Comment

WORD PROCESSING: A CONTINUING GUIDE FOR THE PERPLEXED

Hercules at the Crossroads

In an episode of Laclos's novel *Les Liaisons dangereuses* a nobleman composes a letter in bed using his paramour as a writing table, and discovers he can take a pleasurable break from work without leaving his desk. Although a computer cannot provide so agreeable a setting for the act of composition, it offers diversions and excitements of its own. Writing and revising go faster with a computer than with anything else. The speed is exhilarating but dangerous. When you use a computer you have the power to make sentences disappear from one paragraph and reappear in another merely by hitting one or two keys. You may think you are focusing all your attention on the logic and euphony of your prose, while hidden within you, secret from yourself, a teenager is playing Pac-Man.

You needn't feel embarrassed if, having savored your colleagues' envy when you announced the arrival of a computer, you continue to use a more primitive instrument for composing your first drafts. Paper is a less exotic and distracting medium to work in than a computer screen, and your writing is probably better for it. You needn't regret that you were born too soon to start using a computer in kindergarten. Computerized papers turned in by high school and college students are no better than typewritten ones and are in many ways worse. The logic tends to be associational at best, and the prose includes odd torsos of sentences evidently left behind in the rush of on-screen revision. Certainly you should do all your work at a computer—from first draft to last—if you must rush your copy to a newsroom, if you suffer from the kind of writer's block that only a computer screen can cure, or if you work in one of the academic fields that regard strong prose as a sign of mental weakness. But if you fit none of these categories, put oil in your typewriter and keep your yellow pads dry.

I emphasize these points only because you may have heard that a computer will make your writing not only easier but better. You might just as well expect a car to improve your sense of direction. Two sets of writers gush most volubly over their computers and swear they will never use a typewriter again. One set includes writers who find the computer so exciting that they fail to notice their writing has turned dull. The other includes writers who have decided which computer to buy but haven't yet bought it. A computer is never more efficient, never

more effortless, than during the weeks before you bring it home. Prospective owners blaze up in wounded anger if you suggest that their beloved machine is not the brightest and fleetest ever built. They thrill with anticipation when they describe the word-processing program they have chosen and attribute to it powers that the program's authors never dreamed of. (They probably learned about the program from an "independent consultant" who worked them to such a pitch that they forgot he was also an authorized dealer.) Then the machine and program arrive, and reality prevails. The computer and its owner soon settle into a domestic routine, interrupted by humdrum arguments when the owner mistakenly types an instruction to delete a page rather than print it or when the computer overheats and stops, and by mutual triumphs when fingers fly across the keyboard and a hundred perfect pages emerge from the clattering printer.

The first of these Comments on word processing appeared in the Summer 1985 issue of *The Yale Review*. It urged you to buy a computer (IBM, not Apple) as an aid to writing and to select one of a small number of word-processing programs (none of them WordStar) designed for writers, not typists. Last year's recommendations remain valid on the whole, but the better programs now exist in new versions that deserve a second look, and other kinds of programs, such as spelling-checkers, deserve a first. Further reports will appear every year or so, as long as I remain capable of writing them in English. The editor has agreed that the moment I start writing about sysops, opcodes, baud rates, or COBOL, he will reassign me to the marriage announcements.

Computer magazines often present their product reviews in the form of scientific-sounding reports from their "testing laboratories"— which normally seem to consist of a pair of filing cabinets with a door across the top and a digital watch. Here at *The Yale Review*, the experts who work in the Computer Analysis Complex refuse to dirty their hands with scientific tests, but they have developed advanced techniques for measuring a crucial element of all computers and computer programs, one that has not yet been discussed in the literature of the field. We at the Complex call this the Pac-Man Factor. It is a measure of the degree to which a computer or program, because it is exciting to use, distracts you from the task for which it is ostensibly designed. The higher the PMF, the less likely you are to accomplish anything during a session at the computer—even though you may have a wonderful time while not accomplishing it. A low PMF is almost a necessary feature of a worthwhile product, but it is not sufficient in itself. A product may be incompetent as well as unexciting.

Another matter rarely mentioned in the computer press, except in a guarded way, is the brutality with which computers can torment their owners. Alert specialists observe that some computer products have names that sound like waterfront bars where the patrons wear leather—MailMerge, Number Smasher, RAM Drive, MultiMate—but the public at large suspects nothing. Most computer owners silently endure the treatment they receive from their machines, and many convince themselves they enjoy it. Their reaction is a variety of the Stockholm Syndrome, in which hostages develop sympathy for their violent and irrational captors. Three terror techniques are especially favored by today's sophisticated computers: the blinking cursor, the noisy fan, and the flickering screen. The forces of civilization have devised defenses against the first two of these and are working on the third.

When IBM invented the blinking cursor about thirty years·ago, I suspect that some high-level executive decided to use it in computers because there wasn't enough of a market among torturers. Now that it has become virtually standard among small computers, most of its victims think they could never manage without it. When I told a friend he could buy a program that replaces the blinking cursor on the IBM personal computer with an unblinking highlighted block, he replied through clenched teeth: "It—doesn't—bother—me." The program he won't buy is called NoBlink.* No other program offers such immediate, long-lasting, and indispensable benefits. Besides making the cursor restful to look at, it speeds its otherwise sluggish motion across the screen. Earlier versions worked imperfectly, and you had to go through some contortions to make a copy of the program. In the current version the cursor sometimes disappears (it comes back when you hit a key), but it performs extremely well a task that in a more sensible world would not be necessary at all.

The noisy fan also has its partisans. When I remarked to another friend that his computer sounded like a refrigerator in heat, he shouted back: "I CAN BARELY HEAR IT." He was not interested in a replacement fan that makes less than one-sixth the racket made by the original while doing a better job of protecting the computer's circuits from their own heat. This fan, the PC Silencer (another of those alarming brand names) fits on the back of an IBM or similar computer. Before installing it with four screws, you use a tool supplied by the manufacturer to disconnect the power to the original fan. The whole procedure takes ten minutes and is reasonably idiot-proof. After hooking up the new fan and turning on the computer I felt a moment of panic when I didn't

*Publishers and prices are listed on page 480.

hear the machine make its usual uproar. I only convinced myself it was working by looking at the screen. At night, in a quiet neighborhood, the fan is slightly more audible, but never annoying. It costs around eighty dollars, but silence is proverbially associated with precious metal. The manufacturer, who is helpful and reliable, also makes a noisier but more powerful model that may be useful if you need to cool down a computer loaded with a half-dozen extra gadgets.

The flickering screen presents a more intractable problem. All computer monitors commonly available use television technology that has scarcely been improved since its invention fifty years ago. The worst monitors—a category that includes all color screens—can induce eyestrain within minutes. The best take perhaps an hour. Tolerable monitors using entirely different technologies have begun to appear on the market, but the $3700 price tag and fifty-pound weight of the model IBM offers for personal computers suggests that it may be a bit early to put in an order. The least bad of the affordable monitors for the IBM and comparable machines are the Amdek 310A (discounted at around $150) and Princeton MAX-12E (around $170). The Princeton has a slightly sharper image but, because its background is gray instead of black, less contrast; it is also more susceptible to glare. It makes a better first impression than the Amdek and may be slightly preferable, especially in rooms where no lights shine directly on the screen. Ten years from now we will wonder how we put up with either of them. (The celebrated screen on the Macintosh computer is even worse. The letters are tiny, and because the background, not the text, is illuminated, the whole screen flickers continuously.)

