'd activate only when needed. Or you could include a CHOICE command that calls an alternate menu through which the kids can access their favorite software.

The CHOICE command accepts only single-digit responses. So if you're setting up a menu that includes more than nine items, label the items with letters rather than numbers.

If you want to get tricky, make the /C: switch include characters from the ANSI character set by holding down the Alt key and entering the ANSI number on the keypad. For example, if you entered Alt-205 as one of the valid choices, the prompt would show a double line similar to an equal sign. An unsuspecting user might try to enter an equal sign to select that choice, but the computer would just beep. You'd know the secret to moving on, though. You'd enter Alt-205.

It's your system, and the CHOICE is yours—make it work for you. □

Use it to prompt user responses or to set up secret passwords—the CHOICE is yours.



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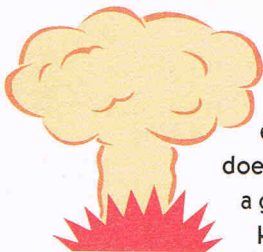


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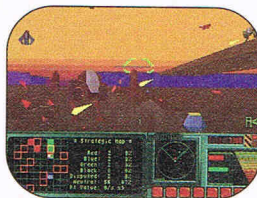
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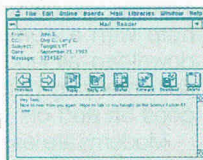
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3. At the U#= prompt, enter JOINGENIE then press <RETURN>

4. At the key code prompt enter ABB222 to get this cool offer.

5. Have a major credit card ready. In the U.S., you may also use your checking account number. In Canada, Visa and MasterCard only.

\*Some restrictions apply. Find out what they are before you sign up by calling or logging on to GENie. Non-prime time is 6 p.m. to 8 a.m. local time Mon.-Fri., all day Sat. and Sun. and selected holidays. This offer is in lieu of all other offers, and is for new subscribers only. You don't have another service? Call us anyway.

\*\*Minimum requirements: 386 and Windows 3.1, 4MB RAM. Mac Plus/Classic or higher, 4 MB RAM.

We've got the biggest big-name guests on-line. Actors, authors, politicians, computer gurus. Sorry, we can't name names. We'd have to deal with Legal. We hate that.



# TEST LAB

Edited by Mike Hudnall  
Reviews by Richard C. Leinecker

**A**n incredible wealth of information awaits you. All you need is a computer, a modem, the right software, and maybe an account with one of today's super online services. With these tools, you can get the latest weather report or stock quote, find information in an encyclopedia, communicate with people across the continent about interests you have in common, get help with a computer problem, download all kinds of interesting software, play games. . . . The list goes on and on.

Modems are less expensive, faster, and more efficient than ever, and thanks to Windows, telecommunications programs are easier to use and more capable than ever. This month's Test Lab focuses on ten telecommunications packages that run under Windows. They're all different. At least one will probably meet your needs. Most of them can interact with other Windows applications and are therefore more useful than stand-alone terminal programs.

All of the programs in this round-up are as easy to install and use as a word processor. And all of them have scripting languages, which let you automate tasks ordinarily performed manually. For instance, you could write a script that logs on to all of the services to which you subscribe, gets your mail, and logs off. Something like this would save you money on connect time, since you could read your mail at your leisure offline when the clock wasn't ticking.

You can also set up a script to allow others access to certain functions on your computer. Suppose that periodically an associate needed to download files from your computer without your being there. You could simply run the host script that comes with most of the packages, customize the included host script to suit your needs, or write a script from scratch.

For all of these packages, I wrote a simple script that did the same thing. It logged on to CompuServe, gathered all of my mail, sent it to the printer, and then logged off. I took advantage of examples and used the reference section of the manuals to answer remaining questions.

If you already have a program like Procomm or Telix that runs under DOS, read the reviews and consider changing over. Although those are great DOS-based programs and many people feel completely at home using them, the power of these Windows-based programs gives you a compelling reason to make a change.

RICHARD C. LEINECKER

## BITCOM FOR WINDOWS

BitCom offers straightforward telecommunications. It has everything you need to connect with online services and bulletin boards, but it doesn't have many bells and whistles. That's OK; plenty of people prefer a simple program that's easy to learn and easy to use. If that's your desire, this is your program.

If BitCom is just a straightforward telecommunications program and Windows comes with its own simple telecommunications program, why should you buy BitCom? Because Windows' Terminal has only two file transfer protocols, has only three terminal emulations, has no scripting language, doesn't support macros, can't re-map the keyboard, and is missing many other features that most people need. It's hard to use Terminal for much other than the most ba-

sic applications.

BitCom has all of the major file transfer protocols, including XMODEM, YMODEM, ZMODEM, ASCII, and Kermit. It has 11 terminal emulations—all of the major ones, including VT100, WYSE, ANSI, and TVI. It has a phone book, a scripting language, the ability to capture and print incoming text, and color customization. BitCom enjoys so many major improvements over Terminal that I wouldn't think twice about buying BitCom and using it instead of Terminal.

The well-designed phone book employs a card file metaphor. It's attractive and easy to use. Tabs at the top let you quickly select a range of the alphabet to access. Once you've selected an entry, its information shows up on the card and can be easily edited. You can search through your file for a record, too.

BitCom's scripting language is as straightforward as the program itself. The language doesn't, however, have any functions that allow it to talk to other Windows applications. Most of the other programs in this round-up do.

The command I relied on most heavily to write the test script I used with each of these telecommunications programs was one that waits for an incoming text string. Unfortunately, BitCom doesn't have the advanced ver-

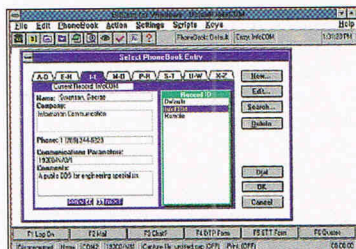
**BitFax Easy (including BitCom for Windows)—\$89**

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Fremont, CA 94538  
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sion of this command that lets you look for several incoming text strings at once. To save time working around this limitation, I "cheated" by altering my ProComm script; once I substituted the equivalent functions for BitCom, the script worked well.

I was a little disappointed that the included scripts weren't easier to use and more prominent. Most of the other programs make their included online service scripts conspicuously available. BitCom doesn't, and I had to work for a while to find them



before I could use them.

BitCom itself won't be available as a stand-alone retail package when you read this. It'll be part of two bundles, BitFax Easy and BitFax Professional.

BitCom is a good choice for anyone who likes simplicity or is new to telecommunications and wants something to get started without a large investment. It has enough horsepower to satisfy half of the telecommunicating public. If you're in that half, BitCom will serve you well.

Circle Reader Service Number 371

## COMMWORKS FOR WINDOWS

When it comes to telecommunications capabilities, CommWorks really gives you the works. Included in this package are five separate programs and a control program to manage them.

TS Online is a commendable telecommunications program that lets you connect with online services and other computers. TS Fax

### CommWorks for Windows—\$229.95

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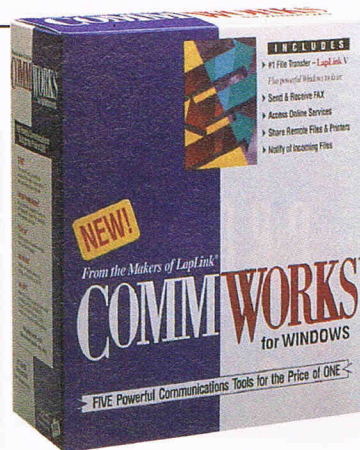
provides printing, broadcast and scheduled faxing, and background and send features. LapLink V lets you transfer files between computers using any combination of serial and parallel ports. LapLink Remote Access lets you connect two computers and have direct access to any disk drive or printer on the second PC. LapLink Alert monitors the sending and receiving of files. And CommWorks Control Center gives you a way to run any of these programs with a single click.

TS Online gives you everything you need to connect to online services and other computers. Scripts for the major services are included, and the ability to add new services is as easy as clicking on the New button and answering some questions. The major transfer protocols are there: XMODEM, YMODEM, ZMODEM, Kermit, and CompuServe B+. The less frequently used flavors such as XMODEM 1K and YMODEM-g are not included.

In the telecommunications program, the Dialer dialog box figures most prominently on the screen. This box shows you a list of services or remote hosts, as well as the configuration information for the selected service. It's easy to change settings, such as the phone number, default transfer protocol, and bps rate.

Once online, you can use a straight terminal screen with pull-down menus, or you can show a button bar at the bottom of the screen. The buttons contain descriptive icons and offer single-click shortcuts for common functions, such as getting E-mail and logging off.

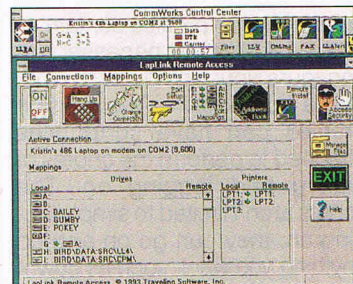
Some interesting features



seem to be unique to CommWorks. You can set the program so that the left or right mouse button can send a carriage return or position the cursor. That's convenient if you prefer using the mouse. A file-find function helps you determine the location of a file—something I frequently need when I start to upload files and can't remember their exact paths.

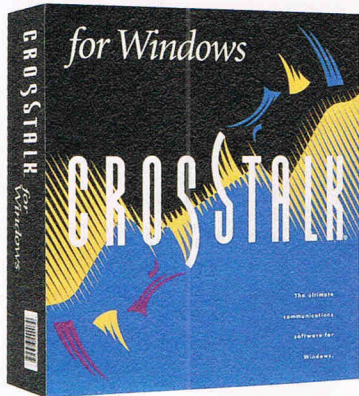
TS Fax is a version of Eclipse Fax which has been licensed for use in this package. It's got everything you need to do your faxing. I especially like the Quick Note feature. Most of the time, all I want to do is send a short note to someone I wasn't able to contact via fax. The Quick Note feature lets me do this easily without having to spend time with complicated setups.

If you have a laptop and a desktop computer, you might really



appreciate LapLink. It might even be worth its price if you have several computers and find yourself transferring large amounts of information between them. LapLink lets you quickly and easily transfer files between computers over a cable. If you take a laptop or notebook computer on the

# TEST LAB



road, you can hook up LapLink when you get back and send your files to your desktop computer. I've used LapLink when I bought new computers. Instead of reinstalling all of my applications and copying all of my data, I just connect the cable, run LapLink, and transfer everything.

For versatility and utility in telecommunications, CommWorks is a wise choice. It's got what you need for practically every situation that will arise. It's well-done, solid software that gives new meaning to *flexibility*.

Circle Reader Service Number 372

## CROSSTALK FOR WINDOWS 2.01

Logging on with a single click and automating online tasks are the best parts of Crosstalk. Files called session profiles contain all of the information necessary to configure your computer to work with a host system. The session profiles can have script files attached to perform the chores of dialing and logging on. The scripts aren't limited to simply logging on; they can go on and do anything you want, such as downloading mail or going to your favorite SIG.

DCA knows how important it is to have single-click access to online services immediately after installation. That's why the company has included 11 session profiles for the most popular services. You'll find files for CompuServe, GENie, DELPHI, Dow Jones, and

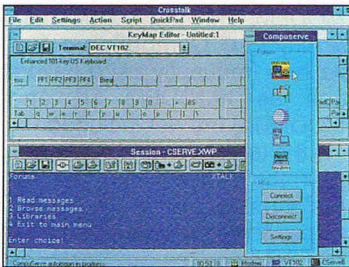
### Crosstalk for Windows 2.01—\$195

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many more. You're not limited to these, however, since you can create your own session profiles and write script files to go with them.

Besides the script files, you can attach files called QuickPads. QuickPad windows contain custom buttons and icons that offer shortcuts and automate tasks. For instance, the CompuServe QuickPad contains icons that go directly to E-mail, the Microsoft forum, Dow Jones, and the DCA forum. Three buttons in the QuickPad window let you easily connect, disconnect, and change settings.

An easy-to-use QuickPad editor lets you make changes to current QuickPads or create new ones. The editor is as easy to use as a paint program. To place an object



in the QuickPad window, all you do is click on the button tool and draw a button on the screen. You can place any text in the button and have practically any action result from pressing the button, including running a script.

I did find a glitch when I tried using the CompuServe session profile. After I successfully logged on, the process would hang up after the CompuServe copyright message was displayed. I tried everything I could

think of to get it to work, including editing the script. After trying a number of fixes, I figured out it wasn't the fault of the script. DCA's technical support recognized the problem immediately and directed me to download new DLL files from its BBS.

These glitches aren't much fun.

### HOW TO SELECT A TELECOMMUNICATIONS PACKAGE

No one piece of software is best for everyone. So how do you pick the one that's right for you? This month's Test Lab reviews and the features table will help, but here are some additional suggestions.

Many people want something that's simple and that won't require any learning time. If this is your desire, consider BitCom for Windows and Mirror for Windows 1.2, since they're the simplest and easiest programs to use. For those who want to spend time jazzing up their online sessions, MicroPhone Pro for Windows has hooks to the Windows multimedia interface.

Some people need the gamut of telecommunications processes, such as faxing and computer-to-computer transfers. For those people, CommWorks for Windows fills the bill.

I often leave my computer in host mode so that associates can call in and get files. Since almost everyone has logged on to a Procomm host at one time or another, I favor Procomm Plus for Windows 1.2 for this.

If you want power, flexibility, and the ability to change languages, Smartcom for Windows would be an excellent choice.

For the ultimate in scripting power, consider HyperACCESS with its C language scripting and total access for external programs.

Two programs that balance most features are Crosstalk for Windows 2.01 and DynaComm Asynchronous for Windows. If your needs are varied, these are good choices.

And Unicom 3.1 is worth looking at if you're a techie or if you like plenty of information on the screen.

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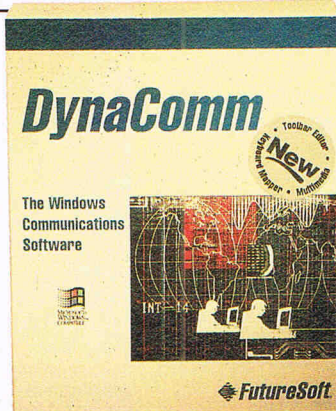
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# TEST LAB



But by the time you read this, the copies of Crosstalk in your retail outlets will have the new DLL files, so you shouldn't have this problem. It's commendable that the technical support department recognized the problem so quickly and offered an immediate fix.

Writing my test script with Crosstalk's CASL scripting language was a pleasure. Almost every script requires watching for incoming text strings. If you're logging on to GENie, you might look for the string "GENie Logon." Once you got that string, you'd know the log-on procedure had been successfully completed. Because some of the more important telecommunications functions involve looking for incoming strings, the ability to do so is very important.

CASL has a function that not only looks for a single string but looks for a number of strings simultaneously. Looking for several strings at once increases your script's ability to respond appropriately. Separate code can be performed for each string that's found. Suppose that an online service said, "You have messages waiting," "There are no messages waiting," or "Your messages have been saved as an archive file." If you were limited to looking for a single string, you'd only know if you got that string. But this hypothetical online service has three choices, and knowing whether you encountered a single string doesn't tell you which one it is.

Crosstalk is a great piece of software. In a short review like this

## DynaComm Asynchronous for Windows 3.1—\$249

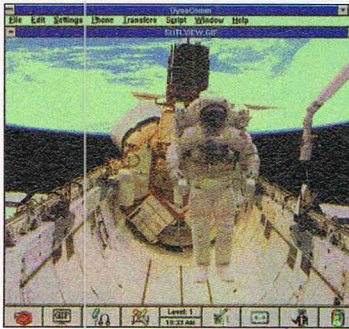
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(713) 496-9400

one, I can't possibly mention everything. However, I can say that choosing this program is a smart move. It's one of the finest in a crowded field.

Circle Reader Service Number 373

## DYNACOMM ASYNCHRONOUS FOR WINDOWS 3.1

With DynaComm, FutureSoft has done a good job of including a wide range of features without cramming in too much. Often, there's a danger of going overboard and burdening users with



complexity they might not need. This program succeeds in balancing features with ease of use.

DynaComm's developers obviously spent some time working on the program's DDE (Dynamic Data Exchange) links to other Windows applications. DDE allows Windows apps to communicate with each other. DynaComm's scripting language has a number of functions that make use of DDE and give you what you need to send and receive interapplication messages. To make sure you can fig-

## SPEAK UP!

Is there a group of hardware or software products you'd like to see covered in an upcoming Test Lab? Let us know by calling (900) 285-5239, (sponsored by Pure Entertainment, P.O. Box 186, Hollywood, California 90078). The call will cost 95 cents per minute, you must be 18 or older, and you must use a touch-tone phone.

ure it out, FutureSoft includes a fairly complex script that sends data to Excel and causes it to produce and display graphics.

A good example of DDE's script functions involves following the stock market. You could write a script that logs on to a service, retrieves the relevant stock quotes, and sends the information to Excel or any other application that supports DDE.

The scripting language's ability to perform multimedia functions is another outstanding feature of this program. You can use a fairly intricate dialog box to play MIDI files. The same dialog lets you make recordings for future playback. There's a demo that shows off the program's ability to read text using speech synthesis techniques. This program's sound capabilities are rich.

Something I personally like is the program's game scripts. Ones for Yahtzee and Match can be called from the program or the DynaComm group window. More than just disk filler, these games are examples of some of the advanced scripting techniques. You could write some online multiplayer games with the program's scripting language.

Using the Learn function, I developed a number of scripts for tasks that I do often. One logged on to three services and retrieved



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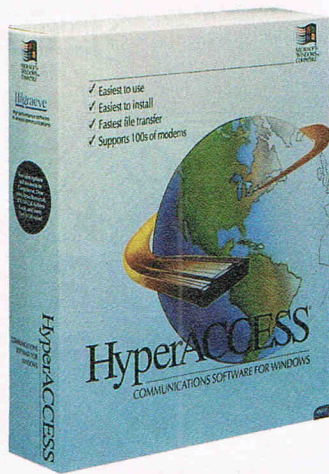
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# TEST LAB



my mail and sent it to the printer. One logged on to CompuServe and went to the IBM file finder. It was easy to use the scripts created by the Learn function.

I especially like the ease with which the program allows you to go into and out of terminal mode. Many of the other packages make it almost impossible to get into terminal mode so that you can simply type *ata* or *atz*. Sometimes, despite all the convenience of the automatic processes, I prefer the simplicity of doing things manually in terminal mode.

If you're looking for a program that reaches a pleasant compromise between features and ease of use, take a good look at DynaComm. It's got everything you need to perform your online tasks, but you won't spend days reading the manual to learn how to do things.

Circle Reader Service Number 374

## HYPERACCESS

I found HyperACCESS a pleasure to use. The longer I used it, the more I came to appreciate its depth and craftsmanship.

When the program first runs, your Phonebook is displayed. The entries all have icons, not simply text. The icons that come with the program are the best I've seen, a good example of the care the publisher has taken. A long list of icons is available as you add services and connections to your Phonebook. The list

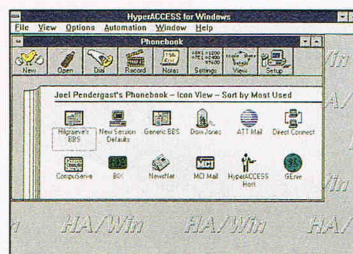
## HyperACCESS—\$199

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includes everything from medical symbols to chemical symbols to financial symbols. And you're not limited to these, since you can use your own.

I turned on the Learn function to automate some of my CompuServe tasks and experienced some surprises. Immediately, I saw a Notepad window open and watched the Learn function create the text of a script as I did things online. Unlike the other programs that create script text files from Learn functions, this program creates scripts complete with comments describing what each line of code does.

In order to satisfy my curiosity, I zoomed the Notepad window and noticed that it looked like a program written in the C language. I pulled out the Application Program-



ming Interface Manual, and lo and behold, the language is identical to C. That's a relief, since so many people know C. There's no time wasted learning a completely new language that you'll never use anywhere else.

Continuing to study the manual, I learned that you can call any Windows application from a HyperACCESS script. Even more surprising than that, though, is that you can call HyperACCESS from any Windows application that you write, as long as you follow some special rules. The pub-

lisher includes a library file that you can link with your own Windows applications. With the library linked, you can call on HyperACCESS to perform a wide variety of functions.

Needless to say, writing my test script that logs on to CompuServe, retrieves mail, logs off, and prints the mail wasn't much of a challenge. That speaks volumes for the built-in scripting language and all of the tools that make it easy to use.

During sessions you can turn on a modem light simulation. If you've ever watched an external modem, you'll remember that there are red LEDs that tell you what the modem is doing. One is on when the modem is transmitting data, one is on when it's receiving data, one is on when there's a carrier, and others provide further information about precisely what is happening with the modem. HyperACCESS simulates these lights. For each LED that an external modem has, there's a simulation in the HyperACCESS window.

The icon bar that initially appears at the top of the HyperACCESS window can be moved to the right, bottom, or left, or it can be made into a floating window. You can also make the buttons larger or smaller. You might not see well and want them large. On the other hand, you might like them small so they take up less room on the screen.

HyperACCESS appeals to me because it's a fine piece of software, crafted to very high standards. This software will definitely stay on my hard drive for the foreseeable future.

Circle Reader Service Number 375

## MICROPHONE PRO FOR WINDOWS

Are you tired of the same old online sessions? MicroPhone Pro not only offers fine telecommunications capabilities but gives you

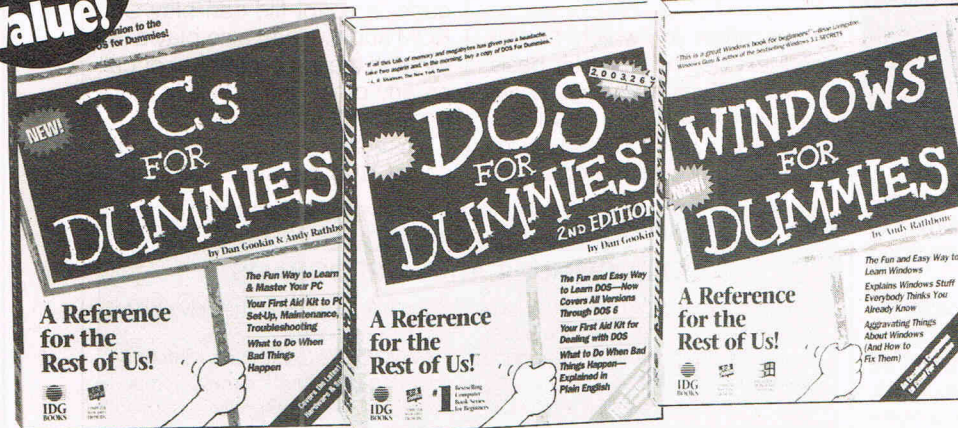
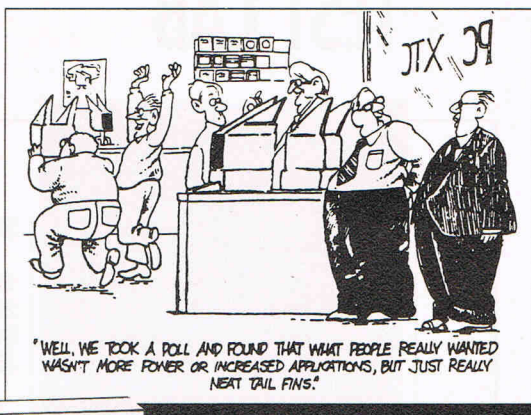
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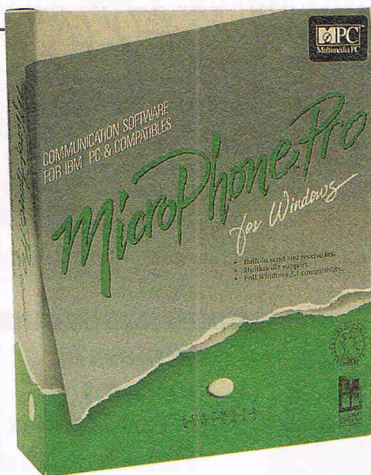
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 Compute 2/94 B-BL5

# TEST LAB



hooks to the Windows multimedia interface. You'll have audiovisual power never before experienced while online.

The program comes with six scripts that automate the log-on procedure for services such as CompuServe, GEnie, Dow Jones, and BIX. The scripts have a number of buttons with descriptive icons, and using these buttons, you can read mail, go to the CompuServe game forum, go to the service's settings menu, and more. I found these scripts more complete and easier to use than those included in most of the other packages. The main reason is that you can do much more with single mouse clicks since the included scripts provide quite a few buttons.

A Mini BBS script in MicroPhone Pro should prove useful if you or someone else needs to access your system remotely. It's similar to the host scripts that come with most of the telecommunications packages. It does go further, including features such as the ability to add bulletins, change the log-on and log-off text files, and perform user maintenance. Since all of these functions can be handled remotely, you can locate the BBS in virtually any place that has a phone line and still exercise full control over it.

You might need a Mini BBS if you collect information from sales personnel in the field. They might send you database or spreadsheet files—things that can't be faxed. If you're part of an

## MicroPhone Pro for Windows—\$195

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organization for which people send text files on a regular basis, the Mini BBS provides a good way to receive files 24 hours a day. I often need a way for clients to log on to my computer and download

work in progress so that they can review what's been done.

At the heart of what makes MicroPhone Pro vastly different is its ability to send commands to the Windows Multimedia Control Interface. With a single line of code, a script file can play CD-ROM audio. It can also play a file through the MIDI manager or call on any other of the built-in functions that Windows offers.

I used the included multimedia script and perused the script

## DEDICATED WINDOWS TELECOMMUNICATIONS PROGRAMS

A dedicated telecommunications program makes an online service easier to use; it's designed from the ground up to work with one service only and usually fits that service like a glove. In place of the scrolling text and endless menus you'll find in a nondedicated program (even a Windows-based one), you'll find an interface that boasts buttons, text boxes, and other controls that make using the service easier.

America Online for Windows (America Online, 800-827-6364) is the Windows front end for America Online, which also has graphical user interfaces for the Mac and DOS (using GEOS). The Windows version of the software is excellent. It supports a toolbar full of shortcut commands and lots of controls that take advantage of the Windows interface. AOL for Windows is the most responsive dedicated Windows program I've used, even at 2400 bps, and with nationwide 9600-bps access available by the time you read this, it will definitely take the lead in speed.

AOL for Windows has excellent downloading support with its Download Manager, which keeps track of what you want to download and what you have downloaded. AOL is also nonmodal, which means that you can mark files for downloading in several forums and download them all later.

BixNav (BIX, 800-695-4775) is a Windows interface for BIX that isn't as fully integrated as the other packages discussed here, but it's still an important improvement on BIX. It sits atop the text-based BIX and turns the system's scrolling text into something a Windows program can understand.

If you use BIX, this is the only way to go, for my money.

WinCIM, the CompuServe Information Manager for Windows (CompuServe, 800-848-8199), is in its second generation now, and it's a very well-designed, smooth piece of software. Like AOL, it has a toolbar, but it also adds a toolbox of forum commands that appear when you're inside a forum. And like AOL, WinCIM lets you mark files for downloading later (unfortunately, in only one forum at a time). CompuServe's E-mail support is excellent, and WinCIM gives you easy access to all its features, which include an in-box, an out-box, and filing cabinets. If you use CompuServe, get out of terminal mode, and check out WinCIM.

MCI is the premier E-mail service in the country, but its interface has turned many people off. The Wire (Swfte, 302-234-1740) is a Windows front end for MCI Mail that makes using this service as easy as can be. The Wire features an in-box, an out-box, an address book, and a desktop. You can move messages between any of these areas by simply dragging and dropping.

The Wire supports another feature I wish every telecommunications program would copy. It has a suitcase for moving your address book or messages from one computer to another. You just drag what you want to move to the program's suitcase icon, save the suitcase file on disk, and unpack the suitcase on the other machine. This is a very slick feature and amazingly easy to use.

—CLIFTON KARNES

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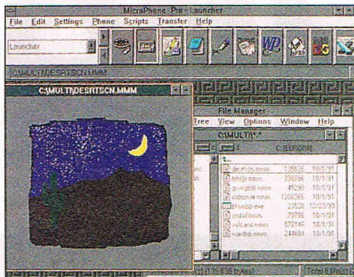
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# TEST LAB

code. Each event is triggered by a single call to the Windows interface. It worked well and was error-trapped well enough so that the first time I ran it, I realized that I needed to install another Windows driver before proceeding. Software Ventures provides not only



the functions but a way to detect errors and alert users as well.

The biggest problem with using the multimedia interface from the scripts is the sparseness of documentation. The online help and the addendum to the manuals offer a single reference to making multimedia calls, but you need to know what the calls are yourself. It really gives you only the scripting syntax for making the calls, not the details of how to do it. You'll have to get a Windows Multimedia Control Interface reference for that. If you wanted to invest a little time and roll up your sleeves, I'm sure it wouldn't be too hard. If you're up to the challenge, a little research and experimentation will serve you well. You may end up with some dazzling multimedia effects, playing Tchaikovsky's *1812 Overture* off your CD-ROM and displaying a photographic-quality picture of the Mona Lisa when you connect to your favorite online service.

Writing my test script wasn't much of a challenge, since I only had to copy what I needed from the included CompuServe script. In about ten minutes I had a script that logged on, got my mail, and sent it to my printer.

MicroPhone Pro is the most distinctive of the packages I looked at. It's not for everyone, but if you want to jazz up your telecommu-

## Mirror for Windows 1.2—\$195

### SOFTKLONE

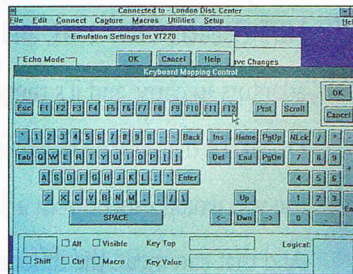
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nications, it might be perfect for you. And if you're really creative, you might end up prototyping the next generation of online services. In fact, I found the program so intriguing that I plan on spending some more serious time with it in the near future.

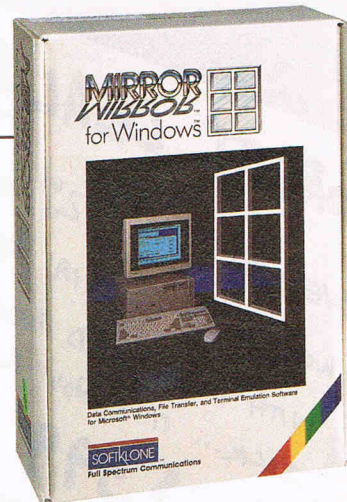
Circle Reader Service Number 376

## MIRROR FOR WINDOWS 1.2

After getting headaches learning complex new software, I'm glad there's Mirror. It hasn't gotten too complicated. Instead, it has made things easier for people through its effective implementation of Windows' pull-down menus, online help, and dialog boxes.



All of the features you'd expect are there. You can select from a number of terminal emulations, such as ANSI, TTY, and VT100. You can send and receive files using ASCII, Kermit, XMODEM, YMODEM, and ZMODEM transfer protocols. The program lets you capture incoming text and save it to a file or send it to a printer. Custom colors can be set up to satisfy almost anyone's tastes. You can conveniently edit the keyboard mappings with a graphical representation of the keyboard. You can



even record a session and play it back to review what happened.

One very nice thing about Mirror is its Learn feature. Using it is as easy as selecting Learn from the pull-down menu, performing all of the tasks that you want Mirror to remember and be able to do later, and turning the Learn process off. Then, when you want to perform the same set of tasks, all you have to do is tell the program what to do and watch it do its thing.

I developed scripts for all of the online services I use by letting Mirror use its Learn capability. Without the manual or online help, I quickly managed to figure it out. You can set it up to log on, get all of your mail, and carry out any other tasks you perform often. The scripts are saved as ASCII files, so you can load them into a text editor, read them, and make changes if you like.

Writing the test script was a total no-brainer. I used Mirror's Learn feature to do it. Just to say I'd seen the script, I loaded it up and took a look. But as long as I can let the computer generate the script with its Learn feature, there's no point in writing one from scratch.

Mirror is a no-frills program that'll give you all you need to connect and use online services and BBSs. It's easy to use because it's not cluttered with a lot of hard-to-learn features. I'll probably keep it on my hard drive for the times when I want something simple or when someone else has to use my computer and doesn't have time for complicated details.

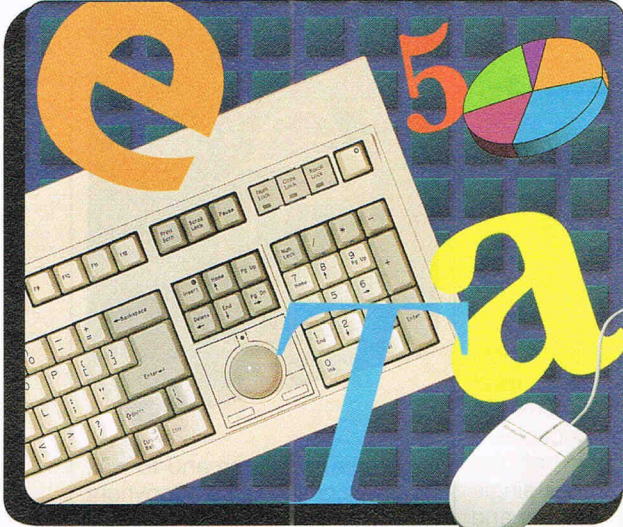
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# TEST LAB

## PROCOMM PLUS FOR WINDOWS 1.2

At least half of the PC users who've been online have used a DOS-based version of Procomm at one time or another. I remember asking a friend in 1985 if I should write a terminal program for the PC. He gasped and said, "And go up against Procomm? You'd never be able to compete." That's how firmly entrenched Procomm has been. The Windows version of Procomm Plus is the next logical step. It's a commendable upgrade to the original DOS version that takes full advantage of the power of Windows.

An experience I had with Procomm gives you an idea of how easy it is to use. A deadline loomed, and I stayed up very late to finish my work. The next morning, I got up at my usual 5:00 and checked my work. All was well, but I had to transfer a zipped collection of files at 7:00. Since I leave for work at 7:15, it seemed a simple matter to start the file transfer and leave—that is, until I factored in the possibility of line noise (very high in my small town) and the odds that the transfer would abort as a result.

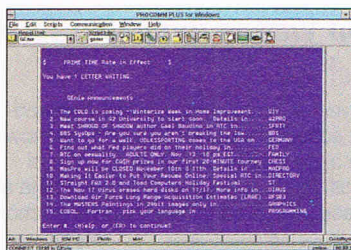
Remembering that I had just received a copy of Procomm, I took it out and prayed to the gods of silicon that I could get it to work by 7:00. The installation took about ten minutes and didn't re-

**Procomm Plus for Windows 1.2—\$179**

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quire too much thought. A host script resembling the host script of the earlier DOS version comes in the package. It even occupies a button at the bottom of the screen, so it only takes a single click to run it. Once I did that and answered several configuration questions, it was up and running.

I separated the files into smaller zipped files in case of transfer aborts, placed them in the upload directory, and called the person who needed the files at 7:00. After watching the first two

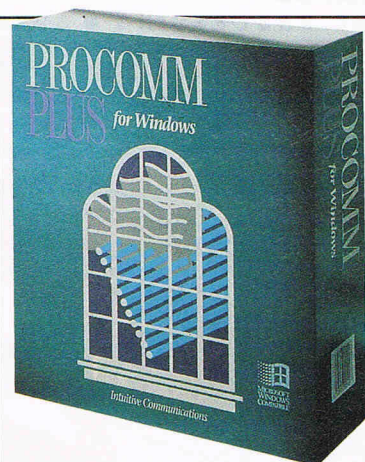


go smoothly, I went to work knowing that all would be well. I called the destination party that afternoon and heard that all the files had transferred successfully. Thank you, Procomm!

Writing my test script with Procomm's Aspect scripting language wasn't too difficult. All of the scripting languages have a command that waits for a specific incoming string. If you write a script for CompuServe, you

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might use this command to wait for the incoming string "Copyright (c) 1993," which appears after your password has been accepted. Once you get this string, you know you're connected. It turns out that my script to log on and get my mail relies heavily on this command.

Although there's a long list of powerful and useful functions in the Aspect scripting language, it is unable to look for more than one incoming string simultaneously. Its inability to do this makes it slightly less useful than I'd like. Most of the time, it's OK to wait for a single text string. But in many cases, you need to look for several strings and respond accordingly. Some of the other scripting languages sort through a list of strings that you're looking for and respond with the appropriate script code.

Procomm has a lot more to offer than I have space to mention. It's a solid program that'll give you great service. If you like the DOS version, you'll absolutely love this fine Windows version.

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# TEST LAB

Smartcom is actually four programs in one. In addition to the main full-featured telecommunications program, there's Smartcom Editor, a full-featured text editor; Smartcom Custom, which lets you modify the configuration of the entire Smartcom system; and a stand-alone GIF viewing program.

It's not often that you get a program that fully supports five different languages. Smartcom lets you select from English, French,



Italian, German, and Spanish.

When you dial a service, the modem goes through several steps to actually dial and connect. Most telecommunications software just tells you it's dialing. Smartcom highlights five separate pictures to let you know exactly what the modem is doing and how the dial-and-connect process is going.

Icons and shortcut buttons are part of Smartcom's attractive and well-planned interface. They can really help you get around, especially when you're new to the software.

One thing that I really wished for was a set of ready-to-go scripts that would let me log on to the major services. Setting up scripts for each of the services that I subscribe to didn't take long, though, with the Learn feature. For each one, I turned Learn on and logged on. Once I was logged on, I stopped the learning, named the script file, and even had the immediate opportunity to assign a hot key to run it. I could have easily placed icons in buttons at the bottom of the screen to run these scripts

## Unicom 3.1—\$69

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with a single mouse click.

Though the scripting language is very powerful, it isn't as easy to use as the scripting languages that come with most of the other packages. It took me a couple of hours to write some simple scripts.

I was thoroughly impressed with Smartcom. It's right up there with the very best of these packages, and it would serve you well for years to come.

