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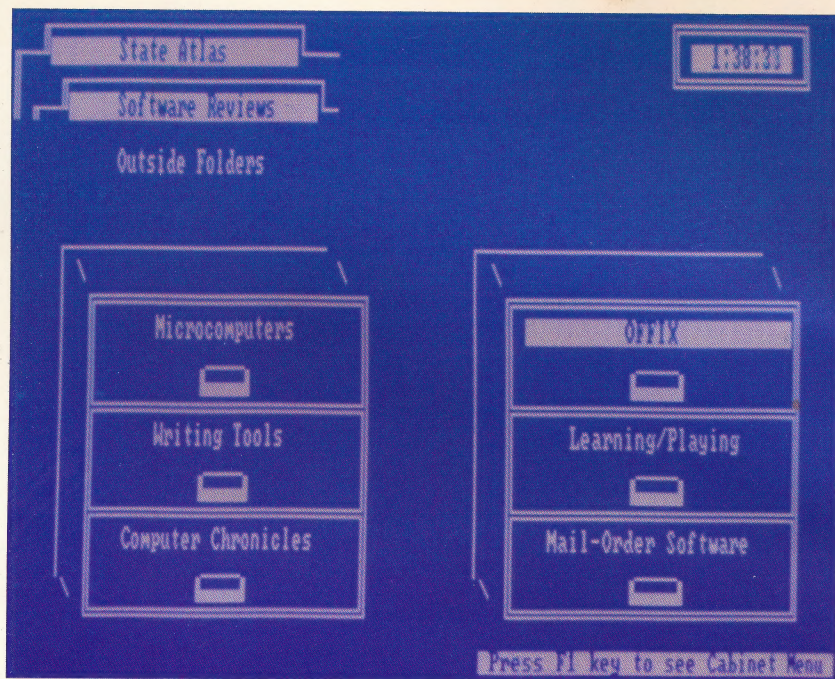
No. 1 Spring 1984

Research current through
December, 1983

WHOLE EARTH *Software* Review



Recommended Writing Tools — page 8



OFFIX: Simple, Useful and Cheap

New personal computer owners share certain frustrations. Their promising "productivity tool" is complex. Software looks simple when the dealer demonstrates it; then turns out to be a bear to learn and comes with a book full of instructions, hints, dire warnings and Catch-22's. If you want to read a book, you would have bought one, right?

OFFIX attracts us with a seductive simplicity based on a graphic replication of the physical steps you go through to gather, organize and structure the information you use. It's simple enough to be shipped without documentation. All necessary instructions are available on the screen and the codes used to make OFFIX perform are blessedly consistent and logical. They pop up on the screen at your command; disappear when they aren't needed.

All this good news is wrapped up in a most welcome trend. Software has cost too much since personal computers appeared. You can get a complete microcomputer for around \$1,500 these days, but a single software package can still cost \$500-1,000. That's wrong. OFFIX is part of a new direction in software pricing: downward. It's a basic set of office tools for only \$99. More about OFFIX starting on page 47.

—Richard Dalton

This magazine is a book-in-progress.

The book is the *Whole Earth Software Catalog*, first edition to appear late in 1984, published by Doubleday. Its subject is everything having to do with personal computers. Its function is to evaluate the best of what's available for personal computers.

The on-going magazine has the same subject. Its function is to *find* the best of what's available for personal computers.

A clear impossibility. Consequently, a clear necessity. Rather than quote the usual astounding statistics of the runaway growth and product proliferation, I can report on my own continuing dismay, delight and intensely educational confusion facing this marketplace as a shopper as well as would-be cataloger. A privileged participant in one of the inner circles of computer mania — COMDEX, the microcomputer and software manufacturer/vendor mating dance at Las Vegas last November — I faced eleven *miles* of aisles of exhibitors. Nicely dressed fast-track professionals gobbled their hot dogs crouched on the sticky concrete floor because there was no space or time for niceties like chairs. If that's the view from inside, what does this bizarre bazaar look like to customers?

Something has to provide an overview. Too bad, it's too smoky and fast-moving a battlefield for an overview. And yet . . . if we can take it piece by piece . . . and assemble the pieces . . . and use the very technology being reviewed to maintain constant updates. . . . If readers are willing to do through a publication what they do in person — share advice. . . . If there's a place with the products and equipment and expertise to compare and check the advice. . . . The impossible might become merely difficult.

Personal computers are automobiles of the mind. They empower. They can also estrange, but information has a greater capability for self-correction than gasoline and steel. (Also a greater capability for acceleration.) The *purpose* of this magazine, as with our previous *Whole Earth Catalogs*, is to aid the empowerment of individuals. And to aid the balance of that empowering.

—Stewart Brand, Publisher

WHOLE EARTH Software Review

No. 1
Spring
1984

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COVER Artist James Dowlen sees computer graphics as "a serious and valid medium which has found a welcome place in my career." He and Review art director Kathleen O'Neill conspired on the cover for our first issue. James executed this striking drawing, titled "Quill," using Lumena, an unusually facile drawing package developed by Time Arts, Inc. [4425 Cavedale Road, Glen Ellen, CA (707) 996-4856].

Lumena operates on an 256KB IBM PC with a special frame buffer and Mitsubishi Analog RGB monitor. Prices for Time Arts systems of this type are \$9,600-25,000. —RD

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—Barbara Robertson

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The First Bug — graphic evidence that computer bugs can be overcome.

A Software Taxonomy

How this magazine (and its research) are organized

by *Stewart Brand*

It's a pretty self-preoccupied industry that refers to its customers as "end-users." (In sardonic programmer jargon, "user" frequently is re-phrased "loser.") No surprise, then, that we are burdened with industry-based language for describing software — "word processing," "database," "CAD-CAM" (Computer Aided Design, Computer Aided Manufacture), etc.

How would *users* divide up and name the burgeoning array of programs for personal use? With familiar words for familiar (if newly extended) activities, we figure. Verbs, preferably. So we made a list, used and revised it, and here it is, straight from the sections of our library to the sections of this magazine. (That "ETC." is not a verb is a defect of English not our fault.)

WRITING

Word processing; form letters; spelling and style checkers; footnote-, index-, and bibliography-making; font and typesetting programs; typing instructors.

ANALYZING

Spreadsheets; investment; modeling and simulations.

ACCOUNTING

Ledgers; accounts payable and receivable; payroll; inventory; tax programs; household accounting; checkbook handling.

ORGANIZING

Databases; "idea processors"; shells (which organize a variety of programs, such as *VisiOn* or Microsoft's *Windows*).

MANAGING

Project scheduling; all-in-ones such as *OFFIX* and *Context MBA*; verticals (specialized comprehensive packages for doctors, farmers, lawyers, construction, etc.).

TELECOMMUNICATING

On-line services; communication programs; local area networks.

DRAWING

Everything primarily for generating graphics.

WHOLE EARTH Software Review

LEARNING

Everything educational — home, school, professional — that is not about another one of these categories.

PLAYING

All games not primarily educational.

PROGRAMMING

Utilities; operating systems; languages.

ETC.

New or small categories such as music; disk magazines; artificial intelligence; novelties; etc.

A modest amount of violence is done to reality with these harsh and often blurred distinctions (such as between "Learning" and "Playing"). The point is not division but providing some kind of handle on otherwise ungraspable profusion. The categories work better if you focus on their clear middles rather than their unclear edges.

The alert reader will notice that only about half of the categories are dealt with in this issue of the *Whole Earth Software Review*. More will be in the next couple issues, and all the animals will be on the Noah's Ark of the *Whole Earth Software Catalog*.

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The SOFTWARE DATING GAME

What Type of Software User Are You?

Bright, curious,
apprehensive WSF
desires agile, sensitive
WP (not over 48K) that
understands my need
for self-expression
and gentleness . . .

by Richard Dalton, Editor

I have a friend who is proud of his personal computer; a lash-up of a naked processor board, off-brand disk drives, custom-interfaced IBM typewriter and a relatively unknown operating system. He didn't wind up with this electronic version of the Frankenstein legend because of limited income. Truth is, he can afford just about any computer that's on the market, but he enjoys the challenge — wringing decent performance out of obscure components. He prowls computer magazines and user groups looking for new bits of software to dink around with.

At the other end of the spectrum, I own a Kaypro II. Everything's wrapped up in a steel box: keyboard, disks, screen and a load of software. I get irritated every time I pick up a new software package (a strange admission for an editor in this field) since the learning curve required to get comfortable with a new program takes time away from other things I want to accomplish.

A lot gets said about how software packages differ from one another. That's useful but incomplete. Equally important is how personal computer owners differ — in their basic

personalities and how they view their machines. In spite of a lot of rah-rah admonitions to the contrary, there is no "right" way to approach using a computer, any more than there is a correct attitude to have about your stereo system.

The *Review* is going to take a stab at defining types of personal computer users and we'll try to marry identifiable groups to software. I haven't seen this done successfully before and some of our initial attempts will possibly be off-target. It's worth doing, though. We've collected an interesting group to help us review software

from this viewpoint:

Psychologists, consultants, software developers and writers are combining their talents to identify not only how a program works but what it means to someone in my friend's computer-hacker group or my own give-me-a-tool-and-leave-me-alone category, or the stops in between.

We expect these concepts to evolve and invite your participation. It's a subtle problem and the more viewpoints we get, the better the solution. Stewart Brand addresses some of the possibilities of matching programs to types of people in his article on page 22. I'm proposing a general way to start looking at yourself (and, of course, the software you buy) with these examples:

1. YOUR INTEREST LEVEL

- They make me use a personal computer at work.
- I want a useful tool.
- It's an interesting hobby.
- Personal computing is my profession.

2. THE TIME YOU HAVE (OR ARE WILLING TO MAKE) AVAILABLE

- Programs have to work immediately.
- I'm willing to spend a few hours learning it.
- I want a program to exactly meet my requirement, even if that means weeks of work.

3. WHO DOES THE WORK?

- I'm the important element; the machine should stay in the background.
- I want a reasonably intelligent helper.

- Tell me what to do!

4. HOW OFTEN YOU USE A PERSONAL COMPUTER

- Every once in a while.
- Frequently, but then I don't use one for long periods of time.
- Almost every day.
- Most of each day.

We have no plans to take these factors (and others you suggest) and construct some kind of rating scale or a presumably evocative set of symbols that imply "FrumpWriter is designed for an occasional user who is afraid of computers, needs direction and has no time to spend figuring out software complexities."

Our intention is to explore ways of looking at software that include more than just the features and the internal elegance of a program; we plan to focus on *use* and suggest types of people who can benefit most from a particular program that we evaluate and recommend.

We recommend the same thing to you. What turns you on/off about personal computing? How much time are you able to spend learning? Adapting your business procedures? How do you respond to change? Frustration? Looking inept?

There's a lot to this new world of personal computing but it isn't a technical subject that you have to accept from "experts." It really begins with what you want and are as a person. Understanding that subject first will make the software choices easier and more useful.

END

Writing Tools

by Stewart Brand

Word processing programs are doing to writing what pocket calculators did to figuring. [Cue the testimonials...]

A good word processing program can change your whole attitude toward writing, while pens and typewriters keep you stuck in your old compulsive habits.

—Charles Spezzano

In the last year I have started up a second income as a writer. The really interesting part of that is that without a PC and good word processing software, I would never have bothered.

—Jack Powers

Word processing is wonderful, period. It's hard to separate the wonders of word processing in general from the wonders of a good program.

—Richard Wanderman

That last one is our function here, identifying the wonders of the very best computer writing tools.

What you will find on the next twelve pages is our first provisional cut at that — a preliminary honor roll of recommendations working toward a more definitive one in the Whole Earth Software Catalog next fall. Help refine this list! (We recommend for specific kinds of uses. If you know by experience a program that performs better in a particular category than one we've reviewed, let us know. If you know by experience a program that well serves a category we haven't considered, let us know.)

Note. This list of programs is winnowed from the 84 we have in our software library, which is winnowed from the couple hundred on the market, which all work. The

worst word processing program is better than the best typewriter. Any writing program you really use you will really love. And hate. Advice #1: If it's working for you, stick with it. Advice #2: Use what your cohorts use. Advice #3: "Buy the best" — Woody Liswood. Contradictory, but that's life.



WHOLE EARTH

FOR IBM PC AND COMPATIBLES

- WordStar (\$495) p. 14
- WordPerfect (\$495) p. 16
- Volkswriter Deluxe (\$285) p. 16
- Wordvision (\$79.95) p. 18
- Microsoft Word (and mouse) (\$475) p. 18

FOR CP/M (KAYPRO, MORROW, ETC.)

- Newword (\$249) p. 14

WordStar is the standard, supported by more machines, software, books and fellow users than any other three word processors put together.

WordPerfect is the most full-featured, relatively easy-to-use PC writing tool. **Volkswriter Deluxe** is the most easy-to-use, relatively full-featured PC writing tool. Innovative **Wordvision** is exceptionally handy for creative writers. Big difficult **Microsoft Word** (plus mouse) is the tool of choice for big difficult editing.

For CP/M machines **Newword** is a **WordStar** clone with significant improvements on the original at half the price. On the Apple IIe **Apple Writer IIe** is the fully featured standard, **Word Juggler** is the breezy, fast correspondence handler and **HomeWord** is the best for beginners and occasional writers. **AtariWriter** has surprising power at low cost; so does **Quick Brown Fox** on the Commodores. Writers-at-large and telecommunicators have flocked to the portable Radio Shack Model 100 for its intelligence and mobility.

Word processing without using some of the great support programs is like eating cake without the frosting. Wayne Holder's **The WORD Plus** (for spelling help) and **Punctuation + Style** not only correct you but teach better usage.

Some word processors we've not looked into yet: **The Leading Edge**; **XyWrite II**; **The Write Stuff**. Next issue we'd like to evaluate the keyboard enhancers — **SmartKey II**; **ProKey III**; **Keynote**; etc. — and would like your comments. We want to explore what is the best hardware (especially hardware combinations) for word processing. What are the best writing programs for computers we haven't covered yet? What are your experiences with "idea processors" such as **Think-Tank** and **The Idea Processor**?

Word processors and personal computers are far more expensive and profoundly more various than pocket calculators. They are intimate personal tools, with hidden qualities that emerge only with extended use. No wonder we're interested to hear each other's experiences with these things.

RECOMMENDED WRITING TOOLS (December, 1983)

FOR APPLE IIe

- **Apple Writer IIe** (\$195) p. 12
- **Word Juggler** (\$295) p. 12
- **HomeWord** (\$69.95) p. 12

FOR ATARI

- **AtariWriter** (\$99.95) p. 10

FOR COMMODORE

- **Quick Brown Fox** (\$75) p. 10

OTHER

- **Radio Shack Model 100** (\$999) p. 20

SUPPORT

- **The WORD Plus** — spelling checker (\$150) p. 20
- **Punctuation + Style** (\$125) p. 20



commodore

Quick Brown Fox

Quick Brown Fox is a menu-driven program with four modes: type, edit, display/print and telecommunicate. I don't know where you can get an easier, more versatile word processor for the money: Some discounters sell it for \$40 or less.

In typing mode, embedded commands control spacing, formatting and paragraphing, with codes like "#p" for paragraph, "#T010" to tab to column 10, "#u" to underline, etc. (the codes can be in upper or lower case, which is nice). **Quick Brown Fox** is not a what-you-see-is-what-you-get word processor, but I find the input codes easy to use, and the back page of the manual (simply written, easy to understand, non-

threatening throughout) is a summary with all of them listed.

Once you've typed your text in, you can preview it on the screen. If you want to make changes, a keystroke puts you in line edit mode. Make your change and a keystroke returns you to display. Moving or deleting blocks of text is easy — choose "Move" or "Delete" from the main menu. Merging files is simple, too, which makes boilerplate and form letters simple.

Once the screen display suits you, another few keystrokes will produce hard copy. You don't have to format a file, or even access a file to print: **QBF** prints from the same RAM that it uses for editing. So if it's just a quick letter you want, you can type it in, clean it up and print it, all without even saving it to disk or tape.

QBF supports most of the formatting commands one expects from a word processor — justification, changes of



ATARI

AtariWriter

Anyone familiar with text-editing programs will not be surprised by the ease with which I learned to use this program. However, I had been struggling alone for many months to master **WordStar** and had not yet become confident enough to trust any important or hurried writing to that program. Of course, I know how powerful it is, how sophisticated, how much it will do. But it couldn't do it for me, with the time pressures I lived under daily.

With **AtariWriter** I was delighted with the ease of producing material with different print types, justified margins, sub- or superscripts, underlining and columns. I quickly learned to chain files, to reformat for printing, to move text and merge files and to search for strings.

I learned the hard way to watch for the limits of the free memory in the Atari. An important feature for me was the ability to see the entire script on the screen without scrolling from one side to the other; however, **AtariWriter** does not have a feature allowing you to move from one page to another in a flash. This is possible in the preview mode, but that mode has a split screen which is disconcerting.

I later compared this program to **Text Wizard** which was produced in 1981 by Datasoft Inc. for the Atari computer. Neither of the programs has an ideal user manual. The **AtariWriter** gets the user into the program instantly with a mini-overview. The **Text Wizard** manual is more specific in its directions, more detailed and leaves little to trial and error; but it takes longer to put it all together. The one-step one-key at a time approach is not as satisfying as the "learn a little bit quickly, and add the complex features later" approach which

margin or spacing, global search-and-replace, and centering.

A friend of mine who writes several magazine columns a month uses nothing but his VIC-20, the **Quick Brown Fox**, a tape recorder and a printer.

—Matthew McClure

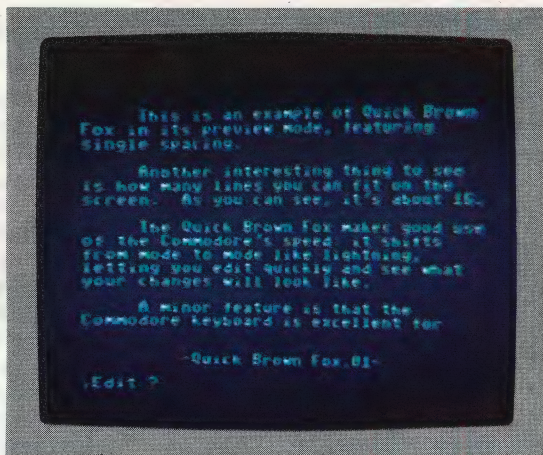
Quick Brown Fox

Cartridge, 5¼" disk.

Hardware requirements:

- Commodore 64; 64K, cartridge \$70, disk \$75.
- Commodore VIC 20; cartridge 5K memory ROM (additional memory optional) \$70.
- IBM PC; disk \$75, DOS 2.0.
- IBM PCjr; disk \$75, DOS 2.1.

Information and nearest dealer location available from:



Quick Brown Fox
536 Broadway
New York, NY 10012
(212) 925-8290

Backup policy: copy protected.

I tend to favor in any learning activity. It is this feature in the **AtariWriter** which enabled me to teach the process to my students and to others on my staff very quickly. I haven't yet given it to my secretary because I don't want to give up the computer and printer to her full-

time use. Once one successfully begins to use a word processor it is inconceivable to be without it.

It does not reduce the amount of paper work I do; instead it increases it by making the production of words so easy and attractive. —Edna Mitchell

AtariWriter

Cartridge, \$99.95 list price

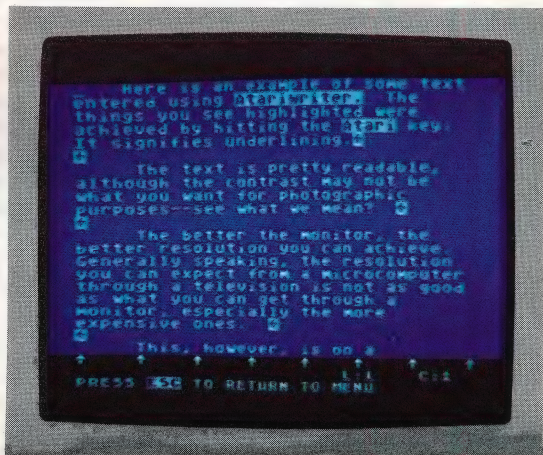
Hardware requirements:

- Works on all Atari machines except the 400 series. Works on only those 400 series machines that have 6K memory.

Information and nearest dealer location available from:

Atari, Incorporated
1265 Borregas Avenue
P.O. Box 427
Sunnyvale, CA 94086
(408) 745-2000

Backup policy: Cartridges cannot be copied.





Apple Writer

Apple Writer was written by the reclusive computer genius Paul Lutus who is famous for writing programs for Apple from his remote cabin in the Pacific Northwest. Like its author, **Apple Writer** is an eccentric yet brilliant word-processing program for microcomputers. **Apple Writer** supports either 40 columns or 80 columns and will support the Apple Extended 80-column Card that gives the Apple IIe 128K of RAM. It gives you all the text formatting and editing capabilities of most word-processing programs, except it does not automatically hyphenate words in order

Word Juggler

One of the *handiest* programs I've seen, **Word Juggler** is best at either enhancing or replacing a secretary. It specializes in handling correspondence, including even a very neat envelope-addressing feature. With the software you get two significant bits of hardware — a set of nineteen replacement keys that blend right in with your Apple IIe but greatly ease the finding of control-commands, and a bit of a board that slips into the computer apparently to enhance keyboard response. (I love the

HomeWord

Until now, warm and cuddly **Bank Street Writer** has been the beginner's word-processing program of choice. Now **HomeWord** has taken over. It does more, does it easier, and, thanks to its use of graphics, it's easier to catch on to. And if you write only occasionally, you won't need to remember or look up elaborate commands — the screen gently guides you.

It's the graphics that make the program unique. At the bottom of the screen is a set of icons — little pictures that become commands when you point at them with your cursor. The basic menu includes "print," "edit," "file," "layout," "customize" and "disk

to justify the right margin as is done by **WordStar**.

If **Apple Writer** does all the same things that the other programs do, what's special about it? Well, for one thing it uses standard *unformatted* disk files. This means that you can edit other files (like BASIC programs) using **Apple Writer**, and you can also edit files you get from other computers over a modem. Another thing is that **Apple Writer** is a RAM-based word processor; the program and the file that you are editing stay in RAM (the computer's internal memory). This makes things such as searching and replacing or moving from the beginning to the end of

way the Apple encourages you to reach into its guts with its easy-off lid.)

Unlike many programs on the Apple, **Word Juggler** is quick, perhaps because it is one of the first products to take advantage of Apple's new improved operating system, ProDOS. Getting to and from disk, to and from printer, to and from formatted on-screen display, to and from current working file is always intuitively easy and also very fast. There is even a single control-command that turns your Apple into an expensive typewriter, typing directly on the printer. The program is supported by a

utilities." Those lead to 28 other icon commands, each labeled with a word indicating its function. When you're writing, there are three graphic indicators on the bottom of the screen. One shows the amount of working memory (RAM) left, another the amount of disk space left. The third is unique to **HomeWord** — it's a "sketch" of each whole page as it will appear when printed, like a living miniature of your work. I found myself fascinated with it.

An apparent drawback of the program is that only thirteen lines of text are displayed at a time (versus eighteen with **Bank Street Writer** and 23 with **Word Juggler**). That is partly compensated for by the page-sketch.

the file much faster than a disk-based program such as **WordStar**.

The unique feature of **Apple Writer** is WPL (Word Processing Language).

Apple Writer comes with a comprehensive 208-page user's manual, along with a 147-page manual about WPL. What is WPL? About the greatest feature any word-processing program could have. WPL lets you write your own features and programs to make **Apple Writer** more powerful. WPL lets you create special reports (such as taking a **VisiCalc** file and merging the data into a written report), write personalized form letters, create legal contracts automatically, do arithmetic

50,000-word spelling-checker called **Lexicheck** that I found to be so-so but certainly better than nothing. I give **Word Juggler** high points for "transparency": It gets out of your way.
—Stewart Brand

Word Juggler

Quark

Two 5¼" disks (one is backup), manual

Hardware requirements:

- Apple IIe; ProDOS, 64K, \$239
- Apple III; SOS, 128K, \$295

Information and nearest dealer location available from:

Also there is ready access to a full 80-column display of the text as it will appear, including bold, underline and other manipulations. Another apparent problem is that once you know your way around the icon commands, they get cumbersome. It takes nine key strokes to move a block of text, for example. Fortunately **HomeWord** has a set of control key commands (and a good reference card) that short cut

calculations, renumber items in a letter automatically, create your own custom menus and more. This makes **Apple Writer** one of the most powerful word-processing programs around, at half the price of **WordStar**. —Frederic E. Davis

Apple Writer

5¼" disk, manual, 3.3 DOS system

Hardware requirements:

- Apple Writer II, 48K, one disk drive, \$150. Apple Writer IIe, 64K, one disk drive, \$195

Information and nearest dealer location available from:

Apple Computer, 20525 Mariani Avenue
Cupertino, CA 95014 (408) 973-2222

Backup policy: comes with backup copy.

Quark Incorporated
2525 W. Evans Avenue, Suite 220
Denver, CO 80219
(313) 934-2211
For orders, (800) 543-7711

Backup policy: comes with a backup, copy-protected. \$20 fee to replace damaged disk.

Lexicheck

Two 5¼" disks (one is backup)

Hardware requirements:

- Apple IIe; ProDOS, 64K, \$129
- Apple III; SOS, 128K, \$149

Backup policy: same as **Word Juggler**.

most functions — a block move takes five keystrokes that way.

In other words **HomeWord** is invitingly simple to enter; then it becomes more sophisticated as you do. That's one of our measures of an outstanding program. The manual is good, and there's an audio cassette to walk you through your first session (always a delicate time). —Stewart Brand

HomeWord

5¼" disk, manual, tutorial
audio cassette, \$69.95

Hardware requirements:

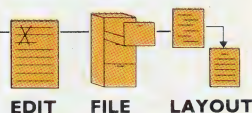
- Apple II, II+, IIe; 48K
- Commodore 64; 64K

Information and nearest dealer

location available from:

Sierra On-Line, Inc.
Sierra On-Line Building
Coarsegold, CA 93614
(209) 683-6858

Backup policy: 90 days free replacement;
after 90 days, \$5 replacement fee.



Newword

About a year ago three people from MicroPro's research and development department left and started their own company. **Newword** is their first product, a word processor with built-in mail merging capability that looks and acts remarkably like MicroPro's **WordStar**.

Newword has the advantages of **WordStar**, plus some new ones. What's new? Here are my favorites: an undelete

command that lets you replace erased text. (You can choose how much deleted text to store.) Document protection, so a file can be viewed but not changed. Searching by page number. (They use the "QP" command. "KS" automatically leaves the cursor where it is.) For Kaypro 10 owners: You can put **Newword** into user A0 and edit or create files in any other area on the hard disk, impossible with **WordStar**. (That's why the Kaypro 10 comes with three copies of **WordStar** in different user areas.) They've also cleaned up the help menus, clarified the messages, improved the installation choices (for creating your



*Personal
Computer*

WordStar

WordStar was the first word processor I used and though I've tried and tested several others in the last four years, I still use it.

Oh sure, I found **WordStar** lacking in features I appreciated in other word processors — like "undelete," windows and buffers, underlining instead of odd-looking codes on-screen, printing a double spaced document without having to reformat the whole thing, file names longer than eight characters.

But I kept coming back. Why? Were the commands so firmly etched in my brain I couldn't learn another pattern? Was it that **WordStar** was always available on whatever machine I chose? Maybe. But there are other reasons, too.

I don't have to print a document to see what it looks like. It looks like it does on the screen.

WordStar stays out of my way and never interferes with my work. Programs that make me stop, pay attention, change modes and take three or more steps before I can edit, use boldface or save or print a document waste my time and irritate me.

WordStar is predictable and I trust it. I've never lost a document. No, there's no little gauge on the screen to tell me how much disk space I have left. On the other hand, if I run out of space I can, without leaving my document, check the disk directory and erase an old file or the back-up file to make room.

To use one of Trip Hawkins' (Electronic Arts) standards for software: It's deep. I've just scratched the surface. I customize the program a little (I don't like right justification and hyphen-help so I turn them off). With user patches, I could add special printer controls (to print "alternate" characters like the Greek alphabet or to change ribbon color) but I don't need them right now. Someday I intend to use the *Technical Support Reference Manual* to fiddle further with printer controls and special installation (although I might need to ask a programmer for help). I rarely use the non-document mode, but have in the past — to write command files that automatically run programs or to quickly edit a data file.

Hard to learn? Maybe. But it's easy to use, and once you learn the commands, they're hard to forget. Ask a **WordStar** user his or her favorite command and I'll bet you get a quick answer. My favorites are "QQB" and "QQZ." QQB reformats an entire

own customized version of the program) and added other nice touches throughout.

Newword is currently available for Kaypros and Morrows, and they're working on a 16-bit version now. The

Newword

5¼" disk, CP/M 80 operating system, \$249 list price

Hardware requirements:

- Kaypro
- Morrow bundle
- Customized versions for various computers that run CP/M 80

Information and nearest dealer location

program is definitely spiffier than its cousin and less expensive (\$645 for **WordStar/MailMerge** versus \$250 for **Newword**). However, keep in mind that it is new, relatively untried and untested.

—Barbara Robertson

available from:

Rocky Mountain Software
1280-C Newell, Suite 1001
Walnut Creek, CA 94596
(800) 832-2244

In California, (800) 732-2311

Backup policy: Working disks can be copied.

document in front of my eyes, and QZQ starts automatic scrolling. I sit back, regulate the speed by typing "I" through "9" and read through my text, stopping, editing and starting up again along the way.

Dozens of programs support **WordStar** (including MicroPro's own product line) — spelling and style checkers, data bases and form letter generators. You can run other programs from **WordStar**'s main menu. And, because of **WordStar**'s popularity, many of these programs use **WordStar**'s commands.

The program is nearly five years old and has over half a million users. Chances are that whatever it is that you

want to do with a word processor — typesetting, form letters, movie scripts — someone nearby has already used **WordStar** to do it and can help you.

—Barbara Robertson

I am a WordStar junkie. The control over hardware is my chief reason. Give me any computer in the Oasis, MS-DOS or CP/M worlds, and any printer. Within ten minutes that printer will be running boldface, subscript and condensed/expanded copy.

—John Halamka

All other word processors try to emulate WordStar in some way. Most add a feature but do not already have all the other WordStar features. That keeps WordStar on top.

—Woody Liswood

WordStar

8" or 5¼" disk, manual, training guide, command card and stickers, \$495 list price

Hardware requirements:

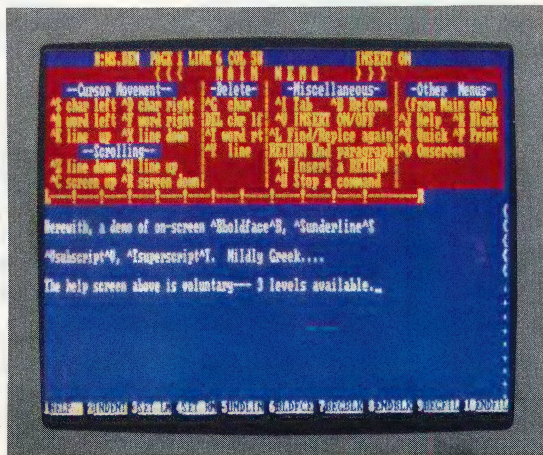
- CP/M-80; CP/M-86;
- MS-DOS; PC DOS

Information and nearest dealer location available from:

MicroPro

33 San Pablo Avenue
San Rafael, CA 94903
(415) 499-1200

Backup policy: Working disks can be copied.



WordPerfect

WordPerfect is the most powerful, the most complete, the best documented and the easiest to use of the seven word-processing programs that I have purchased and tried —

Volkswriter (my second favorite), **XyWrite I and II**, **EasyWriters I.0, I.1 and II** and **WordStar**.