By the way, don't choose a monitor because you like the shape of the letters it shows on screen. The characters are shaped inside the computer itself, and the monitor slavishly displays whatever the computer sends it. And don't buy one of the costly devices that can raise the monitor to eye level. The higher the screen, the more of a strain it is to hold your head up to look at it. Take the monitor off the computer, put it on one of the cheap swivel stands that tilt it upward, and place the stand on your desk. Now read on.

The Closed and the Open

Computers operate in different ways because their manufacturers pursue different policies. These are seldom what you might expect. Gray, regimented IBM, where the engineers wear white shirts and dark ties, makes the most chameleon-like and adaptable of personal

computers. Polychrome, anarchic Apple, where the accountants wear blue jeans and sneakers, makes a computer you can use only in the way Apple wants you to use it. This is by no means the sole reason why a writer would be foolish to buy an Apple Macintosh instead of an IBM PC, but it's one of the better ones.

When I was working on my earlier report, quite a few writers and academics told me they thought it was a good idea to get a Macintosh. That popular delusion seems far less common now, although it persists in odd pockets of opinion, notably in one or two universities where a central office has decreed that the only computer offered for sale will be the Apple model.

Among the achievements of the Macintosh is the highest rating ever recorded on the Pac-Man scale. When you use this computer, you move little pictorial symbols across the screen by pushing a plastic "mouse" around your desktop. At the touch of a button you can make an "icon" jump from one place to another or move it off the screen entirely; you can turn black icons white and white ones black; you can make menus pop into view and make new menus conceal all but the edges of old ones; you can move a box that encloses one set of symbols over a box that encloses another set, and you can enlarge or reduce the boxes at will; you can make an alarm clock appear; you can even use a "control panel" that looks like a child's fantasy of an airline cockpit; you can spend hours adjusting the volume of the computer's beeping sound. What larks! What freedom!

In fact, the Macintosh allows you no more freedom than you will find in Disneyland. Every one of its programs leads you through the same amusement park of mice, icons, and windows. It's an easy system to use, the way a tricycle is easy, but it's hopelessly inefficient for anything beyond the simplest tasks, and you must use it whether you like it or not. You probably will grow to like it, because one thing the Macintosh does best is help you flatter yourself. As you gain skill in guiding the mouse and clicking open windows you begin to feel a protective gratitude toward the machine. You may lose interest in the work you intended to do, but you will find alternate interests in abundance. The IBM PC is an object no writer has ever loved, although it gets the job done. The Macintosh barely gets the job started, but if you feel the need to give love to a machine, this is the one to buy. Its inventors made a careful study of its intended market and instructed the designers to make the exterior look as much as possible like a Cuisinart.

To be fair, one of the two word-processing programs available for the Macintosh—and the one that comes with the machine at no extra cost—has been improved since I reported last time. It can now handle

pieces of work longer than nine pages. The other program, Microsoft Word, was the basis of a comparison between the IBM and the Macintosh that appeared in a computer magazine last year. The reviewers tested the two machines by using the versions of Microsoft Word available for each and concluded that the Macintosh, despite its reputation, worked as quickly, perhaps even a bit faster, than the IBM. As Microsoft Word stands at the sluggish end of the scale of the many programs available for the IBM, this was the equivalent of comparing the hamburger sold at a hamburger joint with the one that a good seafood restaurant lists on its kiddy menu, and concluding that the hamburger joint is a better place to eat.

Even if an acceptable word-processing program were available for the Macintosh (there are rumors that one may appear this year), the Macintosh would still be unacceptably slow in its operations. A slow computer is far more distracting than a fast one. When you tear a sheet of paper from the typewriter and crush it into the wastebasket, at least you are doing something. With a slow computer, you constantly find yourself staring blankly at a blank screen while the computer does something invisible. The Macintosh comes with the programs Mac-Write and MacPaint packed in the box, but when you stop playing with icons and try to get some work done, you discover that it also comes with something that is not mentioned in the ads—MacWait. Sooner or later you will learn to convert this to MacCoffeebreak. You can make the Macintosh a bit more flexible by installing some expensive gadgets, but the improvement is small in comparison with the price. For a new model called the Macintosh Plus, Apple recently announced further enhancements, but they seem too slight, too costly, and too late.

The IBM PC has a low, some would say negative, Pac-Man rating. Unless you buy video-game programs, a color screen, and special "graphics" circuitry that produces pictures as well as words, the IBM is a very unexciting lump of iron. If you want to repel invaders from outer space, you should try a different armory. If you want to work on a book, this is the place to go.

You communicate with the Macintosh by clicking buttons and dragging icons, but you communicate with the IBM by addressing it in the verbal language of its "operating system." The language of the IBM is called PC-DOS, that of the "compatible" machines that work in almost the same way is MS-DOS. (MS stands for Microsoft, the company that devised the language.) Although at first unsettling to native speakers of English, DOS has a fairly rational syntax that anyone who works with words can learn. Every computer manual ever written obscures this

syntax by teaching DOS the way a phrasebook teaches French—plenty of examples, not a word about sentence structure. Even the best of the separately published primers, *Running MS-DOS*, by Van Wolverton, assumes you lost all interest in grammar in the third grade.

DOS uses verbs, modifiers, and objects, but never a first-person subject. It provides rudimentary status-indicators: when you address a computer's disk drive you must include its honorific colon ("drive A:" not "drive A") or it pretends it doesn't hear you. DOS even includes the conditional mood, something impossible in pictorial sign-systems like that of the Macintosh. When a DOS verb is used with accusative or dative objects, it is normally an imperative, as in the command that (roughly) takes the form: "Copy this file there." When used alone or with a genitive object, it is normally interrogative; "Dir B:" means "What's listed in the directory of the contents of the disk in drive B?" Like human languages, the language of DOS has irregularities. Normal DOS usage suggests that the verb *format*, when used alone, should be understood as interrogative. If you use it that way, it can have as fatal an effect on the book you are writing as Henry II's interrogative "Who will free me from this turbulent priest?" had on Thomas à Becket. Fortunately, in situations like this, the computer asks you to confirm that you mean what you say. As you can do similar damage with the Macintosh while playing with its icons, you would be ill advised to believe the advertising ploy that assures you that the Macintosh is the computer for nontechnical people. The Macintosh is the computer for nonverbal people.