Circle Reader Service Number 379

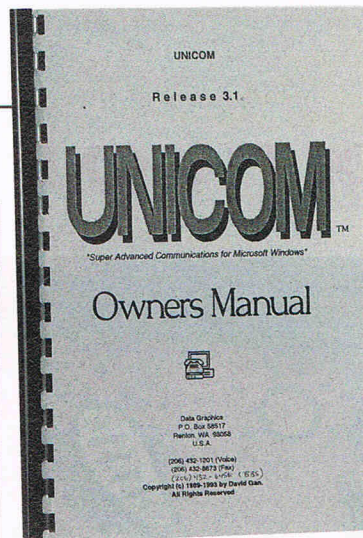
## UNICOM 3.1

Unicom goes to great lengths to present as much information on the screen as possible. About half the screen is used for viewing incoming information, and the other half is used for program information and controls.

I counted 21 buttons containing descriptive icons. The buttons do everything from hanging up to dialing a number to downloading files. There are equivalent items in the pull-down menus, but the buttons make it much easier to perform the tasks. Twenty-two buttons at the bottom of the screen represent special keyboard keys, such as F1-F12, Delete, Page Up, and many others. These easy-to-use keys are programmable.

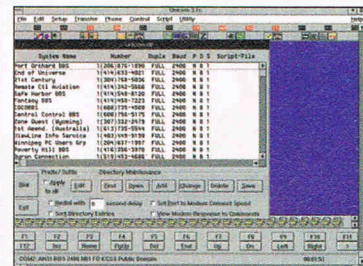
An interesting screen feature is the simulation of modem lights toward the top of the screen. For each LED that an external modem has, there's a simulation in the Unicom window. Techies and people who like gizmos will love the LED simulations.

Another attractive Unicom feature is that it gives you access to many of the Windows accessories from a pull-down menu. The last pull-down menu, labeled Util-



ity, contains entries that run Calculator, Calendar, Cardfile, Clipboard Viewer, Clock, Control Panel, Notepad, and Paintbrush. Being able to use these programs without having to go to the Program Manager saves time. And that can be important, especially if you're online.

Unicom was written by a single programmer, David Gan. I'm a programmer, so I appreciate what a monumental task it was. This program illustrates that you can get high quality from a single programmer as well as from a group.



Unicom's WinScript scripting language is more like C than most of the other languages. I found it easy to use, though it lacks the ability to look for more than one incoming string. That made it harder for me to write my test script.

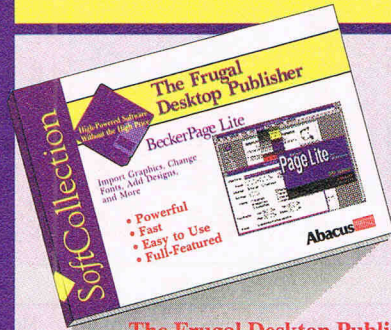
Unicom's screen might appear too cluttered to some users, but if you like to see all of your options and access them with a single click, this is your program. Unicom is a great piece of work and worth considering.

Circle Reader Service Number 380

<b>SOFTWARE FEATURES</b>	<b>BitCom for Windows</b>	<b>CommWorks for Windows</b>	<b>Crosstalk for Windows 2.01</b>	<b>DynaComm for Windows 3.1</b>	<b>HyperACCESS 1.02</b>	<b>MicroPhone Pro for Windows 2.0</b>	<b>Mirror for Windows 1.2</b>	<b>Procomm Plus for Windows 1.2</b>	<b>Smartcom for Windows 1.0C</b>	<b>Unicom 3.1</b>
<b>Packaging</b>										
Dual media included	No	No	Yes	No	No	No	Yes	No	Yes	No
Alternative media available	No	No	Yes	Yes	Yes	No	No	No	No	No
Quick-reference card	No	No	No	Yes	No	No	No	No	Yes	No
<b>Scripts</b>										
Script for major services	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Host script	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Scripting language	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Script trace/debug	No	No	Yes	No	No	Yes	No	No	No	Yes
<b>Transfer protocols</b>										
XMODEM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YMODEM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ZMODEM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kermit	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ASCII	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CompuServe B	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
<b>Interapplication communications</b>										
DDE	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
Cut and paste	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
<b>Miscellaneous</b>										
Keyboard macros	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Key remapping	No	No	Yes	Yes	No	No	Yes	Yes	Yes	No
Event recorder	No	No	No	No	No	No	Yes	Yes	No	No
Learn mode	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Dialing directory	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Custom color settings	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Fax capabilities included	No	Yes	No	No	No	No	No	Yes	No	No
Offline picture viewer	No	Yes	No	Yes	No	No	No	No	Yes	Yes
Realtime picture viewer	No	Yes	No	Yes	No	No	No	No	No	No
Type-ahead buffer for chat	No	Yes	No	Yes	No	No	No	Yes	No	No
Multimedia hooks	No	No	No	Yes	No	Yes	No	Yes	No	No
<b>Buffer</b>										
Capture buffer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Scroll-back size (in lines)	160	25-399	34-8738	25-399	0-5000	51-1706	NA	51-3259	34-1704	80-5000

# SoftCollection

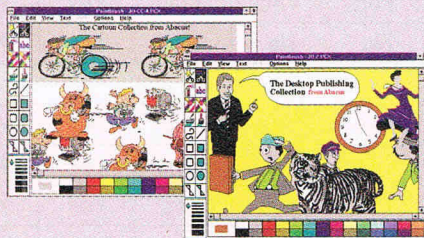
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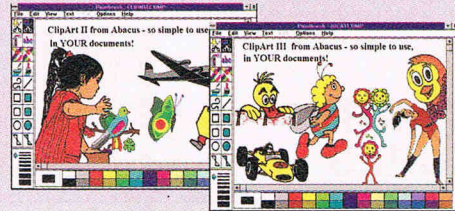
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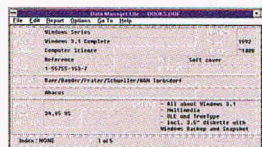
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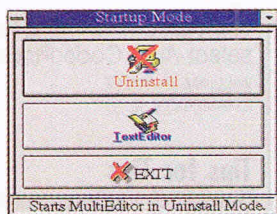
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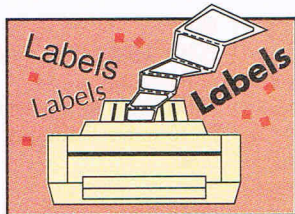


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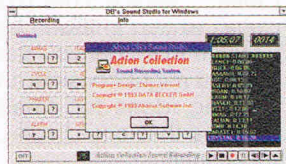


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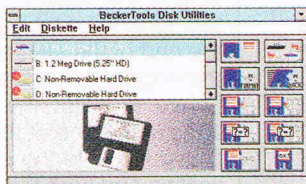


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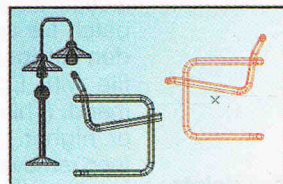


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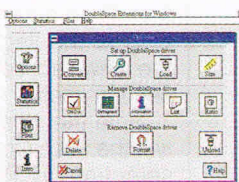


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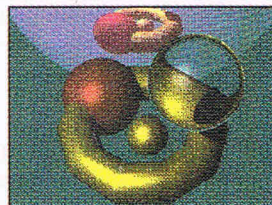


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# TIPS & TOOLS

Edited by Richard C. Leinecker

**A better delete,  
temporary  
WordPerfect tabs,  
and a TSR  
shell in assembler**

## Unattributed Deletion

In the September 1993 "Tips & Tools," a batch program submitted by Ilya Troychansky made improvements in Richard C. Leinecker's DELETTEX.COM program. I have yet another improvement, which speeds up Ilya's batch file significantly.

Instead of copying the files you don't want to delete into a separate directory, have the batch file simply set the hidden attribute byte for each file with DOS's Attrib command. (This requires DOS 5.0 or higher.) Do your delete; then remove the hidden attribute from the remaining files. Don't use this command on a directory already containing hidden files unless you want them unhidden when you're through. This program would also be highly dangerous to use in the root directory, where the two hidden files containing DOS reside.

Here's my batch file called DELX.BAT.

### @ECHO OFF

```
REM-Check to make sure
REM an argument was given.
REM If not (or if the argument
REM was /? or ?), go to the
REM text that explains the usage.
IF "%1" == "" GOTO USAGE
IF "%1" == "/?" GOTO USAGE
IF "%1" == "?" GOTO USAGE
REM Just for the sake of
REM argument, we'll clear
REM all of the hidden attributes
REM before starting.
ATTRIB -H *.*
:DOIT
REM If no more arguments are
REM left, then go and do the
REM deleting.
IF "%1" GOTO DODELETES
ATTRIB +H %1 > NUL
SHIFT
GOTO DOIT
:DODELETES
ECHO Y |DEL *.* > NUL
ATTRIB -H *.* > NUL
GOTO END
:USAGE
```

## ECHO.

**ECHO Usage: DELX filemask1**

**[filemask2] . . .**

**ECHO You may use any wildcards  
ECHO in the filemasks.**

**:END**

RONALD J. EUREKA  
STREETSBORO, OH

## WordPerfect Tabs

Normally, to change tab settings for a short piece of intervening text in WordPerfect for Windows, you go to the beginning of the section, enter the tab setting, and then go to the end of the section to reset the original tabs. It's more efficient to enter the tab settings at the end of the section first. Just go to the end of the section and (with the CUA keyboard) press Alt-Shift-F3 to show the tab ruler. Drag any of the ticks in the ruler away from its original position. This will duplicate your default tab set code in the cursor position. Then return to the beginning of the section to define the new tab settings for the section itself.

Note that this tip works only if the Auto Code Placement selection in Preferences is left off (unselected). From the menu bar, click on File, Pref-

erences, Environment; then de-select Auto Code Placement.

WILLIAM J. WOLFE  
CHAMPAIGN, IL

## Tips for Tips

Several of you have sent in Debug scripts for use in "Tips & Tools." We appreciate this greatly, but we need the source code so we can look it over.

For those who have asked how to write COM programs so that they remain memory resident, here's a small program shell written in assembly language that'll get you started.

You might consider the following ideas for small programs that could run under this shell:

WIN\_RUN.COM lets you know if Windows is running.

VID\_CARD.COM lets you know the highest available video mode.

DR\_TYPE.COM tells you what kind of floppy drive you have.

DISKFREE.COM tells you how much free space a drive has.

BORDER1.COM sets the border to a color and resets it after graphics modes.

NOREBOOT.COM traps Ctrl-Alt-Delete and prevents

```
_TEXT      SEGMENT  PARA PUBLIC 'CODE'
ASSUME     CS:_TEXT,DS:_TEXT
ORG        2ch

ENV_PTR    LABEL WORD
ORG        100h

main:      jmp      StartupCode
           ;; Your program code here!!!

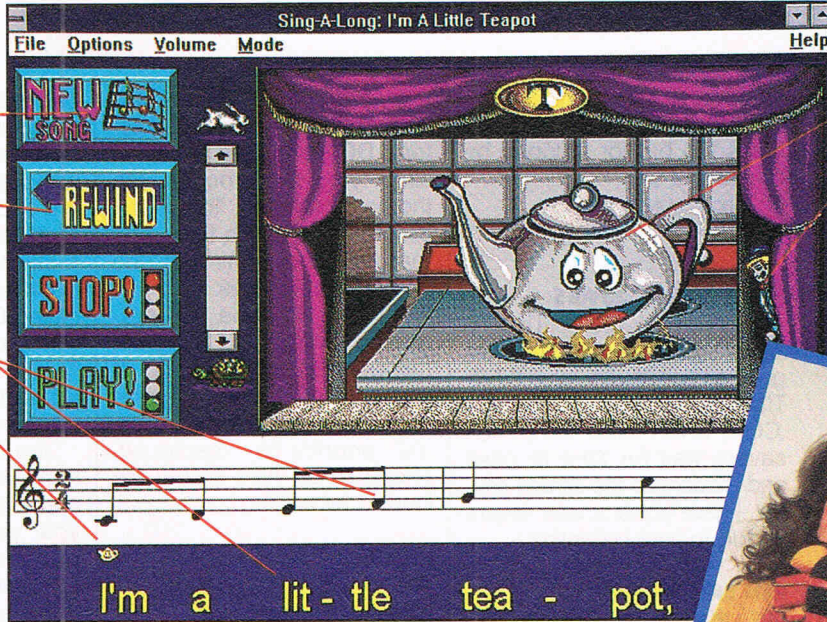
SAVESIZE   EQU      ( ( $ - _TEXT ) / 16 ) + 1
StartupCode:

           ;; Your initialization code here!!!
mov        es,ENV_PTR
mov        ah,49h
int        21h
mov        ah,31h
mov        dx,SAVESIZE
int        21h

_TEXT      ENDS
END        main
```

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warm system reboots.

BIGFILE.COM copies a file that's too big for a floppy by breaking it up.

RICHARD C. LEINECKER  
REIDSVILLE, NC

## More Screen Savers

The August 1993 "Tips & Tools" gave us a number of good screen savers, plus WAIT-TIME.COM and GETRAND.COM, which make the screen savers wait for time to pass and randomize the screen savers. I have some screen savers to add to your collection.

```
REM SAVER1A.BAS
CLS : SCREEN 12
RANDOMIZE TIMER
DrawLoop1:
x% = (RND * 750) + 1
y% = (RND * 500) + 1
RESTORE
FOR j% = 1 to 7
READ k%
c% = (RND * 15) + 1
CIRCLE (x%, y%), k%, c%
FOR t = 1 to 250: NEXT
NEXT
FOR t = 1 to 750: NEXT
Z = Z + 1: IF Z = 35 THEN Z = 0:
CLS
a$ = INKEY$
IF a$ = "" GOTO DrawLoop1
CLS : SYSTEM
DATA 1,5,10,15,20,25
DATA 30
```

```
REM SAVER1B.BAS
CLS : SCREEN 12
RANDOMIZE TIMER
DrawLoop3:
x% = (RND * 800)
y% = (RND * 100)
c% = (RND * 15) + 1
LINE (x%, y%)-(x%, 340), c%
PRINT
a$ = INKEY$
IF a$ = "" GOTO DrawLoop3
CLS : SYSTEM
JUSTIN JORDAN
MEMPHIS, TN
```

## Worth Repeating

Many of us find ourselves repeating the same command or

utility program for several files or file groups in the same directory. DOS provides a way of simplifying this process with the For command. To use it, I created two batch files: one that calls programs and one that calls batch files.

To use the one for programs, just type *do [program name] [files or filemasks]*. If you wanted to edit several files, you'd type *do edit myfile.txt yourfile.txt testfile.txt*. These three files would be loaded for editing.

```
REM DO.BAT
@ECHO OFF
REM Check to make sure
REM an argument was given.
IF "%1" == "" GOTO USAGE
IF "%1" == "/" GOTO USAGE
IF "%1" == "?" GOTO USAGE
IF "%2" == "" GOTO USAGE
FOR %%X IN (%2) DO %1 %%X
%3 %4 %5 %6 %7 %8 %9
GOTO END
:USAGE
ECHO Usage: DO [PROGRAM
NAME] [FILES OR FILEMASKS]
:END
```

```
REM DO.BAT.BAT
@ECHO OFF
REM Check to make sure
REM an argument was given.
IF "%1" == "" GOTO USAGE
IF "%1" == "/" GOTO USAGE
IF "%1" == "?" GOTO USAGE
IF "%2" == "" GOTO USAGE
FOR %%X IN (%2) DO CALL %1
%%X %3 %4 %5 %6 %7 %8 %9
GOTO END
:USAGE
ECHO Usage: DO [BATCH FILE
NAME] [FILES OR FILEMASKS]
:END
JIM BUCCIGROSSI
WEST MIFFLIN, PA
```

## Almost Stupid PC Trick

The urge has completely overtaken my better senses. I've seen those books in every bookstore and have fallen victim to those devious pranks. Now it's my turn!

Here's a program that you

can load surreptitiously into a computer. Then you can have fun watching the user wonder why some characters are capitalized, others aren't, and almost none respond correctly to the Shift and Caps Lock keys. The program is called CAPCHG.COM.

You can automatically load it from the AUTOEXEC.BAT file and see how long it takes the person to figure it out.

You can type in Capchg using the DOS Debug command (just make sure it's in your path). In these examples, the italic text is what the computer prints; the roman text is what you should type.

debug capchg.com

*File not found*

```
-e 100 EB 17 06 50 2B C0 8E C0
-e 108 26 80 36 17 04 03 58 07
-e 110 2E FF 2E 15 01 00 00 00
-e 118 00 B8 09 35 CD 21 89 1E
-e 120 15 01 8C 06 17 01 BA 02
-e 128 01 B8 09 25 CD 21 8E 06
-e 130 2C 00 B4 49 CD 21 B4 31
-e 138 BA 12 00 CD 21
-RCX
CX 0000
:003D
-W
Writing 003D bytes
-Q
```

The checksum value is 04481 (see the July 1993 "Tips & Tools" for the current version of the Checksum program).

RICHARD C. LEINECKER  
REIDSVILLE, NC

*If you have an interesting tip that you think would help other PC users, send it along with your name, address, and Social Security number to COMPUTE's Tips & Tools, Suite 200, Greensboro, North Carolina 27408. For each tip we publish, we'll pay you \$25-\$50. All tips submitted become the property of General Media International.* □

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# PROGRAMMING POWER

Tom Campbell

## EASIER WINDOWS HELP FILES

Last month we covered the laborious process of creating source files for the Microsoft Windows Help Compiler (HC31.EXE) using an ordinary ASCII text editor. This month we will look at a much easier way. I'm offering a vastly simplified translator called MiniHelp, which has just five commands but handles 90 percent of your Help file needs: topics, keywords, hypertext links, titles, and changing the font size. MiniHelp reads a file consisting of MiniHelp commands interspersed with standard RTF commands (if you need them). It spits out an RTF topic file that HC31 can read.

To illustrate, let me show you the minimal RTF input file for the Microsoft Help Compiler.

```
{\rtf1\ansi\deff2 {\fonttbl {\f0\froman Times New Roman;}
{\f1\fdecor Courier New;}
{\f2\fswiss Arial;} } #\footnote SuperNoteOverview}
$\footnote A SuperNote Overview }
SuperNote lets you write several different notes at once.
\par \page }
```

Here's the MiniHelp file that created it.

```
.topic SuperNoteOverview
.title A SuperNote Overview
SuperNote lets you write several different notes at once.
```

As you can see, MiniHelp lets you think in terms of things like topics and titles, not nested RTF commands and # footnotes. I've uploaded a MiniHelp package to COMPUTE's forum on America Online containing the source for MiniHelp, an executable version, full documentation, and examples. MiniHelp is freely distributable, and you may use it for any purpose, as long as you

leave the copyright notices intact.

OK, let's cut to the chase. Here's the MiniHelp manual.

As its input, MiniHelp expects an ASCII text file containing one or more Help topics; the output is an RTF topic file. You will list each of these filenames under the [Files] heading of a text file with the extension HPJ. HC31.EXE reads the HPJ file, then looks for each of the RTF files listed under [Files].

A MiniHelp source file consists of "dot commands," lines of text, blank lines, and hypertext links. Dot commands start with a period as the first character and contain a MiniHelp keyword, followed by one or more identifiers of your choice. Dot commands get the whole line to themselves; don't follow them with any text. It's important to note that word-wrap is handled by the Windows Help system.

The MiniHelp dot commands are .Topic, .Title, .Keywords, and .FontSize. They're listed in order of importance. The .Topic dot command is the only one that must be followed by a unique identifier. The identifier must be a single word that starts with a letter and may consist of letters, numbers, and underscores. It's just like naming a variable in any other language. Here are some examples.

```
.topic SuperNoteOverview
.topic MenuFile
```

A topic tells you where to find the topic text, but doesn't display anything. You need a title after the topic if you want to use keywords, or if you want to show the topic in the History and Search dialogs. A title can be any string of text, including spaces.

```
.title SuperNote: An Overview
.title The File Menu
```

Titles don't have to be unique, although it's less confusing if they are.

Optionally following the title is a set of keywords. These too can include spaces. They're separated using semicolons.

```
keywords File menu; Print; Exit; Open; Save
```

All of the keywords will appear in the Search dialog. Double-click on the keyword in the Search dialog, and you'll jump to that topic.

The Help text follows. Remember that, because of the way word-wrap is handled in RTF, two words which are separated by a carriage return/linefeed will print as a single word. To ensure that they're separated, precede the second word with a space.

To include a hypertext link to a topic within the text, you enclose the phrase to be printed, a colon, and the topic name in curly braces.

```
See also {Print Setup:PrntSetup}.
```

This will display *Print Setup* underlined and in green. When the user clicks anywhere on it, the PrntSetup topic will appear. As you can see, you have can as many words as you want for the text that appears in place of the topic name, though of course, the topic name must follow variable-naming conventions as described above.

Finally, .FontSize does just that, resetting the default font to the specified size in points.

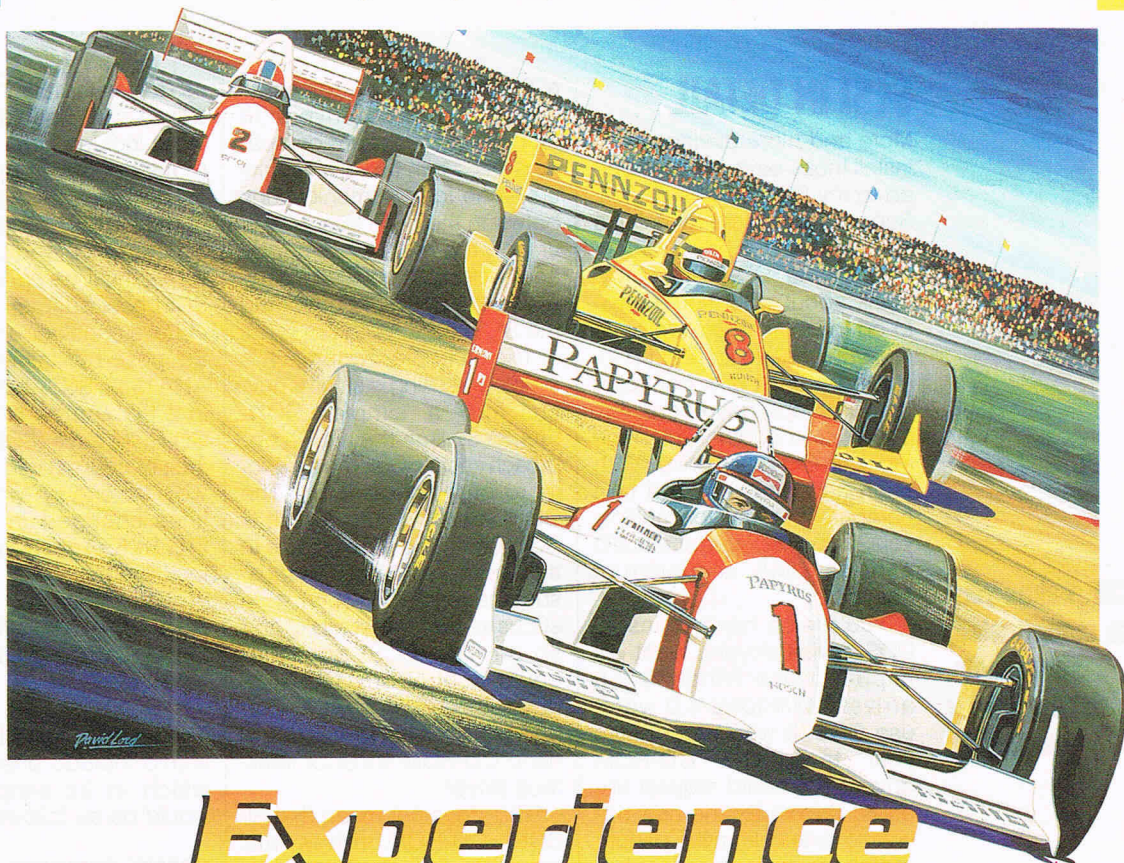
That's it. You'll have an easy-to-use Help preprocessor that lets you skip the trouble and expense of an RTF word processor for an unbeatable price—free. Look for MINHLP.ZIP in COMPUTE's forum on America Online, or send a note on CompuServe to my user ID at 75530,3607. □

Think in terms  
of topics and titles,  
not nested  
RTF commands and  
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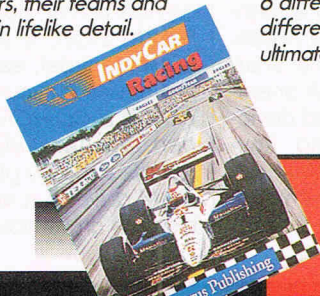
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# HARDWARE CLINIC

Mark Minasi

## SCSI IN DETAIL

More and more devices that I install these days are connected to my PC via SCSI cables. Suppose you were to install a tape drive, a disk drive, a scanner, and a CD-ROM drive. Think about what you'd have to do to install them. It's quite possible that you'd end up installing a hard disk controller board, a tape drive controller board, and another interface for your CD-ROM drive. With each new board added to a computer system, you multiply your risk of ROM address, I/O address, DMA, and interrupt conflicts.

You'd also have to install DOS device drivers. What will happen when Windows 4.0 arrives? Windows 4.0 won't use DOS. It won't recognize your tape and CD-ROM drives. You could request updated drivers for the new operating system from the peripherals' manufacturers, but these days you never know how long a company will be in business, or whether it will support older hardware.

SCSI simplifies things by allowing you to attach a variety of devices to a single board—the SCSI host adapter. Then you install a device driver for that board, so that it can communicate with your operating system. In this way, you can control several devices—seven peripherals, in the simplest arrangement, and theoretically about 12,500 devices in the most complex—with a single board.

When a new operating system comes along, all you need to do is to find the driver for your SCSI host adapter for that operating system.

Suppose I have a choice of two CD-ROM drives. One, from company P, uses a proprietary interface and ships with DOS device drivers. The other, from company S, uses

a SCSI interface and ships with DOS device drivers. In fact, the system from company S ships with two device drivers—one for communications between the SCSI host adapter and the main system, and another for communications between the CD-ROM drive and the SCSI adapter.

The proprietary approach is simpler, resulting in smaller drivers and a simpler CONFIG.SYS. But the SCSI approach sacrifices some simplicity to gain compatibility. The CD-ROM drive, because it is SCSI compatible, responds to a standard set of commands, such as read track X, provide status report, eject disk, and so on. Any SCSI controller could control any CD-ROM drive in the same way. That makes it possible to write a generic CD-ROM-to-SCSI interface driver.

This does not mean that all SCSI CD-ROM drives are equal; they aren't. But the basic programming commands stay the same. This means that if 500 different vendors all make SCSI-compatible CD-ROM drives, then it's not necessary to make 500 different CD-ROM drivers. One will do.

As a result, even though OS/2 2.1 is not as widely supported in device drivers as is DOS, it's duck soup to get OS/2 2.1 to recognize either a Toshiba or an NEC CD-ROM drive.

The next reason why the SCSI approach makes better sense than the proprietary approach is the interaction between the operating system and the SCSI host adapter.

DOS sees SCSI as a manager of block-oriented drives. Devices in DOS are either character oriented or block oriented. Character-oriented devices (serial ports and keyboards, for example) deal with data on a character-by-character basis. Block-oriented devices

deal with data in blocks of a fixed size. Block-oriented devices include hard disks, CD-ROM drives, floppy drives, and LAN boards. A device driver prepares DOS for the SCSI host adapter, and that device driver must be specific to the SCSI host adapter.

Let's consider an example. Suppose I install an Adaptec AHA1542 SCSI host adapter in a PC and an NEC CDR84 CD-ROM drive (SCSI compatible, of course) into that PC as well. I'd end up with just two lines changed in my CONFIG.SYS. Those lines might look like this.

```
DEVICE=C:\UTILS\ASPI4DOS.SYS
DEVICE=C:\UTILS\ASPICD.SYS
/D:MSCD001
```

Then the AUTOEXEC.BAT would include one new line, which in its simplest form would be as follows.

```
MSCDEX /D:MSCD001
```

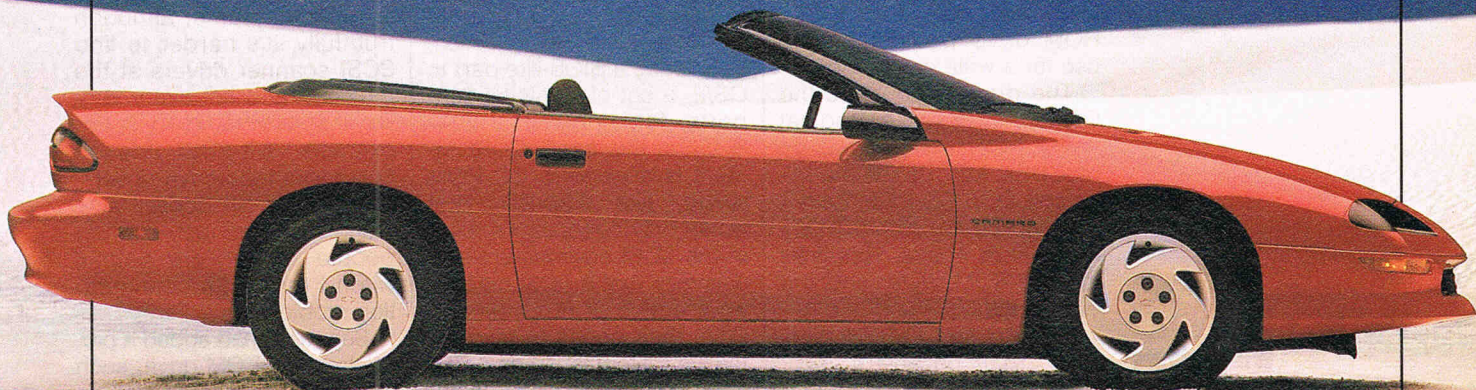
The first driver, ASPI4DOS, establishes SCSI for DOS. It says, in effect, *DOS, I'm a new device called SCSI. You talk to me the same way that you talk to other block devices—just ask me to read or write data. But I may have a number of different block devices attached to me. In any case, don't worry about how many cylinders, sectors, or tracks I have—I'll handle all of that. Just tell me what data you need or what data you want written, and I'll take care of the rest.* This device driver is sometimes called the SCSI Manager. The second device driver doesn't really talk to DOS; it talks to the SCSI Manager, saying, *There is a device on your host adapter. It is a CD-ROM drive, and here are the kinds of commands you can give to a CD-ROM drive.* If it were a hard disk, the driver wouldn't be AS-

**SCSI makes your life less complicated, saves slots, and is getting easier to install.**

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PICD.SYS; it would be ASPIDISK.SYS. The main difference between device drivers is that CD-ROM drives use a few commands that disks don't (such as eject and lock), and vice versa (a CD-ROM drive would have no use for a write command).

The driver also gives the CD-ROM drive a logical name, which is needed by MSCDEX. MSCDEX is the Microsoft DOS CD-ROM Extension; notice the /D:MSCD001 in the lines above. That links the CD-ROM driver and the extensions.

Naming the CD-ROM drive is necessary because it's possible to have more than one CD-ROM drive installed. By giving each a name, you can have several CD-ROM drives along with several separate instances of MSCDEX, and each copy of MSCDEX could have different parameters.

Look at those drivers carefully, and you'll see my earlier point about the simplicity of obtaining drivers. Both ASPID4DOS and ASPICD came from a single vendor—Adaptec, in this case, as part of a package that it calls EZ-SCSI. But other vendors, such as Future Domain and Corel, offer similar packages—Power SCSI! from Future Domain and CorelSCSI! (they both seem pretty excited about these packages, don't they?) are popular, top-quality collections of SCSI drivers you should consider.

Now think about what's involved with moving to a new operating system—OS/2 2.1. OS/2 2.1 includes SCSI management features, so the installation program searches for well-known SCSI host adapter boards. The Adaptec AHA1542 is recognized, and so my OS/2 CONFIG.SYS automatically gets these lines.

**BASEDEV=AHA1542.ADD**

**DEVICE=C:\OS2\CDROM.SYS  
IFS=C:\OS2\CDFS.IFS**

These three lines do for OS/2 just about exactly what the three lines we saw earlier did for DOS. The ADD file (first line above) is a file that essentially loads a BIOS-like part to OS/2, a set of low-level supports for some feature—SCSI, in this case. CDRROM.SYS is a generic CD-ROM driver, like ASPICD, that works only because it's living in the SCSI environment and assumes that a SCSI manager is active at the moment. OS/2 then needs to support the file system found on a CD-ROM drive and needs something like MSCDEX.

OS/2 can, however, go a step further than DOS and install intrinsic support of a whole new way of organizing files via its Installable File System, or IFS. OS/2 ships with a CD-ROM File System IFS driver so that it can support CD-ROM drives of any kind. Again, note that at no time did I have to get NEC on the phone and beg for an OS/2 driver. All I had to do was to hope that OS/2 would support the Adaptec AHA1542.

Is that a lot to hope for? I don't think so. There are several major SCSI hardware vendors, and even the beta versions of most new operating systems supported them. The Adaptec line is supported by DOS drivers, OS/2 drivers, Windows NT, and SCO UNIX. Drivers are also widespread for hardware from Ultrastor and Future Domain. Don't forget to look for drivers in obvious places. I've got an Ultrastor 22CA controller that I bought two years ago on promises of OS/2 drivers coming "soon." Six calls to Ultrastor over 24 months and poking around in its BBS extensively turned up nothing. As it turns out, the Ultrastor controller uses the

IBMINT13.113 driver that's included with OS/2.

Suppose I had added a hard disk, a scanner, a tape drive, or an optical read/write disk. The story would be roughly the same, although truthfully, it's harder to find SCSI scanner drivers at the moment, and not every vendor supports tape drives; for example, EZ-SCSI doesn't come with tape-drive drivers. But CorelSCSI! does. I also found the Corel tech support people to be very helpful when I ran into a configuration problem.

Suppose I had added a proprietary CD-ROM drive, such as one that comes with a sound board. I might have found drivers, and then again I might not have. My experience is with the Creative Labs multimedia kit, which includes the Sound Blaster Pro and a Mitsumi CD-ROM drive. Early on in the OS/2 2.x beta process, it looked as if we wouldn't get drivers, but Creative Labs now has drivers for OS/2—and good ones at that. (The moral of this story is that you should buy from companies with a reputation for good customer support, and Creative Labs' customers have always enjoyed good customer support.)

In essence, SCSI provides for drivers much the same thing that the PC expansion bus provides for circuit boards: a well-defined common denominator.

## Speak Up!

Do you have a tough hardware problem you'd like Mark to tackle? Let him know about it by calling (900) 285-5239 (sponsored by Pure Entertainment, P.O. Box 186, Hollywood, California 90078). The call will cost 95 cents per minute, you must be 18 or older, and you must use a touch-tone phone. □

**With drivers supplied by the SCSI host adapter instead of the peripherals manufacturers, SCSI offers added convenience at upgrade time.**

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Actual screen images.

When the W-2, 1099-INT, and other related tax forms start showing up in your mailbox, you probably begin to feel your annual Excedrin headache tuning up. It's time to dig out the old bank statements, check registers, receipts, and all the other financial minutiae you'll need to do your taxes.

While some taxpaying pain is inevitable, there's a relatively painless way to prepare most tax returns. Today's tax software can help you quickly convert your piles of financial paperwork into an accurate tax return. If you enjoy using your PC at all, this can be an almost pleasant experience—if you can keep from thinking about the government's taking your money.

Tax software for the PC has been around for about ten years now, and the software companies have just about got it right. Competitive pressures, long years of experience, and increased hardware capabilities have combined to give us tax programs that interview you, offer tax advice, do all the calculations and schedule preparation, compare your deductions to national averages, audit the return, and print it in ready-to-sign-and-file form. You still have to fold the return and stuff it into the envelope, but the software does just about everything else. (Of course, most software can actually file your return electronically, relieving you of the envelope-stuffing step as well.)

### Is It Really That Easy?

Can an inexpensive tax program really make preparing your tax return quick, easy, and painless? For most of us, the answer is clearly yes. If your return does not involve truly unusual items, the software can handle your return. If, on the other hand, your return is like the first one I ever prepared for money—involving interest on government bonds from Zimbabwe—the software may not give you the specific advice needed to complete the return. It can't cover everything.

If you've never prepared a tax return and you're not fairly

comfortable using your PC, even a routine tax return can be tough for you—even with the easiest software. If you're the slightest bit adventuresome, however, the chances are excellent that one of the programs that offers the most handholding will get you through the task without a hitch.

### An Endless Parade of Features

Through the years, new feature after new feature has been added to the software; most of today's programs contain a common set of powerful features. I'll review the basic feature set here; then, as I work through the individual programs, I'll mention any missing features as I go.

**Interviews.** The most popular programs offer

extensive interviews. The software asks you questions, often offering definitions, clarifications, and advice as it goes. It posts your answers to all the appropriate places in the tax return.

**Data import.** There's no sense in rekeying data that you already have in your computer. All programs import the basic

data about you and your return from the prior year's program. Some also import from prior-year versions of competitor's programs.

It can also be useful to import your financial information from your personal finance program (such as Quicken, Managing Your Money, or MoneyCounts). This isn't always worth the trouble, however, since the process may be more tedious than rekeying information from the printed reports from your personal finance program.

**Shoebox input.** Interviews and checklists presuppose that you have your tax data all sorted, totaled, and ready to insert into your return. That may not be the case. When presented with a mass of unsorted receipts, checks, statements, and whatnot, an accountant calls it a shoebox return. So that you don't have to sort all this stuff (that's what computers are for), most programs offer a shoebox mode (which

# TAXING SITUATIONS

Don't let tax season overtax you. Here are a top CPA's deductions about current tax software.

By Richard O. Mann





# MEET THE EDITORS ONLINE

If you like reading COMPUTE magazine, you should see what we've done with the electronic version. That's right—COMPUTE now has its own area on America Online. Log on to AOL and then go to the keyword *compute*. Once in COMPUTE Online, you can read the current issue and back issues, conduct an electronic search for articles or topics of interest, read reviews, download software, and much more. You can even download entire copies of COMPUTE books.

Need a quick answer to a computing question? Contact the editors in the message area or chat with them live each week in COMPUTE Conference. You can also reach the editors by E-mail. Here's a list of the COMPUTE editors and their online names.

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may be disguised under another name), wherein you look at each random item, call up the place where it would be entered, enter it, and move on to the next.

**IRS instructions.** Sometimes nothing but the original, uncensored IRS instructions will do. If you're lucky, you'll never look at them, but programs provide as much of the IRS's documentation as they can fit in.

**Audit flags.** When you think you're finished, the software audits the return. It checks that all required information is present, that your answers to its questions are internally consistent, and that choices you've made make sense. If, for instance, you've elected to itemize your deductions but your Schedule A total is less than the standard deduction would be, the software tells you.

