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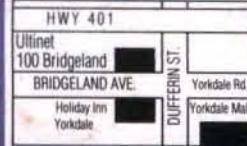
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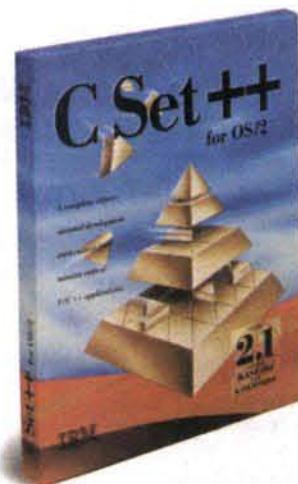
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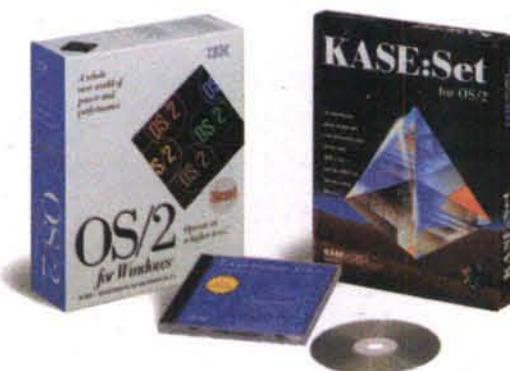
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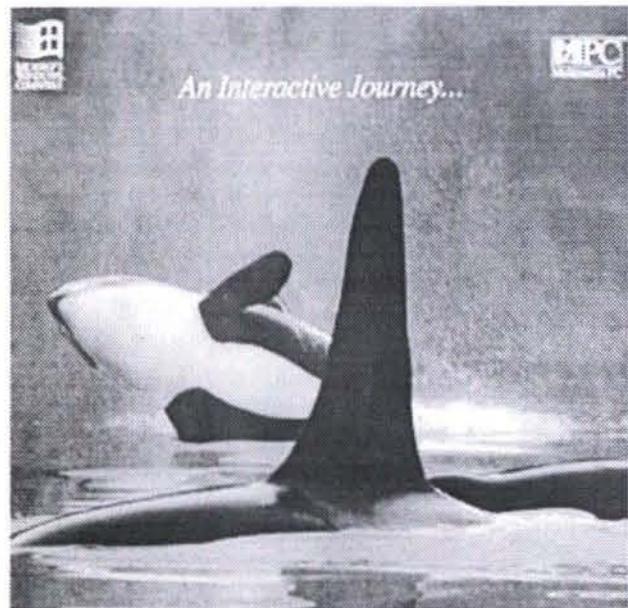
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CONTENTS



COVER STORY

16 A CD-ROM Cornucopia

INDUSTRY

10 Into The Mouth of Gator Country: Touring IBM
By Graeme Bennett

67 Plug And Play On Its Way
By Geof Wheelwright

68 PCI Plugs and Plays

70 Plug And Play Follies
By Graeme Bennett

EVENTS

52 Howard Rheingold and the Next Revolution
The WRITE94 Conference
By Graeme Bennett

PUBLISHING

73 Print On Demand Quickly Evolving
By Ross MacDonald

REVIEWS

75 Books on Demand
Interview with Jack Powers
By Graeme Bennett

36 NEC SilentWriter 610
By Graeme Bennett

60 AST Advantage
By James MacFarlane

64 The Official Word on Modems From Hayes
By Keith Schengili-Roberts

64 Berkeley Unix
By Keith Schengili-Roberts

65 Tenth Anniversary Retrospective of the Mac
By Keith Schengili-Roberts

ONLINE

58 Study: Telecom Benefits Poor Kids
By Dana Blankenhorn

76 The Internet Bazaar
By Boris Anderson

77 Cruisin' The Chocolate Fudge Sundae
By James MacFarlane

SOFTWARE

46 Borland Launches dBase For Windows
By Linda Rohrbough

48 QMedia 2.0 For Windows
By Ross MacDonald

50 OS/2 Performance Beta
By Graeme Bennett

54 Hermes: Microsoft's Unsung Product
By Geof Wheelwright

62 SPC's Spotlight, Harvard Upgrade
By James MacFarlane

DEPARTMENTS

6 Letter from the Editor
9 Mailbox
82 What's New
85 Newsbytes
86 User Groups
87 Training
88 Calendar of Events
89 Show List 1994-95
90 Classifieds
92 Computer Directory
93 Index of Advertisers

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Full Of It

When Gutenberg invented the movable type press in the 15th Century, the first big-name title to roll off the presses was the *Mazarin Bible*. But before an industry sprang up in support of the publishing business, there were a few tough years — years in which few people understood the medium and how it differed from what had gone before it. A similar phenomena is occurring in the CD-ROM and online publishing industries today.

The idea of being able to store so much data on a tiny, shiny, round plastic disc makes the mind of your average publisher giddy with possibilities. Up to 600 million characters of data can be stored on a single 4.75-inch disc. If a word is roughly six characters, that would be something in the order of 100 million words, or the equivalent of 270,000 pages of text.

An edition of *The Computer Paper* has about 60,000 words, so in theory, we could put the text of 1666 full-sized editions on one of these discs. (At 12 editions a year, the disc would be full somewhere around the year 2125!)

Having watched sales of CD-ROM players flounder for a number of years, CD-ROM publishers realized that just plain text dumps of the classics were not going to sell CD-ROM players. So they moved into multimedia — sound, graphics and styled text. Then they went berserk in their quest for things to put on CD-ROM. A recent catalogue from U.S. distributor Educorp listed over 700 "popular titles". Many of them sound fascinating, but my recent experience with a handful of discs suggest that something is still missing. I looked at one on Parenting, The Family Doctor, a couple of encyclopedias and some games. From these, I gleaned some generic problems with CD-ROMs.

Problem No. 1 — Too Slow

CD-ROM is a wonderful media, because it allows such an enormous amount of data to be stored so inexpensively. After a certain volume is reached, the cost of each disc drops to a couple of bucks a pop — less expensive than most books, but capable of holding much more information.

The major shortcoming of this media is that it was really designed to reproduce music, not shoot data to computers. No one needs to send music to the player any faster, so increasing the speed simply isn't an issue with music CDs. With data, however, you can't ever seem to get too fast. So, we have problem number one — even with double- and triple-speed drives, CD-ROMs are generally too slow to be much fun. Admittedly, there are workarounds appearing, such as, compression schemes that allow full-screen, full-motion video to be played back, but they require more hardware or high powered computers to run well.

Problem No. 2 — Random Access

Books aren't perfect: it's easier to turn a page with one hand when there's a Page Down key, and searching is much better with a computer, but for some things, you just can't beat books. They're great when you are flipping around, reading the dust covers, scanning the index, reading the Foreword, flipping pages to get to the naughty bits. Search engines, hypertext links and find commands are wonderful, but learning and exploring ideas are sometimes

better done at a slower speed without these kinds of distractions.

Problem No. 3 - You can't read them on the toilet

I read all over the place, but my least favourite place to read is in front of a computer screen. The resolution of most screens is not good enough. The screens have glare and I prefer to read lying down, or in an easy chair. I can do these things with a book or magazine.

Problem No. 4 — High Res Pictures

I have yet to see a picture on a CD-ROM sent to a computer screen that looks as good as a medium-quality reproduction in a book. When they do go high res on CD-ROM with the likes of PhotoCD, the number of decent pictures they can squeeze onto a CD-ROM drops to about 100 photos, and leaves no room for text files. And we are back to our problem number one — slowness. Slapping thousands of digitized pixels at a screen from a CD-ROM is a slow process. It is easy to beat the speed by turning the pages of a book.

Problem No. 5 — CD-ROMs are finite

One of the big thrills of CD-ROMs is the concept that they would contain everything you would need to know about a given topic. The ideal would be that you would search on a given item and you would come up with a listing of all the possible things you should know and consider. Guess what? It doesn't work. You are still limited. You will still only get a very small sampling of all the information in the world, no matter what you are working with. If it is an encyclopedia, it is limited by the constraints and world view of the publisher. They are just like books, but it is easy to forget this because it is a new media and it has been sold as being able to have so much data come together in one place. This is what the Internet is about I guess....

Problem No. 6 - No CD-ROMs at the Library

Our local library still doesn't stock CD-ROMs. Given all the government budget cuts, they are not likely to get them real soon either. Even if they could afford them, I would wager CAAST or someone like that would come down on them for renting software. Many of the CD-ROMs being put out today are interesting, but not the kind of thing that have huge enduring qualities.

I might like to quickly peruse a CD-ROM on Whales, Parenting, or Beethoven, but in most cases, I am not finding them essential. I would really like an easy and inexpensive way to "consume" these titles. Just as I don't want to buy Wayne's World 2 for \$19.95, but probably allow my children to coerce me into renting it for \$3 at the video store, I don't want to drop \$29-129 on the latest CD-ROM. I would probably rent them if they were cheap and readily available.

Hope springs eternal

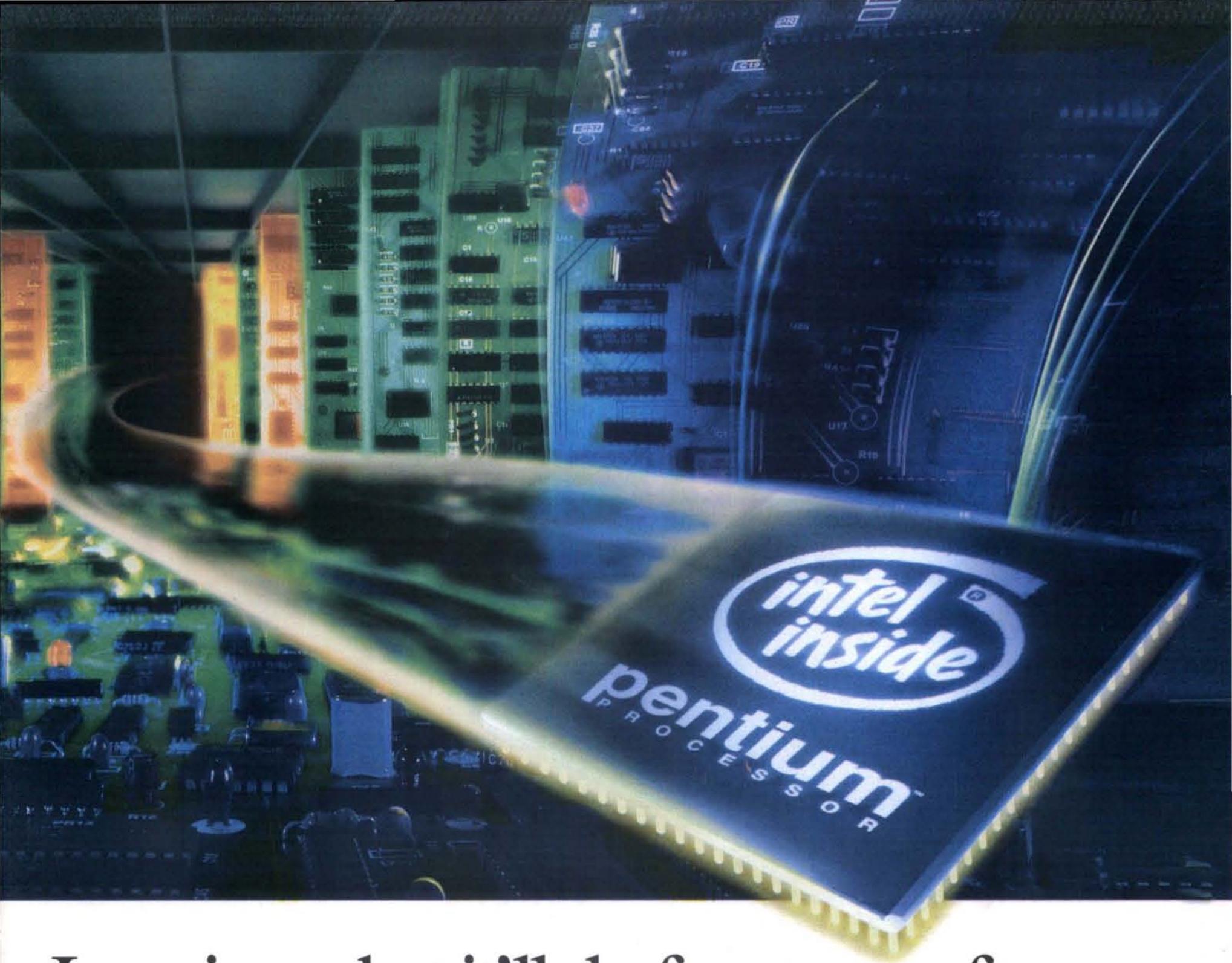
This is not to say that the category isn't exciting. I love having a CD-ROM drive and look forward to sampling many more titles. One that have stuck and will probably remain close to my drive is the Microsoft Bookshelf, which combines an atlas, dictionary, encyclopedia, quotations and a thesaurus—an invaluable combination for writers. They are also great for collections of fonts, clipart and shareware files.

Fate

In the end Gutenberg went out of business and lost his press to a guy named Faust. Time will tell what the fate of some of today's CD-ROM publishers is to be.

Enjoy the issue.

Douglas Alder
Editor/Publisher



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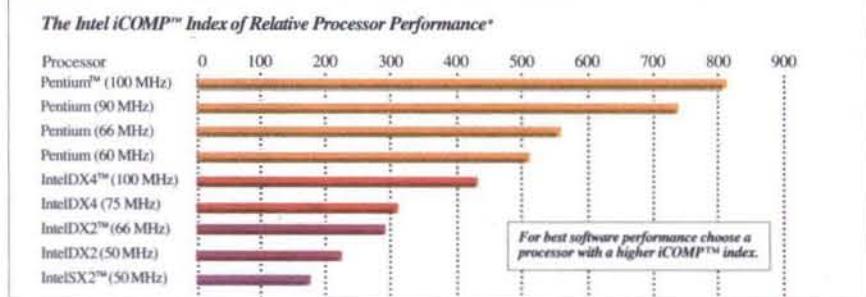


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Mating Unsuccessful

How do you use a Commodore 1701 monitor as an SVHS monitor? I must admit that I haven't actually tried to do it myself. However, my experience with connectors is similar to that of zookeepers trying to ensure the existence of endangered species: they don't mate when they should, and when they do it is usually unsuccessful.

Garth Miles
KAMLOOPS, BC

GB replies: The Commodore 1701 and 1702 monitors have a switch on the back labeled "Output." Set this to rear, and use a video cable that separates the luma and chroma outputs and plug these into the RCA jacks on the back of the monitor to provide superior (SVHS compatible) output to that of a standard composite feed. A Commodore dealer should be able to provide you with the pinouts for a C64-to-SVHS cable, or your SVHS video device manual may provide details for other sources.

New User's Modem Blues

A few months ago I joined the growing ranks of people who purchased their first computer. Like entering any new community, it takes awhile to get over the feeling of being the new kid on the block. Of all the things studied during my introduction, the modem surely must be the most confusing.

I have no doubt that the information

highway is the way of the future. The problem is that the way is shrouded in fog to the uninitiated. Instructions for Terminal in Windows may as well have been written in Sanskrit. The basic procedure seems simple enough, just dial away and the mists will part.

Well, not quite. With great trepidation, I made my fledgling steps into the wonderful world of modem madness. And what fun it has been, assisted by the trusty Bulletin Board Listings in "The Computer Paper". Fully expecting a welcome by helpful computer types, a breed known to relish the slightest chance to tutor the uninitiated, I ran into the exact opposite. It seems the BBS's are somewhat more of a cult than a culture. While the listing were clearly stated as being incomplete, it would have been to the system operators advantage to have included more information to *The Computer Paper*.

Maybe once the world of modems was populated solely by the computer elite, those pioneering few who were fully conversant in all the requirements and technical jargon, and were knowledgeable in the social and technical protocols that made the telephone lines a true worldwide interpersonal link.

But times have changed. Modems are coming installed in almost every new computer. There should be allowances made for neophyte networkers who try to enter this Strange New World. One of the most useful things would be an immediate quick out command that would let the errant Bulletin

Board surfer find a graceful exit, especially if it happens to be a system that allows only members. I have wandered into a few of these, not forewarned by any information on the BBS list, only to be dumped out with little angry emoticons. Well, would if could, let show the know, so long till then.

Maybe a few more instructional articles in your fine magazine could be aimed at the new user of modems, rather than those who actually know what ASCII means. With articles focused on Bulletin Board Services and

what is expected of a newcomer, the inexperienced user could feel more comfortable during their initiation into computer communications. I am sure that there are many people wondering what to do with the modem so conveniently included in their package deals. At this point, any information would help. The new kids on the block would appreciate it.

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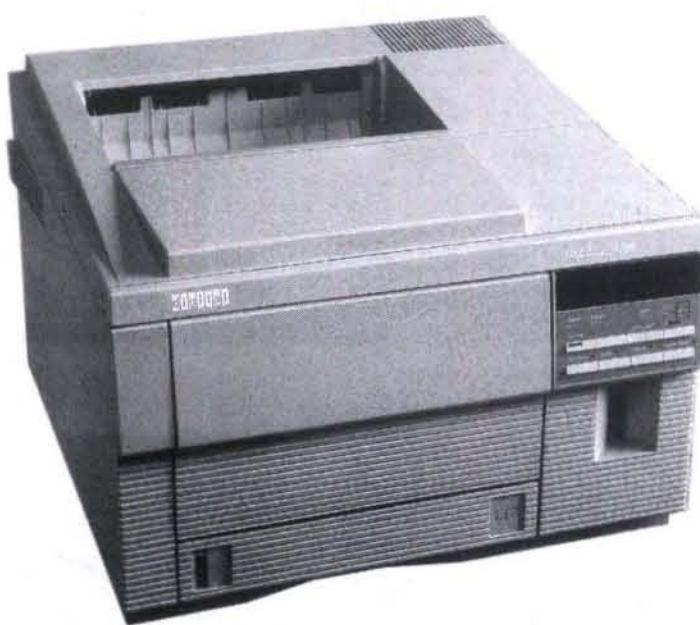
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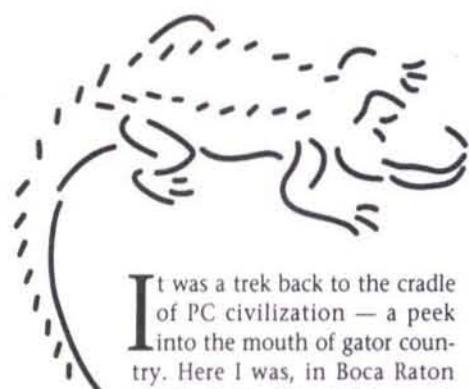
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INDUSTRY

Into the Mouth of Gator Country

BY GRAEME BENNETT



It was a trek back to the cradle of PC civilization — a peek into the mouth of gator country. Here I was, in Boca Raton (that's "Rat's Mouth" to you), the birthplace of the IBM-PC and the home of OS/2.

Boca Raton, for those that don't know, is in sunny Florida, about an hour north of Miami. IBM has a huge research and development facility here, located on a site sprawling across 585 acres (complete with a 30-acre portion set aside as an environmental reserve).

I had come to tour the labs of Big Blue, but my first experience of South Palm Beach County was that of the heat. The air temperature was over 90. I would have verified the reports of 80-degree ocean temperatures personally, but the threat of "possible sea lice" posted on the lifeguard stations kept me at bay.

And besides, who has time to loll about

when there's a bus waiting? I was soon whisked away to the lab, where IBM prepared to take the wraps off its latest goodies.

What's up that big blue sleeve?

Now, I hate to keep anybody in too much suspense, so I'll let the croc at least partly out of the bag: the best thing I saw was a gizmo called MediaBurst that is standard on IBM's just-released Ultimedia PS/2s (and a US\$100 option on all other new PS/2s). MediaBurst does full-screen, full-motion video "movies." Best of all, it performs its magic on existing Video for Windows (AVI), QuickTime or Intel-format (DVI) movies. In other words, you can take a herky-jerky, quarter-screen AVI clip and play it — with sound — at 30 frames per second, at any size up to full-screen.

MediaBurst

MediaBurst represents, I believe, the first time a full-motion video adapter has been standard equipment on any computer.

MediaBurst is the first fruit of a deal IBM cut recently with VideoLogic. It is an implementation of a new motion video protocol known as VMC (VESA media channel). In simple terms, it provides a way for digital video clips to be played without tying up the CPU. One consequence of this fact is that

MediaBurst can play two video clips simultaneously under Windows 3.1, or play one clip while doing something else. Ironically, this was previously something that IBM had touted as an advantage of OS/2.

Although MediaBurst makes its first appearance on the new PS/2 76/77 models, VideoLogic will also be making the technology available on cards for existing ISA-bus PCs. The advantage, claims IBM, is that the PS/2s will require only a simple and hence inexpensive adapter, whereas a MediaBurst-like device for ISA-bus PCs will require a lot more support circuitry, video RAM, etc., and will therefore have a higher cost.

Although MediaBurst has an impressive price/performance ratio, it's not likely to obsolete the MPEG standard for digital video (see TCP, June, 1994), primarily due to the fact that MPEG has somewhat better image quality. And just how much better? According to IBM engineers, MPEG achieves video compression of about eight-to-one, while MediaBurst manages a six-to-one ratio. In other words, an MPEG movie can surpass the quality of a MediaBurst clip by about 30 percent. On the other hand, MPEG playback boards such as the Sigma Designs ReelMagic cost three or four times as much as the MediaBurst. What's more, MPEG encoders (the hardware boards that actually compress the digital video clips) cost several thousand dol-

lars, or something in the neighborhood of \$200/minute to rent. To record and compress a MediaBurst clip, all you need is a video source and any one of the many under-\$500 video-grabbing boards on the market. MediaBurst uses any of the standard codecs (codec=compressor/decompressor). It also has the ability to remove jaggies from the digital video on the fly. Amazingly, this anti-aliasing doesn't slow down the video playback at all. I watched in awe as anti-aliased full-screen, full-motion video played directly from a CD-ROM of standard AVI clips.

According to IBM, a low-cost MPEG add-on for MediaBurst will be available shortly, for those who need the extra quality of MPEG.

I also had the opportunity to speak with some of the key developers of IBM's personal computers. Now, it is often said that engineers are the best people to speak with at these events, as they don't know what not to say, so, needless to say, I was a most attentive listener when I met with Chet Heath, the man some call the godfather of the PS/2.

Chet speaks with an almost evangelical fervor about how the Microchannel Architecture of the PS/2 was years ahead of its time: the first plug-and-play PC. Chet also told me he owned an Amiga, which is not surprising, as that machine's Zorro bus has the honor of

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being the first plug-and-play personal computer bus architecture. Hmmm.

At the end of an hour or so with Chet, you're almost ready to jump up and shout "I believe!" The PS/2 team believes that the market is finally coming around to what they've maintained since 1987, when the first PS/2 with Microchannel Architecture (MCA) was released: that plug-and-play PCs are the way of the future. With the advent of Plug and Play support in the new version of Windows "Chicago," the operating systems of our PCs will at last be able to support the capabilities of the hardware. As Chet points out, there are over 1,200 existing MCA cards available today, and more than 12 million PS/2s currently installed. That looks pretty good when you compare it to the vaporous claims of companies that promise P&P support "Real Soon Now."

However, I know that you expect more than that from a report in *The Computer Paper*. I decided to get down to the really dirty details.

As we tipped more than a few glasses at the seaside that night, I asked an IBM rep about Big Blue's commercial desktop strategy: what about all the existing owners of IBM-brand machines that don't use the MCA bus? After all, the classic AT bus (now known as the ISA, or industry standard architecture) dominates the market, and is found on all IBM PS/1s and ValuePoint PCs. Would there be Plug and Play BIOS upgrades for these computers? "Well, the newest ValuePoint machines have a Flash BIOS. They can be easily upgraded." He squirmed like a manatee in the jaws of a crocodile. "But," I began, with the demeanor of the croc eyeing Captain Hook, "what about the millions of users who bought an IBM-brand PC prior to these new additions to the ValuePoint family? Will they be able to upgrade?"

"They'll be able to get a P&P BIOS from third parties," he claimed.

"But what if the reason they bought an IBM-brand machine in the first place was because they wanted the genuine article?" I wondered.

"But, we couldn't afford to give them all new BIOSes," he sputtered as the jaws tightened.

"Who says the upgrades have to be free?" I asked. "Why don't you charge customers whatever it costs to make it worthwhile, and let them make the choice."

After a weighty pause, he mumbled that the company had no plans to make BIOS upgrades available to existing users. However, he conceded that, if there was sufficient demand, the company might reconsider. I thanked him — and the Southern Comfort.

Now, despite the fact that this is hurricane season (18,000 people in the Miami area were without power the day we left), this little storm was nothing compared to the gale that blew in the next day. We had just toured the development labs, and listened to the marketing droids describe how committed IBM is to the microchannel architecture, complete with the usual marketspeak about how (and I quote) "there is almost no telling how far you can take your PS/2." Imagine my surprise that night, when I disconnected the phone jack from the handset of the hotel phone and checked my e-mail and did a little net surfing. In CompuServe's ZiffNet forum, in an interview in PCWEEK (061394), IBM Group Executive Richard Thoman made some less enthusiastic statements about the future of Microchannel Architecture. Thoman, by the way, is said to be one of the most powerful, but lowest-profile, executives inside IBM and

is a confidante of Chairman Louis Gerstner.

When asked if he saw continued life for the Micro Channel, Thoman replied, "It's something we've obviously looked at. When you touch that kind of a brand, you have to be very careful because a lot of people have made commitments to it. I think we're reluctant not to have something that is sort of backward-compatible to it ... but that's something we're still thinking about."

So, apparently, the real story is that the top brass at IBM has sent a mandate to the MCA group that it's do-or-die time. Clearly,

the window of opportunity for MCA is shrinking. In a few months, automatically configuring ISA cards adhering to the emerging Plug and Play spec will erode much of the perceived advantage of MCA. Although the advantages of MCA are obvious compared to this year's model of "legacy" ISA bus, we think that next year's P&P PCs with PCI or VESA local buses will squeeze the market niche of the MCA architecture even more.

Nevertheless, MCA has several things going for it. It's here today (around 1,200 cards are available), it works extremely well as

a plug-and-play solution and it's very fast. It is a good choice for businesses — especially those where many PCs are networked together. As Thoman said, with 12 million PS/2 customers out there, IBM is not likely to drop the line any time soon.

Before I left, I couldn't resist asking: "So, why did IBM choose Boca Raton, anyway?"

The IBM rep smiled. "Someone once asked Tom Watson, Jr., then chairman, why IBM had chosen Boca Raton as a site. Said Tom: 'The quality of life and darn good orange juice.' □

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How To Save \$800: A Compact Guide to Compact Disk

BY ROSS MACDONALD

The terms "CD-ROM" and "multimedia" are thrown about pretty loosely these days, leaving outsiders to believe they don't know what's going on and CD-ROM users to think they do. The skinny on CD-ROM, however, is that the outsiders are actually closer to the truth.

Tell any of the new, know-it-all breed of CD-ROMers that you're thinking of buying one and stand back from the uncontrolled flood of free advice. But mention "seek time", "throughput" or "constant angular velocity" versus "constant linear velocity" and you'll have discovered the secret of shutting them up.

Which is a neat party trick. But does it have anything to do with practical living? The simple answer is Yes... and No.

Yes, because "seek time", "throughput" and those "velocity" things are important principles of CD-ROM mechanics and knowing which is which and what is what gives you at least some basis for evaluating a potential purchase.

No, because the best evaluation of a CD-ROM drive isn't found in the numbers, it's in what you actually see on your screen. Which can be quite surprising.

But first some background.

Disks and Drives

CD-ROM is an acronym for Compact Disk-Read Only Memory, which is really a red herring because CD-ROMs don't have any memory. They're simply information storage devices like your old LPs or new CDs. However, because the storing is done digitally, CD-ROMs can hold an awful lot of stuff — 640 MB worth of text, graphics, animation and even video. When you have a combination of these running together, that's multi-



media, which is all you really need to know about disks.

The CD-ROM drive, on the other hand, is another kettle of fish. In keeping with computer marketing tradition, manufacturers are wont to dazzle you with numbers and features that just confuse the issue — leaving you dazed and confused, cheque book in hand and at the mercy of the most pernicious salesmen.

But we can clear some of that up right now because all you really want to know when buying a CD-ROM drive — besides the price — is how fast the machine can spin the disk, find information, then pipe it through to your screen. What tells you this are...

Average Seek Time: measured in milliseconds (ms), this tells you how quickly a drive searches the disk for whatever you asked for. The lower the number, the better. It's a handy measurement but it doesn't really help because all drives are in the 250-350 ms range and if you can see the difference between those you have abilities far beyond those of mere CD-ROMs.

Throughput: measured in kilobytes per second (Kb/sec). The higher the better. This is a practical number because it tells you how fast the drive can push the information into your computer. These days look for 300 Kb/sec and up. But remember, once the stuff is shoved up the wire, your computer is responsible for pasting it onto the screen. More about that later.

Spin Rate: currently expressed as "double", "triple" and even "quadruple" spin. The first CD-ROM drives ran at 150 rpm, the same as regular audio CD players. "Doubles" double that, "triples" triple it, etc. Some manufacturers try to fool us with names like "Multispin" proving, alas, that this is the most misunderstood term in the CD-ROM lexicon. Why?

All CD-ROM drives are "multispin" because they often slow down and speed up as they read the disk. Keep sharp — this is where it gets complicated...

Some Basic Theory

Digital information is generally put on disks

in one of two ways. With Constant Linear Velocity (CLV), a piece of information takes up the same length of a track whether it is in the centre or on the outer edge of the disk. That is, if an item sits on two inches of track at the centre it might take half a rotation to read but if it's on the outer edge it's still two inches long which might be only one tenth of a spin. The drive, therefore, may speed up or slow down to access different types of data on the disk at different places.

The other method is called Constant Angular Velocity (CAV), where each item has its own individual ring — or track — so the disk spins at the same speed all the time. Primarily used for Laser Disk movies and Photo CDs, the advantages are crisp, clean special effects and direct access to any image because each ring has its own number. The down side is that saving an individual ring for each item takes up more space so CAV disks hold a lot less information.

Multimedia CD-ROM disks are virtually all CLV but Photo CDs and Clip Art type disks are usually CAV.

Unfortunately, sound is also put on disks in different ways: as Red Book sound, which is exactly the same as audio CD and has to be read at 150 rpm because, just like a record, it's taken directly off the disk; or as WAV. and MIDI files, which require a computer sound card to be decoded.

Which brings us back to the "multispin" thing. Double, triple and quadruple speed labels simply refer to the fastest possible spin rate of the drive which, in turn, would increase the throughput of data that benefit from such speeds. Red Book audio and some other data files would be unreadable at maximum speed so your super expensive, inter-cooled, quattrovalvo, turbo boosted CD-ROM

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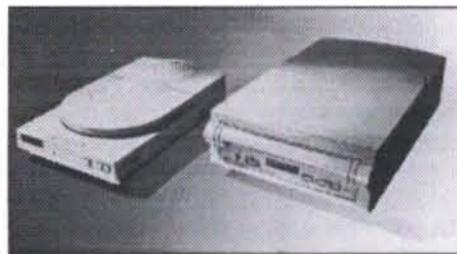
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drive may be putt-putting in the slow lane when you're running multimedia disks.

If you follow so far, you can see that cheaper, slower speed drives can actually be more efficient for multimedia because they don't waste so much time shifting between high and low gears to read the different types of files that these disks contain.

That's the end of theory, class.

Putting the Theory to Work

Now all of this comes together here because I just happen to have three CD-ROM drives to play with — a double speed, triple speed and quadruple speed. So it seems like the perfect time to put some of that theory to the test. All three are the external versions of each model because I do my CD-ROMing through an NEC Versa E DX2/50 notebook tethered to the New Media Bus Toaster SCSI 2 and .WAVjammer 16 bit sound card — both PCMCIA cards.

And our three contestants are:

Chinon CDX 535

Features:

- Double speed drive
- 256k on-board cache
- RCA output jacks (for playing audio CD)
- Two Centronics connectors for hook-up
- "Power" and "busy" lights to indicate status
- Termination (read the manual) via a plastic plug
- Uses "caddies" (like jewel cases) for disk loading

Street price: \$600 (w/o SCSI card)
\$650 (with SCSI card)

The Chinon is the most economical of our three lab rats, especially if you buy the package with the SCSI card included. It's a plain, slim machine that looks a whole lot like the old 5 1/4" external floppy drives of yore. The designers have thoughtfully made sure to include those RCA jacks for Redbook audio and I really liked having "busy" and "power" lights to indicate operating status.

My tests show this to be a solid performer, easily equal to the "triple" speed drive. That's because the 256k built-in cache stores a disk's directory information on the first pass so the machine doesn't have to read that track every time you ask for something — it goes directly to the item.

On the other hand, the debate on caddies still rages. They're somewhat awkward and inconvenient but purists swear that they improve CD-ROM performance by reducing vibration and more securely centering the disk.

NEC MultiSpin 3Xp

Features:

- Triple speed drive
- Two SCSI connectors for hook-up
- LCD screen to indicate operating status
- Control buttons for audio CD (play, ff, rew, etc.)
- External termination (read the manual) switch
- Top-loading (no caddy)

Street price: \$599

This is the most handsome of our three guinea pigs, having been built into a Star Trekky plastic case that deliberately (?) matches the Versa notebook. However, the particular machine that I got makes those annoying "skritch skritch" noises that you often hear from the transport mechanisms of cheap audio CD players. (NEC swears that's from all the nasty, abusive journalists this machine has been through). Which brings us back to the caddy argument, because drives that use caddies are always quiet.

The only complaints I have about this model are the lack of RCA jacks (if you want audio CD you have to run a "Y" cable from the headphone output to your sound card inputs) and the annoyingly faint and teeny LCD screen that's supposed to reveal all kinds of status info but succeeds only in revealing the limits of the human eyeball.

Still, the 3Xp is ultimately likable because of its solid performance, attractive appearance and the easy to use top-loading.

NEC MultiSpin 4Xpro

Features:

- Quadruple speed drive
- Two SCSI connectors for hook-up
- RCA output jacks for playing audio CD
- LCD screen to indicate operating status
- Control buttons for audio CD (play, ff, rew, etc.)
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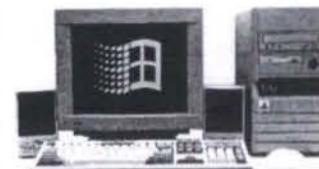
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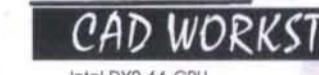
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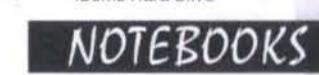
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Not for the faint of desk or wallet, this machine is easily twice the size and price of the other two. Looks like a giant cousin to the Chinon. There must be something to this caddy business because NEC has abandoned its top-load design for its top line machine. The same faint and microscopic LCD screen from the 3Xp looks even smaller on this behemoth, though they've remembered to include the RCA output jacks this time around.

The Test Conditions

All three drives were tested twice in each category in my sophisticated home laboratory cum living room. The technical tests were performed using the MPC Wizard 2.0 diagnostic disk from Aris Entertainment Corp. The what-you-actually-see tests were done using my 35 year old Omega wristwatch (solid gold!).

Table 1: Technical Tests
Average Seek Throughput

	Time	100%	60%	40%	
	(in kb/sec)				
Chinon CDX 535	234 ms	1	380	402	237
NEC 3Xp	309 ms	1	1500	558	228
NEC 4Xpro	209 ms	1	2800	628	238

The Tables

Table one reveals what we might expect. Though seek time gives up some meaningless surprises, the throughput increases accordingly for the double, triple and

quadruple speed drives at 100 percent. The different throughput results come from assigning 100 percent, 60 percent and 40 percent of the CPU's time to addressing the CD-ROM.

In other words, simply accessing a disk lets the CPU devote its full attention to that task. But, as soon as you ask it to do any multimedia stuff — display info, run animations, make sound, etc. — the chip starts to think about other things and the throughput rate drops dramatically. To the point, you'll note, that all three drives effectively cough up the same numbers.

Table 2 confirms this startling discovery. This test involved putting three multimedia CD-ROMs through each drive and timing how long it took them to load, put the index on screen, then show me something I picked from the index. The CD-ROMs I used were: Encarta from Microsoft, Midnight Movie Madness from Medio Corporation and Compton's New Media's Jazz: A Multimedia History.

All three drives performed at virtually the same level regardless of spin rate capabilities... or price! I should mention that the video and animation quality were equally good between drives — not perfect, but certainly good enough.

On the surface, it looks like you can save yourself about \$800 by skipping the quadruple drive in favor of a double or triple. And in most cases, this is the case because...