The most sensible computer for a writer to buy continues to be the venerable IBM PC, with two disk drives, 256,000 characters of memory capacity (256K of RAM, which stands for "random access memory"), and a "monochrome adapter," all installed at the factory. Don't buy a PC Jr., which is a toy. The simplest version of the PC XT, with two disk drives, costs a few hundred dollars more but allows you to add a few more internal gadgets than you can add to the basic PC. Most of these additional gadgets take the form of "boards" (or "cards") that contain memory capacity, telephone connections, or circuitry that lets the computer send information to the screen, the printer, or (as in the IBM monochrome adapter) both. If you are tempted to buy a "graphics board" instead of the monochrome adapter, don't. It isn't worth the price or the trouble. The cost of adding to the IBM's memory capacity is now so low that you might as well buy a memory board; most programs will work more quickly, and you will be able to revise lengthy pieces of work more easily. To install a memory board you need to

remove and replace six screws and perhaps push a couple of switches with a ballpoint pen. Beginners should perhaps choose the Quadram Quadboard or the AST SixPack (whichever is cheaper), equipped with 348K of memory; each includes a battery-powered clock that saves you the trouble of telling the computer what day it is. Adepts will be better off with the Tall Tree JRAM-3, whose memory capacity is much greater. With any of these, you can use some of the added memory as if it were an imaginary disk drive hidden inside the computer. You can copy programs to this "RAM drive" in order to make them work more quickly or to avoid the annoyance of shuffling real disks in and out of the machine.

Because a computer's memory capacity and the storage capacity of its disks are both measured in the same unit (a "K" equals a thousand characters), the difference between them tends to baffle a novice. A computer's memory is the amount of information it can hold in its mind; the storage capacity of its disks is, in effect, the size of the books it can consult when it needs new information for its memory. A computer is like a stage actor: if it has a limited memory, it must stop every now and then to consult the script. A floppy disk is the equivalent of a volume of about two hundred double-spaced pages. For some tasks, the computer needs more information than a floppy disk can hold, and you must take away one disk and give it another, and then perhaps exchange the two disks once again. A "hard disk" (or "fixed disk") is the equivalent of a large anthology, compiled in part from material copied from floppy disks. A hard disk remains in the computer permanently; you don't have to shuffle it in or out.

The convenience of a hard disk comes at a price. Keeping it organized and finding your way around in it is never easy. If the hard disk fails—and eventually it will—all its information goes with it. This is why you should periodically copy everything from a hard disk onto a stack of floppies. Most hard disks produce a continuous high-pitched whine that stops only when you turn off the computer. Smaller and quieter models, mounted on boards that you plug into the computer the way you plug in a memory board, began to appear last year. They now cost about a thousand dollars. When the price drops to half that amount, as it probably will later this year, you might consider buying one. Until then, you can manage perfectly well with floppies. In any event, get more memory before you buy more disk storage.

You should order the latest available version of DOS (the one with the highest number) if you are buying a computer for the first time. If you already have a computer equipped with floppy disks and are using

the version of DOS numbered 2.1, you will gain nothing by investing in a newer version. But if you have a hard disk, you can make your life easier by getting DOS 3.1 (or higher) and using the new "subst" command to ease your way around all those directories that are rapidly filling the disk.

If you buy an "IBM-compatible" computer like the Compaq or Leading Edge, or a "generic" computer whacked together by a mail-order house, you can save a few hundred dollars, but you will be taking a gamble. When the ad describes a computer as "100% IBM-compatible!!" it means that, of the thousands of programs written for the IBM PC, the compatible machine can work with quite a large number. In fact, the program you want to use will almost certainly be among them. The risky moment will come later, when you find a use for a newer program or when you want to install a hard disk or memory board or some other kind of hardware. Many of these will work only with the IBM and one or another compatible model that may or may not be yours. Long before that time, you may also have grown disgusted with the ugliness of the letters that many of these compatibles display on the screen. (The same problem can arise when you use a non-IBM "graphics board" with a standard IBM computer.) If you insist on buying a compatible or any graphics board, first ask the salesman to show you some underlined text on screen. (Many products can't.) If he puts on the tolerant smile that salesmen use in order to show you that they pity your ignorance and says, "No one has ever complained," make a graceful exit.

The keyboards of some compatibles have a more sensible layout than the keyboard of the IBM, but all of them make you feel as if you are typing on a tray full of marshmallows. The Leading Edge uses marshmallows that are more stale than most, but only the IBM lets you type for hours without strain.* If you buy an IBM PC, expect to be sneered at by a would-be expert who has just mail-ordered a Flybynight GizmoRAM at two-thirds the price. Next year, when you have installed one of the new "accelerator boards" that can make your computer run three times as fast as his ever will, it would be needlessly unkind to ask him how much mileage he gets from the old jalopy.

The older Apple computers, the IIe used in elementary schools and the IIc that parents think their children should therefore use at home,

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*Instead of spending $200 on a replacement keyboard for the IBM, spend $20 for plastic caps that enlarge the keys that are too small (available from Hooleon Company, Box 201, Cornville, Arizona 86325).

are far too limited for serious or even frivolous writing. They are also overpriced; you can pay the same amount and get a cheap IBM-compatible. Writing with an Apple computer is like cooking with an electric hot plate, but if an Apple II is what you have, you can at least use a new version of the WordPerfect word-processing program that has been adapted for the machine. It is limited by comparison with the IBM version of the program but is inexpensive and does far more than anything else you can find. In one respect it's superior to the IBM version: the cursor doesn't blink.

The new Commodore Amiga and Atari ST computers—both with high Pac-Man ratings—are known among programmers as "interesting" machines. That doesn't mean you can use them for anything.

I wish I could offer a clear recommendation for a printer. The quiet and fleet-footed laser printers still cost $2000 or more. For the moment, if you prefer a "daisy-wheel" printer, one that works like a typewriter, you should probably get either the cheap and slow NEC 360 ELF or the quicker and costlier NEC 8850; both can print all the characters used by western European languages. I won't allow a "dot-matrix" printer in the house, but excellent cheap models from Panasonic and expensive ones from Toshiba tempt me to change the rules.

Watergate-on-Disk

A few months ago a newspaper columnist based in Washington was startled to see this message appear on his computer screen:

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***INTERNAL SECURITY VIOLATION***
The tree of evil bears bitter fruit,
crime does not pay.
        THE SHADOW KNOWS.
Trashing program disk.
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He was using a program called Microsoft Access, which allows one computer to communicate by telephone with another. After the message appeared he heard some frightening noises from the machine. Later, he reported, he found that some work had disappeared from his hard disk.

Microsoft, the company that wrote Access and Microsoft Word, takes two different views of its audience. The division of the company that produces operating systems like PC-DOS and programs for use by other programmers and the division that produces Microsoft's consistently fine books about computers both write for an audience of intelli-

gent adults. The division that writes "application programs" for word processing or business planning writes for an audience of Pac-Man-addicted children. And it assumes that these children, if given half a chance, will steal candy bars and popsicles rather than buy them out of their allowance.