The audit also checks your deductions against national averages published by the IRS and flags amounts that are out of line.

**What-if analysis.** Useful for both planning future years and making strategic decisions about the current year, what-if worksheets let you change basic amounts and decisions in your return. They report what your tax liability would be under each assumption, allowing you to pick the best alternative.

**State returns.** Your state return draws most of its information from your federal return. If you live in one of the larger states, there's almost certain to be a state tax return module available (at extra cost). Those in less populous states will want to know if a state module is available before selecting a program.

**Electronic filing.** Electronic filing of tax returns is a popular option because it speeds up the refund process by as much as three weeks. Returns must be sent by modem or on disks to a private agency that gathers them up, checks them for proper formatting, and sends batches to the IRS. These agencies charge for this service, usually about \$20. If you plan to file your return electronically, check the software before you buy it to see how much this service costs and whether the software supports it directly. Some programs sell the electronic filing module separately.

**Form 1040PC.** A long-overdue innovation from the IRS arrived last year—Form 1040PC. It replaces the Form 1040 printed on an exact IRS-replica form and the many pages of other forms and schedules. Think about it: 90 percent or more of the lines on virtually every tax form you file are blank. You enter data on only a

few lines on each form. The 1040PC prints only the lines with data and briefly identifies them with form- and line-number references. That's all the IRS needs to process your return. The form is designed for plain-vanilla computer printing and can handle most routine 1040s in less than two printed pages. You'll love the 1040PC.

**Headstart editions.** Many of you start working with your tax return well before the end of the year. By putting in estimated amounts and working with the results, you can plan helpful changes in your tax situation before year-end. Tax developers offer Headstart or EarlyBird editions of their programs in late October. The features of these early versions of the programs are essentially complete, but the programs lack the final approved forms and changes in the law that may transpire before final IRS forms and regulations are issued in early January. Buy the Headstart edition and register it, and the final version comes to you (at no extra cost in most cases).

## The Programs

The realities of magazine publishing require me to write this article several months before you read it. In order to give you information on these programs early in the tax season, I must work with advance information rather than actual working copies of the software, which won't be available (to anyone) until at least early January. These reviews are based on the 1992 programs and interviews with the developers about their plans for their 1993 editions. At the time of the interviews, program features were set, but programming was not complete. Be aware that I can't guarantee that everything will work exactly as described to me.

**TurboTax.** TurboTax, the first successful consumer tax preparation program, is still the best-selling one. Over the years, it has developed into an extremely strong program with all of the features mentioned above. Its roots are still in the form-based approach to tax preparation, so it's easy to drop out of its interview and work with the actual forms.

TurboTax offers the EasyStep System, which walks you through the entire tax preparation process in six steps. At no point in the process are you left wondering what to do next. Even a tax and computer novice will have little trouble with TurboTax; it's holding your hand and gently leading you every step of the way.

New this year is a completely automated import from Quicken; previous-

ly, you ran Quicken to create an export file and then read that into TurboTax. This year, the tax program goes directly into basic Quicken data, bypassing the export stage.

The overall look of TurboTax, both in Windows and DOS, has improved. The DOS version looks a lot like the Windows one but works well by keyboard. The Windows version sports new icons with text labels and pictures so no one can misunderstand their purpose, a small but surprisingly significant improvement.

A new set of automatically generated tax graphs shows analysis of income, deductions, and types of taxes paid. I'm not sure how useful these are, but they certainly provide a colorful show.

ChipSoft developers enhanced the final review by adding Deduction Finder, an intelligent function that searches for any deductions you might have missed.

To encourage electronic filing, TurboTax this year comes with modem software built in, so the tax software can take over the whole process of filing. All you need to supply is the modem.

ChipSoft has beefed up its telephone support with the opening of a new state-of-the-art, 300-person Call

Center in Tucson last October. There's fax-back support, taped voice messages for the most common questions, and immediate access to a live human technician when needed.

TurboTax has programs for all states that require tax returns, which can make it the program of choice for those living in less populous states.

With the emphasis on simplifying, clarifying, and streamlining the program this year, TurboTax reaches new heights. It's a great program for everyone from complete tax novices to professionals.

#### **Andrew Tobias' TaxCut 1993.**

TaxCut, in both the DOS and Windows versions, excels in the art of the interview. From the opening screen through printing the return, TaxCut guides you gently along the way, asking intelligent questions, defining terms in the questions, and offering salient advice.

The interview backbone of TaxCut is superb. Like other Andrew Tobias products, TaxCut talks to you in a down-to-earth way, often using mild humor to ease the pain. The program feels like working with a kindly uncle—one with a law degree from Harvard—at your side.

Questions appear at the top of the screen with explanatory text at the bottom of the screen. Difficult terms are

highlighted in the questions and defined in the text. Some questions require lengthy explanations because of the convoluted way our tax law works.

The program uses artificial intelligence to streamline the interview. It evaluates every item of information it receives from you to determine which questions it needs to ask. It also audits the return item by item as you go, rather than waiting for you to run an audit routine at the end of the process.

This year, the interview is controlled by the Navigator, which graphically tracks your progress through the tax return and allows you to quickly jump back and forth in the interview or the forms.

The new Instant Update feature shows your last year's data in one window with blanks for this year's data in another window. You can mark those items which haven't changed for direct update to the current year's return.

A similar new feature, the Keyed-Entry Quick View, shows an onscreen list of all data you've keyed in so far, allowing quick proofreading and correction. Any changes here, of course, ripple through the entire return, making all necessary changes in all forms.

For those filing electronically, TaxCut also includes the complete telecommunications software needed to file the

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P.O. Box 100  
Hiawatha, IA 52233-0100  
(800) 223-6925  
(319) 395-9626

return. If you have a modem, the software handles the rest of the process.

TaxCut rivals TurboTax for the top-dog position. Picking between them is really a matter of personal style.

**Kiplinger TaxCut 1993.** Having sung the praises of Andrew Tobias' TaxCut, I need to up the ante for this Kiplinger version of TaxCut. It's the same TaxCut program with extra value added by the Kiplinger people. Kiplinger, the highly respected personal finance publisher, adds help and advice screens with more information, additional tips, and deeper discussions of important tax issues.

New this year is a tight integration with the new Windows personal finance program, Kiplinger's CA-Simply Money. You also get a copy of *Kiplinger's Sure Ways to Cut Your Taxes*, a 470-page book, revised for 1993. This version of TaxCut is not sold in stores; you must call the 800 number to order it directly from Kiplinger.

**Personal Tax Edge.** Parsons Technology has a reputation for providing solid, no-nonsense programs at a great price; its tax offerings are no exception. Last year's new Windows version arrived on the scene in a good-looking, fully mature form.

Both the DOS and Windows ver-

sions provide the full list of features delivered in a particularly accessible interface. The interview is good but not outstanding.

Unusual features include tax advice for the upcoming year based on the tax return information, special calculators for depreciation and financial matters, and a powerful interest calculator called Interest Vision.

Personal Tax Edge also evaluates your current withholding status for use in 1994. If changes are appropriate, it prints a new W-4.

If you order by direct mail before year-end, you can get the planning edition for \$19 and the final edition for another \$12. Even at the list price of \$49, Personal Tax Edge is a tremendous bargain.

If you want an even bigger bargain, check out the bargain hunter's dream Parsons released just as this story was going to typesetting: Tax Mate, a special edition of Personal Tax Edge. Parsons will be giving away 250,000 copies of the program free (first come, first served). It includes forms 1040, 1040A, and 2441 and schedules A, B, D, R, and EIC. State modules will cost the same as for Personal Tax Edge (see the grid). Further, Parsons guarantees the accuracy of Tax Mate, promising to

pay "any IRS penalties resulting from computational errors in the software."

**CA-Simply Tax.** Computer Associates, the giant mainframe software developer that also offers a full line of PC software, bought the former EasyTax from SoftKey, renamed it CA-Simply Tax, and launched it with a rousing fanfare in late October. CA is giving away an unlimited number of copies for the cost of shipping and handling, \$9.95 for the Headstart edition and an additional \$3.95 for the final version (which should be available by the time you read this). The product will be free through April 15, 1994.

Call the toll-free number, (800) 737-3382, and it's yours.

CA-Simply Tax, cut from the same mold as TurboTax and TaxCut, is an easy-to-use program full of helpful features for tax novices. It has an interview function, numerous tax tips, and most of the standard features. Improvements over 1992's EasyTax include a new interview system with a more conversational style and help for complete novices, many new forms (over 90 in all), and a series of tax strategies and tips for 1993 and 1994 from Gary Klott, a leading syndicated newspaper tax columnist.

**AM-Tax Personal 1040.** AM-

## Sim City 2000 Design Contest

Maxis and COMPUTE Publications are looking for the very best, original cities designed with the new Sim City 2000 from Maxis. All winning cities will be included on one of COMPUTE's Winning Cities Disks. Each winner will receive \$50 plus a software package from Maxis and a game hint book from COMPUTE. So put on your city manager's hat and design your best cities.

Interested? If so, read on:

### Official Rules

NO PURCHASE NECESSARY

1. Entries must be your original work and never have been distributed by electronic means. All winners will be required to affirm this in writing.

2. Submit as many entries as you want, but we cannot consider cities which have been distributed on disk or are available on any BBS or commercial telecommunications service such as CompuServe or America On-line.

3. All entries must be received no later than April 1, 1994. Print your name, address, daytime phone, and social security number along with your disk to Sim City 2000 Contest, COMPUTE, 324 West Wendover Avenue, Greensboro, NC 27408.

4. Entries must be created with either the MS-DOS or Macintosh versions of Sim City 2000. Cities created with the original Sim City will not be accepted. Entries may be submitted on either a Macintosh 3-1/2 inch floppy disk or a MS-DOS 3-1/2 inch or 5-1/4 inch floppy disk. A separate copy of this entry form must be submitted for each city submitted. Readable photocopies of this entry form are acceptable.

5. The staff of COMPUTE magazine will handle the judg-

ing. The decisions of the judges is final as to all aspects of any entry, including similarity to any entry. There will be at least five winners, but there can be as many as twenty winners depending on the quality of the entries. Winners will be selected on the basis of their originality, uniqueness, complexity, balance, general appeal and use of the new features in Sim City 2000.

6. Winners will be notified by mail by September 30, 1994.

7. The contest is opened to residents of the United States and Canada, except Quebec. Full-time, part-time & previous employees of COMPUTE Publications International Ltd., General Media International Ltd. and Maxis, their immediate families and their advertising agencies, are ineligible for the contest.

8. Contestants must assign the copyright in their entries to COMPUTE using the attached form. All winning entries become the property of COMPUTE Publications International Ltd. Sorry, we cannot return any entries.

9. The approximate value of each of the prizes awarded is as follows: software \$50, hint book \$15, and cash \$50.

10. This contest is void where prohibited or restricted. All winners will be required to submit an affidavit of eligibility, including permission to use winners name and photo for promotional purposes without further compensation; failure to return this affidavit within ten days will forfeit prizes. Neither COMPUTE nor Maxis is responsible for delayed or misdelivered mail. Taxes are winners responsibility. No alternative prizes or cash equivalents of prizes will be awarded.

### Every Contestant Must Fill in and Sign This Form:

Name of Your City \_\_\_\_\_  
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I, \_\_\_\_\_, hereby certify that I am the parent or legal guardian of the above-named person who is a minor below the age of 18 and that I ratify and consent to the execution of this entry form by such minor and to the use of his/her name and likeness for promotional and commercial purposes should he/she be selected as a winner.

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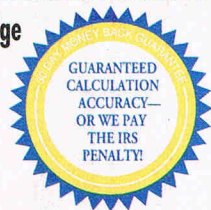
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Package	State Modules	Data Import	Support	Electronic Filing	Other Versions	New for 1993
<b>AM-Tax Personal 1040 AM Software</b>	AZ, CA, CO, CT, DC, GA, IL, IN, KS, KY, MA, MD, MI, MN, MO, NC, NJ, NY, OH, OK, PA, SC, VA, WI; \$29.00 each (renewal \$19.00)	1992 AM-Tax Personal-1 or -2	Free (toll call), fax (toll call)	\$19.00 (ordered as addition to basic program)	AM-Tax Professional, \$150.00; Electronic Filing (includes Professional), \$350.00; 1040PC edition (requires Pro or EF), \$95.00	No simple and advanced personal versions, one version at slightly more than half the price of last year's advanced version, personal electronic filing, online help, what-if comparisons, audit checks
<b>Andrew Tobias' TaxCut 1993 for DOS and Windows MECA Software</b>	AZ, CA, CO, CT, DC, FL, GA, IL, IN, MA, MD, MI, MN, MO, NC, NJ, NY, OH, OR, PA, TN, VA, WI; \$44.95 each (renewal \$24.95)	Quicken, Managing Your Money, Microsoft Money, CheckFree, Fidelity On-Line Xpress, TXF,* 1992 TaxCut and TurboTax for DOS	Free (toll call), fax (toll call), CompuServe	No additional software required to file by modem or mailed disk with clearing-house at \$14.95 per return	None	The Navigator guidance system, all figures checked by Auditor as they are entered, keyed Entry Quick View for quick proofing of entered data, instant update, pinpoint import, mistakes corrected by Auditor in the Audit Report and necessary forms
<b>CA-Simply Tax Computer Associates International</b>	AL, AZ, CA, CO, CT, FL, GA, IA, IL, IN, KS, KY, LA, MA, MD, MI, MN, MO, NC, NJ, NY, OH, OK, OR, PA, SC, TN, UT, VA, WI; \$19.95 each	CA-Simply Money, Quicken, Lotus 1-2-3, ASCII, TXF, 1992 EasyTax	Free (toll call), fax (toll call)	Nelco via mail or modem with transmission within two days for \$14.95 per transmission	None	More conversational interview, extensive tax tips from columnist Gary Klott, entirely new Windows version
<b>Kiplinger TaxCut 1993 for DOS and Windows Kiplinger</b>	AZ, CA, CO, CT, DC, FL, GA, IL, IN, MA, MD, MI, MN, MO, NC, NJ, NY, OH, OR, PA, TN, VA, WI; \$24.95 each	Quicken, Managing Your Money, Microsoft Money, CheckFree, Fidelity On-Line Xpress, TXF, 1992 TaxCut and TurboTax for DOS	Free (toll call), fax (toll call), CompuServe	No additional software required to file by modem or mailed disk with clearing-house at \$14.95 per return	None	The Navigator guidance system, all figures checked by Auditor as they are entered, keyed Entry Quick View for quick proofing of entered data, instant update, pinpoint import, mistakes corrected by Auditor in the Audit Report and necessary forms
<b>Personal Tax Edge for DOS and Windows Parsons Technology</b>	AL, AR, AZ, CA, CO, CT, DC, DE, GA, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NY, OH, OK, OR, PA, RI, SC, UT, VA, VT, WI, WV; \$19.00 each (renewal \$16.00)	MoneyCounts, Managing Your Money, Quicken, Microsoft Money, ASCII, TXF, 1992 Personal Tax Edge	Free (toll call), fax (toll call), smart fax, CompuServe, GEnie	\$15.00 for single return	Tax Mate (a lite version of Personal Tax Edge), free	Direct import from MoneyCounts and TXF 1040PC and 1040X forms, additional tax helps and tips, analysis of 1994 tax situation with advice
<b>TAXPERFECT-PC Personal 1040 Financial Services Marketing</b>	None	Quicken, TXF, 1992 TAXPERFECT-PC	Free (toll call)	Available in professional version only	TAXPERFECT-PC Pro 1040 (for professionals doing individual returns), TAXPERFECT-PC Pro 1120 (for professionals doing corporate returns); \$199.00 each (renewal \$99.50)	Completely new interface, full-screen forms, help, almost 700 pages of IRS instructions online, return audited and verified by DataChek, new interview format, notepads for any entry field to provide audit trail and notes to yourself, forms tree showing interaction of forms in your return, calculation override list, mouse support, file preview
<b>Tax Preparer HowardSoft</b>	CA, \$125.00	1992 Tax Preparer	Free (toll call), fax (toll call or toll-free)	Available for an extra \$295.00 (unlimited number of returns, intended for a professional)	None	No longer requires GW-BASIC
<b>Tax Solver Intex Solutions</b>	CA, MA, NY; \$39.95 each	1992 Tax Solver	Free (toll call)	None	Business packages available for Form 1041 Fiduciary, 1065 Partnership, 1120S Sub-Chapter S Corporations, and 1120 Corporations; \$129.95 each; all business versions in one package, \$495.00	Brief audit function, checklist to determine forms needed for your return, new Head-start edition in October, supports latest versions of Lotus 1-2-3 and Excel, functions in the main program's menu structure in version for Lotus 1-2-3 for Windows Release 4
<b>TurboTax for DOS and Windows ChipSoft</b>	AL, AR, AZ, CA, CO, CT, DC, DE, FL, GA, HI, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NJ, NM, NY, OH, OK, OR, PA, RI, SC, TN, UT, VA, VT, WI, WV; \$39.95 each (renewal \$19.95)	Quicken, TXF, 1992 TurboTax	Free (toll call), automated technical support (toll-free), fax (toll-free), bulletin board, CompuServe, GEnie	Included free with final program, filing electronically costs \$19.95	ChipSoft Professional Series 1040, \$499.00; module for using laser printer with the 1040, \$199.00; 1120, 1120S, 1065, 1041, and 990 (including laser module), \$549.00 each	Deduction finder; tax graphs; simplified interview; faster printing; enhanced help with complex areas including depreciation, home offices, retirement, and real-estate rentals; TrueType fonts in Windows version

\* Tax eXchange Format, a special format that standardizes information sharing among finance software packages

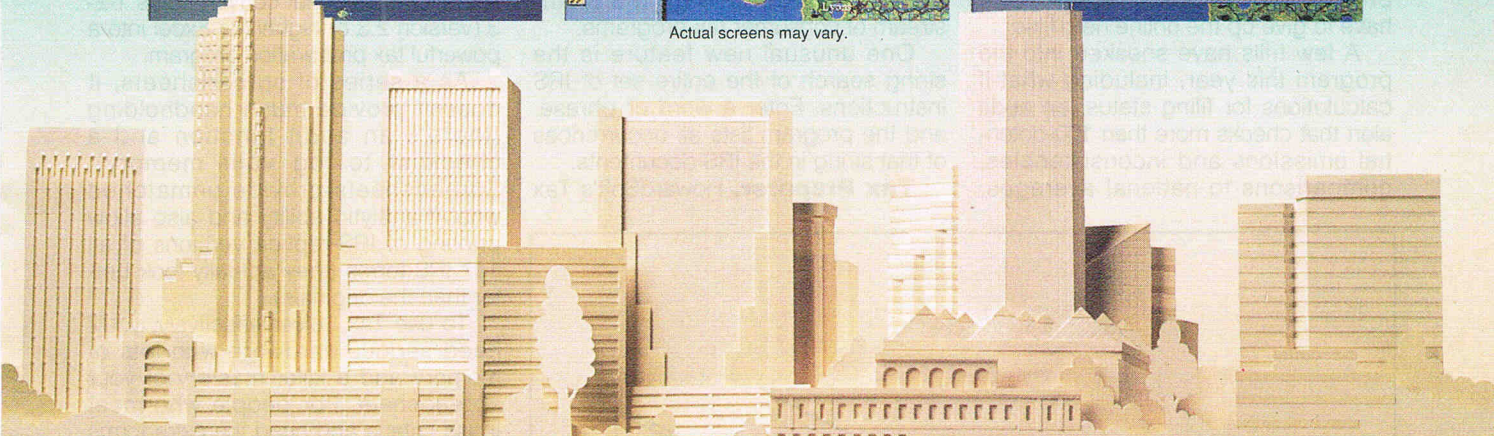
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Tax is a lean-and-mean speedster. If you have no hard disk, AM-Tax can prepare your return, although you'll have to give up the online help files.

A few frills have sneaked into the program this year, including what-if calculations for filing status, an audit alert that checks more than 100 potential omissions and inconsistencies, comparisons to national averages,

online help, electronic filing, and the useful ability to print blank forms.

Also new this year is the combining of the two former versions of AM-Tax Personal into a single version with more features and a lower price than last year's top version. AM-Tax won't, however, print the 1040PC form.

**TAXPERFECT-PC Personal 1040.** TAXPERFECT is a program in transition. From the no-frills, DOS-text, mouseless program of yesteryear arises the new 1993 version—modernized, frill filled, and updated in every way.

The 1993 TAXPERFECT has an interview, direct entry onto DOS-text IRS form look-alikes, almost 700 pages of online IRS instructions, a full complement of worksheets and notepads, a robust mouse-based interface, and a host of smaller improvements. The people at Financial Services Marketing, the developer of TAXPERFECT, are dead serious about bringing their previously old-fashioned program into the mainstream of consumer tax programs.

One unusual new feature is the string search of the entire set of IRS instructions. Enter a word or phrase, and the program lists all occurrences of that string in the IRS documents.

**Tax Preparer.** HowardSoft's Tax

Preparer is a speedy tax program designed for professional preparers, although it could be a godsend for a tax-literate consumer with an ancient single-floppy computer.

One way HowardSoft keeps the use of resources down is to put all the instructions and help in the manual, a 600-page wonder. The company also provides excellent phone support, vowing to provide a live human voice within one minute.

The interface is pure mid-eighties DOS text in a very basic sort of interview, where you fill in lines onscreen which the program posts to the forms. You need to know your way around the forms, however, because the questions you're answering are limited to a single line less than half a screen wide. Some of the abbreviations might stump even an experienced tax preparer.

**Tax Solver.** Tax Solver from Intex Solutions isn't a stand-alone tax program at all. It's a collection of spreadsheet templates that convert Lotus 1-2-3 (version 2.3 or higher) or Excel into a powerful tax preparation program.

As a series of spreadsheets, it doesn't provide much handholding (there's an audit function and a checklist to jog your memory). Spreadsheets provide unmatched what-if analytic ability and also allow printing of IRS-replica versions of all 147 IRS forms (they actually look better than the originals).

To use Tax Solver effectively, you'll need serious hardware with lots of memory and a killer mastery of your spreadsheet. For people who meet those criteria and need the extra forms that none of the other programs provide, Tax Solver is perfect. Ordinary computer taxpayers, however, may quickly find themselves in well over their heads.

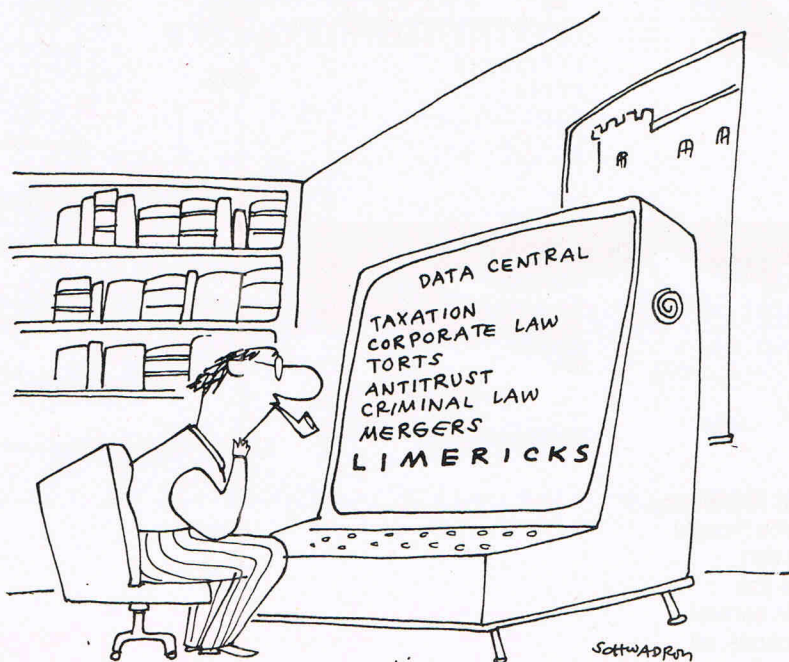
## Final Thoughts

Remember that the best computer tax programs cannot offer professional tax advice. If you have doubts as to the legality or propriety of deductions or other tax matters, get professional help.

These programs represent a full range of approaches to the tax preparation process.

Find the program that matches your style, your budget, and your hardware, and retire the Excedrin bottle for the duration of tax season. □

*Richard O. Mann, CPA of Roy, Utah, has 20 years of professional accounting experience, including preparation of thousands of tax returns by hand, by mainframe service bureau, and finally by PC.*



COMPUTER MALFUNCTION AT THE LAW SCHOOL.

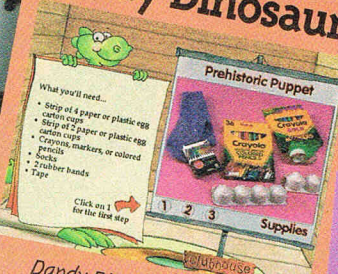


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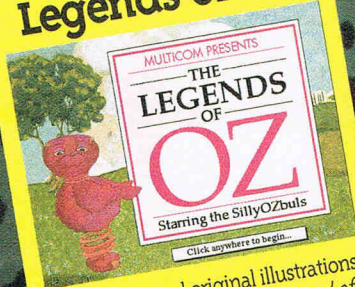
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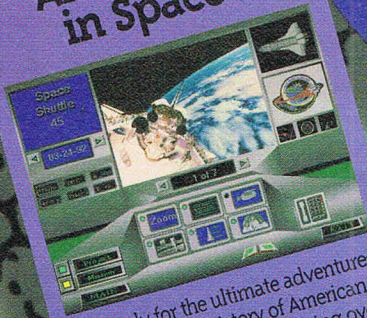


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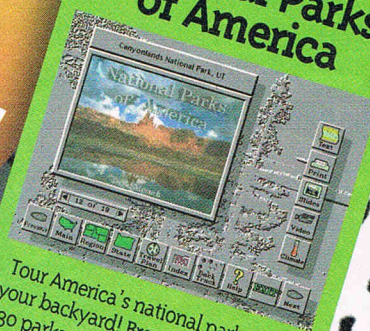
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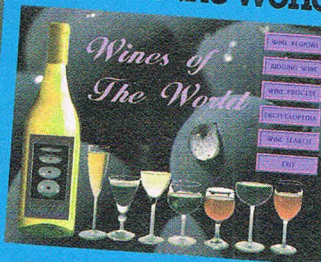
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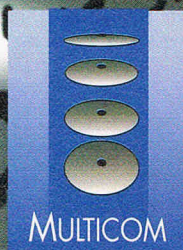
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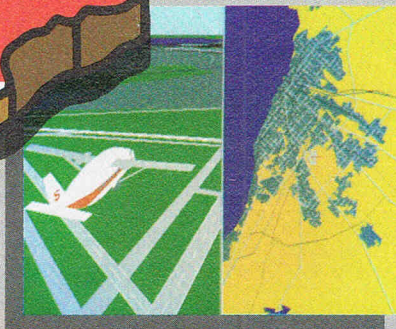
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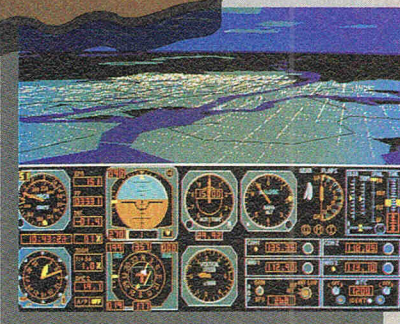
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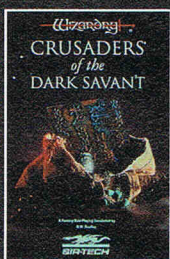
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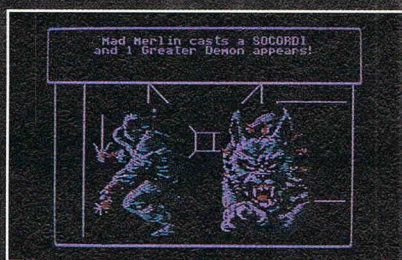
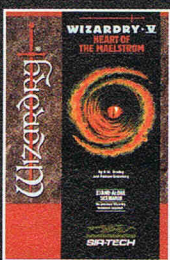
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### When Is the Right Time To Buy?

Timing depends on balancing your desire to have the absolute latest in technology with your desire to spend as little as possible. Product cycles come into play here. With the Pentium shipping in quantity but not yet starting its inevitable price decline, prices of hot 486-based computers are extremely reasonable. If you don't need Pentium power, this is an excellent time to buy a member of the large 486 family.

If you want a Pentium, the most economical strategy might be to buy a guaranteed-upgradable 486 while waiting for Pentium upgrade chips to fall to a more reasonable price. Or, if nothing but a true Pentium box will do, you'll have to decide between today's high prices and waiting for prices to fall. So far, every new generation of PCs has started in the \$5,000 to \$7,000 range, then eventually fallen to much more reasonable prices—\$1,500 buys a basic 486 computer today. With each generation, the time lapse between introduction and lower prices has shortened.

There's more to a computer than the CPU chip, of course. The cycles of technological improvements and accompanying falling prices of all but the latest technol-

ogy also drive the market for hard drives, CD-ROM drives, sound cards, video cards, and peripherals in general. Once you've settled on the basic CPU setup, you can focus your attention on all of these other peripherals.

### Should You Buy New or Upgrade?

Because the differences between a 386 and a 486 are primarily internal (not requiring a whole new bus and other components), CPU upgrades have become a thriving sub-

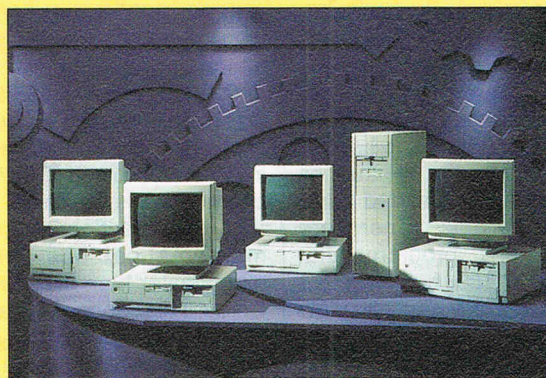
industry. You can obtain significant performance increases by merely swapping out the CPU chip for a later model, which is much cheaper than buying a whole new system.

A computer with an upgraded CPU chip, however, isn't the same as a new computer or the same as a computer built around the upgraded chip. First, an old computer with a new CPU is still an old computer. Its many components—motherboard, bus, disk controller card, hard disk, floppy disk drives, CD-ROM drive, sound board, video card, monitor, and so on—are still as old as they ever were, moving inevitably toward the day when they wear out or break down. Chances are, too, that they aren't able to work as fast as your new CPU does, which slows down the operation to the speed of the slowest component involved.

An upgraded chip is most effective in situations where the rest of the computer is fast enough and new enough to support the upgrade. Millions of 486 systems sold in the last two years are excellent upgrade candidates, because they come with a built-in socket for the Pentium chip.

Another danger in upgrading is that you'll find that after the CPU upgrade, you need a bigger, faster hard disk or a new double-speed CD-ROM drive, or a video accelerator card, or some other performance-enhancing component. You may find that you've spent the price of a whole new computer putting new components into an old box with a slow, weary bus and other important innards that can't keep up with all the flashy new components.

When upgrading costs as much as a new 486 computer, it's usually counterpro-



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## BUYING A NEW PC

ductive. And consider how nice it would be to have two computers—the old, poky machine for routine tasks and your new screamer for Windows work, multitasking, and multimedia applications. With the increasing demand for computers in my family, a second computer—even a poky old 286 or XT—is worth its weight in DRAM chips.

### When to Buy?

Buy a new PC when your existing PC won't efficiently and quickly run the new software that you want to—or need—to run or when it would cost more to upgrade the old PC than to buy a new one.

—Richard O. Mann

### HOW TO CHOOSE A NEW PC

From day one, savvy computer consultants have advised that the only way to buy computer hardware is to decide on the software you'll be using, then buy the hardware that runs it. In today's PC environment, that means deciding if you'll be buying the latest, hottest applications as they appear, or if you'll be sticking with your tried-and-true favorite programs indefinitely. It means deciding if you'll be using Windows applications, multimedia programs on CD-ROMs, or computation-intensive programs such as CAD software. It's definitely possible to be perfectly satisfied with a low-end computer—as long as you don't try to do high-end things with it.

So decide what you're likely to be doing with your new PC before proceeding even one step further on the road to purchasing a new PC.

### The Right Processor

Of course, the first decision is the processor, or CPU. The

CPU determines how fast your machine operates, how well it handles advanced software such as Windows 3.1, and whether it can even run the most advanced new software. Each new generation of software seems to be written to strain the capabilities of the most advanced hardware available. (There are few, if any, programs that require a 486, but there are many that are painfully slow on anything less than a mid-range 486—say a 33-MHz model. And any new Windows application of any size and scope will need a zippy 486 to keep you from comparing its speed to glaciers and continental drift.)

With speed considerations and the low prices of today's 486 computers, anything less should be reserved for special situations where you know you won't be running any advanced software at all.

If you decide on a 486, you haven't narrowed the field by much. A bewildering array of different speeds, manufacturers, and feature sets result in more than two dozen choices in 486 chips, probably more by the time you read this. (At press time, the 486DX3 chips had not been officially announced, but we expect them any day.) Let's discuss the

general classes of 486 chips.

**486SX Versus 486DX.** As with the 386SX and 386DX chips, the 486SX is a slightly limited version of the full 486DX chip. In the 486 line, an SX chip has the math coprocessor masked off, making it non-functional. The math coprocessor is an internal unit that handles floating-point mathematical operations much faster than the normal CPU. This doesn't matter except in computationally intensive programs, such as CAD applications and massive spreadsheet models. Check the price differential before deciding.

**Clock Speeds.** CPUs run at a rated speed. Undoubled speeds currently available are 16 MHz (megahertz, or million cycles per second) and 20 MHz, which currently are available only in SX versions, as well as 25, 33, 40, and 50 MHz. A chip labeled DX2 is clock-doubled, meaning its internal operations run at twice the normal speed, while communications with the rest of the computer run at the undoubled normal speed. The 25 and 33 MHz speeds can be doubled to 50 and 66 MHz. The 486DX2/66 is, at press time, the fastest 486 chip available, but watch for the 486DX3/100 soon.

How important is clock speed? After all, something happening in a fiftieth of a second isn't noticeably faster than the same operation at a tenth of a second. The speed differential shows up in Windows applications, in handling large databases, in loading programs, and other areas where you typically have to wait for your computer to catch up with you. Going from a 386DX/16 to a 486DX2/66 is dramatic. Programs load instantly, Windows applications move along at a tolerable speed, and multimedia applications work in real time.

As new software comes out, however, expect that it will stretch your computer to its limits of speed, so get the fastest unit you can afford—unless you're a particularly patient sort of person who doesn't mind a few seconds waiting now and again.

**Other 486 Chips.** You'll also see 486SL and SLC chips, which have additional power management features for use in laptops, and a raft of oddly named chips from AMD (American Micro Devices) and Cyrix. These two manufacturers, along with others, make chips they claim to be functionally equivalent to the Intel chips we're more familiar with. They're less expensive and experience has shown them to be fully reliable, fully compatible chips. There are technical differences, however, that you might want to be aware of before making a purchasing decision, such as internal cache sizes, number of transistors, and so on.

**Pentium.** Intel's newest and still very pricey chip is the Pentium. Conventional wisdom at this point in the product/price cycle is that most of us don't need that much power yet. Until the cost comes down and more soft-



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## BUYING A NEW PC

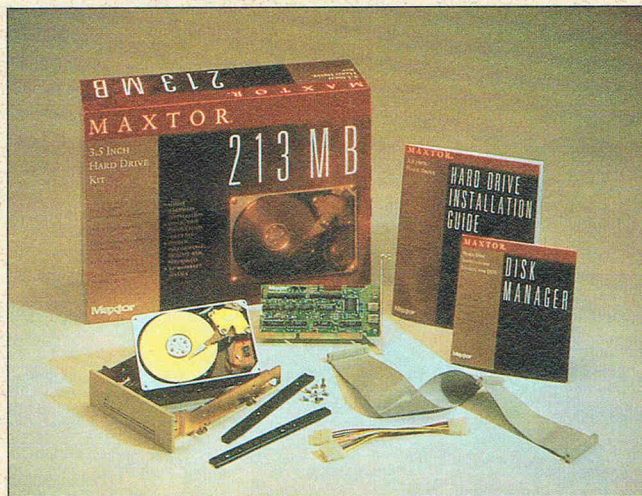
ware is rewritten to take advantage of the Pentium's advanced features, most of us won't be able to justify the cost.

### The Right Bus

The computer's data bus is the channel outside the CPU that carries data and other electronic instructions between all the boards and devices in the computer, including zipping data around the motherboard to the RAM memory chips. As fast as the CPU is processing data, if its instructions are sent out at a lower speed, the whole process must slow down.

The standard bus used in most PCs today is still the old ISA (Industry Standard Architecture) bus from the IBM AT computer. The EISA (Extended ISA) bus runs at the same speed but transfers twice as much data in each pulse. Though the EISA bus was a good idea, its higher cost has limited it. It's primarily used in network file servers and business machines where heavy data transfer makes it worth its cost.

Another term you'll hear is Local Bus. At first, local bus designs were proprietary, but a standard local bus design has emerged, called the VESA Local Bus or VL-bus. Intel recently has introduced the PCI bus, its version of local bus design. The main effect of the local bus so far has been to dramatically speed up video performance, but other devices can be attached to the VL-bus with measurable performance gains. Most local bus systems now available offer a few local bus slots for high-speed devices and ISA slots for everything else. Local bus costs more than a straight ISA bus, but the increased video speed alone makes it a necessity for Windows users.



Your new computer should have at least a 200MB hard drive.

### The Right Amount of Memory

Many computers still come with 2MB of RAM. Don't be suckered into that trap. Windows applications say they'll run with 2MB, but the best you could say is that they walk—or perhaps crawl—with 2MB. You need 4MB minimum, but buy 8MB if you can afford it. Going to 8MB can make Windows run as much as twice as fast. Beyond 8MB, speed increases are minimal with most of today's software. On the other hand, if you're planning on using OS/2 or Windows NT, then 16MB is the minimum.

Also check with the vendor to see exactly how you upgrade memory. If you buy 4MB now and decide later to expand to 8MB, it may cost you more than buying the 8MB up front. (Some memory schemes require you to pull your 4MB of RAM chips, discard them, and replace them with new higher-capacity chips to achieve 8MB.)