WordPerfect was designed for the serious writer/editor/secretary/wordsmith who wants it all — and then some. Aside from the normal features one would expect from a word-processing program, the more sophisticated features of **WordPerfect** include extraordinary cursor control, formatting, macro definition, footnoting, mail merge (no additional cost), block define, document assembly, hyphenation, end-of-page demarcation, on-screen bolding and

underlining, extended Greek, math and foreign character set, true proportional spacing, control of widows and orphans (bits of text left lonely at the tops or bottoms of pages), password security, user-definable defaults, dual document editing, a 30,000-word spelling checker (no extra cost) and a basic math package. An additional \$95 package that can be purchased separately is an indexing and sorting program.

Editing functions are command-driven while formatting and file management commands are driven by menu. All of the function keys and the number keys on the top of the keyboard are used with alternate, control and shift to provide the power for the editing and formatting features. One double keystroke does it all. The program comes with a keyboard overlay to help the user remember the special dedicated

Volkswriter Deluxe

I have become familiar with most of the best-selling word-processor programs written for the PC, including **EasyWriter I.1 and II**, **Volkswriter**, **Final Word**, **WordStar**, **WordPerfect**, **WordPlus-PC**, **Perfect Writer**, **VisiWord**, **Spellbinder**, **PFS:WRITE** and **MultiMate**.

It's time for me to take the plunge and talk about the program I most want to keep for myself after the reviews are finished. There are two contenders: **WordStar 3.3** and **Volkswriter Deluxe**. **WordStar** is the reigning world champion, outselling all the competition and outperforming most as well. It is not, however, my personal favorite nor the one I would recommend to free-lance writers, people running a small office or business or secretaries typing letters. For all these IBM PC or XT users, my recommendation is **Volkswriter Deluxe**.

WordStar is the Mercedes-Benz of word processors, so consigning it to second place requires some explanation. **WordStar** will be five years old soon. It

has been successfully patched up over and over again to add new features. A sign of **WordStar's** age and **Volkswriter's** vitality is that **WordStar** cannot use all the memory space available in my PC. Even though I have 320K internal work space, **WordStar** still swaps portions of long files to and from the disk. Micropro just did not put a lot of enthusiasm into converting its CP/M-80 version of **WordStar** for the PC and this is one example of the price you pay for it.

Volkswriter Deluxe is written in IBM Pascal for the PC DOS operating system. It keeps the entire text it is editing in RAM, without swapping to disk — up to 640K and even beyond that, with "virtual memory," to 1000K. With **VW Deluxe** and 320K, I have approximately 225K of RAM work space which can accommodate close to 150 double-spaced 8½" x 11" pages with 250 words per page.

More impressive is the fact that **VW Deluxe** is still fast enough to make that sort of document length feasible. As you scroll, new lines or screens of text seem

keys. The "Help" mode (Shift/F3) is so useful and clearly written that it can only be compared with the help screens in **Lotus 1-2-3**. Not only that, but when you want to call the folks at Satellite Software International for personal help, you can rest assured that they will be there, cheery, friendly and more than willing to help. They'll even call you back.

—Min S. Yee

WordPerfect

5¼" disk; \$495 list price

Hardware requirements:

- IBM PC, PC-XT, PCjr, and most compatibles: Eagle PC, Hyperion, Columbia, Seequa Chameleon, Corona, Compaq, Televideo PC
- Victor 9000
- TI Professional
- DEC Rainbow

to snap into place rather than bouncing along as with many programs. Through its automatic horizontal scrolling, **VW Deluxe** can handle documents (like spreadsheets) which are up to 250 characters wide.

No other word processor I have seen offers both dynamic page breaks and page orientation so that you can scroll through or jump around your document any way you want, while still being able to see each individual page of text as a separate unit. Like **WordStar's** extra-

Volkswriter Deluxe

5¼" disk and manual, \$285 list price

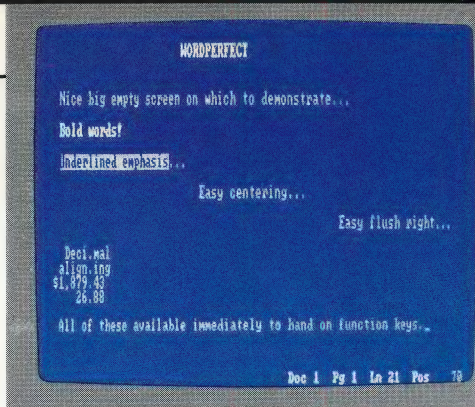
Hardware requirements:

- IBM PC or compatible with 2 floppy disks or 1 floppy and 1 hard disk.
- 80 character color or monochrome display.

Information and nearest dealer location available from:

Lifetree Software, Inc.
4111 Pacific Street, Suite 315
Monterey, CA 93940
(408) 373-4718

Backup policy: Not copy-protected.



• Zenith Z-100

Information and nearest dealer location available from:

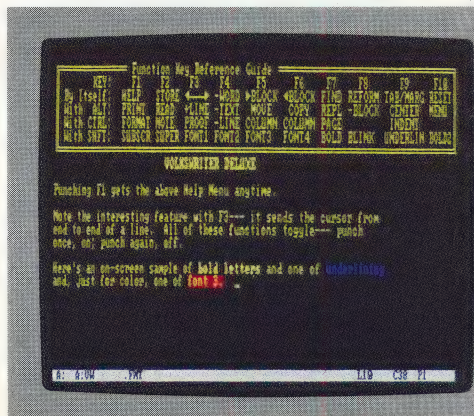
Satellite Software International
288 West Center
Orem, UT 84057
(801) 224-8554

Backup policy: Master and backup disks provided.

cost option "MailMerge," **VW's** standard TEXT MERGE feature handles mass mailings of letters, with each one personalized for a specific reader. There is also a Ctrl-F2 command that lets you quickly store a line or block of text in a notepad or memo file.

If **WordStar** is the Mercedes of the word processor world, Lifetree should rename its package **Porschewriter** just to keep things straight. It is that good.

—Charles Spezzano



Wordvision

The most innovative writing program on the market is also the most agile and also the best buy — \$79.95. By “agile” I mean it is fast and sure in use. It is especially suited to the creative writer, anyone who is thinking and writing at the same time.

The program takes every opportunity to be graphic. The manual is exceptionally well illustrated. So too is the on-screen guidance for configuring the program to your machine. Stick-on labels transform the IBM keyboard with bright colors on the function keys (called “chameleon keys” by the manual — their function varies with what’s going on).

Wordvision is the only word processor so far that makes really intelligent use of color on the screen (though its icons serve perfectly well on monochrome screens). It also arrays keyboard operation in intuitive ways. Related function keys have related colors and are close to each other. The program *twiddles* handily.

Microsoft Word (with mouse)

If you are doing wholesale editing — moving around quantities of copy, shuffling material among files or from one place to another in a document, working from several drafts simultaneously — you may be well served by windows and buffers. Such things (there are eight available with this program) allow you to view simultaneously and move rapidly, even frenziedly, among different bodies or areas of text, like a troop of ants removing the eggs from a burning log.

(Windows are in great demand this season. We’d love to hear if they’re really being used, and for what exactly, and whose windows help best.)

I’ve chosen this program to recommend over other window word processors such as **Perfect Writer** and

Wordvision gains agility by shortcutting procedures that usually are complex. Getting in and out of files is slick and quick and the file titles look like they’re on file folders.

The erase and the cursor-forward and cursor-back functions can be accelerated to move by word, line, sentence or paragraph at a time using just a pair of accelerator keys. There is an “Undo” key for unmaking erase mistakes. While there are no “macro” keys that operate whole definable command strings, there is a set of five “quick phrase” keys to park your clichés on.

The on-screen “help” tree is unusually accessible, simple and visual as you move through it from general headings to specific details. Each explanation has a diagram of the keyboard showing where the operative keys are for the function you’re inquiring about. If you often transpose letters (as I do), there’s a special key to set them right.

So far this program only runs on the IBM PC and XT, as well as the closest clones, Compaq and Hyperion. By our

EDIX + WORDIX because of Microsoft’s great little mouse. Not while you’re writing, but once you’re going back over existing text, the mouse comes into its own, making nearly every editing operation take a fraction of the time and effort that using the keyboard alone does.

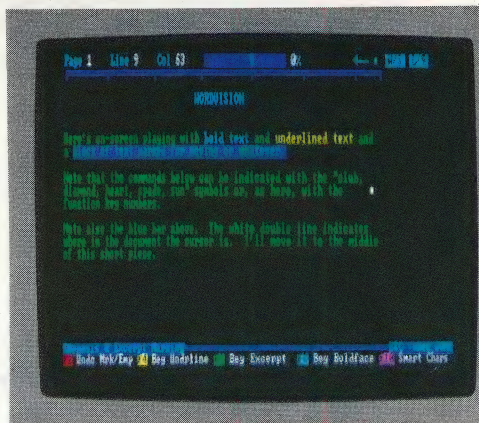
That’s the good news. Great mouse, very powerful overall program with innumerable formatting options, forward-looking support of coming hardware such as laser printers and a formidable publisher who also wrote the operating system, MS-DOS, that everything in 16 bit runs on these days.

Now the bad news. The program’s color capability is wasted. Starting up the system each time is a tedious business. The mouse and windows and menus do not make the program easy to learn, as on an Apple Lisa. They make it harder. The manual is terrible — poorly

testing, it runs as it is on the IBM PCjr (unlike any other of the programs we're recommending here except **Home-Word**, which runs slow on the Jr).

As yet there are no spelling or style checkers supporting **Wordvision**. The program's 32 special key labels will slightly veil your IBM keyboard for other uses, and they somewhat restrict you to one machine — unless the program sweeps the marketplace, which it might possibly do. **Lotus 1-2-3** swept the spreadsheet market by being more agile and visual than the competition, and it's expensive.

—Stewart Brand



Wordvision

5¼" disk, 160-page full-color, indexed, illustrated manual, PC DOS operating system, \$79.95 list price (includes toll-free HELP number and coupon for replacement key caps)

Hardware requirements:

- IBM PC; 96K, 1 disk drive
- Compaq
- MAD and other 100% IBM-compatible computers

Information and nearest dealer location available from:

Bruce & James, Program Publishers
Incorporated
400 Tuller Road
Dublin, OH 43107
(614) 766-0110

Backup policy: "Prepare" program enables user to make working copy from master disk.

organized, overly technical and overwhelming and yet oddly incomplete. The most unfamiliar item to most people will be the mouse; yet nowhere in the manual nor on the skimpy reference card is there a list of mouse commands. There is one buried in the on-screen helps, but it is unprintable

(literally: you can't print it, you have to copy it off with a pencil). Learning the mouse without it is impossible.

Microsoft Word is a valuable tool, but add to its cost a considerable amount of learning time.

—Stewart Brand

Microsoft Word

3 disks, mouse and manual,

\$475 list price

Without mouse: 2 disks and manual,

\$375 list price

Hardware requirements:

- IBM PC, PC-XT with 1 disk drive, 128K RAM

Information and nearest dealer location available from:

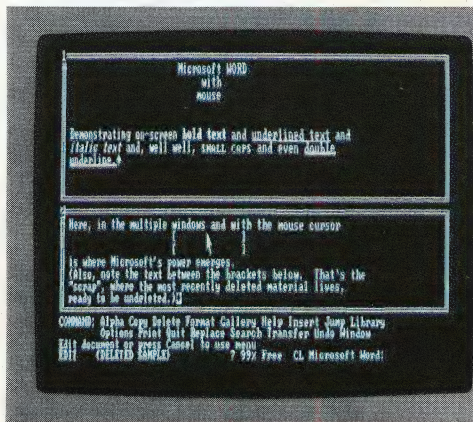
Microsoft Corporation

10700 Northup Way

Bellevue, WA 98004

(206) 828-8088

Backup policy: Not copy-protected.



Radio Shack TRS-80 Model 100

Any list of computer writing tools should include the Radio Shack Model 100, the first of a new genre of "lap computers" that we'll review in more detail next issue. The 100's word processor, written by Microsoft, is among the safest and easiest to learn that we've seen. That's partly because it's built into the 100 itself — a self-contained 9" x 12" box with a full-sized

keyboard and 8-line LCD screen. There are built-in function keys for searching through the text, cutting and moving text and scrolling.

When you exit the program it automatically saves your words to memory. That memory is the Model 100's greatest disadvantage: Even if you add the 16K that Radio Shack sells for \$200 more (without it the 8K machine is \$799), there's still only enough room for about ten typed double-spaced

Spelling and Style Checkers

Wayne Holder's **The WORD Plus** spelling checker is one of the most beloved programs on the market, and his new **Punctuation + Style** is developing a similar following. The programs have flair and personality — traits usually suppressed in applications software. It adds to their usefulness, perhaps because writing itself is such an intimate process.

I use both programs. Though I fancy myself a professional writer (i.e., hack writer), I don't think I've generated a single file over 200 words that didn't benefit from Wayne Holder's attention. Another enthusiast is our reviewer Charles Spezzano, as follows.

—Stewart Brand

The WORD Plus is a thing of beauty: simple, fast, accurate. When you finish writing a file of text, you exit from your word processing program and call up **The WORD Plus**. Actually you call up file "tw" — **The WORD**. The "Plus" part refers to a smorgasbord of other writing aid programs that come with this spell checker and electronic dictionary, including a tool for automatically hyphenating words, programs that help you solve crossword puzzles and jumbled word games, a general purpose word-counting utility, a program that locates and marks homonyms ("their", "there") in your text so you can decide if you used the right one and a tool that keeps track of

how many times each word appears in your document. Some of these are obviously frills, but word count is indispensable if your word processor does not have a program of its own to do the job.

The spell check program is a masterpiece. It is small enough to fit on the same disk with my **WordStar** or **Volkswriter** programs, so I do not have to change disks to use it. Despite this, it has a 45,000-word dictionary. Capitalizing on the fact that successive words in a dictionary have many letters in common, Wayne Holder, creator of **The WORD Plus**, compressed 450,000 bytes of dictionary text into a 139,000 byte space. When you run **The WORD**, it takes 1 1/2 minutes to check a 1500-word file. It then presents the words it cannot find in the dictionary, one at a time. You can add the word to your own custom dictionary, mark the word and work on it after you get back into your writing, leave the word the way it is and do nothing else with it, or correct the word by typing in the accurate spelling. You can ask for words close to your misspelling, and if one is what you wanted, insert it. You can also view the line of text in which the suspect word appears.

With **Volkswriter Deluxe** and **The WORD Plus**, I figured I was in writer's heaven. Then Wayne Holder's Oasis Systems sent me a copy of their new **Punctuation + Style** programs. As the name implies, these two programs

pages' worth of text. You can run a printer directly from the Model 100 (although there's no formatting program included), but I know several journalists who regularly write with it on the road and transmit their files by phone or directly to another computer through a patch cable.

I've found it easier to write with at home than my Kaypro II because I pace when I think, and the Model 100 moves from my desk to my bed to my chair

with me. It dwarfs neither my desk nor my thoughts.
—Art Kleiner

TRS-80 Model 100

CMOS operating system
8K model \$799; 24K model \$999.
Information and nearest dealer location available from:

Tandy Corporation
1800 One Tandy Center
Ft. Worth, TX 76102
(817) 390-3700
90-day warranty

(on one disk) catch errors in punctuation and other inaccuracies in your writing such as incorrect abbreviations, missing capitalizations at the beginning of sentences, repeated words ("Paris in the the Spring"), mixed upper and lower case letters (The), unclosed parentheses, and incorrect forms of numbers. One of the programs contains a list of phrases that are commonly misused in writing. It tries to find these phrases in your writing and suggests alternatives. The manual not only taught me how to use the program; it also taught me how to write better. Like **The WORD Plus, Punctuation + Style** is an elegant and thoughtfully prepared word tool. Wayne Holder understands good writing and helps you achieve it.

—Charles Spezzano

If you are a truly awful speller, or some kind of do-it-all-at-once pervert, you may want to consider **The BOSS**. This built-in companion to a pretty-good word processor for the IBM PC called **WordPlus-PC** (fie on them for causing

name confusion) works while you write.

Spezzano: "Press 'S' and **The BOSS** suggests up to eight replacement words in order of probability, based on phonetic similarity to your misspelled word. Press the number of the one you want (almost always on the list) and the correction is typed right into your text. The speed (six or seven seconds to find the eight suggested words) and uncanny accuracy of **The BOSS** program made it so much fun to watch in action that I might have unconsciously made more typos than usual just so I would have to use the spellchecker a lot. Even intentionally ridiculous misspellings did not fool **The BOSS** and its large 90,000-word dictionary."

Of the word-processing programs we've recommended, the following are supported by **The WORD Plus and Punctuation + Style: WordStar; Volkswriter Deluxe; Microsoft Word; Newword; and Perfect Writer**. For many people that's sufficient cause to eliminate the other candidates.
—Stewart Brand

The WORD Plus

1 to 3 disks and manual, \$150 list price

Punctuation + Style

One 8" or 5¼" disk plus manual,
\$125 list price

Hardware requirements for both:

- CP/M-80, CP/M-86, MS-DOS
or PC DOS

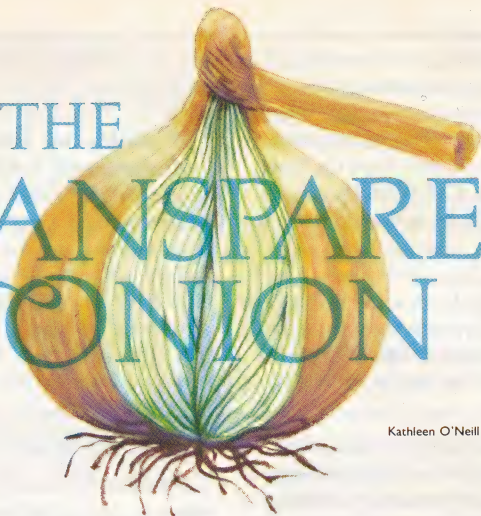
Information and nearest dealer location

for both available from:

Oasis Systems
2765 Reynard Way
San Diego, CA 92103
Backup policy: Not copy-protected.

Word Plus-PC featuring "The BOSS";
\$495; Professional Software Inc., 51
Fremont Street, Needham, MA 02194.

THE TRANSPARENT ONION



Kathleen O'Neill

by Peter McWilliams, Arthur Naiman, Steven Levy,
Charles Spezzano, Woody Liswood, Barbara Elman, Fred Davis,
Robert Purser, Tony Bove and Cheryl Rhodes, Louis Jaffe,
Robert Cowan, Darrell Icenogle, Anthony Weston,
Richard Dalton, Art Kleiner
edited by Stewart Brand

STEVEN LEVY: I compare using a word processor to living with somebody. You go into it with all kinds of enthusiasms, and things are wonderful. Then, you see other word processors promising more. More features, friendlier style . . . The question is, is it worth tossing over a relationship in which you've invested months for a word-transpose toggle, an indexing function you'll use maybe twice and a split-screen capability?

I think we should proceed on the assumption that a choice of a word processor is a major life-decision, and no one can afford (in terms of time, money, or emotional capital) to play the field just because a reviewer in the *Whole Earth Software Review* thinks **Gutenberg** or **Perfect Writer** is nifty.

We gotta get to the Heart Of The Matter.

[The conversational voice is Levy's, but he never spoke this statement, nor did the rest of us hear it. Most of us have never met, in person or even by phone. Where we convened and became intimate enough to argue fiercely and fondly was in the hyperspace of a computer teleconference.]

—SBJ

PETER MCWILLIAMS: I hate to send anything out that has not gone through **The WORD Plus** (the spell-check program) at least twice. That's why I got a word processor in the first place, because I'm an awful speller and a worse typist. Here I am again, looking for

The ideal word processing program is declared nonexistent and impossible and then described. Argument converges on a Writing Tool esthetic.

synonyms for words that are longer than two syllables. (Had to look up "synonyms".)

[The sophistication of the medium we were using is not in its writing convenience but in its conversational convenience. Peter wrote that particular comment late at night. Most of us saw it the next day (or so) and responded in our own good time. The thoughtful, slow-motion discussion continued with growing enthusiasm and depth over three months — July, August, September, 1983.]

This article is a winnowing of the 318 comments that accumulated in that private conference we set up on the EIES Network (see sidebar, p. 30). A few comments come from God-knows-where in the Network, such as this gem: —SB]

ANTHONY WESTON: A word processor has a high initial cost, but the cost per written product, according to *Scientific American*, is less than $\frac{1}{3}$ of the cost of the old labor-intensive typing — and going down.

At the college where I taught last year the clerical workers' union prohibited its members from even learning word-processing skills. At least they will not put each other out of work.

[The purpose of the teleconference

was to investigate how best to evaluate word processing programs in the Whole Earth Software Review and eventual Whole Earth Software Catalog. Join the process. —SB]

LEVY: I readily admit that using my Apple and **Wordstar** has changed me considerably. I do stories faster, write them more organically and have time to play more. I play on my computer a lot. Word processing, even in our current brain-damaged technological state, is something that significantly improves lives. It helps manuscripts, too. I can hardly wait for the next generation, but as for now people could do much worse than Apples or IBMs.

WOODY LISWOOD: There is one true statement about micro computers and micro computer software: NO MATTER WHAT YOU BUY, THE FIRST PERSON YOU MEET AFTER YOUR PURCHASE WILL TELL YOU THAT YOU SHOULD HAVE PURCHASED SOMETHING DIFFERENT.

BRAND: The fact of life I keep seeing is that computers *don't* work when you first get them. It takes phone calls, hand-holding, and service visits to get going. We're still in the

Model-T stage of auto literacy — where everyone *did* have to know how to patch a tire, crank the engine and dive under the hood — just to get around.

Not everybody programs any more, but everybody still has to fix. Will that change in a few months? Remember the early years of TV sets that required endless fiddling with antennas, etc.?

FRED DAVIS: Computer technology seems so razzle-dazzle that many people don't understand how primitive most software is. The really great WP programs haven't been written yet.

ARTHUR NAIMAN: WP is so much better than typing that just about any WP program that's the first one you learn will knock your socks off. I think we should warn readers to look around and not just be bowled over by the first thing they see.

CHARLIE SPEZZANO: What is most unique in this case is that the tool we are discussing cannot be seen by the prospective buyer until after it is purchased. If someone reviews (road tests) a car in *Road and Track*, the reviewer's enthusiasm might be a catalyst for you to go and look the car over and then test drive it. If you like it, his review was true for you.

CAST OF CHARACTERS

PETER McWILLIAMS is author and publisher of a deserving best-seller, *The Word Processing Book*, as well as (deep breath), *The Personal Computer Book*, *The Personal Computer in Business Book*, *The McWilliams II Word Processor Instruction Manual* (the McWilliams II is a pencil) and special editions of his word processing book for the Kaypro and the IBM PC. These days he is talk show fodder. Lives in Los Angeles.

ARTHUR NAIMAN is author of the exemplary *Word Processing Buyer's Guide*, *Introduction to WordStar*, *Computer Dictionary for Beginners*, and *First Book to Read About the IBM Personal Computer*, along with *Every Goy's Guide to*

Common Jewish Expressions. Lives in Berkeley, California.

STEVEN LEVY: "I'm a non-fiction writer who did a story on computer hackers a year and a half ago for *Rolling Stone*. Currently I'm completing a book on Hackerism — from MIT to Apple computer games; I write the telecommunications column for *Popular Computing*; and last fall I began a computer-and-video column for *Rolling Stone*." Lives in New York City.

CHARLES SPEZZANO: "I'm a psychologist involved with a research project called the Society for the Prevention of Cruelty to Users (SPCU). We study software — mostly for the IBM PC — and we collect reports of the personal experiences of other IBM PC users with various kinds of software. I also write a

monthly column for a new magazine called *Micro Discovery*. Most of the time I practice psychotherapy and neuropsychology in Denver."

WOODY LISWOOD writes software reviews that are electronically published on The Source, a consumer information service. He also consults with business organizations about system selection and user training. He has an extensive software "test laboratory" in his home in Pacifica, California.

BARBARA ELMAN, a software consultant especially to screenwriters, is editor and publisher of *Word Processing News*, a newsletter for computer writers. Lives in Burbank, California.

FRED DAVIS is a free-lance computer consultant

You might say that a computer owner can also "test drive" a piece of software at a store, but my experience has been that it takes a while to find out whether a word processor feels right to you or not — longer than you usually will spend in a store. You could thoroughly try out five cars in one day, but it would take a month to really test out five word processors. This situation increases the power of the software reviewer, since someone may take the review seriously enough to spend four hundred dollars on the strength of it.

LISWOOD: The problem, to me, is that I really do not know

enough about a program to say that I like it or do not like it until I have put it into a production environment for a few weeks and have an idea what it will do with real problems.

Why two or three weeks of use, you ask? Most programs work well on the surface. It is what will happen when you push a program to its limits that is important.

[The answer to "What is the best word processing program?" is: "Best for who?" We set about trying to define who, besides ourselves, we are evaluating for. —SB]

and software reviewer based in San Francisco. He is currently writing a book on the IBM Personal Computer.

ROBERT PURSER edited and published what was possibly the first software review magazine, *Purser's Magazine*, from his house in the Northern California Gold Country.

TONY BOVE and **CHERYL RHODES** edit and publish *User's Guide to CP/M Systems and Software* from Woodside, California.

DARRELL ICENOGL is technical director for the Western Behavioral Sciences Institute in La Jolla, California, which is pioneering in the use of computer teleconferences for executive education.

ANTHONY WESTON is an electronic mystery. He appeared briefly on the EIES network and no one seems able to trace him —

it's likely that he was using their "guest" account. So where- and whoever you are, Anthony, thanks for your contribution.

LOUIS JAFFE is a computer applications and telecommunications consultant. He keeps in touch from his Boulder, Colorado, home via the EIES network, The Source and Compuserve.

ROBERT COWAN manages systems research for Research Health Services in Kansas City and also has a private consulting practice. He has had eight years of experience in teleconferencing using computers and video and specializes in human factors related to the design of interactive systems.

RICHARD DALTON is editor of the *Review*. He uses a variety of

conferencing networks to help develop material for this magazine, usually from a dungeon-like office in the back of his San Francisco home — in the early A.M., when the networks are cheaper.

ART KLEINER is editor-at-large for *Whole Earth Software* publications and edits *CoEvolution Quarterly*, another part of Point Foundation, six months out of the year. He is a user consultant for the EIES network, helping people to learn the system and get out of communications jams. Art lives in San Francisco, California.

STEWART BRAND publishes this magazine, along with *CoEvolution Quarterly* and the *Whole Earth Catalog*, and is a rookie word processing program connoisseur. Lives in Sausalito, California.

BARBARA ELMAN: Maybe it would help to determine what kinds of uses people have for these programs — letters, contracts, theses, proposals, reports, novels, film scripts, etc. etc. — and then relate the best and worst of each program to those categories.

ART KLEINER: Our purpose here: To figure out the best word processors for different types of people. We haven't yet really figured out the different types of WP users beyond some rough occupational types. And I think there are limitations there. For instance, it's tempting to say that secretaries don't want to think about what they're doing, they just want to push ahead and type as quickly as possible on an easy-to-use system. But are all secretaries like that? Don't some of them use WP programs for composing as well?

These are some stabs at types of people that need different types of word processors.

Touch typists — Someone was praising **WordStar** because, he said, he never had to take his fingers off the Home Row keys. Even hitting control, his fingers still knew where the keys were. Apple keyboards have a raised dot on the D and K keys so you always can feel if you are on the home row. It sure does speed things up.

Hunt & peck typists — Such people don't necessarily care about being on the home row.

People working on complex projects — They need a WP program that can also allow lots of manipulation of files.

People working in foreign languages — We will need to review at least one good method of typing in tongues.

People working in special formats — **Scriptor** for screenwriting is a perfect example.

People working in a hurry — Are some word processing programs more suitable for the impatient? Are some, well, contemplative? Does contemplative mean just *slow* or does it mean that there is a quality about it which encourages rethinking one's sentences?

BRAND: Add to the WP user typology . . .

Kid — Which includes not a few executive types who've never typed since college and are pretty much starting over. Broderbund's **Bank Street Writer** looks real good for this bunch.

State-of-the art pursuers — They want whatever is the *best*, price no object; this week, next month, the newest, finest, hottest.

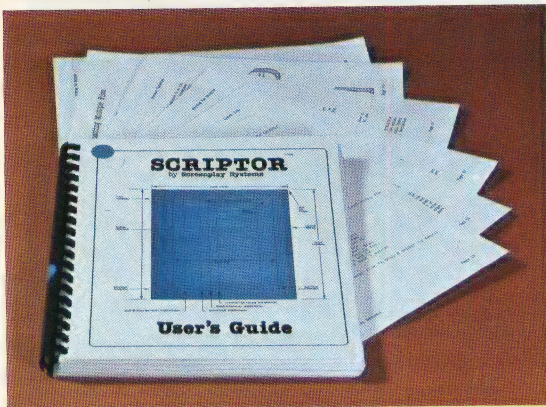
Buy it and never shop again, please — "I want a word processor that will *do*, for the next five years. Even if I get a new set of machines, they'll have to support this program."

Plain Jane — Used for occasional letters, for occasional telecommunications, period. Cheap, clear, good, no frills. Ditto printer.

SPEZZANO: I think the overall plan should be to work toward a software aesthetic, a capacity on the part of the reader to appreciate a good program.

SCRIPTOR, according to Art Kleiner: "Designed especially for screenwriters, it's a perfect example of a program for working in special formats."

Scriptor
\$295 from:
Screenplay Systems
211 East Olive Ave., Ste 208
Burbank, CA 91502
(213) 843-6557



Most of us don't have this because a computer program is a new medium. Like the appreciation of art or music or literature, software appreciation may not lead to one perfect WP but an increased ability to see the subtleties of the medium, and to be articulate about what you like and don't like.

Because of past Whole Earth publications and the expectations based on them, this publication inherits the task of turning its readers into software connoisseurs.

BRAND: Since I feel obligated to break free of the famous WP Apple Pie phenomenon (you always remain patriotic to your first warm sweet food), I am diligently weaning myself from **Perfect Writer** on the Kaypro and learning **WordStar 3.3** on the hated IBM PC. So far I'm enticed. The color palette is decidedly exciting and offers a spectacular early opportunity to customize one's writing tool. (I chose dim yellow on red for menus and bright white on blue for text.) The abundance of menus, and *degrees* of menu help, I found captivating for a newcomer.

Till now I've preferred high resolution over color if forced to choose. Now I'm torn. The color on **WordStar 3.3** and **Wordvision** has really served me. The message I'm getting from all this is the right brain *can* be released by this medium and should be. Art's right about the S-D-E-X star of **WordStar** making better sense than letter mnemonics. That's why line editors suck. That's why what-you-see-is-what-you-get is essential. It's why **Lotus 1-2-3**, with its finger-fast graph interlock, is unbeatable. A trend, I do believe.

McWILLIAMS: Naturally Stewart is going to like color. Sitting alone in a movie theater, when he was ten, watching *The Wizard of Oz*, when the screen changed from black & white to color, he had his first orgasm. He has been a fan of color and Judy Garland ever since.

I don't know what the future of color and word processing will be. For the present, it's not good. Fuzzy characters. But color screens may become less fuzzy, and less expensive. As a famous French director said when he first saw CinemaScope,

"It's good for snakes and funerals, but that's about it."

As to the help menus on **WordStar**. Everyone I know turns off all help menus and uses the printed card (when help is needed). I do wish **WordStar** would allow one to remove the help menu from the program. Lord knows how many Ks of precious disk space those seldom-used helps consume. (In my bike-and-training-wheel analogy: The training wheels can be removed, but they must be carried on the bike forever.)

BRAND: I would like to get out everybody's hate list here early because It's easy and fun, and there's usually agreement. It helps define and limit our eventual task.

So, what programs would you invite to leave the room now, and, *briefly*, why?

A further reason for pursuing this is that it may lead to helping identify the fundamentally important features that top WP programs must handle well. As Warren McCulloch wrote once, "Good is a matter of opinion. Bad is real."

SPEZZANO: With some apprehension about classifying dogs, here goes:

I agree with previous disparaging comments about **Select**.

EasyWriter 1.1 cannot be recommended because it crashes easily, tortures you with a flashing insert block that has a life of its own, does not create files you can easily work on with other IBM software

(because it is written in **FORTH**), and it limits your file size too much.

EasyWriter II also tends to lock you into using other IUS software because it does not create DOS-compatible files, but I am not sure this is grounds to throw it out.