The Explanations:

1) One technical expert explained this anomaly in terms of CPU time (Table 1). Multimedia applications quite simply pull a drive's perfor-

Table 2: The What You Actually See Tests			
	Chinon CDX 535	NEC 3Xp	NEC 4Xpro
Encarta:			
Load	26 secs	30 secs	27 secs
Get Index	6	6	5
Get Item	5	6	3
Midnight Madness:			
Load	30 secs	34 secs	30 secs
Get Index	12	11	12
Get Item	9	12	12
Jazz:			
Load	8 secs	10 secs	10 secs
Get Index	2	2	2
Get Item	4	3	5

mance down to levels at which double speeds match quadruples in terms of what you see.

However, he continued, it's when working with straight data files like clip art, graphics or text, and copying or transferring them between devices like hard drives, networks, etc., that the real throughput differences show up. Simply put, high speed drives are best utilized for the high speed transfer of data. That is, if you're making money with your CD-ROM drive, high speed pays. For home multimedia, it doesn't.

2) Another technical type offered another explanation: Like nearly everything technological, each component's performance is profoundly influenced by what it's hooked up to. The What You Actually See Tests virtually equalize all three drives because my particular system is incapable of showing

what the high speed drive can do.

However, you have to remember that I have an excellent system: a very current NEC Versa E notebook with a DX2/50 CPU, a 1MB 32 bit local bus video card, a SCSI 2 PCMCIA connector and 4MB of RAM (I already know that more RAM would help so don't bother writing).

But more important to CD-ROM performance is how your system is configured. Are you using a "cache" utility? Are you using "SmartDrive"? Did you know that if you have 8+ MB of RAM you can eliminate Windows "Softfiles" which slow you down? I am assured that tweaking these things to optimum levels would have generated somewhat different results.

Yet another factor, though becoming less critical with time, is that many CD-ROMs are simply incapable of taking advantage of the new super speed drives because such capabilities weren't around when the software was created.

Conclusion

The upshot of all this is that the full power of a high speed CD-ROM drive can only be realized if you're transferring data between media and through a super system — the fastest possible CPU, the most RAM, the best video card, the absolutely optimum configuration and, of course, the best CD-ROM drive.

Those of us mired in reality (read: \$) and CD-ROMing at home can bask in the knowledge that a normal to moderately high-end system is quite happy with a double or triple speed drive.

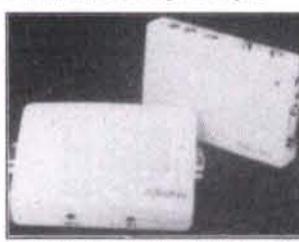
And think of all the disks you can buy with that \$800. □

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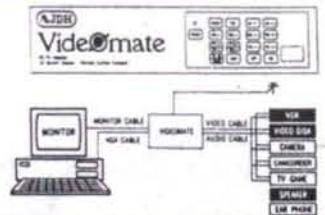
The Vamax model 2000 is a digital voice mail communications too as well! Touch tone programmable, the Vamax can store from 20 to 160 minutes of voice mail message forward to any pager or cellular telephone.



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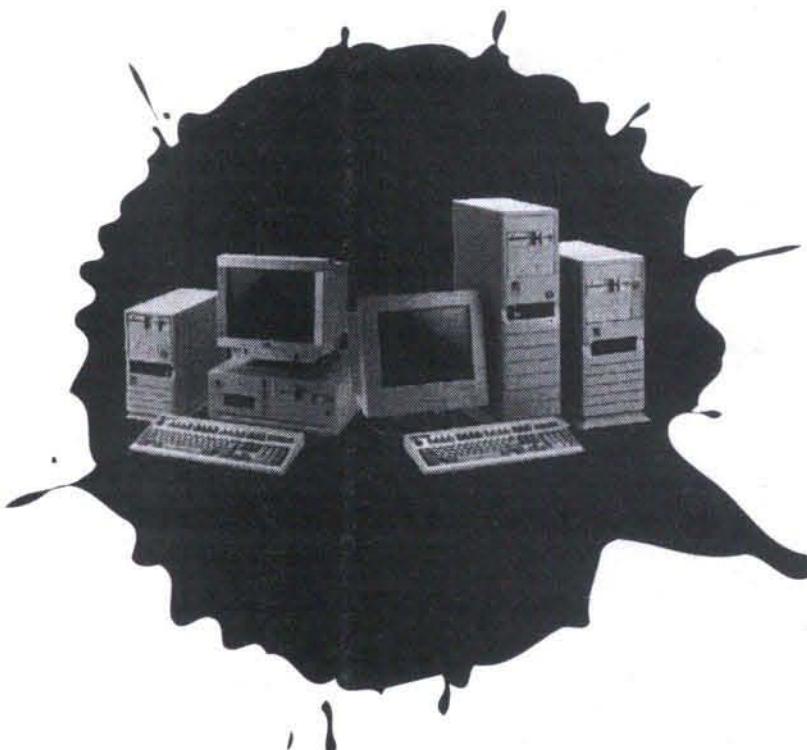
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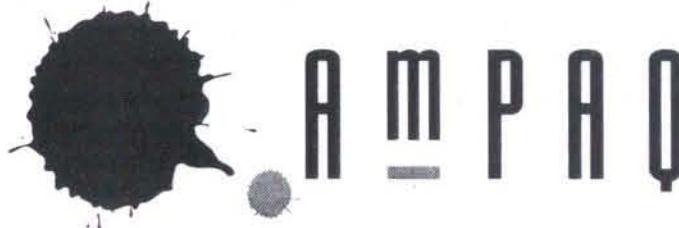
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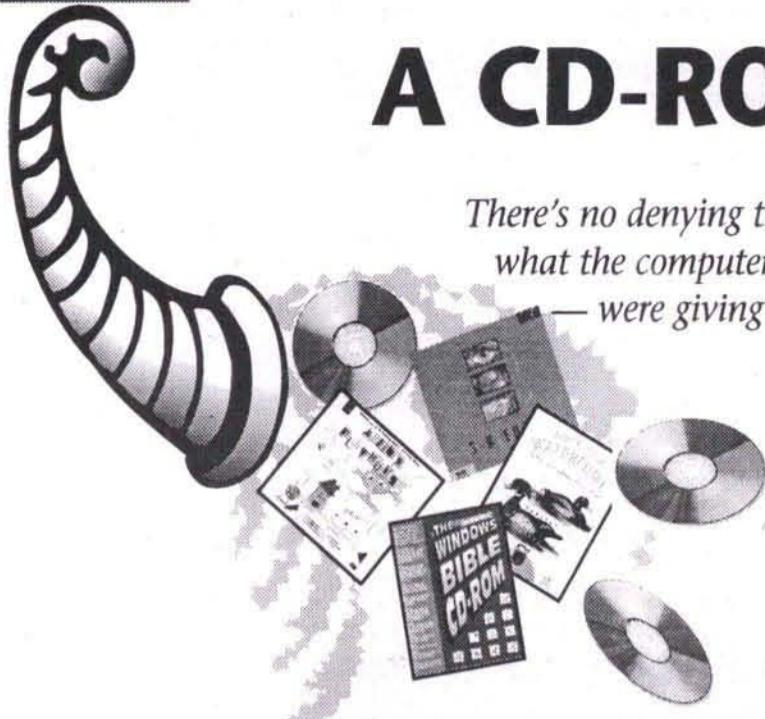
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CD-ROM FEATURE



A CD-ROM Cornucopia

There's no denying that the CD-ROM has arrived. A few years ago content producers — that's what the computer industry likes to call those that fill those silver platters with information — were giving away CD-ROM drives just so that people would buy the disc.

How times have changed. According to the Santa Barbara, CA-based consulting firm Freeman Associates, CD-ROM drive makers shipped 8.3 million units into computer markets around the world in 1993 and are projected to deliver 29.6 million units in 1999. The worldwide market will approach US\$2.8 billion at OEM price levels at that time (retail dollar value will be much larger).

Today, you can buy virtually any kind of information in CD-ROM format. There are general-purpose encyclopedias and specialized reference works, games and other infotainment, learning systems, modularized TV programs and electronic versions of books, all blasting into the marketplace.

If you haven't purchased a CD-ROM drive for your computer yet, chances are you will. At least the reasons to do so are getting better. Following are reviews of just a sampling of the breadth and scope of content that is available in CD-ROM format. —DT

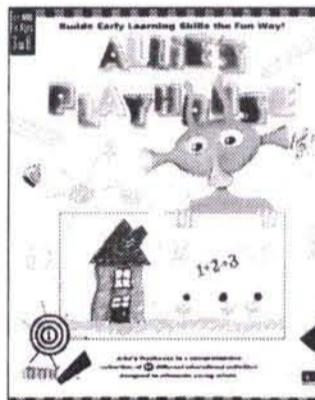
Early Childhood Edutainment

Title: Allie's Playhouse
From: Opcode Interactive
Price: US\$59.95
Review by Gordon Goble

Another sampling from the minds of Opcode is "Allie's Playhouse", a CD-ROM/Windows based learning and entertainment package designed for the younger audience. Recommended for kids three to eight years of age, Allie's Playhouse is a veritable cornucopia of activities that should keep young minds occupied with far more desirable side effects than the ugly "Mighty Morphin' Power Rangers" and questionable Saturday morning TV cartoon fare.

Allie's Playhouse is especially interesting in that it does not require adult supervision.

Children may play and explore at their own pace without a knowledge of computer skills or even the English language, just an ability to move and click a mouse. Real children's voices replace traditional "Help" files, and access to each area is object oriented. Also, apprehensive adults may rest assured their valuable data will remain completely safe. Allie's Playhouse includes a "Child Safety" mode that



prohibits access to anything outside the program.

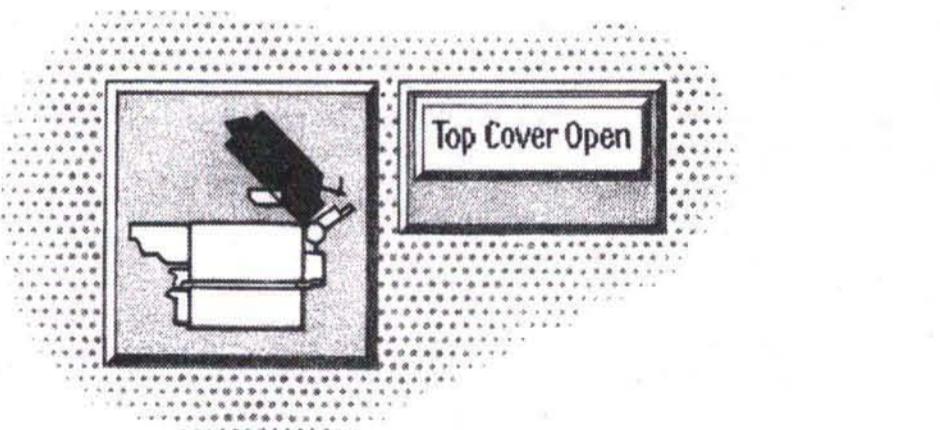
Allie (an accommodating green antennae-bearing alien with horns where his nose and ears should be) is in the fortunate position of owning the greatest playhouse this side of Pee-wee's, and the principal room of his lair (it also comes with a kitchen!) is the program's predominate interface. Strewed with colorful toys and accessories, the Playhouse is a child's dream come true, and clicking on any item brings about some form of reaction.

While cupboards may open and close and fishes may begin swimming about their aquariums, clicking on a light switch brings about darkness and squeals of delight from all in attendance. Even when the program sits dormant, it emits various sounds and words at irregular intervals. But selecting certain objects will take the young computer

user to any one of sixteen secondary screens, where recognition, perception, and deduction skills may be tested and educational games may be played.

Pointing and clicking on the wall clock will bring about "Mr. Clock" and "Digi", two talking timepieces that should help youngsters to tell time. Selecting the drum set will take kids into their own recording studio, complete with keyboard and various instruments. A coloring book, nursery rhyme sing-a-long (with or without vocal accompaniment), map of the earth, spelling games, and entertaining mathematics lessons are just a sampling of the activities within Allie's Playhouse. All the way through, Allie himself (herself?) is ready to prompt and compliment, as are the voices of real children. Printer support is provided, and reams of paper will no doubt be sacrificed in the creation of silly faces, artwork, and the like.

As with Opcode's The Musical World of Professor Piccolo, Allie's musical offerings (and all audio for that matter) is excellent, as is the overall quality, and it is obvious that much thought has been devoted to this project. Written with the assistance of numerous teachers and educators, Allie's Playhouse mixes variety and freshness with educational value and is a whole lotta fun. For kids that is. I'm far too mature for this sort of thing, of course. Admittedly, Dance Time was pretty cool, and I did build some really neat stuff in the Construction Area, but...oh, never mind! □



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A Library Without Stacks

Title: Library of the Future, Third Edition

Manufacturer: World Library Inc.

System Requirements: IBM-PC equipped with a

CD-ROM drive

Price: \$395.00 U.S.

Review by Keith Schengili-Roberts

Thanks to modern technology, you now have a choice when it comes to creating your own home library. You can invest in a lot of new shelving units and a bigger office, and then head down to the bookstore and acquire a library over a number of years. Or you can buy this CD-ROM from World Library Inc.

There are over 1,750 titles available on this CD-ROM. Now, this number is somewhat misleading because their definition of a "title" can be a poem only a few lines long. However, you are still getting an impressive number of texts on disk.

Here's a short list of what is available: the complete works of Shakespeare, all of Arthur Conan Doyle's Sherlock Holmes mysteries, and the stories of Hans Christian Anderson. You also get some hard to find texts of major Ancient Greek and Roman writers, along with the major religious texts of the world, including the King James Bible, the Koran, and the Bhagavad Gita. Add to this selections from Kipling, Shelley, Tennyson and many other major texts.

The CD-ROM can be run from either Windows or from DOS, providing similar features on both platforms. The interfaces for both are not very elaborate, but all of the basic functions you might want are here. While few people are likely to sit down in front of their computer and read the entire works of Shakespeare, many students will find this an ideal aide.

You can search all of the texts on the disk for a word or phrase, clip out a quotation you are looking for, read the text on-screen, or even print out the entire text. There are also brief summaries of each title and biographies of each author, along with dozens of illustrations taken from the original books, and a few short film scenes from film adaptations of some of the titles on the CD-ROM. Designed as teasers to draw the reader in, these clips are really just window-dressing for the core value of this CD-ROM: the texts.

One of the real drawbacks to this package is its price, even though the cost to buy the equivalent number of texts (along with the costs for new shelving) would well exceed the price of this CD-ROM. The pricing for the Library of the Future is more in line with what institutions are willing to pay than with what the typical consumer can afford. This will limit the number of people who will be able to gain the educational potentials of this type of CD-ROM.

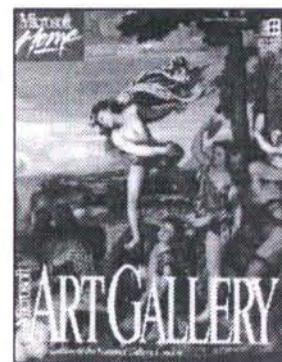
Another feature this reviewer would wish to see in a future release would be criticism and commentary on the works contained on the disk, preferably arranged using hypertext links so that the reader could get a better sense of the context of a text.

This Library of the Future definitely points the way CD-ROMs will be used for education in the future. This is a case where an exciting possibility with the CD-ROM medium is almost, but not quite, realized. Probably the best aspect is that you don't have to wait until the future to use this library - you can get it now.

Contact: World Library Inc. 1-800-443-0238

Gallery on a Platter

Title: Microsoft Art Gallery: The Collection of the National Gallery, London
 Manufacturer: Microsoft Corporation
 System Requirements: Windows-capable Multimedia PC, 1MB of free Hard Disk space, 4MB RAM, CD-ROM drive, VGA+ 256 Colour Display, Audio Board
 Price: \$99.95 Cdn.
 Review by Keith Schengili-Roberts



Gallery: The Collection of the National Gallery, a CD-ROM survey of Western art, is not a bad substitute. This CD-ROM is an excellent addition to the growing library of quality titles

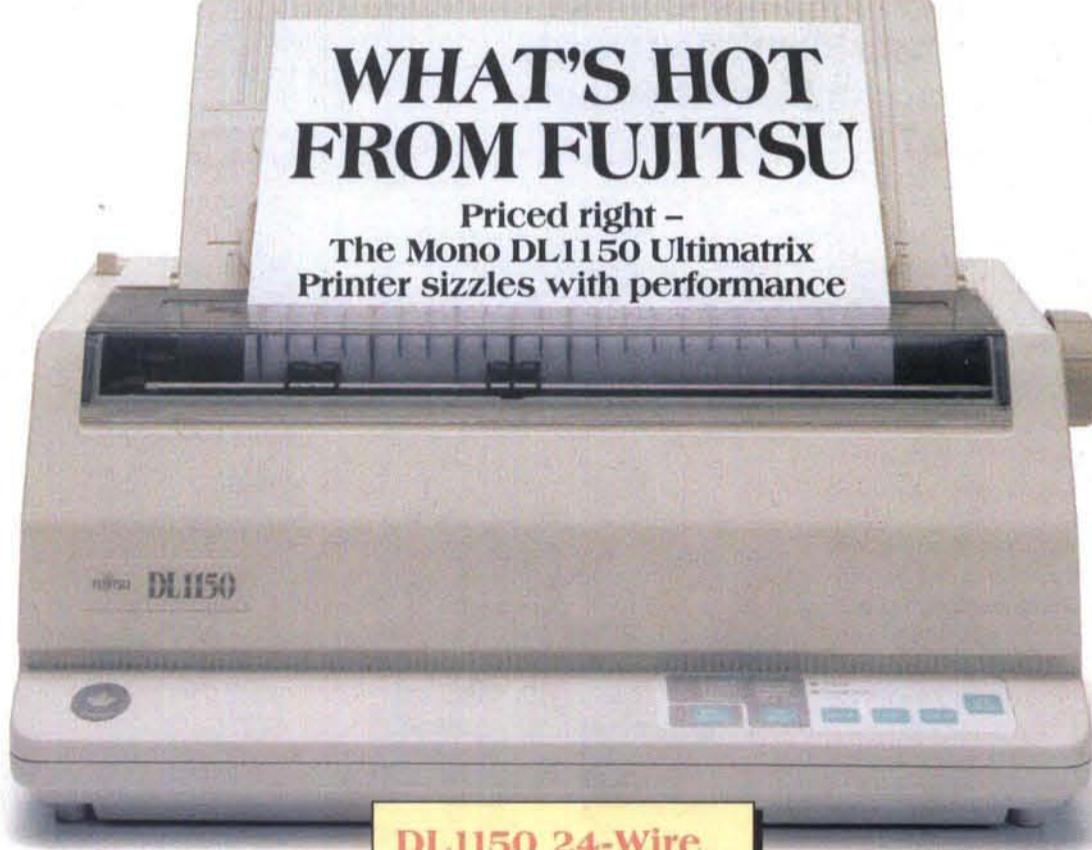
from Microsoft that provide entertainment along with educational value.

This particular CD-ROM has a story behind it. The National Gallery of London, England was trying to put together a collection of their paintings in a digital format. Microsoft came in to help with the project, and now visitors of the National Gallery can use a version of this CD-ROM at kiosks set up near the entrance-way to the Gallery.

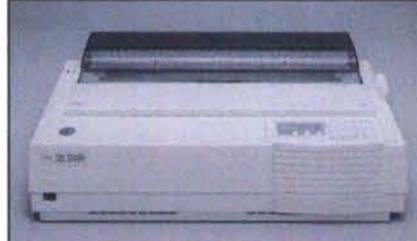
This CD-ROM is a selection of many of the best-known pieces from the National Gallery, and includes over 2,000 works by

master painters from throughout the ages; primarily Western European artists from the 13th to 20th Centuries. It contains biographies of all of the artists, has a glossary of painting terminology, and explains painting techniques through the ages. If you are interested in exploring paintings by their type, you can call up lists of all the portraits, still lifes, landscapes, and other styles of painting contained on the disk. You also have the option of thoroughly investigating the work of an individual artist.

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The CD-ROM contains animated sequences designed to show off aspects of the paintings in the collection, such as styles of composition, and to show the effects of modern restoration techniques on many classic paintings. A good sound-card is also needed to get the full benefit of the "guided-tours" that are available in the program. On the guided-tours, you can learn about how paintings were made, the religious and domestic functions of certain paintings, and

what conservators have discovered underneath the varnish of some paintings. The program will also pronounce the names of the artists for you, so that in the future you can stride into art galleries without feeling embarrassed to pronounce names like Titian, Francaibigio, Koekkoek and Uccello incorrectly.

If there is any drawback to this program, it is that there is no ability to clip out your favourite pictures and use them as Windows

wallpaper. This is deliberate — Microsoft has the rights to use the paintings on the CD-ROM, but unfortunately the National Gallery did not extend these rights to individual users at their PCs.

Microsoft Art Gallery is another excellent offering from the Microsoft Home line of programs, and well worth the investment for anybody interested in exploring European painting from the comfort of their multimedia PC. Unless you can afford the air-fare, this CD-ROM is the next best thing to going to England's National Gallery itself.

Contact: Microsoft Corporation 1-800-563-9048

Planetary Disc

Title: Our Solar System
Publisher: Chestnut CD-ROM
Price: \$19.95 US
3rd Edition published August 1993
Review by Keith Schengili-Roberts



grams, astronomical databases and planetarium programs. There are also graphics programs that will let you view and manipulate the images contained on the CD-ROM. All the files on disk come in both a compressed and uncompressed format, making it ideal for use with BBSes specializing in Space.

The CD-ROM is very simple to use. All you have to do is type "go" at the DOS prompt and you are launched into the cosmos contained on this CD-ROM. Many of the programs on the disk are shareware, so if you end up using them regularly, you are required to pay the author of the program a registering fee.

Some of the programs will run straight from the CD-ROM, and some won't — unfortunately, the lack of documentation in this area makes it a matter of trial and error to find out which is which. Another fault of this CD-ROM is that the manner in which the images are arranged is often haphazard — you can find a few images of Saturn located under some of the sub-directories listed for Jupiter. This sloppiness mars an otherwise good CD-ROM.

If you are into astronomy, then the tracking programs and astronomical databases will be of use to you when you go out with your telescope to explore the heavens. In short, there's enough material here to keep any space buff happy.

Contact: Chestnut CD-ROM (617) 494-5330

How-to Books Migrate to CD-ROM

Title: The Windows Bible CD-ROM
From: Peachpit Press
Price: \$48.95
Reviewed by Keith Schengili-Roberts

This is an example of what is becoming a more frequent occurrence in computer books — the entire contents of an already-published book transferred onto a CD-ROM and arranged as hypertext. This allows the publisher to get more "mileage"

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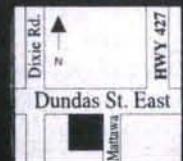


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out of an old title, and gives the user a new way to look up information.

The CD-ROM has two main sections: a hypertext version of the book "The Windows 3.1 Bible", and "Windows Goodies", comprising over 1,000 different computer files. Thankfully, there is a printed listing and description of all of the accompanying files on the disk, so you have an idea of what to try out.

Unlike many other book/CD-ROM combinations, the files put together on this CD-ROM are a good choice of what is available in this format. So often all you are likely to get is a paltry selection of a few popular shareware titles, a few meager examples of other things that can be put onto a CD-ROM, and that's about it. The author has taken some time and effort in assembling the files on this CD-ROM, and it shows.

Included on the CD-ROM are some genuinely good Windows shareware games, historic speeches stored in the WAV sound format, along with pictures and photographs from professional artists. There are also some short video files, along with a copious selection of True-Type fonts for Windows. All of the files are well arranged, and the user interface makes them easy to access.

The Windows Bible is a respectable experienced-user's guide to this popular graphical

user interface. The subjects contained in the original book are enhanced by being in a hypertext format. The hypertext lets you explore a topic one level at a time, taking you deeper into the ways in which Windows actually operates.

Unfortunately, full hypertext capabilities are not built into the program, as there are no active links between related topics, forcing the user to explore a single topic at a time. However, on the whole the text in the book is well-researched and will give the moderately-experienced user good tips on how to optimize Windows for their computer.

If this is what we can expect to get from publishing houses interested in putting their books on CD-ROMs, there's a lot to look forward to.

Contact: Copp Clark Pittman Ltd, 1-800-263-4374

Cha-Cha in a Can

Title: That's News to Me
Description: An interactive comedy CD-ROM hosted by Dennis Miller of Saturday Night Live fame.
Platforms: The CD-ROM runs on both Windows PC and Macintosh computers.
Price: \$29.95
Review by Cathalynn Labonté-Smith

What can I say, Cha-Cha?

The concept of Dennis Miller That's News to Me on CD-ROM is an intriguing one for Saturday Night Live (SNL) fans, especially for those who miss Dennis' sardonic sneers and

cocky head-bobbing and, oh, yes, his mock newscast.

SNL fans will recognize enough of Dennis in the production to be happy. After all, there's a video image of Dennis telling jokes (albeit an image that is blurry to the point that his squarish haircut begins to look a lot like Frankenstein's monster's coif, especially when you add Dennis' waving arms to the picture.) But it's definitely Dennis' voice coming out of the speakers, and not the monster's.

You do, in fact, have to have seen the SNL That's News to Me to fill in the goofy gesticulations and ad-libs that really made the jokes funny, as the spontaneous hamming-it-up so characteristic of Miller has been somehow sanitized; even the head-bobs are gone.

Also, you have to really be into American politics to appreciate most of the jokes, which are weighted quite heavily towards Clinton and the Clintonettes.



Hit It, Cha-Cha

Miller is the first comedian to stick himself in an interactive stage, and let the audience pick the one-liners. Says Miller of his multimedia motive:

"No one in the entertainment world can say interactivity isn't going to have a big impact tomorrow. I'm a neophyte when it comes to computers, but this new media seemed like an excellent way of getting some good jokes out there in a different format. Besides, I didn't want to look back in five years and be upset because I missed the bus on the information superhighway."

Dennis, is there anyone in the entertainment world that can say positively that interactivity (his word, not mine) IS going to have a big impact in the future? Maybe audiences don't want to have control over the performance. Maybe multimedia comedy will never be as entertaining as going to Yuk-Yuk's to see the real thing, or as exciting as participating in live theatre sports. Maybe comedians will be road-kill on the information super-highway after all.

Let me tell ya something, Cha-Cha

That's News to Me has an easy to use and inviting look. I mean, look Cha-Cha, no manuals and no involved setup. Sanctuary Woods has also put in a great set design with trendy colors, and a sophisticated way of opening the joke files, which has a crisp little drum rim beat everytime you click on a button. But it would have been better to have less set and more Dennis—give him some air, Cha-Cha, that box is too small.

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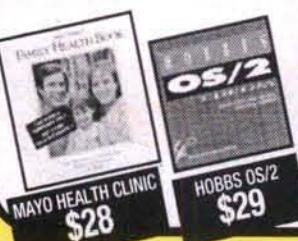
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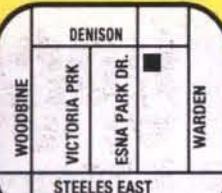
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There's a great musical lead-in to That's News to Me that gives you the SNL ambiance—but I would have liked to hear much more of that jazz.

Among Sanctuary Woods' slick copious promotional material it says, "[It's] a comical look at the punchlines behind the headlines." Sorry, Cha-Cha, but the punchline's way, way, way behind the headline, for two reasons: the jokes are for 1993 events, and it's a long time between choosing a topic and hearing the delivery.

So to summarize — more Dennis, more music, more spontaneity, more speed.

What really intrigues me is the next CD-ROM from the Miller and Sanctuary Woods venture, called Dennis Miller That's Geek to Me. This is based on the same format as That's News to Me, except Miller pokes fun at the technologically aware crowd by giving his own definitions to computer jargon.

I will leave you with a teaser from That's News to Me, my favorite joke on the disk: "Deep Space Nine premiered this month in national syndication. Star Trek fans are optimistic about the show's success, despite the previous cancellations of Deep Space 1 through 8."

And I am outta' here.

Contact: Sanctuary Woods Multimedia Corp.,
1006 Government St., Victoria, B.C. V8W 1X7
Tel: 604.380.7582 Fax: 604.388.4852

Just slightly higher in the food chain are the shareware titles from vendors such as Educorp, BMUG, Alde Publishing, Walnut Creek, and many others.

The quality of these collections varies widely. We were singularly unimpressed, for example, with the picture quality (and we use the term loosely here) of the GIFs Galore CD ROM from Walnut Creek CD-ROM.

Although the disc touts more than 5000 full-color GIF images and viewers for a wide variety of systems, including MSDOS, Mac, Amiga and Unix, we were greatly disappointed at the amateur look of most of the pics.

The best collections of shareware we've seen are those that deliver hundreds of VGA games for the PC. If you've got game-addicted kids, there's nothing like a \$30 disc with hundreds of PC games to keep them occupied and you out of the poor house.

The best values you are likely to find are the discs that dealers sometimes unbundle from hardware. While this is probably in contravention of the manufacturer's licensing agreement (which usually specifies that bundled software is not to be sold separately), it's a common practice. Frankly, we'd be suspicious of any dealer that would do this, though. If they are breaking the law in this way, who knows what else they may be up to?

For better or worse, we've seen CorelDraw (with its huge collection of fonts and clip-art!) for as little as \$99, publishing programs such as Publish-it Easy for \$59, encyclopedias and other reference libraries for under \$40, and many other killer deals.

Clip-art Collections are a natural for CD-ROM. Dynamic Graphics' Designer's Club (1-800-255-8800) offers a subscription service at C\$6730 per month, providing a collection of all-EPS graphics for PC or Mac users. Mac users ordering the CD-ROM collection get a special bonus: an interactive collection of how-to tricks and tips. The company says a PC version is in the works. The collection is also available on floppy disks, by the way.

There are not many titles that feature

Time's Right for CD-ROM

by Graeme Bennett

You can pick up CDs for PCs and Macs for little more than the cost of a magazine — as long as you don't mind putting up with a few advertisements and demo versions. In this price range, we recommend CD World magazine (\$8.95, Windows and Mac), Multimedia World magazine (\$13.95) or NautilusCD (intro issue available for US\$4.95, Windows or Mac).

CD-ROM Drives

The Raven Myriad 16 is a good example of the kind of entertainment and multimedia upgrade package we recommend for entry-level users. It's MPC Level II compatible, has a true 16-bit stereo sound card, double-speed CD-ROM drive, and several bundled discs. A little pricey at C\$700, perhaps, but a good performer that you won't grow out of immediately. Note that its Yamaha FM sound chip doesn't produce the realistic sounds of a wavetable soundcard such as the Gravis UltraSound, but it's adequate for games and other non-musical uses.

Gravis' Ultrasound is a great choice in a high-quality sound board, appropriate for musicians and gamesters alike. There's quite a cult following for the GUS, as it is known. Many of the killer demos coming out of Germany have special settings for the GUS.

The latest Ultrasound is known as the Max. In addition to the wavetable sound and General MIDI compliance of the GUS, it features "3D sound" — essentially, the same kind of on-board effects that musical instrument makers have been sneaking on-board their synths since the Korg M1 started that ball rolling. □



young female protagonists. We managed to track down a few, though. Discus Software of Richmond Hill, ON offers several children's titles, including a CD ROM adaptation of the popular storybook *The Paper Bag Princess*.

Jambone Software's *At Bat* is an interactive comic book for the Mac with animation, music and games that will keep kids involved in non-violent play. (You might be grossed out by the barfing "Hurlman," but your nine-year-old will love it, trust me.)

Another title with a female lead is *Hawaii High* by BC-based Sanctuary Woods, Corp. Howard Rheingold's young daughter (already following in her father's footsteps by appearing in the June issue of *Wired*) named it as her very favorite game. That's good enough for us.

Once you've collected several CD-ROMs worth of clip-art, how are you going to keep track of it all? There are a number of visual image databases and catalog systems available.

Canto Cumulus is a Mac-based image and sound database, although the images themselves need not reside on a Mac. Demo versions are available from Toronto-based Vistek (1-800-561-1777).

Aldus Fetch is one of the most popular of the Mac cataloging databases. Unlike some of its competitors, it can track any type of file. Fetch provides viewers for a large number of file types and further extends its reach by supporting the XTND architecture and the Macintosh Easy Open extension, which is included.

For Windows and Mac, there's Kudo Image Browser, which has one of the best mechanisms we've seen for dropping a file into a desktop publishing application such as Quark XPress: just drag and drop the image right into place.

CorelDraw includes a cataloging utility called Mosaic (not related to the Internet browsing utility of the same name), which in version 5, finally supports similar drag-and-drop functionality. Mosaic supports several picture formats, including those used by the Corel products.

Picture Windows from Matrix Technologies of Newfoundland is a Windows-based image retrieval system. Featuring a 10-field Boolean search, it has the capability to store images with different levels of compression. The company is working on a family of true relational image management products, which will be distributed by Vistek. For those who need a true relational image database today, there's Image Manager, a true relational SQL query, providing links to existing SQL databases.

Walnut Creek, 1-800-786-9907 or 510-674-0783
Alde Publishing 612-934-4239
Vistek, 416-365-1777

CD-ROM Training To Control Emotions, Sell More

by Jim Mallory

NB — Wilson Learning Corp. of Minneapolis has announced two new additions to its line of CD-ROM-based learning programs. The new titles, "Keep Your Cool" and "No Trust? No Sale!" have a suggested retail price of US\$69.95 and are available for the Macintosh and Windows platforms.

Keep your Cool is designed for people who want to break destructive emotional

habits such as anger, frustration, or anxiety. It also teaches how to manage one's feelings and situations that trigger negative reactions and keep one from performing at one's best.

No Trust? No Sale! is a guide for establishing credibility and gaining customer trust. The program is designed for sales professionals and others who use sales skills in their jobs, says the company. Skills such as reducing customer tension, ensuring customer satisfaction and expanding sales opportunities are included.

Wilson says it uses interactive simulations in both programs to make the learning fun while still being effective. "We like to think of these programs as serious fun, providing users with engaging, real-life situations that draw them into the learning process," says Wilson Learning CEO Dave Ehlen.

According to Ehlen, studies show that computer-based multimedia training programs can enhance learning by as much as 35 percent and are less expensive than inter-

active video discs.

In January, the company started shipping "Connect for Success; Connect With Others and Influence Them," "Sell to Needs: Sell the Way People Like to Buy," "Relate with Ease: Build and Keep Interpersonal Relationships," and "Decide for Sure: Add Certainty to Your Decision Making."

Wilson plans to release a total of 10 titles in a joint project with Sony Electronic Pub-

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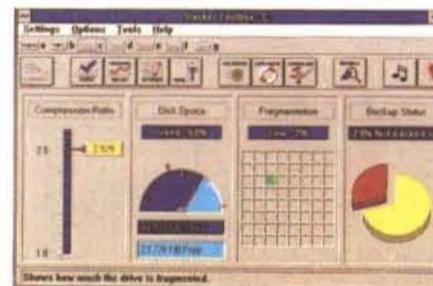
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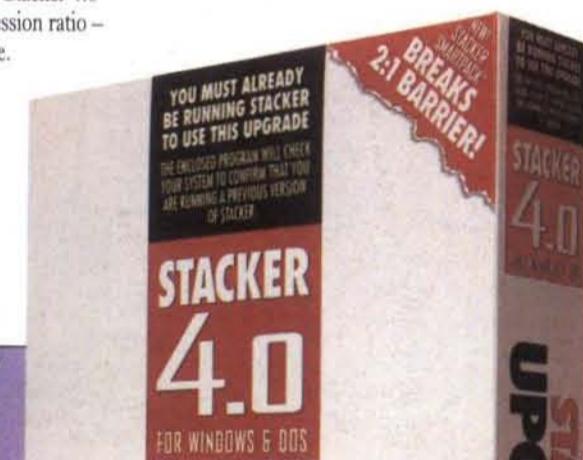
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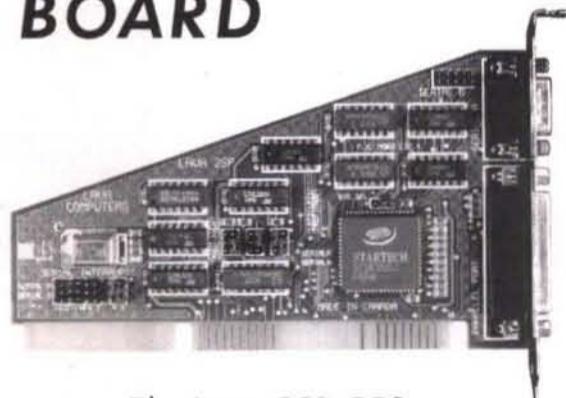
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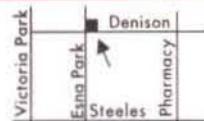
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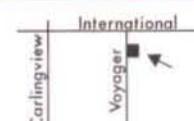


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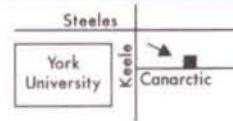
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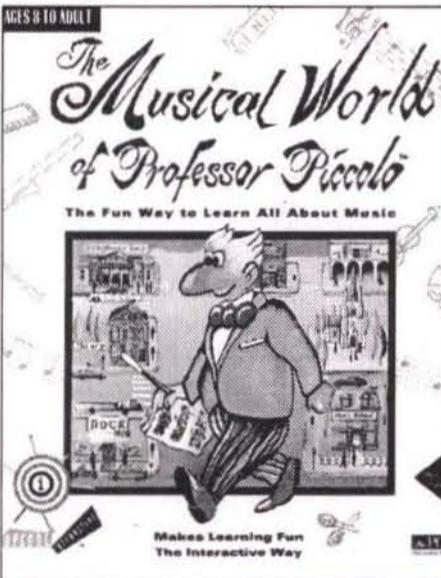
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A Lighter Venue For Music Lessons

Title: The Musical World Of Professor Piccolo
By: Opcode Interactive
Price: US\$69.95
Reviewed by Gordon Goble

*I write the songs that make the whole world sing,
I write the songs, I write the songs*
— Barry Manilow

*Give me a Leonard Cohen afterworld,
So I can sigh eternally,
I'm so tired I can't sleep,
I'm a liar and a thief*
— Kurt Cobain



Two distinctly contrasting artists with distinctly differing approaches to both the sounds and messages they have delivered, yet the common bond between the two is their chosen medium, music. While their respective fans may agree to disagree on each other's musical taste (or even if it should be referred to as music, no doubt), there are surprising similarities in the construction of theirs, and all popular music.