### The Right Hard Drive

Get the biggest drive you can afford unless you're one of the few who never buy new software and don't plan to do much with Windows. Choices

here include the current standard IDE drive systems and SCSI drives. SCSI can be faster, but it isn't really necessary until you get into the really large drives that few of us will be buying—drives in the 1 gigabyte range. For the best price/performance ratio in standard size drives, stick with IDE.

How much hard disk space is enough? Those of us who've been using PCs since the beginning know how rapidly the threshold of enough storage space rises. One thing you can count on: The drive your PC vendor packages with the standard system is unlikely to be adequate for any length of time. In an era when Strike Commander, a game you can buy at the mall for under \$50, takes 28MB of hard disk and any self-respecting Windows application takes 15MB or more, your drive will fill up before your next birthday. Buy as much drive as you can afford, but don't take less than 200MB if you can help it.

One option you might consider: I found that I could buy two 340MB drives for less than one 600MB drive. Two drives also can give you more options and backup flexibility

than a single larger drive.

### The Right Video Adapter

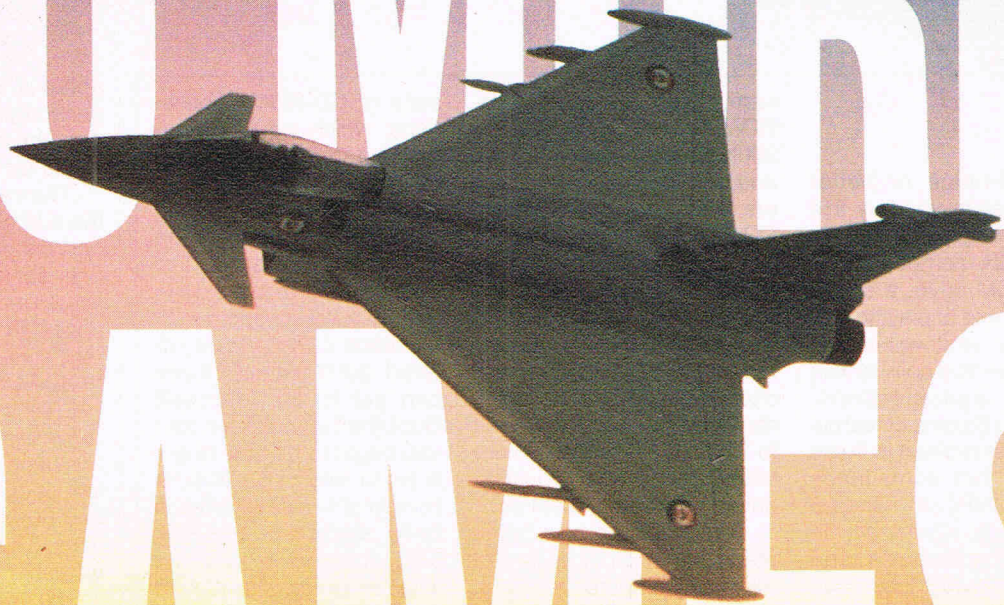
Video has settled into a reasonably comfortable technological valley. There's no present challenge to the Super-VGA standard; all the action is in adding memory to SVGA adapter cards along with a local bus to achieve much faster throughput, higher resolution, and more colors. Windows has a tendency to make you wait while it redraws its graphics screens. Speeding things up through more on-board video memory, an accelerator chip, and local bus has dramatically pleasing results.

The capabilities of video cards are now given in resolution and number of colors provided (really a function of the on-board memory). Windows works with multiple resolutions; 1,024 by 768 (pixels) is the practical high limit for normal monitors. (Higher resolution results in smaller images; 1,280 by 1,024 requires a 20-inch monitor to be practical.) Many Windows users with 14- or 15-inch monitors find 800 by 600 to be a comfortable compromise between getting more on the screen and the smaller image sizes. At any rate, you'll want a practical minimum of 256 colors at 800 by 600, which requires only 512K of video memory. Another 512K of video memory (for a total of 1MB) buys you 65,000 colors at 800 by 600 or 256 colors at 1,024 by 768, which should be enough for anyone without a mega-screen monitor. You absolutely need 256 colors at 640 by 480 (the standard DOS-sized screen and resolution) to run any modern multimedia or game software, so don't get less.

A standard VGA card is called a frame-buffer card. It



# NO MORE GAMES



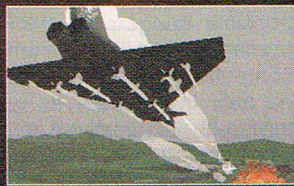
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## BUYING A NEW PC

### TO MPC OR NOT TO MPC?

Any mid-range or better home system you buy this year probably should include multimedia components—a CD-ROM drive, a sound card capable of playing stereo music and voice, and speakers—that comply with MPC-2 specifications. There are dozens of technical issues involved in these devices, but compliance with the MPC-2 standard will get you almost all the necessary features and keep you away from sub-standard hardware.

Briefly, things to insist on include a 16-bit, Sound Blaster compatible sound

card; a double-speed CD-ROM drive with at least a 300K sustained transfer rate; and shielded stereo speakers. Watch out for proprietary CD-ROM interfaces (a SCSI-based CD-ROM interface leaves you many more options), 8-bit sound cards, single-speed (150K transfer rate) CD-ROM drives, and cheap speakers. The MPC standard recently was upped to MPC-2, making the older sound cards and CD-ROM drives effectively obsolete.

Any purchase of a multimedia kit, whether as part of the initial computer purchase or as an upgrade kit, should include a bundle of CD-ROM software titles. This is your chance to load up on an initial

suite of CD-ROM applications, which would be expensive to buy separately. Insist on an encyclopedia, either the Grolier's Multimedia Encyclopedia or the Compton's Interactive Encyclopedia—and be sure to get the current versions. (If Microsoft's Encarta is offered, get it instead.) If you can get it, the Microsoft Bookshelf is excellent, and you ought to be able to get a world and U.S. atlas. A bundle of five or six titles is fairly standard; anything less should make you wary. The remaining titles can be anything you like, but watch out for vendors trying to unload old versions and no-name look-alike titles.

about is the number of lines per screen. At an 800 by 600 rate, the beam is lighting 800 pixels for 600 rows.

The vertical refresh rate is the number of times per second the beam paints the entire screen. Refresh the screen too few times and you'll notice an annoying flicker on your screen. The Video Electronic Standards Association (VESA) recommends 70 to 72 Hz (cycles per second), but its guidelines allow for as low as 56 Hz at 640 by 480 and 60 Hz at higher resolutions. The higher the vertical refresh rate, the better the image you'll see.

**Interlaced Versus Non-interlaced.** Monitors can accomplish vertical refreshing in one of two ways: interlaced or noninterlaced. Interlaced scanning, the older, less expensive way, paints every other line top to bottom, then returns to the top to fill in the remaining lines. Noninterlaced scanning simply works down the screen line by line in a single pass. Interlaced scanning produces much more flicker.

Obviously, then, noninterlaced scanning is preferable. Watch out for less expensive monitors that switch to interlaced scanning at higher resolutions. Don't be fooled by interlaced monitors that claim a 90 Hz refresh rate; that's

relies on the CPU to process all the video information while it merely stores the data for an individual screen image, then spits it out on the screen while accepting another frame from the CPU.

For newer technology, take a look at an accelerator card—usually called a Windows accelerator card because DOS applications get no benefit from it. Windows accelerator cards contain a chip that takes a large portion of the video processing from the CPU, leaving the CPU free for other tasks. Accelerator chips are hard-coded at the factory and require software drivers to interface the CPU to the card's functions.

For today's normal user, Windows performance is a major issue, so go with a local bus Windows accelerator card with enough memory to provide the resolutions that you'll want.

Consider the manufacturer of your video card. A well-known name is best because you're going to need

future upgrades of the software video drivers as new versions of Windows come out. You must know who made your video card and how to contact the company for upgraded drivers. New Windows drivers to deal with quirks in new software are a fact of life, even without new Windows versions. Be sure to get a standard card.

### The Right Monitor

Monitors present another array of not widely understood technical terms to confuse the unwary buyer. The first spec is easy to understand—size, measured in diagonal inches of screen. For years, the 14-inch screen has been standard, but 15-inchers are increasingly popular. An extra inch doesn't sound like much, but as resolutions increase and Windows icons get smaller and harder to see, that extra inch can be surprisingly helpful.

If you'll be doing heavy graphics work, desktop publishing, or other work requiring a large display area, con-

sider a 17-inch or 20-inch screen. However, don't spend the money required for these larger screens without a hands-on test to see if the difference is really worth the extra cost.

**Vertical Scan or Refresh Rate.** The monitor paints an image on the screen by shooting an electron beam at individual pixels on the screen. The beam scans in a tight line horizontally across the screen, returns to the beginning of the next line, and does it again. The second number in the resolutions we've talked

### HEALTH CONSIDERATIONS

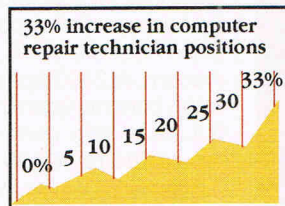
There has been a lot in the press recently about the possible dangers of electromagnetic emissions from computer monitors. There's no definitive answer as to the health risks involved and what safe levels of emissions might be. The Swedish National Board for Measurement and Testing has issued its MPR and MPR II

standards defining safe limits for VLF (very low frequency) and ELF (extremely low frequency) emissions. Monitors may or may not comply with one or both of the standards, and those complying may not mention it in their specifications and advertising. So if it matters to you, you'll need to inquire.

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## BUYING A NEW PC

the rate to refresh only half the screen (every other line), and translates to an actual rate of only 45 times per second.

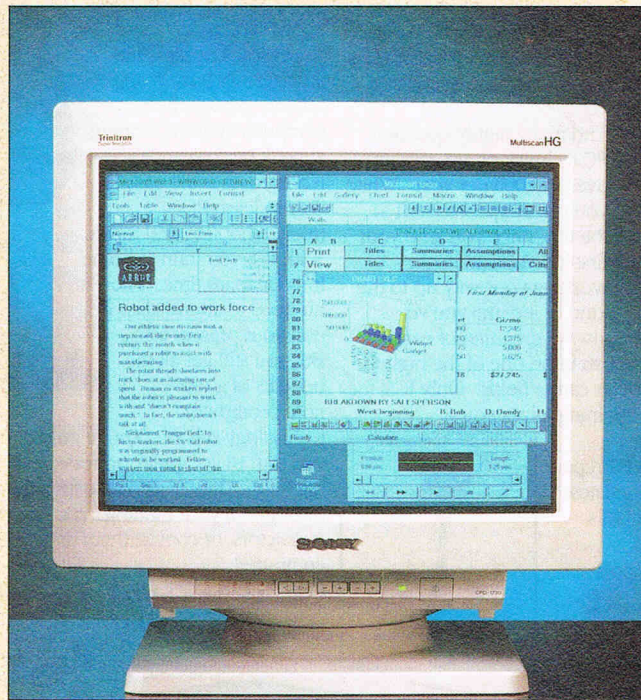
**Dot Pitch.** A widely quoted monitor specification, dot pitch refers to the spacing between the phosphors on the back of the screen—the phosphors that the electron beam hits to light up individual pixels of the screen image. If the phosphors are too widely spaced, the monitor will be unable to create enough pixels at high resolutions.

You'll find dot pitch measured in hundredths of a millimeter. A 14-inch monitor needs a dot pitch of .35 mm to effectively display a 640 by 480 screen. At 800 by 600, it drops to .28 mm, and .22 mm is required at 1,024 by 768. On larger monitors, a dot pitch of .24 will display 1,024 by 768 and all other lower resolutions.

**Other features.** Flat screens or vertically flat screens (curved horizontally but not vertically) are less susceptible to glare than curved screens, but are much harder to manufacture.

A set of manual controls should be available on the front of the monitor. Brightness and contrast will be there, of course, but horizontal and vertical size and position are important as well. Different programs seem to put their images in slightly different sizes and positions on the screen; the ability to alter the size and position of the image is helpful.

A built-in tilt and swivel stand is necessary. A few monitors designed for use in multimedia systems come with stereo speakers built in, eliminating the desk space needed for speakers and reducing the cable clutter surrounding your system.



The monitor's screen size is measured in diagonal inches.

### The Right Case

It'll probably surprise you how important getting the right case or box for your computer can be. Desktop PCs come in four basic case sizes: standard desktop, slimline, tower, and mini-tower. The desire to save desktop real estate may incline you toward the slimline case, but you should know that the smaller cases have very little room for expansion and can be a nightmare to upgrade.

If you'll be adding a sound card, a CD-ROM drive, a tape backup, an internal modem, a network interface card, a removable-cartridge storage system (such as a Bernoulli Box or SyQuest cartridge system), a scanner, or any of a host of other peripherals, you'll be out of internal space to install them in no time. A typical slimline case has two or three drive bays and three internal expansion slots.

Smaller cases also may require non-standard sized

motherboards. Replacing them either for upgrade or repair purposes can be unduly difficult, and smaller cases can make it difficult to access components for repair.

To save slots, some smaller-case computers put video or other functions on the motherboard, effectively blocking you out of changing or upgrading those functions.

Leave expansion room unless you know for certain you'll never need to add more than a few cards or drives and you won't want to upgrade the motherboard.

### Other Components

Insist on a 3.5-inch high-density floppy disk drive and get a 5.25-inch high density floppy drive as well, if possible. It's possible to get along with just a 3.5-inch drive now, but you'll encounter times when it's convenient to have both sizes. You can buy any software or exchange data with any PC

anywhere if you have both sizes of drive.

If your plans include on-line work with the national networks, local bulletin board systems, or dialing up to your office system, you'll need a modem. A 2400-bps modem is the bare minimum needed, but for a little more money you can bag a 14,400-bps fax modem that'll give you high speed connections anywhere on the planet. Go for the internal modem if possible to leave your serial ports available for other uses and reduce desktop clutter. Also, some PC manufacturers have had trouble getting the high-speed 16550 UART-equipped serial ports necessary for high-speed modem communications to work with their clock-doubled 486s. An internal modem bypasses that problem entirely.

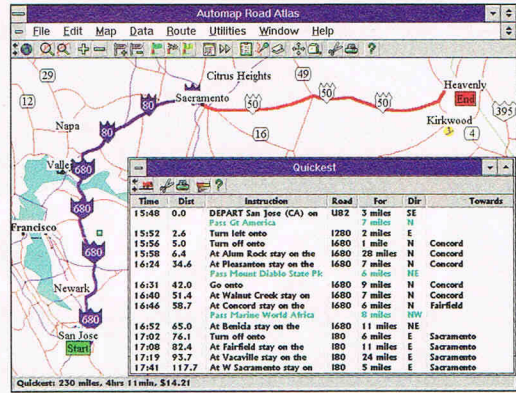
Tape backup is rapidly becoming common, even in home computers. PCs with 200MB-plus hard drives take forever and require dozens of floppy disks to back up. A \$250 tape unit takes all the fuss and bother out of this necessary task, backing up 250MB at a whack, unattended. Internal units occupy one drive bay. Avoid non-standard interfaces (SCSI or IDE are standard).

If you're buying from a local store, you may be able to specify a particular keyboard. Keyboards are totally a matter of personal preference, so if it's possible, try out the keyboard to ensure that you get one that feels right to you. If no acceptable keyboards are offered, you might consider buying it separately from one of the front-line keyboard makers such as Northgate or Keytronic.

You'll also want a mouse and joystick (if you're a gamer) thrown in. Mice are fairly generic creatures, but buying



VS.



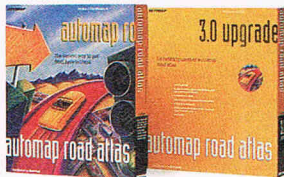
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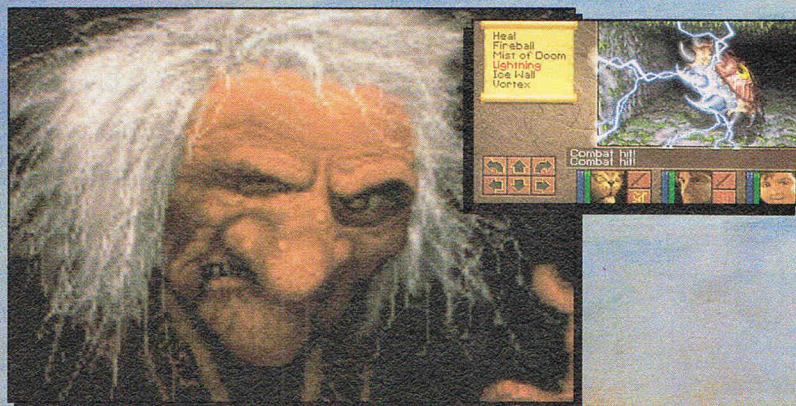
## THE THRONE OF CHAOS



The Dark Army encroaches.  
King Richard falls. And Scotia  
beckons you, laughing...

In her mad quest for power, Scotia has ravaged the  
kingdom. She seeks the throne, yet it eludes her.

She's getting desperate. She's getting mean.



CAN YOU STOP HER? DO YOU DARE?

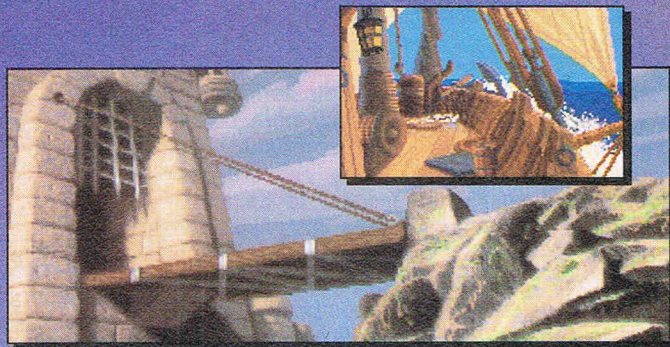
## FEATURING

• **Compass and Automapper Included** - Adventure through ancient keeps and living forests. Unearth hidden ruins and haunted caves.

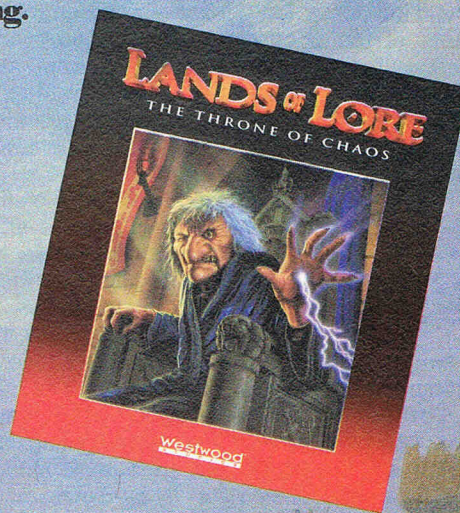
• **Indulge in a Land of Sensory Delights** - Over 20 megabytes of compressed art and special effects. Actually hear the clash of steel! Feel the blows of terrors who slip beneath your guard!

• **Make Friends and Influence People** - Cooperate with the helpful, sidestep the treacherous and destroy the dangerous.

• **Quick and Easy Combat and Spell Casting.**



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## BUYING A NEW PC

the new Microsoft Mouse 2.0 will get you Microsoft's new mouse driver version 9.0 with a bunch of wonderful new features designed to make Windows easier to use.

And lastly, as an incipient Carpal Tunnel Syndrome sufferer, let me advise you to take precautions to protect your wrists. Even the inexpensive foam rubber wrist rest that sits in front of your keyboard can make a remarkable difference in the stress on your wrists.

The trick to buying a PC is finding the right balance between price and features. You may need to trade the least important features for a price you can live with. Or you may need to hold off for a few months and let the prices come down. But don't wait forever; if you wait for the lowest prices ever, you'll never buy, and there will always be price cuts and newer PCs just around the corner.

—Richard O. Mann

### WHERE TO BUY A NEW PC

Deciding among mail order vendors, computer stores and dealers, office supply superstores, and other local outlets such as furniture stores can be a real challenge. The decision involves a few important factors:

#### Where's the Money Coming From?

Your choices of vendors may be limited by financing arrangements. Several users I know bought from a large local furniture chain, because they already had charge accounts there. Buying their systems there made sense; they could add a nominal amount to a monthly payment they were already making and come away with a first-class new Packard-Bell

or Epson computer.

Others buy from certain mail-order companies because those vendors offer what appears to be an in-house credit card. Years ago, I bought my second computer from Northgate, partly because the company's ads featured a credit application and offered inviting terms.

#### Brand Name Versus Clone

You'll pay a little extra for a brand name PC—a lot extra for the big names. In return you get standard, well-known components that can be serviced anywhere. You get the vendor's reputation and know-how, often backed with excellent service and support.

With clones—computers assembled from standard components, with or without a small-vendor brand name—you get less expensive equipment that can be as good as the brand-name stuff or better. It might, however, also be considerably worse. It's up to you to determine the quality of the merchandise.

In buying clones, the reputation and track record of the vendor is key. The PC industry is now mature enough that you have a fighting chance of telling the stable vendors from the fly-by-nights, both local and mail order.

### 20 QUESTIONS YOU SHOULD ASK YOUR COMPUTER DEALER

Whether your vendor is local or mail order, ask these questions when making your choice:

1. Are the sales people knowledgeable?
2. Do they know the brand names of the components in your system?
3. Can they answer technical questions?
4. How do you get after-sales support?
5. Is support available through a toll-free number?
6. Does the company charge for technical support?
7. Does the vendor have a service department?
8. Can the company help you with simple setup questions?

9. If it's a larger vendor, is there online support on CompuServe or other national services?

10. Does the company have its own service BBS?

11. What kind of system documentation is provided?

12. What's the company's reputation?

13. How long has the company been in business?

14. Can you talk to a few of the company's customers?

15. What extra costs will be added to your bill?

16. Do shipping and packing cost extra?

17. Is there a credit card fee?

18. Does the company charge for extended warranties?

19. What's the company's return policy?

20. Is there a restocking fee?

#### Local Versus Mail Order

If the financing source doesn't dictate a certain vendor, you have a choice between a local source and mail order (they like to call it "direct channel" now). Mail order vendors offer better prices than you get from a local source, but the trade-off is easy face-to-face access to service people.

If there's an early problem setting up your system or getting it to talk to your printer, your vendor is nearby. If it's the aforementioned furniture store or other mass merchandiser, however, that may be of little value because they don't support their computers. They refer you to the manufacturer for all problems.

In defense of mail order vendors, it should be noted that many offer outstanding phone and fax-back support.

#### The Final Decision

Whatever you decide, remember there are no certainties in the PC industry. Balance price, service availability, assistance with setup, and the reputation of both the equipment and the vendor to make your best decision on where to buy your PC. Then go out and buy the computer and start enjoying it.

—Richard O. Mann

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Editor-in-Chief,  
Electronic  
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# A NEW TECHNOLOGY THAT WILL **FAST FORWARD** FOREVER CHANGE MULTIMEDIA

BY DAVID ENGLISH

**T**he latest and greatest change on the multimedia front is MPEG compression, which promises to dramatically increase the amount of data that multimedia PCs can handle. I briefly mentioned the new ReelMagic board last month in this column and in "COMPUTE's Getting Started with Entertainment Software". Since then I've learned more about it, and I now expect that this board, and others like it, will completely change our expectations of multimedia.

ReelMagic (Sigma Designs, 510-770-0100, \$449) promises to let you play back full-screen, full-motion video from an ordinary CD-ROM drive. All you need is a 16-MHz 386SX computer, 2MB of RAM, a VGA card with a standard VESA feature connector, and any Level 1 MPC-compliant CD-ROM drive (it only has to be capable of a 150K-per-second transfer rate).

How can ReelMagic bring full-screen, full-motion video to such a lowly computer? The board uses its own processor for the MPEG decompression, so your computer's processor is called on only to move data from your CD-ROM drive to the ReelMagic card. The real magic is performed by ReelMagic's MPEG decompression chip, which can restore MPEG files that have been reduced by a ratio of as much as 200 : 1. It's the real-time decompression of MPEG files that allows the board to play back video files at 30 frames per second with 32,768 colors at resolutions as high as 1024 x 768.

MPEG combines the video and audio into the same signal, so MPEG CD-ROMs will also have CD-quality stereo sound with none of the synchronization problems that plague Video for Windows and QuickTime for Windows. ReelMagic uses your video card's feature connector to overlay its own video—that's why you can display 32,768 colors, even with an ordinary VGA card that normally displays only 16 colors at 640 x 480. In addition, the sound portion of the card is compatible with both the Windows MPC standard and "DOS games" (presumably, that means both Sound Blaster and Ad Lib compatibility).

So what's all this mean for you? With MPEG compres-

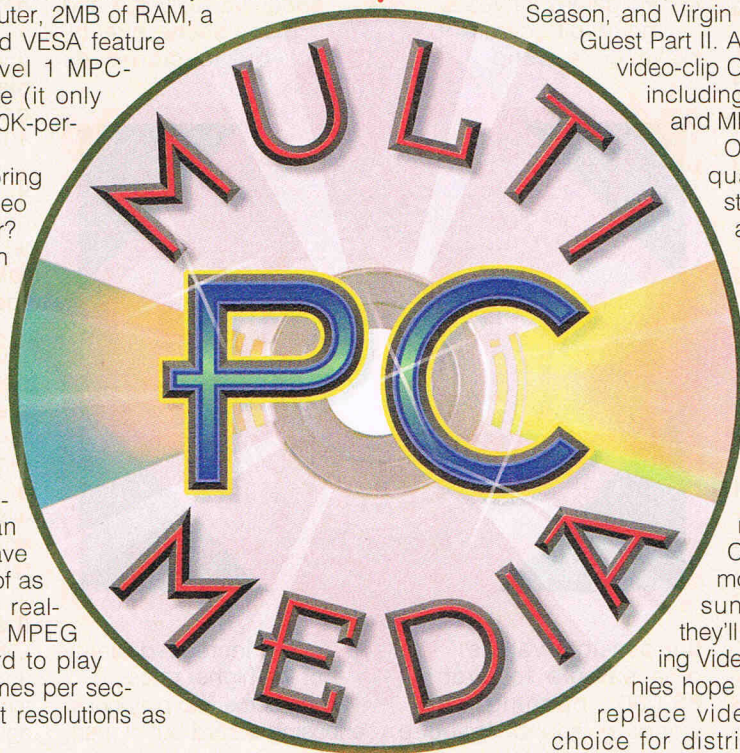
sion, a software developer can squeeze 74 minutes of full-screen video and CD-quality audio onto a single CD-ROM. That means games, educational programs, and video-based reference works can now be full-screen with 32,768 colors. The ReelMagic package includes one MPEG-format CD-ROM game, Activision's Return to Zork, and an interactive CD-ROM with demos of upcoming MPEG titles.

Some of the MPEG CD-ROMs that should be ready by late 1993 or early 1994 include Access's Under a Killing Moon, Interplay's Lord of the Rings, Readysoft's Dragon's Lair, Sierra's Outpost and Police Quest 4: Open Season, and Virgin Games' The X1th Hour: 7th Guest Part II. Aris plans to release all of its video-clip CD-ROMs in this new format, including Video Cube, World View, and MPC Wizard.

One of the most remarkable qualities of this new MPEG standard is its ability to operate across different platforms. Apparently, you'll be able to use your ReelMagic to play some MPEG titles produced for CD-I and 3DO machines. ReelMagic is also compatible with the new VideoCD format, a platform-independent standard for delivering movies and audio material to consumers on CD-ROM. Philips, JVC, Commodore, Goldstar, and Samsung have announced that they'll be manufacturing and selling VideoCD players. These companies hope that VideoCD will eventually replace videotape as the medium of choice for distributing movies to homes.

Paramount Home Video has even begun converting its film library to MPEG format for distribution on VideoCDs.

So should you rush out to your favorite computer store and pay \$449 for a ReelMagic board (or \$499 for the model with a built-in SCSI interface)? This early on, you'd be betting that there would be plenty of MPEG software to follow—because without the software, you'd be stuck with what would essentially be an overpriced sound card. Fortunately, the hardware looks good, and software companies appear to be supporting it. If more companies announce support with computer programs and feature films, this could be the biggest thing to hit multimedia since the invention of the CD-ROM drive. □





# MULTIMEDIA PC

By Richard O. Mann

Let's face it: If you're reading the multimedia section of this magazine, you either have a sound board in your PC or would like to get one. If your sound card is over a year old, you may be considering a new one, to take advantage of the exciting features now becoming available.

Sound is one of the most troublesome aspects of the multimedia PC—the lack of standards means that we're still involved in something like a Beta-versus-VHS battle, only with more than two combatants. To understand the differences among the dozens of sound cards currently on the market, you must work your way through a maze of unpleasantly technical terms.

Even if you understand the terminology, the technology is a moving target, with advances coming every month or two. If you wait to buy a sound card because you hear that something newer and better is coming next month, you'll never enjoy sound on your PC—because there will always something newer, better, and cheaper coming next month.

To choose a sound card, there are some basic technical issues you'll need to understand. Bear with me through the background material, and I'll introduce you to some dynamite new sound cards along with the traditional favorites. (What an industry! Anything popular for a year is "traditional.")

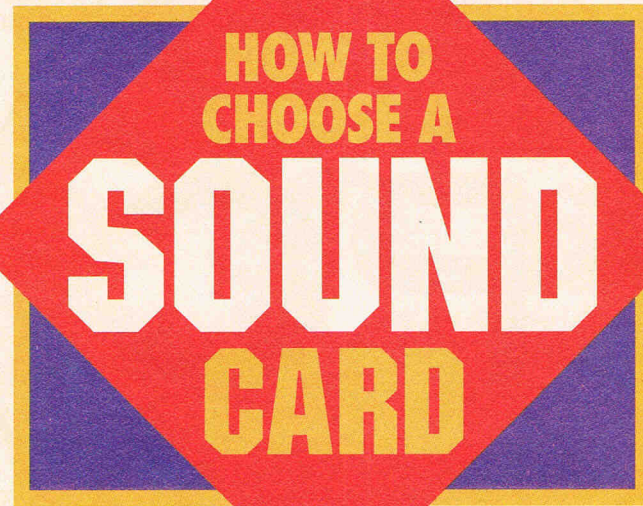
## 8-Bit Versus 16-Bit Sound

The 8- or 16-bit label on a sound card refers to the number of digital bits the

card uses to record a single sound sample. The samples play back in series like frames in a movie (only at a vastly higher rate) to create the desired music, voice, or other sounds. Eight bits provide only 256 possible values per sample, which limits the range and quality of the resulting sound playback. Eight-bit sound is, however, adequate for normal voice applications and provides passable music, such as we've heard from our PC games for years.

The 16-bit boards, however, expand

requires considerably faster sequences of sounds. The sampling rate—the number of sound samples played or recorded per second—can range from 4 kHz (1 kHz is equal to 1000 cycles per second) to 44 kHz (the rate used in audio CDs) and beyond. Any 16-bit card can record and play back at 11 kHz ("telephone quality"), 22 kHz ("FM radio quality"), and 44 kHz ("audio CD quality"). An 11-kHz sound recording is adequate for voice and many sound effects, but music needs



the possible values of a sample to over 65,000, opening new worlds of sound. If you're buying a new board now, insist on 16-bit capability; a year from now you won't be able to buy an 8-bit board.

## Sampling Rates

The eye can be fooled into seeing smooth motion with as few as 15 to 20 frames per second (Video for Windows movies generally run at 15 frames per second), but active sound

the increased clarity of the higher rates.

Rates come into play not in choosing a card but in managing your sound files. Doubling the sampling effectively doubles the size of the resulting sound file. Recording a Windows-compatible WAV file in 16-bit stereo at 44 kHz takes about 10MB of disk space per minute. You'll rarely use that high a sampling rate except on CD-ROM products. Files created at these rates are too large to be practical.

## FM Synthesis Versus Wave-Table Sound

The most common sound technology for PCs is FM synthesis, most often supplied by Yamaha OPL2 and OPL3 chips. These chips have a range of standard sounds they can create, or synthesize. When the computer orders the sound card to create a sound, the FM chips kick in to create the electronic sound that comes out of your speakers. Higher-quality boards have enough chips to provide 20 or more voices (individual sounds the card plays simultaneously); standard cards may have only 10 voices.

Wave-table synthesis is the next step up in sound quality. Cards using wave-table technology have digital recordings of actual instruments permanently stored in ROM (Read Only Memory). When the application calls for a grand-piano middle C, the sound card sends exactly that to the speakers. This, of course, happens only when the software is written specifically to call for wave-table sounds.

Some boards, such as the Advanced Gravis UltraSound, let you record your own sounds and selectively substitute them for the sounds in the wave table.

## Digital Waveform Sound

FM and wave-table synthesis are digital waveform audio. They rely on ADC (Analog to Digital Converter) chips to record and encode sound into digital form and DAC (Digital to Analog Converter) chips to reverse the process on playback. The computer

files storing the digital information are quite large, as described above.

Although there's no formal standard for PC sound processing, you'll often see the terms *Ad Lib compatible* and *Sound Blaster compatible* used to describe sound boards that use digital waveform audio. The Sound Blaster card, by far the most popular of the first-generation boards, is a de facto standard for most games and educational software. Don't buy a sound card that isn't Ad Lib and Sound Blaster compatible unless you plan to use only Windows programs.

### General MIDI—The Next Step Up

To step up to richer, more realistic sound, you'll need General MIDI compatibility. MIDI (Musical Instrument Digital Interface), originally used by musicians and composers with electronic keyboards and other MIDI devices, is gaining popularity as a playback medium for PC sound. General MIDI is an extension of the original MIDI standard.

MIDI is a communications standard that doesn't deal directly with digital waveforms. Instead, MIDI files describe such parameters as note on, note off, pitch change, instrument change, and volume. Because the sounds are stored in ROM and only the performance values are stored in MIDI, that 10MB waveform file we discussed above might take only 35K in MIDI format.

Sound cards boasting MPC compatibility and most second-generation sound cards have built-in MIDI synthesis, a MIDI interface

(the Roland MPU-401 is the most common), or both. With some sound cards, you'll need optional equipment to play General MIDI sound. Roland's Sound Canvas (\$399-\$895), Yamaha's Hello! Music (\$449), or Yamaha's TG100 (\$449) will give you the full glory of General MIDI when added to your sound card's MIDI interface.

### DSP Chips, the Aria Chip Set, and the Future

The newest development in computer sound technology

to buy a new sound board to get them.

Two manufacturers supplying specialized DSP chips to sound board makers are Sierra Semiconductor and Analog Devices. Sierra's DSP is marketed as the Aria Chip Set, composed of the Aria Synthesizer and the Aria Listener. These chips can provide wave-table synthesis along with Sound Blaster compatibility. DSPs hold tremendous potential. The DSP chips in sound boards available today provide wave-table synthesis, addi-

help keep storage demands within reason.

### Other Considerations

There's more to buying a sound card than just picking the board with the best specs or lowest price.


**CD-ROM drive interface.** In a multimedia computer, the sound card usually provides the interface between the computer and the CD-ROM drive. If you buy them together (as in an MPC upgrade kit), the sound card's interface will work with the drive. Nevertheless, it's important to know what kind of interface you're getting.

The SCSI interface is the most commonly used and is emerging as a standard for CD-ROM drives. In the past, Creative Labs' Sound Blaster cards used a proprietary interface that worked with only a few CD-ROM drives. The company still sells this version of its boards but has added a separate Sound Blaster board with multiple CD-ROM interfaces, as well as a board with a standard SCSI-2 interface. A board with a SCSI interface won't limit you when choosing a CD-ROM drive.

### Software bundles.

Sound boards come with a variety of software packages as part of the basic purchase. Look for waveform editors, speech packages, MIDI sequencers, multimedia authoring software, and similar items. Generally speaking, unless you have a specific need for certain software, the sound card's software bundle isn't likely to be the deciding factor in selecting a card.

**Multimedia kits.** Buying your sound card as part of a multimedia upgrade kit

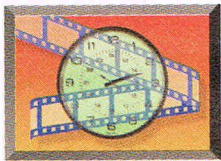


**You can't have multimedia without a sound card, and choosing the right card can save you a lot of headaches later on.**

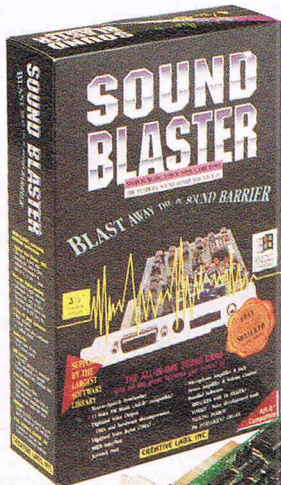
is the DSP (Digital Signal Processor) chip. A DSP chip is specially designed to manipulate realtime digital data, such as sound and video. Programmers can write algorithms for the DSP to achieve effects only dreamed of a few years ago. Further, the DSP can be reprogrammed with software right on your computer, without touching the sound card at all. As newer and better technologies are developed, you won't have

tional voices (Aria provides 32 voices), FM synthesis emulation, speech recognition, reverb, three-dimensional sound (including QSound), and multitasking to provide more than one type of sound or effect simultaneously. Note, however, that software must be specifically written for a DSP to access these features.

The future holds additional audio wonders, including much better file compression algorithms to



# MULTIMEDIA PC



can be the most cost-effective way to get one. You'll get a sound board, a CD-ROM drive that's guaranteed to work with it, speakers, and valuable multimedia software. Here, the software bundle can be a major factor in making your selection. But be sure you're getting a sound card that'll meet your needs.

## The Sound Cards

**ViVa Maestro 16 and 16VR** (Computer Peripherals, 805-499-5751, \$299 and \$349). This brand-new card sports Sierra's Aria Chip Set, which it uses to provide 32-voice wave-table synthesis, 16-bit sound sampling at all the standard rates, full General MIDI support, register-level Sound Blaster compatibility, and voice recognition (in the 16VR version). It has an on-board SCSI interface to run a CD-ROM drive or other SCSI devices.

The ViVa 16VR uses the Aria Listener chip for voice recognition. Unlike with many other voice recognition programs, all the processing of the recognition procedure occurs in the Aria Listener chip, rather

than in the PC's main computer chip. It's also speaker independent. Most PC-based voice recognition software records your words for subsequent matching to subsequent commands received. If you change your tone, pronunciation, or other vocal characteristics, the computer won't recognize the command.