My past experience with **PIE Writer** was very disappointing but I have not tried the new version on my IBM PC. Several SPCU reports from people who once used **PIE Writer** were unfavorable.

Gee, despite my reluctance, I really enjoyed that. Maybe there's a latent sadistic streak that's gone unanalyzed.

McWILLIAMS: Suggestion for discovering a dog's pedigree: Is file length limited to disk capacity? If yes, proceed to question two. If no, send to pound.

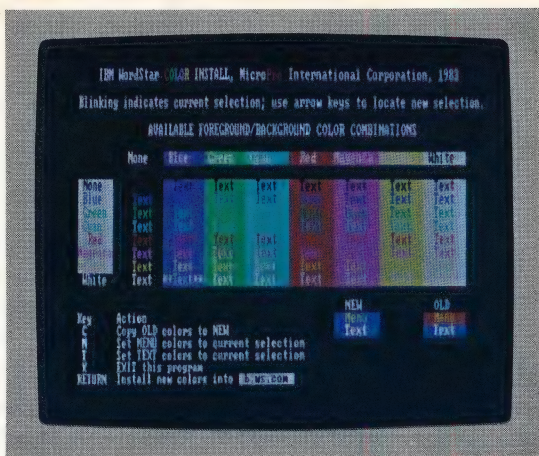
ROBERT PURSER: There are no dogs. If I have paid \$300 (or whatever) for a program, I will live with it and smile.

TONY BOVE and **CHERYL RHODES**: Some good, some bad, all doggies

Hound — **Scriptsit** (Radio Shack). You know how it feels to wanna kick that dumb dog just for bein' so dumb . . . **Scriptsit** starts up so nicely (lickin' right outta your hand! — oh come off it) but one seemingly harmless touch to the keyboard could wipe out a complete paragraph.

Poodle — **Select**. All dolled up with no place to go. Rumored to crash for no reason on Kaypro IIs. "Don't mode me in"

WordStar, according to Brand: "The color palette is decidedly exciting and offers a spectacular early opportunity to customize one's writing tool." It's also a nice example of a completely self-explanatory screen of choices, commands and explanations. This picture is from a Princeton color monitor with an IBM PC.



muttered frequently while using it.

Dalmatian — **Documate**. Sleek, fast, seemingly reliable and productive table of contents and index maker. A tool for the job, nothing more, but only works with **WordStar** files.

German Shepherd — **WordStar & MailMerge**. Lean, muscular, fast, sometimes ferocious. Leader of the pack, etc. Hell, over 600,000 people use it (at least). Can't argue. We use it, using it right now.

Sheepdog — **Spellstar**. Big, dumb, in the way, not really useful spelling checker (maybe it's been improved since last year).

St. Bernard — **The WORD Plus**. Just what you were looking for in spelling checkers. It doesn't just arrive on the scene, it corrects the mistake. It even provides proof (you can look up words while correcting them).

Doberman — **Electric Pencil 2.0**. This one dropped characters if you typed too fast. During "wraparound" it nibbles at your keystrokes while it does what it wants. It would only save text following the cursor, and eat the

rest. Unlike an earlier version, this one barked before biting (sent a message). It may have improved somewhat since then, anyone know?

LISWOOD: Ever since I discovered micros and have been involved in spreading the gospel and teaching about the uses, I have had one thing to say to folks... *buy the best*, the top-of-the-line program in whatever area you are going to do work. If you don't, then you will always wish that you had, and will eventually spend all that extra money to get it anyway.

If you are trying to solve a problem, buy the solution. Period. It is probably better to wait until you have the dollars than to get something you will be unhappy with for sure and that will cost you more in the long run to fix.

SPEZZANO: Sermonette. I think that the best possible word processor does not exist. This has to do with a concept introduced into psychology by the British psychoanalyst, Donald Winnicott. Having perceptively noted the continued

survival of the human race despite the failure of two billion mothers over the millennia to fit any psychologist's criteria for perfect parenting, Winnicott boldly suggested that "a good enough" mother was apparently all anybody needed. This was a real breath of fresh air in the cluttered how-to-be-the-best-possible-mother marketplace.

I think we should content ourselves with that sort of an attitude.

It fits the reality of user experience, like Winnicott's concept fits the reality of child development. There is a limit to how much perfection a PC user cares about. These people are not living in order to write on a computer. They have a job to do. The PC with a WP program is making that job easier. They finish the job and go home, not losing sleep at night about how much better life would be with a Mercedes instead of a Volvo WP. I am glad they feel this way. Who would want a world full of people like us, obsessing about the best-of-all-possible WPs or data base managers?

And that is the end of my Sunday morning sermon. Amen.

RICHARD DALTON: I suspect most/all of us in this conference have been involved with computers for some time. That's a disadvantage I hope we can overcome.

NAIMAN: I have two friends who are writing a book using **Quick Brown Fox**, a cassette recorder, their TV set and a Commodore VIC-20! This cost them \$164 (beyond what they

already owned) and they love it. Of course they're aware of some things they'd like to be better — 80-column instead of 40-column lines, for example, or a disk drive instead of the cassette recorder. But by and large they sit on their bed and watch the characters on their big TV screen and couldn't be happier.

Quick Brown Fox and a Commodore 64 cost less than most WP programs. Why should someone have to already own a Commodore 64 to consider that combination?

[The conference began to ask itself, "What are the qualities that make you hate a Word Processing program, or that make you love it?"
—SBJ

LISWOOD: If, after using the WP for a few weeks, you still have self-awareness of the software rather than the process of writing, I would say that that particular WP is not quite there — at least for that elusive beast we are looking for — the professional WP.

NAIMAN: The writing tool I always dreamed of was one which would take my thoughts right out of my skull and put them on paper. The better a word processing system is, the closer it comes to this ideal. Thus the quality I look for most is *transparency*. By "transparency" I mean that the WP program (and hardware) intrude as little as possible between you and your thoughts.

After all, one of the great advantages of word processing is that you can just slap your words down without worrying

USING EIES

We put this article together through an electronic conference on the Electronic Information Exchange System (EIES, pronounced "eyes"), which pioneered conferencing on computer networks. EIES is an electronic village

compared to larger computer network "cities" like The Source and CompuServe. EIES is smaller (2000 members), more tightly knit and more strictly devoted to communication between people.

We also hold conferences on other software topics on EIES, to which all EIES members are invited

(membership costs \$75/month plus \$3/hour and up for connect time). Almost any personal computer, along with a modem and a telephone, can be used to teleconference. For information on EIES write Anita Graziano, New Jersey Institute of Technology, 323 High Street, Newark, NJ 07102.

—AK

about them and then go back and fiddle with them all you want. (This quality got me over a very heavy and persistent writer's block virtually by itself.)

Safety is another crucial quality (and, if you think about it, a component of transparency, since a WP program that loses your text for you does tend to intrude into the smooth flow of your thoughts). *Ease of use* is a third vital quality.

Most people want pretty much the same basic things from a WP program:

- a manual that's written with some care, skill and humanity;

- an intelligent, hierarchical design that makes common functions easy but also gives you access to uncommon ones;

- troublefree, virtually crashproof operation.

KLEINER: Any program is transparent once you've melded it to your mind.

By "transparency" do you mean the speed with which a program becomes part of you so you don't have to think about its commands any more?

ICENOGLE: I read a statistic somewhere that said something

like 70 percent of all of us micro users are using *the first word processing program we learned as* our primary text editor. Which prompts my second point.

Transparency isn't a property of the program. It concerns the relationship of the user to the program. If you don't have to think about it, it's transparent.

WordStar is my transparent word processor. I can do anything I want to with it, I can do it quickly and I can do it without thinking about it. And it is the first word processor I learned.

DALTON: The hell with documentation. Better documentation is none. The average person is reading one book a year; average households have the boob tube on seven hours a day — who is deceiving whom in an exploration of "better" documentation?

Programs need be only one thing: *self-evident*. You look at it and know what to do.

VisiCalc looks like what it is; with a crib sheet for commands, you can fumble around nicely. Games are the same. Any other candidates?

BRAND: Ease, schmeeze

(gesundheit). The ease-of-entry question has another side. Many users don't use all the time. Many use intensely, then leave off for weeks/months. When they come back, they're temporary beginners again. If the program punishes them for being away, they will feel justifiably resentful and think about sending money to Epson or Broderbund.

SPEZZANO: On **EDIX + WORDIX** there's a good tutorial on-screen that can be completed in an hour and pretty much gets you going. There is even a section of the manual called "If You Are In A Rush" which can get you going in seven steps. A must if you bought a WP to compose a suicide note and you have already taken the pills. Sorry. That was in poor taste. I think I got jaded at the clinic this past week.

ICENOGLE: Ease of learning is over-rated. Everyone equates that with "user-friendly." I know lots of cons and shysters that are friendly as hell, but I don't spend my time with them.

WordStar isn't the best-selling word processor on the market because it's easy to learn. It's because once you've learned it it's fast, powerful and flexible.

"Power." There's another over-used and misunderstood idea. Power isn't the biggest collection of features possible. It's the *right* collection of features for a certain kind of person doing a certain kind of work. And they have to be at your right hand — not around the block and over a half-dozen menus. Look at the

way **WordStar** will stop whatever it's doing and accept a command when you want to give it. Or how it waits to see if you need a menu before it displays it. And how an easy install process will allow you to get virtually anything out of any printer.

Or how it contains virtually every useful feature that anyone had discovered at the time of its development, without stooping to slick and useless things like table of contents generators.

SPEZZANO: Whenever the Society for Prevention of Cruelty to Users (SPCU) received comments from users with split-screen WPs, this feature was praised. My own experience supports this sentiment.

There are so many times that I want to rewrite something rather than revise it. If I'm using a program that doesn't have a split screen feature, I print the old version out and work from that, but I long for the split screen capacity of **EDIX + WORDIX**, which can show up to four files at once.

Each window can contain up to 22 lines with 80 columns, even when all four are in use at the same time. I don't know if this sort of feature qualifies as a standard, but it clearly is a dimension of a WP that users respond to, whether for purely pragmatic reasons or an affection for fancy options.

If block moves can be made between files on screen, that is a real advantage that printing one file out cannot compensate for.

By "transparency" I mean that the WP program (and hardware) intrude as little as possible between you and your thoughts.

—Arthur Naiman

[All this belaboring of **WordStar** was partly because it was the one WP program that everybody in the conference was sure to be familiar with and have opinions and passions about. That made it the standard for discussion; that makes it still the standard in the Word Processing world. —SB]

LEVY: Admission: **WordStar** is the default choice.

DAVIS: **WordStar** is the best selling WP program because it's the best known, not because it's the best. It's the best known because so many people made illicit copies that it was easy to get ahold of. This is a good argument against copy-protection; illicit copies are free advertising that can make a program a *de facto* standard.

LISWOOD: Although I use **WordStar** most of the time as a word processor, I do a significant amount of my consulting practice in data base management. I use **WordStar** in its non-document mode to edit report files and build screens for both **Selector** and **DataFlex**. In this way, **WordStar** gives me all the features of a program editor.

Spellbinder cannot do it, **Palantir** cannot do it, **BENCHMARK** cannot do it. I guess that is another vote for **WordStar**.

NAIMAN: The word processing program I use is Tony Pietsch's **WRITE**, the one Jerry Pournelle

is always talking about in *BYTE*. Although I've been working with it for almost three years (and Pournelle has been using it for longer), the program wasn't released until last spring and still isn't in anything like its finished form. But I much prefer it to **WordStar**, for reasons which I'll now go into, as a way of discussing what I consider to be some general principles of good WP program design.

In my estimation, **WordStar** is one of the most poorly designed WP programs ever written — a huge, elaborate farrago of klugy patches, sort of like a Rube Goldberg machine gone berserk. All kinds of basic functions require disk access, thereby making the program fantastically slow (which it is even where disk access isn't involved; for example, its method of sending text to the printer is so clumsy that sometimes the printer has to wait for the computer!)

Unless you have **MailMerge**, **WordStar** won't let you link files (with continuous page numbering and no required page breaks between files) during printout, thus requiring the use of overlong files. **WRITE** not only links files during printout, it will let you make a global search through linked files, either backward or forward. I'm not saying that **WRITE** is the greatest thing since free love.

There are a number of important features it doesn't have — like the ability to create macro commands.

McWILLIAMS: Do the readers of *Introduction to WordStar* know how its author feels about that program? My, my, my. It's like seeing Jerry Falwell marching in a gay liberation parade: refreshing, but surprising nonetheless.

By the way, your *Introduction to WordStar* is my favorite. (Much better than the one from Brand X.) I was going to write a **WordStar** manual ("The WordStar Book," of course) and then I read yours and decided you had already written it. Everyone in my office learned **WordStar** from your book. Good work.

NAIMAN: Thanks for your kind words. My editor at Sybex does indeed know how I feel about **WordStar**; in fact, one of my requirements before signing the contract was that I wouldn't

have to use **WordStar** to write the book.

McWILLIAMS: My recommended program: **WordStar**. Why? Well, in addition to reasons already given, it can run on practically any computer. Therefore, one can go shopping for the things that word processors (the people) really need — a good screen and keyboard. Here "good" is defined as what they like best. (It's subjective, like the feel of a steering wheel.)

Also, **WordStar** has lots of support. Books, friends to call when you need help, add-on programs (the marvelous **Random House Thesaurus**, **Footnote**, **Index**, etc.), and the knowledge that MicroPro will no doubt be around for a long time — or will sell **WordStar** to someone who will be around for a long time.

SPEZZANO: There are definite advantages to the IBM PC version of **WordStar**, but the use of function keys seems to be an

HOW COMPUTERS MADE THIS ARTICLE

You see on these pages the very keystrokes of the authors. They have been telecommunicated through at least six computers, hopefully improving each time, but always retaining the original gesture intact.

I cannot imagine assembling a forum like this, or extracting its essence, any other way than by computer telecommunications and

computer editing. It would be too punishing.

The 318 comments in the Word Processing Conference came to over one inch thick of single-spaced pages of print-out. In a series of late night (cheaper rates) sessions with EIES, I collected all of that volume on disk. Thank God for 1200 baud. (This was a Hayes Smartmodem four times faster than the 300 baud

one I had used during the conference. I was pulling the stuff in with a version of MIST, an unusually automated telecommunications program. My Kaypro II acted like a snake swallowing a cow.) For the occasional items from other conferences I did quick selective collection live on EIES and then down-loaded the goods.

Interestingly, computers still could not replace 3 x 5 cards for easy large-scale shuffling of items. I needed a wide desk and 60 cards in little stacks

The "ideal" may be a single program with an onion-like approach. Simple and self-evident on the outside with all the features anyone needs, but . . . you . . . have to consciously dig into the program to reach the other, progressively more complex layers.

—Richard Dalton

afterthought token gesture to IBM PC owners and doesn't really replace too many of those CTRL key commands. The main problem I am initially having with those is that I sometimes hit CTRL instead of shift key along with whatever letter I was intending to capitalize. Then something unexpected happens and I have to reach for my manual to see what I have done.

There is something seductive about **WordStar**, even in its complexity and lack of overall organization. I am not sure what that is, or if it's just that I like riding the winner.

LEVY: I left by saying **WordStar** might have to be the standard (I am not familiar with some of the hot new things on the IBM, but oddly, whenever I do see something described as a hot new thing, it doesn't seem much better than **WordStar**). This is depressing, because each week longer I work with **WordStar** on this long project I'm doing, I hate it more. I hate the lack of a buffer, I hate the way it will open a new file if you get one lousy letter wrong when you call the file up (it should look; give me some slack). It's clunky and weird and less fun as it goes along, and sometimes I press a

for that. There are good card-file type programs available, but a screen is too tunnel vision still for getting round large quantities of choices. Since *Perfect Writer* on the Kaypro II with a mere 65K swap file had insufficient pasture for my cattle-sized files, I undertook the pleasure of editing on a Kaypro 10, with its galactic-feeling spaces of 10 megabytes of hard disk and lovely high-resolution screen. (The higher resolution screen I found substantially less fatiguing on the eyes and

mind, especially in the deep night.) At this point *Perfect Writer* came into its own. Its two windows and seven buffers allowed me to cull and re-order text from all over, slinging it around like a giddy Julia Child.

After sundry reviews and re-edits, the final copy was fed from a Kaypro straight into our computer typesetter, a CompuGraphic, and from there to you, typeset by Peter McWilliams, Arthur Naiman, etc.

Sweating this through has been greatly useful

and intriguing for me. I have more respect for what word processing does for the editing function. I have more interest in windows and buffers. I have more of a sense (somewhere between my brow and my forearms) of what is awkward and what is graceful in these Writing Tools, and they are more various in that than I thought.

We do have a service to perform in comparatively evaluating the buggers.

—SB

puter makers have taken the hint (perhaps because making computers "interactive" — meaning usable by humans — meant you could sell them to a great many people). They now offer not just the mouse but other devices that move a cursor and thereby access stored data. Xerox has opted for the trackball on the Star, and Hewlett-Packard has gone for a touch-screen on its HP-150 personal computer. The video arcade is moving into the office.

Any of these devices could work with a Macintosh and all of them perform the essential function of giving users direct, hands-on access to the computer. I have been a typist since I was twelve and I'm not afraid of keyboards. But the keyboard's inefficiency is apparent at a glance. The one I'm using now has ninety-odd keys, each of which can

be shifted at least three ways, resulting in more combinations than a Horowitz has to contend with. Yet the display on my IBM PC, like those on most microcomputers, can show me only the 24×80 matrix. By contrast, a single Mac I/O device, the mouse (basically a button mounted on a ball), can address a 512×342 bitmap. That's an I/O bandwidth improvement of better than 1.2 million to one.

But the mouse was an embarrassment when I was working with *MacWrite*, the Apple-supplied word processor for the Macintosh. Typing with two hands, I needed a third for the mouse. But working with a spreadsheet is another matter. Here the mouse was quick and efficient, selecting boxes from the matrix and changing the display at the click of a button. I had never been able to

THE PETER McWILLIAMS MINORITY REPORT

Let me start with the good stuff. The Macintosh comes with a graphics program that is terrific. This will sell lots of machines to people who will never use it, and it will also sell lots of machines to people who will. It's great fun, and is an excellent example of hardware-software integration. If the Macintosh is a success, much of the credit is due to Bill Atkinson, the author of that program. Architects, designers, and those who make black-and-white drawings regularly are encouraged to look at this program and seriously consider the Macintosh.

From there, the software goes downhill. The included word processing program, *MacWrite*, is mediocre. Okay for memos and homework, but not powerful enough

for business or professional writing. Better word processing will be available, but the Macintosh will not accept a letter-quality printer(!). One must use dot matrix, which is still not acceptable for most business correspondence.

The Macintosh has a nine-inch screen and a single $3\frac{1}{2}$ " disk drive. It has a 32-bit processor and comes with 128K of memory. It costs \$2495. A comparably equipped IBM PC (with a twelve-inch screen) retails for \$3135. Given the reputation, software and support the IBM PC has gathered, which computer would you choose for your business? The IBM PCjr (with a 12-inch color screen — Macintosh is only available in black and white) retails for about \$1800. Which

would you choose for your home?

IBM has created the standard for business computers, and has a good chance of doing the same for home computers. The Macintosh has no chance of capturing the business market away from IBM, and it's priced too high for the home.

So who will buy the Macintosh? People who use black and white graphics professionally, some who still think that "technologically advanced" is automatically the best (it's not: compatibility and support are more important these days), a few who hate IBM on principle, and those who are susceptible to the deceptive soft sell.

—From
The McWilliams Letter
(reprinted by permission)

operate a spreadsheet efficiently until I tried Microsoft's *Multiplan* on the Macintosh; with the mouse, I learned to run it easily in a few minutes, and I was able to set up calculations with very little trouble.

Visual strain is a normal hazard of working with a computer. After experiencing the flicker-free, visually quiet Macintosh screen, I didn't want to go back to a commercial video display terminal. The Mac displays 175,104 picture elements (pixels) on a 5 × 7-inch screen, or about 5,000 per square inch. The PC has 128,000 pixels on a 7 × 9-inch screen, or a little more than 2,000 per square inch. The difference is appreciable.

Pricing on the Macintosh has been capricious. Apple originally announced it at \$1,995, then went to \$2,495 at the insistence of new

president John Sculley, who knows Apple can sell all it can make at either price. At the same time, large discounts were offered to students through large university purchases.

Remember that \$2,495 buys you only the box, the keyboard and the mouse. You'll need a printer (\$595) and software. I strongly suspect you'll also need a second disk drive (\$495), because the built-in 3½-inch Sony drive holds only 400K of memory, much of which is taken up by operating software. And you really ought to have a modem (yet another \$495). That puts the price up to \$4,000 without software. At that, though, the Macintosh is competitive with the IBM PC, and it's a lot more powerful. If you can accept the price, you'll see what performance means to the computer pros. **END**

IBM PCjr:

The answer to why anyone needs a home computer

by Ken Milburn

I have been interested in the new IBM "entry level" computer since I first heard rumors of its imminent arrival. What a wonderful thing it would be, I thought, if IBM made it affordable for the business user to have a personal computer at home, as well as at the office. Those of us with PCs on our desk tops could do some of our work at home and then take the disks back to the office or transmit the files over the phone.

There would be some tax benefits in purchasing such a machine which would help offset the price. If we could use it to help teach the kids, if we could all play video games on it, and if we could use it for the family files and letters . . . why, it would almost be a three-for-one deal!

At first glance, the PCjr is disappointing. It's tiny: there's obviously no room for expansion cards; there's room for only one disk drive in the system box. The

internal (main) memory can't be expanded beyond a minimal 128K. More professional keyboards are found on machines retailing for \$79.95 (e.g., the Vic 20, available at

FIFTEEN WORD PROCESSOR COMMANDMENTS

(from the Society
for Prevention
of Cruelty
to Users)

One legacy of being raised in the Judeo-Christian tradition is the firm belief that any group should be able to summarize its standards in a short list of rules. The following Fifteen (there's inflation everywhere) Commandments derive from my attempts to write on an IBM Personal Computer with about eight different word processors over the past year and from the comments of a broad cross-section of users who have participated in the human factors research of the SPCU project.

1. The problem with software training manuals is not simply that programmers are not writers. It is also that reading a book is not the best way to learn to use a new tool. Studying with someone who can use the tool well and can teach well is the best way, so training manuals (even with on-screen tutorials) are handicapped to begin with. Many word processor manual authors could take a lesson from the information management program *Superfile*. That manual gets you started immediately with a three-column format that could be an industry standard: Column 1 says, "Do this and the screen will look like this;" Column 2 says, "When the screen does look like this, do this next;" Column 3 comments about what is happening and why, like a teacher would. It's great. Following that format, only a sadist could still end up producing a nonunderstandable or unclear manual.
2. The manual should be absolutely clear about which printers the program can use. There should be an easily-accessed screen showing a list of these printers. You should be able to pick out your printer and enter its number. The program should contain sufficient instructions to add another, unlisted, printer to its default settings at that point and print whatever you write, with no other questions to be answered from the printer's technical specifications sheet.
3. While you are creating a file, the program should show you on the screen how many characters, words or pages you have written so far, and how much space is left. The amount of space left should assume you are going to print the document and shouldn't wait until there is not enough room for your document and the printing program too.
4. You can insert text by putting the cursor where you want to start inserting, hitting the insert key(s) and typing. The following text should move right as you enter characters without creating any spaces.

5. You can delete a character, word, text to-end-of-line and a complete sentence with a single keystroke (or a single combination of keystrokes if your keyboard has no function keys) at any time. You should not have to first put the program in a word or character mode and then delete. It's too easy to forget which mode you are in.

6. You should be able to move anywhere in the document quickly and easily.

7. You should be able to move or copy a block of text in four, single-keystroke steps: (1) Mark the beginning of the block; (2) Mark the end; (3) Put the cursor in the new position; (4) Make the move or copy. I cannot think of a simpler way, or a reason why anyone should make it harder. You should also be able to mark off any size block of text and store it as a separate file on disk, and then be able to insert it easily at any point in any other file.

8. You should be able to re-format a whole document or any paragraph with one keystroke.

9. The program should allow unlimited flexibility in specifying a "search string" and you should be able to make the replacement globally or selectively, and quickly.

10. At least one split screen with multiple buffers greatly enhances anyone's ability to write well with a computer.

11. As much as possible the completely formatted text should be on screen (including underlining) while you are writing and editing, including page breaks (which you should be able to change quickly).

12. "Canned formats" that can be stored alone or with a document should be created in a question-and-answer part of the program, and then stored or retrieved with a keystroke.

13. You should be able to put a heading or footing on your pages and number the pages anywhere on the page you want.

14. You should be able to insert a simple command for forced or conditional page breaks.

15. Don't use a program that handles files in a way that's incompatible with your computer's operating system. *EasyWriter II* loses a lot of points in my book by not following this rule. Without this compatibility all the utilities offered by your operating system (like erase and copy) are useless, but even more crucial, you will have problems interfacing your WP with other software written for your computer.

I am not suggesting that this list is definitive, but it does reflect the actual concerns of a number of people using WPs out in the real world.

—Charles Spezzano

Word Processing Computers As Remedial Writing Tools



*If this is how you saw school,
you'd hate it too.*

by Richard Wanderman

I'm thirty-one years old, dyslexic and dysgraphic.* As many dyslexic people who have struggled with writing know, hard work alone doesn't eliminate the problem. Spelling, organization and logic problems, coupled with dyslexia-caused clerical mistakes, are always present to undermine our writing and our morale.

But there are tools that can help us compensate. The newest ones — microcomputers and word processing programs — have completely changed the part of the writing process that has made writing so hard and inaccessible for many people with learning disabilities.

I read a line and as I get to the end of it I start to lose the beginning. I go back and reread the beginning and lose the end. This is assuming that what I'm seeing is what's on the page. I

may be reversing letters within words, changing their meaning, or reversing words within the sentence, changing its meaning. I type a first draft, then go back and read it. I type a second draft to correct the mistakes I found. In reading the second draft I find a new set of mistakes. Not only are there new clerical mistakes which anyone might make, but there are words misspelled that I spelled correctly in the first draft! When this is compounded

This article has particular poignancy for me, as it deals with a problem shared by my son. After fighting with teachers for a number of semesters, I was able to establish that he wasn't just "bad" but had important problems standing in the way of learning.

Dyslexia is far more common than most people imagine. Part of the answer lies in new tools that people like Richard Wanderman self-prescribe to help deal with this subtle thief of human potential.

—Richard Dalton

with the initial problem of holding whole sentence chunks in my head at one time I wonder how I can read and write at all.

There seems to be an underlying assumption that learning has to be hard and unpleasant to be effective: no pain, no gain. If there is a metaphorical connection between the brain and muscle, it falls apart in the case of the person with a learning disability. Repetition and "hard work" don't consistently make learning happen. I had no reference point for differentiating between my dyslexia-caused difficulty and the possibility that I wasn't working hard enough. On top of this there was little positive feedback to keep me actively wanting to learn.

The typewriter is a tool that extends human capabilities. It lets the dysgraphic writer read his own writing and allows him to share it with others. The word processing computer goes further. It separates writing (modeling ideas with words) from printing. This is why this tool is so important to me. Since the writing first exists only electronically, one can work and rework it for as long as necessary — moving things around, correcting spelling, transpositions and typos — before it gets printed.

It's initially cumbersome to use a computer to write with: learning the rigid series of commands and correct syntax to control the machine while at the same time trying to focus on

what one is writing. But even with my reading and writing problems, coupled with the poorly written documentation that comes with most computers and software, I was able to use the machine as my primary writing tool in a few days. Instead of trying to memorize the entire operating system and word processing program at once, I just took in enough information to write a simple letter.

This was an effective learning strategy and I recommend it for beginners. Later, as I felt comfortable, I learned how to do all the fancy editing, block moves, global searches, print formatting, the works.

One's relative ability to use language is an easy means of being measured and typecast by other people. There is an assumption that language is the spoor of thought, and that people, especially adults, who have problems expressing themselves verbally (in this case in writing), are lacking in their ability to think. For me, finally having an unhumiliating way to learn how to write may alone be worth the price of a computer.

It's unfortunate that there's been so much hype and lack of imagination and insight about all of the wonderful things computers can do for us. Given this, it was hard for me to visualize a personal use for a computer until I found out about word processing. END

** Dyslexia is impairment of the ability to read. Dysgraphia is impairment of the ability to write.*

AND NOW FOR SOMETHING COMPLETELY DIFFERENT

Microwriter is a strange little beast, but after handling it for a few minutes, I began to appreciate I was holding something with unique potentialities. Sold primarily as an alternative to standard "QWERTY" keyboards, it is also a good tool for the imagination.

You lay your hand naturally on the Microwriter and tap out letters using chord combinations, similar to (and simpler than) playing the piano.



Jonathan Reineck

Hands fit naturally on Microwriter's keys. A "crib sheet" is included to remind you how characters are entered.

For more information: Microwriter
17 East 71st Street, New York, NY 10021;
(212) 288-8863

We asked a number of evaluators and *Review* staffers to test-drive Microwriter. Not surprisingly, it appealed more to people who were not already touch typists. Most were complimentary about the documentation and thoughtfulness that went into the way characters are formed.

"Instruction book is friendly! And simple! . . . Love the 'characters.' " —Debbie Jardniecek

Reviewers also thought it could be useful for journalists, students or travelers.

" . . . its portability and small size make it an A++ " —Lyn Gray

Microwriter's manufacturer adds that people like scientists, who need to have a hand free for work with instruments, also appreciate its one-handed operating style.

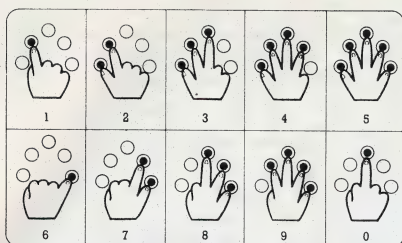
Our reviewers spent one to two hours each with the Microwriter and really only tasted its possibilities. The manufacturer claims it takes about fifteen hours of practice to develop useful skill.

"Most of the letters are easier to remember and enter than I expected. Still, quite a lot of practice would be necessary to train the fingers to press certain combinations."

—Clifford Figallo

To completely assess Microwriter, your hand and brain have to get used to it so that it seems to disappear. Then your fingers can drum subconsciously while your mind plays with the words that are coming up.

Microwriter's \$500 price seems discouraging. Full keyboards cost about half that



Numerals result from logical finger positions, as shown in Microwriter's excellent manual.

much and even some computers (like the Commodore 64) can be bought for about the same amount. More than just a keyboard, however, the two-pound unit includes about 8KB of memory, allowing you to store about four pages of text in Microwriter before transferring the information to a computer or over telephone lines via the built-in RS-232C interface. Optionally, a cassette tape can be used as a storage medium.

A 16-character LCD screen shows what you are entering and the software supports full word processing capabilities like insert, delete and movements by line, paragraph or document. You can set or change margins, tabs and headings, underline, double space and otherwise manipulate text through use of control characters you enter. Microwriter is battery-powered for portable use and a charger is part of the package.

At the recent COMDEX/Fall trade show, we talked to Cy Endfield, the inventor responsible for Microwriter and its clever character encoding scheme (Endfield is a multifaceted person, having been a movie producer prior to launching Microwriter). He introduced us to a new stripped-down version

of the \$500 model now available in the U.K. (and scheduled for U.S. introduction shortly) that attaches to the BBC's Acorn computer, allowing this inexpensive micro to support up to four simultaneous users.

This mini-Microwriter has no memory or display (the computer's memory and CRT display, carved into four sections, are used instead) and the price is much less — £39.50 (about \$56 at this writing) for the first keyboard and a four-way connector plus tutorial software; £19.75 (about \$28) for additional keyboards that are connected to the same computer.

This low-cost version is being sold primarily to schools and means four students can work on a single computer, sharing text entry and educational game software (some interactive word games looked particularly good) for a total cost of about \$600. That makes a Microwriter-based system a less expensive educational package than any other we have seen. Since the Acorn Computer is not widely available in the U.S., versions are being prepared for Commodore and Atari.