In an attempt to deny them that chance, Microsoft has traditionally issued its application programs on copy-protected disks. This means that although you can tell your computer to transfer a copy of a Microsoft program disk to a disk of your own, the copy you make won't work—unless you have used one of the special copying programs designed to make copies that will. Copy-protection produces nothing but inconvenience and risk for the owner of a program—when the original disk fails, you have to order (and pay for) another—but some publishers, including Microsoft, reason that someone who can get an illicit copy is someone who won't buy a legitimate one. Other publishers, like the makers of all programs recommended in these pages, rightly consider illicit copies to be stolen ones, but reason that an illicit copy can serve as an advertisement to someone who will eventually buy the real thing in order to get a printed copy of the manual, help by phone, and any new and corrected versions of the program itself. (Perhaps Microsoft reasons that if potential customers of its well-publicized programs had a chance to try out an illicit copy, they would discover that the publicity is more effective than the programs.)

Normally, copy-protection results in no more than severe annoyance, but during the past couple of years some companies have begun talking about protection schemes that would actively retaliate against anyone who tried to defeat them. One scheme was announced that would cause an illicit copy to set loose an electronic "worm" in your computer to destroy your work or your programs. To the newspaper columnist, who was using a legitimate copy of Microsoft Access, it seemed that the worm had broken loose and attacked.

When the columnist protested in print, Microsoft immediately began to perform a convincing imitation of the Nixon White House. The man in charge of selling Microsoft's application programs first said that the firm's executives hadn't had any knowledge of the matter until they saw it in the paper. "We don't know anything about the message," he told a reporter. "We don't want it in there." If the message wasn't exactly a third-rate burglary, it was the work of a "low-level" programmer who no longer worked for Microsoft. This seemed surprising, because the message that Microsoft didn't know about could be found on at least four versions of Microsoft Word and on different versions of

some of its other applications programs as well.* Microsoft's next move was to blame the whole mess on someone else. The threatening message, together with a coded instruction to the computer to make some harmless but alarming noises, was merely a programmer's joke, they explained, never intended as a worm at all, but it seems to have been set loose on Microsoft Access because of some work done on the program by an independent company.

By this time, Microsoft realized that something had to go. It announced that it would drop the whole copy-protection scheme from Access and from one other program. It also said it would remove the threatening message from future copies of Microsoft Word (it failed to specify whether the resulting gap would last eighteen minutes), but would leave the copy-protection scheme in place.

No computer program, certainly not Microsoft Word, is worth the risks and restrictions of copy-protection, and there is no reason to buy a product that insults you with the implication that you are likely to misuse it. Microsoft has been threatening to release a new version of Word this spring. If it is not copy-protected, it may be worth considering, because the program has one or two useful qualities not found elsewhere. Until then, look elsewhere.

How to Write

The word-processing programs that were worth buying last year are the ones worth buying this year. They are WordPerfect, XyWrite, Nota Bene, and—with fewer capabilities but at a much lower price—PC-Write. The programs that salesmen and consultants may tell you to buy instead are somewhat different this year, but although many frogs still occupy the pond, none shows signs of turning into a prince.

Samna Word and MultiMate, for example, have eliminated most of the absurdities I mentioned last time, but the changes are mostly superficial. The real reason to avoid these lumbering heavyweights is that they are designed for the job of typing what someone else has written rather than for writing something yourself. MultiMate especially: it thinks in terms of pages of fixed length (as in a business

*Thousands of computer users had probably chanced upon the message while using a program called The Norton Utilities that displays on screen all the hidden contents of a disk. The Norton program can also recover work you have erased accidentally and perform various other useful functions.

letter) rather than in terms of "documents" that begin at the beginning, continue until they reach the end, and then stop. You have to wait every time you move from one page to another, and if you want to cut or add a few sentences on the page you worked on five minutes ago, you have to tell the program to repaginate everything and then wait until it not only calculates all the new page breaks but also copies the new version onto a disk. Both Samna and MultiMate include features you won't find in most others, perhaps to the others' credit. Until you figure out how to make it stop, Samna shades in whole swatches of the screen to represent the left and right margins of the page, in the manner of schoolchildren decorating their papers for a favorite teacher. MultiMate attaches a "document information" table to every-thing typed with the program so that companies can trace who typed the original and when. No one is crude enough to say so in print, but the point of all this is to help a higher-up fix the blame on a subordinate when a small error results in an expensive and embarrassing blunder. MultiMate is not the most reassuring program to use if you have no one to blame but yourself.

Perfect Writer, now the product of a multinational conglomerate, has been transmogrified into a menu-driven monster that trips over its own feet. WordStar is still WordStar.

As for the better programs, the general descriptions I offered last time still hold true, and I won't repeat every detail. PC-Write (at $10 for the disk with a manual encoded on it for your printer to type out; or at $75 for a disk, printed manual, keyboard diagram, help by phone, and copies of two future versions) becomes a more amazing bargain all the time, and its Pac-Man Factor remains low. Compared with the version available last year, the current one shows dozens of small improve-ments, but a more thoroughly revised model should have appeared by the time you read this. I'll offer a full report next time. The new PC-Write is designed to be more agreeable to beginners and to remove elements of the program that confused even the experienced. An entirely rewritten manual is promised; a part already distributed sug-gests that the whole will be a model of clarity. I should have mentioned last time that PC-Write only lets you move easily through about thirty-five double-spaced pages at a time. This limit will be removed in yet another version later this year.

WordPerfect has emerged from a thorough revision with all its old virtues intact and many new ones added. Best of all, to use the new version you need not unlearn the old. New features have slipped in unobtrusively; some annoyances have disappeared; the arrangement

on the keyboard of some rarely used commands is more logical; the screen can now be divided between two pieces of work; a few tricky tasks have become easier; nothing has become more difficult. If you have the previous version the publishers will send you the new one for $45. My only regret is the disappearance from the new manual of the charmingly silly cartoons that graced the old one.

WordPerfect still has the lowest Pac-Man rating of any word-processing program. It can almost convince you that you are typing— without the inconveniences of typing—rather than computing. Absolute beginners find it less frustrating than comparable programs, and no other program lets you accomplish so much after learning so little. Last year a friend who bought WordPerfect used it to translate a book and write two or three essays, and then started reading the manual. (It didn't cost him much: educators can buy the program for $125.)

Some highly sophisticated engineering lies hidden behind Word-Perfect's elegant and understated dashboard. It has the least distracting screen of any word processor. Some functions that it performs with no fuss at all require both fuss and fury in others. (See how many steps the others put you through when you want to put a page number at the foot of the opening page of a section and put it next to your name at the top right of succeeding pages.) It lets you recover not only the last phrase or word you deleted from the screen but also the two phrases you deleted before that, and it's clever enough to understand that when you delete five adjacent words in quick succession you are making one deletion, not five. It displays the breaks between pages as a dashed line on screen, so you don't have to remember to ask it to warn you that "Sincerely yours" will appear at the bottom of one page and your name at the top of the next. (PC-Write shows the first line of a page in distracting reverse-video; XyWrite and Nota Bene, because of delays involved in showing page breaks, make you switch on a little taximeter at the top of the screen that tells you what page and line you're working on.)