The Aria Listener, on the other hand, has prerecorded a set of approximately 80 different speakers with all the varieties of sex, age, local accent, and so forth needed to cover most situations. Using these patterns, the software recognizes those words from almost anyone, whether the words are spoken calmly or in the heat of a game's battle.

The 16VR ships with a bundled copy of the Star Trek: 25th Anniversary game, which was specially written for the Aria Listener. Now you merely say, "Beam me up, Scotty," and the game recognizes your command. Play is swifter and more natural.



Most sound cards include a variety of useful audio utilities.

**Pro AudioSpectrum 16** (Media Vision, 800-845-5870, \$179). This phenomenally successful board has racked up more than half

the 16-bit sound card sales through 1993. It supplies full compatibility with Sound Blaster—as Media Vision is the only company authorized to be 100-percent Sound Blaster compatible. Based on the Yamaha OPL3 chip, it provides 20-voice, 16-bit stereo FM synthesis and has an on-board SCSI interface.

The PAS 16 is popular with CD-ROM drive makers; many include it in their multimedia kit bundles.

**Pro AudioStudio 16** (Media Vision, 800-845-5870, \$239). This card is an upgrade of the Pro AudioSpectrum 16, though it's still based on the Yamaha OPL3. It adds a microphone, voice recognition, an advanced Windows sound editor, an audio compression/decompression function, and several noise reduction features. It also includes ExecuVoice for Windows, which responds to your vocal commands for most common Windows functions.

**Pro AudioBasic 16** (Media Vision, 800-845-

5870, \$99). This inexpensive entry-level card is a PAS 16 without the SCSI interface and some of the advanced software.

**Sound Blaster 16 Basic Edition** (Creative Labs, 800-998-5227, \$199.95). Sound Blaster led the way into the modern sound era for PCs with its original 8-bit card. This basic 16-bit card provides 20-voice FM synthesis and Voice Assist, a speech recognition program capable of learning 32,000 words. It currently provides only the propri-



Toshiba's T4700 notebook computer has built-in sound.

etary Creative Labs interface for CD-ROM drives. You can add a Wave Blaster—a separate daughterboard that provides General MIDI wave-table synthesis—and Creative Labs' proprietary Advanced Signal Processor DSP chip that can provide advanced compression/decompression, as well as other DSP functions that may be developed in the future. Its software bundle is particularly rich.

**Sound Blaster 16 MultiCD** (\$249.95) and **Sound Blaster 16 SCSI-2** (\$279.95) finally break Creative Labs out of the proprietary CD-ROM drive interface trap. The MultiCD supports the Sony, Mitsumi, and original Creative Labs proprietary interfaces, while the SCSI-2 version provides the more standard SCSI interface. Both of these boards

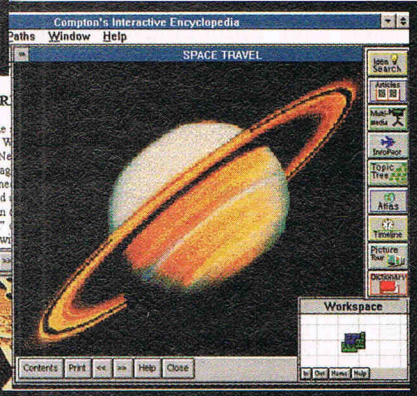
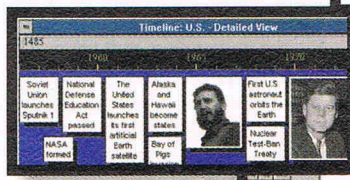
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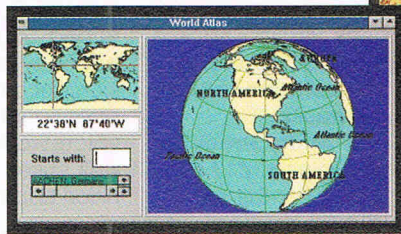
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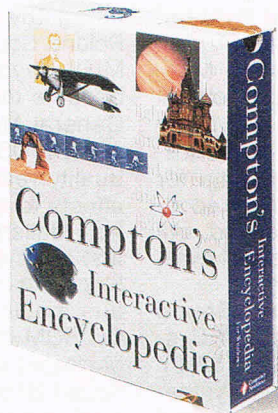
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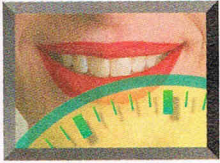
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## MULTIMEDIA PC

come with a microphone and an extended software bundle. With the Advanced Signal Processor, these cards cost \$50 more. Only the MultiCD can use the Wave Blaster upgrade for wave-table synthesis.

**Orchid SoundWave 32** (Orchid Technology, 800-7-ORCHID, \$299). This new board uses the Analog Devices DSP chip set to provide 16-bit stereo wave-table synthesis, General MIDI support, and backward compatibility to Sound Blaster, Ad Lib, Windows Sound System, Roland MPU-401 MIDI, and Roland MT-32 sound. The DSP chip allows the card to emulate three of these devices simultaneously, letting you have access to the best sound available in any software program you might use. Its CD-ROM interface supports only Orchid, Mitsumi, and Sony drives. It comes with a microphone, speakers, and several multimedia software authoring tools.

**Advanced Gravis UltraSound** (Advanced Gravis Computer Technology, 800-663-8558, \$199). The UltraSound supplies 32-voice wave-table synthesis at an affordable price. It offers compatibility with Sound Blaster and Ad Lib through a TSR driver (a mild disadvantage—TSRs are often troublesome with today's complex memory management schemes). Its unique Patch Manager allows you to change the wave-table sound samples to sounds that you generate. It offers a Focal Point 3D sound feature that simulates surround sound.

The CD-ROM interface is an optional add-on board

with Sony, LMSI, and Mitsumi drives supported. A SCSI interface should be available by the time you read this. An optional MIDI Connector Box for General MIDI use is also under development. The software bundle includes Power Chords, a guitar-metaphor music program that lets you write and audition guitar chords.

**Advanced Gravis UltraSound MAX with 3D** (Advanced Gravis Computer Technology, 800-663-8558, \$299.95). The UltraSound MAX board adds 4:1 compression, enhanced 3-D surround sound, and a SCSI interface for CD-ROM drives.

**Cardinal Digital Sound Pro 16** (Cardinal Technologies, 717-293-3049, \$159). The Digital Sound Pro 16 is based on the Analog Devices DSP chip but doesn't offer wave-table synthesis in its basic card. (Wave-table synthesis requires a \$99 plug-in chip.) It provides 11-voice stereo FM synthesis and a Sony CD-ROM interface. A SCSI interface comes with the Pro 16 Plus version at \$229. It's compatible with Sound Blaster, Ad Lib, Windows Sound System, Compaq Business Audio, and Roland MPU-401 MIDI. The company's promotional materials point out the promise of the software-upgradable DSP chip for compression, voice recognition, and 3-D sound, but these features weren't available at press time.

**Diamond Sonic Sound** (Diamond Computer Systems, 408-736-2000, \$299). Based on the Aria Synthesizer chip, the Diamond Sonic Sound offers 32-voice wave-table synthesis, but

the company has chosen not to include the Aria Listener chip for voice recognition in its basic card. (A \$129 upgrade provides the Listener chip, voice recognition software, and enhanced General MIDI support.) The Sonic Sound comes with a standard SCSI interface for the CD-ROM drive and multimedia authoring software.

**Logitech Sound-Man 16** (Logitech, 800-889-0043, \$199). This basic board uses the Yamaha OPL3 chip to provide 20-voice stereo FM synthesis at all the standard sampling rates with standard compatibilities. Installation is streamlined by making all settings through the software—the board has no jumpers. There's no CD-ROM interface. A \$229 Superpack version adds a microphone, speakers, and additional software, including Soft Karaoke.

**Roland Audio Producer RAP-10** (Roland, 213-685-5141, \$599). For the professionals and audiophiles among us, Roland's RAP-10 sound card provides 28-voice wave-table synthesis using the chip from the Roland Sound Canvas, the MIDI synthesizer that became the model for the General MIDI standard. A custom DSP adds studio-quality reverb and chorus effects to achieve concert-hall realism. We're talking first-class equipment here. Since this is a tool for serious musicians, it has no CD-ROM drive interface or backward compatibility with Sound Blaster or other FM synthesis-based cards.

**Turtle Beach MultiSound** (Turtle Beach

Systems, 717-767-0200, \$599). This is another professional-quality board designed for serious audiophiles. It provides 32-voice wave-table synthesis using a Motorola DSP chip. Its General MIDI synthesizer requires only a MIDI playback device to create gorgeous music. There's no CD-ROM drive interface or backward compatibility.

**Microsoft Windows Sound System 2.0** (Microsoft, 800-426-9400, \$219). The original Windows Sound System was a business-oriented sound board that made no attempt to provide sound to games and other Sound Blaster-compatible programs. Instead, it concentrated solely on bringing sound to Windows. In the new version, 2.0, Microsoft has added Sound Blaster compatibility, audio compression/decompression, and a directional microphone for voice work. It's especially well suited for voice recognition applications.

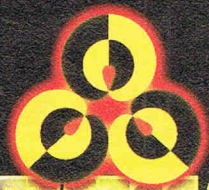
### Conclusion

There's no shortage of excellent sound cards to choose from, but each has a different design, each is based on a different idea of what users want and need, and each offers a different set of compromises between cost and quality.

The DSP-based units hold great promise; if I were buying a sound card today, I'd be looking at cards that use the Aria Chip Set or another DSP, simply because they're software-upgradable, they provide backward compatibility, and their prices are surprisingly reasonable. □



The World's First Photorealistic Interactive CD Sci-Fi Adventure



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Mark Rhodes, Multimedia Editor,  
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6 June 2318, 0651Z.

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# NEW MULTIMEDIA PRODUCTS

EDITED BY POLLY CILLPAM

## Raising a Safe Child

Now there's an interactive storybook on CD-ROM that teaches safety awareness to children. T.J. Finds a Friend was designed to educate children about their own safety and teach them how to detect and avoid unsafe situations. The suggested list price is \$29.95, with 20 percent of the proceeds going to the National Center for Missing & Exploited Children (NCMEC) to help



Teach kids safety awareness. fund its recovery and educational programs.

The CD-ROM is based on a true story. The central theme, preventing the abduction of children, is presented by T.J., who ultimately recognizes a missing child and helps reunite the child with his parents. Through Media Resources and Artists for Media, top entertainment people were brought in to ensure that the final product featured the best in animation, sound effects, music, and interactivity. It features an appearance by John Walsh, star of Fox TV's "America's Most Wanted" and cofounder of and spokesman for the NCMEC.

The disc also contains a

comprehensive Resource Guide. This guide and mini-encyclopedia, activated by the Tell Me More icons and other hot spots on the screen, serves to teach more about the many interactive elements in the story. There's also a directory of information from governmental and private agencies.

Media Resources  
(714) 256-5048  
\$29.95

Compute Reader Service Number 531

## Model Car Hobbyist Alert

Start your engines—the green flag is in sight! How would you like to build your own car and race it the same day? Backroad Racers, the second title in the Power Modeler CD-ROM series, bundles a Boss 302 Mustang model kit with an interactive multimedia CD-ROM. The CD-ROM shows you how to build models of four classic muscle cars, and the limited-edition Mustang is one of them.

Backroad Racers includes a fast-action game which lets you take your car and compete against other drivers. It also has instant replay—a new Power

Modeler feature that allows gamers to relive a death-defying crash. In addition, you can learn about your competitors, the degree of difficulty of a particular road before selecting it, and what the weather conditions may be (the weather adds to the unpredictability of a race). There's even a built-in reward for winning—a gift certificate you can take to the Muscle Motors car lot for more custom options to improve your car.

The model-building portion of the software uses 3-D polygon animation and digitized sound to show you exactly how each part fits together. It includes fast-paced MTV-like video vignettes with tips on how to glue, paint, and detail your model. You can even see what the car will look like in different colors before it's painted. There are also an online glossary of automotive terms and fun facts about the cars. But don't forget to fasten your seat belt!



Background Racers includes a CD-ROM game and model kit.

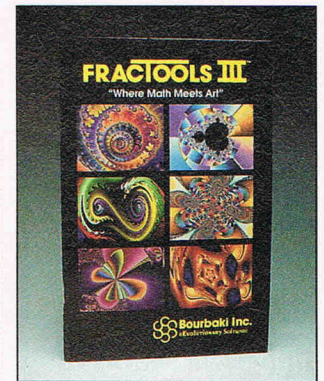
Revell-Monogram  
(708) 966-3500  
\$69.95

Compute Reader Service Number 532

## Infinite Design

FracTools III is an integrated graphics system for generating and printing an infinite number of fractals or other images.

It allows you to create your own slide shows in a



Create your own fractals.

variety of different ways. It's easy to use, has an unequalled image-generating capability, and functions as a learning environment for exploring what you can do with fractals.

The program's features include a multiwindow environment, 20 fractal image types, color strobing and panning, a kaleidoscope display filter, automated slide shows, autozoom, and more. You can print images, create wallpaper for Windows, and add color patterns. Frac-Tools III supports a variety of graphics formats, including PCX, GIF, IMG, and BMP.

Quanta Press  
(612) 379-3956  
\$79.95

Compute Reader Service Number 533

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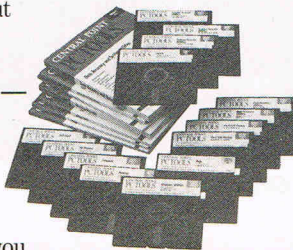
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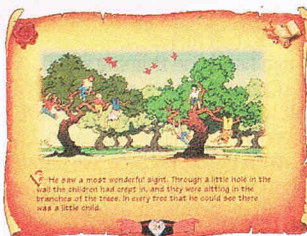




## NEW MULTIMEDIA PRODUCTS

### Giant or Jurassic?

Did you know that Oscar Wilde wrote a popular children's story? With *The Selfish Giant*, the CD-ROM version of Oscar Wilde's fairy tale, your children can read the story aloud, choose to have the giant's voice narrate, play one of the hidden games, or learn more about the characters and settings. The disc includes definitions of nouns and adjectives on a level children can grasp, a build-a-castle activity, and an interactive coloring book.



*The Selfish Giant*

The story concerns a giant with a beautiful garden. One day the giant banishes the children from his garden. From then on, it's winter in the garden, with snow, frost, hail, and the north wind; all the other seasons pass the giant by because of his selfishness.

With more than 100 digitized pictures and animations, professional voice-overs, digital video movies, sound effects, and original music, this program lets kids listen to the narration and the sounds of the onscreen children playing in the garden, as well as sing along with specially written songs. There's detailed information about giants, castles, flowers, and the inhabitants of the storybook garden.

In addition to shipping *The Selfish Giant*, Sanctuary

Woods has released its second interactive comic-book adventure, *Victor Vector & Yondo: The Last Dinosaur Egg*. The digitized duo are back on another mission—this time they must go back in time to recover an egg from one of the last surviving dinosaurs, *Tyrannosaurus rex*. During their journey, they face many obstacles, including a malfunctioning time machine, angry dinosaurs, and their archrival, RAM Axis, a mysterious competitor who changes shape and form in each episode of the adventure series. Fortunately, Victor and Yondo get help from a fellow traveler—the mysterious Delta Mode.

The characters and the more than 100 colorful backgrounds in *The Last Dinosaur Egg* were created by Ken Steacy, illustrator of Spider Man comic books. To enhance the visuals, the product includes digital video clips, sound effects, original music, and professional voice-overs.

Sanctuary Woods  
(415) 578-6349



*Victor Vector & Yondo: The Last Dinosaur Egg*

*The Selfish Giant*—\$39.95  
*Victor Vector & Yondo: The Last Dinosaur Egg*—\$39.95

Compute Reader Service Number 534

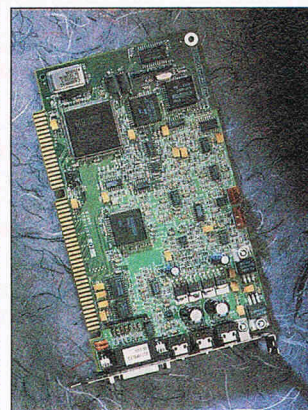
### Logitech: The Next Generation

How about a sound card for \$139? Logitech has introduced *SoundMan Games*, an 8-bit stereo card designed especially for people new to games. It's guaranteed to be fully compatible with *Sound Blaster Pro* and *Ad Lib*.

*SoundMan Games* includes a built-in Sony CD-ROM interface allowing you to install both single and multisession CD-ROM drives. It's MPC and MPU-401 compatible, ensuring that it will work with multimedia and music applications.

This product offers an interface for one or two joysticks, a microphone or CD-audio line-in for recording, an output jack for stereo speakers or headphones, and Windows and DOS software for easy sound recording and playback. It's backed by a full two-year guarantee and unlimited product support.

Logitech has also upgraded its *SoundMan 16*. The company has improved the user installation by adding sound and graphics, making it even easier to add the sound card to your system. It can now be



*Logitech's SoundMan 16*

installed without having to first set the on-board options. The installation software automatically selects the correct settings for your system.

*SoundMan 16* has all the features you would expect from a high-end sound card: a Yamaha OPL3 synthesizer chip with 20-voice stereo support, up to 44.1-kHz sampling and playback, a four-watt stereo amplifier, a joystick port, a MIDI interface, and guaranteed *Sound Blaster*, *Ad Lib*, MPC (Levels 1 and 2), and MPU-401 compatibility.

It also supports both Windows 3.1 and DOS and includes *MCS MusicRack*, *Icon Hear-It Lite*, and *Screen Craze II*, and *AddImpact!*

Logitech  
(510) 713-4516  
*SoundMan Games*—\$139  
*SoundMan 16*—\$199

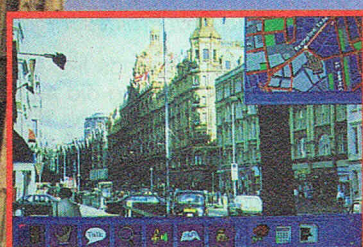
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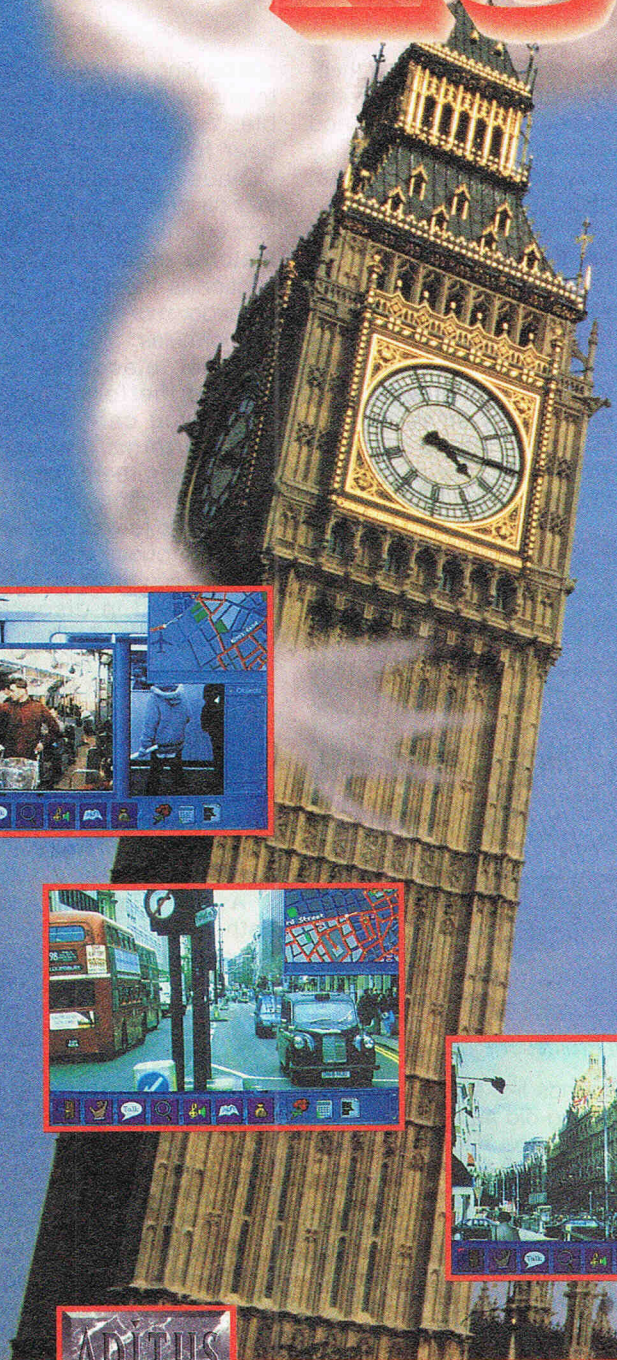
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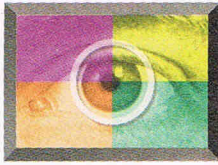
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• ST. MARTIN IN THE FIELDS • TRAFALGAR

• LONDON BRIDGE • TOWER HILL • BLACKFRIARS • WATERLOO • KINGS ROAD • HAMPTSTEAD HEATH





# MULTIMEDIA SPOTLIGHT

By Scott A. May

## ALLIE'S PLAYHOUSE, THE MUSICAL WORLD OF PROFESSOR PICCOLO

Mention multimedia software, and most people immediately think of megabytes of graphics and full-motion video. For others, sound is the most dynamic side of the MPC coin. Few publishers exploit the audio potential of multimedia better than Opcode Interactive in its premier educational titles, Allie's Playhouse and The Musical World of Professor Piccolo.

Allie's Playhouse welcomes kids, ages 3 to 9, with a warm and lively collection of 16 interactive activities. Allie is a friendly green alien whose living room and kitchen are packed with all kinds of fun objects: musical instruments, games, animals, books, and pictures. To explore something, just click on it with the mouse. The program's curriculum of early childhood learning skills includes counting, spelling, world geography, telling time, sound and object recognition, problem solving, and creative expression.

Before entering the playhouse, kids first "pick a friend" from a group of six boys and girls. These digitized playmates serve as narrators, explaining rules and onscreen descriptions in detail. Allie is also on hand to offer words of encouragement and praise. Most activities offer kids free-form exploration, followed by a series of games to test their knowledge. The program's best sections include a music synthesizer, for recording and playing original tunes; Mr. Clock and

Digi, talking analog and digital clocks; Animal Farm, for sound and picture matching; a coloring book with optional printer output; and a tape recorder with 16 sing-along nursery rhymes.

The high-resolution graphics are appropriately silly and inviting (from a kid's point of view), but the CD-ROM features surprisingly little animation. As noted earlier, the program's greatest attribute is its outstanding use of sound—not just standard WAVE effects, but

active course in music theory that takes you from the basics (notation, pitch, and intervals) to advanced study (rhythm, key signatures, chords, and dynamics).

Marketed for ages 8 and up, this amazing product is recommended for anyone who enjoys music, regardless of background or experience. About the only thing it doesn't do is teach you how to play an instrument. However, after a few sessions with your endearing host, Professor Piccolo (who

spotlighting individual instruments or the entire ensemble. You can also read or hear (courtesy of smooth CD-audio narration) about jazz history and what makes jazz unique. One of the best features common to each section is the step-by-step breakdown of song structure and formulas.

Other places to visit include the town library, where you can research musical terms and study entire instrument families. Here, you'll find one of the program's few discernible faults—a questionable lack of distinction between instruments used in disparate musical genres. To illustrate, the description and audio samples for organ are identical for both choral and jazz styles. Your final stop in Music Town is the games parlor, where you can test your knowledge of classical instruments, history, and music theory.

As MPC products go, both Opcode titles are extremely small: 9MB for Allie and 14MB for the Professor. Indeed, each program's heftiest allotment of CD-ROM space goes for audio tracks, totaling 65 minutes in the playhouse and 72 minutes in Music Town. Fortunately, there's far more to quality MPC programming than size alone. Opcode Interactive's foray into Windows multimedia is a rousing success, with hopefully bigger and better projects on the horizon.

Opcode Interactive  
(415) 494-1112  
Allie's Playhouse—\$59.95  
The Musical World of  
Professor Piccolo—\$69.95  
**Circle Reader Service Number 550**



*The Musical World of Professor Piccolo*

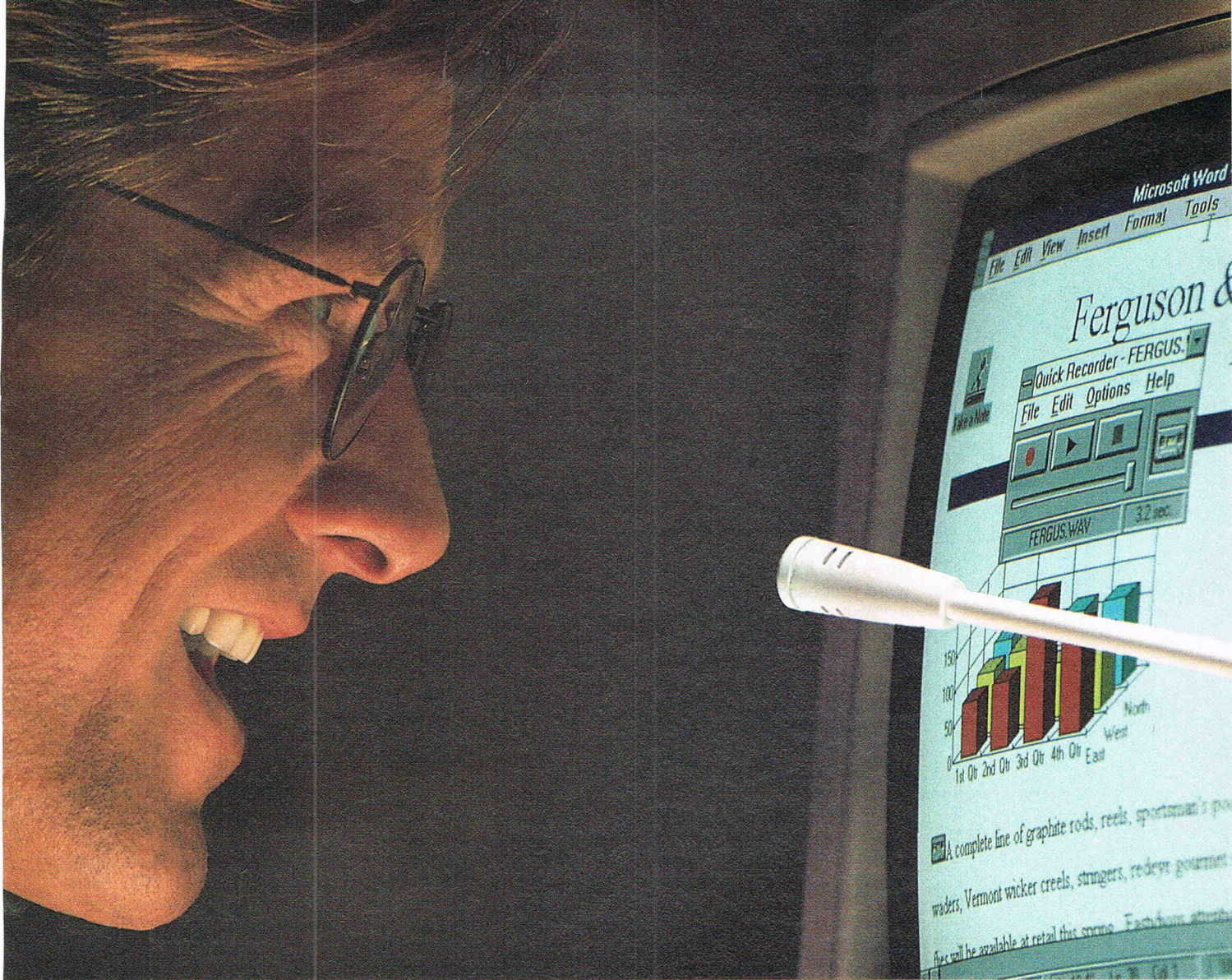
extensive use of MIDI instruments and true CD audio for full-throated speech and resounding stereo music. Few MPC products on the market make simultaneous use of all three sound sources.

Opcode's second CD-ROM product, The Musical World of Professor Piccolo, features even greater use of the full MPC sound spectrum. The program offers a comprehensive guide to music history, instruments, style, form, and technique. There's even a 12-step inter-

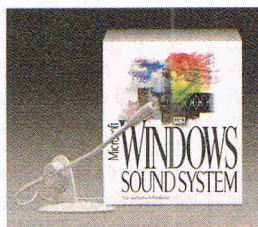
sounds like someone's doddering old aunt, with a head cold), you might feel compelled to sit down at the piano or pick up a guitar.

Your journey begins in the center of Music Town, where various music establishments line the streets. The program distills musical heritage down to four fundamental styles: classical, choral, jazz, and rock. To learn more about a particular style, simply click on the appropriate club, symphony hall, or church.

Enter the Jazz Club, and listen to real jazz music—



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# PRODUCTIVITY CHOICE

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Clifton Karnes

## MICROSOFT WORD FOR WINDOWS 6.0

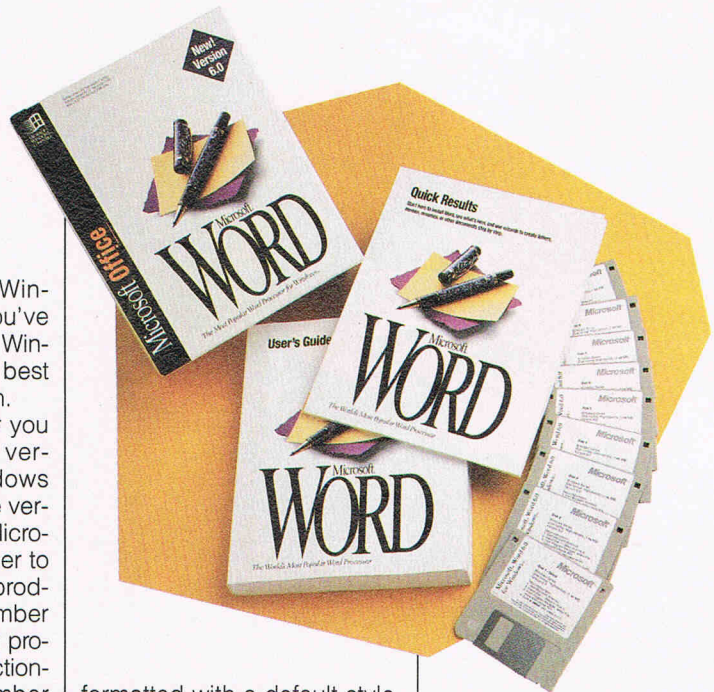
If you're looking for a Windows word processor, you've got to check out Word for Windows 6.0. It's simply the best word processor I've seen.

"Wait a minute," I hear you say. "I thought the last version of Word for Windows was 2.0. Shouldn't this be version 3.0?" It should, but Microsoft has upped the number to 6.0 to give the Windows product the same version number as Word for the Mac (both programs have the same functionality). And a version number of 6.0 helps Microsoft go head to head with competitor WordPerfect and its new 6.0 for Windows.

What's so new and improved about this version of Word? In a word, plenty. Word 6.0 is based on exhaustive research into what users want in a word processor and how they use word processors. Everywhere in this new version, you'll find new modules that make everyday tasks easier.

AutoCorrect is one of these new features. It automatically corrects common typing and spelling mistakes (like typing *don;t* instead of *don't*), and it will optionally capitalize the first letter of each sentence for you and change regular quotes to smart quotes. You can add your own words to AutoCorrect's translation table, and you can turn this feature on or off.

AutoFormat, as the name implies, automatically formats text for you. When you click on the AutoFormat button on the toolbar, your document is



formatted with a default style. You can review your formatting and accept it, reject it, or change it to any of more than 25 available formats.

AutoSelect is another feature that adds intelligence to the way Word works with text. With AutoSelect, a mouse double-click selects a word, a triple-click selects a paragraph, a Ctrl-click selects a sentence, and a click, Shift-click pair selects a block.

And AutoText (this is the last feature named *AutoSomething*) inserts boilerplate text much like the glossary does in previous versions of Word.

Word has always had excellent formatting control, but the new features in 6.0 make formats even easier to manipulate. The most impressive formatting tool is Format Painter, which you use to copy formatting from one part of your document to another. To copy a format, select the text with the format you want to copy, click on the Format Painter icon on the toolbar, and drag the pointer to select the text

you want to change. It's fast, easy, and intuitive. And if you make a mistake, Word's next new feature can help out.

One of the features I used most in Word 2.0 was Undo. If I goofed, I pressed Ctrl-Z to undo the last act of violence to my text. Unfortunately, once isn't enough when it comes to Undo, since you often don't realize you've made a mistake until you're several keystrokes past the error.

Word 6.0 comes to the rescue with a 100-level undo command. This undo is mirrored by a 100-level redo, both of which take the terror out of experimenting. You can even select a group of actions to undo or redo from a combo box, so a large number of edits can be corrected in one step.

Word for Windows was one of the first programs to use a toolbar, and this version carries toolbar technology even further than its predecessors. Word 6.0 can display as many as eight toolbars, including standard, formatting, bor-



ders, database, drawing, forms, Microsoft applications, and Word for Windows 2.0 (which emulates Word 2.0's toolbar). Besides adding color to the toolbar buttons, Word 6.0 has a new toolbar help feature. If you hold the mouse pointer over a button for more than a second, you'll see a small yellow window appear that tells what the button does. After you've mastered the toolbar, you can turn off this feature, if you wish.

Most people would agree that a toolbar makes using a program like Word faster and easier, but sometimes it's a pain to have to move the mouse all the way up to the toolbar to change something. Word 6.0 has a new feature that lets you access a special context-sensitive menu by clicking the right mouse button anywhere in your document. Click the right mouse button in the text area, for example, and you'll see the options Cut, Copy, Paste, Font, Paragraph, and Bullets and Numbering.

One area in which Word 6.0 has really improved is document views. Now you can view your document in modes that magnify from 10 to 200 percent by choosing from a combo box on the toolbar. And Word now has a full-screen view. In this mode, the document is maximized so it completely fills the screen, eliminating all borders, menus, and bars. All you see is a white page with your document. You can still access your menus by moving the mouse pointer to the top of the screen or by pressing the menu access keys (Alt-F for File, for example).

One of Word 6.0's biggest innovations is its support for

OLE 2.0. OLE (Object Linking and Embedding) is a software specification that makes it very easy to create and edit compound documents—documents that contain elements from different applications. OLE 1.0 allows you to embed data from one document in another and, by double-clicking on the embedded document, to summon its creator for in-place editing.

OLE 2.0 goes far beyond this, however, transforming the containing document into the creating document. When you edit elements from several applications in a single compound document, double-clicking on one turns your container application into the creating application.

OLE 2.0 also supports drag and drop between documents, so you can drag a chart from Excel to Word, for example. There aren't many applications that support OLE 2.0 yet, but there will be more as time goes by. It's the wave of the future.

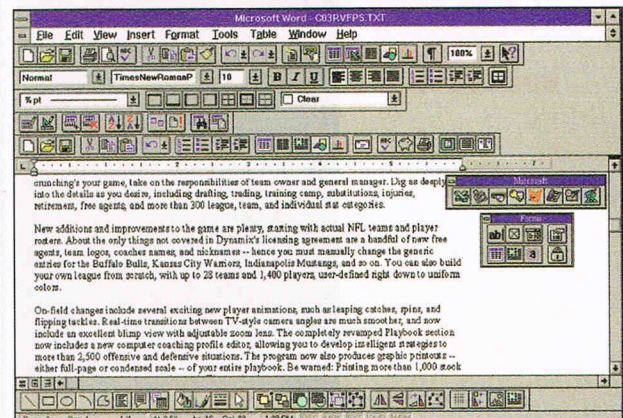
Another area where Word has made a big step forward is with WordArt, the program's built-in text-effects module. With Word 2.0, WordArt is limited to a few custom fonts and a small number of text alterations. Now it's a full OLE 2.0 server. It now supports all your fonts and offers tons of text manipulation techniques.

In addition to WordArt, drawing has been improved greatly. Word 6.0 sports a more powerful drawing package complete with a drawing toolbar that appears on the status line. The drawing module can layer drawings and has special support for creating watermarks and call-outs.

I haven't begun to cover all of the new features in Word

6.0, but since I'm running out of space, here's a laundry list of some of the other neat things you'll find: wizards (which walk you through creating certain types of documents), forms templates, Tip of the Day (which pops up when you start Word and displays a tip on using the product), tabbed dialogs (which use a folder metaphor to make complex dialogs easier to master), a longer list of recently used files (which shows as many as nine of the

**IBM PC or compatible (80286 compatible), 4MB RAM, hard drive with 18MB free (for typical installation), 3½-inch high-density floppy drive, EGA or higher-resolution monitor,**



most recently used files on your File menu), the Insert Symbol command (which makes it easier to work with special characters), and last, but certainly not least, Word Count (which, as you might guess, tells you the number of words in a document). It's taken Word ten years to get Word Count, and I'm happy to see it.

That's a whirlwind tour of the new Word for Windows 6.0. It's a superb writing tool that won't let you down. If you don't have a Windows word processor yet or if you're thinking about switching, try Word for Windows 6.0. You won't be disappointed. □

Circle Reader Service Number 391

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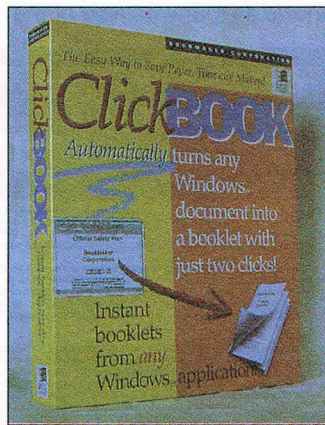
# ART WORKS

Robert Bixby

## TWO-UP PRINTING

A couple of months ago, I mentioned DynoPage from Portfolio Software (10062 Miller Avenue, Suite 201, Cupertino, California 95014; 800-729-3966; \$59.95), a Windows product that allows you to print a document in various formats, such as booklets or pamphlets, two-sided or single-sided. Another Windows product accomplishes approximately the same thing, though for my money, it's better organized and easier to use. It's called ClickBook, and it's avail-

**ClickBook provides power desktop publishing features to Word and other Windows products.**



able from BookMaker (625 Emerson Street, Suite 200, Palo Alto, California 94301; 415-617-1101; \$69.95).

ClickBook offers a preview, allowing you to see how a document will look when printed. The preview lacks a zoom (DynoPage's preview is zoomable), which is a bit of a drag since the type usually greys, making it difficult to tell how your page will look until it's printed. Another drawback to the program (one it shares with DynoPage) is that it won't print just a single page of a booklet. It prints either the whole document or the pages specified in the Print dialog box of your application.