Microwriter is a difficult concept to place in the spectrum of options available to the personal computer shopper. A number of specialized uses are evident but whether it becomes a widely accepted alternative to traditional keyboards is questionable. Overall, it's refreshingly different, well thought-out and worth your consideration.

—Richard Dalton

OF MICE AND CHEESE

by Matthew McClure

My original prejudice was something like "What on earth would you want a mouse for? *WordStar* commands aren't *that* hard to master." Then I tried editing with a mouse and found it was easier on my brain — I could keep thinking about writing while moving the cursor, deleting words, lines and part of lines, moving blocks — all the things that would normally require combinations of control characters. Now I'm a convert.

A mouse is used to move the cursor around but that's only the beginning; the "cheese" that makes the mouse run is software. This cheese lets you run your favorite program using customized mouse-driven menus. In the right environment, a mouse can simplify many word-processing procedures: block moves, search and replace, margin control and so on. Move the mouse a little, touch the button again and you've made your choice. Some mouse environments are also well-suited to spreadsheets, and programs like *Lotus 1-2-3* and *Multiplan*.

Two systems offer a mouse/menu environment for *WordStar*. The PC Mouse, from Mouse Systems Corporation, is a three-button model; each button has a separate menu which pops up in front of your text. Move the mouse to the option you want and press the same button again. The first button gives you the "edit" menu, with choices like "block menu," "delete menu," "style menu." Choosing one of these causes another menu to pop up in front of the text. When you make your choice, the menu disappears, the command is executed and the cursor is returned to its prior position (unless the command itself results in a different cursor position).

The second button gives you a "motion" menu ("screen up," "screen down," "top of file," "bottom of file," etc.) and the third gives file options, such as "save and resume," "abandon file," "print," "delete," or "read." All the pop-up menus have immediate exit options — move the mouse to the bottom of the menu, press the button, and presto! you're back where you were.

Using the mouse to move the cursor around directly — instead of



Clockwise from upper left: Mouse Systems and VisuAll's mice both run on their own grids; Microsoft's mouse runs free.

with the menus — is a little easier than using the normal cursor-control arrows, but it only works in one direction at a time: you can't move diagonally, which would be nice. This is a function of the software environment. In the *IBM Personal Editor*, diagonal movement of the mouse is directly translated into diagonal movement of the cursor.

I use a Mouse System's mouse with the IBM Personal Editor, and it's a great combination. It must be seen to be appreciated. I saw one on a friend's system and bought one for myself on the way home.

—Jack Powers

Another software product for use with mice is *VisuAll*, from Trillian Computer. They also make a mouse but it's really the software that makes the difference. *VisuAll*'s software is menu-driven, but the menus are fewer, longer and somewhat harder to use than the *Pop-Up* ones. Although the Trillian mouse has four positions, its software only makes effective use of one. I preferred Mouse Systems' three-button version mostly because of the

cheese: with three buttons, you have three menus available at once which means they can be short enough to select options quickly and easily.

I also noticed that the same mouse seemed considerably less sensitive with *VisuAll* than with the Mouse Systems program. On the other hand, the *VisuAll* software lets you customize your windows so you can design your own menus for applications, an important feature which Mouse Systems lacks.

One of the most noticeable differences between the two programs is the resolution of the mouse: Again using the same mouse, the *VisuAll* program allows much less precision in its placement of the cursor on the screen. It's very easy to place the cursor exactly where you want it with the Mouse Systems program.

Microsoft makes a mouse, but their software doesn't provide the same kind of environment that either Trillian or Mouse Systems does. It's designed more for programmers who want to develop their own mouse-oriented software. Moreover, it does not work interchangeably with the Mouse Systems or Trillian mouse: It tracks the position of its rollers, sending a different message than the other two mice, which report their position on a special grid. *Microsoft Word* is their word processor designed to work with their mouse. It is a full-featured program but takes a while to get the hang of editing with the mouse. I found the *Pop-Up* menus easier to use than *Microsoft Word*, mostly because the Microsoft program requires a lot of mouse movements between the text and commands the mouse points to. With the *Pop-Up* menus, the movement is minimal and the cursor returns to your place in the text as soon as you're through with the menu. There are a lot of nifty mouse commands in *Microsoft Word* which let you do things like scroll smoothly through your text; but they require a fair amount of memorization before you can make use of them.

END

PC Mouse with Pop-Up Menu Software

\$295 from:
Mouse Systems Corporation
2336H Walsh Avenue
Santa Clara, CA 95051
(408) 988-0211

VisuAll

\$99.95 from:
Trillian Computer
P.O. Box 481
Los Gatos, CA 95031
(408) 374-5001

Microsoft Word

Printed circuit board, manual,
two disks
\$475 with mouse;
\$375 without mouse from:
Microsoft Corporation
10700 Northup Way
Bellevue, WA 98004
(206) 828-8088

For more on Microsoft
Word, see p. 18.

SOMETHING FOR EVERYONE

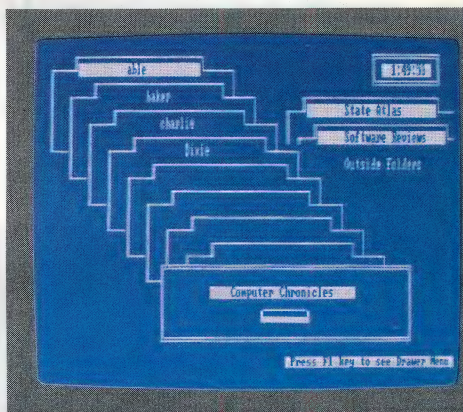
by Charles Spezzano

Jill and I went to Emerging Technology in Boulder today, and fell in love with *OFFIX*. Jill does not usually get as excited about new software as I do but she immediately wanted to put *OFFIX* to work on our SPCU data and my psychology practice files. The no-manual, visual orientation really grabbed her. It's a great basic starter program for almost any home user, professional office like mine or a small business. It mimics so well what most of us have seen all our lives — an office with a file cabinet — that Jill and I often understood before they told us what to do next.

This "personal office system" is intended to be the first product an entry-level user takes home to get started with basic organizing and writing, but it also has enough "almost sophisticated" features that would make it attractive to someone with more knowledge of computers. Emerging Technology wants people to start using the PC for personal and professional work *immediately*.

There are really no commands anywhere in the program after you type in *OFFIX*. Every step involves choosing from menus, guided by great help screens

and pictures of drawers and files and folders. An excellent example of how these "icons" can help capture the feel of working in an office: When you forget to put a folder back in a drawer, you see it lying on top of the cabinet.



Once you have opened a drawer, the screen displays the file folders now in the drawer.

To the right are the folders you have taken out of the file cabinet. Tutorials are available for each *OFFIX* function.

Charlie Spezzano is a rara avis: He both teaches and practices psychology, runs a network of software reviewers he calls the Society for Prevention of Cruelty to Users, is starting (with his artist wife, Jill) The SPCU Letter for Word Processing Software and contributes regularly to the Review, Psychology Today and Popular Computing.

We asked Charlie and Jill to take an early look at OFFIX, our featured software product this quarter. They came away impressed.

—Richard Dalton

Throughout the program, menus are accessed with the "F1" key and help screens with "F2." The first level is tutorial; if you don't need it anymore, you can get rid of it permanently; otherwise *OFFIX* will ask you each time if you want the tutorial for that section. The arrow keys are used to select which drawer in the file cabinet you want to open.

"F3" closes a folder or drawer. Other commands are single letters: Pressing "r" lets you re-label a drawer.

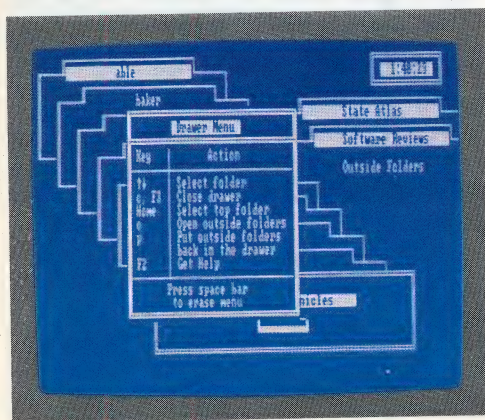
The first thing to do is to open a drawer and select a folder. Each drawer can hold up to 100 folders — about six of them appear on the screen at any one time and you scroll up or down to get the others. (There are highlighted arrows that tell you whether there are other folders up or down or both. A buzzer tells you not to scroll further in a particular direction.) After you are positioned on the folder you want, press "T" to take the folder out of the drawer.

Each folder contains forms or documents created with the word processor. When you use the word processor with a folder open, whatever you write goes into that folder. The folder level is the main work area, so folder maintenance is automatic. You don't have to remember to put the date in the folder; if the folder is open, whatever you do is kept in it automatically.

You can create a form with the word processor — only one form per folder. Once you have created it and stored it within the folder, you can fill out and store as many of that particular form as you want.

To create a form, you need a fresh folder which can be as large as your storage disk. If a folder has a form in it, you cannot change it. The word processor tutorials teach you how to design a form, but it only involves typing in what the form pages should look like. "F4" makes the form permanent. Each form can have 50 fields, with 200 characters per field and 2000 total characters per form.

Forms are limited to one screen, so each field should be kept small on the screen. But each field has a scrolling window, so it can hold much longer records than it appears to be able to; you see that as soon as you start to enter a twenty-



The Drawer Menu. This is an example of the pop-up menus which tell you the available options. The menus appear in front of the screen displaying your folders and you return to that display when they disappear.

character name in a "Name" field that only looks big enough for ten characters.

We saw a demonstration folder with 50 identical forms, each containing information on a state. The sample sort was "Get me all the states that begin with 'A' and give me the capital." In the state field, you enter "A" and title the columns, "State name" and "Capital city." Then you define the desired width of the columns and tell it the layout of the page — you get a picture of a page and design your output. Then it asks you if you want to send it to a printer or the screen.

OFFIX can search a data base (folder) for up to ten fields (selection or search criteria) simultaneously. Once that subset has been identified, it will then "sort" by any one of the ten fields. If I wanted to search the SPCU data for people who use *Volkswriter*, *The WORD Plus* and *OFFIX* from a folder of forms that contains Name, Address, Type of Word Processor, Brand of Speller and Brand of Data Base Manager — *OFFIX* can do that and can then put those names in alphabetical order.

You cannot do a sort or report based on two different folders as you could with a true relational data base. You can, however, open two folders

The Layout Form. Pressing "Return" will step you through the various parameters — margins (top, left, right, bottom), spacing, page length, page title, page number.

simultaneously. *OFFIX* won't do any real calculations except to total a column of figures. There is no spreadsheet, so this is not a cheap competitor for *Lotus 1-2-3*.

The better I get to know *OFFIX* the more I like it and the more it seems accurate to describe it as a very useful, perhaps generic, tool for getting anything, anyone, any office better organized. IBM ought to just throw an *OFFIX* package in with every PC or XT. It could become a rival of games and word processors for general use on PCs. —Charles Spezzano

OFFIX

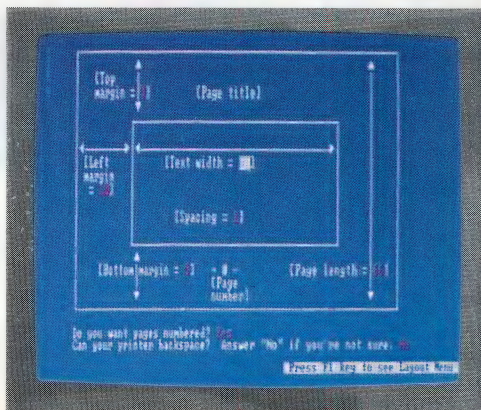
5¼" disk and instructions, \$99

Hardware requirements:

MS-DOS, 128K RAM, two disk drives, IBM clones, IBM PC, IBM XT, TI PC, NEC APC, DEC Rainbow, Zenith Z-100 and Victor 9000, HP 150, TRS-80 Model 2000.

Information and nearest dealer location available from:

Emerging Technology Consultants, Inc.
2031 Broadway
Boulder, CO 80302
(303) 447-9495



McMicro

OVER
700,000
SERVED



Why the IBM PC is a Lousy Standard for the Industry

by Richard Dalton

Good Lord, do they know how to sell. If IBM put a ten-foot whip antenna and optional raccoon tail on its next computer, it would not only sell every one it could make, but whip antennas and raccoon tails would become the "industry standard."

—Steve McNamara in the **Pacific Sun**

The IBM PC isn't a standard for the industry at all — it's a standard for IBM, and a shifty target at that. IBM never set out to create a standard. They birthed a well-conceived market-grabber that bridged the gap between the adaptable but non-business Apple II and the workaday, dull world of CP/M computers.

Well then, fine. . . . What's the big deal about standards anyway?

Imagine a nationwide electrical power system that supplied different voltages to each region of the country. Or required differently shaped plugs in New York than the ones in California. Electrical appliance makers would spend a lot of their research and development resources designing alternative motors and plugs to meet the requirements of each non-standard power supply. That's what goes on in many parts of the world and why you need a transformer to make your hair dryer work in Europe.

Standards are developed (or as often, just evolve) in almost every industry for solid reasons: to make components interchangeable in completed products; to focus design efforts on innovation rather than adaptation and ultimately, to keep the cost of products affordable. These reasons all tend to benefit the consumer.

Success in the personal computer business is a curious chicken and egg situation. Buyers are sophisticated enough to realize they shouldn't consider a computer that doesn't have a broad base of available software; software companies won't create new products for computers that aren't being bought in large quantities.

Some young genius dreams up a new way to organize information. Then, because programs have to match up precisely with a computer's operating system and hardware features, a decision has to be made about which machine or generic group of machines is to be the vehicle for the embryonic product.

Imagine the software developers who were putting the finishing touches on programs for the Osborne I, just when the announcement was

WILL THE REAL PC DOS PLEASE STAND UP?

A confounding part of the IBM "standard" is that IBM itself has no single operating system for the PC line.

PC DOS 1.1 is the operating system that is required for most IBM software currently available. When IBM announced the XT (the hard disk version of the PC) it came equipped with PC DOS 2.0, a major departure from version

1.1, and software developers were faced with the task of modifying existing packages or ignoring those people with version 2.0.

Finally, the brand-new PCjr operates with the new "universal" operating system, PC DOS 2.1, designed to work on the PC and XT models as well as the Jr. Tests we performed recently with software

designed to run with version 1.1 lead us to believe that most software will have to be modified to run with 2.1.

Confusing? It's a much tougher situation for IBM PC-compatible computer manufacturers. Each time IBM's operating system changes, it's back to the drawing boards and the testing laboratories. Software developers are faced with similar activities and the consumer has to wait until it all gets sorted out — or buy an IBM PC.

—RD

BIG IS BEAUTIFUL?

"[the] ...only responsible course open to the court is to seek IBM's agreement to a stipulation of dismissal of this action."

—William Baxter
Assistant U.S. Attorney
General in charge of the
Antitrust Division
(*The Wall Street Journal*,
January 11, 1982)

IBM has been hassled by the Justice Department more than once because of its success in the computer industry. In the most recent case, the antitrust action was dismissed. Questions still remain, however, as to whether IBM was innocent of a high tech monopoly or whether they had just out-gunned the Justice Department's legal staff by the sheer weight of their financial and professional resources.

It's a serious question.

IBM continues to be such a powerful force in the computer business that it's hard to get a perspective on their dominance. Some facts may help:

- IBM's profits in 1982 were more than \$4.4 billion, the highest figure in the *Fortune* 500, where they were ranked number six. They made an astonishing 22 cents profit on each of the \$34 + billion they took in that year.
- Within the U.S. computer industry, IBM's sales were eight times their next closest competitor, Digital Equipment Corporation. And the \$2 billion they spent on research and development (the basis for future product growth and innovation) was more than all but five competitors generated in total 1982 revenue.
- The PC is estimated by *Business Week* to be the sales leader in personal computers, accounting for 26 percent

of sales two years after IBM entered the market. This does not include sales of the new PCjr of course.

- If IBM were a country, its "gross national product" would be larger than all but 35 of the world's nations. That would make IBM larger than Pakistan, Chile or the Philippines.

Does this make IBM Too Big and an anti-competitive force in the computer industry? Supporters maintain that IBM is not being predatory, merely better than the others. That may not be the question.

Companies like AT&T and General Motors were forced to split up when they became overpowering within their industries. Any industry, especially one as important to all of our futures as computers, needs to have a competitive environment safe enough for even the little fish to swim in and thrive.

—RD

made that Osborne Computer had filed for Chapter 11 protection under the bankruptcy act; they didn't lose all the work put into the software designed for this fairly non-standard machine but much of the potential return on their time investment has been lost.

Enter the "IBM PC standard" dilemma. The standard everyone talks about is technical in nature but simple to understand — it comes down to whether a given program can run on a variety of computer brands without modifications. If the IBM PC was a standard in that sense, there wouldn't be all the discussion there is about whether the Compaq or TI Professional or Corona computers are "truly compatible" with IBM's offering.

The reason the compatibility controversy rages is because IBM set out to design a machine that was unique and specifically their own, just as Apple did with the ubiquitous Apple II or Radio Shack with their line of TRS-80 computers.

Few people have ever accused IBM of a charitable outlook toward their competitors. When they announced the PC in 1981, they did take the unprecedented step of releasing voluminous technical information that permitted others in the industry a chance to design add-on components, software and even competitive computers — with one important exception.

In the heart of the IBM PC lies a section of Read Only Memory (ROM) that is a specialized

chunk of circuitry to handle input and output routines and parts of the BASIC language interpreter, among other things. This 40,000 byte ROM area has proven to be a stumbling block to hardware and software compatibility as it is patented and undocumented. This was not an accident; IBM could have made the contents of this critical area as publicly available as they did other PC internals, but they chose not to.

Other computer manufacturers have gotten around this unknown territory by analysis of how the PC and specific software function, accomplished by exhaustive testing. This costs much time and money, commodities that IBM's competitors have in limited amounts, especially compared to the immense resources IBM can bring to bear (see box).

Is IBM not being fair to the little guys? Probably not, but that isn't the issue. By slavishly following the IBM party line, the rest of the industry has put themselves in the position of being jerked around by any design whim (good or bad) that IBM decides is useful to their computer line or even their stockholders.

As noted on the opposite page, operating system changes have already caused trauma for the compatible vendors. But what if IBM decides to change the size and content of the ROM that creates so many compatibility problems, or perhaps load some totally new operating system into this obscured memory location? In

laying out the internal architecture for the PC, IBM allocated 256 KB of the total available memory for ROM and currently uses only 40 KB. That should cause some nightmares for their competitors, if it isn't already doing so.

This isn't intended to be just an anti-IBM polemic. I think the personal computer industry *needs* more than one vendor, no matter how skilled. I think consumers need choices — in

hardware, pricing and innovation.

Unless the non-IBM computer industry gets its act together and develops its own standards, not just a *de facto* approach caused by immediate adoption of any change in PC specifications, most hardware makers will find themselves in an increasingly difficult competitive position; many will find themselves out of business. And as that happens, we will all be the poorer for it.



PLAYING HARBALL

(or, What's Good About IBM Personal Computing)

by Charles Spezzano

Have you ever seen an article entitled "Why I hate the Cleveland Indians"? Of course not. Who would care? Someone did take the time, however, to write an entire book about why he hates the New York Yankees — not George Steinbrenner, or even a particular Yankee team, but the very idea of the Yankees. The Yankees, like IBM, are important enough to hate.

IBM, in fact, has the reputation of being the Yankee imperialist dogs of the high-tech marketplace. They allow other companies to take the risk of introducing new products. IBM sits back and waits to see if there really is a market for that product. If there turns out to be a lucrative one, IBM enters and takes it over. After considerable philosophical and ethical contemplation on this controversial issue, I have reached the conclusion: "So what?"

Consumers have not been hurt by the entry of IBM into the pc-world series, although fans of the Apple Dodgers and Kaypro Orioles will often argue otherwise — and sometimes with a great deal of sympathy and support from the media. Apple, after all, is the American success story. Like the Dodgers, Apple is a spunky company from The Golden State — not a powerhouse from New York. They make a spunky little machine. After IBM's Personal

Charlie Spezzano's ringing defense of the IBM PC should not mislead anyone into thinking they have turned to the Review's sports page. His theme is derived from his native Bronx where he grew up in the shadow of Yankee Stadium.

—Richard Dalton

Computer replaced Apple's II + as the choice for connoisseurs, Apple had enough spunk to come back fighting. True, their reply to IBM took the form of: "For only twice as much as you are charging, we little guys can come up with a piece of hardware that is closer to state of the art in some respects, even if the spreadsheet and word processor tend a bit toward mediocrity." Still, when you're getting that much spunk you ought to be willing to pay, and to make a few sacrifices. I hate spunk.

What I like is competence. IBM took a thoughtful, reflective approach toward its line of personal computers. They introduced a competitive product into a crowded field. Why would anyone have expected IBM to act small? They are big. They acted big and backed up their presumption with substance. People responded and in two years IBM has claimed a quarter of the personal computer marketplace. This success has led to much weeping and gnashing of teeth among those who never seem to think that consumers are doing what they should be.

People are buying what appears best to them and for a person who has a blend of personal and professional uses for a computer, IBM is a natural choice. Almost every important software company is writing or rewriting programs for the IBM PC. No one else had been able to accomplish this before IBM entered the market. In the face of this reality, arguments about whether IBM should or should

not be the industry standard become superfluous.

One of the benefits to consumers of this emerging standard is the ease with which a wide variety of software can be purchased. Before the PC, the top programs could appear in any form — written for the Apple or for some CP/M system. *VisiCalc*, for example, was available only in Apple DOS format for the first year of its existence. That fact alone probably sold one or two hundred thousand machines for Apple.

The new generation of spreadsheets and the vastly improved data management programs and word processors that are here because the PC is here to run them argue strongly that IBM is as good a candidate for an industry standard as can be found in the market today. With IBM in the race everybody has to stay on their toes. That is good for us as consumers.

In the wake of the Black Sox scandal, baseball was dying before Babe Ruth single-handedly revived it with more power at the plate than anyone had imagined. That's Babe Ruth of the New York Yankees, not the Brooklyn Dodgers, spunky though they were. Pee Wees do not fill stadiums. Babes do. The Yankees have always known that and they still draw big crowds wherever they appear. There is always the chance they will play really great baseball and the very fact that they are on the field adds class to the game. The blue caps don't look too bad either.

END

Bringing the IBM

by Frederic E. Davis

The IBM PC is sold "bare bones" to make the initial purchase price seem low. Some personal computers are complete packages including a display, disk storage units and built-in connectors for a printer and communications that make the system ready to go to work as soon as you get it.

The basic IBM PC is known as the "IBM Personal Computer System Unit with Keyboard" and that's just what you get: a system unit and keyboard. This currently retails for \$1,355. The focus of this article is on the hardware you need to add to the system unit to make the computer useful.

Disk Storage

The first device to consider is a disk drive, or better yet, two disk drives. These are used for loading programs into the computer and storing data and information that you create. Disk storage is very important and I would recommend getting two "double-sided" drives which gives you the most flexibility and versatility with your system. Some programs require two drives in order to run properly; one drive used for the program diskette and the other for data.

Memory Considerations

The original IBM PCs came with only 16K RAM installed on the motherboard. (RAM is the active workspace inside your computer and is measured in units of "K" equal to 1,024 computer characters.) This is not enough RAM for most of the programs available for the IBM PC. These early PCs have room for an additional 48K worth of RAM chips on the motherboard. If you have one of these early PCs, the first thing to do is plug additional RAM chips into the

empty RAM sockets on the motherboard to bring the RAM up to 64K. The PC now comes with 64K RAM installed on the motherboard which is sufficient RAM for most games, many word processors and a number of other programs.

If you want to use sophisticated programs that require larger amounts of memory such as *Lotus 1-2-3*, *Visi-On* and others, you will need further memory expansions: 96K, 128K, 256K or even 512K total RAM. Under the current scheme of memory organization, 640K is as far as you can go. The IBM PC can utilize 1,024K of memory; 128K is devoted to the video display (TV screen), 256K is for ROM (Read Only Memory, which has specialized uses, though only 40K ROM is used by IBM at the time of this writing) and that leaves 640K for RAM.

The best way to figure out how much RAM you need is to check out the software you want to use first, then see how much RAM these programs require for optimum operation. If 64K is the

PC Up to Snuff

largest amount of RAM needed by any of the programs you want to use, then you're all set. If you need 128K then get an expansion card that has another 64K on it. The point is: Don't buy anything you don't need. Sales hype may lead you to believe you need 256K RAM right away. Maybe you do; but maybe you don't. Checking the software first will help guide you in your purchasing decision.

RAM cards are sold separately, but the best value is to buy a multifunction card that offers RAM expansion (these multifunction cards will be discussed at greater length later in the article). Look out for IBM's prices; they offer 32K RAM cards at the ridiculously high price of \$325.

Typical setup/scenario: customer has standard 64K RAM in his IBM PC and he has just picked up a copy of a program like *Wordvision* at a local bookstore (where people don't know much about computers). The unsuspecting customer gets home and tries to run the program but it doesn't work, because it needs 96K RAM to run.

A quick trip back to your local IBM dealer who says "You need another 32K RAM for your system . . . and you're in luck. We have a 32K RAM expansion card and the price is lower than our 64K RAM card." It's best to get RAM expansion from

someone other than IBM. Before you buy anything computer-related it's good to shop around. Try to find several similar products and compare prices. Check computer magazines and user groups. Don't buy anything the same day you first get excited about it.

When expanding RAM, look for the type of cards that have empty sockets for future RAM expansion. That way you can get maximum potential for expansion. Add more chips to the card later on as you get software that needs additional RAM. Plugging additional RAM chips into empty sockets on a card you already have is better (and cheaper) than getting another RAM card. One of the expandable RAM cards is the Maxicard offered by Vista Computer Company for \$379 retail. This comes with 64K RAM installed and is expandable to 576K.

Displaying the Data

Another important board to plug into the computer is a video display adapter which lets you connect the IBM PC to a monitor. IBM sells two types of TV interface cards. One is the IBM Color/Graphics Monitor Adapter which costs \$244. This interface card lets you hook up a color television monitor such as the IBM Color Display, selling for \$680. It's possible (and usually less expensive) to use other displays. To get the Color

Choosing the best value from the more than 100 boards available for the PC is perplexing.

Display and the Color/Graphics Monitor Adapter you'd have to spend \$924 plus tax, which is pretty close to \$1,000. You can find lower priced displays, but let the buyer beware since the quality may vary substantially. Color monitors made by Amdek, Taxan, NEC, Quadram, Electrohome and Commodore are all worth considering. The new color televisions that have a "video in" plug can also be used with some types of color adapter cards. Make sure you check how well the card and monitor combination works before buying.

The other display interface that IBM sells is the Monochrome Display and Printer Adapter. This is a multifunction card that provides both a video interface and a printer interface for a cost of \$335. The IBM Monochrome Display is \$345. The most common type of monochrome display is the green phosphor such as IBM uses. Green is thought by many to be the easiest on the eyes, though black-and-white and amber displays are also popular. The combined cost of an IBM Monochrome Display and Printer Adapter interface card is \$680, a considerable savings over the color display and interface card. Also, a monochrome display provides a clearer image than color. This is better for word processing and other applications that require you to



look at the display for long periods of time.

Another advantage of the Monochrome Display and Printer Adapter card is that it provides two different functions; connecting a video display and providing a printer interface. The IBM dot-matrix printer is actually an Epson MX-80 printer with Grafrax that has the IBM label on it. The Epson printers are all quite good and you can save some money by buying the same MX-80 printer from Epson without the IBM label on it.

Communicating

Another important hardware consideration is the issue of communications. A communications interface card can be connected to a device called a modem which allows computers to transmit information over a regular telephone line. This allows you to hook up to large computer



information networks such as Dialog, The Source, BRS and CompuServe. It also lets you call someone else with a micro-computer and transfer information with them.

The standard type of communications card is the IBM Asynchronous Communications Adapter which sells for \$120 (a cable is also needed and IBM wants another \$75 for that). This type of interface is also known as a "serial port" or "RS-232 protocol." It is used for sending a stream of bits one by one (hence the name serial) over a cable in an agreed-upon fashion. But with this interface you still need a modem. 300 bits per second (bps) modems cost \$100 to \$300 and the faster 1200 bps modems cost between \$300 and \$700. There are cards which contain all the circuitry needed to connect directly with your phone line. One example of this is the Hayes Smartmodem 1200PC which sells for about

\$600. This offers software compatibility with the popular Hayes Smartmodem 1200 stand-alone version that is used with many computers.

Multifunction Cards

Plug-in cards offered by several manufacturers offer more than one feature. These cards are known as multifunction cards. They provide features such as RAM expansion, a built-in clock, a video display interface, printer hook-ups and communications, all on a single card. This has the advantage of taking up fewer slots than individual cards for each function (it's important to keep slots on the motherboard free for future expansion options). Multifunction cards usually cost significantly less than separate cards. As an example of this, consider the AST "Comboplus," a top-selling multifunction card that can be purchased from Advanced Computer Products in Irvine, California, for \$695 and includes 256K RAM, an RS-232 serial port, a parallel printer port and a clock/calendar. Buying the individual cards from IBM to do the same things would cost almost \$2,000.

[Note: All IBM prices quoted are from IBM's retail price list dated November 1, 1983.] **END**

Two recent surveys provide current and detailed information about IBM PC boards: "Multifunction Cards for IBM PCs" (InfoWorld — Nov. 14, 1983, pp. 76-82) lists specifications and prices for 36 multifunction add-ins; "Expanding on the PC" (BYTE — Nov. 1983, pp. 168-179) is more exhaustive.

—Richard Dalton

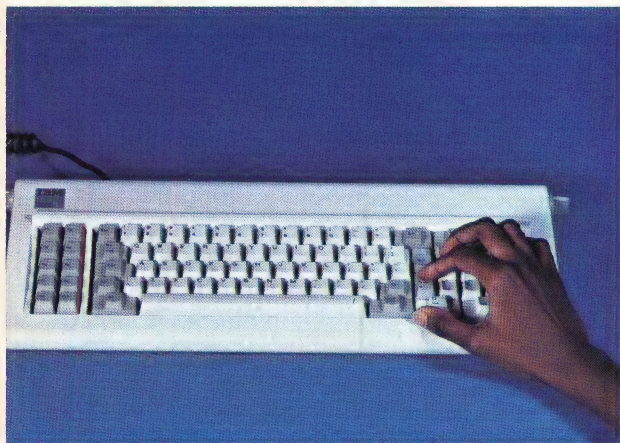
Keyboards for the PC

by Matthew McClure

I've been using keyboards for more than thirty years, ever since I got my first portable typewriter when I was six. I typed papers for friends in school, used a Selectric when I was a securities analyst, set type on an IBM composer for the *Whole Earth Catalog* in its early incarnations . . . I've used a lot of keyboards.

The one that comes with the IBM PC is not among my favorites. My old Royal manual had a nicer touch and I had no problem with extra keys in weird places, like between the "z" and the left-hand shift key or between the apostrophe and the "Return" key. Fortunately, enough companies have been trying to fill the vacuum left by IBM's keyboard that we now have a real choice. Two excellent options now available are the Colby Keyboard and the KB 5150 from Key Tronic.

It's very difficult to describe the feel of a keyboard. The PC's keyboard goes clackety-clack, sounding something like an old Varityper. The Key Tronic has an almost padded feel: It doesn't take much to press a key down; you type as fast as you want without feeling the keyboard slowing you down. The action is more like pressing the keys than hitting them; but it's not so sensitive that a slight pressure makes it think you typed something. There's a quiet muffled sound as you type,



Departing from their very successful Selectric keyboard, IBM's keyboard for the PC has awkward key placement and a clunky feel. The keys are sculptured to make it easy to slide off the "Return" key and accidentally strike "PrtSc", which may cause your computer to "hang," waiting for the printer to be attached.

providing auditory feedback sufficient to know you've hit something.