For everyday tasks, the program's new features are less significant than the subtle improvements in the old ones. It's nice to see newspaper-style "snaking" columns arrayed across the screen, but you probably won't use them much. It's also nice to be able to use your printer as an electronic typewriter for envelopes and printed forms, and to use the improved spelling checker and new thesaurus (which I'll describe in a moment). It's a great help to be able to make the program tell you which of your obscurely labeled notes contains a reference that you know you have put somewhere or other. But what matters more often

are the ways in which the program works more clearly, precisely, and flexibly than before. You can now assign foreign characters to the keys you prefer more easily than with any other program (Nota Bene packs its keyboard with foreign characters, but more densely than you may need); you can glance more quickly into the contents of anything you aren't working on at the moment; and you can make the program perform routine housekeeping on your disks more effectively than anything other than the separate "utility" programs designed to do the same task.*

WordPerfect is highly reliable and does everything within reason to prevent you from losing your work through accident or error. Some people may find it too officious. When you revise some existing work and then save the new version on disk, the program leaves the original copy on the disk until it has finished transferring the revised version. Other programs normally treat the original as a palimpsest and write the new version over the old, although if the electricity goes off in the process, you lose both. All this makes WordPerfect a bit slow in saving your work and cuts down the amount you can store on a single disk, but you may find the added security worth it.

Although WordPerfect works faster than almost every other program with its capabilities, it is markedly slower than XyWrite and the XyWrite-derived Nota Bene. WordPerfect has to figure out where the page breaks belong every time it moves from page two to page twenty-two, and this takes time. When I complained about this last year, I didn't realize that I had the program set up in such a way that this kind of movement took far longer than it normally does (and the manual didn't tell me, because it lists the choices the program makes available without describing the pros and cons of each), but WordPerfect still moves more slowly than I would like—eight seconds to move through twenty pages. For technical reasons that no longer seem as compelling as they once did, WordPerfect does not make use of all the possible combinations of keys on the IBM keyboard. As a result, it lacks keys

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*By far the best of the housekeeping programs is Xtree, which is elegant and efficient enough to buy even if you have WordPerfect. It lets you see what's on your disks, erase or transfer your work, and perform similar tasks without the tedium and errors these normally entail. This program is indispensable if you use a hard disk and invaluable if your floppy disks are littered with recommendations, lecture notes, letters, drafts, or anything else. Xtree is a pleasure to use but never a distraction.

that will take you in a single bound to the next or preceding sentence or paragraph, as Nota Bene can. You can set up your own key-combinations to do this in WordPerfect, but that means you can't use the same keys for displaying foreign characters or other uses.*

Another weakness of WordPerfect is its inability to treat separate chapters as parts of a single book for such purposes as making an index or compiling lists of figures. The program does a very elegant and efficient job of indexing, but it can only do this conveniently with one chapter at a time, which defeats the whole purpose. To use a computer to index a book, you ought to be able to do something like this: when the page proofs arrive, you return to the disks that contain the manuscripts of the separate chapters and insert new page breaks that correspond with the ones in the proofs; then (or earlier) you "mark" the words and ideas you want indexed in the text, and tell the computer to compile a single index of all the chapters together. You can do this with Nota Bene (for a three-hundred-page book if you have two floppy disks, more if you have additional memory or a hard disk), but you can't with the current version of WordPerfect. A lesser inconvenience for scholarly work is that you can't see a long footnote and its surrounding text on screen at the same time, as you can with the new versions of XyWrite and Nota Bene.

On the other hand, you may find this balanced by WordPerfect's smoother handling of more mundane matters. To underline words in XyWrite and Nota Bene requires a lot of movement, and going back to insert a few letters in an underlined word can become a minor production. In WordPerfect, underlining exemplifies one of the program's most admirable principles: the tasks you perform most often should be the tasks you perform most easily.

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*To make one key-combination perform a complex task, you first type in a "macro," which is the computer equivalent of the paper roll in a player piano. When you tell a program to create a macro, it starts to record everything you do at the keyboard until you tell it to stop; you later press one or two keys to make the program repeat everything it recorded. You can use a macro to type out your return address, or to change the margins for different sizes of paper, or to do anything else you do often. Unfortunately, unlike a piano roll, a macro can't make the keys on the keyboard jump up and down by themselves. WordPerfect's macros are effortless to make but tricky to edit (you need a program that comes in a separate "options package"). Macros in XyWrite and Nota Bene can be frustrating to create but easier to manage. In XyWrite macros are called "save/gets," in Nota Bene "phrases," and in PC-Write "recording keys." In WordPerfect, and everything else, macros are called macros.

XyWrite II Plus has evolved into XyWrite III, and this in turn is the basis of a new version of Nota Bene that is scheduled to appear before this review does. All the good news about XyWrite III applies to the new Nota Bene as well.

XyWrite is the only word-processing program that lets you work as quickly as you think. If you want to turn from the middle to the end of a chapter, or search for a word you know is hidden somewhere among fifty pages, or change all the margin settings and paragraph indentations, or replace all your references to Shakespeare with references to Sir Francis Bacon, XyWrite will do your bidding in an instant. For a writer, XyWrite's speed is its overwhelming attraction. Its appearance on screen can be irritating, and it can be difficult to learn, but once you know how to use it, it never distracts you with hesitations or delays. If you find yourself staring blankly at the screen while using XyWrite, it isn't the program's fault.

XyWrite can do almost anything—and most of what it can't do Nota Bene can. Before you print your work you can tell XyWrite to preview the layout of the page with all footnotes, running heads, and page numbers in their proper places. Although you can't make changes in this preview version, you can go back to the program's ordinary display to fix anything that looks wrong—and save a lot of time and paper by doing so. If you want, you can now have as many as nine pieces of work or notes in different "windows" on screen, although I don't believe you'll ever use more than three. If you have two versions of the same chapter and can't remember which you want to keep, XyWrite will show you the places where they differ. If you don't like either version, XyWrite lets you get rid of more words more quickly than you can with any other program, and lets you start working immediately on something better.

The XyWrite manual, once a swamp, is now a garden. Elegantly printed, lucidly written, it assumes you are curious and intelligent enough to be taught the logic of the program as well as its repertory of commands. It comes with introductory booklets that let even a terrified beginner handle the essentials. Because XyWrite keeps adding new features every few weeks, the manual has been incomplete since the day it was printed. You have to study a terse list in the back to learn that you can now easily remove all the arrows and highlighted triangles that normally litter the XyWrite screen. Hidden in the same list is the news that you can tell the program in advance to put your second chapter on screen the moment you finish working on the first, and then do the same with the third. The manual doesn't tell you anywhere that you can

now have double-spaced text on screen. If you want the details, you can call XyWrite, where the people who answer the phone are sufficiently confident about the program to treat you like an adult. If you find something in XyWrite that doesn't quite work, they actually agree with you rather than trying to explain it away. A disk that fixes the problem arrives in the mail a few days later. (The early copy of XyWrite III that I used for this review still had some wrinkles and creases. The program should be smoother by the time you read this.)

XyWrite has improved its handling of page layouts. It doesn't come with the predefined "style sheets" that are so valuable a part of Nota Bene, but it now makes it simple to define your own. The manual scarcely begins to suggest the ease and flexibility of XyWrite's "style" command, which is far more sensible than its celebrated but labyrinthine counterpart in Microsoft Word.