The approaches of the two products are very different.

DynoPage replaces the Print Manager with its own spooler. To print a DynoPage document, you select the DynoPage driver in the Print Setup. ClickBook, on the other hand, places itself in the File menu of each of the applications with which it's friendly. (Before purchasing the product, you should check with the manufacturer to confirm that it supports your application.) I tested it with Word for Windows. Whenever I wanted to print a booklet, all I had to do was select Print ClickBook from the File menu in Word.

Another difference between the two programs has to do with printing two-sided documents. ClickBook requires you to flip the entire stack of pages over to print the other side; DynoPage requires you to flip each page individually (which is confusing and an invitation to error).

Both products reduce the point size of the type used in a document so that the lines will fit within the margins of the booklet. The aspect ratio of a 5½- x 8½-inch booklet page is not the same as that of an 8½- x 11-inch page, so your printout may have a wide bottom margin. You can deal with this by trimming the booklet or by expanding the page area within your word processor so that your word processor thinks you're printing on legal paper (which more closely approximates the booklet page's aspect ratio).

If you print instructions, telephone directories, collections of student writing, manuals, or anything else that would lend itself to being assembled in a booklet format, either of these products would serve you well. Using either of them has an advantage over using a desktop publishing package: You probably already know your word processor, and learning DynoPage or

ClickBook takes little time.

GST, maker of 1st Design, a very low-cost yet very high-powered drawing program mentioned in the November "Art Works," does have a U.S. address, contrary to my report in that column. Contact GST at 3336 Hemlock Drive, Falls Church, Virginia 22042; (703) 560-2354.

In October I gave an incorrect phone number for ArtBeats, maker of Marble & Granite. The correct number is (503) 863-4429. At one time ArtBeats seemed to have the market for interesting backgrounds to itself, but now it seems as if everyone with an electronic camera is getting into the act. In October I covered Pixar One Twenty Eight, which went beyond stone faces to provide textures like sand and shingles. The latest product of this kind that I've seen is PhotoGear from Image Club Graphics (1902 11th Street SE, Suite 5, Calgary, Alberta, Canada T2G 3G2; 403-262-8008; \$59), a CD-ROM containing 30 images in three different resolutions.

The images include various marbles and granites, as well as money, bricks, paper, canvas, burnished metal, Formica, cloths, plywood, and particle board. The files are in TIF format, which means that they can be used with nearly all graphics programs.

Have a DTP tip you'd like to share? Let me know about it by calling (900) 884-8681, extension 7010203 (sponsored by Pure Entertainment, P.O. Box 186, Hollywood, California 90078). The call costs 95 cents per minute, you must be 18 or older, and you must use a touch-tone phone. Or write to "Art Works" in care of this magazine. And if you don't have a tip, call to let me know what you're up to, what software you're using, and how I can be of help. □

# Give Your Joystick a Thrill.

In the early 21st century, staged fighting has become a lucrative profession for female hardbodies, with dozens of legal arenas in the city. But for the leanest, meanest warriors, the real money comes from the illegal bouts held outside the city. It's the hottest day of the summer and you're baking inside a dilapidated warehouse. You — and your opponent — wear the latest in MECHA armor. The best fighting armor in the world.

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System requirements: 286-20 or faster machine (386 recommended) with 640K RAM, hard disk, joystick recommended. Operating Sys.: MS DOS 3.3 or above, Windows 3.1. Graphics compatible with VGA. Sound support: Sound Blaster, Sound Blaster Pro, Thunder Board, Pro Audio Spectrum, Adlib Gold and Speed Master.

**R** This game is not for the faint-hearted. Contains violence and some material inappropriate for minors under 18.

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# DISCOVERY CHOICE

Children can populate cities with dinosaurs, demolish buildings with bubbles, and have a blast as they design, build, and decorate with this remarkable CAD package.

Carol Ellison

## KID CAD

Remember the hours you spent with Tinkertoys? The Erector Set you busied yourself with one Christmas morning long ago? Or how about the Kenner girder and panel set or your first big canister of wooden blocks? These days, Lego sets are the top choice among junior architects. But they'll soon be supplanted by the next-generation building set if Davidson & Associates has its way. It gives us Kid CAD, a new program that, well, is a little hard to sum up in a single phrase.

Engineers in the audience will recognize the CAD in Kid CAD. It stands for *Computer-Aided Design* and is a label reserved for advanced design packages.

Kid CAD is a CAD program specifically designed for youngsters, but it will be appreciated by anyone who finds pleasure in whiling away hours creating, populating, and electronically demolishing everything from livestock barns to skyscrapers.

Kid CAD would be impressive even if it weren't the only CAD program designed for children. As the first of its kind, this Windows-based program does for computers what building blocks did for the living room rug when we were young: It turns the screen into a landscape where kids can create whimsical structures on a space that's all their own. Best of all, it's electronic. Translation: There's no mess to clean up, and the skyline isn't damaged if the dog runs through the room or a sibling zaps a dream house with a rubber band.

With Kid CAD, any sort of



architectural creation is possible. "It is exciting to see the many different ways that kids can be creative. And because they haven't necessarily known construction as adults have, kids come up with new ideas for how buildings could be used," says Bob Birdsell, a sixth-grade teacher at Juarez-Lincoln Elementary School in San Diego. "If they like the sun in the house in the morning, they'll build a whole wall of windows."

Kids can be as imaginative in demolishing their creations as they are in building them. The program includes a set of demolition tools that bring their own kind of joy to the construction site. For instance, children can make holes in buildings with bubbles, a laser beam, and blobs. They can implode an entire structure using a squasher, a wiper, a mower, or a dozer. And because the program features sound, the children will hear things crashing as well as be-

ing constructed. They hear slurping noises, for instance, when they drop a blob on a block to destroy it.

Because demolitions are so much fun, you'll want to remind your junior architects to save their work before destroying it. By doing so, they'll have buildings to demolish another day. Children enjoy recalling saved files over and over again to test how many different ways they can knock down a building.

The program allows children to design structures for any of three landscapes: a farm, a town, and a big city. When they start the program, they can see all three scenes in panorama views. If they aren't ready to put on their thinking caps and begin construction, they can play within the panoramas, clicking on buildings, trees, and people. Behind each object waits a little surprise, an animation that makes a chimney puff with smoke or pine trees sparkle

as if it's Christmas time, for example. Although Kid CAD is recommended for kids seven years and older, even very young children will enjoy exploring the panorama.

When they're ready to begin construction, the children select the Design Studio, the place where they actually build a structure to add to the selected landscape. The Design Studio presents a closeup of the construction site. It's surrounded by the tools needed to build the structure, including building blocks of various sizes and shapes to erect the walls, furnishings and wallpaper to decorate with, and colors and textures to upholster the furnishings. There are even people, pets, and other animals (such as barnyard friends) that the kids can select to inhabit the houses and office towers.

Just as if they were using wooden blocks, children can build their constructions block by block in Kid CAD. The program places a grid over the objects on the site to help kids position the blocks. When children hold down the mouse button, they see a shadow of the block; this makes it easier to determine how to place it.

To simplify things, children can select completed windows or stairs or even fully constructed houses rather than assembling them piece by piece. They can then concentrate on filling the buildings with furniture, people, and animals, as if they were playing with dollhouses. Younger children who have short attention spans or are unable to manipulate the blocks will fare well and have fun with these prefab homes.

One of the problems in designing anything on a computer screen is that the screen is two-dimensional. You can't walk around a structure to see how it looks from all angles. Kid CAD addresses this limitation and is even billed as "the amazing 3-D building kit." It uses a kid-sized version of computer tools—in the form of a camera view—to let children see their designs from a variety of angles. It even zooms in and out so that it seems as if the children are actually walking around and through the structure. This feature lets them pretend to be the construction site superintendent, who walks around and inspects all design elements to make sure each detail is just right. It's a great feature, but one that's a little tough for young children to master. Birdsell suggests pairing younger children with older kids until they're about nine; at that age, they're better able to grasp spatial relationships and see how to manipulate the camera and understand what things look like from various angles.

The program presents the designs in a wireframe view. This means that all of the constructions are rendered in black-and-white line drawings, making them appear as if they were wire structures awaiting surfaces.

There are also a number of tools that help children alter the images and objects. Among them are a rotate tool, which allows objects to be placed on their sides or even upside down; a linking tool, which joins or separates objects to include them in the changes or ensure that they won't be affected; and a hide feature, which makes objects

disappear so children can see what's behind them.

If there are several children in your house, it's easy to come up with game ideas that will encourage them to work in teams or as competitors. Challenge them to construct imaginative designs. Suggest that they hide an object from each other and then demolish structures piece by piece to find it. Tell them to

**IBM PC or compatible (80386 compatible, 25-MHz or faster recommended), 4MB RAM, VGA or SVGA, hard drive with 9MB free, mouse, Windows 3.1 (enhanced mode); Sound Blaster or other**



keep score to see who finds the hidden object in the fewest demolition steps.

A bonus: Reptile and amphibian monsters—such as a giant *Tyrannosaurus rex* and similarly cuddly creatures—are included in the program. If dinosaurs are as in vogue at your house as they are at mine, your children will be happy to find and use these.

This program is the perfect challenge for all who like to build—adults and kids alike. There's just something incredibly fun about building an improbable suburbia. Give your children free rein with Kid CAD, and who knows? You may discover an engineer or architect in the house. □

Circle Reader Service Number 392

**Windows-compatible sound card recommended—\$49.95**

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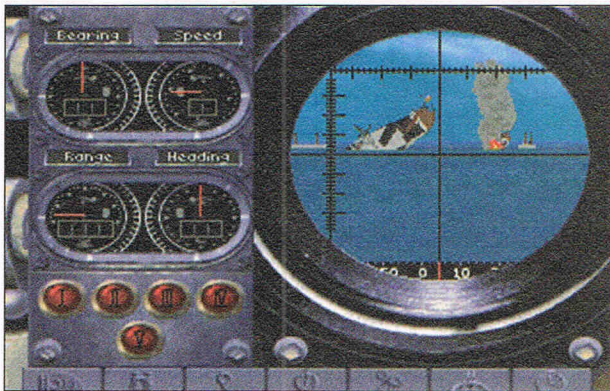
# GAME INSIDER

Shay Addams

## SIMS AND NEWTON GAMES

Submarine simulations are back, and they're sporting all kinds of technological advances in graphics and sound effects. SSN-21: Sea Wolf, the Electronic Arts entry in the new fleet of sub sims, emphasizes digitized sound effects as you wage war against the hard-line communists who have taken over Russia again. In an underwater search for the enemy, you must learn to distinguish between the sonar signals of whales, friendly subs, and the foe. With Sea Wolf, you're not limited to playing against the computer—with a modem or a network, you can go head-to-head against another person.

**The waves are so realistic in Aces of the Deep that you may need Dramamine.**



Dynamix's first sub simulation, *Aces of the Deep*, is an all-new interpretation of submarine warfare designed by Mike Jones, who designed Three-Sixty's long-running hit, *Harpoon*. It's built around a graphics and menu system similar to that of the company's *Great Warplanes* series. In addition to individual missions as a German U-boat captain, you may also play out an entire career that spans World War II. A new implementation of Dynamix's 3-Space 3-D technology depicts incredibly realistic ocean waves when you're at

the surface or looking through the periscope.

*Harpoon 2* also uses the latest technology to resurrect a type of game that some people thought would never rise again. *Harpoon 2* not only makes a giant leap from the original game's EGA graphics to Super VGA graphics, but even supports one of the highest levels of SVGA: 1024 x 768 resolution. It also incorporates fuzzy logic, the latest wave in artificial intelligence. Fuzzy logic more closely approximates the decision-making process of a human being than does pulling choices from a tree of alternatives that branch off in linear fashion. Released earlier this year for the IBM, *Harpoon 2* should arrive soon for the Macintosh.

Dig it? *Jurassic Park* producer Steven Spielberg doing an adventure game? With Brian Moriarty, whose credits include LucasArts' *Loom* and Infocom's *Trinity*? As I mentioned last month, this unexpected cross-media collaboration occurred when Spielberg realized that a tale he wanted to produce theatrically might work better as a computer game. An adventure game enthusiast, Spielberg teamed up with Moriarty, a veteran game designer who got his start working at Adventure International's geodesic dome in Florida, to create *The Dig*.

The story commences with the discovery of a strange asteroid. When four scientists set out to explore its rocky surface, they discover too late that it's actually a booby trap that transports them to a distant world—a world from which they must escape and where they must eventually unravel a panorama of secrets. *The Dig* promises to be a darker story than previous LucasArts outings, such as *Secret of Monkey Island* and *Day of the Tentacle*, and will make

extensive use of cinematic sequences and sounds. Moriarty's talent for designing adventure games makes it all that more likely to succeed.

Another graphic adventure to look for is Access's latest in the Tex Murphy detective series. Under a Killing Moon was supposed to ship on two CDs during the first quarter. The first to feature major Hollywood actors (Margot Kidder and Russell Means), it will also be released on floppies sometime this spring. Look for a complete profile in this month's entertainment feature.

Sierra On-Line is moving in new directions with the imminent release of *The Outpost*. Though the company is better known for its graphic adventures and volatile stock prices, this game is a multimedia space strategy extravaganza that may open new doors for Sierra. (For a more traditional Sierra title, hold on for *Phantasmagoria* later this spring.)

Turned me into a Newton. If you need to play on the road, now there are games for Apple's Newton. Marc Blank and Michael Berlyn, who created early Infocom classics such as *Zork* and *Suspended*, teamed up to form their own development company late last year. Their first games for the Newton include Columbo's *Mystery Capers* and *Dell Crossword Puzzles*. Based on Peter Falk's Columbo character from the TV series, the mystery game is a graphical product with 40 crimes for you to solve. The Dell games offer hundreds of crossword puzzles, word searches, and cryptograms. These titles are packed onto little PCMCIA cards. Who knows? With game designers like Berlyn and Blank creating titles for the Newton, this kind of device could eventually replace Nintendo's Game Boy—at least for the executives in the crowd. □

RETRACING THE MISSIONS  
OF WORLD WAR II FLYING

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BUT REWRITING HISTORY IS  
THE ULTIMATE CHALLENGE . . .

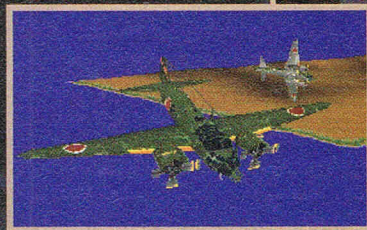
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# ENTERTAINMENT CHOICE

*Photorealistic graphics, digitized sound, and gradient hues make this a radical and satisfying upgrade of the most realistic flight simulator for home use.*

Bob Eller

## MICROSOFT FLIGHT SIMULATOR 5

It's hard to describe the feeling you get soaring through the sky. Sitting alone at 10,000 feet puts a whole new perspective on the world and your place in it. Indeed, flying brings you as close as you can get to how it must feel to be a bird and climb through the sky on outstretched wings. It's a wonderful feeling and, once experienced, very addictive.

Microsoft Flight Simulator 5 gives you that feeling like no other flight simulator. When I first heard of Flight Simulator in the early 1980s, I knew I had to try it. After moving through the first three versions of the program, I went out and began work on my private pilot's license. If I'd owned Flight Simulator 5, I might have stayed at home and saved enough money to buy a new Pentium computer. As Microsoft advertises, FS5 is as real as it gets.

In many ways, FS5 is the most radical upgrade of the Flight Simulator series. Taking advantage of the faster processors and graphics cards now available, FS5 brings you graphics that will make you swear you're sitting in the pilot's seat high above the ground.

FS5 replaces the two-dimensional graphics found in previous versions with lifelike three-dimensional graphics. The sky, instead of being solid blue, now looks like a real sky with gradient hues of color that reflect the time of day. The computer-drawn instrument panel is replaced with



photorealistic instrumentation digitized from real aircraft instruments. The panel array still includes the instruments required to fly under either visual flight rule (VFR) or instrument flight rule (IFR), as mandated by the Federal Aviation Administration.

The scenery included with FS5 is also a step-up from that of previous versions. In addition to adding photorealistic ground scenes, buildings with texture and lights, and airports with active runway lighting systems, FS5's scenery world covers the entire globe. Instead of being confined to the 10,000 x 10,000 square miles contained in Flight Simulator 4, you can now extend your journey to Europe and beyond.

Flight sectionals, directories, and runway maps are included in the manual for a number of airports located in

the Paris and Munich areas. And FS5 adds significantly to the number of airports that you may access directly via the program's menu system. As with previous versions, you can move your aircraft to anywhere in FS5's world by setting the location's coordinates from the menu.

One of the nicest additions will help new aviators with the most difficult task to master when flying either a real or a simulated aircraft: landing. The task is so hard that most folks, including seasoned pilots, have found themselves crashing in the Flight Simulator programs until they get the hang of it. FS5's Land Me command puts the aircraft under the control of an instructor who takes you to the nearest airport and, using onscreen scrolling text, talks you through the landing. You may never again hear the sound of



bending metal during your landing.

If you do hear that wince-inducing sound and you have a sound card installed in your PC, the tones will take on a new reality with FS5. This is the first version of the program to use digitized sound and to support the Microsoft Windows Sound System, Creative Labs' Sound Blaster and Sound Blaster Pro, Media Vision's Pro AudioSpectrum and Thunder Board, ATI's Stereo FX, and the Ad Lib and Ad Lib with COVOX. If you don't have a sound card, nondigitized sounds are played through your PC's internal speaker.

Most of the valued features found in previous versions of Flight Simulator are included in FS5. These include a choice of aircraft, flight instruction, a log of your flights, and several entertainment flight options. The only feature from FS4 not included in this version is the aircraft designer. This feature has been replaced by the stand-alone Aircraft and Scenery Designer program available separately from Microsoft.

FS5 comes equipped with four aircraft: a Cessna Skylane RG, a Learjet 35A, a Schweizer 2-32 sailplane, and a Sopwith Camel. The Cessna Skylane RG is an excellent aircraft for pilot training and general aviation. According to the manual, this aircraft's simulation is designed for realism, both in what you see and how you feel behind the controls. The Learjet is designed for fun and speed. You can cruise at 460 knots at an altitude of 41,000 feet. The sailplane allows you to experience the joys of soaring on a thermal

and gaining altitude by circling upward on the currents of a friendly ridge, and the Sopwith Camel is a venerable biwing that is great for low and slow sightseeing.

If you're new to flying, you'll get a fast start with FS5. The package's manual, in addition to describing the program's operation and aircraft, contains an excellent section called Flight School. Like its counterpart in real flying, Flight School provides the information you need to understand the basics of flight. It moves from there to many of the flight maneuvers you'll need to learn if you want to earn your private pilot's license. When you're ready, FS5 contains a flight instruction section that walks you through the basic flight skills via an onscreen instructor and postmaneuver briefing.

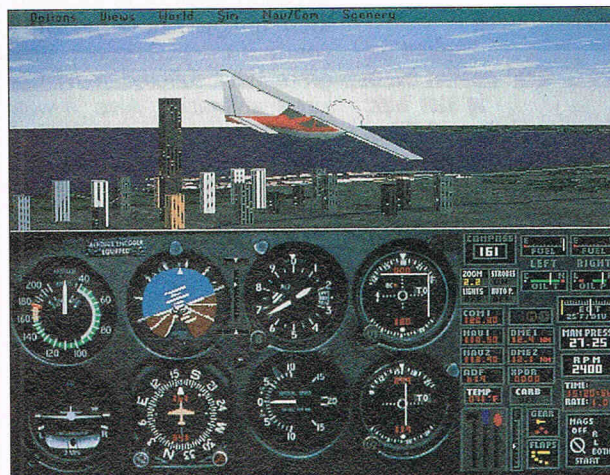
For entertainment, you can play FS5 with a friend via modem, try your hand at the crop-dusting game, or test your skills with formation flying and electronic flight instrument system scenarios.

Microsoft has raised the minimum requirements needed to run FS5 from those of previous versions (see the list of requirements, right). Although the minimum system will run the program, in order to get the best performance, you need an 80486 running at 33 MHz with at least 4MB of memory, 2MB of which is configured as expanded memory. The faster the computer, the better the video performance. In fact, it wouldn't hurt to have a local-bus graphics adapter in your system. I found that with 4MB of memory I was unable to get my 486 system properly configured. Expanding my PC up to 8MB of

memory solved this problem.

A number of expansion products are available for use with FS5. In addition to Aircraft and Scenery Designer, Microsoft has released scenery packs covering New York and Paris, which let you take an aerial tour of the Statue of Liberty and the Eiffel Tower. Mallard Software offers extremely lifelike ray-traced scenery for San Francisco and

**IBM PC or compatible (80386 compatible); 530K RAM, 1MB extended memory, 2MB free memory configured as expanded memory; EGA, VGA, or SVGA; hard drive with 9MB free; 3½-inch**



Washington, DC. Derived from actual satellite photos, this package further enhances the feeling of being there.

Microsoft Flight Simulator 5 is the best flight simulator I've seen for home use. In fact, the only flight simulator that comes close to its realism is one I saw running on a Silicon Graphics computer several years ago. According to the salesman, I could've taken home a copy for only \$30,000—not including the required high-tech computer, of course. So if you want an extremely realistic flight experience that doesn't cost the price of a good used aircraft, you just can't beat Flight Simulator 5. □

**high-density disk drive; Microsoft mouse or compatible pointing device, joystick, or flight yoke game controller recommended; major sound boards supported—\$64.95**

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# GAMEPLAY

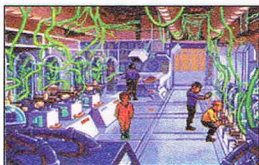
Denny Atkin

## THREE FROM INTERPLAY

Perhaps the most exciting holiday release from Interplay was the new CD-ROM version of *Star Trek: 25th Anniversary*, with the voices of all the crew members. But that's not all the company has in store.

**Hollywood Buzz.** The space-program simulator *Buzz Aldrin's Race into Space* hit the market without too much fanfare earlier this year. The disk-based release was an interesting attempt to simulate the management of the early years of the U.S. space program, but it suffered from lackluster animation. Also, it was so difficult to win that I won-

Explore the final frontier again in *Star Trek: Judgment Rites*.



dered if the U.S. would have even kept its space program going if it had blown up as many astronauts as I'd managed to in *Race into Space*.

Now, creator Fritz Bonner has come back with a CD-ROM version that adds a new level of interest and playability to the game. The jerky animation of the original has been replaced by full-motion video. Launches are shown using both actual footage (when available) and computer-generated ships overlaid on real space scenes. An innovative mosaic technique lets you toggle in impressive-looking full-screen, full-motion video. Sound has been improved as well, since the CD-ROM al-

lows room for a little variety in *Mission Control's* digitized play-by-play.

Gameplay has been made more fun, as the vicious random-number generator that would turn your rockets into so much scorched scrap metal is tamed when you set the game to a beginner level. *Race into Space* is based upon the board game *LiftOff*, so even though the game factors in how much time and money you spend on developing your space systems, in the end much boils down to the random-number generator's dice roll. *LiftOff* players seem to love the gameplay, but aficionados of the real space race may sometimes find the game more frustrating than fun.

Still, this game *is* fun, and the CD-ROM version has been refined into a more enjoyable experience. It now supports both modem play and E-mail play; taking on a human opponent is more fun than challenging the computer.

**Russian Six Pak.** Nope, this isn't a simulation of chugging *Budski Light*, but rather a collection of six games created by Russian developer MIR-Dialogue for Interplay. Available for both DOS and Windows, *Russian Six Pak* includes a series of puzzle games, not one of which matches the pure addictiveness factor of *Tetris* (also a Russian game), but all of which are fun.

*Flying Pictures* will likely appeal most to *Tetris* fans. You're faced with the task of eliminating a series of blocks (which have pictures of fruit on them, thus the less-than-creative name). You move Alice up and down a ladder and toss fruit at the row, which eliminates any matching pictures it contacts.

*Fast Ring* challenges you to remove buttons from a board by connecting them with fences until you've created a solid

ring. It's sort of a computerized update of the Dots game you may have played on paper in elementary school; it's simple but fun, and blockades add some real challenge at higher levels. The similar *Line Man* will appeal to fans of the LucasArts classic *Pipe Dream*; you have to rotate a series of straight and bent pipes to form solid rings, which then disappear from the board. *Master of Bombs* and *Crete* are also interesting puzzle challenges, with rules a bit more complicated than I have room to explain here. The sixth challenge, *Shadows*, is a strange hybrid of *Asteroids* and *Missile Command* that plays like neither and doesn't really fit in with the rest of the games, but it's fun nevertheless.

**Judgment Day.** Finally, there's the long-awaited *Star Trek: Judgment Rites*. This game builds upon the successful formula established in *Star Trek: 25th Anniversary*. It's essentially a series of episodic landing-party adventures separated by combat sequences on the *U.S.S. Enterprise*.

There are many improvements here, though. The game looks and sounds better, with digitized matte painting backgrounds and sounds from the original series. The musical score by The Fat Man, Dave Govett, and Rick Jackson helps maintain the feeling that you're actually participating in a "Star Trek" episode.

Those who enjoyed the adventure elements in the first game but didn't have the reflexes for the starship combat will be happy to hear that the combat scenes can be bypassed in this sequel. Sulu wannabes will be pleased to know that said combat sequences are smoother and more challenging.

With eight well-written episodes, this game should provide hours of fun play. □

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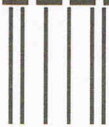
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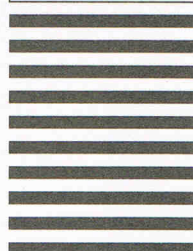
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# SILICON HOLLYWOOD

By Denny Atkin

A hush falls over the small sound stage as final preparations are made for the shoot. Actress Margot Kidder studies her lines one last time as the cameraman makes a last-minute adjustment. The director cues, "Scene 3-A8, take 1. Action!" and Kidder instantly slips into her persona as a bartender in a futuristic gin joint.

"Call me sweetheart again, and I'll tear your throat out. Now what do you want?" she demands in a threatening manner. After the take is finished and the director gives the cut signal, the film crew laughs approvingly at the intensity of her performance. The lights and camera are quickly repositioned for the next shot. A serious look comes across Kidder's face as the director cues the next shot. "Mind your manners, and I won't introduce you to Bluto," she sneers. "He's the reason we call this place the Broken Skull."

No, this isn't a scene from a typical day of filming at a major Hollywood studio. The sound stage isn't in Tinseltown, but in a back room at Access Software's headquarters in Salt Lake City, Utah. Kidder's tough, sarcastic bartender isn't a character in an upcoming movie blockbuster. She's starring in the Access interactive opus, *Under a Killing Moon*, scheduled to hit a software store—not a theater—near you in March. It's a CD-ROM adventure game that features Kidder (*Superman* through *Superman IV*), Brian Keith ("Family Affair" and "Hardcastle and McCormick," along with numerous films), and Russell Means (*Last of the Mohicans*).

In many respects, Hollywood and Silicon Valley are converging. Hollywood has been looking to the computer game industry for inspiration as it decides how to exploit the entertainment products it will be able to create when 500-channel interactive cable systems, computerized set-top control boxes, and the digital superhighway become realities. Although it hasn't received as much media publicity, the computer game industry has been reaching out to the TV and film industries not just for ideas for games, but for production techniques and even actors.

## A Shining Example

Access is billing *Under a Killing Moon* as the first real interactive movie. Other programs have laid claim to that distinction before, but they've generally been little more than collections of film clips stored on CD-ROM, where your decisions simply determine which clip is shown next—you don't get the feeling of being in the film. If anything, calling *Under a Killing Moon* an interactive movie isn't giving the game the credit it's due, since it offers a first-person feeling of being there that no movie can achieve.

Of course, playing even the most interactive, movie-like computer game on a 14-inch screen probably isn't going to cause the intense emotional reactions in the player that watching a movie on a 30-foot screen can. Each medium has its advantages. But many of the distinctions that made computer games seem distinctly more like toys than something that can be compared to television and film are rapidly disappearing.

Access isn't the only company drawing on Hollywood for talent and inspiration. The CD-ROM version of *Return to Zork* from Activision features over a dozen minor actors with Hollywood credits. Other software producers have hired the likes of Donald Sutherland, Robert Culp, and Robby Benson to star in their games. And behind-the-scenes talents such as artist Syd Mead and writer Harlan Ellison have recently lent their abilities to computer games. As mainstream and electronic entertainment technologies continue to converge, it may become less and less unusual for professionals to jump back and forth from working on TV pilots to working on interactive entertainment products.

## Preproduction

From the start, there were many parallels between the creation of *Under a Killing Moon* and the production of a film. The project began when Access decided it was time to create a sequel to its Tex Murphy detective series, which started with *Mean Streets* and *Martian*

A look at the making of Access Software's CD-ROM interactive movie,

UNDER A  
*Killing Moon*

Memorandum. The first break from the computer game past came here; Access brought writer Aaron Conner into the project to script the game. Woody Allen and a few others aside, most Hollywood directors and producers don't write the screenplays for their productions, and Access decided it was time to bring a dedicated script writer to its game.

After the basic background script was created, it was time to meet with the special-effects folks—the programmers. Initially, there were thoughts of using a two-dimensional, fluid-motion polygon system (like that used in Delphine's Flashback) to achieve a movielike quality, but the programmers decided to do a test and see if they could create a real 3-D virtual-reality (VR) environment. When the first tests came back better than anyone had hoped, the script was modified to take advantage of the VR approach. Now Access could create the game from a first-person perspective, making the player a participant in the experience rather than an observer.

Chris Jones, who heads up the production of *Under a Killing Moon* and also stars as Tex Murphy, says that the inspiration for the VR approach came from the company's successful *Links 386* golf game. "We asked ourselves what we could do to really make this more of a movie experience for the player, when we realized that we could apply some of the things we learned from *Links* to enrich the movie experience," he explains. Although the *Links 386* software engine proved unsuitable for realtime 3-D movement, the programmers were able to create a new system that lets the player move around 3-D Studio-generated rooms with complete freedom.

Comprehensive storyboards for each section of the game were created, and the puzzles were reworked for the new first-person perspective. "The next part was developing the individual scripts for the characters," Jones says. Conner worked hard to develop realistic personalities for the characters. "We don't want to deal with the characters as puzzles, like some games do, but as human beings," Jones says.

The story is divided into a sequence of related quests, with a reward at the end of each one. A film only has to keep the viewer's attention for about 2 hours, but games of this scope can take as much as 100 hours to play. "We divided the game into 100 COMPUTE FEBRUARY 1994



These rooms don't exist just as pretty still pictures, but as 3-D virtual-reality environments that you can explore.

segments that are more like interesting short stories to keep the flow of the game going," Conner says.

Next came casting. Like most game companies, Access had used local stage actors, models, and company employees for previous adventure games, where characters were

generally represented by digitized stills accompanied by sampled voices. But now the company planned to use full-motion video for the game, and acting talent suddenly became a big issue. "If we did all this work, and we wanted to rely heavily on the characters, but then had performances





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like we'd seen in other games, it wouldn't have been taken seriously," Jones says. "We want to be compared to TV and movies, and that requires a level of performance that games haven't needed before."

A casting agent found Access some local actors around Salt Lake City who had television experience, including a regular cast member from the series "Life Goes On." But the designers decided that if they wanted to bridge that credibility gap that plagued computer entertainment, they should reach for the stars.

### **Casting Call**

Eventually, the company lined up Kidder, Keith, and Means, as well as a number of other talented actors. Jones says that everyone onscreen in *Under a Killing Moon* has stage experience at a minimum, but many have been on TV or in films.

The professional actors were intrigued by the possibility of working in a computer game, but they didn't realize the scope of their performance. Jones explains that they figured they'd be doing the voices for animated cartoonlike characters on the screen or voice-overs for still images of themselves. The actual game features full-motion video of the characters, complete with synchronized voices, and you encounter many of them standing right in the VR rooms that you walk through. "What really got Margot excited was the VR stuff," Jones says.

For the most part, the actors were filmed individually and composited during postproduction. They were filmed against a black backdrop, which can be edited out of the digitized video—a procedure similar to the blue-screen techniques used in movies and television.

"There was a really intense preparation period," Jones recalls. "We have to storyboard practically everything the actors are going to be doing—where they're going to be in the room, where they're going to turn, what furniture is going to be in there. You see Margot there behind the counter in the game, but there's nothing there in the room where she's filming."

The amount of footage of actors that was shot for the two-CD-ROM game is actually more than you'll find in an average movie. "Most movies are about 90 minutes, and we've got about two hours of video right now. And most of that is just talking," Jones says. "If you take a whole movie and break out how much speech they have, it might be 30 minutes. The

amount of speech we have is like creating *Gone with the Wind* with no action scenes, just talking."

### **Virtual Set Building**

The images are electronically composited onto 3-D backgrounds, allowing Access to put characters in scenes that would be budgetary nightmares if actual sets needed to be built. Some scenes do exhibit that too-clean appearance that reminds you that you're looking at a computer-rendered background, but others, such as a fight scene between Murphy and the evil Chameleon on a gritty street corner, are dazzlingly realistic.

The 3-D sets allow Access to bring the player into the game as an actor, instead of a director. "You can't have this third-person little guy walking around anymore," Jones says, referring to the characters in previous Tex Murphy games. "You've got to be more innovative. There's nothing more exciting to me than the concept of a real room that I get to walk around in and search, where everything's from my perspective and everything looks real."

And realistic these sets are. Unlike earlier 3-D efforts like *The 7th Guest*, *Under a Killing Moon* gives you complete freedom to explore the 3-D sets in the game. You can walk around, look under tables or stairwells for clues, and even climb up on a desk to get a better look at something on the ceiling. Objects are texture-mapped, and there's so much detail in the rooms that you can actually walk up to the wall and read the small print on Murphy's diploma.

Although the virtual sets were built with realism in mind, Access had to go back and do a second pass on early rooms when it was discovered that they needed to be a bit bigger than life. Because of the limited field of view afforded by the computer screen compared to that of your eyes, you'd spend all your time in a room built to scale looking down because you'd be practically on top of all the objects you see.

### **Lights! Camera! Interaction!**

One thing moviemakers don't have to worry about is giving the audience control. Under a Killing Moon has three different styles of interaction. There are animated segments, where in you watch a short sequence that provides exposition for the next part of the game. The exploration segments draw from classic computer game experience, letting you use the

mouse to move around and explore while choosing icons for actions such as looking and taking. The sequences where you interact with actors forced Access to draw from both cinematic techniques and game development ideas.

The player sees characters standing in the VR rooms, but once you initiate a conversation, the view changes from first to third person. The actors were filmed from a variety of camera angles, rather than just head-on, to try to capture the feel of a movie.

When you're watching a movie, you don't read the lines in a script right before you hear the actor say them. Access didn't want to bore players by forcing them to hear the response they just read onscreen, so you choose from selections like "Inquisitive joke" or "Sarcastic detective remark" instead of the actual verbal queries. Jones hopes this will draw the players into the scene, since they'll be hearing responses for the first time. Conner worked hard to inject humor into the script, and many players will likely find themselves going back through the game just to hear the alternative responses. Interactive computer movies will give you the opportunity to see what might have happened if Rhett hadn't told Scarlet, "I don't give a damn."

### **It's a Wrap**

With some of the best acting and most realistic VR elements seen to date in a computer game, *Under a Killing Moon* sets a new standard for interactive entertainment. When you walk into a bar, look under the tables, and then talk Margot Kidder's character into letting you into a secret meeting, you're experiencing a level of realism that has never before been present in computer games or movies.

Access didn't stop with making the player one of the actors, though. You can also direct, using a feature that allows you to record segments of the game, splice them together, and play the result back as a noninteractive movie.

In 1989 Access released *Mean Streets*, which set a new standard with its VGA graphics and digitized voices. Under a Killing Moon is the standardbearer for the MPC generation. As the entertainment market shifts to CD-ROM games on powerful PCs, look for the distinction between computer games and mass-media entertainment to blur dramatically. □

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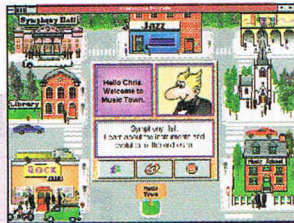
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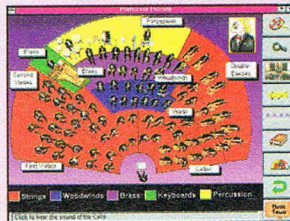


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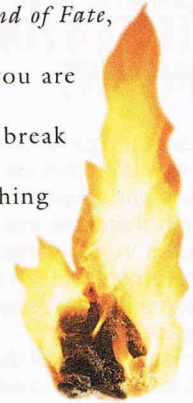
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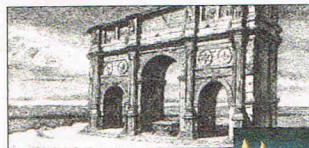
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Release 4 has all the functions we've come to expect in Windows spreadsheets, such as instant charting, complete control of the formatting of each cell, and so forth. I'm not going to focus on these features—suffice it to say that there's a full suite there—but rather on those things which make this implementation of 1-2-3 easier to use and make the power of the software more accessible.

This release's interface has four basic components: standard menus across the top of the screen, the icon bar (called SmartIcons), the worksheet area, and the status bar.

Lotus describes the status bar as "alive." It gives you feedback about the current cell, including the font, the size of text, the format (currency, date, and so forth), and the number of decimal places. You can change each setting by clicking on the appropriate section of the status bar. Thus, changing the font and the size of the characters is as easy as clicking on the status bar. (You can also use the traditional menu selection methods.)

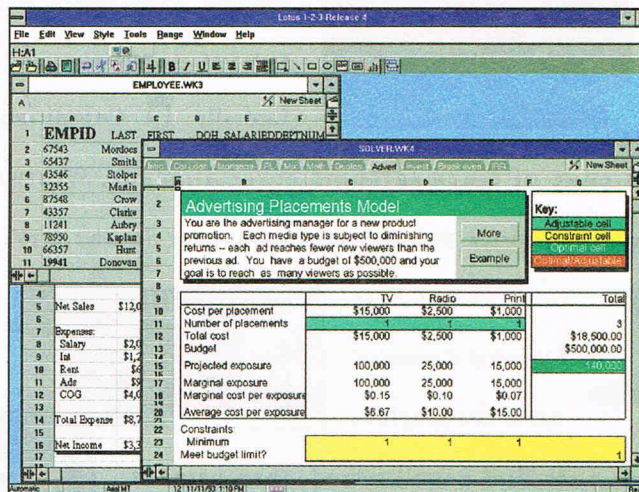
Also on the status bar are the date and time, the mode indicator, and a button to change or hide the current icon bar. In some ways the status bar acts as a second icon bar. The icon bar

provides easy access to often-used functions, and the status bar has the ones used most often.