As far as layout goes, it's very similar to the PC keyboard without its most irritating features. The "**\|**" key, for example, is placed to the left of the shift key, sensibly out of the way until you need it and making use of the lefthand shift key much easier. The "**^~**" key is above and to the right of the "Return" key, eliminating the PC's problem of the accidental *accent grave* when you're trying for a "Return." There is a little raised line on the "**f**" and "**j**" so you can find the home keys instantly in case you get lost.

I have never typed on a keyboard I enjoyed more.

The Colby keyboard is another alternative to the PC. It too has improved positioning of the "**\|**" and "**^~**" keys, the same as the Key Tronic's. Colby places the function keys across the top right of the keyboard, along with a second set of cursor control

arrows on the top left. It's nice to have the function keys all in one row across the top, especially when you're using a program that displays their meanings across the bottom line of the screen. But it's a mixed blessing, because it means that the main typing on the keyboard all takes place to the left of center. With the function keys on the left, the keyboard feels more balanced and it's easier to land on the home keys when you're diving for the keyboard to get what someone's saying on the phone. I don't find it especially helpful to have the function keys along the top; I still have to look to be sure which one I'm hitting, and two rows on the left makes them pretty easy to find.

The key size seems slightly smaller than the Key Tronic's; the right-hand shift key is small enough that it's very easy to hit the "PrtSc" key accidentally, sending the printer into paroxysms and wasting your time. The Colby also lacks the raised marks on the "**f**" and "**j**"

The Colby Keyboard, while an improvement over the IBM, requires off-center placement of the hands, making the "home keys" hard to find.





The Key Tronic keyboard is well-designed, both for touch and for key placement. The curly cord is long enough for typing in your lap, a relaxing change from the standard typing position.

keys; this disadvantage is compounded by the keyboard's compact size and leftward orientation; I found it quite difficult to land on the home keys. The Colby also requires a firmer touch than the Key Tronic and has a clunkier sound — although still quieter than the standard PC keyboard.

I often like to type with the keyboard in my lap; it's easy to adjust to the height and makes it possible to be quite relaxed while still typing fast. The Colby keyboard comes with a curly cord that is too short for lap-typing. The Key Tronic's cord is long enough to keep the keyboard in my lap and my feet up on the desk — quite comfortable for writing, actually.

Either of these keyboards is preferable to the IBM's. I recommend the Key Tronic. It feels like it was designed to let your fingers fly over the keys, and if you're going to have a QWERTY keyboard, you might as well let your fingers fly. **END**

Key Tronic IBM PC Plug Compatible Keyboard

Model No. KB 5150

\$209 list price

Information and nearest dealer location available from:

Key Tronic Corporation
P.O. Box 14687
Spokane, WA 99214
(800) 262-6006

Colby Keyboard

\$260 list price

Information and nearest dealer location available from:

Colby Computer
2598-B E. Bayshore
Mountain View, CA 94043
(415) 960-3400

The Lookalike Actalike Workalike Club

If the IBM PC costs too much, or is too hard to figure out, or you just believe in the value of encouraging competition for the industry monolith, what do you choose?

The first issue is compatibility. That's where the lookalike/actalike/workalike terminology comes from. After all, the only real reason to buy a machine with specifications similar to the IBM PC is to be able to access the large and growing software collection that has been developed for the hot-selling IBM machine.

"Compatible" itself isn't descriptive of a black and white condition — there are infinite shades of grey. The only way to tell, for absolute sure, that a specific program will run on a specific computer is to load it and see if it works. The factors that determine a computer's relative compatibility to the IBM PC, however, can help guide you in making a choice.

The reality is that there is no perfect solution to this quandary. And with dozens of new systems in the PC-compatible universe, your choice will require careful thought.

Even systems that are almost totally compatible with the IBM PC will offer trade-offs that you need to consider. One of the more important concerns is the uncertainty that the vendor will continue in business. Many PC-compatibles are offered by manufacturers that have been in business for a short time or are small in size. We don't think that should eliminate them from consideration but you should understand the relatively higher risk you have of winding up with an "orphan" machine. That fact of life is one of IBM's most persistently-hammered sales tactics.

Whatever happened to the old Whole Earth spirit? I seem to remember Stewart Brand used to talk about a state of mind called the "outlaw area," and how it's important to visit there once in a while. Whatever happened to "Small is Beautiful?" It says right in the front of the Whole Earth Catalog that your purpose is to promote individuality, to develop alternatives to big business.

—Louis Jaffe

True . . . and we also feel that people, when plunking down their \$2,000 — \$5,000 for a personal computer, should consider the fate of the Snail Darter vs. the TVA and reach their own conclusions about priorities. (The little fish lost.)

Reviews of the Compaq, Corona, Columbia, Seequa and HP 150 computers follow. This is barely scratching the surface of the PC-compatibles but these units appear to offer better than average combinations of software access, vendor longevity and value. Other machines, such as the well-regarded TI Professional, Eagle PC, the low-cost Sanyo system and the new Radio Shack 2000, will be covered in future issues.

We welcome your suggestions and reviews as well.

—Richard Dalton

Price Comparison

\$2,458	CORONA
\$2,718	COLUMBIA
\$2,895	SEEQUA
\$3,573	IBM/QUADRAM
\$3,883	ALL-IBM
\$3,964	COMPAQ
\$3,995	HP 150

There are some surprises when you rack up the prices for the IBM PC and its imitators. We selected a common configuration: 256KB memory; two double-sided diskettes; monochrome monitor; keyboard; serial and parallel ports. IBM is shown twice — once with all IBM components, and again with a Quadram multifunction board installed.

My Daily Affairs with a Compaq

After purchasing our IBM PC eighteen months ago for business use, I found myself taking it home frequently to develop software. It was such a hassle plugging and unplugging the cables and lugging around each of the modules that I soon tired of the experience. It seemed easier to come back to the office at night.

Then the Compaq arrived on the market — a potential answer to my problem, providing the software was as interchangeable as claimed. But how could I justify purchasing a second computer just so I could easily tote it home?

Let me set the scene: Smith & Hawken Tool Company is a small and rapidly growing mail-

order business located in Palo Alto, California. We provide high quality, imported garden tools. We have a minicomputer that handles our order processing, inventory, sales analysis and mailing list. We use our IBM PC for inventory analysis, bookkeeping, word processing and communications with our suppliers overseas via Telex. It is also hooked into our minicomputer for use as another terminal and for downloading files that are more easily and quickly manipulated using micro software.

I've never really been able to take the IBM PC personally, you know. Sure, it's a nice little machine, but its attitude is no-nonsense . . . strictly business. It's not warm and cuddly like an Apple or transportable like a Kaypro. It just kind of sits there,

INSIDE

*A quarterly compendium of trends, rumors, gossip and guesswork
untainted by the rigors of objective evaluation.*

These four pages are a hangout -- an escape from our own rules to vigorously validate each review, only publish information on commercially available products and other internal etc's.

We deal with a rabbitlike industry: skittish, fast and darting in unexpected directions. These pages are held open until the last minute and we hope to give some flavor of the wild-hare computer business and how it may affect you. Just don't expect rumors or gossip to be tested and approved.

-- Richard Dalton

* * * * *

IBM's PCjr didn't thrill the critics and it looks like a while before the public will get to vote with their MasterCards. A local dealer is actively non-selling Jr, to the extent of putting a monochrome monitor with the demo unit to reduce its sex appeal. The dealer won't be able to deliver Jr's in quantity for months, so why push them? The regular PC is a bigger sale anyway.

Jr's controversial in many ways: one (only) diskette, a less than professional keyboard, and most critical of all, questions about which PC programs will run on the little tyke.

Research director Barbara Robertson grabbed some word processors off our library shelf and found that only Wordvision worked on a Jr. out of the group selected. The ones that didn't were Microsoft Word, WordPerfect and XyWrite. Configuration problems may have been a factor.

INSIDE

Once again, trying out programs individually seems the only way to insure compatibility.

Since then, we have found out that WordStar will work, but the installation procedure requires two disks. Get your dealer to install WordStar on a regular PC, then you can run it on the Jr.

CAUTION: Neither Wordvision nor WordStar was thoroughly tested against a normal range of conditions.

* * * * *

We have an in-house schism on the new "windowed environment" software getting so much attention from the press (like Visi-ON, Apple's Lisa and Microsoft's Windows -- more on these next issue). One camp holds that no one can do eight things at once, so why have software that can? Assistant editor Matthew McClure responds, this may be a case where computers and minds can evolve together, pacing each other into unexpected capabilities.

* * * * *

Speaking of COEVOLUTION, our companion quarterly of the same name (see page 126) proudly proclaimed itself -- with apparent justification -- to be the "first general magazine with a regular computer science department." That was from the Summer, 1975 issue.

In an overview of the then-primitive software realm (all of eight years ago), section editor Marc Le Brun described software "as the way our intentions concerning the behavior of the machine are represented." That's an interestingly victimless viewpoint, one which contemporary software shoppers might think about.

* * * * *

INSIDE

As software gets more complex, costs and delays mount. This is an old adage, dating back to the first computers and it seems that personal computer software companies aren't immune:

Reports received here suggest that Lotus is having trouble adding functions to their popular 1-2-3 package;

DESEQ obtained an additional \$5.8 million to complete development and to fund marketing for their windowed software announced last April -- though we understand they signed substantial agreements with DEC and NCR on the plus side;

Sorcim, whose SuperCalc software products are well thought of (we use SuperCalc2 for budgeting), has been seeking funding, to help turn the company into a market leader; so far without success.

It's an increasingly expensive and harshly competitive lifestyle in softwareland. Even veteran companies need watching to see if they are likely to be around to support your purchase.

* * * * *

Since the PCjr is designed for the home, it was a little astonishing to see the following offered on the screen as the reason for our featured OFFIX program not running:

```
"?Error:  dbuffer:  Halloc
Error Code 0
PC=0F7A:  00B5; SS=0C00, FP=C23A
SP=C23C"
```

Score one for user-friendly.

* * * * *

If you buy a computer, how do you know if it won't be obsolete -- and abandoned by software developers looking for greener pastures? Recently, we've heard a disturbing number of predictions that Commodore was going to dump their immensely successful VIC 20/64 products, in favor of newer models. Even worse, Commodore has a habit of ignoring software compatibility when they move to a new hardware generation. What happens to the hundreds of thousands of 20/64 orphans?

On the same theme, Esther Dyson, who heads the prestigious Rosen Research organization, was heard to cryptically comment, "a year from now, the interesting computers will not be 8088-based."

Big gulp. That's the chip behind the IBM PC/compatible phenomenon! Not to fear; Intel, the 8088's parent, has a whole raft of next generation versions of this product line: the 80188, 80186 and 80286. These newer processors are more powerful and integrate many functions that require support chips on the 8088, giving more bang for the buck. Compatibility with the current models is not 100% but seems close.

We suspect that IBM will go to the new Intel chips... just as soon as competitors (like Radio Shack, which has a 80186 in their new Model 2000) work out all the bugs and Intel can get into the volume production.

With other companies being first in the queue for the new processors, won't that put IBM behind? Please note that IBM owns more than 17% of Intel.

* * * * *

Dave Smith's **COMPAQ** is a nearly perfect substitute for the **IBM PC**: interchangeable software, compact size, soft-touch keys. For more information: **COMPAQ Computer Corporation**, Chasewood Bank Building, 20333 FM 149, Houston, TX 77070; (713) 370-7040.

with its crummy keyboard layout and never-tiring, ever-blinking cursor, willing and able to respond without complaint, producing effectively and efficiently. Boring. But, of course, a very good tool for business.

Anyway, our company was growing, operations were getting complicated, and I needed to hire a secretary to keep up with it all. Perfect. With the right software, I could justify another computer to be my secretary and this one I could take home at night.

I picked up my Compaq at Businessland late last June. It compares very favorably to the PC and runs all of my PC software without a hitch. The screen is smaller, but I now prefer it over the larger PC monitor. In fact, using the PC monitor now is like sitting in the third row of a movie theatre. The keys are soft-touch instead of clickity-clack, which I also prefer. It has the same lousy keyboard as the PC, but I'm finally getting used to that. My one complaint is the noisy fan: bothersome, sitting next to me on my desk all day long.

Here's how I work with my "secretary" on a daily basis: *The Desk Organizer* (software from Conceptual Instruments Company) has integrated into the Compaq some of the clutter that was on my desk. It has a



clock that chimes every hour and a calendar that can be paged through by day or month. It tracks appointments and reminds me with alarms or chimes. It has a Rolodex-type, cross-indexed filer that can also be used to dial phone numbers. Included is a four-register, floating-point calculator and notepads that can be time-stamped, cross-referenced, filed and printed out. Putting it into background mode allows me to use other software as it continues to remind me of appointments. It does not make coffee.

Besides *The Desk Organizer*, I use *Volkswriter* with a Brother typewriter/printer for correspondence, 1-2-3 for spreadsheets, forecasting and graphs (no second monitor needed) and *dBaseII*. *Prokey* also comes in handy.

Using these systems forces me to be better organized and the chance of something important being over-looked is greatly reduced. To protect

important information, we maintain a backup system including storage off-site.

A note on software. I think Andrew Fluegelman's approach with *PC-Talk*, which encourages user copying and distribution and keeps gently reminding us to pay for what is useful, is a great way to market software and respects our honesty. But it is up to us users to earn that respect. In the past I've received copied software from friends. Most I played with for an hour or two, then erased. But in the cases of *Volkswriter*, *1-2-3*, *dBaseII* and *Prokey*, after trying them extensively and deciding that they would be useful on a continuing basis, I purchased them from a dealer.

What more could a guy want? When I'm ready to leave the office, the Compaq quickly snaps in, zips up and pops into the trunk. I can dial into our minicomputer from home, manipulate files on diskettes, or my kids can use it for math drills.

The capacity and responsiveness of personal computing makes daily desk work a bit more challenging and a whole lot more fun. With the transportable Compaq, I have a true personal computer. It's not warm and cuddly, but it's here by my side every day, interacting, being useful and admirably fulfilling most of my daily office needs. And what the heck . . . I can do without the coffee. — Dave Smith

Dave Smith is President
of Smith & Hawken Tool Company.

Corona Data Systems PC

This is the best designed of all the IBM PC compatible machines . . . no contest. Be aware that there are problems, though. This is a relatively new machine and has had birth pains; I'll detail the problems later. First I should tell you why I love this machine.

All the well-known IBM PC software we have tested on it runs. A few programs require minor system adjustments or PC-DOS COMMAND.COM (Lotus 1-2-3) to run. The hardware interface works with most of the cards on the market, but one should check specifically before buying.

The Corona has been designed as a complete business machine. It includes serial and parallel ports, asynchronous communications, monitor card, graphics, a monitor and more memory than its IBM counterpart. Software includes MS-DOS, GW-BASIC, PC Tutor and MultiMate (a terrific word-processor that needs its own review).

Memory can be expanded to a full 512K on the *motherboard*. Since the basics (and then some) are all taken care of on the main board, the four expansion slots are available for taking advantage of the multitude of PC add-in boards capable of giving the machine specialized capabilities.

Corona has paid attention to looks and comfort, too. The screen border is dark grey (to cut glare). Screen resolution and

Corona's appearance isn't startling (that's what lookalikes are all about). What counts is the price and performance inside.

For more information: Corona Data Systems, Inc., 31324 Via Colinas, Suite 110, Westlake Village, CA 91361; (213) 706-0831.

contrast are excellent. The character set is cleaner and easier to read; the keyboard faster and more sensitive than IBM's.

In other words, the "common sense" design adds up to a lot of power, utility and expansibility.

Now for the bad part. Most of the systems my company has installed have been returned for a variety of repairs. My guess is, these problems occur for two reasons. First, Corona can't fill orders fast enough, so machines go out without having been thoroughly checked. Second, it's sometimes tough to get critical parts for "PC-compatible" machines, so there is a tendency to use what is available. Start-up companies can't afford to sit on partially-completed inventory.

This is a great machine.

Columbia MPC (Multi-Personal Computer)

The Columbia is a computer a mother might love, not very pretty but pretty good all the same.

Three slots more than the PC, two serial ports (not one or none), a full line of bundled software and a high degree of software compatibility are this machine's advantages over the PC-clone competition.

The bundled software consists of the entire Perfect Software line: *Writer*, *Speller*, *Calc* and



Jonathan Reichert

Corona deserves support for designing a PC-clone that's practical for business. If you can afford to chance a couple of weeks of down-time within the first few months, buy it. You will get a lot of power for the money.

—Ken Milburn

Ken Milburn heads Micro*Star, a consulting and personal computer sales organization.

Filer. Also included are MS-DOS, BASICA, BASIC, the *Home Accountant* and a couple of games. The word processor is one of the best, the "calc" package is no slouch and all are integrated in the sense that most commands are shared by all the Perfect programs and data can be easily sent from one program to the other.

This is plenty of software to get an executive, salesperson or small business person started. If you find better programs for your purposes later on, at least



Columbia is relatively big and clunky. Also reliable and low-cost; take your choice.

**For more information:
Columbia Data Products, Inc.,
9150 Rumsey Road,
Columbia, MD 21045;
(301) 992-3400.**

Jonathan Reichert

you've found out what your needs are without spending extra money.

We have never had one of our Columbia installations fail. Keep in mind that we see it as a specialized machine, so we haven't installed many, either.

Computing is often a matter of trade-offs and compromises; here are the negative points about the machine, as I see them.

Columbia has never included *Perfect Writer* or the *Home Accountant* with the machines, as they are supposed to do. It has long since been available in MS-DOS format, but none of our calls to their distributors seem to produce any results.

The machine is too big but that's more practical than trying to cram eight slots into a machine the same size as an IBM PC. At least you can "piggy back" cards in adjacent slots and there is still room for them to get air.

Fit and finish are a little clumsy. No monitor is included with the machine. This means more flexibility in choosing one you like, but understand that

the price you see in the ads doesn't usually tell the whole story.

The hard disk version is poorly implemented in that one is not allowed to segment the ten megabytes into separate drives and the drive *must* start on "B:". Try that out on some software that expects program files to default to drive "A:". Reading a directory that contains 10MB worth of program and data files is also less than ideal. If you buy this machine (it is well suited as a file-server in a local area network), plan to use an external hard disk. Corona's can be segmented into as many as four drives and you can designate the first segment as drive "A:" if you wish. X-Comp makes a 16MB hard disk that can be given as many as 24 designated drive names.

If you need a reliable machine with lots of "soup-up" potential and aren't picky about appearances, this may be the machine for you. It costs less than the original and comes with a more than adequate starter set of software. Buy a big desk to go along with it.

—Ken Milburn

The "Doctor Denton" door on the Chameleon's backside is an irritating feature. It prevents you from putting the computer up against the wall because the door must hang open for the power cord and the keyboard.

For more information:
Seequa Computer Corporation,
8305 Telegraph Road,
Odenton, MD 21113;
(301) 672-3600.

Jonathan Reichel



The Seequa Chameleon

Chameleon isn't a luxury model, but with a base price a hair under \$2,000, you can't really expect it to be the Cadillac of compatibles. In appearance, it reminds me of a Kaypro, only in IBM oyster white.

It's the cheapest kid on the block right now and that's the primary reason for including it in the IBM alternatives round-up. It also offers the unusual advantage of having both an 8-bit Z80 processor and an 8088 processor for IBM-compatible software. This may not be a big issue to many, but it helps if you are stepping up to the IBM world after having previously owned a CP/M-80 computer and want to continue using the same software for something like your accounting.

The nine-inch display is relatively small and characters are not nearly as well delineated as on the Compaq or Corona. The keyboard is less precise than the other models we looked at, having a wobbly feel.

Nonetheless, software we tried, with the exception of programs written in IBM's

BASICA language, worked fine. You should be aware that we did not test programs that are primarily graphically oriented; *Lotus 1-2-3* and *Harvard Project Manager*, which both use some graphics, worked satisfactorily.

The Chameleon is shipped with *Perfect Writer*, *Speller* and *Calc*. The Condor data base management system will be added when it becomes available. This is another reason for considering the Chameleon. The software included in the purchase price is enough to get most people started and would cost more than \$1,000 if you were to purchase it separately.

Overall, the Chameleon is a higher risk purchase than the other units reviewed. Our recommendation: Test it thoroughly with the software you plan to use, see if you can get comments from other Seequa owners (your dealer should be willing to make referrals) and weigh its drawbacks against a realistic appraisal of the financial commitment you can make.

If cost is the primary concern, Chameleon deserves a long look. —Richard Dalton

Touch a handle to roll the card file; touch the tab to select a card.

For more information:
Hewlett-Packard Company,
Inquiries Manager,
1820 Embarcadero Road,
Palo Alto, CA 94303;
(800) FOR-HPPC.

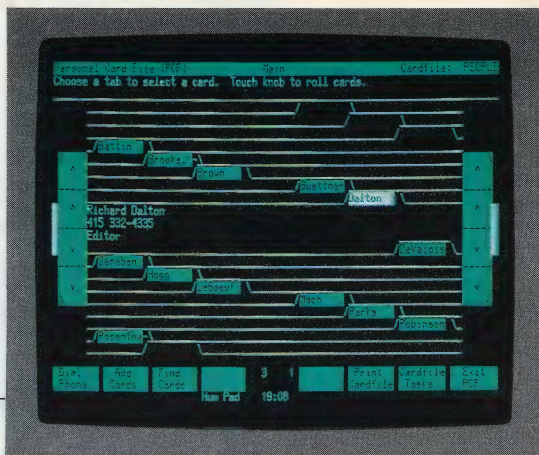
HP 150: The Magic Touch

The first mistake I made was to put this clever little machine on my desk. Not that it occupies much desk space — it doesn't. HP managed to squeeze a lot of machine power into about a square foot of space. Nor that it isn't useful. It is. I can process words, numbers and graphs to my heart's content. But I quickly discovered that it attracts a lot of attention.

One of the nicest things about the HP 150 is that it encourages people to give it a try. Staff members who had not used a microcomputer before were able, with no prompting, to find themselves using an applicable program. People familiar with application programs wanted to see if adding touch makes a difference. It does.

The second mistake was to tell people I didn't mind if they played with it. Soon visitors were brought into my office not to meet me, but to meet my machine.

The touch-screen isn't the only thing that attracted attention, however. The HP 150 uses 3½" "microflopies" that store 256K



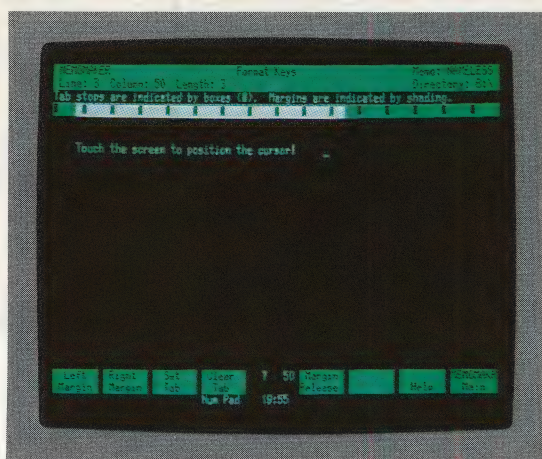
Jonathan Reichek

bytes of memory. "Micro" describes the size, but "floppy" is a misnomer. The diskette itself is encased in a hard, blue plastic material with a metal "shutter-like" device to close the door on possible damage. The "door" opens automatically once the diskette is in the disk drive. They're tiny, easily carried and people are not as afraid of damaging them as they are the 5¼" floppies.

What makes the touch screen work? If you were to look along the rim of the bezel that surrounds the screen, you would see a row of holes. Light beams shoot out from these holes on the sides, top and bottom creating a grid. When an object breaks the grid, a command is sent to a program in the same way a command is sent when a key is pressed. It isn't necessary to actually touch the screen; interrupting the light beams in front of the screen is enough.

The grid pattern is small enough so that you can select each line on the screen. You can't select a character on the

One of our least experienced people was waiting for instructions on how to use MemoWriter. He got bored, looked at the screen and proceeded to write his memo. Not a bad endorsement.



Jonathan Reichert

line, though. HP decided that the object most likely to be used for touch is a finger, or maybe the end of a pencil, so the width you can select is a fingertip width — about two characters.

To help people avoid sending commands they don't intend, HP has designed the applications so that a command is sent when you lift your finger (or pencil) from the screen, rather than when you first touch it. This means you can slide your finger around the screen until you select the precise spot you want without issuing a command. The cursor follows your finger. In many applications the spots to select are highlighted in some way — with a box around the selection, with reversed lettering or with an asterisk next to a function label. Any command you can give by touching the screen can also be given by using a key (or combination of keys) on the keyboard.

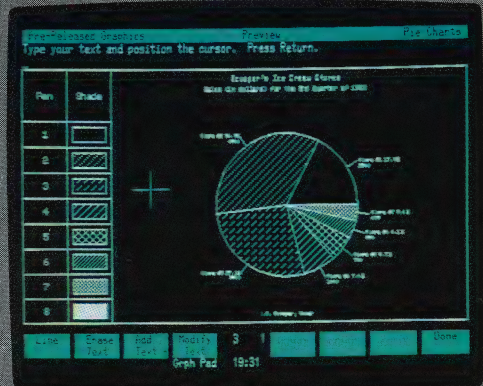
All the Series 100 software packaged for the HP 150 uses what HP calls "softkeys." Softkeys are highlighted boxes

on the screen and eight of these softkeys always appear in a row at the bottom of each screen. Touching the box causes the program to do whatever the label says. Giving a program a command couldn't be easier or more obvious.

Sometimes touching a label on a softkey box causes a whole new set of labels to appear. This means that dozens of program commands and help messages can be reached by touching the screen. With most of a program's commands on the screen, documentation becomes a back-up reference source rather than a necessary step-by-step guide.

The Series 100 programs available from Hewlett-Packard for the HP 150 include MicroPro's *WordStar*, *SpellStar* and *MailMerge*; HP's version of *VisiCalc*; the Condor relational database from Condor; and five programs from Hewlett-Packard: *Personal Card File*, *MemoWriter*, *Series 100 Graphics*, *DSN Link* and the *Personal Applications Manager*.

Is it IBM PC compatible? No, not really. The HP 150 uses the



The HP 150:

Graphics have never been simpler. You can change pen colors or patterns by touching the boxes at the left of the screen.

MS-DOS operating system as does the IBM PC, but programs written for one machine will not directly run on the other. By January, Hewlett-Packard expects to have their *DSN/Link* program available for the IBM PC so that data can be transferred between the two machines. HP also plans to offer 5¼" disk drives for the 150 to facilitate data transfer from IBM PC disks.

Is lack of compatibility with the IBM PC a disadvantage? The disadvantage is that software written for the IBM PC won't run on the 150 and most of the new software is first written for the IBM PC because of the large number of IBM PC owners.

However, with more than 25 programs already available for the HP 150 including *Lotus 1-2-3*, *Multi-Plan*, *dBaseII*, *BPI* accounting and the *PFS* series, you can probably do any type of computing you want to with a 150.

What advantages does the IBM PC have over the HP 150? Primarily those which come from being on the market first with a successful product. Peripherals and supplies like printers, disk drives, boards,

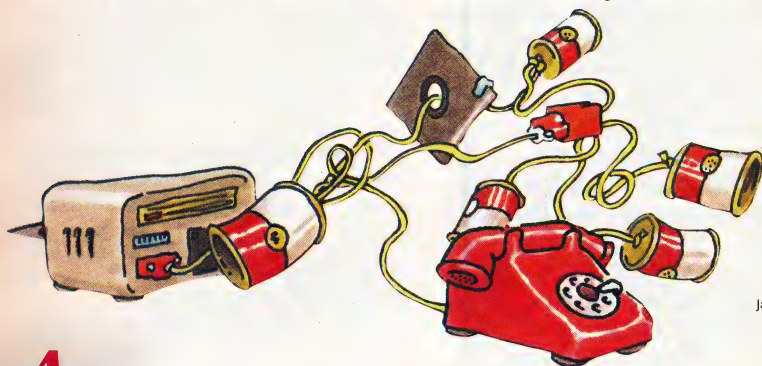
printer paper, etc., for the HP 150 have to be purchased from Hewlett-Packard right now which means there's no pricing competition.

What advantages does the HP 150 have over the IBM PC? First of all, the 150 is the only machine at a reasonable price (as of November, 1983) with a package of software that takes advantage of a touch screen. (To give an idea of how much of a breakthrough this is, Touch-N-Know, a Stamford, Connecticut, company that makes educational systems, just announced a touch sensitive color monitor priced at \$2,950. That only gets you a screen — you still have to buy a computer!) Touch makes this machine easier to use than the IBM PC.

Second, it's smaller than the IBM PC which means it takes up less space on your desk. Third, even without considering the touch screen, you get more value for your money — more RAM, more ROM, an easy-to-use shell for the operating system, some integration of application packages from a variety of vendors and a better keyboard.

—Barbara Robertson

The Next Phone Company



James Donnelly

A New National Computer Communications System, Starting This Year

by Art Kleiner

Until this year American Telephone and Telegraph was the wealthiest, most regulated private corporation in the world. It was the John Wayne of corporations: large, slow-moving, arrogant, dependable, staid, responsible and adamant to the end about protecting its own turf. Though the Bell System included 150 million phones on 400 million miles of circuitry, it was less a network of cables and switches than a communications standard that acronym-loving Bell employees called POTS, for Plain Old Telephone Service. Every phone had to fit that standard; any change in the network itself had to accommodate telephones still in use that were 80 years old. Maybe you couldn't touch-tone on them, but they'd still get you your number.

I talked to several dozen people while researching this article. Besides those quoted, the most helpful were Bell Labs public relations rep Linda Hudson; Central Services Organization planners David Loring and Cas Skrypczak, plus public relations rep John Callahan; Bill Riker at the National Cable TV Association; Southern Bell LADT planner M.E. (Gene) Davis; AT&T Communications executive Larry Garfinkel; Bob Soika at the New York State Public Utilities Commission; Dave Manahan and Charles Brockman at AT&T Information Systems; and consultants Rich Davis, Tom Hargadon, Bettie Steiger, Dave Caulkins, and Ken Bosomworth. The article simplifies many complex technical and political issues; I'm responsible for any inaccuracies.

—AK

Fortunately, Plain Old Telephone Service still exists, but the monopoly that nurtured it is gone. Under the well-publicized 1982 anti-trust suit settlement with the U.S. Justice Department, AT&T chose to sell telephone equipment, computer gear and long-distance connections instead of running a national phone service. (They weren't allowed to do both.) They turned over the local Bell phone companies, still monopolies within their boundaries, to seven new regional financial organizations with no connection to AT&T.

From the old phone monopoly's ashes a new American telecommunications system is emerging this year. It's

a difficult technological feat and an unprecedented experiment in corporate cooperation. If it works, voice telephone calls and computer signals will travel simultaneously into homes and offices on the same lines, making computer networking easier and cheaper, and ultimately melding the personal computer and telephone into one device. If it doesn't work, getting in touch with each other, even by telephone, will be hell.

Personal computers prompted the new system because they strain the telephone network — which AT&T people estimate can only handle the projected growth of computer communications until 1990. Voice conversations typically last

The Next Telephone Bill

People seem to feel subconsciously that telephone service should be free — who wants to be aware of the meter running when we're talking? That's probably why so many people respond to Lily Tomlin's telephone company bill collector character Ernestine. Unfortunately, our first post-divestiture phone bill will make many of us long nostalgically for Ma Bell. Until the regulatory controversies are settled this year, here are the most likely trends:

- Local phone bills will go up as subsidies from long-distance calls disappear. The monthly flat rate will go up two- or three-fold, on the

theory that heavy users (especially computer users) should pay more of their share of network use. The phone companies will encourage most customers to pay by the minute for local calls instead. Lifeline and budget rates may be limited to people who can prove their poverty. Local toll charges to nearby counties won't change much, but installation costs will skyrocket.