If that isn't disturbing enough, the basic building blocks used in, say a Guns N' Roses tune, are not dissimilar to those used by composers of classical, opera, and even country music. The presentation may be worlds apart, as may be the complexity, but the concept is the same.

Opcode Interactive has been in the musical software business for eight years, but "The Musical World of Professor Piccolo" represents their first attempt at edutainment for the computer-using masses. It is an intriguing, fact-filled, and interactive overview of music's many faces, its history, and its interwoven connections. Along the way, Professor Piccolo will instruct its users in music theory, notation, instruments, the science of sound, and more.

To avail yourself of the teachings of the esteemed Professor, you'll need the right equipment. Aside from a quest for musical knowledge, a 386-16MHz computer (prefer-

ably faster), a minimum 4 MB RAM, double-spin CD ROM, quality sound board, decent speakers, a mouse, 14 free MB of disk space for the full version, and Windows 3.1 or higher is essential stuff — this Professor is quite demanding.

Professor Piccolo is accessed through a Windows icon, and that means one may run it in the background, re-size its window, and do all of the cool things that can be done with any other Windows-based program. Furthermore, in the eventuality that the Professor has outlived his usefulness, the enclosed Uninstall program will wipe all traces of Professor Piccolo from the hard drive with but two or three mouse clicks.

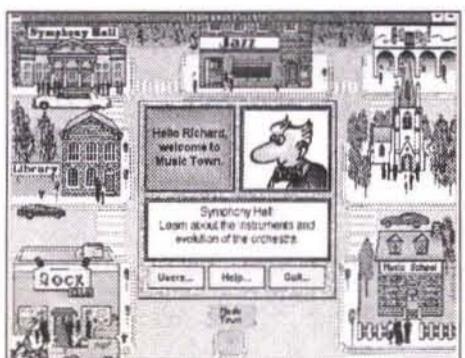
That a *total* Uninstall feature such as this should be mandatory for any and all software releases almost goes without saying, and a tip of the hat to Opcode for including it here.

But whether the budding music student will ever want to make use of the Uninstall feature is another question — anyone with more than a passing interest in music will see that Professor Piccolo is a hard drive staple for quite some time (the only exception here being young children, as the Professor may be a touch too advanced for kids under seven or eight years of age).

Launching Professor Piccolo will transport one to a different land, that of "Music Town" to be exact. A land with little need for the basics such as supermarkets, jails, service stations and the like, Music Town features seven of its own essential services. The Rock Club, Jazz Club, Symphony Hall, Music School, Church, Library and Arcade make up this tuneful town, and from this colorful interface all interaction is initiated.

Clicking on the Jazz Club will bring forth music and information on that musical form, the Symphony Hall a look at the classics, etc. The Library is a visual and written reference section, musical games will be found in the Arcade, and lessons at the Music School. There is no formal structure to Professor Piccolo, and one may explore to his or her heart's content.

One such exploratory journey took me into the heart of the Rock Club. Here, in a strangely smokeless and alcohol-free zone, I found myself face to face with a still image of a typical rock band. Several icons lined the bottom of the screen, and I chose first to audition the full band. The talented musi-



cians/programmers behind Professor Piccolo (Jeff Pucci and Richard Vivard) have composed an original tune for denizens of the Rock Club, and a cleverly crafted piece it is (although bereft of any deeply insightful lyrics). I have not connected my CD ROM drive to a sound card, but the sound was excellent through headphones.

Professor Piccolo then allowed me to break the tune down into its individual instruments, and in order, I chose the guitar,

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keyboard, and bass lines, then drums and vocals. For those uninitiated to the workings of music, it can be interesting to discover just what each instrument does on its own, and how the whole is so much greater than the sum of its parts. Selecting another will take one into the world of music structure, wherein the user will come to understand the various elements of a song and how they harmoniously work together.

In popular music, an introduction usually leads to a Verse 1, Chorus, Verse 2, Chorus, Bridge (usually with an accompanying solo), Verse 3, Chorus, and Close. Each component is distinct, and Professor Piccolo explains through the written and narrated word the make-up of each bit and its purpose in generating a song's finalized feel.

Students of the dear Professor may also access the Instrument Ranges section while in the building of their choice. Here, a small keyboard allows the investigation of a particular instrument's ranges and a digitized reproduction of its sound. A good idea, yet here, and in some other spots in Music Town, I found problems with driver conflicts that manifested themselves in distorted or

vacant audio. Customer support calls alleviated some of the uncertainty, and though I was assured this type of difficulty was extremely rare, limited audible difficulties remained.

Each genre-specific building incorporates the same type of structure, and one will gain further explanations and history on each with a mere click of the mouse button. All material is well written and incisive, and I thought it was nice to see Cobain's band, Nirvana, mentioned in the same breath as the Police, U2 and REM and not thrown into the "heavy metal pit". Unfortunately, although the presented information is worthy of praise, there could be more of it. Those with a real interest in music may be left wanting, both of the music itself and its definition and history. In-depth descriptions may be better sought in the real life library.

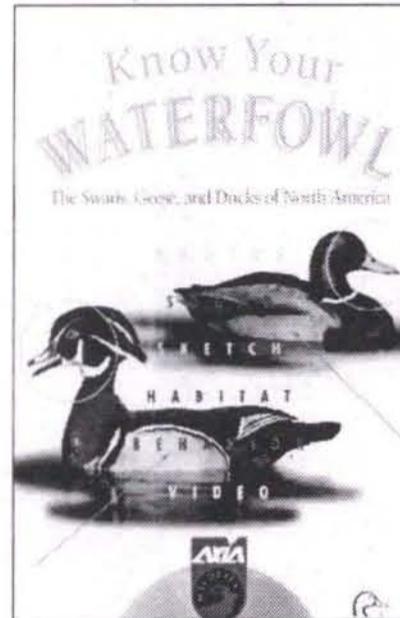
On to the Music School, an exercise that concerns itself primarily with the education of reading and writing music. Having never actually learned music penmanship, yet being a guitar hacker myself, this was of particular personal interest, and Music School's twelve lessons went a long way toward reawakening my fascination with such pursuits.

All dozen lessons feature buttons that permit one to listen as they learn, whether notes, chords, intervals, rhythm, etc., and as a bonus, I not only gained insight into musical notation, but was able to accurately tune my guitar as well!

Although Professor Piccolo offers no skill-testing exams, Music Town's Arcade will quickly expose one's knowledge of various musical terms, trivia, and song structure. The games are intriguing, yet a larger database of questions would have prevented some of the repetitive nature of the Arcade. Being able to actually write music on-screen for the Professor's correction would have been another big step forward.

Professor Piccolo supplies a superb overview of music essentials in a far better environment than my Grade 7 music teacher could ever have dreamed possible. The grid-work is certainly there, and Music Town promises to be a pleasure to anyone with even the slightest musical inclinations. Yet the inclusion of more material in just about every aspect of The Musical World of Professor Piccolo would have turned what is a sparkling digital ditty into a great symphony of software.

Moving The Great Outdoors In: Three Wildlife CD-ROMs



Title: Know Your Waterfowl
 From: Axia International Inc.
 Platform: Windows
 Price: \$95
 Reviewed by David Tanaka

Know Your Waterfowl is a stunning piece of work. Calgary-based Axia International Inc pulled in some heavyweights for this project and it shows.

Senior editor of this and Axia's other titles in its forthcoming wildlife series is Wayne Campbell, former curator of the vertebrate collection at the Royal British Columbia Museum in Victoria, and editor of the multi-volume *The Birds of British Columbia* encyclopedia.

Much of the audio portion comes from Cornell University's Cornell Ornithology Laboratory. The photos are from various wildlife photographers and the U.S. Fish and Wildlife Service, while the Video clips are from Ducks Unlimited.

These ingredients are combined with an innovative navigational interface that exploits the full potential of the CD medium. The result is an entertaining and educational experience.

Axia calls *Know Your Waterfowl* a field guide. Well, maybe if you have a big hip pocket you'll be able to carry a multimedia laptop to your favorite marsh. Nevertheless, despite this bit of marketing hyperbole, the volume is organized like a field guide. It covers the 45 species of waterfowl that nest in North America. According to Axia, the disc contains 500 full-screen photos (gorgeous color), and a half hour of video as well as sketches, range maps, habitats and audio clips of many of the calls. Also included are about 45 minutes of narrative programming — these work like self-running demos — that explain the various components of the volume and how to use them.

The disc incorporates a "recognition training system" that Axia is in the process of patenting. The heart of the system is two side-by-side windows that allow you to place two separate pieces of information on the screen at any given time. You can use it to compare markings of two related species, or to show a species in one window with other pertinent details in the other.

The Challenge mode uses the windows as a learning tool. When you enter the Challenge mode, you are presented with pictures of a bird in the left window, and are asked to identify it. If you guess correctly, the program advances to the next question. If you guess incorrectly, your choice is shown in the right window, along with some specific defining characteristics of your choice.

At least, that's the way it's supposed to work. In the beta copy Axia sent us, the Challenge mode was not yet operating correctly. We also encountered the occasional truncating of sound clips. Apart from that,

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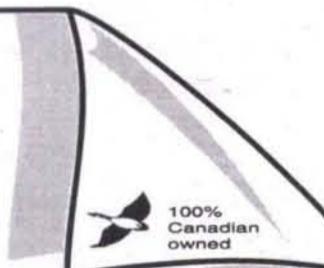
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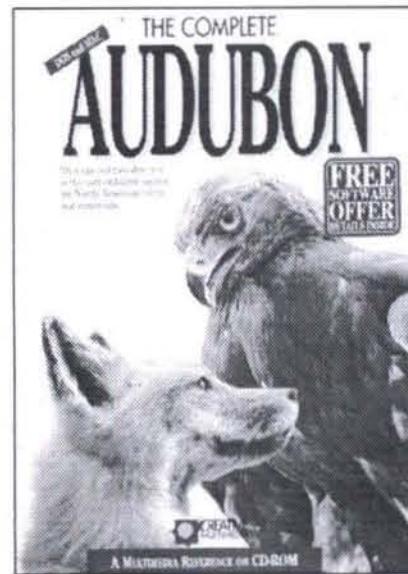
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however, the beta disc created no problems. The company plans to release other titles in the Wildlife series. The next will be a two-volume set called "Birds of Prey." Volume I will be about owls, while Volume II will cover other birds of prey.



Title: The Complete Audubon
From: Creative Multimedia
Platforms: DOS, Macintosh
Price: US\$79.99
Reviewed by: David Tanaka

Some CD-ROM volumes are multimedia extravaganzas, while others rely on the quality of the content for their appeal. The two discs that make up the *The Complete Audubon* fall into the latter category. No fancy interface, sculpted 3D buttons or sound effects accompanying button clicks here. The interface — at least on the DOS version — is a straightforward drop-down menu affair, and the Esc key backs you out of any sequence of the program.

What is revealed beneath this simple menu system, however, is a fine collection of lithographs and text by American wildlife artist and naturalist John James Audubon. One disc contains Audubon's Mammals; the other, Audubon's Birds.

According to the publisher, the Mammals CD contains the complete contents of the 1840 first edition Octavo volume *Quadrupeds of North America*, which includes 150 color plates and Audubon's detailed notes on each mammal. Added to the CD-ROM version are sound clips from the Cornell Laboratory of Natural Sounds.

The Birds CD contains the complete contents of the Octavo edition of *Birds* — 500 color plates and notes — and sound clips from The Cornell Laboratory of Ornithology.

The quality of the digitized artwork is impressive. The illustrations can be shown full-screen; the experience is like having 8 x 10 glossy photos of the artist's collection at your fingertips.

The animal sounds are also of good quality. In some instances the sound and illustration are linked so that they are played back together. However, you can invoke sound clips from the DOS menu. It's not as visually entertaining as other CDs, but it provides a fast way to access many animal sounds.

If you like the style of Audubon, you'll like this two-disc volume.

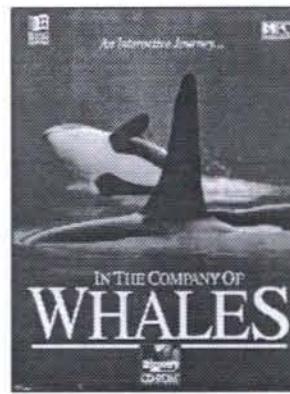
Title: In the Company of Whales
From: The Discovery Channel
Platform: Windows
Price: US\$49.95
Reviewed by: David Tanaka

In the Company of Whales is a highly edutaining volume from the Discovery Channel, whose flavor is more like a packaged TV program than a packaged book.

The interface is easy to use, and the main menu presents four large buttons which take

you to various databases, plus help and exit buttons.

Push the buttons and you hear a whale blowing as the CD searches for the segment. "At a Glance" is an overview of the



CD and an explanation of its content. This will probably be viewed only once by most users.

The "Whales in Motion" button launches you into the video portion of Whales. It contains seven video segments. These are narrated by Patrick Stewart — lately known as Captain Jean-Luc Picard of Star Trek NextGen — who adds an air of authority to the volume.

The audio portion of the 14-minute overview features Stewart, while a text box

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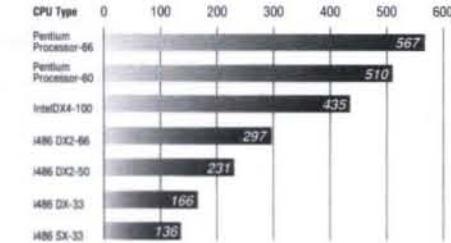
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The Intel iCOMP™ Index



Source: iCOMP™ A Simplified Measure of Relative Intel Microprocessor Performance

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holds the transcript of the speech. Meanwhile, a series of video clips and animations illustrate the subject matter.

The live action and animated sequences are deftly blended, although the tiny video window prevents you from seeing a lot of detail. In one animated sequence a human figure in a dory provides a reference size as ever-larger members of the family — from dolphins to the great blue — swim underneath the progressively diminishing craft

above. Nice effect.

In addition to the overview, there are six other videos on topics such as ecolocation and songs of the Humpback whale.

The "World of Whales" menu button is the gateway to the bulk of facts and illustrations about whales. As with any good reference work, Whales is full of interesting facts and theories about the subject. Did you know, for example, that whales are thought to have evolved from a furry wolf-like land animal

that turned to the sea about 50 million years ago in search of a better food supply?

The fourth button on the main menu screen, "Ask the Experts" allows you to do just that. On the assembled panel are Dr. Roger Payne, who co-discovered that the vocalization of humpback whales were actually communicative "songs;" Dr. Aleta Horn, who is chief scientist of the US National Marine Fisheries Service in Silver Spring, MD; Dr. James Mead, Curator of Marine Mammals at the

Smithsonian Institution; and Dr. Christopher Clark, director of bioacoustics research at Cornell Laboratory of Ornithology.

You can select from a variety of topics, such as "are whales intelligent?" and hear and see a video clip of each expert answering the question. The video is a bit choppy in places; however, TV on your computer is an engaging experience. □

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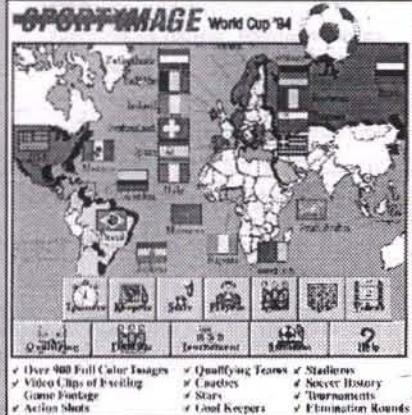
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For Soccer Fans: World Cup '94



This CD-ROM, from Penticton, BC-based Optical Data Systems Inc. will keep your average soccer fan floating in stats, instant replays of key plays, historical tidbits and all things of a soccer persuasion.

Although we looked at a pre-game version with statistics updated to December 1993, a post-game version, due out in mid-August, will contain updated statistics including the results of the World Cup '94 tournament (being contested as we write this).

Optical Data looks at the CD-ROM title as an electronic magazine, and indeed, most of the content of World Cup '94 has been obtained through an agreement with a specialized soccer publication in France. The disc also contains a selection of video clips, so fans can play back their favorite moments.

The extensive database includes information on teams and individual players — biographies accompany the more accomplished ones — as well as goalkeepers, coaches and trainers. Statistics are available on all the qualifying rounds and there's even information on the individual soccer stadiums. There's also information on the history of soccer. World Cup '94 has a suggested price of \$39.95.

Dial M For Multimedia Part II

Upgrading Your Existing PC

BY GRAEME BENNETT

We had several inquiries from folks looking for the second part of our June article "Dial M for Multimedia." In the second paragraph it said we would be presenting a guide to upgrading the computer you may already own. Although the article was ready in time for the July issue, there wasn't room to run it. So here, a month late and with our apologies, is Part II.

Hard Disk Drives

On multimedia PCs, the more disk space, the better. Serious multimedia mavens will be happiest with a fast SCSI hard drive; casual users can save a few hundred dollars by opting for a good IDE drive.

Most experts will tell you that SCSI drives are faster and more flexible, but the difference in performance isn't compelling enough for many users to justify the price difference over a good IDE drive. A local bus hard drive controller and a fast hard drive is a worthwhile investment. Look for rated access times under 15ms.

HD Controllers

If you plan on using a SCSI drive, you require a SCSI controller. Newer SCSI drives implement a faster form of the standard called SCSI-II. A SCSI-II controller is a good choice for digital audio, video or high-performance server applications.

Caution: Don't rely on DoubleSpace, Stacker, or other disk compression products to increase your disk space, though. For multimedia applications, you'll find the performance hit too great.

CPU Considerations

PC vendors sometimes tout their units as being upgradeable via an "Overdrive coprocessor" socket. These 169-pin sockets on the motherboard allow a clock-doubled CPU to be added to the system, which substantially improves performance. However, it is not commonly known that even if a system does not have such a socket, it can usually be upgraded anyway. Your dealer can simply pull out the existing 168-pin 486-class CPU and pop in a DX2 chip. The 169th pin simply helps to key the upgrade chip to the right orientation on the socket.

Recent CPU models from Intel and other vendors have complicated the upgrade picture further. IBM came out with a clock-tripled "Blue Lightning" series of 32-bit chips. (IBM's version of the 486 is a clock-tripled 486SLC with a 16K internal cache.) Intel, in a case of marketing one-upmanship, called its CPU the DX4, even though it is actually a clock-tripled chip. Interestingly, these DX4 chips outperform the rarely-seen P24C chips that Intel convinced many PC manufacturers to build a socket on their

motherboard for, and promoted as a "Pentium Overdrive" upgrade to users who thought they were getting a *real* Pentium upgrade, instead of a 32-bit implementation.

PC advertisements sometimes refer to a PC as having a CPU upgrade "ZIF" socket. This stands for zero insertion force and means that there is a small lever on the socket that, when lifted, allows the chip to be simply dropped into place. When the lever is pressed down, it clamps the upgrade chip firmly into place. Note that the "Pentium Overdrive" upgrade does not turn a computer into a true Pentium PC unless the PC has a 237-pin socket, in which case it is correctly termed "fully upgradeable," i.e., upgradeable to true 64-bit Pentium technology. The 168-pin "Pentium OverDrive" upgrade is limited by the 486-class PC's 32-bit external architecture.

Catching the Right Bus

PCI — PCI (Peripheral Component Interconnect) is a so-called "mezzanine"-type local bus, primarily promoted by Intel, meant to eliminate the traditional bottleneck between a computer's central processor and peripheral devices. It is capable of supporting 32- or 64-bit PCI devices, and is generally considered a superior technology to VL-Bus (see below).

The PCI bus is limited to two or three slots, except with the use of currently rare bridging technology such as that recently introduced by Digital Equipment Corp. PCI versions of SCSI and Ethernet cards would typically each use two of the 10 "loads" permissible on a single PCI bus, although some implementations, such as a chipset introduced by AMD, use just one.

Theoretical data transfer rate of about 132 MB per second. Actual figures vary depending on source. *Byte* magazine claims sustained throughput as high as 80MBps. It is called a mezzanine bus because of its buffered isolation from the actual CPU local bus. PCI devices can work concurrently with the CPU. PCI peripherals can work with any CPU speed or design. PCI is available on some 1994-or-newer PCs, Alpha and PowerPC computers.

VL-Bus Level 1 — The VESA (Video Electronics Standards Association) local bus has a theoretical maximum data capacity of 132 MBytes per second. Considered a 486-centric design, it is available on many 1993-or-newer PCs.



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A VL-Bus will support up to three peripherals operating at 33MHz.

The VL-Bus Level 2 has a theoretical data capacity of 267 MBytes per second, but is not yet available.

EISA (Extended Industry Standard Architecture) — A 32-bit bus downwardly compatible with ISA (see below). Better RAM expandability than ISA systems — typically 64 MB or so. Auto-configurable. A card that can take over the bus and deliver data without waiting for the CPU said to be a Bus Master.

MCA (Microchannel Architecture) — semi-proprietary PS/2 bus. Auto-configurable, compatible with the forthcoming Plug & Play standard.

ISA (Industry Standard Architecture) — Data capacity of 6 MBytes per second. (Figures vary depending on source. Intel claims ISA transfer rate of 5 MB/sec.)

In addition to their poor data throughput, ISA systems have limited RAM expansion capabilities — typically 16 MB. Manual configuration required. Users with ISA systems with more than 12MB of RAM often find that their video cards either don't work at all, or suffer from exceptionally poor performance. Since the video memory won't fit cleanly into the 16MB limit, the video driver will fail or has to perform software shenanigans to access the memory.

A configuration problem on ISA bus PCs — the dreaded *IRQ conflict* — results from an expansion card not being detected by the system or the card not working properly. Usually solved by reading the manual and correctly setting DIP (dual inline pin) switches or jumpers on the expansion card. IRQ conflicts never happen on Macintoshes or other computers that use auto-configuring cards.

Expansion slots

64-bit — PCI is a 64-bit bus design. It is said to have 64-bit expansion slots.

32-bit — EISA, MCA and other 32-bit bus designs are said to have 32-bit expansion slots.

16-bit — ISA motherboards usually contain several 16-bit "ISA expansion slots" or other Expansion options such as internal modems, sound cards, SCSI adapters, network cards, etc., each requiring one expansion slot. "Slimline" PC designs or notebook computers may lack slots entirely, or have slots that require cards that are less than full-length. EISA bus systems have 32-bit slots that can also accept 16-bit ISA cards, however, a 16-bit ISA slot cannot accept a 32-bit EISA card. 16-bit cards cannot transfer data as quickly as 32-bit cards.

8-bit — older PC motherboards usually contained at least one 8-bit "XT-type" slot. Newer PC designs often lack this slot, as virtually no 8-bit expansion cards are produced anymore. 8-bit cards cannot transfer data as quickly as 16-bit cards.

The Future

An emerging class of "system-on-a-chip" microprocessors, such as HP's PA-7100LC multimedia chip, are designed with on-chip support to handle graphics-intensive, multimedia applications, such as image process-

ing, digital video, and digital audio. Clock speeds of initial runs of the new chips are around 80 megahertz (MHz), but future versions could go as high as 100 MHz and beyond.

The next generation of game machines will use powerful 64-bit RISC chips. Nintendo, for example, will use chip technology supplied by NEC, Toshiba and Sharp (based, in turn, on a design created by MIPS Technologies in the U.S.) to create a game machine based on a 64-bit RISC chip.

Some computers are upgradeable to support multiple processors. For example, some Pentium PCs are upgradeable to dual processors. Symmetric multiprocessing requires an operating system with multiprocessor support, like Windows NT or Unix.

Further in the future, we may see massively parallel processing (MPP) systems migrate to the desktop. Such systems use multiple processors to simultaneously perform various parts of a computing problem. Some, like Cray Research T3D supercomputers, are available with up to 2,048 processors. Of course, supercomputers are astronomically expensive, but such technologies tend to filter down over time.

RAM

A well-equipped multimedia PC needs plenty of memory. Despite the fact that most dealers continue to flog PCs with only 4MB of RAM, we recommend at least a 486 with 8 MB of RAM if you want to run Windows. Try to purchase a RAM configuration that leaves you with some free SIMM sockets for adding more memory, down the road.

When upgrading: Some desktop PCs can be expanded to a maximum of 16 megabytes (MB), while others go all the way up to 128MB. The amount of system memory or RAM (random access memory) a system can support may vary widely from model to model. You will need to consult the computer's manual or your dealer to find out what your memory expansion options are.

If you have an older model of computer or portable, it may use some other, less common, type of memory such as SIPP or individual memory chips. Again, consult your manual.

Tip: Note that RAM memory is not the same as having any number of megabytes of hard drive space.

Note also that if you upgrade your computer's CPU or motherboard and attempt to use your old RAM on the new system, you may find that the memory is not fast enough to keep up with the faster CPU. Therefore, some people buy RAM that is faster than their current system needs, as a hedge. Note, however, that faster RAM is more expensive.

RAM speed is expressed in nanoseconds (ns). The fastest PCs have 60ns RAM, while older models use memory with higher numbers (80ns, 100ns, etc.) Other than the higher cost, there is no problem in using RAM faster than your computer requires.

Slower RAM will induce wait states, which slow the computer's ability to process information. Slow RAM can lead to system crashes and other problems.

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How much RAM is enough?

If you plan to run DOS, with occasional Windows, get at least 4MB.

If you want to use Windows regularly, get at least 8MB.

If you want to run OS/2, Windows NT, NeXTSTEP or Unix, get at least 16MB.

If you want to do digital image editing or photo retouching, get at least 32MB.

Macintosh users should get at least 8MB.

An external cache is still useful.

A cache uses a special, faster, kind of memory. Usually, this is Static RAM, or SRAM for short. Standard memory is called Dynamic RAM, or DRAM.

The speed of cache memory — like most memory — is measured in nanosecond (ns). A typical 60 MHz Pentium CPU will have a 15ns 256 kilobyte (K) write-back cache.

Transfer rate - the speed that the unit can transfer data to the computer. Look for units that deliver at least 300kb per sec. SCSI-2 and a 16- or 32-bit SCSI adapter can speed performance.

Single-speed - obsolete MPC standard drives. 150 Kbps data transfer rate. Not recommended.

Double-speed - most — but not all — current drives are able to spin discs at double the standard speed to increase access and data-transfer performance to 300 Kbps. Overall performance is not necessarily double that of a single-speed drive, but improvements are significant.

**If you plan on
installing several
expansion cards or
using multimedia
features, a heavy-
duty power supply
(200W to 300W) is
desirable.**

Performance Boosters

Serious users will want a level 2 external cache. 128K or 256K is a good size for DOS and Windows users. OS/2, Unix or NT users should get a system with a 512K cache.

Some CPUs have an on-board internal writeback cache which improves performance of certain operations. The 486, for example, has an on-board 8K internal cache.

Expansion Options

Add-ons such as sound cards, internal modems, I/O cards, bus mouse, graphics adapters, SCSI host adapters for CD-ROM and scanner(s), video digitizers, network adapters, etc., require one free slot each.

While you're thinking about plugging in sound boards, SCSI adaptors, video cards, and so on, remember that it is possible to overload a computer's power supply by plugging in cards that exceed the rated wattage. If you plan on installing several expansion cards or using multimedia features (sound, video, MIDI, etc.), a heavy-duty power supply (200W to 300W) is desirable. Note, however, that today's components use a lot less power than their predecessors, so a 250-watt power supply may be overkill, especially if power-supply fan noise bothers you.

PC Power & Cooling, Inc. (1-800-722-6555 or 619-931-5700) make special low-noise power supplies. The best units have a two-speed thermostatically controlled fan.

Another factor to consider, when deciding what type of case your computer should have, is the number of drive bays. A tower case typically offers more expansion room than a desktop-style case. A popular size is known as a 16-inch mini-tower. Users with an interest in graphics, photography, scanning or other heavy storage needs should get a system with three or more drive bays. Some systems have as many as eight drive bays.

Hard Drive What's What

IDE (Integrated Drive Electronics) — common PC-standard drive, low cost.

SCSI (Small Computer System Interface) — common, faster and more expensive than IDE. The SCSI interface, which has been common on Apple Computer Inc. Macintosh computers for some time, is now seeing wider use on IBM and compatible PCs. It allows as many as seven devices to be attached to a single interface, and is often used with compact disk read-only memory (CD-ROM) drives.

SCSI-2 (small computer systems interface type two) — The fastest SCSI controllers are said to be Fast/Wide SCSI-2. A SCSI-2 card that can take over the bus is said to be a Bus Master. If it can deliver data without waiting for the CPU, it is said to support asynchronous I/O.

MFM (modified frequency modulation) — obsolete PC standard.

RLL (Run Length Limited) — obsolete PC standard. Held 1.5 times as much data as MFM.

ESDI — semi-obsolete PC standard. Never exactly "common," but available on some higher-performance PCs a few years ago.

PCMCIA — Because you probably want memory or a hard disk available at all times, these are not ideal candidates for putting in a PCMCIA slot. Several options, however, are available, including a SyQuest removable hard drive that fits into a PCMCIA Type III slot.

External — drives cost more than internal units, due to their need for a case, power supply, and CSA approval.

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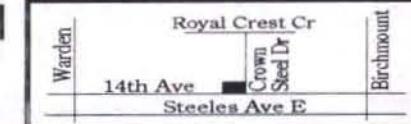
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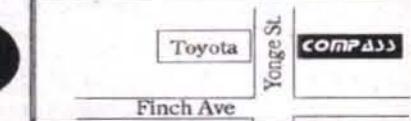
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Triple-speed - similar to double-speed, but spin rate is tripled (450 Kbps data transfer rate), as in NEC's MultiSpin 3X drives (etc.). Overall performance is not necessarily triple that of a single-speed drive.

Quadruple-speed - as above, but 4x speeds. Approximately 600 Kbps transfer rates. Several manufacturers, including Pioneer, Texel, and NEC, offer 4x drives.

Multisession Photo CD compatible - the ability to read Kodak's photo discs that have been written to (i.e., pictures were added) in more than one session.

Common Terms

Disc formats and standards

Apple HFS - CD-ROM format used by Macintosh computers. Files mastered in this format will mount on the Macintosh desktop without the use of the Apple "Foreign File Access" extension.

CD-R - Compact-Disc-recordable. Allows the writing of discs that may be read on standard CD-ROM drives. Most current CD-ROM drives can read only those discs that are recorded in a single-session, track-at-once format.

CD-ROM - compact disc read-only memory. General term may refer to drives and/or discs.

CD-ROM XA - "Extended Architecture" means support for interleaved data, typically audio and/or video.

Digital Audio - CD-ROM format. Known as the Red Book format; used by standard audio CDs.

High Sierra - CD-ROM format. An outdated version of ISO 9660 file format and not used very often.

Hybrid Disc - a CD-ROM disc that has been mastered with Macintosh and PC programs and/or data on the same disc. Generally, half the disc is partitioned as Apple HFS and the other half as ISO 9660.

ISO 9660 - volume and data-structure standard for CD-ROM, defined by the ISO (International Standards Organization). Discs mastered in ISO 9660 format can be read by PC, Macintosh and Unix (etc.) computers. A Kodak Photo CD is a good example of a disc mastered in ISO 9660 file format.

MPC (multimedia personal computer) - defined by the MPC Marketing Council, the original MPC spec (now referred to as MPC Level 1) is an obsolete (and hopelessly underpowered) multimedia standard for PCs.

MPC2 (MPC Level 2) - an improvement on the original MPC spec. The minimum requirements are as follows:

- 25 MHz 486, 4MB RAM
- 160 MB hard drive
- 16-bit digital sound card with 8-note synthesizer and MIDI playback
- CD-ROM drive capable of a 300KB/sec data transfer rate, maximum access time of 400 milliseconds, XA ready (mode 2), multisession capable
- Video card supporting 640x480 screen resolution with 65,536 colors
- MIDI I/O and joystick ports.

Single-session/Multisession - some older CD-ROM drives are not "multisession capable." These "single-session" drives can only read the first group of pictures put onto a Photo CD disc. For instance, if your photofinisher put 36 pictures onto a new Photo CD, you could read this disc with a single-session or multisession drive. If,

however, you took the disc and another roll of film back to the photofinisher at a later date and had, say, a second set of 36 pictures put onto the disc, a single-session drive could only read the first 36 images. A multisession drive could see all seventy-two images on the disc. A Photo CD can hold up to 100 pictures.

Orange Book - CD-WO (Compact disc write-once). Orange Book typically refers to the physical standard specification, while the data spec is referred to as DIS 13490 (also known as ECMA 168) or ISO 13490. Note that, although the logical format of a disc created with a CD-WO drive may be

Care For A Chip? Common CPU Terms

80x86 - another way of saying that a CPU is Intel-compatible. IBM-compatible PCs typically have an 80x86 CPU.

CPU - central processing unit. The brain of the computer.

FPU - floating point unit. Speeds up number-crunching in CAD, spreadsheets, 3-D and other math-intensive applications. A growing number of graphics packages require an FPU.

Pentium - The first-generation Pentium CPU is a 237-pin chip with approximately double the performance of a 486DX2-66 for integer operations; floating point operations are four times faster. Speeds start at 60 MHz and go up from there. 66MHz models are currently available, but Intel is expected to have 100+ MHz versions before the end of 1994.

One of the common complaints leveled against the Pentium chip is its high power consumption. A 66MHz Pentium, for example, draws 16 watts of power (compare this with the 1 to 1.5W a PowerPC 603 chip draws). This generates a lot of heat. Pentium-based systems require large heat sinks, special fans mounted over the chip, or even liquid cooling systems.

P54C - Announced in March, 1994, this is Intel's smaller, faster and less-expensive Pentium. At press time, 90MHz chips were expected to be the first to appear, with 100 MHz models to follow. The P54C runs cooler than original Pentiums due to its 0.5-micron die size and 3.3 volt power rating.

Pentium Overdrive (P24T) 32-bit external/64-bit internal architecture, fits in 168-pin (or 169-pin) sockets. The "Pentium OverDrive" upgrade is limited by the 486-class PC's 32-bit external architecture.

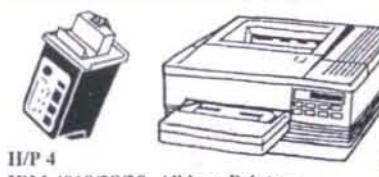
486 DX4 - clock-tripled (I/O at normal speed, CPU clock tripled), 32-bit. A 99MHz 486DX4, for example, runs at 99 MHz internally, but communicates with the rest of the I/O subsystems at 33 MHz. 8K internal cache. 75 and 99 MHz versions appeared initially.

486 DX2 - clock-doubled (I/O at normal speed, CPU clock doubled), 32-bit. 8K internal cache. For example, a 486DX2-66 is a clock-doubled 486 processor that runs at 66 megahertz (MHz) internally, but communicates with the rest of the system at 33 MHz.

OverDrive processor - clock-doubled (I/O at normal speed, CPU clock doubled) upgrade for Intel 486SX or DX-based systems.

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compatible with standard CD-ROM drives, most CD-ROM drives can only read single-session, track-at-once discs created with CD-WO drives. Incremental recordings are not readable on most current CD-ROM or CD audio players. See CD-R.