The SmartIcons have been improved. The default bar has the most frequently used commands, such as Save, Copy, Cut, Spell Check, and Print. There are seven additional

sheets, you'll appreciate the new Worksheet Tabs feature which makes it easy to name and organize multiple-page worksheets. You can drag and drop elements between pages with ease.

I've touched on only a few of the new features included in this product. This implem-



The Worksheet Tabs feature in Lotus 1-2-3 Release 4 for Windows makes managing multiple-page worksheets a snap.

SmartIcon bars you can access either through the status bar or icon bar.

Although software publishers hope that you can tell exactly what each icon means and what it does, icon graphics don't always get the point across. If you point to an icon on 1-2-3's icon bar and press the right mouse button, you'll see a short description of the icon's purpose. This is a very helpful feature that all applications should adopt.

Users of the MS-DOS version of 1-2-3 will feel right at home, as Lotus has included the full set of keyboard commands from the original program. Just press the backslash key to bring up what Lotus calls the 1-2-3 Classic Menu.

If you work with 3-D spread-

sheet of the old standby is rich and complete. Among other new features are in-cell editing, a menu of @ functions, more than 250 new built-in macros, and a bundled version of Adobe Type Manager 2.5.

Whether you're new to spreadsheets or an old hand, you'll find this new release of 1-2-3 for Windows easy to master. And the number-crunching features have been improved just as much as the interface. You'd be hard-pressed to find a needed feature that's not included in this workhorse spreadsheet.

STEPHEN LEVY

Lotus  
(617) 577-8500  
\$495

Circle Reader Service Number 434

## POCKETFILE 85

A hard drive the size of a credit card? Yes, the Integral Peripherals PocketFile 85 removable hard disk slips easily from your portable or desktop computer into your shirt pocket. Changing drives can be done on the fly: Simply plug the drive into your computer's PCMCIA card slot, and access your data or programs. Unplug the current drive and slide in a new one, and it's ready for immediate use without your having to reboot your computer.

I tested the PocketFile 85 (85MB) with a Toshiba 4500 notebook computer. Integral is also shipping the PocketFile 42 (42MB, \$495) and the PocketFile 105 (105MB, \$750).

You may need to install a software driver so that your computer will recognize the PocketFile plugged into its PCMCIA slot. CardSoft driver software is provided with the PocketFile 85, but check first in your computer system's reference manual—you might already have the necessary drivers in place. If so, there should be a listing for Integral Peripherals in your manual.

The CardSoft software installed easily in my test. As with standard hard drives, initial partitioning and formatting is required. The included MFDisk utility partitions the PocketFile, and the standard DOS Format command is used to format it.

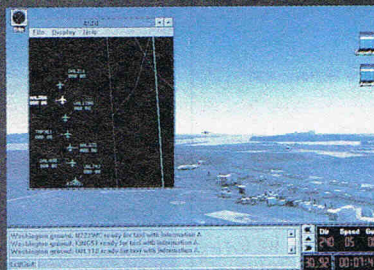
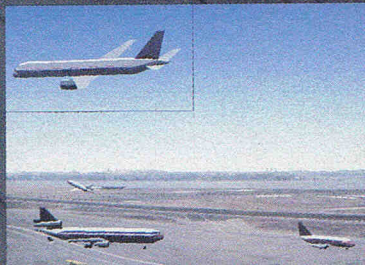
The PocketFile 85 is simple and fast to get up and going. Just take it out of your pocket and plug it in while your computer is running. A couple of quick beeps tell you the drive is available. Use it as you would any other drive on the system. The drive was quite speedy in my testing, meet-

Arriving soon...

# TOWER!

Tower cab simulator.

Photo-realistic graphics and features like a 360° scrollable view and easy access information displays put you right in the middle of all of the action.



Tower puts you in the controller's chair high atop the tower cab of a major airport to choreograph the movement of the incoming and outgoing air traffic.

You control runway activity, ground crews and terminal traffic through a 360° scrollable out-the-window view with your keyboard or mouse. Local radar displays and easy-access information displays give you crash reports, news stories and more. You can also link, via modem, with Microsoft's® Flight Simulator® and Mallard's Air Traffic Controller™.

Character-style game play allows you to work your way up the 'corporate ladder' of each airport gaining perks, acquiring passwords to new levels and getting promoted accordingly. Points are scored depending on varying levels of traffic at different airports, types of pilots, time of day, weather conditions and the problems and emergencies that face the controller on the job every day.

So if you think you're up to the challenge of directing traffic of a 'big league' international airport, get to your local software retailer for the arrival of **Tower!** From the publisher of today's hottest flight simulation enhancement products, Mallard Software. Who else?



Mallard™

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Circle Reader Service Number 188

ing its rated 18-ms average access time.

Although you won't want to toss it on the pavement, you'll be relieved to know that the PocketFile 85 can take over 100 g's of operating shock.

There are many practical uses for the PocketFile. If you're an accountant, for example, you might have separate PocketFiles for each of your major clients. A company might buy just one portable computer for field use and provide each person taking it out with a PocketFile for personal data. And it's an easy way to add more storage to a laptop with a jam-packed hard drive.

RALPH ROBERTS

Intégral Peripherals  
(303) 449-8009  
\$560

Circle Reader Service Number 435

## PRIVATEER

Always playing the good guy can be downright dull. *Privateer*, the latest in Origin's *Wing Commander* line, honors this simple truism. In *Wing Commander I* and *II*, you fly for the glory of the Confederation, defending humanity and restoring your personal honor. In *Privateer*, success is measured in the size of the day's profits and the gratifying knowledge that you've salvaged some salable merchandise from the debris of a would-be pirate—a pirate who won't be troubling you or anybody else again.

You begin your career at the helm of a rusty old Tarsus-class merchant ship. You're a free agent, and the possibilities for a fast buck abound. You can earn a consistent dollar as a merchant, shuttling needed goods be-



The PocketFile 85 PCMCIA card packs 85 megabytes of hard disk storage into a package the size of a thick credit card.



*Privateer* puts you in the cockpit of a cargo ship and lets you take on the role of honest merchant or vicious pirate.

tween systems and quadrants. Choose the life of a smuggler, and you can get rich quick running drugs and guns, though you'll be dogged by the militia. As a mercenary, you're a gun for hire, taking out pirates and Kilrathi alike. If your favorite *Star Wars* character was Han Solo, this is the game for you.

Pirates, Kilrathi aces, and the ever-vigilant militia aren't the only obstacles standing between you and a healthy bank account. You'll also encounter Retros, fanatical religious terrorists determined to destroy the evil of technol-

ogy, one ship at a time.

As if these challenges weren't enough, you soon find yourself in possession of a priceless alien artifact whose owners have a habit of turning up dead. The word in the space lanes is that you're next. Between staying alive and making a living, you must now unravel a mystery whose clues are hidden in the far-flung systems of four quadrants and countless miles of empty space.

Despite some technical glitches, Origin has turned out a real winner in *Privateer*. Playability and depth

are realized with a rich assortment of game elements. There are four ship types to fly, as well as a wide selection of add-on weaponry, defenses, and other hardware to purchase. The game is physically large as well, with over 60 solar systems to visit.

The graphics are much improved over those in earlier *Wing Commander* games, and on a fast 486 system, the animation can look downright gorgeous. Those who like the look of the previous *Wing Commanders* will really like the look of *Privateer*.

Pushing the technological envelope is not without risk. On a 386 the frame rate became so jerky that it became difficult to aim with any accuracy, as the motion of the crosshairs became too crude to track enemy ships. A 486 is suggested to really enjoy the game. Also, there are some minor bugs that will intermittently hang systems with some sound card settings, but work-arounds are available from Origin.

*Privateer* is a real accomplishment. Origin continues to build on a familiar universe, this time from a new angle. Best of all, you're not locked into a story line here. You can fly around as long as you want, building your ship, before you take on the mysterious alien artifact. And once you've completed the story line, you can continue building your coffers and enhancing your ship by taking on cargo or mercenary missions—at least until the first expansion disk comes around.

DAVID GERDING

Origin  
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\$79.95

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# THE Hanna-Barbera

## ANIMATION WORKSHOP

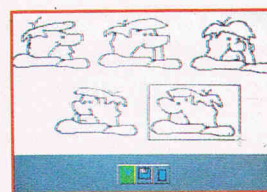
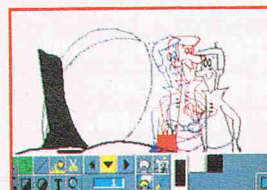
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The Hanna-Barbera Animation Workshop brings the power of animation to your computer in a form that is user friendly. Using a simple yet powerful Icon Animation System (IAS), anyone can quickly produce impressive animations just like the professionals.

Complete with Hanna-Barbera animations (The Flintstones, Scooby Doo, Yogi Bear & The Jetsons), and clip-art for you to include in your own artwork.

Video input capability that allows you to import hand drawn animations and still backgrounds by using a camcorder or video camera and a digitizer.\*

Contains features that the professional animator couldn't do without such as onion-skinning for careful positioning of frames and an adjustable exposure sheet so that you can get the timing just right!



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SOFTWARE

## REVIEWS

### INTERACTIVE SOUNDXCHANGE, M-MAIL 3.0

InterActive SoundXchange Model B is a speakerphone-style sound device that uses a built-in sound card to record and play voice messages on your PC. Using it is as elementary as using a telephone or a tape recorder.

The SoundXchange is available in two models; both have a condenser microphone, amplified speaker, telephone-style handset, volume control, and a headset input jack. The Model A is for those who already have a sound board with microphone and speaker jacks. The Model B reviewed here adds a simple digitized sound recording and playback card. (It's not a Sound Blaster-compatible card, so while it can be used for playing sounds from Windows, it's not useful for games.)

The SoundXchange connects to any parallel port—even one already connected to a printer—using the included smart parallel cable. The SoundXchange detects which parallel port you connect it to, making configuration a snap. This pass-through connection works fine, but when a sound sample is playing, printing pauses momentarily, and you may have to tell Print Manager to retry printing.

Recording is effortless but not sophisticated. You use the Windows Sound Recorder to "tape" the messages on your computer's hard disk in WAV format. If you have a professional telephone headset with a microphone plug, you can use it instead of the SoundXchange's speakerphone or handset.

Since SoundXchange supports OLE, you can even insert sounds into documents and other

files created with various Windows applications such as Write or Word. For example, when you choose Insert Object and select Sound, up pops Sound Recorder. Lift the handset on the SoundXchange, click on the microphone button, talk, click on the stop button, then exit. The sound will then be included in the Word document as a microphone icon. Double-clicking on the icon calls up the Sound Recorder to play the message. This is handy for adding voice annotations (via OLE) to documents that you're sending to colleagues on a network.

If you're looking for a device to record speech and other digital samples, and you don't need music, SoundXchange may fill the bill. Its parallel-port interface means you don't have to open your computer to install it, and you can use it with laptops. The handset will come in handy in office situations, where you might want to listen to your sound samples in private.

A good complement to SoundXchange is InterActive's M-Mail 3.0, a Windows program that is designed to make it easy to create, send,

and retrieve multimedia messages over a network.

When you send your message, the recipients are notified, and they use M-Mail to play your message. M-Mail supports OLE, so these multimedia messages can be embedded just like

## ACCESS Brings You a Virtual World Interactive Movie!

### What Reviewers are Saying:

**"Lots of games claim to be pushing the envelope—*Under a Killing Moon* blows it to smithereens!"**

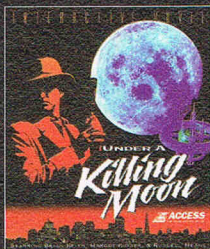
—William Trotter, *PC Entertainment*

**"*Under a Killing Moon*...the most elaborate graphic adventure to date. A ground breaking CD adventure!"**

—Joyce Worley, *Electronic Games*

**"*Under a Killing Moon* combines the best elements of movies and computer games and creates an amazing interactive experience that's better than either of them. It literally pulls you into the screen."**

—Denny Atkin, *Entertainment Editor, Compute Magazine*



This category-creating Interactive Movie from ACCESS Software goes light years beyond any other product labeled "interactive." *Under a Killing Moon* takes you to the streets of post World War III San Francisco and casts you into the role of Tex Murphy, Private Investigator, who first appeared in *Mean Streets*, then *Martian Memorandum*. *Under a Killing Moon* is a Virtual World full of people and places so richly detailed, you'll feel like you're actually there.

those created in Windows Sound Recorder.

M-Mail provides facilities for creating text, sound, and image files and for assembling them into messages using some or all of these elements.

M-Mail can use the SoundXchange or any

other sound board with a Windows 3.1 driver. It plays both WAV and VOC files.

M-Mail lets you change SoundXchange's sampling rate. It defaults to 6000 Hz; at this rate, a message ten seconds long takes about 60K of disk space. This provides clearly audible speech that sounds at least as good as a telephone conversation. You can also compress larger sound files using DPCM compression techniques, record at rates from 2750 to 11,025 Hz, and play samples taken at 2750 to 44,100 Hz.

M-Mail supports TWAIN-compatible scanners and digital cameras (grayscale or color), and three different video capture boards: Video Blaster, Video Logic DVA 4000/ISA Video Adapter, and New Media Graphics Super VideoWindows.

M-Mail provides only crude editing tools; it's best to use it to combine elements you've edited or acquired elsewhere as part of your messages. The elements of a message are played one after another, so the order is important. For example, it's a good idea to display a slow-loading

picture first, then the text and sound that go with it.

Another program, M-Play, lets you save messages onto a floppy disk along with the necessary support files. The messages can then be played by anyone running Windows with an installed sound device or speaker driver.

SoundXchange is a good first step into Windows sound if you don't need MIDI or game card compatibility. With the combination of M-Mail and SoundXchange, you have the basic elements of a network voice-messaging and document-annotating system.

J. BLAKE LAMBERT

InterActive  
(605) 363-5117  
\$229 (SoundXchange Model B)  
\$89 (M-Mail)

Circle Reader Service Number 437

## MATH MAGIC

Sometimes, it doesn't pay to be subtle, especially when designing educational games. Many titles work so hard to cleverly disguise their lessons that they simply forget to have fun. As a result, kids don't learn because they're not drawn into the action. MindPlay tackles this problem head-on with Math Magic, an educational arcade game which proves that fast-paced fun need not be mindless.

Designed for ages 4 through 9, this one-player game takes its cue from the arcade classic Breakout. The game also appeals to youngsters' attraction to wizards and dragons by setting the action in the Land of Magic. You play Wizrow, a powerful sorcerer and collector of mythical beasts. One morning, you awake to find that your herd of friendly dragons is missing, held captive in the cold dungeons of the evil Doomlord. Using magic fireballs and the flat side of your wand as a paddle, you must break through the dungeon walls to free your beloved

UNDER A

# KILLING MOON

**Q:** What do film stars **Brian Keith, Margot Kidder, & Russell Means** all have in common?

**A:** They all star in ACCESS Software's new CD thriller **Under a Killing Moon!**

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pets from the dungeons.

You'll need more than a sharp eye and quick hand to succeed in your quest, however. At random points during the game, Doomlord halts the action to challenge you with a mathematical problem. Points are scored for answering correctly and for each brick removed from the dungeon wall. Knock down the entire wall to set your dragon free, but don't rest yet: There are 15 more dungeons waiting to test your math and demolition skills. The game's arcade elements are well designed and attractive, rendered in 256-color VGA, but with no sound card support. Although the keyboard can be used to control paddle movement, a mouse offers much faster response. One caveat: Game speed goes ballistic at the highest skill level (age 9) when the game is played on a fast CPU. Rookie gamers will need to beware!

MindPlay's hallmark is its Challenge Upgrade, a two-step method of customizing gameplay to match each player's skills. Arcade elements that can be changed include the number of math questions asked during each round, paddle size, fireball speed, reward type, and number of fireballs per dungeon. The second step allows the adjustment of such math variables as equation size (two or three figures) and range (0-99), carrying and borrowing, and style (picture counting or numerical addition and subtraction). Parents can also develop personalized math tests to focus on potential problem areas. Finally, the program can chart the performance levels of up to five players.

Though relatively narrow

in scope, Math Magic sets a well-defined goal and achieves it brilliantly. Top-notch arcade action and variable skill levels assure a long-lasting challenge.

SCOTT A. MAY

MindPlay  
Distributed by Electronic Arts  
(800) 245-4525  
\$39.95

Circle Reader Service Number 438



The CD-ROM edition of Microsoft Golf adds aerial flybys and video hints from golf professionals.

## MICROSOFT GOLF FOR WINDOWS MULTIMEDIA EDITION

Tired of number crunching? Fed up with facts and figures? Open a window and hit the cool fairways with the Microsoft Golf for Windows Multimedia Edition. Leisured paced for the laid-back Windows environment, this game provides instant escape from the daily grind.

You'll have to dig deep to find the names *Bruce Carver* or *Access Software*, but make no mistake, this is essentially Links 386 Pro for Windows—watered down in some areas and enhanced

in others. The MPC version adds more than 80MB of animated course previews and digitized full-motion video. As you'd expect, system requirements are substantially greater for the CD version, including an MPC-compliant CD-ROM drive, 4MB RAM, and an MPC-compatible sound card. You'll also need at least 5MB of hard drive space for minimal instal-

speed is gained by running in 16 colors is negated by downright ugly dithered graphics. In 256-color mode, you'll enjoy the full beauty of the game's photo-realistic golfers and smoothly textured, digitized landscapes. User-defined levels of graphic detail also allow you to fine-tune the display to suit your system.

Up to eight players can compete on the included 18-hole golf course—San Diego's Torrey Pines South, known for its quick greens and stunning view of the Pacific. Player options include your choice of 14 clubs, as well as tee-off positions for rookie, amateur, or pro skill levels. Games can consist of the full 18 holes or a quick tour of the front or back nine. Additional courses are available through Access's Links Championship series, including Firestone, Bayhill, Dorado Beach, and Barton Creek. With more than 500MB to spare on the CD, however, why didn't Microsoft license more courses for the disc? (Add-on CD-ROM courses will be available soon.)

The mechanics of gameplay are virtually identical to those in both Links 386 Pro and the original, disk-based Windows version. With a little creative sizing, up to six windows can be open on the screen at once: main view, top view, swing control, shot info, advanced shot setup, and scorecard. Those familiar with the original can step right up and swing away; novices will be surprised at how quickly the controls can be learned (although never mastered). The uncalibrated swing gauge makes it difficult to judge the power of your stroke accurately.

Aerial flybys present a full-

lation, or a whopping 96MB to transfer all files to hard disk. Doing so speeds up gameplay, but you lose the space-saving advantage of CD-ROM storage.

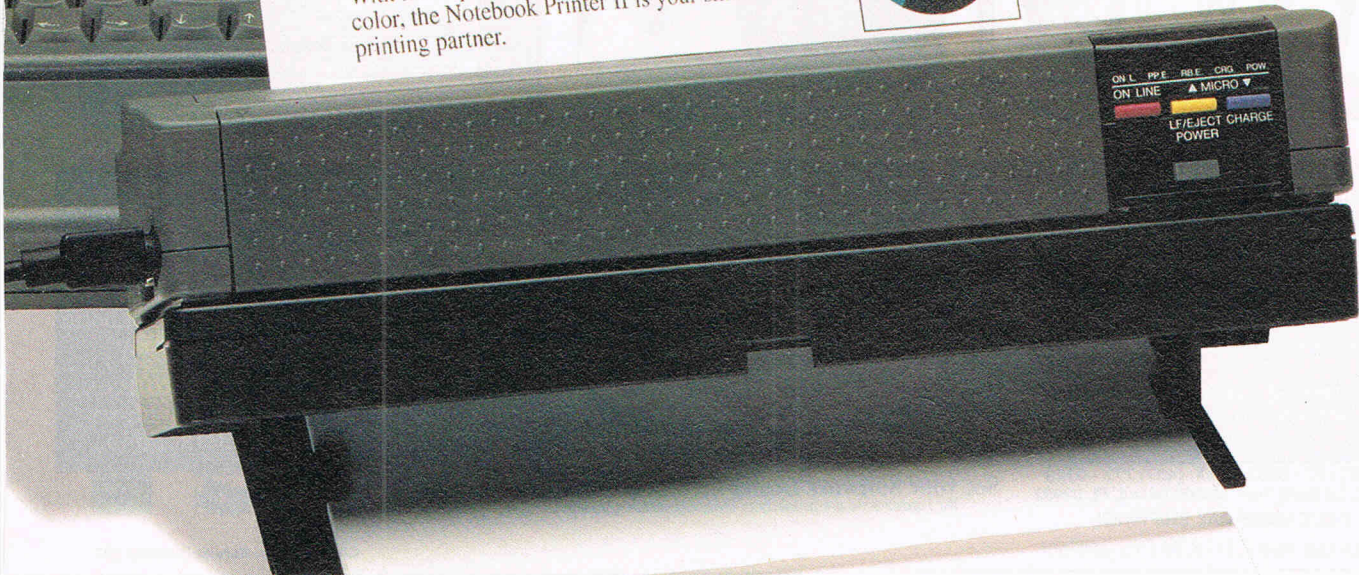
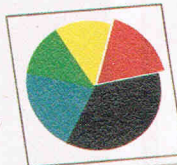
For those concerned with speed, the programmers have done another excellent job of delivering top performance at minimal MPC Level 1 standards. If speed is a problem, the first suspect should be your CPU or video card. Although a 386SX running at 16 MHz is the minimum requirement, a 386DX at 25 MHz is a more reasonable low-end recommendation. Likewise, a Windows accelerator video card is almost a must. The game offers both 16- and 256-color versions, but what little



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# 2 GREAT MEDICAL PROGRAMS

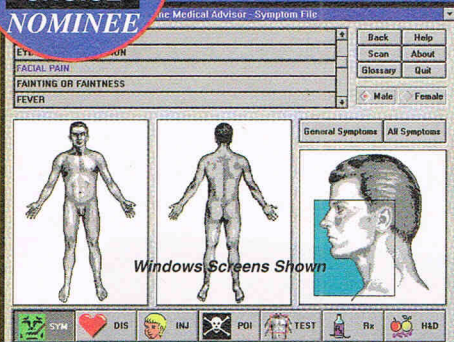
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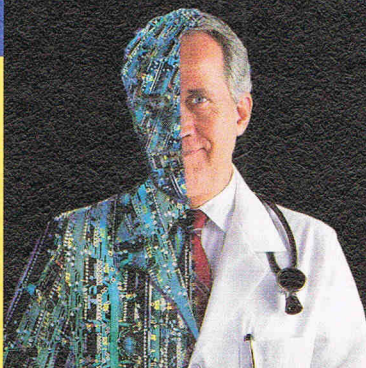
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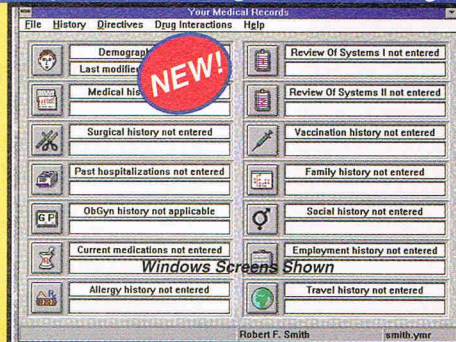


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motion view of each hole's gentle nuances and hidden traps. Full-motion video golf pros are always on hand to offer advice. Although there's little written documentation provided with the CD, introductory videos and extensive online help screens provide fast, essential information. Another nice touch: Digitized sound effects are in WAV format, allowing you to add your own personalized shot commentaries or weird background noises.

If you already own Links 386 Pro or the original Microsoft Golf for Windows, the multimedia edition adds many enjoyable extraneous effects but few indispensable enhancements. Newcomers to Links and Multimedia PC games in general, however, will find this product absolutely dazzling.

SCOTT A. MAY

Microsoft  
(800) 323-3577  
\$64.95

Circle Reader Service Number 439

## THE LEGEND OF KYRANDIA CD

There's something special about The Legend of Kyrandia, created by Westwood Studios, developer of the role-playing classic, Eye of the Beholder. It could be the gorgeous hand-painted graphics, the intuitive interface, or the digitized speech of this all-talking CD version. Perhaps it's simply the nature of the game—with its intriguing quest pitting good against evil, its unusually colorful characters, and its magic, humor, and subtle ecological slant. More than likely, what's special is how all these qualities combine to make this one of the year's most instantly accessible adventures.

Published in 1992, the disk-based version generated much prerelease hype but little fanfare upon its final unveiling. The conversion to CD format will hopefully ignite renewed interest

in this superb beginner's-level fantasy game. Kudos to sound engineer Toto Zara and voice director Jennifer Sward for some of the genre's cleanest and most expressive speech to date. As spoken by more than a dozen professional actors, the game's prose truly seems to come alive. Westwood Studios' incredibly smooth production surpasses the excellent work of multimedia pioneers LucasArts and Sierra—high praise indeed.

The story takes place in the enchanted world of Kyrandia, where the inhabitants once enjoyed a special kinship with the Natural Kingdom. The result of this covenant was the Kyragem, an enormous gem of fantastic magical powers. As necromancy spread across the once-simple kingdom, the Order of Royal Mystics was formed to help control the gem's magical influences. Through the ravages of war and the prosperity of peace, the Kyragem proved

a constant source of strength and good—until now.

Malcolm, court jester to King William the Generous, was apparently driven mad by greed and jealousy. To possess the Kyragem and control the land, he ruthlessly murdered the king and queen. Kallak, chief of the mystics and father of the fallen queen, imprisoned Malcolm in Castle Kyrandia. Fearing Malcolm's terrible rage, Kallak escaped to the countryside with his grandson, Brandon, sole heir to the throne. That was 18 years ago. Having broken his bonds, Malcolm has seized control of the Kyragem and now seeks revenge on the entire realm of Kyrandia. Only you, as Brandon, can retrieve the powerful gem, defeat Malcolm, and restore peace to the kingdom.

Your quest unfolds in five chapters that take you to every corner of the richly landscaped island of Kyrandia.

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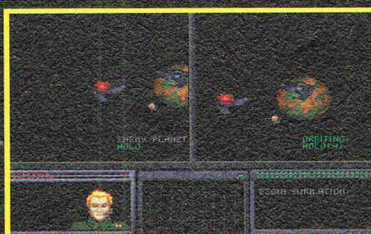
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Among dozens of min-quests, riddles, and visual puzzles, you must find four stones to restore the magic Amulette, your only hope against Malcolm's awesome evil powers. Despite this ominous premise—typical of the premises of most fantasy adventures—the designers evoke an uncommonly light and enjoyable atmosphere, with generous displays of both humor and pathos. Among the quirky characters you'll meet are Herman, a cave-dwelling handyman; Darm, an absent-minded wizard, and his bickering, fire-breathing dragon, Brandywine; and Treeface, spokesman for the ailing Natural Kingdom.

The game is free-form in appearance only; its structure is strictly linear. Although the direction of the story is permanently set, the speed at which it flows is determined by your ability to solve a long series of interactive puzzles. Few cannot be solved, even by the green-



The CD-ROM version of Legend of Kyrandia sports clear, unbroken speech and music of exceptional quality.

est adventurers. You'll be edged along by unmistakable visual or spoken clues. The streamlined point-and-click interface offers only the essential functions—you can pick up, drop, use, talk to, and look at objects. A backpack allows you to carry up to ten items in your inventory. Game control options include three walking speeds, speech and text toggles, and descriptive game

saves. Although the speech is always in English, text can be in English, French, or German. And the context-sensitive background music is outstanding; like the clear, unbroken speech, the CD's music and sound effects are of absolutely exceptional quality.

What's so special about The Legend of Kyrandia? Everything—it's a beautifully realized multimedia adven-

ture game that you simply won't want to end.

SCOTT A. MAY

Virgin Games  
(800) 874-4607  
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Circle Reader Service Number 440

## THE DELUXE AMERICAN HERITAGE DICTIONARY, THIRD EDITION

The American Heritage Dictionary is great because it offers much more than definitions—wonderful photos and drawings that tempt you to learn. While the PC version (available for Windows and as a DOS TSR) doesn't have the illustrations, it is still superb.

The software lets you look up a word in the included AHD and Roget's II Thesaurus simultaneously, viewing either or both as you





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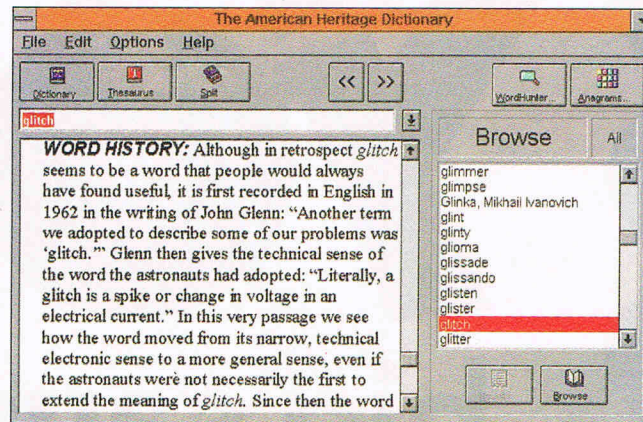
You can't get any closer than this!

wish on the left two-thirds of the screen. You can browse, type in a word, or double-click on any word to look it up—even a word that's within a definition or thesaurus entry. The program remembers which words you've already looked up, so you can re-view them.

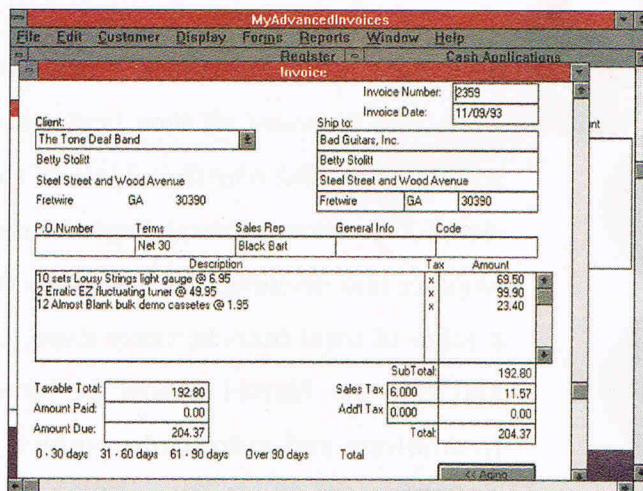
The right side of the screen displays an alphabetical list, which can be all the words in the dictionary, alternate spellings for a word it could not find, or a list resulting from a search. Cross-word cheaters can use wildcards and pattern matching (? for any character and \* for any number of characters, as with DOS) to create lists. For anagram aficionados, AHD will track down all words that can be made by rearranging the letters in a given word.

With the WordHunter feature, you can find just about anything by using logical AND, NOT, and OR expressions to search the dictionary. To find dog breeds of Tibetan origin, enter *tibet and dog* (the program returns *Lhasa apso*, *Shih Tzu*, *Tibetan spaniel*, and *Tibetan terrier*). I was able to search for all the definitions that mention or quote Shakespeare (there are 144) and get a list of colleges and universities in a certain state, including enrollment and even a brief address. You can copy and paste a word, definition, thesaurus entry, or results list into another program.

The dictionary also includes abbreviations, biographical and geographical information, and even Indo-European word roots. The deluxe installation adds etymologies, antonyms, regional variations, word histories, and usage notes (advice on which of several similar



The Deluxe American Heritage Dictionary is available in editions for both Windows and MS-DOS users.



MyAdvancedInvoices is a quick way to get your small-business or home office billing organized.

words to use).

At roughly 15MB, AHD is a disk hog, but worth it. The Word for Windows macro didn't work on my system, but you can write your own with WordBasic or Windows Recorder. Although the Windows and DOS versions can share the same data files (saving space on your hard drive if you choose to use both), the Windows version seemed to find entries in searches that the DOS version didn't.

Even with its problems, The Deluxe American Heri-

tage Dictionary is a must for word and knowledge lovers of any age. It's great to have such a thorough and interesting dictionary available for the PC, where you're able to search and jump quickly through its entries. Now if we could just get those cool illustrations from the print version . . .

J. BLAKE LAMBERT

Star Press/WordStar  
(800) 227-5609  
\$99 (Windows or DOS edition)  
\$148 (both editions)

Circle Reader Service Number 441

## MY ADVANCED INVOICES

MyAdvancedInvoices for Windows is a basic invoice manager best suited for individuals or small businesses. The program automatically numbers invoices and calculates totals, keeps track of outstanding credit, and warns you if an order would put a customer over his or her credit limit.

Simply enter all payments as they come in, and MyAdvancedInvoices handles the rest, providing a suite of reports to help you stay on top of your accounts. Best of all, you can quickly and easily print statements for just those customers who have a credit or balance due.

While MyAdvancedInvoices does let you change some basic headings and select standard forms, letterhead, or plain paper, it limits you to one font in one size per report. It imports invoice data only from its EasyDOS MyInvoices predecessor.

MyAdvancedInvoices is quirky in places and doesn't offer much protection from common errors, but it's a quick way to get your small business billing organized. There are many other, more sophisticated invoicing programs available for the PC, but if you have a home-based business and your needs and budget are modest, MyAdvancedInvoices can help you get started.

J. BLAKE LAMBERT

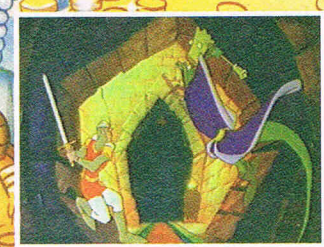
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## CROSSWIRE

Have you ever watched a TV quiz show and guessed the answers long before the onscreen contestants? It's easy, right? Now you can jump into the hot seat and test your knowledge with CrossWire, a fast-paced and challenging word-association game for Windows. Presented in a slick game-show format, with tongue firmly in cheek, this one-player contest is easy to learn and instantly addictive.

The premise is deceptively simple: Match words or phrases from one column with associated clues in another column before time runs out. Points are awarded for each correct pairing, while points are deducted for each wrong answer. The game advances with three solo CrossWire rounds of increasing point values. Score at least 2500 points to qualify for the LiveWire round, where you match quick wits with one of six computer opponents. Beat your challenger and move on to the final HighWire round, a frantic race against the clock with a devious twist: Hidden somewhere in your list of words are two bogus clues. Attempt to match a bogus clue, and you'll immediately lose the game. Winners take a trip to the HotWire room for a random shot at 50 "fabulous" prizes, most of which will bring a good chuckle.

Three levels of difficulty—Leisurely, Challenging, and Wired—determine the speed of the clock and thus, the pace and challenge of the game. The program divides its database of approximately 7560 clues among 16 categories, including Pop Culture, History, Geography, Movies, Music, Sports, Literature,

and Language. Additional clue disks are also available from the publisher for \$14.95. The program can track the history of up to seven players, assuring that each new game will be played with a fresh set of clues. Detailed player stat sheets record number of games played, points

CrossWire manages to educate while it entertains.

Graphics are simplistic but stylish, rendered in 16 colors with no animation. Likewise, sound effects are sparse but well implemented. This is the type of game that cries out for multimedia treatment, with live actors,



CrossWire brings game-show action, complete with tongue-in-cheek humor, to Windows.

scored, prizes won, and best categories.

The clues range from incredibly easy to impossibly tough, depending on your background and areas of interest. Since blind guessing can quickly cost you the game, when stumped you should match as many as you can, then simply let the clock run out. One of the game's most intriguing aspects is its purposely obscure category topics. As in the quiz show Jeopardy!, you're never sure what the clue relationships will be from the vague topic headings. In Commerce, for example, the topic "Head to Toe" requires matching articles of clothing to popular name brands. With other topics, such as "First Ladies," the relationship is more apparent. Like all good trivia games,

speech, flashy game-show theatrics, and phony commercials. A modem option would also be fun, allowing two players to go head to head, but none is offered.

Light and lively, CrossWire will have even the most serious Windows users uttering those famous last words: "Just one more game."

SCOTT A. MAY

Silver Sun  
(800) 874-5837  
\$39.95

Circle Reader Service Number 443

## WARLORDS II

While Warlords II may look at first like a role-playing game, don't be fooled by its medieval fantasy theme. Warlords II is a war game, along the lines of the classic Em-

pire, but this time in a medieval setting.