- Long distance rates for both voice and data will vary widely as long distance carriers compete for our attention. There will be price wars, time-of-day discounts, weekly specials on calls to particular cities and a

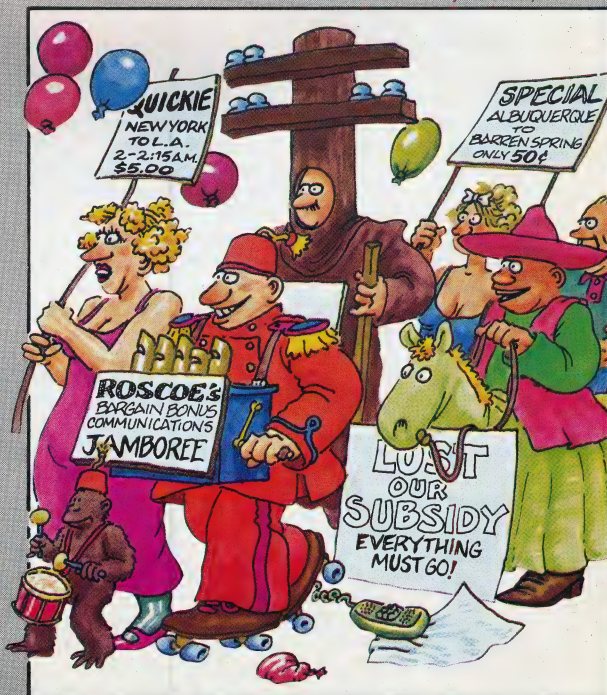
replay of the carnival atmosphere of airline deregulation. Distance will matter less, especially for data; 3000 miles will be as cheap as 300. Alert telecommunications will save vast sums on long distance calls, but spend more time checking out the bargains.

- Most of us will get separate bills from our various long line and computer services, who want to sell and use their mailing lists. A few will bill through the local phone companies, making local phone bills incredibly complicated to dissect. Be suspicious of every unexplained charge on your bill, especially during 1984.

Even without extra charges, the current phone system is no bargain for personal computers. Phone lines weren't designed for computer signals; computers of

James Donnelly

—AK



modems, despite all the very real benefits of networking (see box: Four Reasons to Try Computer Networking).

The phone companies' solution might be called Plain Old Data Service, but this year's acronym for it is ISDN — Integrated Services Digital Network. It's a proposed group of communications standards that would link voices, graphics, text and maybe video, adapt them for all types of computers, and switch them between local, long-distance and international addresses. "We'd like to have the equivalent of a modular jack for data services," said Tom Powers, in charge of network planning at Bell Laboratories. "The hardware

plug is the easy part; the complexity is in the protocols (the software codes that establish transmission compatibility between different machines). For example, when one terminal sends a command, every other computer should respond in a predictable way. It's like teaching someone to speak German: you can teach them the right inflections, but they don't communicate until they've learned they're supposed to say *Guten Tag* when you say *Guten Tag*."

The companies involved are hashing out the technical issues in an advisory committee to the State Department which in turn represents the U.S. to the

Four Reasons to Try Computer Networking

1. **INFORMATION RETRIEVAL** — pulling canned news and information from databases in remote computers. That can also mean tracking stock prices, airline schedules or obscure bibliographic leads. Online databases often make available specialized information which only corporations could previously afford. The frontier of information retrieval is Selective Dissemination of Information (SDI), in which a pre-planned profile of specific interests flags anything that matches it.

2. **SOFTWARE ACCESS** — Microcomputers can act as terminals to use software on large timesharing computers,

but they can also download software onto their own disks from either free, public-domain bulletin board systems or commercial online software houses.

3. **ELECTRONIC TRANSACTIONS** — with banks, stores, or other institutions, both local and long-distance.

4. **COMMUNICATING WITH PEOPLE** — one of the most rewarding uses of computers. We computer networkers don't live by the telephone's schedule. We send and pick up mail several times a day and keep in touch with varied groups of people more easily than through any other medium. For anyone who's comfortable

writing and reading, computer networking is a warm, human, satisfying form of communication, different from but complementary to the telephone.

Commercial network planners know through their market research and statistics that their most popular feature is communication between people, but it has the least potential for profit. Messaging costs as much as other services to provide but can't fit with advertising. Thus, most networks allow messaging but are reluctant to offer more elaborate conference-type communications until they see how popular they become.

—AK

International Telephone and Telegraph Consultative Committee (CCITT), an international forum for telephony standards. The advisory committee, called T1 (all standards committees are named with a letter and a number), is sponsored by the Exchange Carriers Standards Association, an industry group of phone companies. Though preliminary work has gone on for years, the CCITT only recently decided to coordinate international ISDN plans by 1984. Anyone with a stake in ISDN, including user groups and software developers, is invited into the process, but the American committee will be dominated by the four main types of telecommunications companies left after AT&T's breakup.

The first type is equipment manufacturers including AT&T, which only now can legally sell computer products — like the UNIX operating system developed at Bell Labs. AT&T will still make phones and phone equipment, but there are also dozens of competitors like Northern Telecom and Rolm, which are both heavily involved in ISDN talks. Makers of telephone switching machines are also active, along with International Telephone and Telegraph, several Japanese manufacturers, and IBM, a major supplier of modems, computer network software and even telephone gear. Although the ISDN standards will drastically affect modem specifications, most personal

computer modem manufacturers have yet to join the talks.

The second type of telecommunications firm is the local phone company. These are the only telephone monopolies left in the U.S. — 22 Bell Operating Companies, former AT&T divisions that now share a separate research group called the Central Services Organization through which they pool ISDN planning and other development; dozens of local companies that belong to corporations like Continental Telephone or General Telephone and Electronics (both active in ISDN talks); and more than 1000 small independents. The larger local phone companies will implement ISDN's early stages on electronic switching software that they already have in place.

Henceforth the third type of telecommunications company, the long distance carrier, must handle all traffic between local phone areas, even within the same local phone company's territory. (Divestiture redefined the Bell companies' territories into 161 new local areas, roughly based on those building blocks of demographic research, the Standard Metropolitan Statistical Areas of the U.S. Census.) Long distance voice carriers include AT&T Long Lines (now called AT&T Communications), MCI, Sprint, ITT City-Call, and a horde of others to come — which telephone users will choose among by typing one to four extra digits each time they make a call. Computer networkers will similarly choose from a variety of long distance



Divestiture redefined Bell territory into new types of local areas, shown on this Bell Laboratories map. Each little box is an exchange; each differently colored region is a local area. There are 161 of them, roughly 30 to 50 miles in diameter. New Jersey has three; Texas has 15. Any voice or data calls between local areas are now long distance calls and must be carried by a long-distance company. Local data services like LADT will only operate within the local areas.

data lines — some high speed private transmission systems, others switched networks like Telenet, Tymnet or AT&T's own Accunet. Others will emerge to take advantage of new satellite and fiber-optic technologies.

The fourth type of telecommunications company, called Information Providers within the industry, are to data transmission lines what newspaper publishers are to newsstand distributors. They include: CBS, Times Mirror, Knight-Ridder and other publishers newly establishing computer-based information services; the Source, CompuServe, Dow Jones, Control Data and Lockheed's DIALOG, maintaining such information services now; Chemical Bank, CitiBank and Bank of America, hoping their national electronic funds transfer

networks will transcend branch offices and introduce nationwide banking; and shop-by-terminal stores. Though they came late to the ISDN effort, these companies provide its financial motivation. Said a Sears representative at a recent ISDN conference, "To me ISDN stood for I Sure Don't Know what it is, but now I see it's what we're going to use."

There is no regulatory mandate for all these disparate corporations to cooperate, except that, as Tom Powers said, "there's a growing feeling in this country that the lack of a universal standard is just depressing the market for everybody." So far the general eagerness to meet international communication standards is overcoming historical antipathies like that between the Bell Companies and MCI, although some observers say the effort is dominated by AT&T people and others see it as an early battleground between the phone companies and IBM. The major battle will probably be between telephone companies and modem/software companies, who have already invested in mutually incompatible protocols; ultimately they'll have to find one that fits both for ISDN to work.

That will take half a dozen years, but the first ISDN components are already in place, waiting to be joined together like early tiles in a mosaic pattern. The most important tile is Local Area Data Transport (LADT), a new type of computer network piggybacking on local telephone lines, travelling directly into homes and offices and managed by the local telephone companies. Bell people say their 30 or 40 largest cities will have LADT by mid-1985, but it's so far only available near Miami, Florida, where local phone company Southern Bell installed it to serve a new videotex system called Viewtron. (Videotex is a graphic telecommunications format which composes color "pages" of words and pictures on a video screen as if someone behind it were twiddling a full-color etch-a-sketch.) The Miami LADT also reaches other local computer systems and Tymnet, a long-distance data line which connects to national networks like the Source, CompuServe, and Dow Jones News Service.

LADT comes in two flavors. *Direct-access* allows simultaneous talking and telecommunicating on one phone number, at 4800 baud (about 480 characters per second, four times faster than the maximum speed available on personal computers now). A switch at the central office skims off the data, which travels as sounds pitched at much higher frequencies than the human voice, and routes it into a separate system. *Dialup*, which hooks a regular telephone line into the LADT network, only

operates at 1200 baud and doesn't permit simultaneous voice and data calls. It's cheaper than direct-access for low-volume users. The phone companies see it as a way for potential computer communicators to get their feet wet.

As flat monthly phone rates rise or vanish, LADT should become the cheapest local path for avid computer communicators. Southern Bell estimates an average total monthly bill of \$14 for dialup and \$40 for direct-access, assuming 25-30 daily minutes of use. Since direct-access LADT charges by the text sent or received, not by the minute, you could leave your terminal connected all day, and still only pay for the few minutes you used it. The local phone companies will probably keep LADT cost-competitive, because it's their technical solution to phone network overload. Like many long-distance data lines, it employs packet-switching to break streams of computer text into disparate packets and interweave hundreds of peoples' data on the same few lines.

As it matures, LADT will add an essential but under-appreciated feature — a directory of people and services, listing all types of online services with the commands to reach them, the long distance connections and how to dial them and network addresses of users. LADT will also include coin-operated public access terminals, which one local phone company has already contracted for. Details will vary because each local phone

company will implement LADT differently.

Unfortunately, most personal computer modems won't work with LADT, which uses more sophisticated error checking protocols derived from high-speed communications between mainframe computers. It's not clear yet whether you'll have to buy a new modem to hook in or LADT itself will translate for diverse types of modems (a technically possible feat forbidden by the FCC). The modem problem will probably become the local phone companies' biggest snag, because until LADT is widely available modem manufacturers have no reason to release products for it. Only AT&T's own \$900 Sceptre terminal, with no storage of any kind, has an LADT-compatible modem so far.

By itself, LADT is a useful but limited foreshadowing of ISDN. ISDN's excitement comes out in its planners' blue-sky dreams for 1986 or 1987. They want LADT to translate each service's different commands to the same basic language: sending a message on hundreds of different systems would use the same codes. They want to interweave LADT with higher-speed data transmission lines, starting with a relatively cheap 56 kilobit service (about 7,000 characters per second) that's available now and eventually going up to 10 megabits per second, enough for five high-quality digitized color photographs each second. They want movable network addresses, so that as you travel around the world your

telephone calls and electronic mail still reach you. They want devices that interweave data with voice and pictures (see box: Beyond the Busy Signal).

But skeptics remember when AT&T assigned hundreds of programmers in 1978 to create a system called Advanced Communications Services that would connect every type of computer nationwide. After two years of FCC arguments and technical hassles, they finally gave up. (Some of that effort resurfaced this year as Net 1000, AT&T's business communications network.) Dr. Norm Smothers, a former AT&T market planner who worked on that project, said all the companies that tried global interconnection telecommunications systems — AT&T, Xerox, IBM and Telenet — failed. "As you add more nodes, or implement more features, or connect more types of terminals, the complexity goes up geometrically," he said. "More likely there will be a ragtag group of partially integrated communications media. Maybe ten or fifteen years from now that will become so contorted and fragmented it will be cost-justified to junk it and build a totally new system. The phone company itself evolved that way."

Even if technically possible, ISDN will be an immense political challenge. Computer people rightfully scoff that AT&T was too complacent and bureaucratic to innovate, market aggressively, or even respond to its customers, but the monopoly did create the most reliable

phone network in the world. In some ways it's too bad that a single company won't govern the national data network; if it bogs down in standards negotiations or delays, other manufacturers will develop incompatible designs and lock themselves out of it. Already Apple, IBM, MCI and several software companies support a new microcomputer communications standard called MNP that may not work with LADT. Without a universal data connection there can be no universal data service.

Universal data service may also require a legal mandate to connect it everywhere. So far, urban ISDN costs are comparatively low because it works on equipment already in place; even the software needs relatively little tinkering. Southern Bell spent \$2.5 million installing LADT around Miami, compared to \$7 million for a single neighborhood's central office telephone switch. But installing a national digital network will take much more; AT&T spent \$15 billion annually

Beyond the Busy Signal: New Kinds of Voice Services

"Why, in 1984," asked Harry Newton, "does anybody still have to get a busy signal?" I asked if he meant that calls should be shunted instead to a message taker, and he shouted, "*Anything!* Use your imagination!" Newton is the manic, outspoken Australian-born publisher/editor of *Teleconnect*, a New York-based business phone industry magazine. I had gone to him to ask what, from a consumer's point of view, would be good voice phone service, especially as new voice and data services meld together into one system.

Suppose, we brainstormed, you call me and my line is busy. I could have my telephone built into my computer, and your number or name might appear on the screen. I could send you a quick electronic message ("call you back in ten minutes") without

interrupting my other conversation. Or, instead of giving you a busy signal, a central computer tape drive might record your voice, call me after I hang up, and play me your message. Or the phone network might shunt your call to another person at another number, or to a central holding place where everyone waiting for their lines to free up could talk to each other. Since busy signals tie up the network without making the phone companies any money, Newton said they'll introduce as many alternatives as possible, and charge people extra who DON'T take a relatively simple option like Call Waiting (which works like a "hold" button for single-line phones).

"All the things that happen in private business phone systems could be available for everyone from the local

phone company," he said. "They could automatically figure out the least expensive way to route your call over different networks, or offer store-and-forward delay, where calls get recorded in mid-day, sent between 2 and 6 a.m. when it's cheap, and received by a machine that gets listened to the next morning.

"What people want is choice," he said. "Bell has given people a Cadillac service at a Cadillac price; why give everyone the same bloody service? The little old lady in tennis shoes could get a cheaper long distance call if they told her the call would go through in five minutes, called her back when the network was ready, and took 20 percent off the price. She'd be happy with that. We haven't yet scratched the surface of what the phones can do."

—AK



Bell Laboratories, January 1982

Technicians testing a digital telephone switching system in Seneca, Illinois, in 1981. For many local phone companies, starting a local computer network will mean changing the software on their switching systems, not installing new equipment.

just building and upgrading its voice lines. Since rural local loops are the most expensive per capita, people who might need data communication most — people in remote areas who could get work through their terminals — will probably get it last. People who can't afford computer terminals or networking fees may not get it at all.

Maybe it's worth considering a

pitch from well-known computer communications writer James Martin. In his 1981 *The Telematic Society* Martin wrote: "The most cost-effective solution would be a massive piece of systems engineering (for telecommunications) like that for the moon landing. . . . U.S. federal spending on highways exceeded \$70 billion in one ten-year period. Now we need electronic highways. A similar expenditure . . . would work miracles." **END**

Telecommunications Coverage at the Review

Beginning next issue we will evaluate software/hardware combinations for personal computer communications — including terminals, modems, communication boards and lap computers. We will also review the best online services — not general services, like The Source or CompuServe, but

specific features. Which messaging system is easiest to use? Which software-by-phone service is most trustworthy? We'll also look at specific videotex and cable TV services as they become available, computer links via satellite and Ham radio, books on personal computer communications, and ISDN developments. You can

help. Please let us know what telecommunications software, hardware or services you're using and how they work for you.

Write me at the *Whole Earth Software Catalog*, 150 Gate Five Road, Sausalito, CA 94966 or message me at Source PS0008, EIES 866, or CompuServe GO WEC.

—AK

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5 1/4" disks, \$175/\$49.95

Hardware requirements:

- TRS-80 Models I, III, IV and compatibles.

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Enlightenment
demands patience
and humility.
ISO didn't do it.
Nor will any
Software,
not even
with 128K
and HARD DISKS.

—John Hamamura

In our country, we've always enjoyed a free press — free, that is, for those who could afford the costs of publication. By interfacing micros to typesetting equipment, the cost of publishing is coming down and I think we'll see a dramatic increase in the quantity and diversity of published materials . . .

. . . I am intrigued by the comparison to Gutenberg's invention of movable type which led to the rise of vernacular languages, modern nationalism and the Protestant Reformation. Any time the flow of ideas is aided by a technical discovery, we should expect a blossoming of thought and creativity. I feel we're on the verge of such an era . . .

—Thomas Abate

. . . Gutenberg invented the personal book, but who

needed a personal book? What could you do with a personal book? Since most people couldn't read, there was no need for the personal book, and I'm not sure books were user-friendly then. In fact, if you had to have a personal book, you had to go through an exercise called becoming literate. —H.E. James Finke

in ISO WORLD

. . . we edit our creativity to death. First, however, you have to believe that creativity can be cultivated and is not simply there or not there. If it's a genetic endowment that cannot be denied in those who truly possess it, a roll of paper towels and a crayon will work just as well as a computer. If it's a process, then perhaps a good tool, like a microcomputer, can help foster its development.

—Charles Spezzano
in MICRO DISCOVERY

Many people now choose software by feature lists, that is, lists of things the software is supposed to do.

Many things are more important than simply what features a program has. These include unification, integrity, clarity, simplicity and feel; of great importance is ease for the casual or frantic user.

Clean design means making the parts fit together well and elegantly. Consider the Mona Lisa. She has one mouth, one nose, two eyes. Would adding more features make her better?

—Ted Nelson

As for me, I'm waiting for R2-D2 or C3PO to come and work my machines for me. I just want to be able to say, "Do this," and let it happen.

—Woody Liswood

William von Meister is probably best known as the inventor of The Source, the first network designed to link personal computers together on a national scale. His newest venture, Control Video Corporation, offers games and other software over telephone lines for Atari-compatible video game machines. Last September, when von Meister was in San Francisco to promote his new concept, I went to his hotel room for an interview and demonstration. The conversation was absorbing, with some revealing implications for the future.

Games, stock market prices, sports results and opinion polls can all be downloaded into the 12.5 million Atari-type game machines now in American households. That implies tremendous power in our living rooms, a rich menu to choose from. Sounds great. Then the questions enter: Will a menu-driven society become passive, indulgent and selectively ignorant? Look at television's impact. How much freedom lies in choosing from a selection presented to you by someone else . . . or someone else's computer?

—Matthew McClure

Mr. Download:

An Interview with William von Meister

Q. How did you get into electronics?

A. I've been a ham radio operator since I was eleven years old. I really didn't want to go to work for a living, so I decided I'd try to become a consultant. I had a thousand business cards printed. Finally, after passing out six hundred-odd of them, somebody believed me. The guy was the president of a research laboratory, doing cancer research

for the National Cancer Institute, had 3,000 monkeys they were giving various compounds to, trying to give them cancer. There were seven generations of monkeys; trying to keep the monkeys and the compounds and the generations all straight was a bear of a job to do manually — this was in 1962 — so I said, "Well, you should use a computer."

They said, "We don't know

William F. von Meister, founder of The Source, Digital Music Company, and Control Video Corporation, is now introducing GameLine, StockLine, SportsLine, OpinionLine, and eventually NewsLine, MailLine and BankLine.



anything about computers." I didn't really, either, but I didn't admit that. I went down to my friendly IBM salesman, and said, "If you don't tell them that I don't know anything about computers, I won't tell them that I'm sole-sourcing this." So we made an agreement, and sure enough, six months later all the monkeys were under control. The old 1401 or 1403 was running fine with its punched cards and its printer; it was a success.

Another of my clients early on was Western Union. I learned my communications engineering there, and that's what I'm really good at — understanding computer throughput and how to design large, very fast systems. Western Union was a great client. It was so badly managed that there were always dozens of opportunities waiting for an ambitious consultant; it was a lot of fun.

They were billing manually when I got there, and they were billing with computers when I left. I also did a lot of work on the Mailgram system. Then I came up with an idea for something called Telepost, which was basically a smart CRT. Heavy Mailgram users could store frequently used letters and names and address lists on a central computer, use the CRT just to type in the name, the letter number and the amount of money they owed the company. This was radical for 1967. Today it's Western Union Electronic Mail, Inc., which is the largest operating independent telegraph company.

I came up with the idea for The Source, which we put together in record time: it took about three months from the time we dreamt it up until it was operational. We got Telenet and Tymnet to file new tariffs for us — 75 cents apiece per hour after

hours. We made a deal with Dialcom to use their hosts (their mainframes) for 75 cents an hour after 6:00 at night. So we had a lot of capacity, and then it was relatively easy going out to talk to United Press and the *New York Times* and all the other data base suppliers. We got it up and running, but it was also capital-intensive. The reason for that, and it is still true today, is that unless you can get an awful lot of business users using it at eighteen to twenty dollars an hour during the day, you can't afford to subsidize the nighttime users at less than cost, which was the idea.

To operate those systems before you make a profit costs nine or ten dollars an hour, roughly five dollars for the system and five dollars for the communications. So we were selling it at \$2.75 and making it up on the daytime volume: The business users loved the electronic mail system.

Reader's Digest has not followed that philosophy since they bought it; but they can afford to not follow that philosophy. They've raised the price, dramatically, so they've lost a lot of users, although they have plenty. The problem with that is that the young computer freaks can't afford it.

Anyway, after doing that, we started another company called the Home Music Store, where we sent digital recordings over the coaxial cable. The technology worked beautifully. We had a seven channel system over one cable TV channel. It was very fast: 12 million bits a

second. The stereo quality of the digital signal was better than the digital optical disks.

The idea was terrific. No commercials, seven channels: rock, classical, easy listening, jazz, country and two channels on which you could buy albums. Go to your touchtone phone, dial our number, get the voice response system, it would ask you for your account number — which of course we would then hit your American Express number, or your Visa number with — punch in the album number which you got from your monthly magazine called the *Home Music Guide*, set up your tape deck, and at the appointed hour you got a master quality recording right off the original masters, which we had licensed from the record companies — we thought. That was until the retailers found out about it. They went absolutely bananas. They threatened us with mayhem.

Q. Literally?

A. Oh, yeah. Really nasty stuff. Threatened the record companies that they were going to ruin key acts if they did this. Anyway, the record companies wilted rapidly under that heat and withdrew their licensing agreements. Ergo, no more Home Music Store.

So then we were sitting around about a year ago in June, deciding what we wanted to do. We'd spent several million dollars to develop this very interesting modem technology, and we thought perhaps we could adapt it to the delivery of

"I don't think you have to be able to program a computer to be at ease with it."

video games. We got all excited, and went about doing that.

The idea of having a really cheap modem is applicable to either cable or telephone. We thought, okay, let's use some of the principles we learned in the designing of a modem — much slower, obviously, since the telephone bandwidth is much more limited — but nonetheless awfully fast for the price. That was the idea behind this modem, which operates at 2,000 baud. Our cost for the parts is about seven dollars. So that's pretty nice.

Q. How is GameLine set up for the user?

A. There's a one-time \$15 membership fee, which gives you the master instruction book and a poster. The instructions are in the book; and, each month you get a magazine which has six new games in it, plus the contents. You tear those out and stick them in the book in alphabetical order, so your pile is always growing and always up to date.

You turn the system on and you get a musical fanfare. Press the button and it asks you for

your personal i.d. We assign the personal i.d.'s to you after you've gone into the store and bought it — you have to give us a credit card. We ask you the name, sex and date of birth of your kids, your wife and yourself, and what your weekly credit limit is; that's how we enforce not going bananas on the credit card.

We can give you a little ad when the download is completed: "Wouldn't a pizza taste good right now? Call 347-1000 for free home delivery." We know it's you. We know where you live, and we know there's a Pizza Hut nearby, right?

Q. Are you going to be selling commercial time in the future?

A. We're not doing that now, but we'd like to eventually. It's not as powerful, obviously, as full television; but on the other hand, you have the kid's attention glued to that screen while you're loading the game, and the beauty of the system is that you know exactly who you're talking to. It's only a four-second spot, so it shouldn't be annoying.

Q. Once a game has been

downloaded, how much can they play?

A. There's a play counter that we set in the software, so that you can only play a certain number of plays. Ten plays for a dollar, usually; that's in the book. There are 65 games on the system right now; 6 new games a month, so there'll be 71 in October. There's about 200 videogames in existence now. I have a feeling they'll stop around 300.

Q. Are the games the standard line of Atari games?

A. No. We have about 120 games licensed. They include Imagic, Tigervision, 20th Century Fox, Spectravideo, Telesys, but not Atari or Activision yet. We're meeting again for the umpteenth time with Atari next Wednesday. They're a moving target because they change around so much that you never know who to talk to. I hope we can do a deal with them.

Q. Are the videogame manufacturers reluctant to have their games played on this?

A. Generally, they like it. It allows the game company to test the game before they commit it to distribution, which is by far the most money. That's where the big bucks are, because you've already paid the game designer. Put it on the system, follow it with a questionnaire, and say, "Hey, kid, what do you think? You play for free if you fill out this questionnaire." The kid says, "I think it's awful. Awful graphics, awful playability. No, I wouldn't buy

it." And the manufacturer says, "Gee, here's a good way to save three million bucks. I won't put it out on the market." They would have saved themselves a lot of grief and aggravation if we'd been around last year. I hate to say it, but *E.T.* never would have made it if it had been on this system.

The retailers like it because it will keep them from stocking the dogs. They want to know what the good cartridges are; that's to their advantage, because they're going to make money selling them. But they're not going to make any money selling the crappy cartridges.

Q. Then does a certain percentage go to the retailer?

A. Two-and-a-half percent of every play for the first year. That's our retail incentive program. It's a way to get them to continue to demo and promote it. They like that idea; they get a check every quarter.

Q. Do you have a profile of the typical customer?

A. It follows the population of the United States, but it's quite a bit more extravagant than we thought. We had expected the users to average six to eight downloads a month; they're averaging between fifteen and twenty. Each download is typically ten plays. They set weekly credit limits for themselves. We thought the average weekly credit limit would be \$5 per family, which they wouldn't use up entirely. The average weekly credit limit is \$32.21, which is unbelievable. If they exceed the limit, they

The GameLine Master Module plugs into any Atari-type game console at one end, and into the telephone wall outlet at the other. A monthly magazine, *Gameline*, gives descriptions and instructions of the games available through the system.

For more information:
Control Video Corporation
8620 Westwood Center Drive
Vienna, VA 22180
(800) 282-2100



get a message, "Try again next week."

We use Visa, MasterCard, American Express, Carte Blanche, Diner's. The vast majority is Visa and MasterCard. We don't know their annual income. We don't ask them that; we don't ask them their religion.

Q. You have a couple thousand users now?

A. Nearly three.

Q. Do you have a break-even point?

A. Yes, but it's pretty high, up in the 100,000 range. I'm hoping to get there by the 15th of November. Certainly by Christmas. The kids, I must tell you, love it. We get great fan mail, tremendous fan mail considering that relatively few members have been hooked up. The strategy, apparently, from the kid's standpoint, is variety. They will play every game once, just to see what it's like. They sit with that book on the floor and go through it, and study it just like you would a word processing manual if you were

going to buy some word processing software.

Q. Are all the calls local?

A. They're all toll-free, either an 800-number, or a local multiplexed phone call. No long-distance. The computer knows your telephone number; if you're 415-527, I know that you're within local multiplexer range of San Francisco. If you're outside the local multiplexer range, you go on the 800-number.

Q. Do you have plans in the direction of education in the home?

A. Not right now. To make these VCS's educational is virtually impossible. There are a few games, like *Word Zapper*, a spelling game, and some interesting math games. But it's very limited in the amount of text you can display on the screen, and a lot of other things. It was not designed as a PC, obviously.

As our system evolves into talking to real computers, home and personal computers, hopefully, we'll enable our users

to take advantage of the huge amounts of educational software that have been written for the Apple, the Vic-20 and the Commodore 64. That's very exciting. In fact, I believe that and gals are the next untapped markets.

Q. What are the other features you have planned for this system? How far along are you in the planning and what does your timetable look like?

A. We're in pretty good shape, actually. StockLine and SportsLine are now available.

MailLine, the electronic mail system, will be fully operational within a few months — the way that works for the VCS is to put a keyboard on the screen and let the kid hunt and peck. It's called video typing.

StockLine gives you the high, low, close and volume on your favorite stocks — up to ten of them.

OpinionLine is our polling program. We did a demo of this for the National Education Association. It shows you how you can take polls. This could be a poll about a game or your food preferences — hopefully not a poll about your sex life. This one is a demo of a political poll for teachers. They want to figure out what their universe is feeling about particular subjects in order to react better to them and to help them plan, in this case, for the 1984 political election.

The VCS will either dial right now and send the information back to the computer, or it will

hold it in CMOS until the next time you play a game, depending on how urgent the poll is. One less phone call that way, and it will suck it up before it gives you the game. We've been testing out the technology for getting information out of the unit, and it works fine.

Q. What do you think AT&T and Coleco are doing?

A. AT&T talked to Atari, they came to us, and they went to Coleco. What they asked me — and I can't be sure that this is what they've asked from Atari — is to help them with the software for an interactive system over local phone lines so that two users can play each other using a modem which is attached to the joysticks. It is not for downloading software; it's slow, 300 baud.

You put your joystick into the modem, and you have to find a partner, which is part of the secret. You play a common user game. You buy the cartridge, presumably with a modem, from Coleco.

There are several interesting issues here. The first is that to keep the games in synchronization is very difficult. You don't want them to wander off once they've begun. The second is the game's perspective. I'm in my spaceship looking at you, and you're in your spaceship looking at me. It's very challenging software. I've seen it done; it's neat, but it's not easy. The third problem is that, if there are only a few of us who have these things in the beginning, how do we know

"Access to sources and control of sources of information is probably the most powerful tool. Thank God it's a distributed tool . . ."

when it's time to play each other, unless you are my next door neighbor and I happen to know you have one of these things? So you need an appointment service or a bulletin-board service.

The reason that I am suspicious of it as a business is that it will tie up the phone for as long as the kids are playing, and I'm not sure the parents are going to go for that; they could play for hours and hours and hours. Long-distance implications are so mind-boggling that I can't believe AT&T is doing it with a straight face. Just because they say "We'll limit this to local phone calls" doesn't mean they're going to limit it to local phone calls.

Unless they have a very fast modem, they can't deliver the software; and every indication from their videotex experiments in Coral Gables — where they're using that \$900 box that they're selling for \$600 — is that they don't have the technology.

Q. Are they talking to you in terms of combining efforts? They could use your technology for downloading software, and then

use their idea of connecting with the game they just downloaded and with someone else?

A. It's an interesting idea, isn't it?

Q. You probably spend some time daydreaming about what the future of communications, computers and technology is.

A. Sixty percent of the first class mail load is bills. The problem with implementing a nationwide electronic billing system directly into the home is, if you have everybody on the block except the little old lady on the fifth floor with a terminal, someone still has to make the deliveries to the little old lady; otherwise you're going to make her risk her life to go out to the post office. That's a problem I don't easily see overcoming — how do you get universality other than through legislation, which is what the French do: As of tomorrow, there will be no more directory service; if you don't like it, get a CRT. If you still don't like it, you still don't get a directory, because there are no more phone books.

Q. In what way do you

think information relates to economics?

A. Very directly. First of all, at the macro level in the United States, 55 percent of the work force is engaged in moving around information already, and that's probably going to continue to grow.

Access to sources and control of sources of information is probably the most powerful tool. Thank God it's a distributed tool, but it's one of the most powerful tools that exist.

Q. Other countries have a more socialistic approach to computing in their societies, like Japan, France and Britain. What do you think about the virtues of the free enterprise system leaving telecommunications to private enterprise rather than taking a few billion dollars and transferring it from a missile into putting a computer in everyone's house?

A. I think there are ways of doing it. One that comes to mind is the Post Office. The other outfit that could do it is any large encyclopedia company. You're used to paying six or eight hundred bucks for the *Encyclopedia Britannica*; obviously you could pay something less than that, or about the same amount, for a general purpose computer with a bunch of disks, be they videodisks or otherwise, that could grow each year. Those are two ways I see of doing it. I have my doubts about whether in this country government would or should. You immediately have the implication of content control:

what now is permitted and not permitted? That scares me.