XyWrite is the only program I know with a variable Pac-Man Factor. If you are intent on writing and aren't bothered by the program's utilitarian appearance on screen, XyWrite's PMF is very low. But if you get intrigued by the freedom given you by the program to modify the way it operates, its PMF can rise to dangerous levels. With XyWrite you can, for example, completely rewrite the program's elaborate system of providing on-screen advice. You can make any key or combination of keys perform any of the program's myriad functions or any combination of functions. You can teach yourself the basics of XyWrite's internal programming language and use it to do things unattempted yet in prose or rhyme. (Someone somewhere has doubtless set up XyWrite to brew a pot of coffee every time he hits Control-C.) The advantage of all this is that XyWrite is the least procrustean of programs. If something bothers you about it, it is designed to let you change it. David Erickson, XyWrite's chief author and holder of an advanced degree in wizardry, once said something like this: "Ultimately, the program belongs to the people who use it. I merely wrote it."

The trouble with XyWrite is that it hasn't yet fulfilled its enormous potential. It has surprising pockets of inconvenience and annoyance. The fact that you can make the keyboard layout more sensible doesn't balance the fact that it isn't sensible already. The program's more complex features could have been supplied with the pieces already linked, rather than being left for you to put them together when you need them. Its messages could have been translated into a language closer to English.

All this and more has been accomplished by Nota Bene, a licensed

adaptation of XyWrite produced by a separate firm. The new version of Nota Bene is still incomplete as I write this, but the program has evidently made a great advance over its first version. (If you already own it, the new version is certainly worth the $40 charge for a replacement and the small effort of reeducation.) The keyboard layout still includes far more functions than the standard XyWrite keyboard in an arrangement logical enough to be remembered. It comes already equipped with foreign-language characters and an athletic variety of cursor movements. Much of the tricky maneuvering required by XyWrite, especially in working with footnotes and indexes, has been eliminated. Beginners now have menus that let them use the program without learning any commands at all (although at half-speed), while adepts can still take all the shortcuts they like. Many functions that seemed grafted awkwardly to the first version have now been fully integrated within it and work at a much faster pace. The appearance of the screen is somewhat less distracting than XyWrite's. Nota Bene's unique but inflexible "textbase," which permits indexing and retrieving any notes and other writings you have on disk—not the same as indexing the pages of a book—is scheduled for improvement, and some of its functions also can now be performed by commands included in XyWrite itself.

As a tool for scholarly writing and editing, Nota Bene has no competition. Both Nota Bene and XyWrite will create different kinds of footnotes in the same work (for example, lettered notes for textual variants , numbered ones for annotations), and both will include automatic cross-referencing (so that you can write "See footnote x" and have x print as the number of the note you have in mind), but Nota Bene will make these and similar feats easier to perform. Nota Bene also does much of the work of editing an index that XyWrite leaves you to do by hand. Nota Bene—but for now, not XyWrite—will be capable of working at the same time in Hebrew and accented Greek together with European languages, or in Roman and Cyrillic alphabets. (You will have to add to your computer an "Enhanced Graphics Adapter" card from IBM or its imitators and pay an extra fee to Nota Bene.) Through some programming written for Nota Bene by David Erickson, you will be able to type English or Greek text from left to right, hit a key and type some Hebrew from right to left, and then hit a key to switch back again. Nothing remotely like this is available with any other program written for a personal computer. Even if you don't use all this ingenious gadgetry, with its temptingly high Pac-Man Factor, you will certainly find Nota Bene to be the best of all programs for serious academic use. You may find it the best for most other uses as well.

How to Spell

Before you decide a computer can solve all—or any—of your prob-
lems, have a look at one of the programs that check your spelling. All
the ones I've seen perform as advertised. Each reads through any piece
of work you have on disk and asks you if you want to change or retain
any word it finds that doesn't match the words in its encoded vocabu-
lary list. Each gives you confidence that you can send off your learned
article or job application without making anyone suspect you of illiter-
acy. And each includes at least one spelling mistake in its manual—
usually of *their*-for-*there* variety that no computer program can catch.

Spelling programs come in two kinds. The traditional ones check
every word of your work after you have finished writing and let you
correct all your errors and typos at once. Certain newer ones lurk in the
shadows of your computer while you write and can be summoned up to
confirm the spelling of a word you are doubtful about or to offer a list of
synonyms if you want to use a different word instead.* The first kind is
most useful for writers of books and essays, the second kind for jour-
nalists. You can now buy spelling programs that aren't content to lurk
in the background until summoned but beep at you every time you use
a word that isn't part of their limited vocabulary. This kind is useful to
no one.

If you have WordPerfect you won't need any of these separate
programs. You can call up WordPerfect's own speller to check a word
or to offer synonyms while you work, or you can use it after you've
finished to proofread a whole chapter—or a few revised paragraphs in
the middle of a chapter. The design of the WordPerfect speller makes
more sense than any other and requires the fewest and most intuitive
responses to its messages. It won't let you replace one error with
another; it automatically suggests alternate spellings that you can
insert by pressing a single key; it can add as many words to its vocabu-
lary as you like; it is the only speller of any kind that recognizes
foreign-language characters. Its thesaurus, which has a richer vocabu-
lary and more precise distinctions than any other, lets you browse
through synonyms of synonyms just as you can with a printed version.
The program works at only moderate speed on a floppy disk, but it can
be made to zip along nicely if you have a lot of memory in your
computer. Last year's version permitted some odd misspellings to slip
through its net. This year's is more discriminating.

*Earlier versions of XyWrite and Nota Bene could not be used with the lurking
programs; the new versions can coexist with them if you make some adjustments
specified in the manual.

Of the separate programs, MicroSpell is by far the best. This is the
XyWrite of spellers. It doesn't look pretty on screen, it offers a range of
options that at first seems confusing, and it has some petty annoyances—
but it works at astonishing speed and is more ingenious and helpful ·
than any of its rivals. Although its encoded dictionary is not especially
large, it recognizes that a word like *arbitrariness* is made up of a root and
suffixes that it understands. It automatically suggests alternate spell-
ings and has an uncanny ability to guess the word you meant to type but
didn't. The program insists that you confirm every use of a word
followed by an apostrophe-*s* (other programs quietly assume you in-
tended a possessive), but it still lets you proofread a long article much
faster than any other, and it never lets you doze off while waiting for it
to get to the next word. The program's author is equally helpful and
will supply a special version to suit just about any program you own,
including all those recommended here. (XyWrite and Nota Bene use
the standard version.)

Word Proof II doesn't come with a printed manual and doesn't
automatically offer alternate spellings, but it's inexpensive, quick, and
great fun to watch. All the mildly unusual words in your work flash by
in a little window while the program hunts for a word it doesn't
recognize at all. When it finds one it opens another window that offers
you various ways to correct the word or ignore it. With windows
popping open all over the screen, the program's Pac-Man rating is
agreeably high and gets higher when you discover that it can also
provide anagrams. You can only add six hundred words to the pro-
gram's vocabulary, but if you quote a lot from foreign languages, this is
the program to buy anyway, because it lets you skip over any passages
that you don't want it to bother checking against its list of words.
(MicroSpell can be told to skip over passages marked off in advance,
but you have to remember to put in the markers first and remove them
later.) Word Proof has a rudimentary word processor of its own that
lets you revise style and content while correcting spelling errors. It
offers synonyms, but too slowly and ineffectively to make you ask for
them often.