Photo CD — Photo CD is a technology introduced in the summer of 1992 by Kodak that stores pictures taken with 35 mm cameras on compact disks. Up to 100 images are placed on the disk by specially equipped photo processing vendors. The images can then be viewed on a personal computer or television set equipped with a Photo CD-compatible CD-ROM drive. Standard Photo CD resolutions range from 128x192 to 2048x3072 pixels. There is also a professional version which can store images from film sizes up to 4 inches by 5 inches. Technically, the disc format is ISO 9660; the data format is CD-ROM XA (mode 2). See Single-session, multisession.

Red Book — See Digital Audio.

Rock Ridge — CD-ROM standard provides data interchange with Unix systems by implementing X/Open and Posix file systems and directories.

Yellow Book — physical specification for CD-ROM discs.

Interface — Common Terms

Parallel port connector — a less common way of connecting a CD-ROM drive to a notebook PC. Note that most aren't MPC-compliant.

SCSI — seven devices can be "daisy-chained" to a single SCSI host adapter. SCSI units should have the ability to easily change SCSI ID numbers.

SCSI-2 — faster version of SCSI. "Dual

channel" means as many as 14 drives and devices can be supported on a single slot.

SCSI (or SCSI-2) adaptor — interface card or connector. Both 25-pin and 50-pin connectors are common. The Adaptec 1542, and adaptors compatible with it, are emerging as the *de facto* standard for PC SCSI interfaces

Terminator/Termination — Termination applies the electricity that goes through your computer, through the cables and into external hardware devices. A terminator is a piece of hardware that fits on the unused SCSI port on the last device in the chain. You can't have a terminated device in the middle of a SCSI chain. According to the rules of termination, the first and last devices must be terminated. Internal SCSI hard drives are terminated and count as the first device. Systems with Active Termination monitor the 26 SCSI data lines, automatically adjusting and compensating for fluctuations in line voltage and impedance.

Playing Audio CDs

It is worth mentioning here that virtually all CD-ROM drives can also play audio CDs. External units typically have RCA jacks on the back, while internal units have connectors on the interface card. These audio connectors are connected to a set of powered speakers or may be hooked up to your home stereo for optimum fidelity.

The best CD-ROM drives are double speed or triple speed, multisession Photo CD compatible. If you choose to pay a little extra for a SCSI drive and adapter card, you will get slightly better performance than non-SCSI units, including proprietary sound-card/drive interfaces.

It is worth mentioning here that virtually all CD-ROM drives can also play audio CDs.

Related Technologies

CD-R (also known as CD-WO) —

There are two common methods by which the data on a CD can be recorded: Track-at-once and incremental.

Incremental — allows writing within a track with multiple data streams. Cannot be read by most existing CD-audio and CD-ROM players. Cannot be written by some CD-WO recorders.

Multisession — a session is a sequence of one or more tracks where the track numbers form a continuous, ascending sequence. Each session could be an ISO 9660 volume.

Track-at-once — allows stepwise creation of a CD-WO disc; up to 99 tracks are possible.

Volume-at-once — A simpler form of track-at-once; this is how CD-ROM is mastered. The recording of the entire volume is done at once.

Plug-and-Play

Some add-on cards can be configured entirely by software. In other words, the various configuration options can be set and/or checked without resorting to setting DIP switches or jumpers.

Sound Cards such as the Media Vision Pro Audio Spectrum 16 (16-bit) and Pro AudioSpectrum Plus (8-bit) have programmable DMA and IRQ for easy installation.

Other cards, such as the Sound Blaster Pro, require hardware switches to be set.

Future Domain (714-253-0400) has a series of PCI/SCSI-2 products that are fully autoconfiguring, eliminating the need for either jumpers or switch settings.

Sound Card Buying Advice

Sound: Get a sound board or module that is General MIDI compliant for best results.

The best sound boards have 16-bit audio, and an on-board DSP chip that supports sound wavetables. Boards using the Yamaha chipset or promising "FM synthesis" do NOT fall into this category, and suffer from rather cheesy synthesized sounds.

A DSP (digital signal processor) is typically used in digital audio/video, telephony, and image-processing applications. Several integrated circuit manufacturers make DSPs, including:

Texas Instruments — the TI3210 is used in Macintosh AV-series computers, Radius PhotoBooster, Spectral Innovations NuMedia, etc.), Motorola, Analog Devices, and others;

Motorola 56001 — Used in original NeXT hardware, Turtle Beach Multisound and various Digidesign products, etc.

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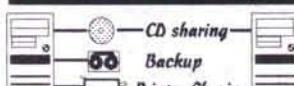
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The many DSP sound boards on the market include the Turtle Beach Multisound, Spectral Innovations NuMedia card, and Digidesign Audiomedia II and Pro Tools products. Many of these high-end sound boards use the Motorola 56001 DSP, including all those mentioned here except the NuMedia card, which uses a TI3201 DSP.

Most people agree that the Multisound is the best-sounding PC audio card currently available, although the Gravis UltraSound is a strong contender that costs a lot less and is somewhat more flexible.

Sound peripherals of varying quality are also available for portable computers from various manufacturers, including Logitech (1-800-732-3180), New Media Corp. (see the review in our June, 1994 issue) and DSP Solutions (916-621-1787).

Common Problems

It is worth noting that some products that claim "Sound Blaster compatibility" aren't really as compatible with that product as consumers are led to believe.

Cardinal Technologies, for example, makes the Digital Sound Pro 16 sound card, a product competing with Creative Technologies' Sound Blaster. Cardinal advertises its sound card as compatible with Creative's product, but, in fact, the Cardinal sound card doesn't properly playback speech in popular PC games such as "Mortal Combat," "4-D Boxing," and "Kings Quest V." Cardinal's product doesn't duplicate Sound Blaster's generation of speech and sound through technol-

ogy used in the Sound Blaster, identified as "Adaptive Differential Pulse Code Modulation" (ADPCM).

On the Horizon

Although Creative Labs' Sound Blaster is the de facto compatibility standard of the current generation of sound cards, many analysts predict that General MIDI (MIDI stands for Musical Instrument Digital Interface) will supersede it and prove to be the most important compatibility consideration in the next few years.

Tip: The drivers for the MusicQuest MIDI card (sold by Musicware in Canada, 416-785-3311) are among the best on the market. They multitask properly under Windows; most others don't. □

Desktop Publishing

Flash Magazine

(contact waltervj@flashmag.com) calls itself The Premier Journal of Desktop Publishing. It is a half-size mag (C\$4.95 per issue) full of wild ideas in laser printing, DTP and related topics. The June 1994 issue has features on programming in PostScript, a laser printer survival guide, a discussion of what kinds of paper work best for laser printing, promotion secrets, and the scoop on printing onto heat transfer papers. Good stuff.

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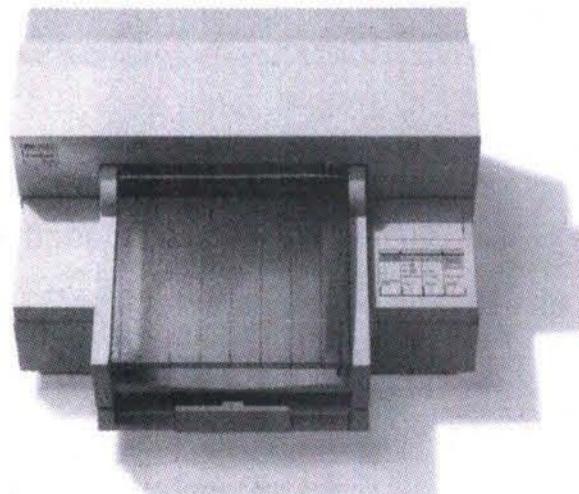
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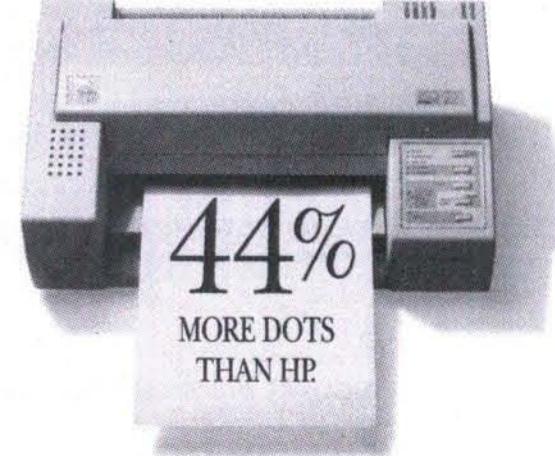
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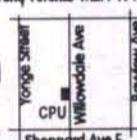
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Requires: 386 or greater running Windows in enhanced mode, min. 4 MB system RAM and 8.5 MB virtual memory (disk space), plus 3.4 MB for installation of SuperScript software and TrueType fonts. A parallel port is required.

Pros: Inexpensive Windows-only printer with good printer status messages thanks to bi-directional parallel port communications. HP IIP (PCL 4.5) emulation and Windows GDI support. Sharp Edge Technology improves print quality of text and graphics over unenhanced 300-dpi output. Small (14.1" x 14.6") footprint takes up little desk space. Low power consumption. Print speed: Up to 6 pages per minute.

Cons: Only 300 dpi, not networkable, toner cartridges not refillable, does not support external print spoolers. Optional PostScript software does not support Level 2 commands. Host-based processing uses your PC's CPU to handle print tasks. This means that the PC is busy longer than printers which have their own CPU. The 20 TrueType fonts included with the printer are of poor quality.

The SuperScript 610 is a new laser printer that NEC has developed especially for users of Windows version 3.1. The Silentwriter SuperScript 610 differs from most other printers in that it is directly driven by the CPU of the host computer; hence, it has faster response and better status information. In addition, by expanding the memory of your computer or upgrading to a more powerful PC, the performance of your SuperScript 610 can be further improved.

The SuperScript software lets you choose between two print modes, GDI and PCL emulation. GDI mode, which prints what you see on your Windows screen, is very fast and works well for most users.

PCL emulation mode offers compatibility with existing PCL print files and also gives you the ability to print from a DOS application running within Windows.

You can select the print mode from many Windows applications, or through the Windows Control Panel's Printers window.

GDI Mode

GDI mode takes advantage of Windows' own internal design to produce documents faster than most conventional printers can. Other printers require Windows to translate a document into their printer language, such as

PCL on LaserJet printers. GDI mode reduces overhead by eliminating this translation step before starting to print. This results in faster printing—as much as four times faster for some files. SuperScript GDI mode includes additional features such as manual duplex printings.

The computer and Silentwriter SuperScript 610 communicate bi-directionally via the parallel port connection to exchange the operating status information (i. e., warm-up, paper out, paper jam, etc.).

The SuperScript 610 displays messages requiring your attention on your screen, if necessary. We find it convenient to have printer messages show up on-screen, rather than having to refer to the printer operator panel periodically.

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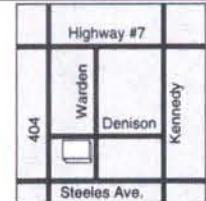
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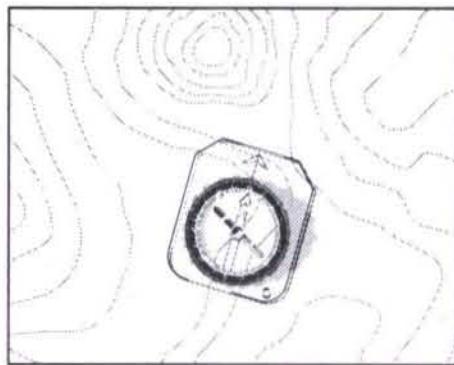
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Lost? Consult Your GIS

Geographic Information Systems No Longer Just For Cartographers

BY GEOF WHEELWRIGHT



While most of us are used to having our personal computers help us keep track of where we are in our working life, the day has arrived when PCs can also become real-life navigators in the car and on the road.

This facility normally comes from a GIS (Geographic Information System) or "mapping" application. Computer mapping has been around for many years, with professional cartographers being the early adopters. In fact, many of the best road maps and atlases that you buy in a bookstore today started their life on a computer screen.

Similarly, computers have played a heavy role in the satellite mapping of the planet — controlling where cameras were going to shoot and what kind of information was going to be in the picture (and then enhancing that picture to provide the maximum possible resolution).

For most PC users, the practical use for such mapping technology comes with products that help get them from "A" to "B" in the fastest time possible. These products commonly include on-screen maps of a predetermined area and a strong database of streets, towns, highways and cities. At their most simple, they let you key in the place you plan to start from, the destination you want to reach and the kind of route you want to take (highway or scenic). This breed of software will then calculate the best potential routes for the trip and print out a set of driving instructions and a map.

Far from being just a "fun" utility to impress your friends and help you get to places a little more quickly, this kind of application has also allowed larger firms to better carry out their fleet management — tracking mileage and expenses — and make more realistic demands of employees who are traveling from one place to another by car on business.

It has also provided real, practical corporate help for the traveling executive, who can leave the office with a clear set of instructions and a personally-tailored map before setting out for a meeting — and have a realistic idea of how long the trip will take.

Continued on page 41



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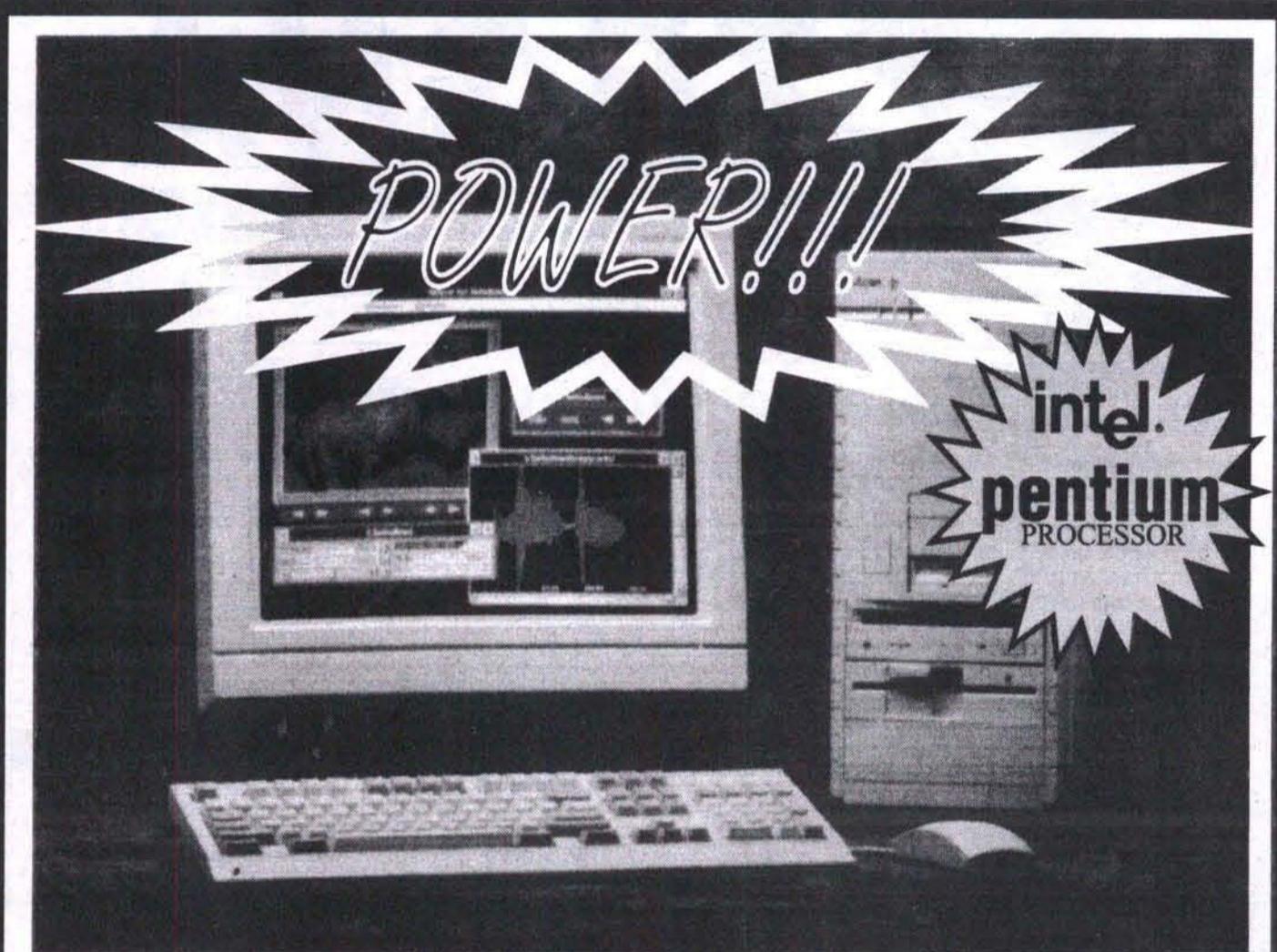
Version 5.23 of SPANS GIS includes a modeling handbook and accompanying database, enhanced raster and vector transla-

tion support, a new standard set of color palettes, a number of enhanced import and translator options, along with a number of other enhancements. Readily adopted by the natural resource, environmental, commercial and government sectors, SPANS GIS has been on the market for more than 10 years.

What is spatial analysis? Spatial analysis is a computer-based technology for producing, organizing and analyzing spatial information. GIS combines elements of database management, mapping, image processing and statistical analysis. The distinguishing factor which separates GIS from traditional information

systems is the use of locations for referencing information as an important variable in quantitative analysis. GIS applications are of rapidly increasing importance in a wide range of disciplines using spatial data. □

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Toshiba Multimedia Car Navigation System

NB — In Japan, Toshiba has announced that it has developed a car navigation system. It is equipped with a CD-ROM drive that plays both music CDs and CD-based software.

To be released in Japan at 268,000 yen (US\$2,680) on September 1, Toshiba's latest car navigation system is called the NP-A50. It consists of a controller, display monitor, and CD-ROM-based map software. The controller measures 14.5 x 5 x 19.5 cm and weighs 1.15kg.

Due to the size, this system can be installed in almost all types of cars and is portable. Toshiba has additionally enabled it to be connected with a regular television set.

The car navigation system uses a global positioning system to locate the car's position. The controller receives signals from eight different space satellites owned by the US military but available for public use. Interchangeable map software allows the system to be used in almost any area in the world. Due to Toshiba's "map-matching" feature, the firm says, the system's ability to locate a car's position has a high degree of accuracy. □

Lost? Consult Your GIS

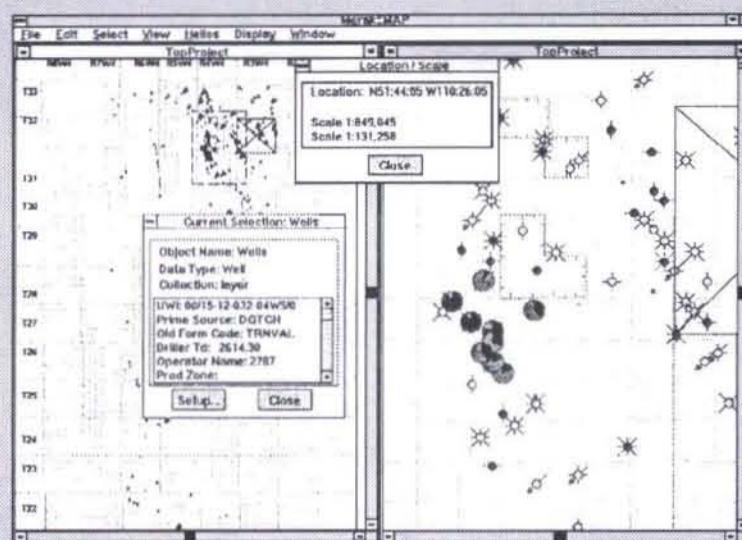
Continued from page 39

Mapping systems can also play a vital role in door-to-door, marketing and direct-mail campaigns, where territories covered can be marked off on the screen and boundaries between different salespeople's territories can be clearly delineated. On-screen maps that clearly show where different products or services are most successful can also provide a clear guide as to how companies should direct their marketing energies. And with many GIS systems allowing you to "zoom in" as close as street level, this kind of specific area targeting can provide quite direct, empirical data.

Of course, surveyors and planners are natural customers for such products and have quite specific demands for such software. When they are doing land, seismic and hydrographic survey work for customers in the government, military and commercial sectors, they often need as much geographic detail as possible, including that from satellite photography and geological surveys.

Probably the most successful of all GIS applications is a product called MapInfo from a Troy, New York-based company of the same name. MapInfo put GIS systems "on the map" last year with reported sales of \$18.4 million for its flagship mapping product.

MapInfo is designed to help its users look at and analyze information in a geographical context and is particularly popular with marketing organizations that want to study demographics. The company that pro-



Helios Map

Merek Projects, a Calgary firm that has moved its international headquarters to Houston, TX, has a mapping program geared to the oil patch. Known as Helios, the geographic Information System, the system includes a map interface that allows a company to view data geographically. □

duces MapInfo is quite bullish about future sales for the product - estimating that something like 80 per cent of all corporate data has a geographic component to it.

MapInfo claims success in sales, marketing and customer service organizations - as well as the insurance, banking, telecommunications, sales analysis, site analysis, direct

mail marketing, dispatching, asset management, route planning, risk assessment and insurance claims processing markets. Pricing on MapInfo starts at \$795 (US). The product runs on the DOS, Windows, Macintosh, Sun and HP Unix environments and it is available from a variety of dealers and value added resellers. □

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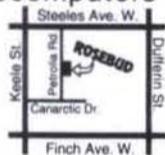
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CONSUMER ELECTRONICS SHOW

Music Industry Sees Internet Threat

BY RUSSELL SHAW

CHICAGO, IL (NB) — The executive vice-president and general counsel of the largest music industry trade association called the Internet a potential threat to the music business, during a panel at the Consumer Electronic Show.

"As far as the Internet is concerned, we are very troubled about how easy it is to upload sound recordings and other information without the necessary means to moni-

tor, track, identify and pay for those materials," said David Leibowitz of the Recording Industry Association of America (RIAA).

The RIAA comprises nearly all the record companies in the United States. The group says it is concerned about the specter of bulletin board system (BBS) owners digitizing a CD, capturing it in computer memory, and then sending it out over the BBS to anyone with Internet access who chooses to receive

the material.

Leibowitz stressed that the industry would combine a get-tough approach along with research to make such unauthorized transmissions tougher.

"We have been looking at a number of bulletin boards, and we know that a number of them are, today, either providing musical samples or full cuts," he said. "We are investigating them to the extent that these activities are unauthorized and violate our members' rights."

An anti-piracy task force at RIAA has been handed the ball. "They (the task force) are actively enforcing that," said Leibowitz of the anti-piracy efforts. "Anti-piracy has always dealt with the unauthorized manufacture of records and CDs, and their sale in flea markets and stores. Now, we are having to adapt toward looking what is going on over the wires."

Leibowitz then uttered a comment of frustration. "The Internet may be a lost cause at this point. It seems uncontrollable," he said. "Everyone with an Internet address has a mailbox, and there must be a phone number built into that —

but the possibility of creating electronic 'Swiss banks' really is troublesome."

Leibowitz's analogy referred to the legendary impenetrability of the Swiss banking system to the efforts of investigators.

He then implied that encryption or similar technology that will block digitization by unauthorized info highway pirates is the best hope for the future.

"Our industry is building in the license plates such as international standard recording codes. Each track will have a brief digitally imbedded, alpha numeric code identifying that track. That's part of the solution," he said. □

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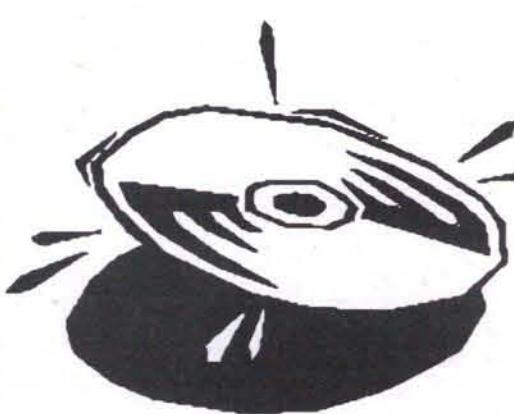
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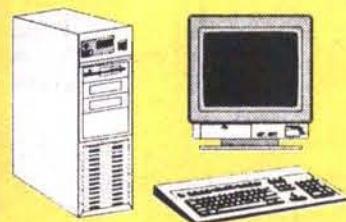
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CONSUMER ELECTRONICS SHOW

Dick Tracy-style Wrist Communicator Arrives

BY WENDY WOODS



CHICAGO, IL (NB) — The latest entrant in the Dick Tracy emulation race is MicroTalk Technologies, which promises to be the first out with a phone you can wear

on your wrist.

The Minnetonka, MN-based MicroTalk, showed the TeleWatch at the Summer Consumer Electronics Show in late June. It incorporates a cordless telephone, intercom, and wristwatch in one device. The unit can receive and make calls within 300 feet of a base station, but plans are to have a unit that will be a cellular phone in a year or two.

The Telewatch is promised for shipping by Christmas, says Barry Voroba, Ph.D., chief executive officer of the company. He told Newsbytes that the unit will retail for \$300.

The FCC must first approve the device for sale, however.

The tiny watch offers a 12-digit keyboard and a liquid crystal display on which an entered number is displayed. The watch measures 0.2-inches thick, 2.2-inches high and 1.6-inches long, not counting the wristband. The sound from the phone is emitted through a tiny speaker. Two batteries are provided, allowing one to be charged while the other is in use. These are rechargeable nickel metal hydride batteries.

For its size, the unit is also feature-rich, offering a "hold" button, security codes to restrict use, memory speed dial, intercom functions, privacy scrambler circuit, battery low indicator, and 10-channel operation.

Dr. Voroba, an entrepreneur, says he created the Telewatch after successfully selling another invention, a soft hearing aid, to Bauch and Lomb. This time, he says, he wants to be the first to market a wristwatch phone, and believes he has the winning

combination of technology and design to do so.

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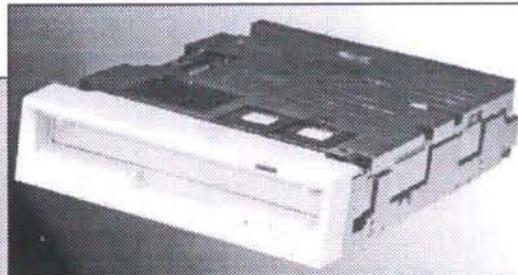
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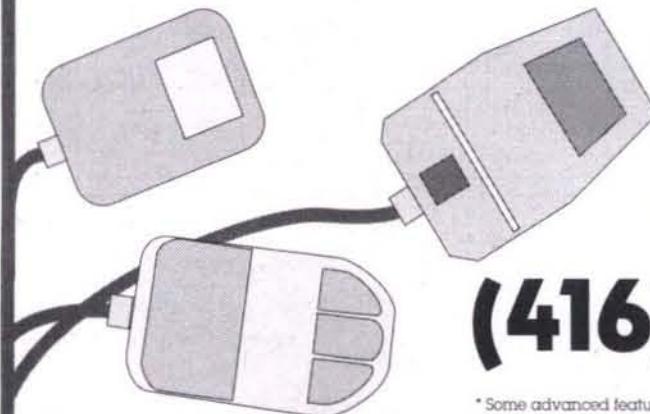
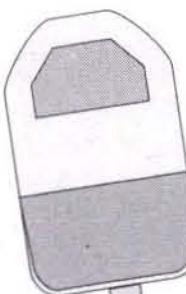
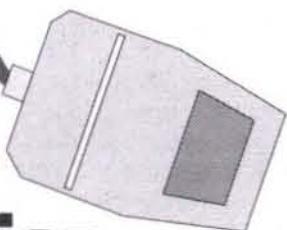
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CHICAGO (NB) — The next wave of productivity will not come from higher capacity hard disks, or full-motion video and sound coming through a computer, but will come when people have the tools to be productive wherever business takes them. This was the view expressed by Randall Battat, Motorola, formerly of Apple Computer, who addressed the PCC (Personal Communications and Computing Show), which was held simultaneously with the Consumer Electronics Show at McCormick Hall in Chicago.

Battat, vice president of Motorola's Wireless Data Group, showed one of the jewels in Motorola's crown — a personal communications device called the Envoy, which will be shipped in late summer. Envoy, based on the General Magic's Magic Cap software and Telescript, was part of a demonstration for the keynote address.

Envoy allows the user to send a fax, send wireless messages to an administrator's Macintosh, or to receive a wireless message via the Internet from a PC.

Envoy presents the user with an opening screen display that looks like the surface of a desk — there is a fax machine, a calendar, a notepad, a telephone. If one taps with a stylus on various devices, functions pop up. For instance, a touch to the calendar brings up the calendar function. A touch to a full inbox shows a series of messages waiting, which can then be received through wireless transmission with a host computer. When a pen is touched to each message, the full text is displayed.

"A lot of people will enjoy Envoy, but this is the first step in a long term project. We're where pagers were 10 years ago. But today, a lot of the pieces are there to do some incredible things right now," said Battat. "At Motorola we're extremely excited about what all these new things can do for people."

Envoy, composed of Motorola's own "Dragon" chipset and featuring a 68349 processor and special-purpose ASIC (application specific integrated circuit), will enable the user to send two-way wireless, wireline, and infrared signals to other computers.

Applications coming with the unit, which is expected to retail for US\$1,500, will be a datebook, address book, notebook, filing system, calculator tools, plus a host of other third-party applications.

Cheryl Beck Ruff, product marketer for the Envoy from Motorola's Wireless Data Group, told Newsbytes that RadioMail and AT&T Personalink Services will work with Motorola's ARDIS network to offer additional functionality to the Envoy.

The AT&T service, she added, will be especially useful since its ability to understand the Telescript language means that a "richer content" can be transmitted — i.e., handwriting can be transmitted, as well as text. □

CONSUMER ELECTRONICS SHOW

More Games For 3DO

BY WENDY WOODS

CHICAGO, IL (NB) — 3DO Corporation, makers of the 3DO Interactive Multiplayer System, and Atari, with a 64-bit game machine called Jaguar, created booths at CES that were designed to be louder, brighter, and bigger than those of Nintendo and Sega, which hold the top spots in consumer video gaming.

3DO, of Redwood City, California, now has 60 titles available for its 3DO Multiplayer, with 160 more in development worldwide. This is in contrast to earlier this year, when only a handful of titles were available. New titles include: Shock Wave; Road Rash; Way of the Warrior; Off World Interceptor; and Demolition Man, featuring Sylvester Stallone, who was shot against a bluescreen for the action scenes in the game. The color and cacophony of the 3DO display was meant to dispel concerns about the company's future, and employees projected an upbeat image.

Although Sony and Sega plan to unveil 32-bit game machines and Nintendo promises a 64-bit unit next year, 3DO has a 32-bit game machine now and company officers wasted no time making hay with that fact.

"We have that technology today, not in the future," said director of marketing, Janet Strauss, to Newsbytes, referring to the custom chipset that generates photorealistic graphics, fluid animation, CD-quality sound and fast interactivity. The system also features a double-speed CD-ROM drive.

Although sales were slow when the units first went on sale in the US last October, and in Japan in March, they are now picking up speed, and 3DO projects that it will sell 150,000 3DO Multiplayers by year's end.

Matsushita is manufacturing the machines and selling them under the Panasonic label. A European PAL version (as opposed to the current NTSC (North American Television Standards Association) signal version) is being readied for a fall, 1994 release. The unit also accepts a variety of add-ons including modem, memory storage cards, MPEG-1 (Motion Picture Experts Group) compression video cartridges, expected to be available this year, and trackballs, keyboards, flight sticks, and mice. The 3DO also plays audio CDs, Photo CDs, and CD-ROMs.

The most popular game right now on the 3DO is John Madden Football, Strauss said, but the company does not have a hit as big as Super Mario Brothers or Sonic Hedgehog, titles which have made Nintendo and Sega, respectively, forces to be reckoned with.

Regarding the price, which is stuck at US\$499, Strauss told Newsbytes that the company has tried to reduce its costs, but that the price cannot go any lower for now. "We are happy with the price," she said, adding that in the US, Panasonic is also bundling at least two software titles with the unit, making it a better deal.

3DO has 10,000 retail outlets for the 3DO player in Japan and 3,000 in the US at this time.

Jaguar Sounds Off

Meanwhile, Atari Corporation of Sunnyvale, CA, may have had the loudest booth on the show floor, as the company dominating the entrance to the North Hall with displays of its Jaguar game machine. This 64-bit unit, manufactured by IBM at its North Carolina plant, is less expensive than 3DO's, costing \$250, but has only five software titles available. Two more are coming in July, and Atari hopes for a total of 30 by December. About 150 developers have been licensed to create Jaguar software and peripherals.

Introduced last November in Northern California and the New York markets, the



machine is now being launched nationwide and overseas in the UK, Germany, and France.

Ron Beltramo, vice president of marketing, told Newsbytes that some of the Jaguar's advantages over the competition are technical at this point. The system architecture is 64-bit (compared to the 3DO's 32-bit architecture); it has a faster bus bandwidth, a faster rendering speed, and more processors (five compared to four on the 3DO unit). However, a CD-ROM drive attachment, when available, will cost another \$200, bringing the cost perilously close to the 3DO unit. Also at this time, no CD-ROM titles are available for the Jaguar, even if the drive was.

Atari anticipates sales of 250,000 to 300,000 Jaguars this year, with most of the sales coming between August and November, 1994. Beltramo declined to say how many Jaguars have been sold to date.

Atari has bet its future on the Jaguar, emphasizing its PC business in favor of the lucrative game market. The company plans to launch a major TV advertising campaign on MTV, Nickelodeon, and other stations in the third and fourth quarters of this year to build demand.

"Third-party developers are intrigued by the power of this platform," he claimed. "Jaguar allows them to be the most creative." □

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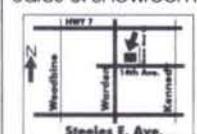
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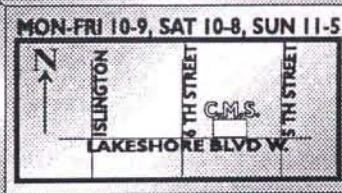
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Borland Launches dBASE For Windows, But Delays Shipment

BY LINDA ROHRBOUGH

NB — Borland officially launched the long-awaited dBASE 5.0 for Windows and dBASE 5.0 for DOS at the end of a multi-national tour demonstrating the product. Borland officials have said the company is counting on the success of dBASE for Windows to stop the flow of multi-millions in red ink.

Borland obtained dBASE when it purchased floundering Ashton-Tate in October of 1991. Ashton-Tate, built on dBASE, was on the decline and the launch of a problem-ridden dBASE IV 1.0 for the DOS platform might have been the finishing blow had Borland not purchased the software giant.

Announced for shipment three years ago, dBASE for Windows had been postponed so many times that Borland stopped talking about when it was going to ship — until now.

Borland was very nervous about the possibility of releasing a dBASE with problems. The DOS version is shipping in July, and the Windows version is expected to ship in the next two months.

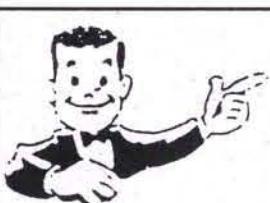
Borland maintains dBASE for Windows is fully compatible with previous versions of dBASE, including dBASE III Plus and dBASE IV. In addition, the company has promised developers will be able to jump between developing DOS and Windows applications using the same code. The

product also includes a plug-and-play architecture, object-oriented dBASE extensions, and a scalable database engine, Borland asserts. Early reviews from beta testers have been favorable. However, earlier this year some industry leaders started moving to other products already available for Windows.

In Canada and the US, Borland has set the retail price of dBASE 5.0 for Windows at \$300 less than dBASE 5.0 for DOS. But upgrade pricing is \$50 higher for the Windows version. Retail price for dBASE for Windows is \$495, while the DOS version is \$795. The DOS upgrade price for registered users of dBASE and Paradox is \$149.95; however, the Windows version upgrade is \$199.95. Upgrades are available directly from Borland.

Borland reported losses of US\$69.9 million for its 1994 fiscal year (FY) compared to a loss of \$49.2 million in FY 1993. The company said it will gain \$145 million from the sale of products to Novell for that company's office software bundle it is putting together by purchasing word processing software company WordPerfect. Novell is paying \$110 million for the Quattro Pro spreadsheet product line and \$35 million for Borland's Paradox database product licenses. □

Borland, tel 416-229-6000; fax 416-229-6123.