Q. A lot of people are concerned that computers tend to exacerbate the rich/poor dichotomy in society.

A. I think it's probably true. But it's a short-lived rather than a long-lived phenomenon. Only the rich kids had automobiles to start with; now everybody does. Only the kids who were going on to college got slide rules. When the price of slide rules dropped to two dollars for a cheap wooden slide rule, every kid, in effect, could have one. The same thing has happened with pocket calculators.

Q. Your brochure mentions computer literacy as one of the reasons for GameLine. What is your working definition of computer literacy?

A. Basically, just being at ease around computers. Not being afraid of them. I don't think you have to be able to program a computer to be at ease with it. I think you have to be familiar enough to find the power-on switch and the keys on the keyboard, and to follow reasonably simple instructions, and be comfortable in doing that, not being fearful of making a mistake and having the thing laugh at you or having your friends laugh at you. That's what I mean by computer literacy, not much more than that. That's one of the reasons joysticks are so nice. I don't take credit for it; it's Atari's idea. But that's computer literacy. People don't think of it that way, but it is.

END

Starting FORTH

Leo Brodie's *Starting FORTH* brings FORTH programming to beginners. To start, he leads you through elementary FORTH concepts — THE STACK, reverse polish notation, math operations, the editor and the interactive dictionary.

Then, he guides you through the core language so that you learn to use it in the broadest sense of "use." Each concept builds on the foundation laid by the previous discussion. You master FORTH, as you should, step by step. He illustrates every point with charming cartoons.

I believe you can learn the rudiments of FORTH by reading and doing the problems on paper even if you don't have a computer. Though that is partly the nature of FORTH, can you say that about many other computer language texts?

With most languages, you write formal programs that don't change the language at all. FORTH is a perfect complement and antidote to them and especially the teaching languages — BASIC and Pascal. With FORTH, you redefine or extend the language to include your new concepts for any specific application.

BASIC and Pascal are evolving as systems programmers add extensions in machine language. FORTH evolves in FORTH. You develop your own version by mastering FORTH. Oh, it accepts machine code directly, similar to Christopherson's TRS-80 BASIC string packing technique, but you don't need machine language to modify FORTH.

FORTH is subroutine oriented. Brodie offers no programs until the end of the book. Rather, he discusses technique and describes short routines that you may add to your own FORTH.

Because *Starting FORTH* is such a good book for beginners, it has become a *de facto* standard for microFORTH implementations. The core or kernel of any FORTH offered for sale should be

structured around Brodie's description or include a glossary of variations from him in documentation or manuals. Indeed, Human Engineered Software's implementations of FORTH for the small Commodore computers include a page by page list of variations from Brodie's book.

The major weakness is the lack of an alphabetical index. This is not a reference book, so it won't help those who have mastered FORTH programming, and they may find Brodie's discussions tedious and his cartoons irritating and oversimplified.

The shelf of microcomputing books is strewn with absolutely terrible introductory texts by authors who pretend to be teachers. You won't master FORTH with Brodie's book as it is written at the simplest possible level. However, you will learn elementary FORTH and basic computer concepts. What better praise can there be? He succeeded in one monumental task where so many others have failed.

—Louis Buscaglia-Zepa

For a book with so much deep thought behind it, Starting FORTH is surprisingly specific, concrete and grounded in reality. Brodie's humor and humanism show throughout. His puns and illustrations work well; they convey the essential ideas and fix them in memory. You can get a lot from the book just reading it but of course the only way to really learn FORTH is to do it, sitting in front of a screen with a teacher or this book by your side. It's rather like Zen and Brodie, good roshi that he is, would be the first to deny that he's teaching you anything. —Mark Zimmerman

Starting FORTH

by Leo Brodie

1981; 348 pp.; \$17.95;

Available from:

Prentice-Hall, Inc.

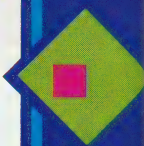
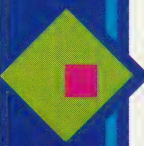
Box 500

Englewood Cliffs, NJ 07632

or from Computer Literacy



LEARNING/ PLAYING



This Christmas found Santa packing a pile of personal computers, for apart from business uses, the two primary reasons people buy computers are for education and game playing at home.

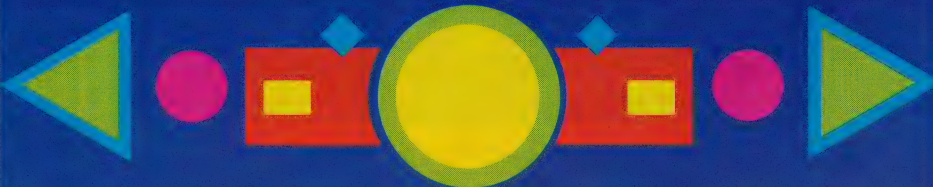
If your idea of an exciting evening at home is to battle space ships on a CRT, this may be all the justification you need to own a personal computer. But many parents want their home computer to be more than a handy, hypnotic baby-sitter. They see its potential as a tool for learning.

The distinction between playing and learning is becoming blurred. Some software vendors rush to label game software "educational" in the hope it will raise sales. Meanwhile, educational software is beginning to look very much like games. The packaging is of little help.

We asked some software and education experts for their opinion of the impact of home computers and on what makes a game educational. Dr. Ann Piestrup, chairman of The Learning Company, and Doug Carlston, president of Broderbund, responded along with Dr. Edna Mitchell in the education department at Mills College in Oakland, CA, and Timothy Hornberger and Ellen Witford in the education department of Trenton State College, NJ. These articles are accompanied by reviews of some of the playing/learning software we find particularly intriguing. Our reviewers include teachers, parents, avid game players and one ten-year-old, Bradley McKee.

We plan to continue this discussion in future issues and welcome your contributions.

—Barbara Robertson



Games And Learning For Children

by Ann McCormick Piestrup, Ph.D

As parents we have a difficult choice when we look at the array of new software available for our children. Many of us are concerned about our children being prepared for a future in a new age in which information and knowledge are commodities, yet we don't have thousands of dollars to build a software library, and there are so many new programs claiming to be fun, educational or both. How do we sort out the gems that will be as enduring as a trusty set of blocks from the flashy computer games that resemble breakable plastic toys but which are more expensive? Home computers are so new we can't rely on known classics as we can with books, games and toys.

Software for children can be classified into three types: video games, other entertainment and serious learning. Knowing what to look for within these categories can help you decide. A key question to ask in evaluating programs is

Hey Diddle Diddle

We all gathered around the CRT; Mom, Dad and kid on the knee, for Mother Goose has met the "chip," and now can be found in our IBM PC.

Hey Diddle Diddle is a collection of traditional Mother Goose nursery rhymes set to computer music and colorful graphics. With three fun ways to play this game, *Storytime*, *Storybook* and the *Rhyme Game*, our five-year-old was delighted.

Storytime is for pre-readers and automatically runs all 30 Mother Goose rhymes with music and slowly generating graphics. The child becomes fascinated with the generating images and learns to use the "space bar" to continue the show.

Storybook displays the same rhymes, but the words generate slowly so the beginning reader may easily read along.

The *Rhyme Game* is for more advanced readers and has two levels of play. The child learns to use the arrow keys to unscramble either the first four lines or the entire eight lines of a nursery rhyme. Two players can play and race against the clock.

The child learns to organize fragmented thoughts and is rewarded with music and a colorful graphic image when successful. The graphics



"Storytime" in *Hey Diddle Diddle*: Mother Goose rhymes which generate graphics and music.

"What is the child going to actually learn?" If he or she is watching a show, it's not enough.

Video games on home computers are scaled down versions of arcade games and usually feature fast action in which your child is always defeated sooner or later. Action often centers around a player, moved by the child and capable of shooting missiles or rays while spaceships, aliens or insects attack. A variation is the gobbling action of *Pac-Man*.

Children who master these games can develop a disciplined focus of attention while under pressure that reminds me of masters in the martial arts, although they are facing electronic bleeps, not bodily opponents. The skills of timing, thumb action and learning complex visual patterns possibly help kids notice other visual patterns and certainly prepare them to play other video games.

Other entertainment software focuses on teaching letters, numbers or other school subjects. But many programs are so limited in scope and play value that children tire of them quickly and they're not worth the price or your child's time. Examples in this genre are programs in which each keypress makes an alphabet letter appear with a picture on the screen. The pictures might animate, which is amusing the first few times but there is actually not much action for the child. The computer is doing the work and therefore doesn't allow the child the delight of more complex interaction. Other programs show numbers or mix tops, middles and bottoms of characters.

Also in the entertainment category are programs that require more thinking and fantasy. These are adventure games that are like *Dungeons and Dragons*. Children choose weapons, stores of food and magic implements, then go on a quest, an interactive odyssey. Often whole neighborhoods participate and there is social learning among the kids as well as learning complex mapping, mythical characters, objects, rules and problem solving. Examples are MicroSoft's *Adventure*, a text cave exploration, *The Wizard and the Princess* and *Dark Crystal Adventure*, which have some

are wonderful and the package seems to have something for everybody. Pre-readers will have to be supervised, but for the most part the software is easy to use and requires little supervision.

—Rik and Deb Jardnicek

Hey Diddle Diddle

Spinnaker Software
5¼" disk, \$29.95 list price

Hardware requirements:

- Apple II+, IIe; 48K, joystick
- Atari 400, 800, 1200XL; 48K, joystick
- IBM PC; 64K
- Commodore 64; 64K, joystick

Information and nearest dealer location available from:

Spinnaker Software
215 First Street
Cambridge, MA 02142
(617) 868-4700

Rocky's Boots

Rocky's Boots does not have any stilted graphics or "keybored" page turning with a hidden agenda. It's not a program that already has the answers figured out and merely puts the learner through the exercise of finding out what is known but held back.

Instead, *Rocky's Boots* creates an open, moving and changing environment filled with color (the program works on a monochrome monitor but color makes a wonderful difference), sound and exploration. Once introduced to the

workings of the program the child gets to move a large floating cursor around the screen from one environment to another. Each environment is a room entered through a magic doorway and filled with tools, machines, various parts and other surprises. There are cutters, clackers, electric arrows, sensors, and-not-or gates, flip-flops, clocks and delays. Any of them can be "picked up" with the floating cursor and then rearranged, linked together, hooked to a power supply, turned on and off — used in as many different ways as there are children to think them up.

The instructions are clear, thorough and simple enough for any first or second grader — or for that matter, any self-conscious adult — to grasp with a little practice. The potential variety of combinations and the range of challenging tasks and games offered by the program menu leaves room for all kinds of experimentation with currents, switches, lights, etc. — experimentation that is based on basic scientific principles. *Rocky's Boots* offers a chance to utilize the problem-solving skills we are trying so hard to teach these days — intuition, logical thinking, sequential ordering, re-checking and debugging.

Most children, including

pictures. These are all hard to begin and require advanced reading and thinking ability.

In the serious learning category are games which can be structured and sequenced so that each game builds on skills learned in the last one. Examples are *Bumble Games* and *Bumble Plot* which teach number lines, rows and columns and plotting graphics. The games in *Moptown Parade* and *Moptown Hotel* also guide the learner with clues, prompts and manageable steps to do logical thinking. These sets of programs have endearing characters, a warm tone, allow a smooth flow through the games with consistent ways to enter information, and have an element of whimsy.

There are also text-oriented learning programs that are just that — flash cards or workbooks on the screen. They can provide remedial help where it's needed if you have a way to diagnose areas that need work and if the learning is sequenced from level to level. Children sometimes resist doing problems that so resemble school work at home, but you can probably find more playful programs with the same content.

Finally, there are skill builders like the typing programs. My favorite of these is *Type Attack*, which encourages left-to-right eye tracking and introduces typing gradually. *Master Type* uses bombing of space ships to

A magic game room in *Rocky's Boots*. You, the orange cursor, build a machine that kicks the purple boot to hit a moving target.



teach typing, so it is a hybrid of learning programs and video games.

Other hybrids that cut across these categories appear daily. For example, there are math problems that are decorated with dragons. Besides all these, there are languages like Logo and BASIC; graphic editors like *Paint* and *The Illustrator*; word processors like the *Bank Street Writer*. I have heard of children "playing" *WordStar* and *VisiCalc*, exploring their parameters. These boot up and just sit there, so the child must make everything happen without prompting and may need more help from you. But children can do real work with these and find out what computers are for after the games are over.

It seems useful to have a variety of programs for your children. Some for fun, some to learn with and some real tools. Neighbors, some libraries and reviews can help you find programs that have lasting value for your children. The category to concentrate on depends on your values for your child's learning and play.

END

myself, do the obvious first — build a machine that turns on and works: moves, honks, clacks, lights up, carries current, does something interesting that could not be done in the real world without a lot of expense, safety precautions and time. But we can move on — from the concrete to the abstract and from the simple to the complex — all through the process of making something actually work. The only other way I have seen children learn the same skills with computers is when they work on programming in a language like Logo or BASIC. By using active and open-ended simulations, this software program is able to utilize

Pinball Construction Set

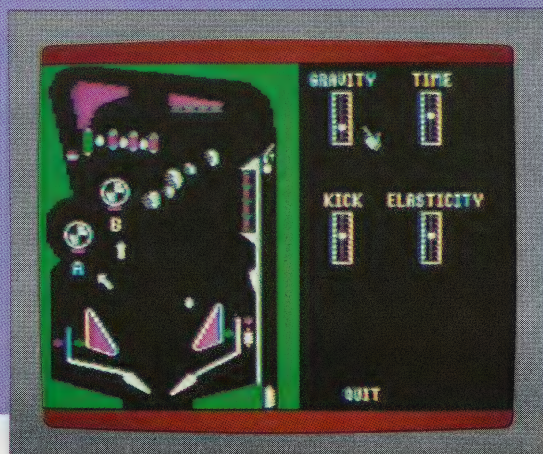
I've asked a lot of people who are crazy about computers just why it is they are so crazy about computers. They will hem and they will haw but eventually it gets down to this: A computer makes you God. The only catch is that you have to learn to program before you can take command of the universe and it takes more than seven days to learn to program.

Pinball Construction Set makes you God in a few minutes. True, your universe is restricted to making pinball machines. But there is much to

learn about pinball machines. There are series of targets to connect that create bonuses. There are decoration schemes to consider; tactical

variations that make subtle differences in play. You find this out as you build a pinball machine, try it out (debug it), make changes and improve it. This trial-and-error

You move *Pinball Construction Set*'s little white hand to assemble components and (as here) choose the game's characteristics.



the computer's potential for revealing new ways to think and explore. With *Rocky's Boots*, educational software moves into another dimension, one reflective of the magical world children live in.

—Robert Scarola

Rocky's Boots

The Learning Company
5¼" disk and manual, 3.3
DOS operating system.
\$49.95 list price

Hardware requirements:

- Apple II, II+, IIe; 48K

*Information and nearest
dealer location available
from:*

The Learning Company
545 Middlefield Road,
Suite 170
Menlo Park, CA 94025
(415) 328-5410

The New Space Invaders — Is Computer-Video Technology Pushing The Family Out Of The Home?

by Edna Mitchell, Ph.D.

At the peak of home video game purchasing, Christmastime two years ago (and just as *Pac-Man* was being marketed for home consoles) I conducted a study to learn about the effects of the new technology on families with children. I had concerns about the possibilities of greater isolation of family members and detrimental effects on school work, desensitizing children to war and aggression through games which blast the enemy off the screen and widening the gender gap through greater male competence with technology.

Twenty diverse families in the San

process is something you might want to apply later on, when you learn programming, or anything else.

The method by which you build your machine is ridiculously simple — a little "hand" icon, controlled by your joystick, pulls bumpers, flippers and targets to the pinball field. By pointing to other icons like a paintbrush, a screwdriver or a little globe, you can decorate, change the scoring or sound, create new shapes or actually play your game. Since you are God of this universe, you can even change the pull of gravity to make the ball drop faster.

If you simply want to play a pinball simulation game — like you might have with author Bill Budge's bestselling *Raster Blaster* — you can try one of five demo pinball machines included on the disk. But it's best to build your own, save it to a new disk and come up with a complete arcade of your creations.

Everything works. (Well, sometimes a ball will go through a flipper — but who said Bill Budge was God?) Electronic Arts supplies a clear and detailed manual. If you hate pinball machines, you might not like this. But then, this program might make you like

pinball machines for the first time.

—Steven Levy

Pinball Construction Set

Bill Budge

5¼" disk

\$40 suggested retail price

Hardware requirements:

- Atari 400/800/
1200XL; 48K
- Apple II, II+, IIe
- Commodore 64
- IBM PC

*Information and nearest
dealer location available
from:*

Electronic Arts
2755 Campus Drive
San Mateo, CA 94403
(415) 571-7171

Francisco Bay Area, with a total of 44 children (ranging in age from five to seventeen and almost evenly divided among boys and girls) were selected. The families were from varied social classes, racial and ethnic backgrounds, different neighborhoods, with both single-parent and two-parent families and a wide range of occupations.

Of all the initial concerns, the only one to be verified in the data was the evidence of a gender gap.

The most compelling outcome, expressed in different ways in nearly every family, was the new "togetherness" experienced within the family. Families reported increased play among siblings, between parents and children and between members of opposite sexes. Families commented on the spirit of cooperation and verbal interaction which accompanied playing the games at home. This especially contrasted with previous television watching habits. Fathers and daughters talked of the fun of playing together with both a spirit of competition and a spirit of pride in each other's accomplishments.

Mothers, however, generally did not play. Fifty percent of the 20 mothers in the study did not even touch the machines. These mothers cited being too busy, disinterested or too nervous to play. The noise and fast pace of the games seemed to intimidate some of the mothers. Others thought it a dreadful waste of their time, although they thought it was good for the children and relaxing for their husbands or male friends. Of the ten mothers who did play, only four of them played often enough to become competitive within the family and of these, two became family champions.

Children often tutored their parents, introduced them to the games and taught them the strategies. The traditional expectation that parents would teach their children new skills was obviously reversed and in some cases this was difficult for fathers to accept.

Children and parents agreed that playing the games at home did not adversely affect

Ms. Pac-Man

I am not a big arcade fan. I used to play foosball a lot and occasionally shot some pool. The high-tech video games, however, left me feeling broke and inept. "Game Over" always appeared long before I got the hang of the fire button and hyperspace capabilities. And that's why I found *Ms. Pac-Man* such a welcome oasis in a sea of video war games. I could feel accomplished at it even after playing only once or twice.

The home version generates the same feeling. It starts off at a level that's comfortable for a novice (particularly when you have to get used to both the game and the joystick), yet moves quickly on to harder game boards (the maze changes) and faster play. It forces you to use your peripheral vision as you guide *Ms. Pac-Man* through the maze, munching on dots, cherries, strawberries and oranges (I haven't made it past the orange level) to avoid the deadly ghosts. The quality of the joystick you're using is going to greatly affect the pleasure you get from this game as well as your score. As I play *Ms. Pac-Man*, my goal has been to advance to harder boards. Since I've only made it to the second level, I find I'm less concerned with the strategy of points and more concerned with

clearing the board. I suspect I'll start paying more attention to points and will play a more aggressive and a riskier game. Which will, of course, require a great deal more concentration. And maybe a better joystick.

—Cindy Craig

Ms. Pac-Man

Atari

Cartridge, \$49.95 list price

Hardware requirements:

- Atari 800; joystick.
- Atari 5200, 2600; game systems.

Information and nearest dealer location available from:

Atari

P.O. Box 427

1399 Moffett Park Drive

Sunnyvale, CA 94086

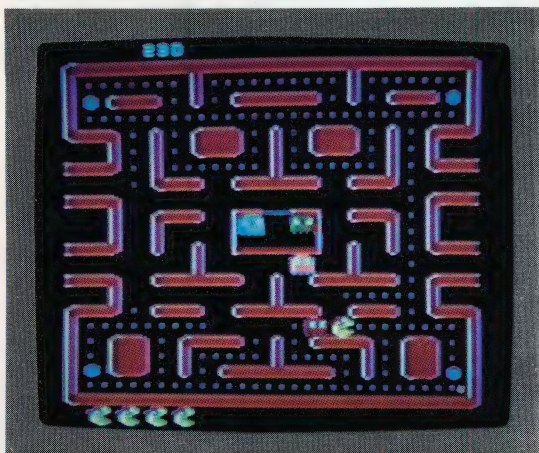
(408) 745-2820

M.U.L.E.

(Multiple Use Labor Element)

Here is a new and brilliant idea for a home video game and it's the best thing since *Space Invaders* in my opinion. You and up to three other players pick what type of alien you are (and they are all very creative) and try to colonize a planet in six, nine or twelve months, according to the skill level you choose.

The goal is to develop the land that you either buy or receive from a land grant, and start your own business. There is



Jonathan Rechek

Ms. Pac-Man, pursued hotly by a red ghost, seeks the nearest energy dot.

school performance. The opposite was believed to be true. A substantial proportion of subjects in the study were convinced that the games had increased their ability to concentrate, improved eye-hand coordination, strengthened self-concept and launched the family into the world of new technology. Most families saw their home video game purchase as the first step toward becoming knowledgeable about computers.

Now, almost two years later, those expectations are being fulfilled in many families. The home video game set has been replaced by the personal computer in many families. Unfortunately the accessibility of this powerful technology will be limited to affluent families in the foreseeable future and it threatens to be limited as well to families with sons. Studies are beginning to show that families are more likely to purchase home computers when they have sons than when they have daughters.

If the invasion of the computer into the home follows the path of the home video game, we may expect to see its use kept in perspective among other family activities. It will be used for play, for learning and for some serious work activities. It will be used as a social center by some families, and as an isolated activity in other homes. It will

not replace other forms of family recreation and learning, such as outdoor activities and reading books. It will be less exciting to most families when the novelty wears off and when the alternative of using uninteresting software or creating one's own becomes more apparent. It will continue to replace some television viewing time, rather than be added onto television time. Given the potential for the control within the family of the quality of a child's experience with the computer and the complete lack of control over the quality of television (except to turn it off), I believe the computer has the edge.

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Entertainment In Educational Software

by Doug Carlston

A great deal of the software marketed today is described as educational despite strong play elements. In fact, the most successful vendors of this software often call their products "edutainment" in recognition of their explicitly recreational side. Although there is little doubt that entertainment value helps sales, some educators have begun to express concern that the play element in these products interferes with or distorts their teaching function.

Part of the problem is that many people are unsure of the exact difference between entertainment and education. Games have been used as teaching tools since the beginning of human memory. The relevant question may be whether the games being played are teaching something that it is appropriate for the person playing the game to learn.

At some stage, even games which focus on nothing more than honing motor skills have educational value — it is only when a person plays games that teach skills that have little utility to the player or which he or she has

just one problem about making products: you have to buy stubborn M.U.L.E. machines and pull them to your property. You can pick your own products to produce, like food, energy, Smithore or Crystite. Food and energy need not be explained. The third product, Smithore, is what M.U.L.E.s are made of. Crystite can only be made in the hardest level of experience, Tournament Play, and it's like gold on this alien planet. The type of land you choose affects how fast you can produce a particular kind of product.

The planet's currency is dollars. One way to get dollars is to gamble in the pub. You can also make assays, buy and sell land, trade your products at an auction, develop land and a few other miscellaneous things. Bad and good things can happen to one player or the whole group of players. It is a fantastic game and I'm sure you and your friends will have fun playing M.U.L.E. It's for all people 8 years old and up.

—Bradley McKee

M.U.L.E.

Ozark Softscape,
designers
5¼" disk and manual
\$40 list price

Hardware requirements:

- Atari 400/800/
1200XL; 48K
 - Commodore 64
- Information and nearest
dealer location

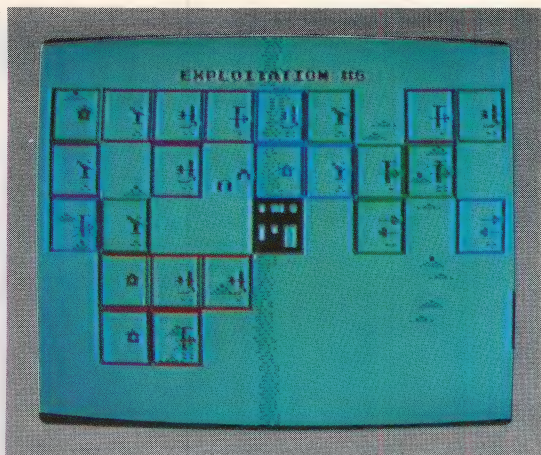
available from:
Electronic Arts
2755 Campus Drive
San Mateo, CA 94403
(415) 571-7171

Flight Simulator

As the plane went into an uncontrollable spin and the gyros tumbled madly, the last thing I saw out of the cockpit was Lake Michigan rushing up to meet me. Everything went dark. Everything except the "SPLASH" that came on the screen. Mad? Damn right. It was at least the fourth time it had happened.

As the only instrument rated pilot on the premises, I'd been selected to check out flight simulator programs, but despite my ratings, I was bending more aluminum (simulated) than any ten student pilots ever did. Being new to the IBM PC was part of the problem, for it soon became apparent that success was based on keyboard skills as well as flying ability, but after a few sessions I was able to get into the air more often than into the lake. Along the way I discovered that by simply hitting "P" I could pause, freezing the action while I grabbed the manual and planned a proper response before returning to the drama. I'm quite sure that such a feature made standard on airplanes would be highly popular with pilots.

Operating this program



M.U.L.E. land plots, colored according to which player owns each plot. The dark square is town, where M.U.L.E.s wait to be outfitted.

already substantially learned that the educational value of the game becomes suspect.

The largest category of entertainment software comprises fast-action arcade-style games, which challenge eye-hand coordination and other essential motor skills. They usually get their appeal by their play on hunt/flight instincts or gathering impulses. Most objections from educators center on their emphasis on violence. Part of this is clearly liberal discomfort with an essential part of human nature, our fundamental definition as a hunter/gatherer. Our species has survived for 98 percent of its time upon this planet in this role.

Nonetheless, a good argument can be made that these skills, however useful to our forebears, are dysfunctional in modern society, which requires intellectual rather than physical prowess. These games are a nostalgia trip, and teach nothing of great value to most of us today.

Computers are good at presenting finite amounts of information in a finite number of ways. If the information presented has educational value, then the program may as well. If the information is presented in a way that challenges our competitive game-playing selves, it will have entertainment value too. **END**

means dealing with a split screen showing an instrument panel below and a view out the cockpit window above. The cockpit view can be in any direction, front to rear, a nice feature but limited considerably by screen resolution. Don't expect anything more than a vague resemblance to passing scenery. But there's also "radar," which replaces the cockpit visual with a bird's eye view similar to what you see on a radar screen. It's great for keeping track of where you are during desperate times, kind of like radioing in when you're lost and asking for a vector to the nearest airport. But much less embarrassing.

This program is by no means just in the "games" category, for it can definitely assist in pilot training. From the navigational challenges of cross-country flight to IFR approaches, all with different levels of difficulty available, there's plenty of juice here. And of course the most basic aspect of instrument flying is the "scan," that unnatural habit of continually shifting both the eyeballs and attention to cover all the instruments as opposed to doing what comes naturally — fixing on one dial and getting behind the airplane. Focusing on the artificial horizon and keeping the wings level is quite satisfying, but if you



Jonathan Rechek

Cockpit's-eye view of *Flight Simulator* before takeoff, with the John Hancock building in the distance at left.

neglect airspeed until you've passed redline then, as the wings peel off the fuselage in the last dive you'll ever make, you'll be wishing you'd scanned better. This program demands that you learn to scan.

On the other hand, flying via computer requires keyboard skills that will never transfer, for pushing buttons just ain't the same as a stick and rudder. Not to mention the ongoing bane of computer life — those phrigging glitches. Back in WWII, pilots called them gremlins and they couldn't be explained at all. Nowadays we suspect them to be programming errors, but it's still hard to prove. I haven't met a glitchless program yet and in this one it was after I'd crashed at Santa Monica airport instead of into Lake Michigan that the whole affair went batty and jumped into a loop of continual crashes from

which I escaped only by turning off the machine and restarting.

So even though this isn't a flight simulator of the Link trainer variety with the satisfying feel of genuine airplane controls to yank on while sitting inside a cockpit, it still has much to offer. Call it a \$50 Link and capitalize on all the learning that's available. I only wish the manual went into more detail considering all the program has to offer.

—Dick Fugett

Flight Simulator

Microsoft

5¼" disk, manual, \$49.95 list price

Hardware requirements:

- IBM PC; 64K, disk drive

Information and nearest dealer location available from:

Microsoft Corporation
10700 Northup Way
Bellevue, WA 98004
(206) 828-8089

Magic Spells

Magic Spells successfully meets my three criteria for good software in the drill and practice genre.

First, it's engaging and clear. The letters are big, bold and colorful; the graphics are simple but pleasing; instructions and command sequences are simple, effective and accurate.

Second, it's friendly, interactive and assists the student in accomplishing a specific goal. It gives the student options: they can unscramble scrambled letters or use a simulated "flashcard" to learn correct spellings. Students are not rushed and as the game is played, the program gently helps them spell words correctly. If a word is misspelled, the program shows the letters they've gotten correct (in the proper sequence) below the misspelled word, leaving spaces for missing correct letters to be filled in. Points are won from or lost to a very happy looking demon who appears on the screen when he wins points. When the entire word list is worked through, the student gets part or all of a prize from the "treasure room" as a reward.

Third, it's adaptable to individual needs. The program allows the student or teacher to create individual word lists. A separate datafile

Computer Games Make Reading Fun

by Timothy R. Hornberger
and Ellen V. Whitford

Ever since people began to read and write, there have been those who have complained that youngsters don't read enough. Children seem to spend much more time playing games and watching television than they spend reading. Because of the hypnotic effect of television, parents and teachers were sure that children would stop reading altogether.

Today there is a new threat — the microcomputer. Some parents and educators are very concerned that computers and especially computer games will deprive children of even more valuable reading time.

Before you join this latest group of critics, you might want to take a look at some of the latest computer games. While your child is exploring a fantasy world or attempting to outwit a clever opponent, he or she will be improving skills in reading comprehension, directionality concepts, visualizing, problem solving, grammar, vocabulary, spelling and even dictionary skills. What's more, these games require concentration and active participation. Your child will never fall asleep in front of a computer game!

One of these games which we have played with our students is called *Monty Plays Scrabble*. Developed for the novice or the expert, this game offers a real challenge for youngsters. The object of the game is to beat Monty, a clever little fellow with a 54,000 word vocabulary. In order to do this, the player must think of a word which will give him the greatest number of points. Often, in their zeal to beat Monty, we find our students grabbing a dictionary to find a word or challenge Monty. Little do they know they are improving their own vocabulary and dictionary skills. Spelling

disk can be created with a whole semester's worth of words on it. These words can be easy or difficult, making the program applicable for grades from kindergarten through sixth, seventh, possibly even eighth grade (although it might look too "childish" to the budding pre-teen).

If you want to learn or teach spelling by practicing word recognition, this is an excellent tool to use (how else could you play with substituting letters in words until you found the right combination? Impossible unless you happen to have controlling interest in an eraser company). It makes learning to spell words correctly more enjoyable and rewarding for both student and teacher than it is without the help of a computer and software.

—Robert Scarola

Magic Spells

The Learning Company
5¼" disk, manual, DOS
1.1 64K operating system,
DOS 2.0 128K operating
system, \$34.95 list price
Hardware requirements:

- Apple II, II+, IIe; 48K
- Atari w/BASIC; 48K
- IBM PC, PC jr.

Information and
nearest dealer location
available from:

The Learning Company
545 Middlefield Road,
Suite 170
Menlo Park, CA 94025
(415) 328-5410



The Learning Company

The main *Magic Spells* menu as you prepare to venture into the Castle of Spells

counts, too. Monty won't accept a word if it is misspelled, and even the worst speller will make sure that every word counts.