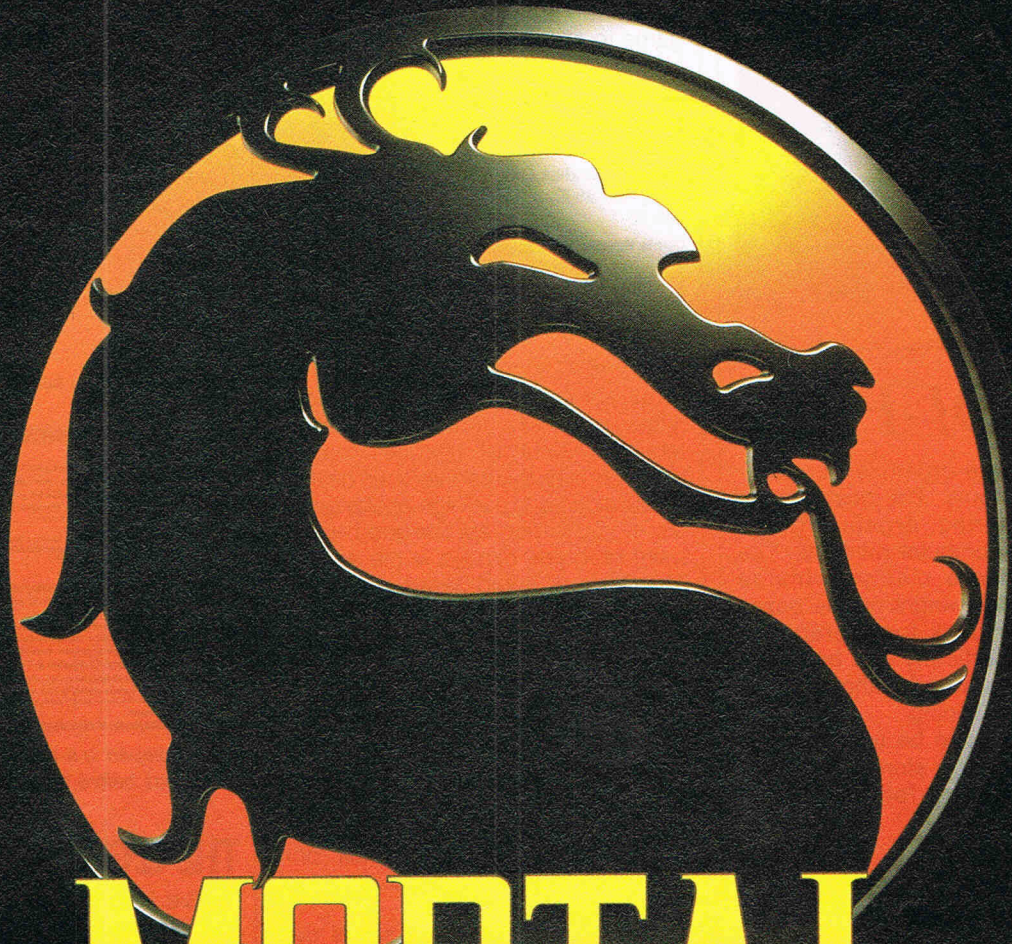
You start with control of a single city, with the goal of expanding your empire until you control the entire world. Up to seven opponents (human or computer) stand in your way. To build your armies, each city you control may produce up to 4 of the 27 types of units in the game, from simple wizard fodder such as scouts (human or computer) stand in your way. To build your armies, each city you control may produce up to 4 of the 27 types of units in the game, from simple wizard fodder such as scouts (human or computer) stand in your way. You can also purchase units that your cities may not be equipped to produce. Unlike all other units, heroes can only be purchased, never produced. Only heroes may take up quests and search ruins to obtain powerful magic items, gold, or special allies such as dragons and archons.

Combat between two army groups (each group may have up to 4 armies) is simple enough, but enemy cities may contain up to 32 armies, and only one army group may attack at a time. Army bonuses matter as much as or more than the army's base strength—heroes and elite units can help turn simple soldiers into fearsome killers of their own.

SSG claims advanced artificial intelligence on the part of the computer opponents, but it's the many game options (such as hidden maps, strong neutral cities, a diplomacy system, and computer personalities) that really make for interesting play. There's a random map option but, alas, no map editor. The random map option could benefit from more options, since very few prebuilt scenarios are provided. The time between game turns was about a minute on my 486SX. The game did lock

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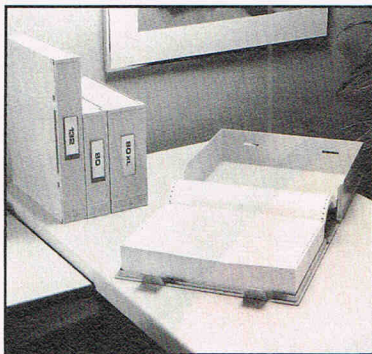
To order see your local retailer, or call 1-800-447-6543 (MC/VISA/AMEX).  
Mortal Kombat is available for the Amiga and IBM/Tandy & 100% compatible PCs.

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## REVIEWS

up twice on me, but only after more than 50 hours of play.

Despite the limited number of scenarios, I can heartily recommend this game to any Empire fan or to any war gamer looking for a different kind of world to conquer.

GRAHAM KINSEY

Strategic Studies Group  
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Circle Reader Service Number 444

## CLICKART STUDIO SERIES

Now that PCs have made it easy, lots of us are making nice-looking signs, flyers, advertisements, and newsletters—and plenty of ugly ones, too. The quickest way to improve your desktop publications is to use high-quality graphics. If you're not fast (or good) with a paint program, clip art is the solution. The Clickart Studio Series is an excellent collection of clip art, available in EPS (Encapsulated PostScript), CGM (Computer Graphics Metafile) or WMF (Windows MetaFile) formats. Check your software to see which formats it supports. If you use Windows, the WMF set is probably best (with its 48-color palette, as opposed to CGM's 12-color palette). All of these formats may be resized without losing detail, print well at various resolutions, and look good in black-and-white.

Artistry & Borders is a set of over 375 pictures for spot graphics and trim. There are illustrated capitals and numerals; borders for ads, stationery, and labels; award seals; and lots of general-use dingbat graphics. Animals & Nature includes over 150 images. They are mostly high-quality, useful pictures—of animals, plants, and nature scenes—along with a few borders and dingbats in nature themes.

J. BLAKE LAMBERT

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## DYNO NOTEPAD

Sometimes, the best way to organize your thoughts is to outline them. If outlining works for you, you'll find Dyno Notepad a handy way to work on your ideas using Windows instead of paper.

Outline processors help you put information into a structure that helps you organize your thoughts before, during, and after writing. Unlike with paper

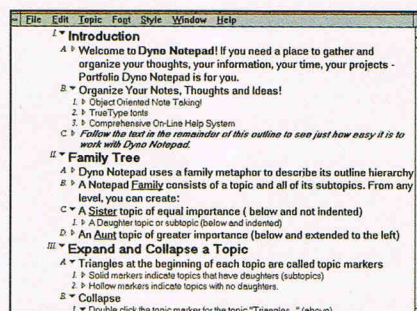
outlines, you can collapse and expand computer outlines to view or hide sections, like the way Windows File Manager lets you look at disk directory levels. Also, on a computer it's easy to move and rearrange outline items.

Dyno Notepad has some neat features. You can automatically enter opening and closing quotation marks using smart quotes, embed graphics, use type styles and color labels, and save outlines in standard outline formats (Ready!, PC-Outline, and ThinkTank formats) or in Rich Text Format for importing into your word processor.

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*Dyno Notepad is a handy way to organize your ideas before tackling a difficult project.*

## THE LEGACY

You've inherited a vast New England mansion from long-lost relatives. As usually seems to be the case with old mansions, you realize you might have inherited more than you bargained for when the door slams shut behind you—by itself. Welcome to MicroProse's Legacy, where a dream has just turned into a nightmare and zombies, ghouls, and assorted nasties are out to prove that your best pitch is the dead man's curve.

The Legacy distinguishes itself from earlier MicroProse adventure releases with crisp graphics and an intuitive interface. You can choose from a series of predefined characters or create one of your own. The characters are well designed and different enough to provide multiple game challenges. Unlike most RPGs and adventure games, this one doesn't allow your character to carry everything in the game, plus the kitchen sink. Four pockets for small objects plus the character's two hands are all you get until you find objects large enough to carry the others. A nice mapping feature is included, although you lose this later in the game.

Amusingly, the manual asks the ques-



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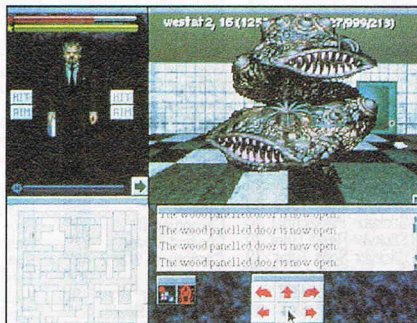
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Xandria, 874 Dubuque Ave., South San Francisco, CA 94080  
Void where prohibited by law.

## REVIEWS

tion, "Can my character die?" A better question might be whether your character can live, as this is a positively lethal game. Pick one of the characters with some magic ability to give yourself a fighting chance. Spells are an intrinsic part of the game. Your first few



MicroProse's *Legacy* lets you explore an old mansion, which is, of course, very haunted.

games will be spent finding different spells and magic crystals that recharge magic power. Remember that it's often better to run away and live to fight another day.

The game contains hundreds of rooms to explore on multiple levels both above and below ground (what haunted mansion doesn't have a dungeon?). Each level becomes increasingly more difficult and challenging.

It's not an easy game, but *The Legacy* is an entertaining addition to the horror RPG genre. Passing this one by would be a grave mistake.

WALLACE POULTER

MicroProse  
(800) 879-PLAY  
\$59.95

Circle Reader Service Number 447

## MYLABELDESIGNER, MYADVANCEDLABEL- DESIGNER

With most software trying to be all things to all people, MyLabelDesigner concentrates just on labels. This Windows program offers over 30 preset sizes for dot-matrix labels and over 50 for laser labels.

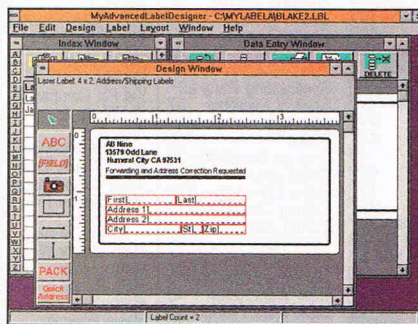
The program includes templates for mailing, disk, audio, and video labels; price tags; badges; rotary index cards; postcards; and more. You can enter and save your own label sizes as well. In this "Quick & Easy" version, each label is a separate item and may be different from the others in the same file in all respects except for

size—you can store unrelated items together.

In the Design window, you can enter and rotate text; include and size clip art; add lines, boxes, and circles; and even insert serial numbers. A Quick Address button inserts areas for you to type in name and address information on the label. You can easily copy one label's contents to the next (but copying inconsecutive labels—label 11 to label 20, for example—is more difficult). MyLabelDesigner imports graphics in BMP, DIB, EPS, GIF, PCX, TIF, and WMF formats, and it has a handy graphics preview feature. It includes 100 WMF images by T/Maker.

The Index window displays each label number and title. Alphabetical index tabs and jump buttons let you move quickly through the labels, and you can sort the labels by title.

Printing options are good. You can skip already-used areas on the first sheet of labels and select the number of copies of each label or set of labels. Documentation is sparse but adequate; the program includes a six-



MyAdvancedLabelDesigner includes a CD-ROM packed with over 1000 clip-art images.

page quick-start guide. Online help may answer questions not in the guide.

MySoftware also sells an advanced version of the program. Ironically, the database features make MyAdvancedLabelDesigner quicker and easier to use than the Quick & Easy version.

In the Advanced version, each label file contains only one style of label, loaded from a template or designed by you. There's no need to copy one label to another. Quick Address inserts all your field names in one easy click, and a pack feature eliminates blank lines.

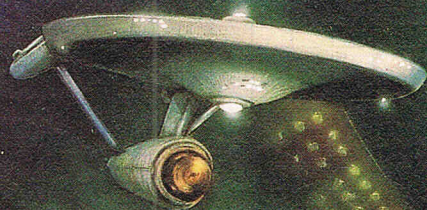
Only two fields of your database are visible at a time in the Index window, but you can choose which to display. You can sort the data list, enter or edit a list (in the Data Entry window), and import and export comma- or quote-delimited files. This makes the Advanced version useful even if you manage your database elsewhere.

The serial-number-labeling feature is



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like that of the other version, but you can set start and skip values. This version imports the same graphics formats, and the CD-ROM includes 1000 T/Maker clip art images. Curiously, though, you can't rotate text. The program has a quick-start guide and a slim manual to go with its online help.

The Quick & Easy version is OK for the simplest of tasks, but get the Advanced version (available on disks and CD-ROM). It's more powerful, more convenient, and more flexible.

J. BLAKE LAMBERT

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 \$59.95 (MyAdvancedLabelDesigner, floppy version)  
 \$79.95 (MyAdvancedLabelDesigner, CD-ROM version)

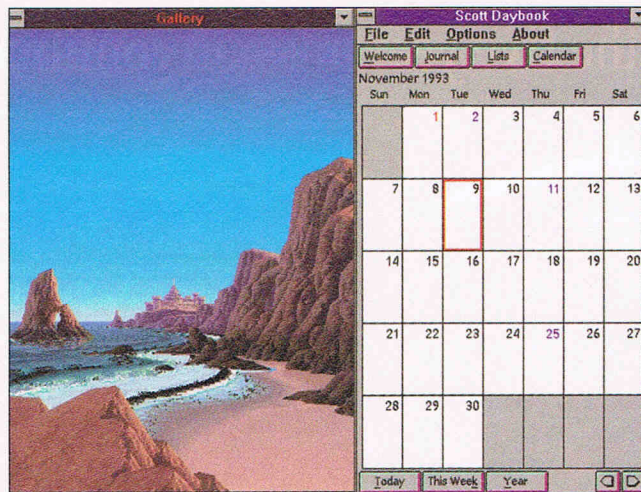
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## SEIZE THE DAY

In the high-tech, fast-paced world of computers, business, and everyday life, it's sometimes easy to lose track of things that really matter. When we finally do slow down, it's often only to fret about the precarious balance between responsibility and aspiration.

Seize the Day is a company that recognizes that we all need a little inspirational push sometimes—and what could provide a better opportunity than a personal information manager? The company's Windows PIM (also called Seize the Day) combines top-drawer productivity aids with uplifting motivational images and words. Although far from the most full-featured PIM on the market, it's without doubt the most unusual.

The program is divided into two sections: a personalized Daybook and an option-



*Seize the Day provides beautiful, animated backdrop images along with its personal information manager functions.*

al Gallery of 256-color graphics, the computer equivalent of calendar art. The Daybook opens to the Daily Journal, offering 1 of 365 motivational quotes on personal success from such diverse sources as Andy Warhol, Voltaire, Mae West, and Henry Kissinger. Also included are background profiles for each day's quotable personality, as well as a list of famous births and significant events that happened on this date in history. A built-in text editor lets you create a private, free-form message base, where you can quickly record ideas or maintain personal diaries. Additional journal libraries, featuring a variety of special themes, can be purchased from the company.

For a more structured, professional PIM, turn to your Personal Journal. Here you'll find a perpetual calendar (viewable in daily, weekly, monthly, or yearly mode) with a notepad and to-do list. An alarm feature, with snooze and autorepeat functions, can be linked to any of 21 high-quality WAV sounds included in the pack-

age. Also included are separate personal and business address lists, phone books, and contact managers. Some of the standard PIM features missing here are a telephone autodialer, an envelope printer, and a form letter generator.

A strong point is the online manual with hypertext index and topic searches. Linked to the built-in text editor, information can be easily cut, pasted, copied, or moved using pull-down menu commands or drag-and-drop mouse controls. Context-sensitive printing capabilities let you create hardcopy output from almost any portion of the program. The product consumes little of Windows' precious system resources, making it an ideal multitasking PIM.

The graphics gallery, although completely optional, is easily the program's most fascinating feature. The twist here is that the 256-color paintings—one from each month of the year—are "alive." Initially, the only indication is color cycling, a stunning visual effect that

makes key elements of the picture appear to move. You'll see flowing waterfalls, waves lapping a shoreline, and smoke billowing from a chimney. Each day—in fact, every hour—the picture changes. Linked to your computer's internal clock, the image slowly reflects the rising and setting sun, as well as such random elements of nature as rain, snow, and wind. Each picture also changes throughout the month. In the October scene, for example, leaves gradually turn to autumn colors, then drop to the ground. In March, the painting slowly melts its snowy cover to reveal the first buds of spring. A special time travel feature allows you to view all pictures at any given date and time. Additional gallery collections are available from the program's publisher.

*Carpe diem!* In Latin, this means "seize the day"; that is, enjoy the present and don't place all hopes in an unforeseen future. Seize the Day may not be the most powerful Windows organizer, but it's definitely the most personal, which, for many, might ultimately be more meaningful.

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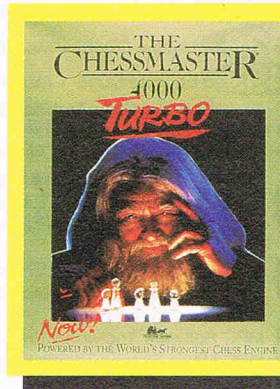
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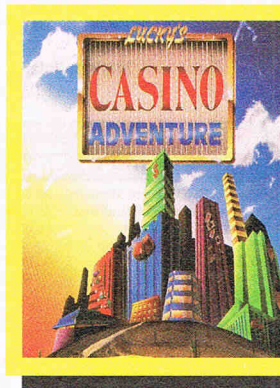
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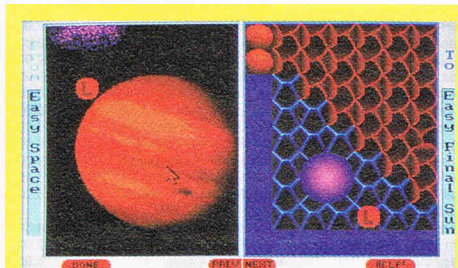
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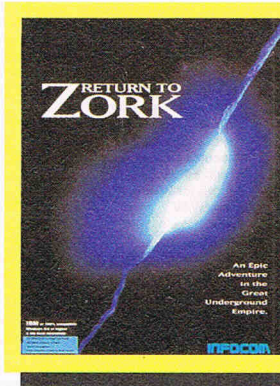
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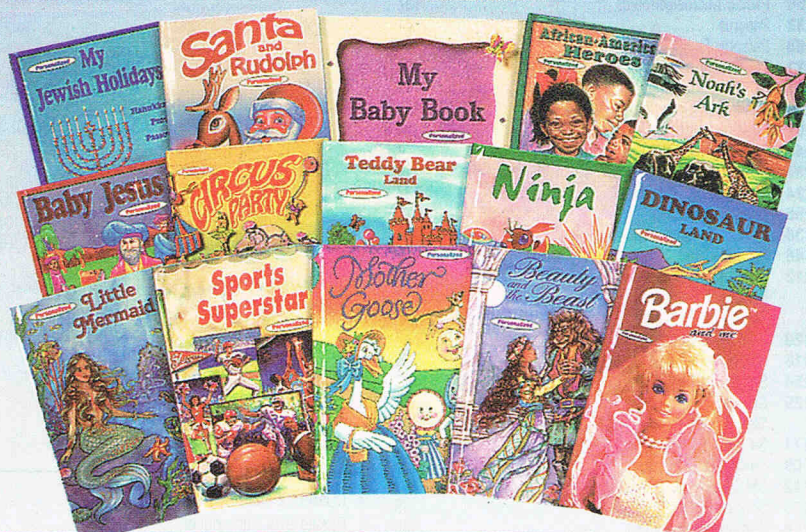
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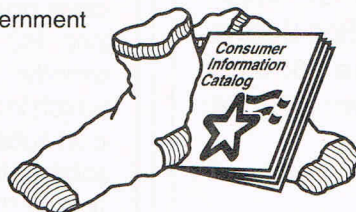
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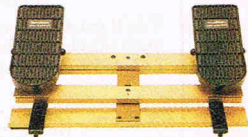
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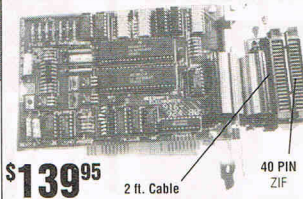
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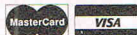
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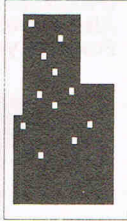
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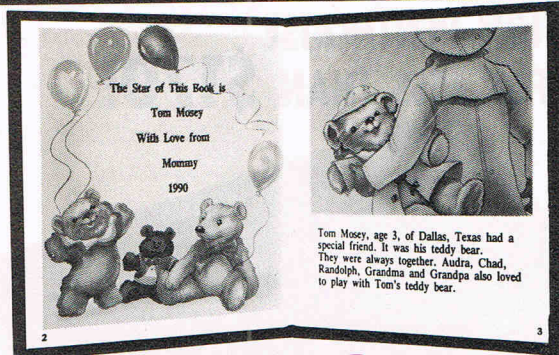
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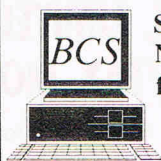
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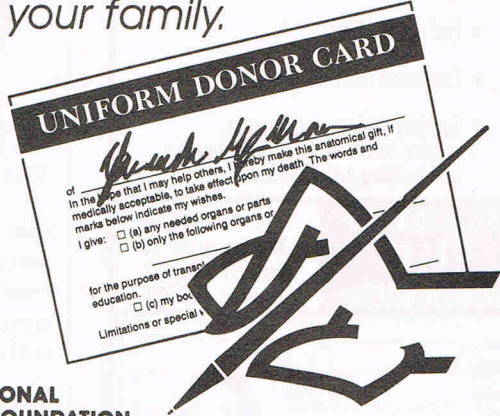
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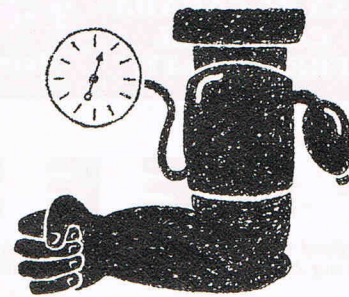
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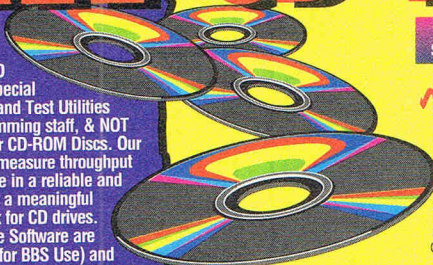
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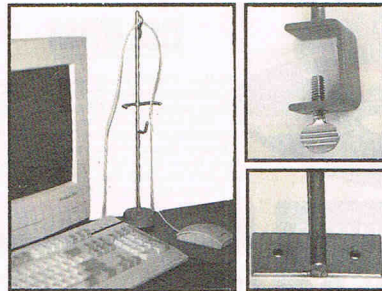
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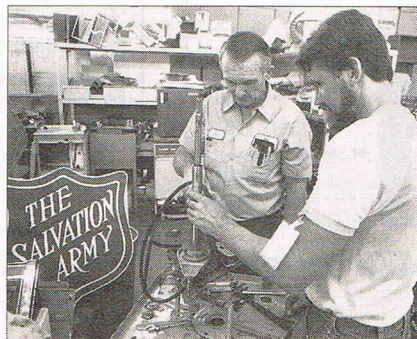


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*continued from page 144*

oped another of their famous Sim games, and this time you're responsible for designing a national healthcare system. You choose the values you want to include, combine policy elements, and wait to see how your system affects patients, doctors, hospitals, businesses, insurers, and the national budget over a period of time. While fun to play, SimHealth is a serious learning tool for everyone.

### **A Fort Knox for Data**

FolderBolt for Windows is a new software product from Kent♦Marsh, a leading producer of PC security software, that provides state-of-the-art security at the folder/directory level with a full range of very flexible features. You can lock folders completely, secure them as read-only, or designate them as one-way drop folders. Groups of folders can be locked or unlocked in sets. You can encrypt your files, create self-decrypting files for confidential material you want to send elsewhere, and even securely override password protection if a password is forgotten. According to Kent♦Marsh's president, Vance Nesbitt, "This system provides absolutely uncrackable data protection. It's like putting your data in Fort Knox." At \$99, it's a steal. Contact Kent♦Marsh at Kent♦Marsh Building, 3260 Sul Ross, Houston, Texas 77098; (713) 522-5625, (713) 522-8965 (fax).

### **TI for Open Standards**

It's open season in Texas—for printers. Texas Instruments announced its participation in the development of an industry standard printer-management model for desktop and local area and wide area network printers. Ron Smith, manager of TI's Advanced Printer Technology Develop-

ment, says, "The establishment of a standard database to describe and manage printer functions will allow application and systems developers to begin the development of standard printer management and control software." Of course, Smith says, the real winner will be printer users: Such a standard "will ultimately free the user from dealing with the myriad technical details associated with setting up and controlling printers."

### **You Call That a Free World?**

Moscow citizens used to gabbing on the phone all day might not appreciate their welcome into the twenty-first century via a new state-of-the-art telephone network. Currently, Moscow General Telephone Service, which services all of Moscow's 15 million residents, charges its customers a flat monthly fee, regardless of the number or duration of telephone calls made. However, according to Compaq Computer, the Russian phone company is purchasing Compaq PCs and related options in order to automate Moscow's telephone operations, including the entire accounting system. This means that the phone company, for the first time, will be able to track actual telephone usage. No one said freedom was free.

### **Long Filename? No Problem!**

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### **DOS 6? Help!!!**

Having one too many DOS 6 headaches? Forget the aspirin. DOS *Help!* version 6.0 from Flambeaux is a complete online manual that provides in-depth coverage of all the latest DOS features. More than 600 fully cross-referenced and indexed topics, 100 pop-up definitions, and a tutorial are all part of the package. "This database is our most ambitious project yet," says Dan Rollins, author of DOS *Help!* 6.0. "By comparison, Microsoft's User's Guide is pretty anemic. It lacks any kind of command reference, and the Microsoft online help text is inadequate; it contains some errors and omits lots of important details." List price is \$49.95. Contact Flambeaux Software, 1147 East Broadway, Suite 56, Glendale, California 91205; (818) 500-0044, (818) 957-0194 (fax).

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## TECHNOLOGY UPDATE

900 MHz breakthrough!

## New technology launches wireless speaker revolution...

Recoton develops breakthrough technology which transmits stereo sound through walls, ceilings and floors up to 150 feet.

By Charles Anton

If you had to name just one new product "the most innovative of the year," what would you choose? Well, at the recent *International Consumer Electronics Show*, critics gave Recoton's new wireless stereo speaker system the *Design and Engineering Award* for being the "most innovative and outstanding new product."

Recoton was able to introduce this whole new generation of powerful wireless speakers due to the advent of 900 MHz technology. This newly approved breakthrough enables Recoton's wireless speakers to rival the sound of expensive wired speakers.

**Recently approved technology.** In June of 1989, the *Federal Communications Commission* allocated a band of radio frequencies stretching from 902 to 928 MHz for wireless, in-home product applications. Recoton, one of the world's leading wireless speaker manufacturers, took advantage of the FCC ruling by creating and introducing a new speaker system that utilizes the recently approved frequency band to transmit clearer, stronger stereo signals throughout your home.



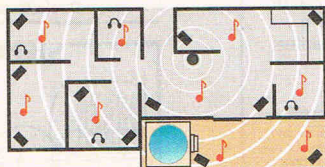
**Crisp sound throughout your home.** Just imagine being able to listen to your stereo, TV, VCR or CD player in any room of your home without having to run miles of speaker wire.

Plus, you'll never have to worry about range because the new 900 MHz technology allows stereo signals to travel over distances of 150 feet or more through walls, ceilings and floors without losing sound quality.

**150 foot range through walls!**

Recoton gives you the freedom to listen to music wherever you want. Your music is no longer limited to the room your stereo is in. With the wireless headphones you can listen to your TV, stereo or CD player while you move freely between rooms, exercise or do other activities. And unlike infrared headphones, you don't have to be in a line-of-sight with the transmitter, giving you a full 150 foot range.

The headphones and speakers have their own built-in receiver, so no wires are needed between you and your stereo. One transmitter operates an unlimited number of speakers and headphones.



Recoton's transmitter sends music through walls to wireless speakers over a 75,000 square foot area.

**One transmitter, unlimited receivers.** The powerful transmitter plugs into a headphone, audio-out or tape-out jack on your stereo or TV component, transmitting music wirelessly to your speakers or headphones. The speakers plug into an outlet. The one transmitter can broadcast to an unlimited number of stereo speakers and headphones. And since each speaker contains its own built-in receiver/amplifier, there are no wires running from the stereo to the speakers.

**Full dynamic range.**

The speaker, mounted in a bookshelf-sized acoustically constructed cabinet, provides a two-way bass reflex design for individual bass boost control. Full dynamic range is achieved by the use of a 2" tweeter and 4" woofer. Plus, automatic digital lock-in



Breakthrough wireless speaker design blankets your home with music.

tuning guarantees optimum reception and eliminates drift. The new technology provides static-free, interference-free sound in virtually any environment. These speakers are also self-amplified; they can't be blown out no matter what your stereo's wattage.

**Stereo or hi-fi, you decide.** These speakers have the option of either stereo or hi-fi sound. You can use two speakers, one set on right channel and the other on left, for full stereo separation. Or, if you just want an extra speaker in another room, set it on mono and listen to both channels on one speaker. Mono combines both left and right channels for hi-fi sound. This option lets you put a pair of speakers in the den and get full stereo separation or put one speaker in the kitchen and get complete hi-fi sound.



These wireless stereo headphones have a built-in receiver.

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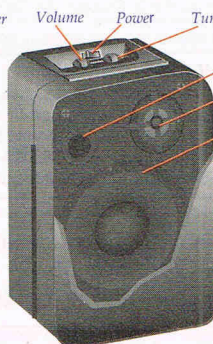
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# NEWS & NOTES

Jill Champion Booth

## Climb Capitol Hill

What's it like to be a member of the U.S. Congress, rising from the freshman ranks to become Speaker of the House, Senate Majority Leader, or chief House Bank abuser? (Just kidding.) The Software Toolworks Presents . . . Capitol Hill is a new CD-ROM edutainment title that gives you a first-person perspective on what it's like to be part of the highest lawmaking body in the country. Through narrated video clips, photographs, and illustrations, you'll explore the inner workings of the U.S. Congress—how a bill becomes law, how operating budgets are created, how the Congressional support staff performs its duties, and more. You'll have a chance to meet your political peers and engage in a walking tour of the Capitol. Suggested retail price is \$49.95. Find your seat on Capitol Hill by contacting The Software Toolworks, 60 Leveroni Court, Novato, California 94949; (415) 883-3000.

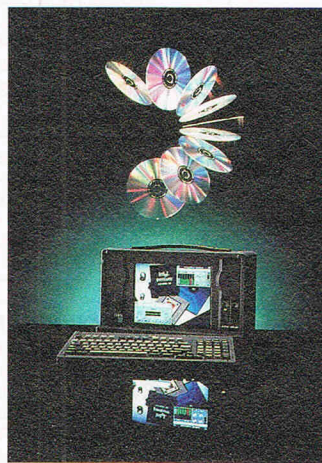
## Macintosh TV

If you like the idea of controlling your TV with a desktop computer, read on. Apple's new Macintosh TV is a computer *and* a full-screen TV combined. You can capture a scene from your favorite TV show and save it as a graphic, switch from VCR to cable to the built-in CD-ROM drive, set a password so your kids can't watch "Beavis and Butt-Head" without you, run your favorite Macintosh software one minute and watch MTV the next, or jam with Pearl Jam in the CD drive—and these are just a few of the really cool options at your fingertips. The system costs a mere \$2,079—and the whole thing fits neatly on the top of your desk. Look for this special-edition Macintosh TV at select retailers, at college bookstores,

and in the Apple direct-mail catalog. Contact Apple Computer, 20525 Mariani Avenue, Cupertino, California 95014; (800) 795-1000.

## First Pentium Portables

The hot (literally) Pentium chips introduced last year are now turbocharging a line of five-slot portables from Dolch—a company well known for its rugged power portables. But what about the heat problem? Dolch says that's been solved with the liquid cooling technology originally developed for the company's line of MACH portables. Also avail-



able is a stereo-sound model, the A-PAC, a complete multimedia delivery platform with enough raw computing power and expandability for even the most serious of presentation professionals. Prices for the Pentium-based portables begin at about \$6,000. Contact Dolch Computer Systems, 372 Turquoise Street, Milpitas, California 95035; (408) 957-6575, (408) 263-6305 (fax).

## Gifts in Kind

For those who haven't heard, the Software Publishers Association is spearheading an industrywide initiative to encourage technological donations,

with a goal of reaching 100,000 charities by the year 2000. In a partnership with Gifts in Kind America, the leading charity in product philanthropy, the SPA wants to expand the donation of software to community-based nonprofit organizations nationwide. In 1993 alone, more than 80,000 packages of current-version software, worth more than \$16.8 million (retail value), were donated for distribution through Gifts in Kind, which distributed the donations to health- and human-services, community-development, educational, environmental, and arts and cultural organizations. Contributions are essential for providing unemployed and other disadvantaged Americans with computer-skills training and for improving productivity within nonprofit organizations themselves. "By putting the best our industry has to offer into the hands of these capable organizations, we will ultimately benefit all those who are aided by the programs of our nation's nonprofit organizations," explains Katherine Borsecnik, vice president of operations for the SPA. For more information, contact Gifts in Kind America, 700 North Fairfax Street, Suite 300, Alexandria, Virginia 22314; (703) 836-2121, (703) 549-1481 (fax), or the SPA, 1730 M Street NW, Suite 700, Washington, DC 20036; (202) 452-1600, (202) 223-8756 (fax).

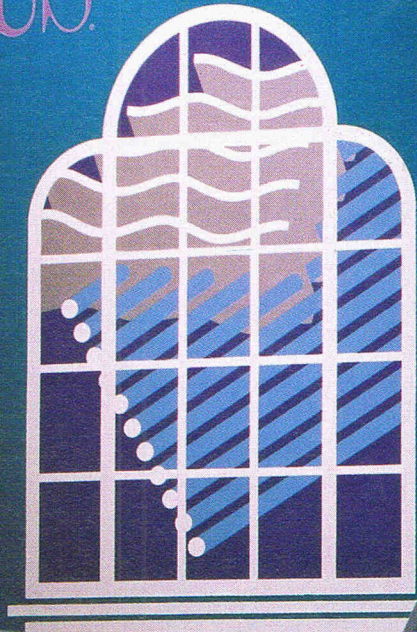
## SimHealth

Once you're through automating your claim-tracking process, maybe you'd like to try your hand at designing a new healthcare system for the country—one that bypasses the tax-money-hungry hands of an overbureaucratized Uncle Sam, perhaps? The people at Maxis seem to think you can do it. They've developed

*continued on page 140.*

**Dolch takes a giant stride with the first portable Pentium machine.**

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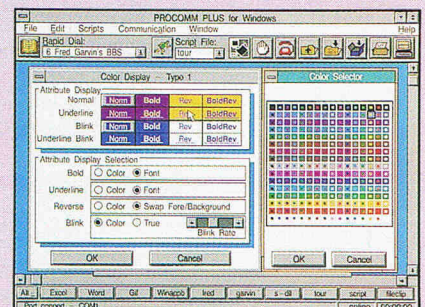
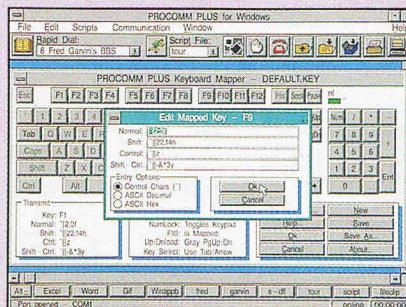
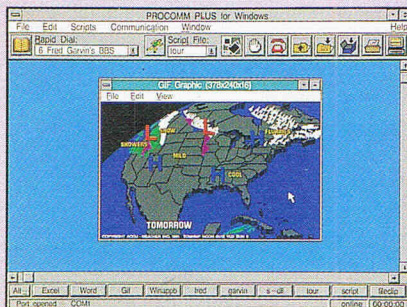


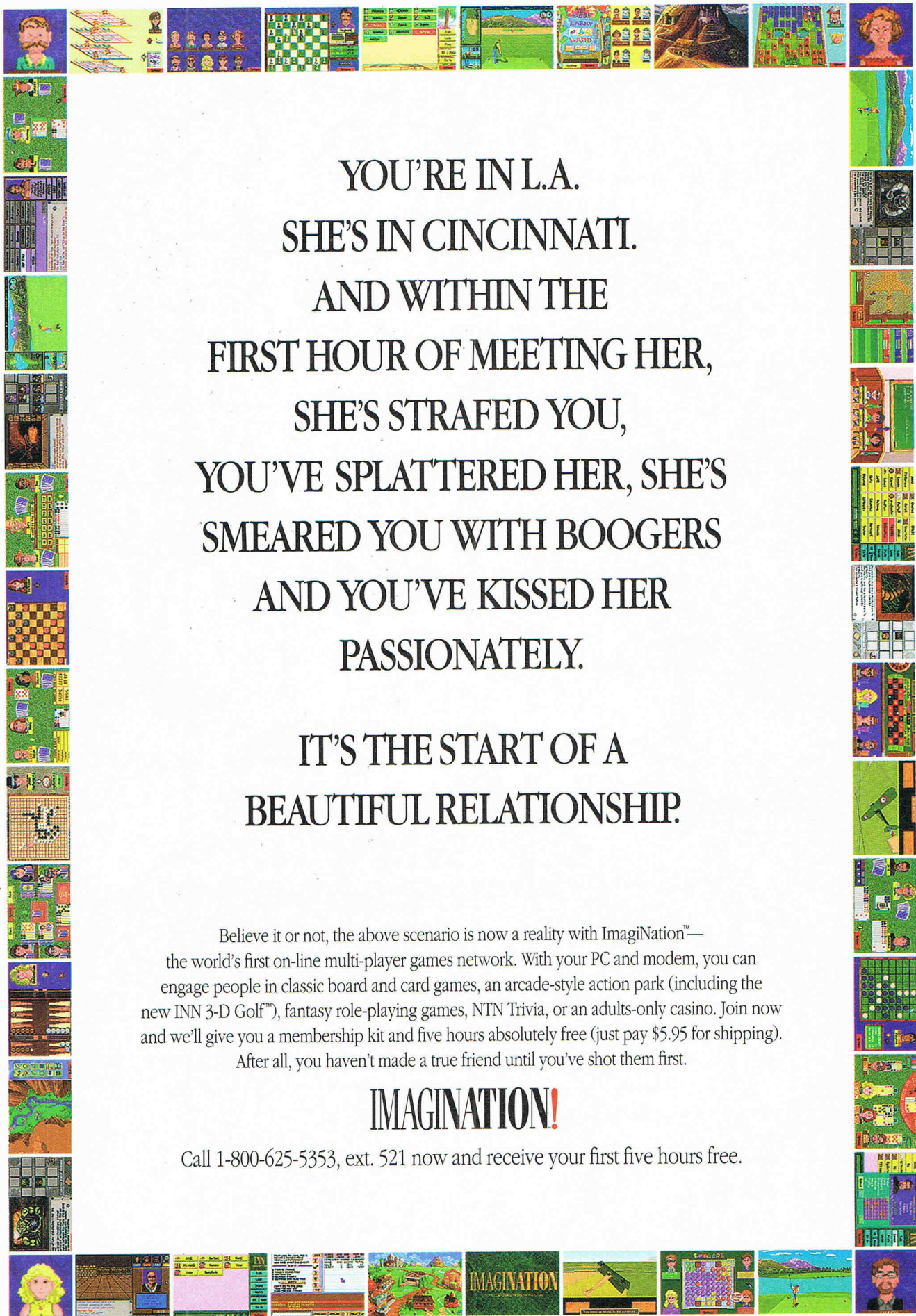
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