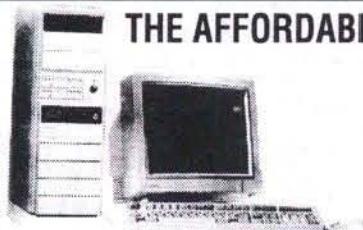
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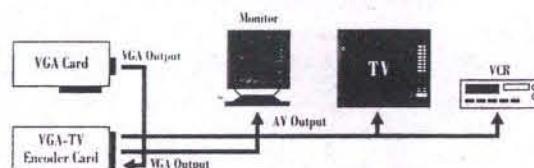
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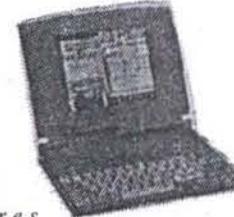
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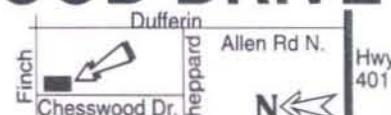
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New to Version 2.0 is full interactivity between components, the inclusion of Microsoft's OLE 2.0 (that's Object Linking and Embedding) which is the part that lets you pull in stuff from MS applications like Word, Excel and PowerPoint, plus the addition of a screen outliner, multiple text styles and lots of templates.

What Q-Media is, essentially, is a facilitator. It effectively contains all the tools you might need to assemble multimedia presentations for your business needs or home productions for your own entertainment.

But the central core of Q-Media is what they call the "clip list", which is where you combine your text, images, animation, audio and video. With the ability to address 23 different file formats, it basically doesn't matter what program you used to create those files or where the source media is coming from. Q-Media will accept and work with them.

It's all achieved using the now practically universal Windows type (but really Macintosh type) pull-down menus and all over the screen mouse dragging. What you see most closely — and deliberately — resembles Microsoft Word.

But what really separates Q-Media from its more expensive competitors is that the programmers have considerably made the combination of multiple animations, images, captions and graphics just as easy to work with as a single item.

For example, by simply selecting what you want from your directory of pre-prepared files, you can have your company logo rotating in a corner of the screen while an animation runs in the centre as music plays, text scrolls and a narrator explains whatever it is you're trying to tell people will ultimately grasp.

Very busy indeed, but so simple to achieve that you may have to curb your instincts for more, more, more!

Everything in the show is synchronized by means of a time-line which lists each separate item with a bar across the bottom of the screen. You can graphically see when they will begin and end in relation to each other. And the niftiest part is that you can change these values by simply dragging the line backward or forward with the mouse to alter when each component will begin and end.

To continue to describe all of Q-Media's abilities would be deceptively confusing, because it is really quite simple to operate. But, alas, it is true that every picture is worth a thousand words, and we don't have that much room.

The only problem you're likely to encounter is storage for all your new found

directorial talent. It is an unfortunate fact of multimedia that lots of text, graphics, sound and video use up lots of space. So, if your fantasy is to carry a pocketful of presentations around on floppies, you're dreaming. Just to give you an idea, a one minute segment with two animations, some text, narration and background music eats up more than 3MB. You might want to look at getting each presentation stamped onto a CD-ROM — an option that's ever more economically feasible.

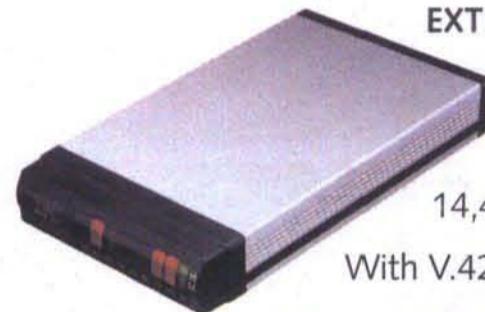
But that's not to say that Q-Media is geared specifically toward business. According to James Secord, Q-Media's Manager of Product Development, the package was designed to address the needs of a wide variety of users: Fortune 500 type companies who want to add impact or emphasis to their existing presentations, professional multimedia producers who require a quick and easy tool for previewing or experimenting with ideas before incorporating them into a final production, and home users and hobbyists

who want to combine their own multimedia stuff — home video, MIDI music, CD audio, Photo CD images, etc. — into fun and sophisticated private projects.

At only 200 bucks, Q-Media has a lot of appeal and offers far more bang for the buck than its only real competitors — "Action" from Macromedia and "Compel" from Asymetrix. Jingos will be elated to know that this is a purely Canadian product, developed and produced in Vancouver, B.C. □

V.FC 28800bps FAXMODEM

Four ways to meet your needs for speed



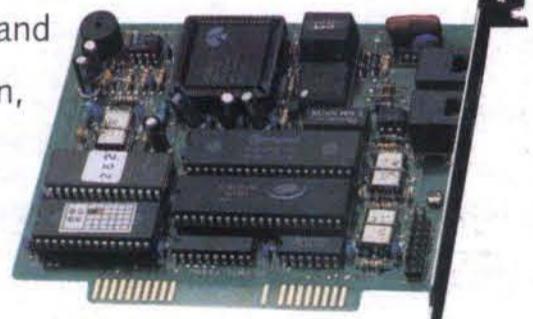
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the effective data throughput is pushed up to 115,200bps. Synchronous and asynchronous operations.

INTERNAL FAXMODEM. Send and receive faxes and data at the same speeds as the



PCMCIA FAXMODEM CARD. No bigger than a credit card, this model sends and receives faxes and data at 14,400 bps. Effective throughput up to 57,600 bps with data compression Asynchronous operation.



Stores three telephone numbers and two configuration profiles. Compliant with PCMCIA 2.0.

POCKET FAXMODEM. Ideal for use with laptops, this model has all the features of the faxmodem card, plus audio monitor.



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OS/2 Performance Beta

BY GRAEME BENNETT

Product: OS/2 Performance Beta**Price:** \$14.95 for CD-ROM disc, or download from

CompuServe

Pros: Robust multitasking replacement for DOS runs on PCs with 4MB of RAM and 30-40 MB free disk space. Innovative graphical environment offers several

advantages over Microsoft Windows and/or DOS.

Cons: At least in this beta, Windows compatibility requires the 3.1 version of Windows, which is no longer sold. Installation may be problematic. Some DOS/Windows programs and device drivers don't work as expected.

nately, it gets worse. When I finished re-installing OS/2 (thank goodness we had a CD-ROM disc and were able to avoid the punishment of re-installing twenty some-odd floppy disks), it still didn't work! Grrr.

Now, most reviewers (and users?) would probably have filed the disc and/or the computer in File 13 by this point, but your intrepid reporter was determined to at least see the package working, if only to qualify for the Jerry Pournelle Award for doggedness.

After several complete re-installations of OS/2, three complete re-installations of Windows and numerous partial ones (as required by this release of OS/2), plus more than a dozen hours of fiddling with CONFIG.SYS and .INI files, I finally stumbled across the answer: somehow, a line in CONFIG.SYS that referred to MOUSE.SYS had been broken. Using the OS/2 text editor, I made sure that both MOUSE.SYS and VMOUSE.SYS were present and accounted for and... victory!

In all fairness, I fully expect IBM to improve this aspect of OS/2 before the program's release. This, after all, is what beta-test procedures are all about.

So, now it's working. Let's have a look around....

OS/2 and the future: dual PS4C desktops?

OS/2 SMP is supposed to ship later this year. Insiders say system vendors will ship US\$4K dual-ZIF-socket machines next year, and for an extra \$1K (for the other Pentium), PC users can have two-way SMP on the desk.

By all appearances, many of the original OS/2 app developers are now hurting, or at least backing off from the market. Reportedly, an internal task force recently recommended that IBM get back into the app business in some form, the better to push OS/2 and Workplace. We think that IBM should start by improving the "applets" that ship with OS/2. At least the accessories that ship with Microsoft Windows show off the features of that operating system.

Another trick that IBM could learn from Microsoft is in the area of "Wizards" (to use Microsoft's term). OS/2 really needs a help system that can watch for problematic device drivers or configuration settings and then make intelligent suggestions on how to solve the problems. For example, many OS/2 users know that OS/2 can be made to boot a "virtual DOS drive" that contains device drivers that would otherwise be troublesome, but frankly, the setting up of such a configuration is not very easy. We'd like to see the system offer to do these tasks automatically.

We also believe that IBM has seriously underestimated the networking needs of the users of "Personal OS/2." After all, the forthcoming Macintosh System 7.5 OS and the "Chicago" version of Windows both include peer-to-peer networking support and tools to access the Internet. We think that IBM should build peer-to-peer network support and a basic suite of internet tools (SLIP/PPP, TCP/IP support, Mosaic, etc.) into its Personal OS/2 release. Leaving (Novell) Netware support out is fine, we think — something for the full-blown version, but, with all the interest in the "infobahn," we hate to see any more reasons not to choose OS/2. □

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Howard Rheingold and the Next Revolution

BY GRAEME BENNETT

Attendees at Write 94, the Writers' Retreat on Interactive Technology and Equipment had an opportunity to hear a keynote address by Howard Rheingold, the well-known author of *The Virtual Community - Homesteading on the Electronic Frontier*.

Rheingold, looking very flashy in a loud yellow suit, proved to be an engaging speaker. Here are some excerpts from his talk.

Rheingold had his audience pegged right

from the beginning. "As you know, writers are at the bottom of the food chain. You don't often get a chance to look your audience in the eye." Rheingold says that his idea of writing was skewed by what he had read in books and seen in movies; that it is really a life sentence of solitary confinement.

"I think the reason so many writers drink is that it provides a place where they can go out and meet people."

Howard said his first introduction to computers was the venerable Apple II, back in 1979. Indeed, using it as a word processor wasn't easy: there weren't any word processing packages and the first Apple II hardware could only support upper case letters. According to Rheingold, the developer of the first Apple text processor said that Woz and his team of Apple designers thought

that users would only want to program in BASIC or play videogames.

Within three months, Rheingold says, he was spending two hours a day on the computer — to the increasing consternation of his wife. Says Howard, "If you spend more than a few hours a day talking to people that aren't there, the people that are there will get pretty upset after a while."

Nevertheless, Rheingold felt that he was on to something important. "The thing about interactive online communication is that it's like a freelance instant think tank.

"And it's kind of a gift economy," he maintains, referring to the free exchange of information on the net. "These days, where everything is a market economy, it's kind of nice." You've got to prime the pump, says Rheingold. If someone needs some info, you provide it.

He recounted an incident where 'Phil,' a user, logged on to the parenting conference with the unhappy news that his son had just been diagnosed with leukemia. Within minutes, says Rheingold, an online support group formed. Doctors who were able to analyze blood count numbers provided hope

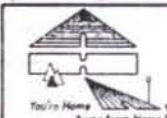
that, indeed, the situation was not as grim as Phil's family had feared.

Howard Rheingold is bullish on the potential of the telecommunications, but thinks that the Clinton administration's "info highway" emphasis is projecting the wrong image. "We've gone from the electronic frontier to the info superhighway in six months!

"It's not about information — it's about communication. And it's not a superhighway, it's a network. It's about people communicating. It's a many to many medium. It gives writers a new opportunity for distribution.

"It's about convergence — all mediums are going through the same pipe. We are just beginning to see if it's like the period just after the printing press was invented. And, most definitely, it's a period of innovation."

He demonstrated a few of the many newsgroups on USENET, a conference that spans over 100 countries, and has millions of people participating. Rheingold recounted that, when the events in Tiananmen Square occurred, the information was uploaded to



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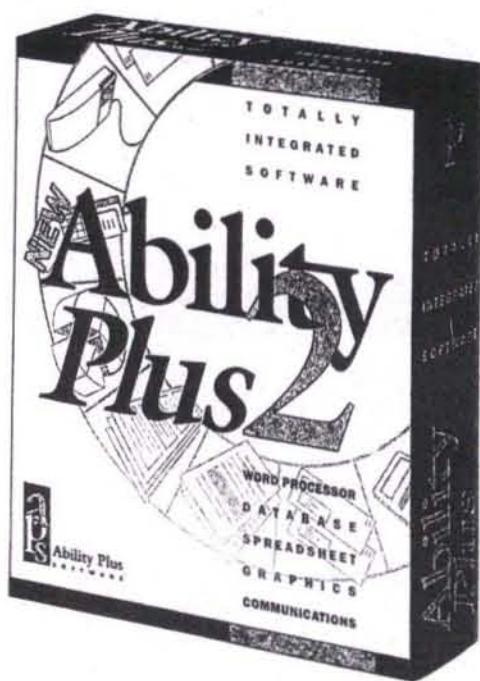
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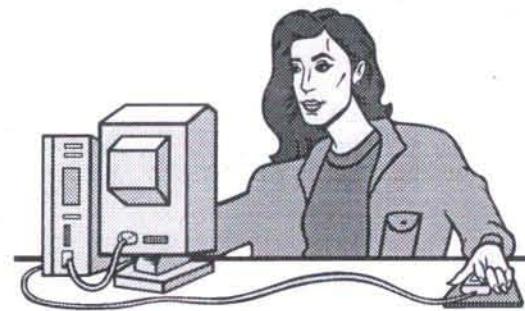
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The Canadian PC Market: A Rite of Passage

According to an IDC Canada report, entitled "1994 Canadian Single-User Systems: Review and Forecast:"

- Single-user systems had a banner year in Canada in 1993, growing 17.8 percent to an unprecedented 1,065,800 unit shipments, with the overall value of shipments growing 8.7 percent for the same period. This substantial improvement in the Canadian PC market can be attributed to a number of factors, including the migration to Windows, the booming notebook market, and declining PC prices.

- The general outlook for the Canadian single-user systems market is extremely good for the near term. In 1994, the market is expected to grow another 13.1 percent to 1,205,000 unit shipments. Overall unit shipments are projected to grow at a CAGR of 6.2 percent between 1993 and 1998.

- Vendors such as Compaq and AST continue to focus on product affordability, new distribution channels, solidifying brand image, and addressing new product cycles. The advent of Pentium and PowerPCs, entry level positioning of the 80486SX, and an abundance of notebook (and smaller notebook) PCs has resulted in a product mix vastly different from that of a year ago. It has also contributed to growth in the market as users upgrade to newer technologies or go mobile.

Contact: IDC Canada 416-360-0033.

Howard Rheingold...

Continued from page 52

USENET, virtually as it happened, by someone who lived nearby and had a home computer.

Indeed, Rheingold observes that, with 500 million telephones connected, every person can become a publisher and a broadcaster. "There are 60,000 BBSes in North America alone — up from 40,000 a year ago. I think those BBSes are really the militia rifles of the next revolution."

Every person is a potential eyewitness. This, hopes Rheingold, represents a radical decentralization of power — a solvent that will open doors and tear down walls. The corollary, he cautions, is that every node is a potential source of disinformation. "There will always be a place for a trusted reporter, writer, or editor — the sources that you've come to trust."

Howard Rheingold is the executive editor of *Wired Magazine's* online edition, @Wired.

W.R.I.T.E.94 was held June 16-18 in Vancouver, and hosted by UBC, Simon Fraser University and Emily Carr College of Art and Design. □

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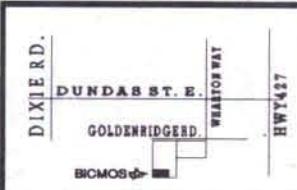
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Hermes: MS's Unsung Product

BY GEOF WHEELWRIGHT

You have heard about Windows NT, Windows for Workgroups, Windows 4.0 (code-named Chicago) and probably even Cairo, but do you know what Hermes is all about?

Hermes is a suite of systems management tools and technologies developed by Microsoft over the past couple of years to work in conjunction with the company's operating system and network products, as well as with other important network offerings from other vendors. It first gained public prominence late last year when the company announced support for Hermes by some 23 third parties, including a number of key developers in the mid-range computing sector that had traditionally developed for mini and mainframe computer systems.

Microsoft says that Hermes was designed to allow key vendors to "build on open, standards-based systems management software to provide a complete business solution for customers managing hardware and software on large, diverse, and often geographically dispersed networks".

And it appears that vendors have taken up this challenge in a big way. The firms supporting Hermes include enterprise product vendors such as Computer Associates International, DEC, Hewlett-Packard, Infonet, Legent, NCR, Netlabs, Olivetti and Siemens-Nixdorf Information Systems. Many of these companies are working to tightly integrate their own enterprise products with Hermes to form a seamless solution, not merely an add-on to whatever might already exist.

Microsoft also explains that "companion product" hardware and software vendors will work with Microsoft to integrate Hermes functionality into their products in specific areas, such as advanced software recognition and specialized hardware management.

Partners in this sector include Attachmate, Automated Designs Systems, Brightwork Development, Compaq, hDC, Microcom Network Managers, Synoptics, Tally Systems and VisiSoft.

Meanwhile, software reseller service providers will use Hermes to distribute software to corporate customers. Potential new services include off-site support centers, help desks, detailed planning reports, automatic upgrade distribution and automated billing. This systems management strategy is built upon three key components, according to Microsoft.

The first of these is the core technology already built into Windows NT (including built-in networking, performance-monitoring, event logging, security, resource sharing, user management, and system backup).

The second is the utilities in Hermes, which allow administrators to centrally support networked PCs by providing hardware and software inventory, software distribution

and installation, remote diagnostics and control and management of networked applications.

Microsoft says that "close cooperation with third parties to complement Microsoft technology and extend manageability throughout a heterogeneous enterprise" makes up the third component of its strategy. The idea is that Hermes itself doesn't really provide much more than a framework to build systems management tools. Third parties will use it to build their own.

New potential services include off-site support centers, help desks, detailed planning reports, automatic upgrade distribution and automated billing

While Hermes comes with some tools for distributing and monitoring the license of software over a network, Microsoft is counting on supporting vendors to really make something of Hermes. DEC, for example, says that Hermes will speed up the availability of NT versions of Digital's Polycenter system management products. Olivetti says it is working to integrate Hermes into its own network and systems management offerings, while HP promises it will combine Hermes with OpenView to provide better systems management. NCR wants to use it to integrate server and desktop management systems into its Star SENTRY offerings, and Computer Associates is banking on the use of Hermes with CA-Unicenter for better enterprise-wide applications. Siemens Nixdorf, meanwhile, says it is working with Microsoft to implement an SNMP proxy agent to extend its base of SNMP management products on PC client desktops.

So Hermes is getting a wide base of third-party support, but will be much more the "invisible glue" that holds the management of many enterprise-wide solutions together, rather than a high-profile, up front product such as Windows or Windows NT Advanced Server. Hermes is also designed to work tightly with future versions of Windows and Windows NT, including Chicago and Cairo. □

Canadian Product Launches

BY GRANT BUCKLER

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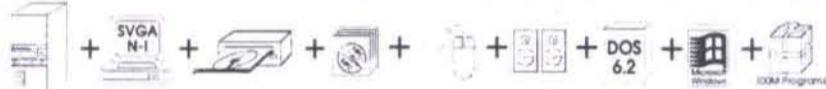
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NB — In studies funded in part by NYNEX and Merrill Lynch, researchers at the City University of New York have shown that at-risk students can benefit a lot from access to modem-equipped PCs.

The study was a three-year project by The CUNY Graduate School's Stanton/Heiskell Center for Public Policy in Telecommunications.

"The story of Project Tell is not about computers," insisted Helen Birenbaum, director of the Stanton/Heiskell Center in a press statement. "It is about finding ways of leveling the technological playing field in ways that provide the greatest social and educational benefit to students."

The project, funded by a US\$3.5 million grant from NYNEX, provided a group of sixth-grade students in New York City Public Schools, who had been identified as at-risk of dropping out, with access to computers and information systems both at home and at school while offering training and support throughout the process.

Students received computers and network information systems in their homes. All who successfully remained in the program were able to keep the computers. The project also provided support and training for teachers in their efforts to learn to use computers with telecommunications capacity and to integrate their use in the classroom. As a third component of the project, NYNEX's Voice Messaging service was introduced at a Manhattan public school.

Birenbaum discussed the study with Newsbytes. "There have not been enough studies on kids who are academically at risk of failure. You find them in cities and the country. What we wanted to do was work with these students, who might not have graduated high school otherwise or [who were at risk to] drop out."

Birenbaum said the study used the New York Public Schools' definition of at-risk students: "reading levels between 25-50 percentile, a history of truancy, and moving a lot from one place to another. The students were selected at random from this pool. We also had a control group" of at-risk students who didn't get the technology, she said. "There isn't much known of how these students respond to electronic communities, and electronic learning."

"Many of these students were functionally illiterate, from homes that were functionally illiterate. They didn't read well or write well," she continued. "We had so much success that NYNEX extended the computers in the home funding. We place telecommunications in the homes of these students, and the student became the teacher of the others. We provided training for the student, and caretakers if they chose."

"With the students in the home, the goal was to motivate them to remain in school," and empower them. "We responded to the

students, not the reverse. We initiated the program primarily through games we thought were educational, and chat. They'd talk to each other even if they didn't know each other — they were the same age. The curriculum piece with those students was to tutor them in areas where they were failing, and they got to keep the hardware if they remained in the program. The program wasn't curriculum-based — it was supporting a desire to learn.

"The second part of the program, which NYNEX has just funded, allows us to have a seven-year study tutoring and mentoring students over the network. NYNEX has offered scholarship assistance into college. We're trying to get these students into college. Our program is now geared toward the curriculum, and we're bringing on teacher-tutors and mentors in the community. We think this is going to be a very interesting, innovative program."

The results of the study should give new hope to inner-city school systems. "I don't think the school system is aware of what these students can achieve. We just need to find new ways to reach them. Most schools don't have telecommunications or teachers who know how to use it. We're not talking about computers. We're talking about networked learning communities."

In addition to the student study, there was a study of teachers. "We put the equipment into teachers' homes, trained them, and told them that when they were comfortable we'd put it in the classroom. We asked them to create curriculum that would support learning in their classrooms, in any area. That's been not quite as successful. None of the teachers wanted the computers out of their homes — we had to buy clones for the classroom. Then we found that because most teachers had no experience with telecommunications, it takes more support from the system" to get results. "We're developing a new program based on that, using a Merrill Lynch \$100,000 planning grant. It's a professional development program. We want them to learn to use the computer as a tool, something the teacher can use so they can help kids learn."

Newsbytes asked about the impact of all this on the curriculum. "We're not going to rewrite the curriculum," she said. "What we're doing is helping teachers understand

the concepts we want conveyed, through the curriculum. And we support them with this software, a resource that will help the teacher take the class through the learning experience. It encourages collaborative learning, with the teacher becoming the facilitator. It's not standing up in front of the classroom and talking." Of course, "We hope we can influence change in the curriculum" as teachers learn what they can do with the technology to change learning from an industrial model to a post-industrial model. The catch-phrase here is "out with the sage on the stage, in with the guide on the side."

Newsbytes asked Birenbaum about the center. "We're a public policy center. Part of our objective is educational change. We're not in the business of running programs. We create demonstration models from which we can step back. We target policy issues and try to influence policy-makers in school systems, government and funding agencies to realize there can be new ways to look at how learning can occur in our schools. You have to do these studies or you're not taken seriously — if it's all anecdotal it won't influence. You have to do this well, then you can influence. It isn't obvious to the policy makers, or they'd be more responsive to allowing large urban school systems to buy the technology and do the programs. We have to collaborate with the private sector because the budget isn't there for the hardware. Once we convince the systems they need this, they'll use the budgets they have to make the purchase."

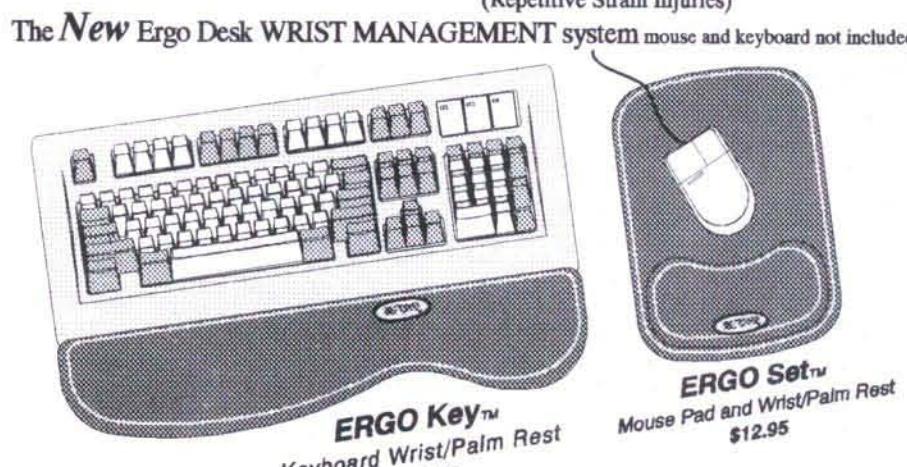
On funding technology, "They don't look at it as books, paper, and pencil yet. We're saying technology should be as integral as books, paper, pencil, and blackboards. And in the public school system it's the government that makes the budget."

Newsbytes asked about the impact of all this on efforts to make education more multicultural. "In history, social studies and geographies you can see different cultures, and ways of living. You can see how people can live among each other. There are programs where you can be networked to other kids, in Costa Rica and Moscow. It's very exciting. Then the school teaches them about these other students. If these kids can get experiences and understand experiences, they'll change." □

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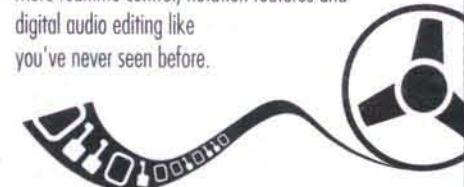
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AST Advantage

Focuses on Functions

BY JAMES MACFARLANE

AST may have created the dream machine for the home and small office. By combining bundled productivity software, multimedia and telephony features, their new Advantage series is a serious step forward in terms of functionality and ease of use. The entire system revolves around AST Works, a desktop enhancement that offers an alternative to, but does not replace, the Windows Program Manager. AST Works provides push-button access to the various software packages that come bundled with the

system without the need to understand how to manipulate the Windows environment.

Included in these packages are multimedia and video presentations on understanding your machine. Aside from pointing out simple things, like which port your modem plugs into, the multimedia help system provides a complete encyclopedia of computer terminology — and an extensive one at that. Forget the self-help computer books, this system is loaded with useful information.

Bundled goodies

Advantage comes ready to use. DOS and Windows are pre-loaded and pre-configured. The machine boots up right into AST Works, where the user can launch the tutorial or jump right into one of the many useful bundled applications. Included is a print-shop program that creates cards, signs and banners. There's a daytimer, based on the Lotus Organizer, Microsoft Encarta, and other helpful programs such as Quicken for personal finance. Word processing and spreadsheet applications are included in Microsoft Works Multimedia Edition.

What really makes the machine valuable is its telephony capabilities. The system allows you to build your own voicemail system with user-defined menus and up to 99 mailboxes. Using the system's built-in caller-ID capabilities you can even create caller specific menus, so whenever Aunt Martha calls you can have the machine tell her that you're out of town.

The voicemail system uses a drag-and-drop menu builder, so you can build your voicemail menus on the screen. This will be the envy of many a home office. You can also receive fax calls on the same line as your voice calls. Fax and voicemail forwarding are also featured. The system automatically detects the call type. The Lotus organizer has been specially modified for this system. It can automatically dial numbers, and pull up records based on caller-ID information.

The machine also has a feature called "line snooping". This allows the system to listen for any outgoing call on any extension of your phone line, and by listening to the touchtones, log the call. This can be useful for tracking long distance billing and unauthorized calls to Holly's Romance Line.

User registration with the Advantage is simple: you fill in an on-screen form and it calls a 1-800 number and files your registration electronically. The system comes with lifetime toll-free 24 hour 7-day a week technical support through the system's BBS, fax service or phone. There is also a one year on-site parts and service warranty.

Lacking local bus

While the AST Advantage comes with some impressive software and multimedia capabilities, it is behind the times as far as technology goes. It lacks local bus technology, which is important for multimedia performance.

A lot of careful study and market research has gone into Advantage. AST examined many of the difficulties new users have with the so-called "user-friendliness" of Microsoft Windows and found that navigating and finding their applications, not using them, was where the problem was. AST Works alleviates this barrier and the multimedia help engine really makes Advantage shine. The telephony capabilities makes it an affordable and indispensable tool for the home or small office. □

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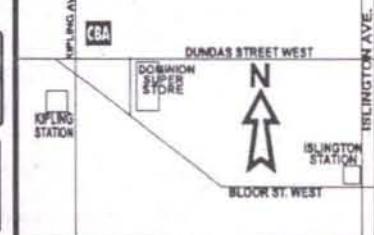
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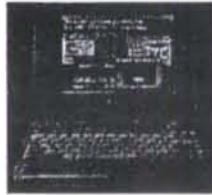
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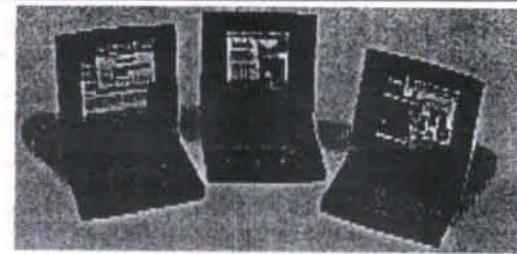
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SPC's Spotlight, Harvard Upgrade

BY JAMES MACFARLANE

After cutting half of its staff this year, Software Publishing Corp. is shipping Harvard Graphics 3.0 and a new product, Spotlight.

Spotlight fills an important gap in the presentation graphics industry. While most presentation graphics programs are good at making slides, they're poor when it comes to actually helping you perform the presentation.

When performing, most people resort to hand-written notes on the hard copy of the slides. Others end up using output from a word processor, which can make it difficult to synchronize what they're saying with what people are seeing. Neither approach is ideal for a professional presentation.

Spotlight allows you to take the slides from virtually any presentation graphics program, including those of SPC competitors, and link speech notes to your slides. You can rearrange the slides visually, and the program automatically moves your notes with them.

Timing can also be important in a presentation. Spotlight allows you to assign duration for each slide, and to adjust the timing dynamically should you suddenly find out your allotted time is shorter or longer than expected. An on-screen visual cue provides a gauge of your planned timing and when you should be moving to the next slide, as well as showing a preview of that next slide.

While Spotlight allows you to simultaneously view your notes, monitor your timing and preview your next slide, all you want your audience to see is the slide you are discussing. The package provides some interesting ways to do this:

1) It provides conferencing capabilities. This lets users run a slide-viewer via LAN connection, allowing the presenter to coordinate what everyone sees. Messages can be sent between conference members, via BBS-like chat functions, during the presentation.

2) Spotlight comes with a null-modem cable, allowing one PC to display the slides and the other to serve as the presenter's control panel.

3) Systems supporting dual-video frames can output one screen to the display screen and one to the presenter's.

Spotlight is available for an introductory price of \$99 until October, after which it will sell for \$129. SPC offers a 90-day money back guarantee and 30 days free technical support.

Harvard Graphics 3.0

Harvard Graphics, one of the most popular presentation graphics packages, is targeting version 3.0 shipments for July.

Version 3.0 is aimed at helping users make better layout and content decisions by providing outlines for many popular presentation styles in as well as providing automated design 'advice'.

Pre-defined templates for things like annual reports, marketing plans and other business items not only provide examples of some of the visuals that can be used in a presentation but also provide a ready-to-use outline that includes important items that should be included in the content. Think of it as planning clip-art.

**To add a little
more pizzazz to
a presentation,
Harvard 3.0
includes
animation clips**

While a lot of people may be good at planning the content of a presentation, not everyone has the graphic design skills to make it look good. A design-checker will examine every element of your presentation and suggest changes where it believes visual improvements could be made. For example, it will suggest adding labels to a chart, or changing the color of a heading if it does not provide enough contrast with the background.

There is also "quick advice", which acts a lot like Microsoft's "wizards", helping you take a complex task, like designing a chart, and break it down into smaller elements that are easier to control and understand.

To add a little more pizzazz to a presentation, Harvard 3.0 includes animation clips. While this is not a complete animation package, it does provide a number of pre-defined animation sequences that can break the tension of an intense meeting as well as demonstrate your point.

Other enhancements to version 3.0 include a transition effects preview as well as "quick looks," (the ability to preview changes before making them) context-sensitive right-mouse button controls, and an application launcher that allows you to quickly get in and out of the source data stored in your word processor or spreadsheet.

Harvard Graphics 3.0 is priced at \$495, and an upgrade from a previous version or competitive upgrade is available for \$139.

Software Publishing Corporation 1-800-234-2500.

GAME REVIEW

Battle Chess 4000

BY NAOR WALLACH

Runs on: MS-DOS machines with 1 MB of EMS memory available, 600K of base RAM and in color. Requires 386SX-16 processor or better. **From:** Interplay Productions Inc., 17922 Fitch Ave., Irvine CA 92714 (714) 553-6678, 800-869-GAME. **Price:** US\$59.95

Rating: 3.5 (on a scale of 1=lowest to 4=highest)

Summary: A chess program with a twist. This new version of Battle Chess sheds the medieval connotations of the original for a semi-futuristic look. This is also a stronger chess-playing program than the original Battle Chess. Can cause laughter, mirth, and consternation as the characters battle it out.

NB — Battle Chess 4000 (BC) is a direct outgrowth of the original Battle Chess that won many converts and astounded people with its advanced graphics and humorous battle situations. BC continues and

expands on that theme. Basically, the game is the same (after all, chess hasn't really changed all that much in the last 300 years). If you know the rules of chess, then

you can play BC with no trouble at all. However, there is much more to this game than simply having an opponent ready to play you at any time.

The game comes on 8 (!) 3.5" diskettes. Installation is fairly simple although it does take about 30 minutes. Since it takes up about 14 MB when completely uncompressed, you may want to make sure that your hard drive can accommodate this before you start. Installation also requires that you have a minimum of 600K of RAM free as well as 2 MB of EMS. If you don't know how to accomplish this (or what these terms mean) don't look to the manual for answers, it does not have them. You will have to play with your Autoexec.bat and config.sys files on your own.

In addition to the disks, the game comes with a registration card, a reference card, and a 50-page manual. The information on the registration card is very much a repeat of what's in the manual. After reading the manual and becoming familiar with the program, one would expect to be able to set aside the manual and proceed with only the reference card. Alas, that is not to be. You see, Interplay copy-protects their software. The box that the game comes in claims that there is no disk copy protection and I guess, in the narrowest

sense, they are correct. However, the game starts out by asking you questions that can only be answered by looking up the appropriate information in the manual. In other words, the manual can never leave the side of the computer. So, what's the use of the reference card?

The manual contains lots more useful information. To start, there is a short story that attempts to give you the background on the particular pieces. The 4000 in the game's title refers to the year in which it is played (i.e. 2000 years in the future). Other information that is dispensed is about the different menus available and the options that each one contains and what they do. This is an extremely important section to understand as the game can be tailored to one's needs by using the appropriate controls.

The screen displays a standard chess board with the expected pieces on it. Of course, since this is Battle Chess, none of the pieces look like what we would consider normal. They are, however, all distinguishable. The two teams are identical except that one team is in red while the other sports blue. The pawns look like some plasticized worms with big eyes. The knights are square jawed adventurers, the bishops have egg-shaped heads and are garbed to look like religious figures, although the manual claims that they are scientists. The rooks resemble some sort of transformer toy. The king and queen are also humanoid in shape although the king has the most incredible nose, mustache, and beard, while the queen's bosom puts Dolly Parton to shame.

All of the figures are very well crafted. They appeared to be almost clay-like. This impression holds up when the pieces are moved or combat results. The movements



and fluid and remind me of the claymation movies I've seen. Each character has its own style of movement. The pawns kind of slither, while the rooks

raise themselves on long legs and stride purposefully. The main event of course, is the combat. When two pieces duel for the same square, they square off against each other and a combat sequence appears. Depending on the pieces involved, these combat scenes differ in tools used and the way the combat progresses and ends. □



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bookreview

The 'Official' Word On Modems From Hayes

BY KEITH SCHENGLI-ROBERTS

Title: *Official Hayes Modem Communications Companion*
Author: Caroline M. Halliday
Publisher: IDG Books
Price: \$39.95
Hardcover: 444 pages 1994
 Comes with a single 3.5" high-density diskette

IDG Books, the firm which launched the successful *Dummies* series of books, and Hayes, the manufacturer that started the PC telecommunications revolution, have joined forces to put out the *Official Hayes Modem Communications Companion*. It is a book on modems for beginning to intermediate users that covers most of the questions users will ever have on how their modems

work and how to get the most out of them.

While there are many modem manufacturers in the market these days, Hayes is still considered to be one of the firms at the leading edge of modem development. As such, Hayes has a responsibility to put out a consistent and useful book, and they have delivered on this promise.