If it didn't suffer from one drawback that entirely disqualifies it, a
program called Webster's New World Spelling Checker might be the
best spelling program of all. It works quickly and cleverly and presents
the most elegant display of information on screen. It offers at the start
an alphabetical list of words it doesn't recognize in your work, so you
can tell it to ignore foreign words and proper nouns before correct-
ing any errors. Alas, the program stops dead without doing anything at
all if you ask it to scan a piece of work longer than about twenty

pages—fifteen if you have a large vocabulary. I wish I could recommend a program that is otherwise so well designed, but until Mr. Webster addresses this problem, you would do better to consult Dr. Johnson.

The Word Plus, the oldest of the spelling programs, is too slow and expensive to buy now, but if you already have a copy you needn't rush out and get something different. A companion program, Punctuation & Style, has some uncommon functions that may justify its high price. The "Punctuation" part of the program is a well-behaved copyeditor that warns you of such things as unclosed quotation marks or parentheses, missing or excess spaces and capitals, and repeated words. "Style" chides you for using the passive voice or any of a long list of muddy and windy phrases. "Style" is a busybody, but "Punctuation" quietly saves you from the kind of mistake you generally notice only after it has made you look foolish in print. Next time I'll report on a new program called Grammatik II that claims to duplicate these functions but also, being more up-to-date, slaps your hand when your writing is sexist.

The best of the lurking-in-the-background programs is the Random House Reference Set. You can use one key to check the spelling of the word under the cursor, or another to list synonyms, and you can insert one of the suggested alternate spellings or alternate words by pressing yet another key. The program does its job quickly and straightforwardly, and it lets you insert predefined text into your work if your word-processing program doesn't provide macros. Like WordPerfect, when it offers lists of synonyms, it lets you look for further synonyms of the words it displays. None of these thesaurus programs can approach the wealth of a printed book, but the Reference Set seems less impoverished than the others. Unlike the other lurkers, it includes an after-the-fact spelling program as well, although this works more slowly and awkwardly than the better programs sold separately. Still, no other spelling program does as much for the money.

If you judge computer programs by their publicity, then the best ever made is a spelling program that somehow got named Turbo Lightning. In parts of the computer press it seems to have been confused with an as yet unreleased program, The Second Coming. The cover story in one magazine said Turbo Lightning will change the way you do just about everything. It in fact does somewhat less than the Random House Reference Set, while making a lot more fuss. It uses the same lists of words as those in the Reference Set, but it doesn't let you look for cross-references in the thesaurus (which works painfully slowly), and it's incapable of understanding that *it's* is a common con-

traction. It claims to be adaptable to different word processors, but it doesn't warn you that you will probably have to fiddle with its key-assignments if you want your word processor to continue to function.

One of Turbo Lightning's claims to fame is its ability to beep at you every time you type a word it doesn't like. This is annoying in itself, but the program compounds these bad manners by taking up so much of the computer's attention that it can't immediately display your typing on the screen. Until you tell the program to stop honking and leave you in peace, it makes you feel as if you are stuck in a traffic jam in a molasses factory. The publicity for the program asks you to under- stand it as an "information engine" that will soon let you use your computer to look up any reference work you choose. This engine may be slowed by its inability to recognize anything other than ordinary English letters: it understands *façade* as two non-words, *fa* and *ade*. The company that makes Turbo Lightning is headed by an expatriate Frenchman who seems to have forgotten what his native language looks like.

Word Finder, one of the first of the lurking thesauruses, is report- edly something of a best-seller. Some of its buyers may be book publish- ers in search of a convincing demonstration of the superiority of the printed page over the magnetic disk. Although the head of the com- pany that produces the program says, "We abhor copy protection," the original program disk is copy-protected. After working your way through a setup procedure that requires you to encode your name and address on the disk (while it displays messages reminding you not to share the program with your friends), you can then make copies of the essential part of the program, although you now have to wait for the computer to display your name and address—and the name of the company and much of its staff—every time you start work. It took me less than a minute to find a situation in which Word Finder causes a computer to freeze up, so that any work in the computer's memory would be lost. (This situation, the DOS "copy con" command, presents no problem to the other lurking programs.) When Word Finder does start working, it works slowly. You will get very tired of seeing the message, "Just a moment . . . while I look up the word."

The program seems to use a dialect of English that you may not have encountered elsewhere. In this dialect the synonyms for *recommend* are *advise* and *counsel*, but not *urge*, *propose*, or *endorse*. The verb *set* does not mean *congeal* or *calibrate*. *Test* is not a noun and *wonder* is not a verb. But the synonyms of the verb *goof* include *lollygag*, *loll*, and *lounge*. If Word Finder is not much use as a thesaurus for the dialect in which you write, its lists of synonyms are so zany that you may want to buy it for its

entertainment value alone. Is *terse* too terse for you? Word Finder offers *breviloquent* instead. Do you overuse *thaumaturgic*? Alternate it with *sorcerous*. Does *harass* sound too strong? Substitute *tantalize*. Looking for a synonym for *gnostic*? Try *discerning, insightful*, or *knowing*. The program's "linguistic editor" says in a press release: "Word Finder allows you to adjust your writing image." That states the case exactly.

How to Read

People who make a career of predicting the future used to collect large fees for announcing that the advent of the computer heralded the end of the printed word. Since then, monthly computer magazines have broken the five-hundred-page barrier, and every day a forest is transformed into computer manuals, and another into books that explain the manuals.

Not all these books are worthless. *The Whole Earth Software Catalog*, edited by Stewart Brand (Quantum Press/Doubleday), now in an inadequately revised second edition, gets overexcited by new products that turn out to be duds, but has more practical good sense in its chapters of general advice than you can find in any other computer book. *Getting Started With the IBM PC and XT*, by David Arnold and others (PC World Books/Simon & Schuster), offers reassurance to the beginner, as does Cary Lu's *The Apple Macintosh Book* (Microsoft). For Pac-Man fans who want to convince themselves they are doing something useful, *The Fully Powered PC*, by Burton J. Alperson and others (PC World Books/Simon & Schuster), includes a disk packed with programs that let you spend many enjoyable hours customizing your machine so that it can save you a few seconds. I already mentioned *Running MS-DOS*, by Van Wolverton (Microsoft), as clear and informative as it is handsomely designed.