The book is arranged as a series of questions and answers, with each chapter devoted to the exploration of a single subject. The Companion provides an excellent overview of modem basics, including how to install your modem, how modems actually work, and a look at such things as terminal emulations and transfer protocols. It also touches upon the type of services you can get using a modem, like connecting to BBSes and on-line services, and using e-mail. Modems are typically one of the least-understood parts of computing today. This book goes a long way to satisfy the beginner's understanding of how modems are supposed to work, the types of services that can be

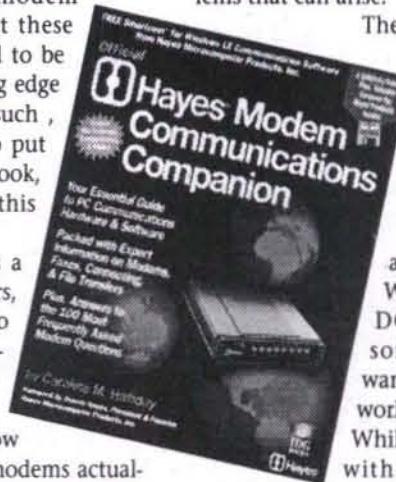
accessed with them, and the types of problems that can arise.

The only drawback is that this book will disappoint expert users, who are still waiting for a definitive book on modem communications.

Hayes also provides a copy of Smartcom for Windows LE, providing DOS communications software to those who want to explore the on-line world covered in the book. While it is rare that anybody with a modem does not already have some form of communications software, the software is provided for people who want to try something different.

If you are looking to get more out of your modem, or just want to understand how it all works, then take a look at this book. □

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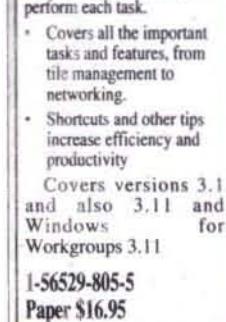
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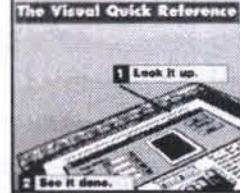
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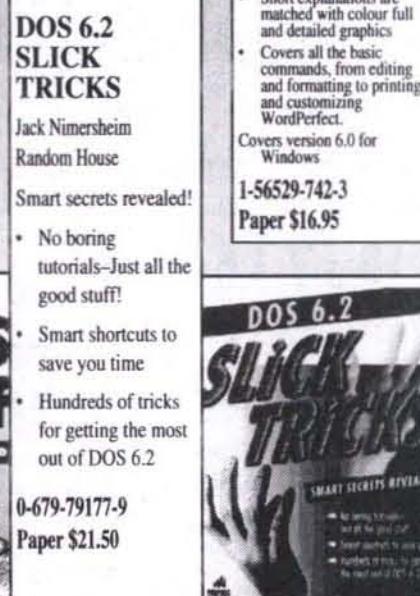
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The Computer Systems Research Group at the University of California, Berkeley, the Usenix Association and O'Reilly & Associates, have released 4.4BSD Berkeley Unix. This popular version of Unix is derived from the collective efforts of many researchers over the years who developed the code Bell Labs originally released in the 1970s, and 4.4BSD is being billed as the "definitive" version of Berkeley Unix.

O'Reilly & Associates, best known for their books on Unix and the Internet, will release the new Unix to wide distribution in conjunction with a couple of new titles cov-

ering this revision. The full source code will be available on a CD-ROM that accompanies a five-volume set of manuals, and a "Lite" version will also be available. The Lite version will be a CD-ROM-only release which will contain the source code and manuals, and along with research papers from the University of California, Berkeley. Other books and manuals covering the operating system will also be released. The five-volume set with CD-ROM will cost \$150 U.S., while the Lite release will be priced at \$40 U.S.

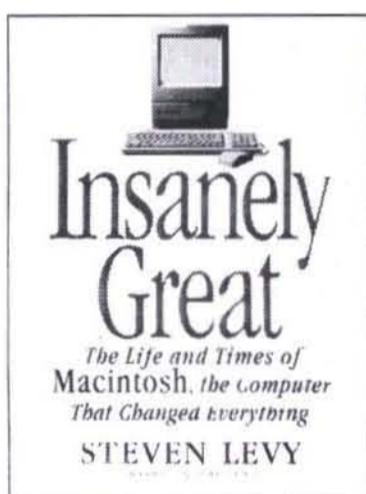
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bookreview

A 10th Anniversary Retrospective of the Mac

BY KEITH SCHENGILI-ROBERTS

Title: *Insanely Great: The Life and Times of Macintosh, the Computer that Changed Everything*
Author: Steven Levy
Publisher: Viking Penguin
Price: \$25.99
Hardcover 292 pages 1994



It is fitting that on the tenth anniversary of the launch of the Macintosh computer, we get *Insanely Great*, the story of its making. Written by the author of *Hackers* and more recently *Artificial Life*, Steven Levy takes us through a journey of how the Mac came to be, and the people who created it.

"Insanely Great," was how Steve Jobs described the Macintosh when he was head of Apple Computers. He believed it would transform the way people used computers. It certainly did, as even the most begrudging PC user would have to agree.

The book starts out by looking at some of the predecessors to the Macintosh. This includes the Alto, a computer far ahead of its time produced by Xerox's PARC laboratories. It had a bit-mapped graphics screen, a mouse, and a windowed interface. Soon after the Alto came out, some Apple officials visited PARC and were immediately inspired to produce a similar machine of their own. The true successor to the Xerox' Alto would be Apple Corporation's own computer: the Lisa.

When the Lisa was launched in 1983, it was the most advanced personal computer of its time, and contained many of the features found in the Alto. But the Lisa had its drawbacks. It only ran proprietary software, was not very fast, had a diskette drive that didn't work very well, and contained various compromises in its design. In short, it was a computer design by committee. It was also fiendishly expensive. It cost millions of dollars to build, and it was a commercial flop.

While the Lisa was being developed, there was also a plan to put together a less-expensive computer. This project eventually produced the Macintosh. This computer was designed by a dedicated, sometimes fanatical, core of hackers who loved the idea of producing a computer that could "put a dent in the Universe". Much of the story of the Mac is also the story of Steve Jobs, who took over the Macintosh project and made it his own. A lot of the Macintosh's success has to do with Steve Jobs' influence on the project. But he was fired as head of Apple because of its failures.

Despite the fact that the Mac was "insanely great", its success was far from being a sure thing — unless you were Steve Jobs. Part of the reason why Jobs was let go

from Apple was because he refused to face the reality that the Mac was not selling as it was supposed to. The original Mac was expensive, under-powered, didn't have a hard drive and had no facility for expansion. When these failings were addressed with the "Fat Macs" that were released later, there still weren't many programs around that you could really use on them. The Mac's fortune was assured when, in 1985, PageMaker was released, the "killer app" that made the Macintosh the de-facto computer for desktop publishing. It was this program that pushed the Mac into businesses and homes in large numbers — and probably saved Apple from going under.



So why didn't the Mac take over the computer world? The author places the blame for Macintosh's relatively low market penetration on John Sculley's decision not to drop the prices of the Macintosh in the mid-1980s, which would have put the computer into more homes and businesses. Levy also points out that the true successor to the Mac was not put out by Apple, but by Microsoft, in the form of their Windows operating system.

Sometimes the book becomes a bit of a "love-in" for the Macintosh, but *Insanely Great* is an enjoyable tale told by an author who has a gift for spinning a good story. While it's hard to say where the Mac and Apple are going to be 10 years from now, it's a sure thing that the Mac will continue to be thought of as "the computer that changed everything".

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CD-ROMs for Macintosh

REVIEWED BY GRAEME BENNETT

QuickTime Starter Kit

From: Apple.
Street Price: \$169

This package contains a useful, if somewhat outdated collection of Apple's own tools for creating and working with QuickTime movies, but that's probably not the best reason to pick it up. We liked it for its collection of interesting copyright-free

QuickTime movies, notably a slew of old propaganda flicks from the 40s and 50s. You'll love the ones touting the wonders of asbestos, and who could live without the kitchen of the future?

Performance artist Laurie Anderson also puts in a series of appearances. Unfortunately, the movies are puny, averaging 120-by-160 pixels. However, they are definitely fun to watch and might be useful as source material for that next rock video.

Pixar One Twenty Eight

From: Pixar, 1-800-888-9856 or 510-236-4000
Price: US\$299

This CD-ROM contains photographic images which have been seamlessly "tiled," so that backgrounds of any size may be created. This is particularly appropriate for use with 3-D graphics applications, which typically allow textures to be wrapped ("texture-mapped") around 3-D models. A wide variety of textures are included on the disc, including various types of stone, wood, thatching, brick, metal, wallpaper, plantlife, and other photographic imagery.

The CD includes a Photoshop plug-in, which allows you to automatically tile a texture into any area.

The textures can be used with any application that reads PICT or TIFF files on Mac, Windows or Unix machines.

EXPLORA1: Peter Gabriel's Secret World

From: Realworld, distributed by Interplay Productions
Street Price: \$79

This disc has won numerous awards and it's not hard to see why. There is much to see in the Secret World. You can wander around the grounds of Gabriel's Real World studios, entering doors as you please. Occasionally, someone will tell you that you need a pass to get into a particular area. In one case, having a pass lets you into a mixing room where you can mix your own version of "Digging In The Dirt," a song from Gabriel's latest US album. You can even save your own mix, if you want to.

Elsewhere, there are areas that showcase some of the extra-curricular activities that Gabriel is involved in. There are a series of harrowing scenes from Amnesty International, and in another area, you can tour the WOMAD (World of Music, Art and Dance) fairgrounds and see and hear acts from around the world. Elsewhere, noted producer Brian Eno is in the engineer's seat at a jam session featuring 40 musical guests from around the world. You can assemble your own supergroups, but be careful — not every combination works. After all, not everyone wants to be in a band with Sinead O'Connor.

Little details add a lot of flavor to EXPLORA1, such as the album of family snapshots that become home movies when you click on them, and the passport photo of Peter that morphs from a child into an old man when you click on it. This playfulness adds much to the fun of exploring the Secret World. EXPLORA1 is a must-see for Peter Gabriel fans and would-be multimedia authors alike.

Undoubtedly, the success of Gabriel's disc has not gone unnoticed by the record

companies. We fully expect to see more discs with the flavor and depth of EXPLORA1.

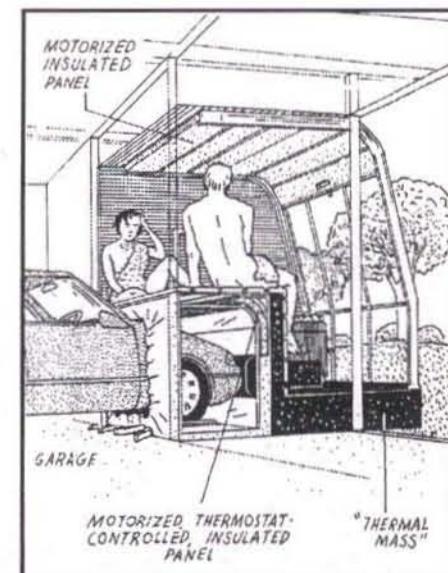
Isaac Asimov's The Ultimate Robot

From: Microsoft
Street Price: \$69

Ultimate Robot is a real robot fest for kids and, well, anybody who knows who the real star of *Forbidden Planet* was. On this CD-ROM, you'll find movies of the automaton stars of the movies, ranging from Fritz Lang's *Metropolis* to James Cameron's *Aliens*. Along the way, you'll be able to read along with excerpts from the scripts and watch clips from *Logan's Run*, *Aliens*, *2001: a Space Odyssey*, *Star Wars*, and just about every other pivotal sci-fi flick. Along the way, you'll learn about Asimov's laws of robotics, and be able to trace the history of robotics from the earliest mechanical novelties to the latest in droid technology. A selection of Asimov's stories and book covers are presented, and Mr. A himself shows up in a video, discussing robotics.

In another area of the program, there's a robot factory where you can build and animate your own robot prototypes from a plethora of parts. Elsewhere, there's a section showcasing real-life industrial and experimental robots, along with some ones that haven't quite made it off the drawing board yet. We're looking forward to the one that appears in a series of 1992 videos, that cleans the toilet, washes the car and then mixes us drinks. Ahh, now that's technology at work. □

Sightings Steven M. Johnson



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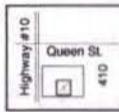
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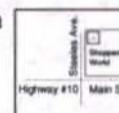
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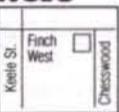
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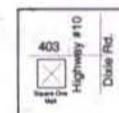
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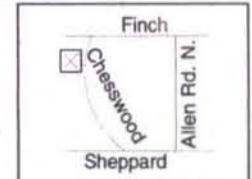


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Plug & Play On Its Way

BY GEOF WHEELWRIGHT

After more than a decade of users having to open up PCs with screwdrivers and fiddle with DIP switches - as well as understand DMA, IRQ and memory mapping settings - just to install something like an internal modem, Plug and Play aims to finally make this entire process automatic.

It should be no more difficult to add a CD-ROM or sound card to your PC than it is to add new speakers to your home stereo: you plug in your new goodies and they immediately start working as you would expect. This is the goal of Plug and Play, and the prospects for the success of this venture seem good - with backing from Intel, Microsoft, Compaq, Phoenix Technologies and 16 other industry leaders.

Early this year Microsoft and Intel provided the interface specifications to make the first implementation of Plug and Play available for the Windows 3.1 and Windows for Workgroups 3.11 operating systems. Compaq - with its recently-introduced Compaq Deskpro XE and some of its new portable systems - is also delivering Plug and Play compatibility with future Plug and Play operating systems.

The first Plug and Play operating system on the market will be the next generation of Windows (code-named Chicago), which is set for release later this year. Plug and Play devices such as memory cards, network interface cards, modems and sound boards are being developed by a number of other companies and Chicago is designed to be able to configure them all.

Chicago, however, is unlikely to be the only operating system with Plug and Play support. The standard has been designed to be operating system independent - so that a version for Unix or Windows NT is quite possible, even when running on non-Intel RISC hardware.

This is partly because hardware makers have worked together on this specification. Last year, for example, a coalition of more than 20 computer hardware and software companies released the Plug and Play BIOS (Basic Input/Output Services) specification. The industry standard Plug and Play BIOS is a set of instructions embedded in PCs which should "make it dramatically easier to install and configure Plug and Play computers and enable new, innovative system designs," according to an industry statement.

To meet the Plug and Play standard, the system BIOS of personal computers must be enhanced to provide identification and configuration of system board devices such as the hard drive, random access memory (RAM) or a math co-processor. This is critical as more and more devices are integrated onto the motherboard of PCs. The Plug and Play BIOS should also tell the system software of important configuration changes.

For example, inserting a notebook computer into its docking station while the system is running is called 'hot docking' and Plug and Play systems will be able to control this process from software via the BIOS. When removing the notebook from its docking station, a system with a Plug and Play BIOS and operating system automatically reconfigures itself to reflect the undocked state without the user having to reboot.

In complete Plug and Play systems using Plug and Play devices and operating systems, the PCs that follow this specification will

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Plug and Play On Its Way

Continued from page 67

resolve all conflicts to guarantee boot-up every time a user adds a new Plug and Play device. In addition, new system designs are possible with Plug and Play, providing dramatic improvements in ease-of-use.

For example, a Plug and Play infrared-capable subnotebook PC can be designed to automatically set up a printer and inform applications of the new printer when a user walks into a room containing an infrared-enabled printer.

While Plug and Play sounds like just what everyone's been waiting for, it must be said that this is not the first time such a thing has been attempted.

Apple, to its credit, has already largely achieved all the goals that the Plug and Play consortium has set for itself. Largely trouble-free integration of new add-ons has been possible using the Apple Macintosh since the mid-1980s, but then Apple did not have to carry with it the baggage of backward compatibility with the IBM PC standard.

Even IBM has tried this before - with the introduction of Micro Channel Architecture (MCA) back in 1987. MCA was not compatible with the AT bus, but was faster, smarter

and easier to use than the ISA standard (Industry Standard Architecture) AT bus backed by the likes of Compaq and Dell. It required that all producers of MCA expansion cards have their products "registered" with IBM so that when inserted into a PC with MCA and driver software installed using a "reference disk", the PC would automatically configure the add-on card to work properly.

The problem with MCA was that, because it was incompatible with the ISA standard, most producers of add-on cards wanted to wait until a significant number of MCA-based systems had sold. But because MCA was viewed as incompatible and largely unsupported by add-on cards, MCA-based systems never sold in significant numbers and the whole effort flopped rather badly.

The supporters of Plug and Play do not plan to make that mistake, and have folded support of ISA into their standard, along with PCI, SCSI, PCMCIA and a number of other standard PC interfaces, including parallel ports and serial ports. Thus, it should become the industry-standard way to configure your hardware. □

PCI Plugs and Plays

The latest bit of technology that will try to wend its way into your mind is known as PCI (Peripheral Component Interconnect). It is a new expansion card interface standard. PCI is used in a number of new PCs from manufacturers such as Gateway 2000 and is expected in many more over the next few months.

PCI has been designed from the outset to use new Plug and Play standards.

Another advantage of PCI over rival connection systems lies in performance and flexibility. PCI allows add-on components to work with your computer at its full processor speed, rather than the speed of the standard ISA (Industry Standard Architecture) or EISA (Extended Industry Standard Architecture) expansion bus.

PCI does not replace the latter add-on systems, but is designed to be used in conjunction with them.

PCI is actually a direct rival to the VL-Bus standard championed by the Video Electronics Standards Association (VESA), which has been around for more than two years and has been successfully used in many PCs. But the PCI specification, which is backed by leading chipmaker Intel, allows computer makers to put more PCI slots on the main board of their computers than the VESA VL-Bus design and works more tightly with Intel's computer processor chips. PCI has also been gaining ground with many manufacturers over the past six months and the majority of new, high-end PCs from the top PC producers are likely to include PCI.

Both PCI and VESA are very good at providing what is called "local bus" video card connections. Local bus video or 'direct' video has become the best way of handling the complex and demanding video output produced by most modern PC applications.

In most PCs, video output is generated by a display adapter expansion card that sits in one of the PC's "expansion slots". Since the advent of the IBM AT in 1984 - and the enhanced expansion slot technology which went with it - these adapter cards have generally run from the 16-bit AT expansion but at a rate of 8 MHz.

While an 8 MHz bus speed was fine in 1984, anyone who knows anything about processor technology can tell you today's fastest PC processors can run at between 66 and 100 MHz. Having a video card that only runs at 8 MHz creates a slowdown. It's like having a turbocharged Porche 911 with only a Volkswagen Beetle engine in it. All the other parts of the system are optimized for high performance, but they hit a bottleneck when it comes to the video output.

A variety of solutions have been presented to this problem. They include video accelerators, faster processors on the video display adapters themselves - as well as more memory. But whatever you do to the video card itself, it still has to communicate with the motherboard of the PC at a measly 8 MHz.

And this is where local bus video comes in. It is a way for the video circuitry to talk "directly" to the processor over a "local bus," rather than the standard AT expansion bus. This means that a local bus video system - such as PCI or VESA - has to be built onto the motherboard of the computer.

Local bus video systems claim to be able to run at between 33 to 50 MHz, making them much, much faster than those running from an 8 MHz AT bus. And with today's applications demanding extra performance, local bus has become a technology much in demand. □

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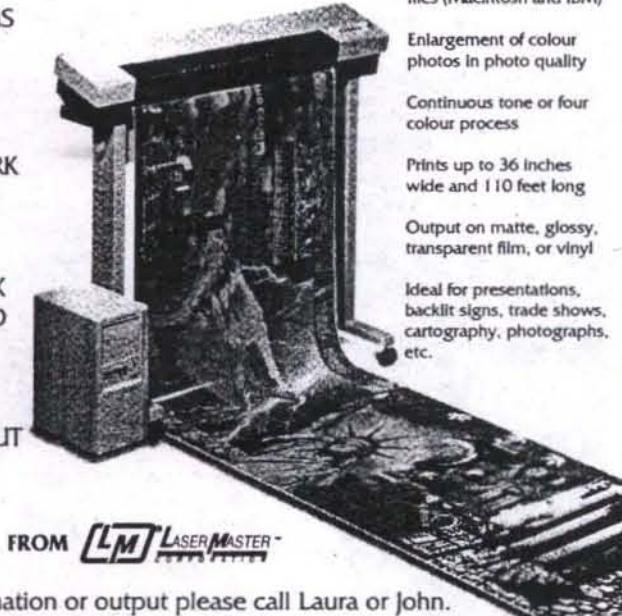
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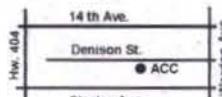
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March 15, 1994 PC MAGAZINE

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We're more than a tad unimpressed with the EtherPRO III Plus network card, but the problems it caused us are indicative of what you get when you buy a cheap one. The 'AUTOSET' program included on the disk for configuring the jumperless card has a screen where one has to configure the adapter for BNC or 10baseT connectors, and the card was strangely enough configured for BNC, even though it doesn't have that connector available to it. Choosing the 10baseT-only setting of course didn't allow us to reconfigure it, because it assumed it was already correct. Choosing the 10baseT/BNC setting allowed us to set the connector, so we set it to 10baseT, then were able to go back and choose the 10baseT-only for final configuration. Weird.

Unfortunately, it IS indeed NE2000 compatible, but this means that the IRQ range is limited, because NE2000 cards are either IRQ 2 or IRQ 3. Sheesh.

Phonetek only gave us those options when we said that it was NE2000 compatible. So, you lose your COM2/4 port. Most users won't stand for that. It might be better to break down and buy a 3COM card....

But anyway, at least we succeeded in getting the system up and running on the network!

In summary, configuring your own PC can be a challenge more daunting than most users can handle. The most important lesson here is to read the README files!

Here are the results of our DOS/Windows tests and, for comparison, some preliminary Chicago (Windows 4.0) tests:

Test #1: Install an EtherPRO III Plus ISA Ethernet card in an EISA 486.

Result: Failure. Card has no jumpers or switches. Diagnostic software supplied with the card indicated that the system should be working. Cable and network connection checked and verified as okay.

Solution: Under DOS, we found that selecting the wrong driver, then reselecting the right driver solved the problem. Chicago provides drivers for the NE2000 card and many others.

Analysis: Although it works, we do not recommend this card, due to the above-mentioned IRQ limitations.

For comparison, note that installing any expansion card in a Macintosh or an IBM PS/2 with Microchannel Architecture practically guarantees success, due to the automatic configuration capabilities of these systems. Of course, in the real world, a few other factors come into play. For example, try auto-configuring an MCA card without the "registration" disk that ships with each MCA card. Mac devices are a little closer to true auto-configuration. Most CD-ROMs, hard drives, video boards and network cards work without any additional (i.e., non-Apple) software or fiddling, beyond ensuring that each device in a SCSI chain has a different number and that the last device (and only the last

device) in the SCSI "chain" has a terminating resistor on it.

Test #2: Install an Aztech Labs CD-ROM and sound card multimedia upgrade kit in an ISA-bus PC.

The sound card includes 3 connectors for different brands of CD-ROM drives (Panasonic, Aztech/Mitsumi and Sony). Our review unit came with an Aztech drive.

Result: Card and drive initially not recognized by DOS or Windows. Installation under Chicago succeeded, but required CONFIG.SYS and AUTOEXEC.BAT drivers. Aztech says it will provide drivers for Chicago by the time it is released.

Solution: We tried changing jumper settings to select different IRQ values, different memory addresses, different drivers. We removed all other cards from our PC — nothing worked. Unfortunately, the cable included with our review unit was built with the red stripe indicating pin 1 upside down



The Advanced Gravis UltraSound Card offers realistic instrument sounds through wavetable synthesis.

from the instructions indicated in the manual. Needless to say, this took more than a bit of head-scratching to figure out. After a ridiculous amount of trial-and-error, we finally got it working.

Analysis: have your dealer set up your CD-ROM and sound card.

Test #3: Install a Gravis UltraSound card in an ISA-bus PC.

Result: System locked up during initial phase of installation. The Gravis install program advised that, should this occur, the machine should be rebooted and the installation process repeated. The next time through, the software recognized the fact that an attempt had failed and automatically adjusted its settings, leading to a successful installation. Hurrah!

Whups, not so fast. For some reason, the UltraSound played fine from DOS, but was silent in Windows.

Solution: A Gravis technician suggested reinstalling Windows (again?!). This solved the problem. Installation under Chicago succeeded, but required CONFIG.SYS and AUTOEXEC.BAT drivers.

Analysis: a good-sounding card, with a better-than-average installation procedure. The card also works well under Chicago. We'd recommend expanding the card's memory beyond the skimpy 256K it comes with. It is worth noting that the Gravis UltraSound card currently does not support double-speed CD-ROM drives. Advanced Gravis says a double-speed daughterboard is in the works.

Your Great Novel Might Be Just Around The Corner

Print-On-Demand Is Quickly Evolving

BY ROSS MACDONALD

Despite the fact that the technology has been around since 1978, very few of us have heard of Print-On-Demand. But that's going to change very soon now because the equipment is getting better and better as well as cheaper and cheaper as time, and technology, marches on.

Which still, I know, doesn't tell us exactly what it is that's goose-stepping down the information highway to eventually commandeer our traditional printing press way of life.

Print-On-Demand is basically the ability to print as few — or as many — copies of anything you'd like as soon as you'd like to see it. It frees us from the shackles of the regular print shop which demands that we have either large volume press runs to be economical or an extended lead time to be ready or both.

Anyone who's ever been involved in preparing business reports, newsletters, catalogues and updates or even simple informational booklets and press kits has surely encountered common logistical problems: the print shop requires a minimum order of 1,000 copies to get the cost down to affordable and you only wanted 150, they insist on

six weeks to get the job done, and your information is either getting stale already or you've had to guess what will be current six weeks down the road. Then you pray you're right and the printer doesn't screw up. Of course, then there's proofing, editing, revisions — I know of one large local company that spends six months preparing their annual report!

Print-On-Demand is slowly changing all that, primarily by making the cost of one copy the same as the cost of 1,000, while at the same time doing it at the same time you want it.

And all of that's now possible because of — you guessed it — computers. Though the Print-On-Demand machines themselves look suspiciously like large photocopiers, they take their instructions directly from your computer or floppy disk, which makes all the difference. No photo-ready finals to prepare, no plates to be made, no first-run proofs, no blue lines, no color keys to be studied before the big run. Just a disk in one end and a book out the other. The only limitation so far is that you can only have black and white, though color is on the way in the coming year.



Plug and Play Follies

Continued from page 72

Test #4: Install an Axxon Soft I/O card into an ISA PC with an ATI video card.

Result: "Subsystem Failure" at startup. An Axxon spokesperson said that early versions of the card were incompatible with 8514/A-type video cards and other adaptors.

Solution: choose a different video adaptor or send the Soft I/O card back for an upgrade. Analysis: call Axxon to verify that your equipment is compatible.

Test #5: Install Mindflight CD-ROM drive under a beta version of Chicago.

Result: The drive worked, but could not be accessed from the File Open dialog of any application. However, it worked well from the Chicago Desktop. The drive was impressively speedy, easily outperforming a double-speed Teac drive connected to a Trantor T130B SCSI adaptor on a comparable system. In one test, the Mindflight drive loaded a file in 12 seconds that took the Teac/Trantor combo 17 seconds.

Solution: Use Mindflight drive under Windows 3.x and/or DOS.

Analysis: Check with the vendor about whether the drive is compatible with your computer's operating system before purchasing. (Mindflight says it will deliver Windows 4.0 drivers by the time Microsoft's new operating system is officially released. Chicago is expected sometime before the end of 1994.)

Test #6: Install Windows Sound System under Windows 3.11 and Chicago.

Result: no problems in either case. Chicago provides direct support for the Windows Sound System.

Analysis: Although incapable of the "wavetable synthesis" available with better-sounding cards, the Microsoft Sound System performs well.

Test #7: Install a Teac SCSI CD-ROM drive and a Trantor SCSI adaptor under Windows 3.11 and Chicago.

Result: no problems in either case. Chicago provides direct support for SCSI devices such as the Trantor adaptor and the CD-ROM drive was usable without installing any CONFIG.SYS or AUTOEXEC.BAT drivers.

Analysis: SCSI costs a little more, but it's worth it.

Test #8: Install Telelink Pro fax/modem under Chicago.

Result: Chicago automatically recognized the presence of the new card and offered to configure it. One mouse-click later, the modem was working.

Analysis: You gotta love that plug-and-play. (Telelink Pro will be reviewed in an upcoming issue.) □

Contacts: Advanced Gravis, 604-431-5020; ATI Technologies, 416-756-0718; Axxon Computer Corp., 1-800-361-1913; Mindflight, 1-800-263-3888; Trantor Systems Inc., 510-770-1400.



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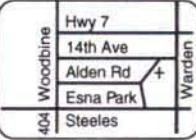
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**Print-On-Demand Evolving**

Continued from page 73

Jack Powers, the "renowned expert on the trends and future of printing and publishing", anticipates one of these high speed machines in every mall in Canada in short order:

"This is the digital equivalent of photocopies," Powers explains, "and right now more than 40 per cent of all the business that goes through photocopy shops comes in on disk. The next step is to not have the paper master — the analog master — but just hand in the disk and have it printed up."

"The real impact," he continues, "is in the ability to customize at levels you could never do before. Maybe you want *Gone With*

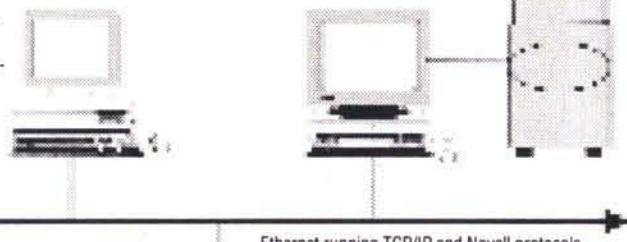
mail that nobody could read it all, but most of the information wasn't relevant to each sales person's territory or field of specialty. Print-On-Demand has allowed that company to print weekly booklets of only relevant correspondence for each sales person and which might be of interest only during that particular week.

Another current application is exercised by university book stores where text books are internally customized to each particular course and professor. This development saves the eternally overburdened student hundreds of dollars. After paying the appropriate copyright fees, the school's print

Books on Demand

Documents are stored on the XDOD Server with optical juke box.

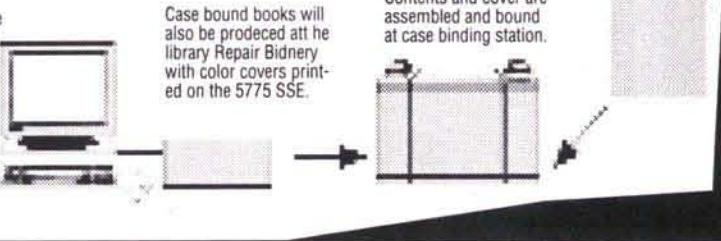
Book printing requests are submitted from the XDOD viewing station.



DocuTech Publisher (with Network Server) prints the contents of the books 2-up on 9x12 inch paper.

Book blocks are separated with the floor cutter.

Book covers are foil labeled on the GBC Impression Makers.



Case bound books will also be produced at the library Repair Bidney with color covers printed on the 5775 SSE.

Contents and cover are assembled and bound at case binding station.

Xerox Documents on Demand Image (XDOD).

Image courtesy of Xerox. Presentation by Jana Kolar.

The Wind but want to take out Rhett Butler and put in Jack Powers, for example. That customization is part of an overall trend in all of the media, not just print but in television, in radio, in direct mail and so on — to more finely target a piece of media. The buzz word in the publishing business is 'the audience of one.' We want the Jack Powers magazine, the Jack Powers catalogue, the Jack Powers newspaper — things that I'm more interested in than anybody else.

"And we do that now," he says, "with data base look-ups and multiple regional editions of magazines and newspapers. But Print-On-Demand has the potential of producing a booklet in which every page is different for everybody."

Powers has already seen Print-On-Demand taking hold of the internal publishing departments of large businesses. In one example, he describes how an insurance company with 4,000 sales representatives in the field were receiving letters and bulletins from all the insurance underwriters in the country. Not only did this generate so much

department assembles a book out of the relevant chapters from standard text books along with other material specifically prepared by the professor for his or her course.

Powers sums this up nicely: "Nobody wants more print. Nobody wants to see more paper. We all see too much paper as it is. What we do want, though, is more effective print — more targeted, more customized, more timely, more economical. And, where you can apply these Print-On-Demand tools, you won't make one press run of a million copies of something anymore. You'll make ten press runs of 100,000 or 100,000 press runs of ten. So you'll be able to produce a print package that's much more finely tuned to the reader and effective in a lot of ways."

Sounds good, doesn't it? You yourself can finally publish that brilliant novel or collection of poetry that Random House is just too short-sighted to appreciate! But don't go running down to your local Future Shop just yet. A basic machine still costs \$250,000 and that doesn't include attachments. □

Books on Demand: Interview with Jack Powers

BY GRAEME BENNETT

Jack Powers is director of *Graphics Research Laboratory* in New York. The Computer Paper spoke to him on the future of documents, both paper and electronic.

TCP: The Graphics Research Laboratory sounds like an interesting place to work. What do you do there?

JP: Back in 1985, we did the sales training for Apple in DTP.

These days, most of our clients are in publishing. We're helping them look at how to do not just more publishing, but better publishing.

TCP: Now that documents are going electronic, what about copyright control?

JP: It's an important problem. The problem with rampant copying is that there's no incentive to produce the content.

TCP: As we've seen in the digital typeface market...

JP: With one of these systems, you have the opportunity to keep control. Xerox has introduced a system that automates royalties management, to provide copyright permissions.

A lot of it is starting at the university bookstore level.

UBC Bookstore has a system, - on-demand publishing. We've got the system in place at McMaster University, and several other sites. There's a consortium in the U.S. pursuing it.

TCP: What about traditional book publishers? What do they think of books-on-demand?

JP: Some so-called "traditional book sellers," such as John Wiley, will now let you buy just a chapter of a book. Say, a certain number of pages at 10 cents US per page. The author gets his or her normal royalty.

Canadian Reprographics Collective, known as Cancopy, is trying to ratchet up the margins, to increase the royalties that authors get.

The same thing's happening in the music business, where the user can pay the royalties for single cuts off a CD. You see it in the software business, too.

TCP: Do you have any figures on what is happening in the document publishing market?

JP: Clearly, we're seeing less ink on paper and more toner on paper, as short-run document publishing grows. This year, an estimated 2 trillion pages will be output from laser printers. In 1995, that number is expected to swell to 2.8 trillion. Is it just going to mean that we'll kill more trees? None of the printers we've spoken to think they'll be doing longer runs — they'll be doing more kinds of publishing, shorter runs - jobs they wouldn't have had otherwise.

In traditional publishing, 40 percent of the cost of a document is in ware-

housing and handling. And something like 46 percent of magazines go straight to the landfills — unread. And lithography is a hugely toxic process.

With the new technology that's out there, enabling bookstores, universities, and so on to produce books on

demand, we're seeing people using it in interesting ways. When Xerox introduced the Documents on Demand system in New York on April 19th, we saw some people doing things we just wouldn't have thought of. There were some fabulous applications. That's the

great thing about a show like that. People can come and see how and what others are doing. It's really learning by example. □

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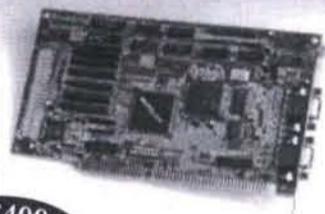
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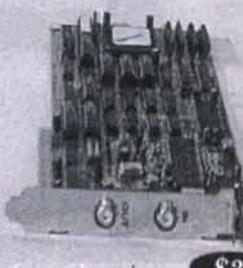
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The Internet Bazaar

BY BORIS ANDERSON

I have been popping into the bazaar on a regular basis for nearly 10 years now. Recently, I've been going more frequently since I can now get there from my home computer. It's even reached the point where I am leading tours around the place and helping other people to reach it.

Like any good tour leader, I take my charges round the well-known sights of the bazaar. The merchants offering free samples of their work, the net saints who are simply giving their material away. We usually take a look at the latest art works available locally, and listen in to some of the more exotic conversations going on in sheltered nooks and crannies.

I always make a point of visiting the stall where they give away the great classics of literature, from Beowulf to Sherlock Holmes. If my wife has come along for the ride, we usually stop in at the Scandinavian equivalent - she's Norwegian and it's good to keep in touch with your heritage.

Like most of the visitors in the bazaar, I usually just ignore the demagogues on their soapboxes. There's a particularly noisy one near the bookstall who is apparently convinced that all the evils of the planet can be traced to gay people. There's usually a crowd standing around and jeering at him.

Another one, based in some northern provincial town, is usually to be found standing next to a large blue box with a flashing light on top. I'm sure he'd be more amusing if

he wasn't so incoherent most of the time.

Sometimes bad things do happen here. Parts of the bazaar are quite seedy and run down but most people have the good sense to steer clear of these areas. Inexplicably though, there are unsupervised children who sometimes find their way into these parts, and sometimes they suffer the consequences of their parent's inattention. Despite the occasional, well publicized lapse, however, the crime rate is pretty low. There are an estimated four million people who can get here - and so far there hasn't been a single drive by shooting.

In the last year, we have been getting an increasing number of visits from puritans in various guises. To these people the ungoverned nature of the bazaar seems offensive. They look at the rich diversity on display and see only "murderous thugs" and "thieves".

Embarrassingly enough, not only do they seem to have failed to grasp the nature of this community, they frequently have no real understanding of the technology involved either. Their proposals to bring "law and order" would be laughably easy to circumvent if they were ever put into place.

It also looks as if big business and government are becoming worried by the size and power of the bazaar. There have been proposals to raze it to the ground and replace it with

Continued on page 78



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ONLINE



Cruisin' the Chocolate Fudge Sundae

BY JAMES MACFARLANE

Back in the mid-80s computer marketers carelessly threw around the term "user friendly". It didn't matter what it was, just add the slogan and you have an instant marketing campaign. Today they're doing the same thing with "information superhighway". Don't believe the hype.

Earlier this year I attended a press conference on something called SGML. I didn't know what SGML was, but the press release raved on about how important this was to the information superhighway. It ended up having as much to do with it as a word processor does.

At trade shows the "information highway" buzzword/cliché is shamelessly thrown onto signs, product brochures, mentioned in speeches, and now, all of a sudden, every notebook manufacturer that has a PCMCIA slot has verbally upgraded their machine from being able to accept a "modem" to "a modem that provides you with access to the information superhighway".

So, if the modem gives you access to this blahblahblah highway where is it? Oh, surprise it's the free CompuServe trial pack they include. Oh boy! We don't need to build the information superhighway at all! It's been here all along and hiding away in the depths of CompuServe, America Online and Prodigy. Well that's what the marketing know-nothings would like you to believe.

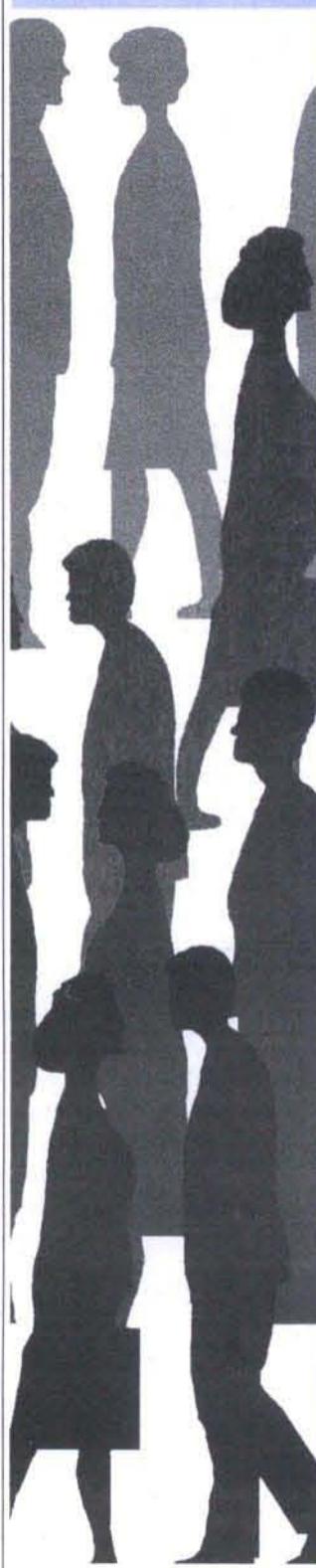
Here's a few things they forgot to tell everyone: even a simple photograph stored as a JPEG, or GIF file is going to be about 50K. Even with a 28.8 modem you're looking at about 15 seconds (50,000 divided by 3300cps) to download that picture. Forget the 150K per second that's required for a multimedia data stream. Some computers can't even keep up with that even with all the hardware being in the same box, never mind trying to squeeze it all across a phone line.

So exactly which information superhighway are they talking about anyway? Not mine.

Next time you see the nasty highway cliché in someone's marketing propaganda, mentally replace the phrase with "chocolate fudge sundae", at least it will be worth a laugh that way.

Faster than light

Hewlett Packard, aside from making some very nice printers, has always been a proponent of infrared data transfers. It first appeared on its high-end engineering calculators than made its way into the HP95LX palmtop XT.



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The Internet Bazaar

Continued from page 76

a sort of cybernetic strip mall. But I don't think this is going to happen; the net is well entrenched in our society now. You might as well propose to dig up the roads of the city because criminals sometimes drive cars.

So I'll keep dropping in on a regular basis. Maybe I'll see you there.

Cruisin' ...

Continued from page 77

The idea is that you simply aim two of these devices at each other and the IR link pretends its a serial cable. You can transfer files and data through thin air. Great for cheating during exams, but the idea never really caught on.

HP has recently published a standard on three and five *megabit per second,* IR protocol. That's about the speed you get through a low end LAN. No troublesome and expensive wiring and no RF radiation or interference. In fact, if you've got AC power you can blast a signal strong enough to penetrate an entire room without a line-of-sight. Portables that can't afford that kind of power out-

Boris Anderson
(boris@oakfj.wimsey.bc.ca)

The author wrote this in response to "a hysterical article about crime on the Internet" published by a local daily newspaper. -Ed.

is sent and received and the files you've been working on today are automatically backed up to your server. And you didn't even have to do a thing to make it all happen.

No cables, no connectors, no clumsy LAN adapter, no logon. Nothing. Look forward to some new product with a high "gee whiz" factor hitting the streets early next year. Just keep your blinds closed because the guy across the street can read the signal as easily as your server can.

MKS Internet Anywhere

For hardcore BBSers using an offline mail reader can save you hours of tediously reading through all your mail online. They work like this: the software calls the BBS, grabs all the new mail, compresses it into a nice little package, downloads it and logs off. You then browse through the messages randomly on your machine, composing your replies which are then sent back to the BBS in the same manner.

If you can do it with a BBS, why not the Internet. It would be nice to have a way to gracefully handle the goings on in the 8,000+ different newsgroups of Usenet, but typical BBS offline readers have problems with Usenet messages. The structure of Usenet is very different from what is used on BBSes.

One package, MKS Internet Anywhere, promised to solve this problem. All you need is the package and a UUCP dial-up account somewhere. It provides a friendly Windows interface to a set of utilities that will allow you to do unattended mail/news runs, incorporating news and mail readers, message editing functions, logon scripting and other things that make the Internet easier to deal with.

I've been evaluating the product for few weeks. It comes with a good user's guide and a directory of Internet UUCP access providers across Canada and also includes discount coupons for some of them. From a first glance it looks like everything the average neophyte would want in order to get Internet news and mail.

It provides some nice features: like the ability to attach files to messages. On the Internet this requires the special trick of "UUencoding", making your 8-bit file pretend it's 7-bit ASCII text. The program does this automatically for you, as well as having the ability to reconstruct files UUencoded in other people's messages. You can even ZIP and encrypt the file before it's sent.

The news reader is nice: you get a list of newsgroups in one window, a list of message topics in the other and you simply click on the header and out pops the message in a window. You can then reply to the message by private mail, or post a public response. You can read according to sequence in which messages were written or by "thread".

For private messages you can compose a real-name address book and drag-and-drop recipient's names onto a message. This is much easier than remembering people's username@site addresses.

The overall concept of how the program works is very nice but there are some serious problems with the product. For example, let's say you've been away for a week and there's 500+ message built up in a newsgroup. You probably don't want to read all of these messages, so one of the options is to "mark all as read", which more or less marks them as "delete this". On the header window it selects each item and puts a stroke through it, so visually you can see it has been "read".

The problem is that when it gets to the bottom of the window it takes about a half a second to scroll the screen and mark the next item. That adds up to about four minutes per 500 messages, certainly much longer than I want to wait around to get to the next newsgroup.

Another problem is that it often replaces subject lines with "...", making it impossible to tell whether you want to read that message or not. Sometimes when you click on a message to read it, it pulls up the message you just read, not the one you selected.

Opening up the address book takes so long that it's easier to type the addresses in yourself. Calling up the message editor also takes far too long.

Although MKS Internet Anywhere is a great idea, there are far too many rough spots in the program for it to find its place in a market that is already eagerly awaiting for something like this. While the program looks promising, I'd wait for the next version before buying it.

It costs \$189, and is available from Waterloo, ON-based Motive Kern Systems (519)884-2251.



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OPTICAL DRIVES

Coming: CD-ROM Recorders

BY GEOF WHEELWRIGHT

CD-ROM (Compact Disc - Read Only Memory) players have started to have a big impact on the personal computer market, with sales of CD-ROM add-ons soaring and increasing numbers of personal computer makers including CD-ROM drives as standard equipment on their systems.

CD-ROM players, however, still have one huge limitation: You cannot record information on them. But a CD recording technology stands to change this state of affairs and turn the CD into a low-cost mass storage medium for the masses.

One of the first implementations of this comes from California-based Pinnacle Micro, which recently started selling a new RCD-202 CD-Recorder drive that allows you to record and playback information from "blank" 650 Megabyte CDs as well as from standard CD-ROM discs. The drive sells for US\$2,995 in the US, making it several times cheaper than any CD recording devices previously available.

And the cost of blank media for use with this drive is only \$39 US, with the price dropping even further for bulk orders. At this kind of price, many users are expected to take a long, hard look at the CD-Recorder for use as a back-up device. While the CD-Recorder is not as flexible as traditional mag-

netic back-up media (in that you can only fill up the CD media once and cannot "erase" anything), the huge amount of space on a CD (650 Megabytes) means that it could take a long time to fill it up.

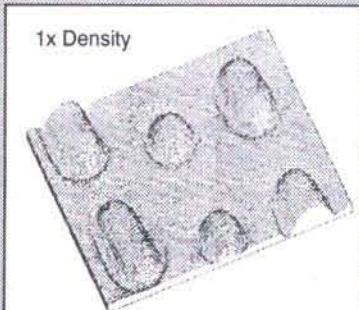
This technology is perfect for keeping periodic back-up files of "archived" data that will not need to change. Once you have invested in the CD-Recorder, you can then produce backup copies - available to anyone who has a standard CD-ROM drive - for only a fraction of the cost of traditional magnetic media backup.

Another key element in the potential success of this technology is that the CD discs you record your data onto can be played back on any standard CD player, meaning that only one system in a small company or department needs to have the CD-Recorder hooked up to it. Anyone else who wants to use the information held on the CD can just plunk the CD-Recorder-produced disc into their CD-ROM drive.

Pinnacle Micro RCD-202 CD-Recorder drive is shipping now in the US and Europe, but it is not the only CD-Recorder on the market. A growing number of these devices are becoming available at a very low cost per-Megabyte.

OPTICAL DRIVES

CD Mastering System Packs 'em in

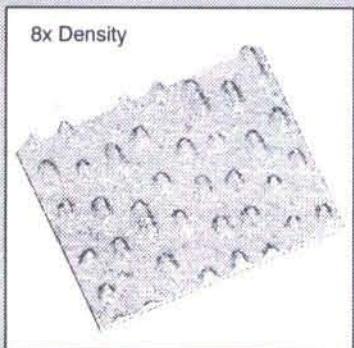


Optical Disc Corp. of Santa Fe Springs, CA has been impressing the industry with its 8x-density CD mastering capability. The company says its mastering systems are capable of recording at 4x- and even 8x-density, despite the fact that existing CD playback systems lack resolution at extremely high density.

But as the demand for increased density continues to grow and quad-speed players become mainstream, ODC claims its technology will be part of the next generation of CD manufacturing.

The company recently demonstrated a high-density, high-resolution video CD, which delivers more than 30 minutes of CCIR 601-resolution, broadcast-quality video using MPEG Extended compression. The recording was made at double standard CD density and at four times CD data rate, using ODC's Series 500 Mastering System.

Contact: ODC, 310 946-3050, Fax: 310-946-6030.



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This new, lower-cost CD recording technology also has serious implications for the security of the CD media. Compact Disc has long been touted by its developers as a basically "pirate-proof" way of distributing software, music recordings and - more recently - commercial movies for playback on computers, CD music players and CD video players.

But the advent of the low-cost CD-R recorder means that those who want to pirate anything recorded on a CD will now have the technology to do so. This is particularly true where multimedia software is concerned. In the past, music and video movies have been pirated in their analog forms (using traditional tape recorders and VCRs) but multimedia software has been safe because it would take so many ordinary floppy disks to record all the information held on a CD-ROM disc that there was no financial incentive to pirate it.

With the release of lower-cost CD-R players, that disincentive is just no longer there. CD-ROM discs produced on these new CD-R machines can now hold as much information as standard CD-ROM discs (an average of around 650 Megabytes). And the discs produced using these recorders can be played on any standard CD-ROM player.

The only possible financial disincentive would be if the cost of the recording media (blank CD discs) was impossibly high for pirates. But even now, at the early stages of this technological development, that is not really the case. You can buy blank, recordable, CD discs for around US\$40 retail - the price could easily come down to \$25 or less if you buy the discs in bulk and do so regularly from a single supplier.

So the computer industry will need to come up with a strategy to deal with this issue.

It is possible, however, to vastly overstate the danger of CD-R piracy. After all, piracy has been with the computer software industry almost since Day One - and you don't see

any evidence of software piracy billionaires dotting the planet. The nature of software has often been such that software buyers need good documentation, strong after-sales support and the ability to upgrade more than they need to save a few dollars on buying a pirated copy of something.

And while the CD media mitigates some of those problems by offering enough room on the CD to hold both software and documentation on a single disc, the vastness of many CD products means that lots of users will want to have legitimate support for their CD-ROM software purchases. □

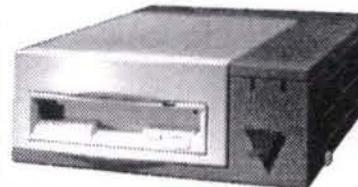
**Police Seize Counterfeit
MS Software**

REDMOND, WA (NB) — A series of police raids in six states across the U.S. have turned up what authorities estimates is US\$2 million worth of counterfeit Microsoft software.

Police seized over 13,000 packages of counterfeit software in California, Georgia, Louisiana, Maryland, Texas, and Virginia. Authorities say the seizures are evidence of a large scale counterfeiting ring operating across the country.

This is not the first time counterfeit Microsoft software has been seized, and it is not the biggest seizure. However, it may be the first time the counterfeiting includes software other than MS-DOS and Microsoft Windows. Authorities also seized CD-ROM versions of Microsoft's Bookshelf reference library and Microsoft Works.

Microsoft says the counterfeit software was easy to spot, as it did not contain the version-specific holograms, 3M Confirm labels, or Microsoft Certificate of Authenticity used to identify legitimate Microsoft software. □

OPTICAL DRIVES**DynaTek Intros
Big Mac Drives**

BEDFORD, NS (NB) — Storage peripherals maker DynaTek Automation Systems Inc. has moved into the Apple Macintosh market with a line of disk drives, tape drives, and optical storage devices, all using the small computer systems interface (SCSI).

These are DynaTek's first products designed specifically for the Macintosh, company spokesman Andrew Clarke told Newsbytes.

All the new models combine DynaTek designs and software with basic assemblies from other manufacturers. The collection includes five hard drive assemblies using Quantum hard disks, four removable-media drives with SyQuest cartridges, three digital audio tape (DAT) drives using Sony technology, three rewritable optical drives using Fujitsu and Sony components, and a 600 megabyte (MB) CD-ROM drive based on Toshiba equipment.

All the devices are supplied with ComPass Pro 3.0, software from DynaTek that provides diagnostics and testing as well as a SCSI code editor and an audio compact disk control program.

They also support the SCSI Manager 4.3 that comes with Apple's Power Mac models, making use of its asynchronous transfer mode to provide access to multiple SCSI buses with mirroring capability. This capability, not to be confused with the asynchronous transfer mode (ATM) used in high-speed networking, allows simultaneous access to more than one SCSI drive, Clarke said.

Prices for the new models range from C\$574 to C\$4,789 for a 1.3 gigabyte (GB) rewritable optical system. Hard drive assemblies are available in capacities up to 1GB, and removable media drives in capacities from 88MB to 270MB.

Contact: DynaTek, 902-832-3000, fax 902-832-3010

OPTICAL DRIVES

Study: Optical Technology Expanding

The optical disk drive industry shipped 8.7 million units in 1993 and is projected to deliver more than 14.2 million units in 1994 — a 64 percent rate of growth — according to a report by Santa Barbara, CA-based Freeman Associates.

The demand will expand at a yearly rate of 25 percent to more than 32 million units in 1999, say Robert C. Abraham and Raymond C. Freeman, Jr., authors of the 304-page *Freeman Report: Optical Data Storage Outlook 1994*. "Despite some softness in rewritable and write-once markets, a boom in CD-ROM sales boosted the industry in 1993. New products in the rewritable and write-once segments will balance industry expansion more equally in 1994."

According to the newly completed analysis, the worldwide market for optical disk drives will exceed US\$4.2 billion at OEM price levels in 1999, a 16 percent compounded growth rate from the \$1.8 billion value of the 1993 market.

"While total drive shipments in 1993 were up 129 percent over 1992 levels, revenue was up by only 34 percent," reported Freeman. "This difference in rates is due to a shift in mix favoring lower-cost CD-ROM drives coupled with falling prices for all categories of optical products."

CD-ROM devices accounted for 95 percent of all optical drives shipped for computer use and 68 percent of total revenue in 1993. Rewritable products followed with four percent of shipments and 22 percent of revenue. Write-once products comprised the remainder.

Rewritable Market

"Late introductions of second generation products contributed to a soft market for both 3.5-inch and 5.25-inch rewritable products in 1993," Abraham pointed out. "While momentum moderated in 1993, the market for rewritable drives — which includes multifunction devices — is projected to grow steadily through 1999."

Total rewritable/multifunction shipments will rise from 360,000 drives in 1993 to 2.5 million drives in 1999, a compound growth rate of 40 percent. Revenues during that period will grow from \$397 million to \$1.25 billion, a rate of 23 percent. Sony was the market share leader for rewritable products, with a stake of 25 percent of 1993 rewritable drive revenues.

Drives using 3.5-inch disks — which are gradually shifting from 128 MB to 230 MB versions — accounted for 61 percent of rewritable shipments and 38 percent of revenue in 1993. A faster transition to double capacity units is taking place in the 5.25-inch market, which tallied 39 percent of shipments and 62 percent of revenue. Sub 3.5-inch drives will enter the market in 1994 and will lead unit shipments by 1999. These products are currently represented by Sony's MD Data product, but a broad range of sub 3.5-inch products is expected.

Write-Once Market Renewed by CD Recorders

Write-once devices led the optical drive market in terms of revenue from 1983 until being overtaken by rewritable and multifunction

devices in 1990. These products continue to generate considerable sales, accounting for 10 percent of optical revenues in 1993 despite totaling less than one percent of industry unit shipments.

"These disparate ratios are due to the large differential in prices between write-once and other optical product classes," said Freeman. This phenomenon will continue throughout the forecast period, but will lessen as dramatic shifts take place among the three write-once product classes."

Dedicated write-once users continue to abandon 5.25-inch products and are opting for either 12-inch or 14-inch write-once devices or 5.25-inch multifunction products.

"These market shifts have hastened the demise of 5.25-inch write-once drives," said Abraham. "At the same time, write-once CD products have emerged to give new life to the low-end market."

Total write-once shipments will grow from 36,000 units in 1993 to over 221,000 in 1999. During this period, revenue will grow from \$170 million to \$192 million. Philips LMS led write-once activity in 1993 with 29 percent of industry revenue.

CD-ROM Becoming a "Must Have"

"Multimedia applications, a steady flow of new titles, and declining hardware, software, and replication costs continue to stimulate vigorous demand for CD-ROM technology," stated the Freeman Associates analysts. CD-ROM drive makers shipped 8.3 million units into computer markets in 1993 and are projected to deliver 29.6 million units in 1999. The worldwide market will approach \$2.8 billion at OEM price levels at that time, a 16 percent compounded growth rate from the \$1.2 billion value of the 1993 market.

Shipments of CD-ROM drives for 1993 were up 141 percent over 1992 levels, while revenue was up by 55 percent. "This difference in rates is due to mushrooming growth in demand teamed with rapidly failing prices," reported Freeman. Double speed drives led the market in 1993 with 66 percent of shipments. Triple speed or faster drives will assume the lead in 1996. Single speed drives — which have served the market for 10 years — will cease manufacture in 1994.

Production of CD-ROM drives will continue to be dominated by Asian companies.

"The combination of high volume and low prices that drive this market require leadership manufacturing," stated Abraham. "It should be no surprise that Sony and Matsushita control over 50 percent of the market."

The report predicts that no USA firm will enter the CD-ROM drive manufacturing business. Involvement by USA companies will continue to be extensive but will take place in publishing, marketing, integration, and replication.

The complete report "Optical Data Storage Outlook" costs US\$2,195. The report contains 70 tables and 60 figures.

Contact Freeman Associates, Inc., 311 East Carrillo Street, Santa Barbara, California 93101, (805) 963-3853




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Contact: Indelible Blue Canada, 416-252-7103.

Group I Fulfill
Canada Post
Requirements

Group 1 Software has released the Master Delivery Series of Canadian address and mail management software for IBM and compatible microcomputers. The Master Delivery Series allows mailers to correct and validate Canadian addresses and postal codes easily as well as automatically preset and qualify mail according to Canada Post's specifications. By using the Master Delivery Series, mailers can avoid postal surcharges and obtain substantial postage incentive rates. In addition, by providing the highest possible quality of mailing addresses, mailers can improve the speed and accuracy of mail delivery and substantially reduce undeliverable mail.

The company says these products will be of use to organizations that need to demon-

WHAT'S NEW

Sun Microsystems
at World Cup

BY KEITH SCHENGILI-ROBERTS

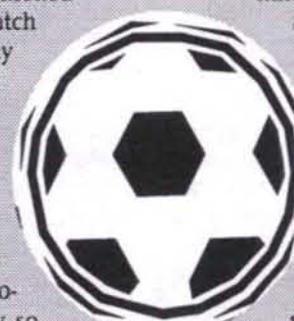
As soccer balls are being kicked around at the World Cup match in Chicago this summer, many of the journalists covering the event from around the world will be relying on information systems supplied by Sun Microsystems.

Sun Microsystems is the exclusive computer supplier to the World Cup, and has provided the means necessary so sports reporters will have instant access to information regarding the games. Sun systems will be in place at

nine separate World Cup venues, all linked by digital fibre-optic technology and the largest client-server networked environment ever assembled for a sporting event.

The World Cup will be seen in over 170 countries and is expected to have a cumulative television audience of 31 billion viewers.

Contact: Sun Microsystems Canada (416) 477-6745



what's new

strate to Canada Post an address accuracy level of at least 80 percent to maintain qualification for postal rate incentives. If this level of accuracy is not demonstrated a \$0.05 surcharge will be assessed for each invalid piece.

Effective January 1, 1994, Canada Post modified its original 95 percent address accuracy requirement downward to 80 percent to allow more mailers to participate in the automation program and to contribute toward the achievement of Canada Post's automation goals. This qualification level will be increased by 5 percent per year until the 95 percent level is again required.

The Master Delivery Series includes Smart Addresser, SmartLookup, and SmartSort and is available in either DOS or Windows. One year of monthly updates, toll free technical support and maintenance is included. These products are also available as individual modules.

Contact: Group 1 Software, Inc., 905-844-7273

MS SoundBits: Classic Cartoons from Hanna-Barbera

One of the hallmarks of the Windows operating system is the ability to customize features of it to express aspects of your personality. Some people do it with screen-savers and Windows bitmapped images on their system. The Microsoft SoundBits collections (\$54) are for those who want to do it with sound.

The Hanna-Barbera Cartoon collection of sounds features some of the best lines from this pantheon of cartoon characters, from such favourites as Scooby-Doo, Yogi Bear, Snagglepuss, The Jetsons and, of course, The Flintstones.

Many sounds and quotations are available from bulletin boards, but rarely are they as well-recorded or edited as the sounds that appear in this collection. Many of the sounds have been chosen to punctuate Windows system events.

If you use the built-in sound-scheme, you can hear Boo Boo say "We made it Yogi" when you start an application, and hear Snagglepuss say "Exit, stage left!" when you close a Windows program. This collection also comes with a lot of the famous sound effects that accompanied many Hanna-Barbera cartoons — you can animate your system with various doinks, zip-pop, thunk, and pie-in-the-face sound effects. This is all strictly for fun, and is meant only for people who want to zest up their computers a bit. Warning! you can drive your co-workers crazy with this sort of thing in a business environment, but as sound is slowly becoming an accepted part of corporate computing, it's hard to deny a bit of fun.

One drawback should be noted: playing sound files can use up a lot of Windows resources for the brief span they are played, and have been known to slow down Windows operations and interrupt Windows communications programs.

The Microsoft SoundBits: Featuring Classic Cartoons from Hanna-Barbera is a fun collection of sounds that will liven any dull computer. Scooby-Dooby-Doo!

Contact: Microsoft Corporation 1-800-563-9048

WordPerfect 6.0a for Windows Interim Release

Registered owners of WordPerfect 6.0 for Windows can now obtain a copy of the interim release WordPerfect 6.0a, which provides a number of enhancements over the previous release.

Of particular interest to most users is WordPerfect 6.0a's increase in speed and reliability. Users will find that functions like scrolling, manipulating graphics and the spell-check feature will run faster. WordPerfect has also provided better integration with the OS/2 and Windows NT operating systems. An uninstall feature is included to remove either the whole program or selected parts of it.

WordPerfect has also thrown in a few extra features: a QuickCorrect feature automatically replaces commonly misspelled words without being prompted, and the QuickStart Coach and Transition Advisor will help flatten the learning curve for people who are just being introduced to Windows word-processing.

The upgrade is available free to registered users of WordPerfect 6.0 for Windows.

Contact: WordPerfect Corporation 1-800-451-5151

Don't Buy Before You Try

Toronto-based Sidea (Software Information, Demonstrations, Evaluations and Assistance) gives customers the opportunity to come in and try the multitude of software packages it carries before purchasing. It also provides knowledgeable sales consultants, product information, and Info-Session product seminars. The advantage to consumers, claims Sidea, is that they will be able to pick the best software for their needs, rather than having to alter their needs to suit the software they've bought.

Sidea's 5,700 square-foot showroom contains around 65 computers loaded with hundreds of programs for customers to test drive, evaluate and compare. Formed in November 1993, Sidea carries hundreds of software titles, hardware and accessory products. It also publishes a catalogue, and Softalk, a monthly newsletter.

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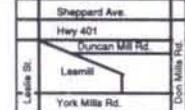
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what's new

Apple Goes First-Class

Apple will be bundling SoftArc's FirstClass communications server package with its Apple Workgroup Server (AWS) 60 and 80

models. Called the Apple Education Series Communications Bundle, the hardware and software electronic communication product will be offered exclusively to the K-12 (kindergarten-to-grade 12) education market by Apple.

The Communications Bundle is designed to streamline communications within

schools and between entire school communities. Students can collaborate on projects and share class notes, even when they are not in the same classroom. School administrators can have direct access to student records, curriculum guidelines, budgets and staff information. Teachers can send memos, bulletins, schedules, questions and meet-

ing notes to one another. And parents can access the system remotely to pick up homework assignments, read school news and exchange messages with faculty.

The Communications Bundle will be sold in two parts: a server and a user license. A 25-MHz AWS 60 with FirstClass server software is priced at \$2,599. A 33-MHz AWS 80 with FirstClass is \$6,389 (prices include setup and connection to a school's existing network). Apple is offering a choice of two FirstClass user license packages with the Communications Bundle: a 100 regular user pack or a 250 regular user pack. Apple and SoftArc both offer identical special educational prices on user licenses — the 100 user package is available at \$895 (normally \$2,495) and the 250-user pack is \$1,495 (normally \$595). Later this summer, Apple plans to offer customers the option of adding one of SoftArc's existing FirstClass Internet gateways for private mail, mail lists and Usenet news groups.

Contact: SoftArc Inc. 416-299-4723 Fax: 416-754-1856 FirstClass: 416-609-2250 Internet: sales@softarc.com

Notebook From Samsung

Samsung announced their new NoteMaster 486P, the first of a series of new notebooks to be launched throughout 1994.

"This unit is designed to prevent the two to three month obsolescence that is a problem with most notebooks today", says Martin Worndl, general manager of sales and marketing for Samsung Electronics Canada at a Toronto press conference.

Preventing a machine from becoming obsolete means upgradability. The Notemaster provides this through a flip-up keyboard that reveals a plug-in CPU module that can accept everything from a 486SX-33 right up to a DX4-100. The hard drive too is both removable and upgradable, currently providing options for 200, 260 and 350 MB configurations.

The unit comes standard with 4MB RAM and is upgradable to 20MB with user-installable RAM cards as well as providing one type II and one type III PCMCIA slots. Two screen configurations are available for the machine, either a 9.4-inch STN (6.2 lb unit) or TFT (6.5 lb unit) colour display. The unit comes with a 19mm trackball. Battery life is 2.5 hours.

What is special about the Samsung NoteMaster 486P is the two-year warranty. Samsung, with a special arrangement with Federal Express, will pick up the notebook anywhere FedEx serves world-wide, and return it to the factory for service, free of charge. Loaner machines can also be arranged, and sent out to the customer on demand. Loaner machines will be pre-loaded with DOS, Windows and a software suite.

Warranty service is available through a 1-800 number anywhere in North America and via collect call elsewhere. Prices range from \$3,759 to \$7,299 depending on configuration. Promised later this year are a sub-notebook series and a PDA.

Samsung Electronics Canada 905-542-3535

SELECTED SYSTEMS	486DLC-33 w.128KB cache	486DX-33 w.256KB cache	486DX2-50 w.256KB cache	486DX2-66 w.256KB cache	PENTIUM 66 w.256KB cache
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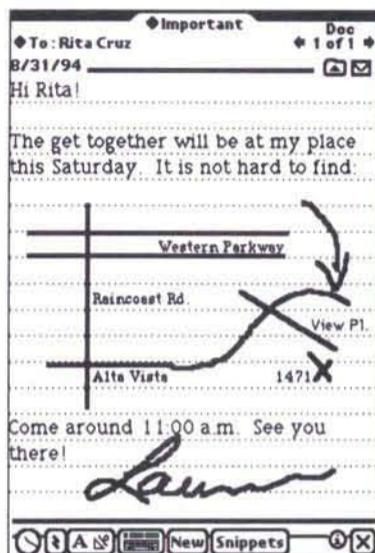
ZOLTRIX 14.4 F/M internal.....155

ZOLTRIX 14.4 F/M internal voice.....1

newsbytes

EXCLUSIVE NEWS

Letter Express Ships for Newton



PenMagic Software of Vancouver is now shipping Letter Express for Apple Computer Inc.'s Newton. The software is a new version of a letter-writing utility PenMagic originally created for Go Corp.'s PenPoint operating system in 1992.

A key concept in the new version is "snippets," which can be short segments of text or formatting commands. For instance, an address, a salutation, and a paragraph thanking someone for an order might each be a snippet. Users create letters by stringing these snippets together, and they can create their own custom snippets as needed.

Letter Express will insert an address directly into a letter when the user chooses a name from the Newton's Name file, and can also pick up information such as the writer's name and return address from the Preferences file. Formatting and page numbering are also automatic, PenMagic said.

The suggested retail price of Letter Express is \$69.95.

Alert Raised on Trojan Horse

Newsbytes has confirmed that a new "Trojan horse," named the "Chinon" or "CD-IT" program, is being spread by "unknown hackers" on the Internet.

Newsbytes confirmed through the Computer Emergency Response Team at Carnegie-Mellon University in Pittsburgh that the program has been distributed by unknown persons on the Internet, from which it can be downloaded. Unlike a virus, a piece of code which hides from users and then causes destruction, a Trojan horse masquerades as a helpful program, but then causes damage when downloaded.

The program alleges to be a shareware utility for PCs that will convert an ordinary CD-ROM drive into a CD-Recordable device. That is technically impossible. Instead the program destroys critical system files on a user's hard drive and can crash the CPU, forcing its user to reboot while remaining in

memory.

According to a spokesman for CERT, the only remedy now known for infected computers is a regular back-up of the hard drive. Once the Trojan horse is activated, there's nothing that can be done except to erase the hard drive and re-load it from the back-up, losing all work done since the last back-up. The program is not detected by most anti-viral programs, in part because it's not a virus.

First Cyberspace Wedding At PC Expo

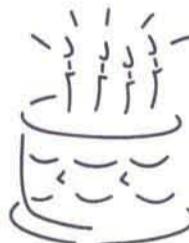
Describing themselves as "high tech fanatics," Cassandra Lehman and Chris Thorne tied the knot in cyberspace. The couple was married by Retired Superior Court Judge Spurgeon Avakian in California via a coast-to-coast videoconference link from PC Expo in New York. Family and friends gathered at both locations for the ceremony, held Thursday, June 30, 1994.

The couple says the wedding is a "reflection of our lifestyle." Cassandra, 29, is an assistant professor of computer art at San Jose State University, in San Jose, California. Chris, 34, is president of Riverview Systems Group in San Jose.

The couple made arrangements for the wedding with Pacific Bell's Pacific Telesis Group several weeks ago, according to company officials. The marriage license is from California, obtained and signed by Chris and Cassandra before they left for New York, and will be signed by the judge and witnesses in California after the ceremony. And it is legal, according to Judge Avakian, who said all he needs is to be convinced the bride and groom are in his presence.

Cassandra and Chris plan to honeymoon in Greece.

Happy Birthday To Internet



While hippies were off and running to Woodstock in 1969, a small group of men and women were busy creating a small network, ARPANET, named after its funding agency, the Defense Department's Advanced Research Projects Agency (ARPA). Twenty-five years later, participants of both events are ready to celebrate a birthday.

It is unlikely that any of the founders of ARPANET had any idea their small network would one day be called Internet and have more than 20 million users. On September 10, 1994, a celebration to honor their achievements will be held in Boston, Massachusetts.

A key contractor on the ARPANET project, Bolt Beranek and Newman (BBN), will host The History of The Future: ARPANET, Internet and Beyond.

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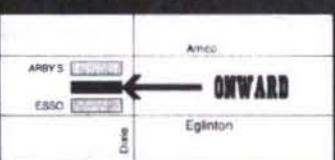
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EXCLUSIVE NEWS

Within its first eighteen months of operation, ARPANET was to connect ten major research facilities from three states in the US. This early network carried e-mail across different computers and in a short time connected hundreds of universities and research centers. Its packet-switching technology was a forerunner of frame, relay, and cell switching standard in asynchronous transfer mode (ATM) today.

**First "Paperless"
Hospital in UK**

One of the dreams of the National Health Service in the UK has always been a hospital which runs without the mountain of paper that usually accompanies most patient activities. Now that dream has been achieved at a private hospital, the 260-bed Health Care International (HCI) unit in Glasgow, Scotland.

The hospital cost around UKP180 million to commission and opened for business in June. To date the problem with computerizing all paper transactions has been the issue of medical ethics and patient privacy. At the HCI unit, these problems have been solved, HCI claims.

Traditional hospitals operate on a paper mountain with the patient's medical records at the center. By computerizing the medical records system, any nominated and security-authorized official of the hospital can gain access to the patient's medical record files, which are maintained at a central point on computer.

This means that any patient "transactions" such as blood or urine tests, prescriptions for drugs and anything involving the

patient's welfare, can be added to the medical record file instantly, allowing other officials in the hospital to read the most up-to-date information on the medical records file for the patient.

Since all transactions feed into the main medical records computer, security can be maintained, and staff in the various patient services facilities only get to input data to the system, and cannot see any other data on the patient. In this way, HCI claims that medical records security and the patient's privacy is maintained.

**Packard Bell Spectria
"Designer" PCs**

Westlake Village, CA-based Packard Bell has announced its new line of Spectria "designer" personal computers (PCs). The models come with a two-tone sculpted, wave-patterned chassis and detachable color accent panels available in teal, azure or sahara.

The company has announced the line offers either Intel 486- or Pentium-based machines, as many as 27 software titles, and includes All-in-One multimedia models that even have a radio.

The Spectria models come with speakers that mount directly on the sides of the monitor, though users can opt for upgraded speaker systems that even include a subwoofer system.

The All-in-One system includes a built-in monitor, CD-ROM, radio, television, stereo, fax machine, and telephone answering machine. The company maintains the small footprint of the unit will make it attractive to those with limited space requirements who need to move things often, such as college students. □

USER GROUPS

AMIGANAUTS MEETING On the second Sunday each month, 6-8 p.m., at 2975 Don Mills Rd. West, Oriole Community Resource Centre, 2nd floor, Games Rm. Full Amiga users support, monthly tutorials and presentations of latest software and hardware for the Amiga and, coming soon, a BBS.

ANIMATORS' GROUP Interested in the creation of 2-D and 3-D animation? Zim-graphics Ltd. offers hands-on training and memberships for those interested in computer graphics. For more information call 497-5263. (log on if MIS Affiliated messages, into Tech 2nd category called CASE). Contact Joe Da Silva at 252-1408 or Rob Beckman at 928-2694.