If you are tempted to buy a book about a word-processing program, you may need a different program instead. You can turn over a whole library while learning to use WordStar, but the three books devoted to WordPerfect add nothing to the manual. Of the dozen books that have sprung up to explain Microsoft Word, two are published by Microsoft itself and another has been announced from the same source. If you raise an eyebrow over a publishing firm that first issues an inadequate manual for one of its programs, then suggests that you buy two or three of their books to make up for the deficiency, you are not alone. The most informative book on the subject is *Microsoft Word for the IBM PC*, by Philip Lieberman and Philip J. Gloe (Howard W. Sams), which lists

errors in the manual and faults in the program and includes a disk with practice exercises. The early chapters of *Word Processing Power with Microsoft Word,* by Peter Rinearson (Microsoft), almost supplant the manual. The later chapters suggest roundabout ways of making the program perform such tasks as compiling an index, which it was never designed to do; in most cases it would be simpler to do the job by hand. These chapters convey to the unhappy user of Microsoft Word the unintended but unmistakable message, "You should have bought WordPerfect."

Computer magazines have begun to characterize their readers as "power users." Whether this means that they are powerful users of the computer or users of power is left flatteringly vague. Until advertisers recognized these people as a major source of income, "power users" were known as "computer nerds." The magazines try to appeal either to an audience interested in computers in general or to an audience that owns one type of machine. The magazines of the first type divide into those like *Byte* that are too technical for anyone but specialists, or those with names like *Generic Computing* that are too simple for anyone at all. The exception is *InfoWorld,* the weekly paper of the personal-computer industry, which has enough gossip, shoptalk, and scandal to be interesting even if you don't get excited about computers. *InfoWorld* was the *Washington Post* of the Microsoft Access affair and is the only computer publication available on newsstands that prints stories embarrassing to large corporations. Its product reviews, though uneven, are not extensions of the advertisements. A weekly column by John C. Dvorak provides cheerful and stylishly-written inside reports on corporate vanity, incompetence, and greed. Stuffed shirts are constantly writing in to cancel their ads or their subscriptions after Dvorak mentions their company.

The magazines devoted to individual machines are published by men and women who know which side their disks are buttered on and are unlikely to offend their advertisers. Useful information can be found there anyway, often by peering between the lines.

Each of the two widely available magazines concerned with the IBM PC takes its character from the coast on which it is published. *PC World* has a manner that may be described as California counterculture corporate. *PC Magazine* provides a mixture of skepticism and hype that could only originate in New York.

PC World, published monthly in San Francisco, presents itself in laid-back style, with plenty of fashionable white space and new-wave pastels. Many of its articles consist of mind-numbing waffle about the future by people like Jerry Brown, or dreamy celebrations of people

with great tans who make lots of money with their personal computers. The magazine's product reviews sometimes have a tenuous relation to reality. Some of the products praised in its pages exist as little more than a gleam in a programmer's eye. When judging programs actually on the market, the feature the magazine values most is the Microsoft label. Most issues include an article or two that may be useful to the beginner or the adept. Last December's special issue on the latest trends in computing managed to include no useful information whatever, although the publisher found room for four full-color photographs of himself.

PC Magazine, published biweekly at the commercial end of Park Avenue, printed twelve pages of puff on Turbo Lightning but is also capable of reporting that a product doesn't work. Its issues consist largely of product reviews and useful advice printed in a layout as tightly packed as that of the *New York Times*. The table of contents is hard to find among the reams of ads at the front, but because the magazine falls open to the index of advertisers at the back, you can compare mail-order prices quickly. Like *PC World* (but more frequently), the magazine prints short programs that you can type in yourself. Some of these are quite useful, like one that makes the irritating Caps Lock key on a computer keyboard act like the Shift Lock key on a typewriter.

The product reviews in *PC Magazine* have improved over time. A blockbuster survey of word processors early this year was discriminating and mostly accurate. The mistakes in last year's survey indicated that the editors didn't understand the basics of the program they use in the office. The difference between *PC World* and *PC Magazine* is epitomized in their approaches to copy-protection. *PC World* printed a survey of its readers' attitudes on the question, complete with multicolored graphs. *PC Magazine* tested the programs designed to defeat copy-protection and reported which one picked the most locks. The editor of *PC Magazine*, apparently in an attempt to rival the cult of personality fostered by the publisher of *PC World*, prints occasional photographs of himself, but only in black and white.

Owners of the Macintosh can choose among a larger variety of magazines. Most of them, like the machine itself, are long on diagrams and short on words. Three stand out. *The MACazine* prints the least wide-eyed reviews. *Mac World* prints the prettiest pictures. *MacUser* prints a column by John C. Dvorak that explains what is wrong with the Macintosh.

Edward Mendelson

Publishers and Prices

MicroSpell. Version 6.24. Trigram Systems, 3 Bayard Road, Suite 66, Pittsburgh, Pennsylvania 15213. $140, $65 for educators.

NoBlink Accelerator. Version 3.1. Nostradamus Inc., 5320 South 900 East, Suite 110, Salt Lake City, Utah 84117., $40.

The Norton Utilities. Version 3.1. Peter Norton, 2210 Wilshire Boulevard, #186, Santa Monica, California 90403. $100 list, $60 from mail-order dealers.

Nota Bene. Version 2.0. Dragonfly Software, 409 Fulton Street, Suite 202, Brooklyn, New York 11201. $495 list, available from the Modern Language Association, to members only, for $396.

PC Silencer (fan). PC Cooling Systems, 31510 Via Ararat, Bonsall, California 92003. $80.

PC-Write. Version 2.55. Quicksoft, 219 First North, #224, Seattle, Washington 98109. $10 for the disk, $75 for a registered copy, free through computer users' groups.

Random House Reference Set. Version 2.0. Reference Software, 2563 Boulevard Circle, Walnut Creek, California 94595. $90.

Turbo Lightning. Version 1.00A. Borland International, 4585 Scotts Valley Drive, Scotts Valley, California 95066. $100, $55 by mail order.

Webster's New World Spelling Checker. Version 1.2. Computer Software Division, Simon & Schuster, 1230 Avenue of the Americas, New York, New York 10020. $60 list, $40 from mail-order dealers.

Word Finder. Version 2.2b. Writing Consultants, 300 Main Street, East Rochester, New York 14445. $80.

WordPerfect. Version 4.1. WordPerfect Corporation, 288 West Center Street, Orem, Utah 84057. IBM version: $495 list, $215 from mail-order dealers, $125 for educators (call WordPerfect for details). Apple version: $179 list, $125 by mail order.

The Word Plus. Version 1.4. (Also: Punctuation & Style, Version 1.2.) Oasis Systems, 2765 Reynard Way, San Diego, California 92103. $120, $85 from mail-order dealers.

Word Proof II. IBM Personally Developed Software, Box 326, Wallingford, Connecticut 06492. $40.

Xtree. Version 2.0. Executive Systems, 15300 Ventura Boulevard, Suite 305, Sherman Oaks, California 91403. $50.

XyWrite III. Version 3.04. XyQuest Inc., Post Office Box 372, Bedford, Massachusetts 01730. $395 list, $320 from mail-order dealers.

NOTE: The version listed is the one available at the time of writing (February 1986). A "version" of a program is roughly equivalent to an edition of a printed book. Version 1.0 corresponds to the first printing of the first edition, 1.1 to a revised and expanded second printing, 2.0 to a rewritten second edition.