CLIPPER DEVELOPERS ASSOCIATION OF TORONTO For details call Mike Parente 905-336-5191 ext. 447.

CLUB CUBASE meets at 7:30 pm on the last Monday of every month at Trebas Institute, 410 Dundas St. E, One block west of Parliament. Call 496-9905.

CLUB MAC COMPUTER GROUP OF ONTARIO All Mac users, Macintosh OS & related issues, meets 2nd Tuesday, Michener Institute, 222 St. Patrick St., Toronto, 7 pm to 10 pm, infoline 462-1702.

COMPUTER TRAINERS NETWORK meets the first Thursday of every month to discuss issues related to PC's & training. Each meeting includes a presentation on relevant topic. Location: the CBC Building, 25 John Street. Call Lynn at 362-9215 for further details.

CANADIAN COMPUTER GRAPHICS ASSOCIATION CCGA's mission is "to provide education and information in computer graphics technology and its applications." Additional benefits include; insurance, newsletters, subscriptions, employment liaison office, and annual art & design competition. CCGA, 2175 Sheppard Ave. E., Suite 110, Willowdale, Ontario, M2J 1W8. Fax: 491-1670 Tel: 491-2886.

CANAM COMPUTER CLUB for serious computer hobbyists. Breakfast meetings are held every Saturday morning at Obies Restaurant in Warden Woods Mall, Scarborough. The Club has a sister group in the U.S. with whom info., ideas and help are exchanged. Membership is free but a full breakfast is \$5.00 including gratuity. For

CYBERPUNK RESEARCH LABORATORIES Merry hackers in search of picturesque mountains, RAM and fairytales. For further data write c/o CyberPunk Research Labs, Seneca College of Communication Arts, 1124 Finch Ave. West, North York ON M3J 3J3.

INTERNATIONAL PROGRAMMERS GUILD Meets every second week starting at 7:00 pm on Tuesday nights in downtown Toronto at the Graf Bobby, 36 Wellington East, Toronto. Programmers who are not members are also welcome to attend. Ask at the

front desk for the Programmers Guild. Next meeting: May 24th. For more information, 1994 meeting schedule, or a free copy of the latest newsletter, call the IPG at 905-824-7947.

INTERNET USER GROUP now forming. Daniel O'Connell 416-365-1899 or Dan@Grant.York.ca.

KW-MUG 376 Peel Street, New Hamburg, ON, N0B 2G0, (519) 662-2627. Focus: Public domain distribution; reviews of current software; meetings variable, no fees.

LOGIC functions by: Meetings 1st (Macintosh) & 3rd (Apple II) Tuesday of the month, North Toronto Memorial Community Centre, 200 Eglington Ave West at 7:00pm.. Messages: 416-323-0828, BBS 416-487-9771, FAX 905-737-6159.

METRO TORONTO ADAM GROUP (MTAG) Supporting ADAM, CP/M-TDOS Users contact: (416) 424-1352 or write to: P.O. Box 165, 260 Adelaide St. E., Toronto, ON, M5A 1N0. Meetings 2nd Monday of each month, 1485 Albion Rd (Community Centre) and 4th Sat. each month at the Pape Ave. Community Center. Bi Monthly newsletter.

MISSISSAUGA COMPUTER CLUB Meets on first Wednesday of every month at 8pm at the Burnhamthorpe Community Centre located at 1500 Guelph Dr. in Mississauga. For online info, call our support BBS at (905) 568-5294 or (905) 568-2496.

NORTH AMERICAN DESKTOP A computer users group for PC and Apple. Useful, constructive exchange of ideas, business services and information through presentations, discussions and networking at an affordable price. Bi-monthly. For more information call (905) 889-5311.

Continued on page 89

training

Using Windows For Workgroup Utilities

Microsoft Windows has gained a well-deserved reputation for being powerful and easy to use. The many built-in utilities within Windows can make your working life even better. Windows provides tools for making all kinds of changes to your system, and creating custom solutions to your problems when you need them. But a little guidance in how best to use those tools can go a long way.

And that is exactly what we'll offer in this article. We'll also include some specific insights on the new utilities added in Windows for Workgroups 3.11 (the version currently shipping with many new PCs).

The Way To Change A Display

One of the best examples of how knowledge can empower Windows users becomes evident when you decide to change display drivers for the first time. But why, you may well ask, would you want to do so? If, for example, you are using a new application that requires a higher screen resolution than your currently-installed display driver offers — or you have installed a new display and display adapter card in your PC and want Windows to make use of them — then a new display driver is in order. Whatever the reason, the process of changing screen display resolutions is the same: you need to use Windows Setup to do so.

Many users naturally assume this means using the Windows Setup software from within the Windows environment itself, choosing a new display driver from the supplied list and then restarting Windows using the new driver. This is an entirely plausible way of doing things, provided that you are sure you have selected the right screen driver and that you have the necessary floppy disk containing the screen driver files.

If, however, you are unsure of which screen driver you should be using and want to try a couple that are likely candidates, do NOT do so from within Windows. This is because, by doing so, you run the risk of making Windows temporarily unusable. If you select a screen resolution which is incompatible with your display (or video card), Windows will restart and show you a screen that is either very hard to read or completely unintelligible.

In this particular case, it is a much better idea to exit Windows altogether, run the DOS version of Windows Setup from DOS prompt, make the changes to the screen resolution and then see if it works. If it doesn't, you can always restart your computer — or even exit a screen-scrambled Windows display using the ALT-F4, followed by space bar key combination — and use Setup from the DOS prompt to change the screen resolution back to something else.

Collecting In The ClipBook

The Clipboard in Windows 3.0 and Windows 3.1 has always been a useful place to temporarily store objects that you want to copy or paste between applications. But users have always had to plan such moves carefully, because the Clipboard can only hold one object at a time.

All of that has changed with the advent of

the ClipBook in Windows for Workgroups. It allows you to store multiple "clipped" objects in a ClipBook, name the ClipBook page on which each object is stored, and then recall the ClipBook pages as they are needed.

Because these items are stored as objects on ClipBook pages, not as traditional data files, you can give them longer, more descriptive names than the regular 8+3 character DOS file name convention allows. The ClipBook page containing your 1993 profit by division graph pasted for Excel, for example, can be called "1993 Divisional Profit Graph," which makes it much easier to find and use when it's needed.

The ClipBook does not, however, actually replace the Clipboard. Normal cut, copy and paste operations still take place via the Clipboard. If you want to store an item in the ClipBook, you must first copy it from the Clipboard and then paste it into a named page in the ClipBook. Once you have a few pages in your ClipBook, you can then make some choices about how you view those pages. Using the Toolbar in the ClipBook, you can choose to view the pages in a list showing the written descriptions of those pages, or look at "thumbnail" (i.e. miniature) versions of the objects on the ClipBook pages.

Running Out Of Time On The WinMeter

If you are sharing your PC's resources with other users over a Windows for Workgroups network — and find that its performance is suffering as a result — you can do some preliminary investigation as to where the biggest drain on resources is coming from. This investigation tool comes in the form of a utility called WinMeter, which graphically shows you the percentage of CPU (central processing unit) time that you and the people in your workgroup are using.

This can be useful in planning how you share resources with others, perhaps ensuring that large print jobs be carried out when the computer that's hooked up to the shared printer is not being used for another processing-intensive task.

If, however, you want a more specific look at how you are connected to your Windows for Workgroup network — and the resources it makes available to you — then you will want to use Net Watcher, another utility that comes with Windows for Workgroups. Net Watcher allows you to see which computer resources, including files and printers, are being used by others on the network, which other computers are connected to your own, and what "permissions" go along with each of the connections.

Putting Your Type On The Map

One of the great, unsung heroes of the Windows 3.x world is TrueType, the typography system that provides scalable, on-screen fonts that match a provided set of printer fonts. TrueType ensures that what you see on-screen is what comes out of your printer, even if you only have an old, dot-matrix printer.

A good selection of TrueType fonts comes with your Windows system, including foreign language characters and a couple of sets of "symbol" fonts. These symbol fonts are actually just pictures that have been "mapped"

onto letters of the keyboard, so that when you select a symbol font and press a key on the keyboard, a picture — rather than a letter — appears on the screen.

The great thing about symbol fonts is that, because they are scalable, you can enlarge and shrink them without losing the

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crispness and clarity of the symbol. If you do that with any ordinary "bit-mapped" image (such as something you might create in Windows Paintbrush), you would find that the image tended to lose definition as it became larger.

The only problem with the foreign characters and graphical symbols available as part of your TrueType font set is that it is not at all obvious how you get to them. There is nothing obvious, for example, about pressing the ALT key and then the sequence of numbers 0153 to get a trademark symbol in a Times Roman font. What you really need is a simple "map" of all the characters available within each font and the keystrokes needed to get them. And that is where the Windows Character Map utility comes in.

Using Character Map, you can see all of the characters — including extended and special characters — in any given font. Character Map not only shows you all the characters in a font, but also the keystrokes necessary to produce each character. It also allows you to cut and paste all characters from the character map directly into applications. This is an extremely useful feature, particularly if you use large numbers of symbol fonts and find it hard to remember which symbol is associated

with which key on your keyboard.

Keeping An Eye On Your Work

Windows for Workgroups 3.11 is also the first version of Windows to include support for hardware devices built using the Microsoft At Work hardware architecture. There are currently several brands of high-powered fax machines, a new Lexmark range of Windows laser printers and Microsoft's own Windows Printing System that all support this design. It is likely to become even more common on new hardware devices throughout 1994.

It should be made clear here that Microsoft At Work is not Windows or even a subset of Windows such as Modular Windows. It is a multi-tasking operating system in its own right that will allow Windows Messaging and Telephony APIs (Applications Program Interfaces known as MAPI and TAPI) to exert external control of some of its functions. There are basically six classes of devices that will initially see Microsoft At Work being embedded within them: printers, copiers, fax machines, phones, handheld computers and hybrids of these technologies. As they all move to becoming digital devices, it becomes easier to mix and match them (i.e. photocopiers that can act as fax machines and scanners and laser printers all at once). □

CALENDAR

SEPTEMBER

SIMCOE BUSINESS & COMPUTER EXPO. Sept 7-8. Barrie Curling Club. Contact Pro Power Promotions 705-721-4433.

ATLANTIC CANADA COMPUTER SHOW Sept 14-15. Halifax, Nova Scotia. Contact ITCS 416-252-7791.

THE CANADIAN HIGH TECH SHOW. Sept 20-21. Toronto. Contact Reed Exhibitions 416-491-7565.

COMPUTERFEST'94 Sept. 23-25, Friday 10-6. Automotive Building, Exhibition Place, Toronto. Call 324-0765 for more information.

SOFTWORLD'94. Sept 25-28. Fredericton, N.B. Contact Ray Harpell 506-453-1076.

INFORMATION CANADA '94. Sept. 27-30, 1994. Toronto, ON. Encompassing eight side-by-side conferences including Internet Canada and Virtual Reality Canada. With tracks in areas such as online searching, electronic publishing, and the Internet. Contact: Mecklermedia 800 Meckler or 203-226-6967 or Fax: 203-266-6976.

NETCON Sept 28-29. Toronto. Contact Plesman Expositions 416-497-9562.

OTTAWA BUSINESS & GOVERNMENT COMPUTER SHOW. Sept 28-29. Ottawa. Contact ITCS 613-241-2888.

OCTOBER

MACWORLD EXPO Oct. 18-20 Toronto. Contact: Mitch Hall Associates, 617-361-3389 or fax 617-361-3389.

NOVEMBER

CIO SUMMIT Nov. 28-29, Toronto ON A conference to explore the information technology needs of CIOs and senior management in private and public sectors. Conference theme is "Enabling the High Performance Organization Through Information Technology." Contact Motivational Strategies Inc. 416-698-6933 or Judith Sykes Public Relations, 416-927-1069

SEMINARS

PLANNING A STATE-OF-THE-ART FINANCIAL INFORMATION SYSTEM. Sept 21, 1994. Toronto, ON. This seminar will cut through the technical jargon and vendor hype to give you the critical facts you need to plan and design the best possible financial information system for your company. Contact: Suzanne Hogan at 514-848-3960.

INTERNATIONAL

OBJECT WORLD/San Francisco. July 26-29, 1994. Object World/San Francisco is part of the World's largest all object technology (OT) series of events. This conference and three-day exposition is organized by the object Management group (OMG) and IDG World Expo and focuses on the commercial and practical aspects of object technology.

MACWORLD Expo/Boston. August 2-5. Bayside Expo & World Trade Centre, Boston. Contact: Mitch Hall & Associates 617-361-2001.

GROUPWARE SAN JOSE 94. 8-11 Aug '94. San Jose, CA. Contact: The Conference Group (602) 661-1260.

MACSHOW 21-23 Aug '94. Chicago, IL. Contact: The Show Management Company: (215) 957-9111.

INTERACTIVE MULTIMEDIA '94. 24-26 Aug '94. Washington, DC. Contact: Comtech: (703) 347-0055.

NETWORLD/INTEROP '94. Atlanta, GA. September 12-16, '94.

COMPU EXPO. September 14-16, '94. San Jose Convention Ctr. (510) 657-3418.

NETWORKS EXPO. September 20-22, '94. Dallas, TX. (800) 829-3976. MULTIMEDIA WEST & DIGITAL VIDEO. September 20-22, '94. Silicon Valley, CA. (212) 226-4141.

BREAKAWAY. September 21-23, '94. Nashville, TN. (803) 561-0040.

UNIX EXPO. New York, NY. Oct 4-6, '94. Contact: National Blenheim Expositions: Tel: 800-829-3976 or Fax: 201-346-1602.

EDI-ELECTRONIC DATA INTERCHANGE. Birmingham, England. Oct 4-6, '94. Contact: Blenheim Online. Tel: 081-742-2828 or Fax: 081-742-3182.

CD ROM EXPO & CONFERENCE. Boston, MA. Oct 5-7, '94. Contact: Mitch Hall Associates. Tel: 617-361-3389 or Fax: 617-361-3389.

LAP & PALMTOP. Chicago, IL. Oct 6-7, '94. Contact: Laptop Expositions. Tel: 212-682-7968 or Fax: 212-867-8277.

PAGEMAKER CONFERENCE. Chicago, IL. Oct 17-18, '94. Contact: Thunder Lizard Productions. Tel: 206-633-3431 or Fax: 206-633-0153.

PC EXPO. Chicago, IL. Oct 19-21, '94. Contact: Bruno Blenheim Inc. Tel: 800-829-3976 or Fax: 201-346-1602.

COMPUTER TRAINING & SUPPORT CONFERENCE. San Antonio, TX. Oct 25-26, '94. Contact: Ziff Institute. Tel: 617-252-5187 or Fax: 617-252-5113.

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Canadian Show List 1994-95

SHOW	SPONSOR	CONTACT	TELEPHONE	CITY	DATES	PREVIOUS ATTENDANCE	BOOTH PRICE (10X10)
Computer Fair & Swap Meet		Pat Daley	(604) 275-4973	Vancouver	Feb 19/94; May 21/94	2,500	\$100
Racing Towards Millennium	CATA / ITAC	Norm Kirkpatrick	1-800-387-CATA EXPO	Toronto	May 16-17/94	800	\$645
Comdex Canada	Interface Group	Eric Bello	(617) 449-6600 ext 4904	Toronto	Jul 13-15/94	34,651	\$2,700
Computer Fest Show	ShowFest Productions	George Bachir	(416) 730-1293	Ottawa	Sep 9-11/94; Sep 8-10/95	11,000	\$790
Atlantic Canada Computer Show	ITCS	Carol Smith	(416) 252-7791	Halifax	Sep 14-15/94; Sep 13-14/95	7,400	\$1,400
The Canadian High Technology Show	Reed Exhibitions Companies	Mike Swetnam	(416) 491-7565	Toronto	Sep 20-21/94; Oct 3-4/95	5,000	\$2,500
Computer Fest Show	ShowFest Productions	David Carter	(416) 925-4533	Toronto	Sep 23-25/94; Sep 22-24/95	26,000	\$1,090
Information Canada '94	Mecklermedia	Hannah Preston	(207) 883-1223	Toronto	Sep 27-30/94	2,000	\$1,600 (for a 8x10)
NetCon	Plesman Expositions	Chuck Armitage	(416) 497-9562 ext 381	Toronto	Sep 28-29/94	5,500	\$2,400
Ottawa Fall Business & Computer Show	ITCS	Ray Fahey	(613) 241-2888	Ottawa	Sep 28-29/94; Sep 27-28/95	5,736	\$1,650
Ontario Computer Fairs	Computer Literate	Sue Creighton	(416) 535-3761	Kitchener	Oct 2/94	2,000	
Calgary Business Computer Show	ITCS	Steve Henrich	(403) 266-8700	Calgary	Oct 5-6/94; Oct 4-5/95	6,500	\$1,500
Edmonton Business Computer Show	ITCS	Steve Henrich	(403) 266-8700	Edmonton	Oct 12-13/94; Oct 11-12/95	4,500	\$1,500
Executive Symposium on Object Technology	Plesman Expositions	Chuck Armitage	(416) 497-9562 ext 381	Toronto	Oct 12-14/94		First time \$2,900
Computer Fest Show	ShowFest Productions	Darryl Johnston	(604) 572-1401	Vancouver	Oct 14-16/94; Oct 13-15/95	14,000	\$790
Pacific Coast Computer Fair	PCCFA	Ed Smith	(604) 420-3286	Vancouver	Oct 15/94	1,800	\$45-4'x8' Table
MacWorld Expo/Canada	Mitch Hall Associates	Nanette Traetow	(617) 361-2001	Toronto	Oct 18-20/94; Sep 20-22/95	1,800	\$2,800
Computer Fest Show	ShowFest Productions	David Carter	(416) 925-4533	Montreal	Oct 21-23/94; Oct 20-22/95	18,500	\$890
Client Server Solutions '94	DCI	Andrea Papetros	(508) 470-3870	Toronto	Oct 24-26/94	6,000	\$3,590
G-TEC	Connelly Exhibitions Inc	Brennan Senos	(613) 731-9850	Ottawa	Oct 25-26/94; Sep 1995	7,500	\$2,580 for a 9x10
The Parent Show	Corporate Events Management	Jacqueline Peake	(416) 869-0141	Vancouver	Nov 4-6/94; Nov 10-12/95		First year \$1,100
Computer Fest Show	ShowFest Productions	David Carter	(416) 925-4533	Etobicoke	Nov 4-6/94; Nov 10-12/95	20,000	\$990
Ontario Computer Fairs	Computer Literate	Sue Creighton	(416) 535-3761	Windsor	Nov 6/94		
Canadian Multimedia Show	U of Calgary/CD-ROM Store	Margaret-Anne Stroh	1-800-265-2494, 220-7101	Calgary	Nov 7-9/94		First time \$1,250 for 8x10
SCIB	ITCS	Michelle Gravel	(514) 270-5481	Montreal	Nov 8-10/94	23,000	\$2,000
Canadian Computer / Office Technology Show(S.C.I.B.)	ITCS	Michele Gravel	(514) 270-5481	Montreal	Nov 8-10/94; Nov 7-9/95	23,000	\$2,000
The Parent Show	Corporate Events Management	Jacqueline Peake	(416) 869-0141	Toronto	Nov 11-13/94; Oct 27-29/95	2,800	\$1,300
Canadian Computer Show & Conference	ITCS	Ross Horton	(416) 252-7791	Toronto	Nov 23-25/94	26,318	\$1,975
BC Business Computer & Communications Expo	Business in Vancouver	Darryl Johnston	(604) 572-1401	Vancouver	Nov 28-29/94; Dec 5-7/95	14,000	\$990
Computer Fest Show	ShowFest Productions	Reed Ireland	(403) 431-1916	Calgary	Dec 2-4/94; Dec 1-3/95	14,000	\$790
Computer Fest Show	ShowFest Productions	Reed Ireland	(403) 431-1916	Edmonton	Dec 9-11/94; Dec 8-10/95	7,000	\$790
Comdex Canada/Pac Rim	Interface Group	Eric Bello	(617) 449-6600 ext 4904	Vancouver	Jan 17-19/95	8,000	\$2,500
Computer Fest Show	ShowFest Productions	George Bachir	(416) 730-1293	Ottawa	Jan 27-29/95	9,000	\$790
Computer Fest Show	ShowFest Productions	David Carter	(416) 925-4533	Toronto	Feb 17-19/95	26,000	\$1,090
Quebec City Business/Computer Show	ITCS	Sylvie Dousenard	(514) 270-5481	Quebec City	Mar-95	7,200	\$1,700
Computer Fest Show	ShowFest Productions	Reed Ireland	(403) 431-1916	Calgary	Mar 10-12/95	9,000	\$790
Computer Fest Show	ShowFest Productions	Darryl Johnston	(604) 572-1401	Vancouver	Mar 17-19/95	14,000	\$790
Automation Show & Seminar	Baxter Travel Group	Alan G. Crockford	(416) 968-7252	Toronto	Mar 21-22/95		First time \$1,500 for 8x10
Computer Fest Show	ShowFest Productions	David Carter	(416) 925-4533	Montreal	Mar 24-26/95	18,500	\$890
Canada's Advanced Electronic Systems Expo	Reed Exhibitions Companies	Mike Swetnam	(416) 491-7565	Montreal	April 11-12/95		
Computer Fest Show	ShowFest Productions	David Carter	(416) 925-4533	Mississauga	Apr 21-23/95	22,000	\$990
PC EXPO	ITCS	Michele Gravel	1-800-361-0329	Montreal	Apr 28-30/95	15,000	\$775
Executive Symposium on Open Client/Server Comptng	Plesman Expositions	Chuck Armitage	(416) 497-9562 ext 381	Toronto	May 9-10/95		First time \$2,900
Computer Expo	Post Reality Inc	Brent Aubertin	(204) 947-9766	Winnipeg	May 12-13/95	8,164	\$600
VARDEX	Reed Exhibitions Companies	Janet Whiddett	(416) 491-7565	Toronto	May 17-18/95	3,500	\$2,520 for a 10x12
SIIM	Exhibition & Conference Mgt	Diane Laporte	(514) 288-8811	Montreal	May 31,Jun1-2/95	16,000	\$1,600 -8x8
Multimedia 94'	Multimedia Tradeshows Inc.	Susan Blair	(905) 660-2491	Toronto	Jun 1-3/95	1,500	
Ontario Computer Fairs	Computer Literate	Sue Creighton	(416) 535-3761	Burlington	Sep 11/95	1,500	\$100-8x2 1/2' Table
Ontario Computer Fairs	Computer Literate	Sue Creighton	(416) 535-3761	London	Sep 18/95	1,500	\$100-8x2 1/2' Table
Ontario Computer Fairs	Computer Literate	Sue Creighton	(416) 535-3761	Ottawa	Oct 15-16/95	4,000	\$100-6x2 1/2' Table
Ontario Computer Fairs	Computer Literate	Sue Creighton	(416) 535-3761	Whitby	Nov 20/95	1,500	\$100-8x2 1/2' Table
Canada's Advanced Electronic Systems Expo	Reed Exhibitions Companies	Mike Swetnam	(416) 491-7565	Ottawa	1995 show in Mtl.	3,500	\$2,500

USER GROUPS CONT...

PCCT (PERSONAL COMPUTER CLUB OF TORONTO) — PC users, 3rd Tuesday, St. Gabriel's Community Centre, 672 Sheppard Ave. E. (2 blocks East of Bayview, North side), North York, 7:00 pm; membership includes shareware, BBS, special interest groups (SIGs) & workshops. Information (416) 244-6786.

TAF - TORONTO ATARI FEDERATION - XE/STA/Falcon computers. 300 members. BBS. Newsletter. SIGs for MIDI/DTP, General and more. Meets 7:30pm. Third Thursday of month in North York Memorial Community Hall in the N.Y. City Centre Library building, 5110 Yonge St. at Park Home. BBS - (300-16.8) 235-0318. Info-Line (416) 22-55-823 CALL-TAF.

THE CANADIAN AUTODESK MULTIMEDIA USER GROUP — Interested Users of Autodesk Multimedia products are invited to call Pia Zimperi at (416) 929-8155.

THE CANADIAN INFORMATION PROCESSING SOCIETY - For further information call RickPenton 518-1437

THE COMMUNICATION NETWORK - Join our Social Network/Support Group for SHY people and enhance your social and interpersonal skills. Participate in weekly organized social and cultural activities. Weekly meeting from 7-10pm. Pre-registration is required. Call for more info at 851-6696 or 851-2980.

THE DURHAM P.C. USERS' CLUB - Meetings on second Thursday of each month at 7-10 pm (free admission). Meetings held at CAW Local 222 Hall, 1425 Phillip Murray Ave., Oshawa. Contact Linda Netten 905-623-2787 or Bruce Laycraft at 905-728-9351.

THE ELITE GROUP OF 3-D PROGRAMMERS — (E.G.3D P) in association with L.T.P.D. Dedicated to Atari users. For

more information write to L.T.P.D. c/o (E.G.3D P), 37 Montya Ave., Box #2, Toronto, Ontario M6S 2G8.

THE INTERNATIONAL INTERACTIVE COMMUNICATION SOCIETY (IICS) is a non-profit professional organization dedicated to the advancement of interactive and multimedia technologies. Through monthly meetings, newsletters and networking IICS members are able to keep up-to-date in this growing field. Membership is \$90/yr. For more information call Peter Richardson 416-288-0550 or fax 285-4395.

THE TORONTO COLOUR COMPUTER GROUP — meets on the 2nd and 4th Mondays of each month. For more information, call Larry Osborne at (416) 972-1809.

THE TORONTO GUPTA USERS GROUP (TGUG) - Meetings held in Feb, Apr,

June, Sept, Nov each year. Contact Terry Lewis at 416-620-6565 X639 or 416-620-6913 (fax) for more info. Corp membership fee: \$50/yr (up to 3 employees); Single membership: \$25/yr.

TIME-SINCLAIR USERS CLUB — All Timex and Sinclair Computers. 1st Wednesday of the month, 14 Richome Court, Scarborough, ON, M1K 2Y1, 7:00 pm. Demonstrations, bi-monthly newsletter. Voice Info. (416) 751-7559.

TORCHI (Toronto Region Computer Human Interaction) — Meets every second Wednesday of the month from 7:00 pm-10:00 pm. For more information re speakers, topics and membership. We are the local chapter of Sigchi a part of ACM. Call M. Boshes (416) 448-2697.

TORONTO APL SIG — An educational and social organization concerned with the use and promotion of APL computer language.

4th Monday of each month at 6:30 pm (excluding the Summer) at BCE Place, 161 Bay Street, 10th Floor. Or write: Toronto APL SIG, Box 384, Adelaide Street P.O., Toronto, Ont., M5C 2J5. Contact Ben Best (416) 862-3193.

TORONTO BORLAND USER GROUP — meets 1st (C/C++), 2nd (Paradox) and 3rd (Quattro Pro) Thursdays of every month at 6 pm, 5:30 pm and 7 pm respectively. Meetings are held at Borland, 5001 Yonge St, 14th Floor. For membership and meeting details please contact Doug Campbell 496-2120. Free BBS (905) 271-9795.

TORONTO USERS GROUP — User members support of Intermediate CL. Next meeting is held on Sept. 22nd at the Howard Johnson Plaza at 400-401 Keele St. Please contact Wende Boddy at suite 2550, P.O. Box 77, Toronto Dominion Centre, Tor., Ont., M5K 1E7 for more information, or call (416) 607-2546.

TPUG (TORONTO PET USERS GROUP, INC.) — Commodore users (PET, 64/128, Amiga, CDTV, MS-DOS, etc.), meets Tuesdays (1st, 128; 2nd, Amiga; 3rd, GEOS; 4th, 64), York Public Library, main branch, 1745 Eglinton Ave. W. (near Dufferin), 7:30 pm; 3rd Thursday Alderwood United Church, 44 Delma Drive, Etobicoke, 7:30 pm, software library, newsletter & BBS, information (416) 253-9637.

TRACE — Toronto Regional AutoCAD Exchange: Presentations on the last Tuesday of every second month. Held at the Malton Community Centre, 3540 Morningstar Drive. For details call Tim Lucas at (416) 750-9765.

ZIM USERS GROUP — Revival of the Toronto Zim Users Group. Emphasis on exchange of ZIM technical expertise in a friendly environment. Contact Fay Rakoff. Phone (416) 979-6216, or fax (416) 979-4888.

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Books	Ambra 21	CTS Computer Co. 12	MIT Computer Supplies 75	Tor Computerized Sys. 30	Computer Prod. Services 92
Computer & Book Ctr. 65	AmPAQ 15	Digital Equipment 9	MPM Industries 62	Tribus 6	Custom Control & Inter. 92
CPIC - Tech. Bookstore 64	Anubis 62	Dominion Bus. Mach. 92	MPT Computers 36	TTI 41	Data Recovery 92
MC3 64	Apix 93	Epson 35	Multimedia Effects 35	Ultinet 3	GTI 43
Mississauga Comp. Bks. 65	Ashteq Business 29	Ergo Desk Inc. 59	Neta Computer Cons. 42	Unicorn Computer Corp. 56	Image Control 35
PC Mania 66	Beginners Computer 45	Eurocom 43	O.P.M. Office Photocopy 83	Vina Computer 67	On-Site Services 93
Toronto Computer Books 64	BiCMOS Trading Int. 54	Faxcessories 63	Onward Computer 86	World Business Sys. 25	Rosebud 41
	Big Boss Computers 74	Fujitsu 17	Optimicro Techn. Inc. 73	Yeuko 38	
	Bondwell 96	GC Systems 73	Pacific Royal 58	YHC Cassette Ind'l Ltd. 43	Service Bureau
Classifieds	Boscan 80	Genicom 8	PC Factory 55	Zegna 39	Copywell 26
TCP Classified 90	BUS Ultimate Sys. 33	GigaTrend 67	PC Solutions Group 26		Lino Depot 45
	Byte 40	Global Drive Solutions 22	Plustek Canada 71		Nielsen Mktg. Research 18
Desktop Publishing	C&T Computech Co. 91	Hi-Tech Services 81	Ponlix Multimedia 70,92		Presentation Edge 93
eye-fi 92	CAD Connection 32	HITS 53	Practical Sales & Serv. 6		Tri-Tech 38
Fantom Arts 92	CEID 14	HVM Computer 83	Quick Cheque 92		
Graphic Solution 30	Cdn. Business Auto. 60	IBM Canada Ltd. 4	RA Electronics 26		
	Canara 11	IC Technology 63	Rainbow Computer 76		
Hardware & Software	Caranet 82	ICCT Technologies 6	Rocket Computer Sys. 43		
1 Stop Computer Shop 83	Claris Canada 28	ITD 8	Samware 50		
123 Comp. Warehouse 59	CLT/Commercial Laser 76	Intel 7	Saved by Technology 92		
2000's Technologies 82	CMS Computers 46	Kehtron Computer Inc. 74	SBL System Builders Ltd. 69		
2000's Technologies 92	COM Bus. Service Ctr. 60	KGB Enterprises 9	Signa Computer 13		
3A Computers 94	Compac RBM Systems 86	KV Computers 18	Sirus Tech 27		
A&G Computer Depot 80	Compass Technologies 32	Lance Electronics 51	Smart Machine 70		
ABC Computers 37	Compatible Plus 73	Lantec 68	Soft Comp 24		
Ability Plus 52	Complete Micro Sol. 2	Lava Computer 24	Softec Business Comp. 34		
AC Systems 29	Compu City 42	Lexmark 16	Stac 23		
ACC Technology 72	Compumemories 84	Logic Computer House 19	STD 95		
Access Business Ctr. 76	Computer Liquid. Ctr. 82	MDG 61	Steals Direct 48		
ACEEX 49	Computer Parts Surplus 68	Media CD Shop 45	Sunix Inc. 46		
ACM Comp. System Ltd. 56	Compuworld Plus 20	Micro Drives Canada 79	Sunni Microlab 78		
Adam Peripherals 32	Connell Computer 80	MicroGram 50	Systelligence 8		
Advanced Home Auto. 52	Cotech Computer Inc. 54	Microland Comp. Sys. 81	TCC Communications 10		
					Training
					Inst. for Advanced Tech. 87
					Microbus 88
					SAIT 92
					SoftTrain Institute 88
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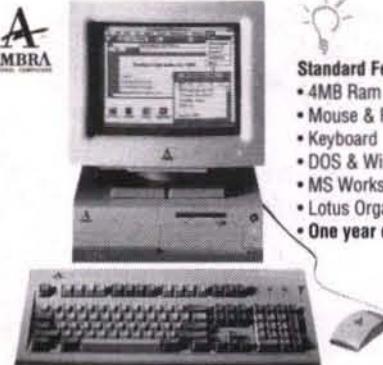
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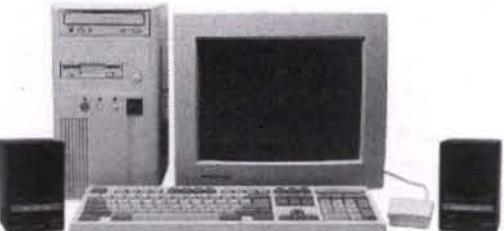
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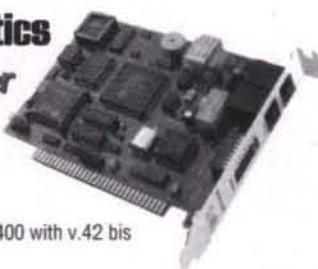
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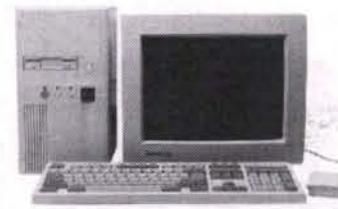
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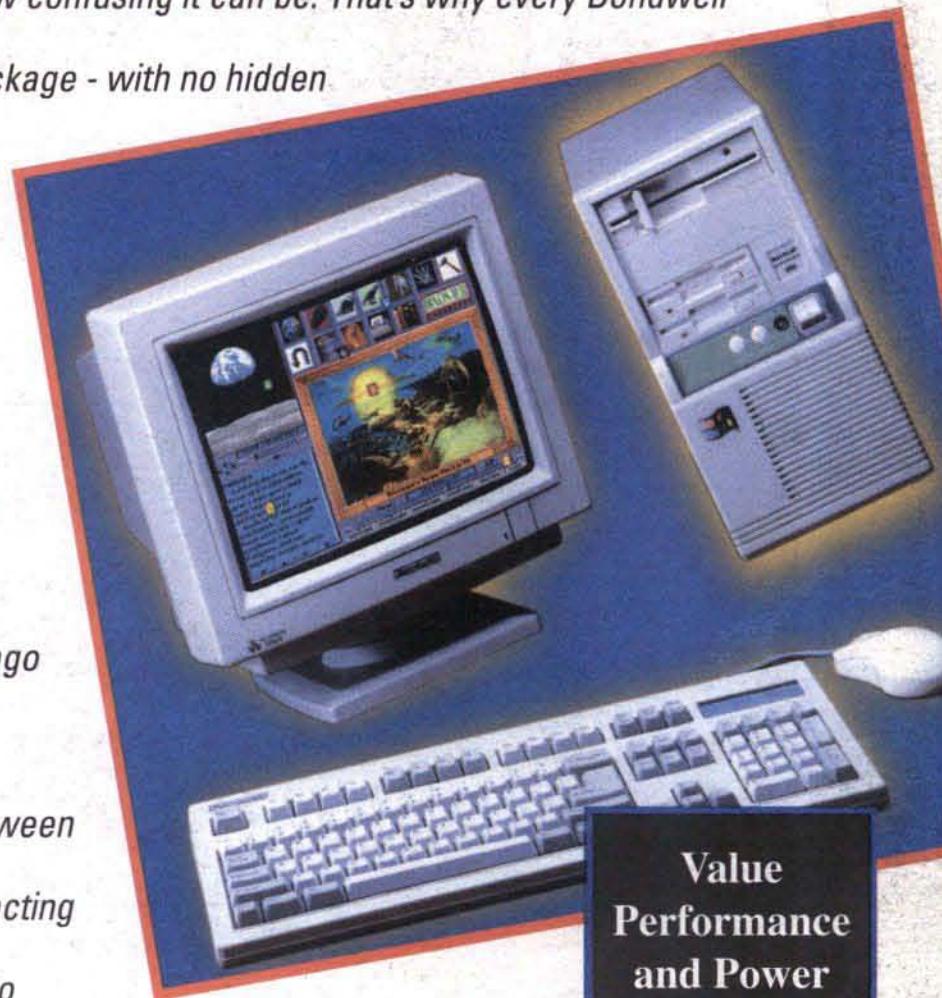


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