Even fantasy and adventure games can build reading and thinking skills. For example, we have seen real skill development in students playing adventure games such as *XENOS* and *ZORK*. Neither of these games includes graphics; rather, they rely upon the reading ability and imagination of the player. And it requires some resourceful thinking to explore the fantasy worlds, avoid the dangers and discover the surprises which await the skillful player. These games and others like them force kids to think logically, interpret directions, make decisions and understand sophisticated vocabulary words. Don't be surprised if you find your child drawing maps of a city or underground empire from hints presented on the computer screen.

There will always be mindless computer games just as there will be junk shows on television. But if you look carefully, you can find quality entertainment. Play a few computer games with your child and select those which are fun as well as educational.

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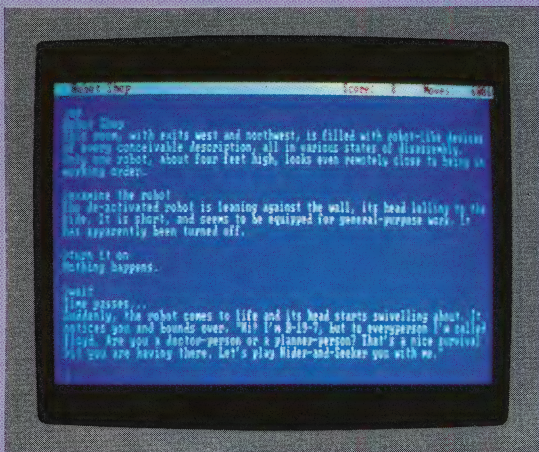
Planetfall

If you like treasure hunts and the challenges of logical puzzles, you should give adventure games a whirl. *Planetfall* is one of the best I've seen.

Infocom's "interactive prose adventures" are the cooler part of the game spectrum. No joysticks or paddles to jockey; just your intellectual powers get exercised. They are faintly addictive (this review took about six times as long to complete as I had expected) as they present scenarios you direct with simple commands like "push the brown button" or "go north." Some clues are given, but mostly you just figure out how to locate and acquire various treasures (for points) and avoid hazards that can slow you down or occasionally kill you.

Planetfall stars an inept junior officer in the Stellar Patrol who later gets an obtuse robot named Floyd as a sidekick — Floyd doesn't show up, you have to find and activate him.

There's a good deal more humor in this rendition than in Infocom's *ZORK* series of adventures, but since you wind up going through the same areas



A dramatic moment in *Planetfall*: the discovery of Floyd.

repetitively (there's a lot of fumbling along in adventure games, at least for adults), the gags can get a little stale. Balancing this, *Planetfall* has a 600-word vocabulary which allows you to give the game some fairly bizarre instructions and still escape the dreaded "I don't understand that word" response.

The packaging for *Planetfall* should do nothing to dissuade your purchase. Inside are endless authorizations and instructions, in classic military-bureaucratic style, including: "Failure to comply with the above regulations is punishable by the loss of not less than one appendage." You

also get three postcards from the planets you visit to send your friends, like the one from Accardi-3 that cites the "exotic anatomical charms of the Gabrillic Hyphenated Woman."

—Richard Dalton

Planetfall

Infocom, Incorporated
5 1/4" disk, \$49.95 list price

Hardware requirements:

- IBM PC

Information and nearest dealer location available from:

Infocom, Incorporated
55 Wheeler Street
Cambridge, MA 02138
(617) 576-3190

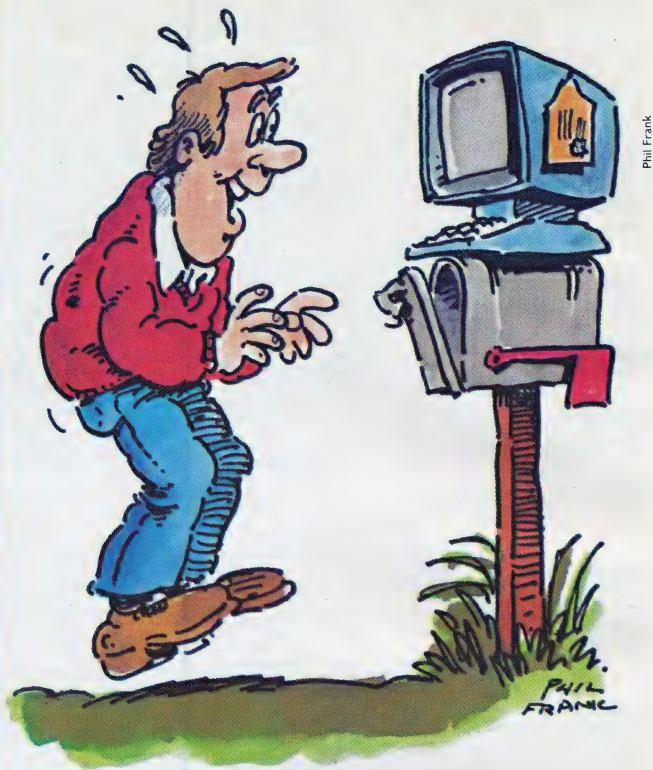
MAIL-ORDER BUYING PRIMER

by James Stockford

The two advantages of buying by mail are that you open yourself to a huge selection of products that are available nowhere else and that you can generally save money on your purchase. All the computer magazines, amidst the apples, peaches, gorillas, elephants and mice, display advertisements asking you to mail away for keyboards, dust covers, books, unique kinds of software, gizmos and brainstorms that can't be found

Jim Stockford handles software acquisitions for the Review. He has been studying the benefits and pitfalls of buying by mail for some time. As he notes, you can save substantially on purchases if you are careful and stick with reputable dealers. We are interested in identifying a group of reliable mail-order firms we can recommend to readers. Please let us know if you have a candidate to include in our list and what your experiences have been.

—Richard Dalton



Caverly's Guide to Direct Mail Advertisers

The most useful publication I have found is Caverly's Guide, a two-volume set of direct mail suppliers arranged by computer brand. Whatever computer you are using will almost certainly be listed. Altos through Morrow are listed in volume one, North Star through Zorba in volume two.

Buy the volume which refers to your machine,

look up your machine's section, and find all these suppliers selling products germane to your system. Over 400 vendors are listed with specifics as to what and how they sell. As a bonus you get an analysis of direct mail buying techniques, some of which has been excerpted in this article. There is nothing like this catalog for direct mail basic training.

\$7.45 postpaid from:

Caverly's, Inc.

512 Bridle Court

Walnut Creek, CA 94596

Wilson's Computer Business

With a name that has all the poetry of a truck stop, the Wilsons have established a pre-eminent reputation for integrity and helpfulness. They sell anything that is made for computing except equipment from manufacturers that do not allow mail-order sales. This means if they do not stock the equipment or software you are looking for, they will make an effort to get it for you.

You are likely to wait a few weeks for your purchase from Wilson's, but that is the case with most mail-order houses, including many who claim to have the very article you need in stock.

W.C.B. is my first choice for a mail order

on the shelves of retail stores, along with standard products: disk drives, printers and software at prices well below those offered by retailers.

The magazine pages serve as a forum for an unusually free economy. Magazine ads allow someone with a good idea and a limited budget to reach you. We encourage you to explore this interesting resource.

Over half the ads in any magazine invite a coupon clip or phone call. They call it "direct-selling." Some advertisers are large, well-established distributors, while others are small distributorships (typically family-run) specializing in one kind of item. Most of the mail-order ads, though, are placed by small manufacturers and software publishers, each selling its own wares.

The large suppliers are obvious. They take out two-page ads which display long lists of the most popular software, monitors and printers available at prices well below retail. A typical vendor employs fifty people, including a dozen order takers, two technicians, shipping and receiving personnel, a bookkeeping staff and a few managers. The best of these have most of what they advertise in stock, ready for delivery. You can expect your order within two weeks of the time you pay for it and technical help by phone is generally good. As they depend heavily on semi-skilled labor, deliveries are not always right and they are seldom able to respond to unusual requests.

The smaller distributors do not have the money to buy two-page ads in many magazines. Their strategy is to place large ads in a few, or to place smaller, column-sized ads in a larger number of magazines. These operations typically employ three to six people, many of whom are likely to be family members. Their stock is limited, and they often specialize in one kind of supply, like disk drives or printers or monitors.

While this group includes a number who began on a small budget and limited knowledge, some are now run by very knowledgeable people. If you can find a well-run small mail-order house, it will be a supplier who gives great service and who can help you get items normally outside of his lines, all at a good price.

The third group of advertisers includes manufacturers and publishers of software and books who are not in a position to control the large distribution channels to the retail stores. Their advertisements serve a double purpose: for their sales force to persuade retailers to carry the product and to attract customers who wish to buy directly. Advertisers whose products can be found in retail outlets will tend to sell them at full price, mainly to accommodate those who do not live near a retailer. Products not widely distributed are likely to sell at a lower price.

Naturally, variations of these rules will be found but an understanding of the nature of these suppliers will underpin the strategy of buying without getting burned.

The first part of your strategy is to stop and think; be sure you know what you are getting into. You will have to install your new purchase yourself, so it is very important that you know what you're doing. You must know enough to ask hard questions about installation, procedures, interfaces and any of the other problems attached to the item you want to buy. You must be able to assess a vendor's ability to provide the necessary after-sales support that you will very often need. You will need to understand what they are talking about when you call. If you don't know what you're doing, don't buy direct.

Here is a basic formula for those of you who have at least a fairly good idea of what it is you want to buy. Figure out what your time is worth to you on an hourly basis,

house not just because of their nearly unlimited range of products but because I have heard praise from retailers, distributors, customers and manufacturers, all stating that Wilson's service is excellent. I have also heard that they will refuse to sell a system to a customer who seems to be unable to handle it. The service they have given me has been terrific.

Wilson's Computer Business

14 W. Third Street, #5
Santa Rosa, CA 95401
(707) 575-9472

Conroy La Point

This large supplier runs a tight ship. As I placed my order for disks and supplies the woman I spoke to confirmed each stage of the ordering process. She then warned me that they were re-doing their warehouse system and my order would be delayed by a few days. In other words, I was to wait a week and a half between ordering and receiving my goods. I only wish that other mail-order houses would re-do their warehouse systems if it meant service this prompt.

The pluses for this supplier are that they work from a large stock on hand, are orderly in their procedures, offer technical assistance to their customers and are

willing to suggest alternatives to confused buyers. There are no real minuses other than that their low prices can be beaten by a small percentage on occasion and that there is a little inflexibility that comes with being big and successful. They offer Apple II's, disk drives, monitors, add-on cards, software, printers and on and on. A very good choice for a supplier.

Conroy La Point
PO. Box 23068
Portland, OR 97223
(800) 547-1289

Guenther Computer Products

A small business (the mail-order business is a good one for mom and pop operators). Check prices here for disk drives, add-on cards, disks and disk accessories. Delivery is good and technical support is available. Prices are low.

**Guenther Computer
Products**
681 East Brokaw Road
San Jose, CA 95112
(408) 287-7730

800-SOFTWARE

It took some doing for us to place our order with this large supplier, and apparently it took some doing for them to get our order to us. It

then figure what your time is worth when you are frustrated and in a lousy mood. Multiply that figure by five to ten hours per item and you will have an approximate idea of the amount you must save in order to break even on a purchase even if you have support. Once again, if you are unfamiliar with the product: **DON'T BUY IT BY MAIL!**

Your next step is to invest in lots of magazines, new and old. This should be fun, for you get to window shop in the new magazines to see who is selling what and for how much. Old magazines will allow you to see who has been around for a while. A business which has been advertising for two or more years is likely to be dependable. Remember, as well, that your library is a source for these magazines.

As you look, beware of the promise of the "too good" deal — strings are sometimes attached. There is a distributor by the name of Protecto whose offer of the Commodore 64 at \$99 sounds great, except that they ask that you pay \$199 for the computer and a coupon for \$100 worth of software. That's a good deal only if you can use the software. Outright rip-offs are rare and are almost always easy to spot. Good clues are an unbelievable product or price and an ad that provides only a post office box and no street address or phone.

Nearly all advertisers are legitimate and problems result from slovenly business practices rather than malicious intent. For that reason, never buy from a vendor without first calling him. This process can be fun; most of the people on the other end of the line are excited by this business and are happy to talk about it.

When you call a vendor, ask questions that help assess their ability to serve you: how long they have been in existence, where they place their ads, who works there, what they have in stock, when they can ship your order, how they accept

payment. Ask if they provide after-sales support; do they have someone knowledgeable about your product to whom you can talk as you install it? Their answers will paint a picture of their operation. The tone of their answers will help you tell if they are able and willing to assist with your new purchase. Remember that you will be dealing with people and the relationship should feel good.

Look for payment options. Once you send someone your check or money order, they will have your money! If you send a personal check, suppliers will wait until it clears the bank before they ship your order. Most businesses honor some credit cards which allows for easy adjustment of discrepancies and an immediate transfer of funds. A surcharge of a few dollars is generally added for the use of a credit card. C.O.D. has the advantage of giving the vendor peace of mind without tying up your money for a long time, but if the box you receive does not contain what you want, adjustment can be a little hairy.

Develop good buying habits. When you order, be specific and exact. Include the manufacturer's name, the model name and model number of what you wish to buy. Remember that what you are ordering must be compatible with your system. A CP/M program may be designed for the Osborne and not work on the Kaypro. A serial printer may not support the communications protocol specified for your computer. There are software programs written for IBM's PC DOS which will not run on other MS-DOS machines. If you order hardware, find out whether the price includes cables. If cables are extra, determine the cost and make sure they are compatible with your system.

Verify the price of your purchase. Prices change fast. Some time may elapse between the time an ad appears and the time you place the order and you don't want an unpleasant surprise.

wasn't much, really. We wanted some disks and a couple of disk storage units. Here is our sad tale.

First, don't dial 800-SOFTWARE as their name implies; the number has been changed. They now have several numbers to call and all of them were busy when I tried. With patience, I did get an answer, talked with a clerk and placed our order via charge card.

I felt abused a week later when another clerk called to ask what I had ordered and what the charge card number was. The caller explained that the former clerk had "spaced the order out" as it was her last day there. Well, what can you do? Place the order again and say "Thank you."

Two days later a clerk called with the news that the items were out of stock. Annoyed, I placed an alternate order which arrived two days later, correctly billed. The process seemed a little too chaotic to be forgiven, yet this may not have been a fair test of their overall ability to deliver on advertised promises.

800-SOFTWARE

940 Dwight Way, Suite 14
Berkeley, CA 94710
(415) 644-3611

Inmac

Other offices and warehouses of this giant supplier are scattered

across the country. Inmac is big. That really says it all, but here is what big is all about.

Big means rarely having to say "We're out of stock." A supplier this big is not selling discount prices, but service, supply, dependability and peace of mind. Big means desks, chairs, racks, fire extinguishers, cables, ribbons, glare filters and hub rings. They don't sell computers, disk drives, printers or other hardware that might require field support.

If you need a dependable source for accessory computer-ware, keep an Inmac catalog around and don't expect low prices.

Inmac

Corporate Office
2465 Augustine Drive
Santa Clara, CA 95051
(408) 727-1970

Total Access

The littlest mail order house in Texas. This is a one-man operation and a good one. Walter Cook specializes in disk drives, disks and accessories, printers, Morrow, Franklin, Zorba, Brother and Radio Shack equipment. Prices are low, delivery is reasonable, and he offers technical support via telephone.

Total Access

P.O. Box 790276
Dallas, TX 75379
(800) 527-3582
(214) 458-1966

How long should it take? The Federal Trade Commission thinks it should take no longer than thirty days for the vendor to ship your purchase once they receive your order and payment. If there are problems use your phone and be patient. Most problems will be adjusted by a reputable vendor. Too often people give up trying or blow the whistle too soon. Be sure to find out if your supplier will have to back-order your purchase. If an item is out of stock, a seller may back-order it. Be sure that you and they understand that back-ordering is your option. While most vendors are conscientious, a back order can sometimes result in a long wait — as long as six months.

When your package arrives, check that everything is exactly as ordered. Be sure to check your statement. Everyone makes mistakes, and there is the occasional rip-off artist who will sneak in an "arithmetic error," a different (higher) price, or a non-existent entry on your bill.

If your vendor is remiss, your recourse is to notify the Postal Inspector, the Better Business Bureau and the Association of Direct Mail Advertisers. You will need documentation and your letter to the supplier will be of little value. A cancelled check or credit card statement is better. A statement signed by them acknowledging your order (and payment, if you can get that) will help a lot.

You can avoid getting into trouble by thoroughly researching your vendor. Buying direct is a game for those who really know what they are doing and who can wait for a week or a month to get a shipment. If you can manage the expertise and patience necessary to hook up a new purchase, you can save money on the locally advertised price. That's nice in itself, and you can also access a number of vendors who offer programs and devices that are simply not available on retailers' shelves at any price.

END

PUBLIC DOMAIN SOFTWARE

FOR CP/M AND IBM PC SYSTEMS

by Tony Bove and Cheryl Rhodes

Free software! The best bargain to come out of the computer age, touted by some as a gold mine and by others as a waste of time. Can I use it for something?

Want to learn about alternate money supply policies using *The FED*? Can you use the "only standard protocol" for personal computer communications (*Xmodem*)? How about *BusinessMaster II*, which includes a complete business accounting system for computers running CP/M? How about stock market analysis programs for your IBM PC?

Most programmers know about the public domain, and understandably, the libraries are loaded with programmers' workbench utilities: assemblers, cross-assemblers, debuggers, linkers, assorted programming language dialects, math routines and engineering calculators. But there is also software that would be useful to anyone using a computer for business or professional management or even personal use. There is also a fair amount of educational software.

Many users have no trouble getting programs from the public domain libraries; the distribution network works perfectly for them. However, there is no "typical" user, nor is there a common disk format for every computer, which makes distribution extremely tough. So consumers and other newcomers to computing are hovering outside meeting rooms at computer shows, asking "dumb questions" at computer stores, getting half-baked answers from ignorant salespeople and feeling

Tony Bove and Cheryl Rhodes write and edit tutorials on public domain programs for their magazine *User's Guide*.

frustrated in their attempts at getting some of this software. Recent surveys (polls taken at computer expos) have shown that less than ten percent of the users of CP/M systems are even aware that the programs exist, yet with over 2000 programs, the CP/M library is the largest of all the free program libraries.

Ethical Use

The American culture breeds two kinds of commercial extremists: those who want to regulate production and distribution for the good of the people, and those who want to make a profit on anything they can grab. Somewhere between these extremes are the two feuding camps of public domain software distributors: SIG/M and CP/MUG.

SIG/M (Special Interest Group/Micros), part of the Amateur Computer Group of New Jersey (ACG-NJ is a non-profit organization), tests public domain programs and organizes them into disk volumes. The New York Amateur Computer Club prints and sells catalogs of these volumes. Volunteers send copies of disk volumes to various distribution points (more volunteers). SIG/M offers one disk format — the eight-inch CP/M standard single-density format. Distributors offer a variety of disk formats, adding membership fees or overhead to the price per disk. In many cases the distributors operate bulletin board systems from which the software can be copied for free.

CP/MUG, supported by Lifeboat Associates in New York (a commercial software publisher), provides several disk formats for a higher price — \$13 per eight-inch single-density disk, and up to \$18 for Apple and Kaypro formats. Ed Currie, President of Lifeboat, feels justified in charging a higher price because Lifeboat promotes the public domain library worldwide, maintains libraries in several disk formats, and provides steady distribution using paid staff.

Once a program is placed in the public domain, the entire program or any portion of it can be sold without legal restrictions by anyone, with or without permission. The commercial publishers are not breaking any laws by selling disks of public domain software. There are many cases where public domain programs have been enhanced and then sold commercially. Adding documentation where none existed before is considered "enhancing" the program; therefore, some publishers feel that providing documentation warrants a higher price for the program.

The Public Domain Hit Parade

Nearly every computer user can make use of some of the *system utility* programs, which help manage disk files and computing operations, so it is not surprising to find that system utilities dominate the list

ENTER FREWARE

A message appeared on The Source and CompuServe announcing the availability of *PC-Talk*, a communications program for the IBM PC, free to anyone who sends a disk to the address. Recipients were asked to make a *voluntary* contribution if they used the program and liked it. The following message accompanied the copy of *PC-Talk*:

If you have used this program and found it of value your contribution (\$35 suggested) will be appreciated.

Regardless of whether you make a contribution, you are encouraged to copy and share this program.

This is not public domain software: it is an experiment in distributing commercial software for a profit.

The publisher, Andrew Fluegelman of Headlands Press, wrote *PC-Talk* in an

effort to make his PC more communicative with a fellow writer's computer. Realizing its worth in the marketplace, Fluegelman looked at conventional methods and was struck by this novel approach which he calls Freeware, or generically, "user-supported software."

It is based on three principles: (1) Only after using the program can a

of the most popular public domain programs:

For CP/M:

- *SD* (Sorted Directory), which displays an alphabetically-sorted list of files on your disk, with the size of each file and the space still available on disk. (Author is Ward Christensen, revised extensively.)
- *SQ*, *USQ*, and *TYPESQ* (The Squeezer Utilities). This set of programs let you "squeeze" files to make them smaller and "unsqueeze" them to bring them back to normal. (Author is Dick Greenlaw.)
- *DU* (Disk Utility) lets you perform surgery on a disk to recover erased files, isolate bad sectors from use and make data transplants. You must know what you are doing, or follow someone else's directions. (You must know how to count in hexadecimal, and you need to know about the

CP/M file structure.) Newer versions may provide extra help for newcomers. (Author is Ward Christensen.)

- *FindBad* (Disk Utility). This program finds bad sectors on your disk (ones not currently used by other files) and isolates them from future use. Every time your disk drive finds a bad sector, CP/M says "bad sector" and gives up. With *FindBad* you can continue to use a disk that has a few bad sectors. You can also use *FindBad* to find out *right away* that a disk has bad sectors, before using it in critical applications.
- *LU* (Library Utility). This program lets you organize many similar files into one library file; useful for managing archives and hard disks.
- *SWEEP*, *WASH* and other file copying/renaming/deleting utilities that are much easier to use than the CP/M commands for these operations.

user assess its value. (2) Independently-developed programs should be supported by the computing community. (3) The ease of copying should be a boon to the electronic information industry, not a hindrance, and therefore, copying should be encouraged, not restricted.

User-supported software does not need advertising (except word-of-mouth and bulletins on bulletin board systems), nor does it need copy-protection schemes or distribution channels (people are encouraged to

copy it). The concept appeals to the positive nature of humans, who see no risk in trying the program, and who respond not just with donations but also with friendly suggestions for improving the software (feedback becomes "freeback").

It has so far proved to be very successful. Requests are pouring in from individuals and Fortune 500 companies. Of those who order direct from Headlands Press, approximately 70 percent respond with donations.

Friendly "freeback" has contributed to the development of the latest version, *PC-Talk III*, which incorporates the public domain *Modem7* protocol, soon to be a standard in personal computer communications. The donation has been increased to \$35 for the new version, which is loaded with features.

Freeware is reserved as a trademark by Fluegelman for his enterprise. He encourages others to market their software in this manner, and to use the generic term "user-supported software."

For the IBM PC:

- *PC-Talk*, a communication program for the IBM PC that incorporates the *Modem7* protocol (published by Freeware, Headlands Press, Box 862, Tiburon, CA 94920; \$35 suggested donation).
- *PC-File*, a complete data base management system for the IBM PC (author is Jim Button).
- *GUMUPs*, or Garber's Unsupported Moderately Useful Programs, are system utilities for checking the status of devices, logging in disks, handling function keys and other system operations (author is Jeff Garber).

How To Get The Software

With the acceptance of the *Modem7* protocol throughout the network of remote bulletin board systems (RBBSs), these systems allow callers to download public domain software stored on the bulletin board systems' disks.

The RBBS systems (also called RCP/M systems if they are running CP/M) are operated by computer programmers (called "sysops") who volunteer both time and equipment that can answer the telephone and provide computer activities. Most RBBSs are personal computers with modems capable of answering the phone as well as communicating through the phone lines.

The drawback of receiving software via your local RBBS is time. Your regional "Cousin Bell" charges you for the phone call. It takes too long to browse through the entire catalog and too long to download the catalog. The result is that most newcomers send away for catalogs in the mail, or they go to their local user group.

Public domain enthusiasts usually congregate in computer

THE MOST POPULAR PUBLIC DOMAIN PROGRAM

Of the system utilities, the most popular program is known as *Modem7*. This program controls a modem (device for connecting a computer to the telephone line) so that you can use your computer to communicate with remote bulletin board systems (RBBS). *Modem7* lets you transfer computer data files and programs from your computer to the bulletin board (uploading), and from the bulletin board to your computer (downloading).

You can receive functional programs this way — by downloading them to your computer. In the world of CP/M computers, this capability provides a medium for software exchange between different types of computers. Unlike many other commercial modem programs,

Modem7 lets you transfer working programs because it can assure *error-free* transmission — it uses a *protocol*. A protocol (a shared understanding of the starts and stops of words) is required for nearly all communication. Computers are no exception. Protocols must

clubs and user groups. Meetings are held once a month: Much public domain software is copied, and new members get acquainted. If you're lucky enough to have one nearby, your local user group is the best place to look for copies of public domain software volumes. The atmosphere of free exchange of public domain software, applications tips, methods and guidance helps sustain the enthusiasm for beginners. User group members provide the best information on whether a particular program is useful in a particular computer configuration, and configuration details are the hardest details to get.

Public domain programs are distributed in four ways: (1) Direct from SIG/M or CP/MUG; addresses on page 123. (2) From volunteer non-profit organi-

zations such as local area computer clubs, national computer societies and mail-order distribution points associated with SIG/M. After joining a club or group (and paying a membership fee), copies of volumes are typically free if you bring your own disks. (3) From the network of remote bulletin board systems. (4) From commercial software publishers that provide public domain software in various disk formats, usually for a fee that is more than that charged by non-profit organizations.

The best way for you depends on where you live and how much time you want to spend browsing catalogs or directories on the bulletin board systems, or waiting for such catalogs in the mail.

Also, sending away for

be in place so that the receiving computer can recognize each data word.

Many modem programs use protocols for such operations, but they don't necessarily use the *same* protocol — most have their own proprietary ones. *Modem7* was introduced to the public domain, and as a result, the protocol itself is in the public domain and is rapidly being accepted as the standard for personal computer communications (although some say not rapidly enough).

Several commercial programs (such as *COMMX*, *MITE*, *SuperTerm*, *MIST* and others) already use the *Modem7* protocol (also known as "Xmodem" or "Christensen" protocol) and are helping its acceptance in the industry.

Ward Christensen (known universally as the "father of CP/M bulletin boards and public domain software") created the protocol in his fourth version of his personal Modem program — *Modem4*. All versions

of *Modem7* were derived from *Modem4*.

Some of the public domain software available for CP/M systems is only available from RBBBSs through use of *Modem7*. Although you can send away to SIG/M or CP/MUG for floppy disk volumes, these volumes are supplied only on well-known disk formats (eight-inch IBM or CP/M standard, and a few 5¼-inch formats). If you don't have a well-known format, *Modem7* is the only way.

volumes of disks can be time-consuming and a waste of money if you don't already know what's in those volumes. The best way to find out what the volumes contain is to send a self-addressed stamped envelope to SIG/M for the list of the available catalogs.

END

Access Information

Catalogs of public domain software are available for \$10 from the New York Amateur Computer Club:

NYACC

P.O. Box 106 Church St. Station

New York, NY 10008

NYACC Hot-Line (answering service):
(212) 864-4595

SIG/M (Special Interest Group/Micros), which is part of the Amateur Computer Group of New Jersey (ACG-NJ), makes available the entire SIG/M library on eight-inch disks (\$6 per disk) and a pamphlet describing the volumes and listing the catalog contents (catalogs

available from NYACC). Eight-inch disks, single density, \$6 apiece (\$14 overseas).

Volume 0 of the SIG/M volumes contains the huge file SIG/M.CAT, which is a complete listing of the SIG/M volumes and program names, and the file REGIONS.SIG, which is a listing of the SIG/M distribution points worldwide. The disk also contains a listing of CP/MUG volumes. For information, please enclose a self-addressed stamped envelope.

SIG/M User's Group of ACG-NJ

P.O. Box 97

Iselin, NJ 08830

or MODEM CBBS (201)272-1874 or

VOICE (201)272-1793;

CBBS (215)398-3937 or

VOICE (215)398-1634

CP/MUG offers eight-inch disks, single-density: \$13 each. North Star, Apple, Kaypro, and others: \$18 each. CP/MUG can be reached by writing:

CP/M User's Group

1651 Third Avenue

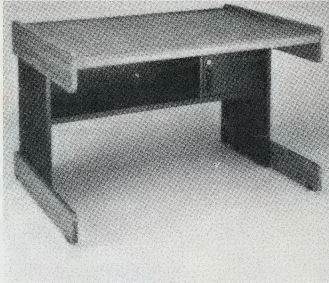
New York, NY 10028

Bush Computer Furniture

Once in a great while, a little of "the right stuff" finds its way into our lives. . . . I was so pleased with this particular find that I had to pass it on.

About the time my PC arrived, I got a sale catalog from a local discount house showing a computer desk and matching table that I had admired at a local video store. They were very well designed, from both a form and function viewpoint, and the only thing that scared me was the phrase "assembly required." Those two words brought visions of late Christmas Eves with misprinted instructions, missing parts and cheap plastic. It sounded like a long shot, but the assembled units looked pretty sharp; I decided to give it a try. The computer desk and the optional shelf unit (called a "hutch") were packed separately in small but heavy cardboard packages. I decided to start with the table; it looked simpler and was packed in a third carton.

The instructions were a single large sheet printed on both sides that included an exploded view of the complete unit, followed by illustrated assembly steps. All the holes were predrilled. Assembly consisted of selecting the proper fasteners and screwing the pieces together. The only tools required were a Phillips screwdriver and a hammer. After about an hour, the table was finished, and without any mistakes or rework. Assembled, the table is 28¼" wide by 19" deep and 29" high. It has casters and a shelf underneath which is just



CT130
Desk

about the right depth for boxed reference manuals. Included is a U-shaped "bridge" which works nicely as a printer stand. There is a wide slot in the back for feeding cords and/or paper from the shelf underneath.

The desk and hutch are slightly larger projects, but no more difficult. Each took about an hour to assemble, with an occasional helping hand to hold something while I worked on it. Additional tools required were a straightedge and a pair of pliers. The hutch is assembled in place atop the desk and the total height of both is just under five feet. The desk has a lower shelf like the table's with a locking compartment large enough to hold several boxes of diskettes. The desk top is 45½" wide by 29" deep and is 28" high.

Construction is of particle board with black and oak vinyl veneer. All of the parts were cut and drilled properly and the holes lined up perfectly. The finished product is quite sturdy and rigid.

If attractive and functional design are highest on your list for computer furniture and you don't insist on the most expensive materials, you can get "the right stuff" at a good price.

—Jack Powers

Bush Computer Furniture

CT-120, Computer table, \$79.95
CTA-131, Computer desk hutch, \$99.95
CT-130, Computer desk, \$169.95

Information available from:

Bush Industries
312 Fair Oak Street
Little Valley, NY 14755
(800) 228-2874
in NY state, (800) 248-2874

CTA131
Hutch



Why and How this Magazine is Non-profit

Two reasons: legacy and curiosity.

The legacy comes with sixteen years of publishing Whole Earth Catalogs, CoEvolution Quarterlies, and occasional other books. One of those, the 1971 Whole Earth Catalog, netted over a million dollars, which Point Foundation distributed in grants over the next three years. Since then Point has operated on a break-even basis.

One of our customs is to blurt out all our financial details in each of our publications. Non-profits get a tax break for serving the public good; I figure that includes an obligation to be public about how our funds are allocated.

This magazine could have been spun off as a for-profit operation. Amid the current computer biz boom, it was a distinct temptation. We looked at the competition and decided that the boom is a very good reason to stay non-profit. Most computer magazines are burdened with overwhelming advertising. It colors the reader's experience — don't drop one of those 760-page clay-coat babies on your foot. It colors editorial objectivity — (pause for the usual vociferous denials). In the biggest new market in magazine history — 200 to 300 periodicals suddenly on a single subject — most of them have the flavor of trade magazines, i.e., industry-servers more than customer-servers.

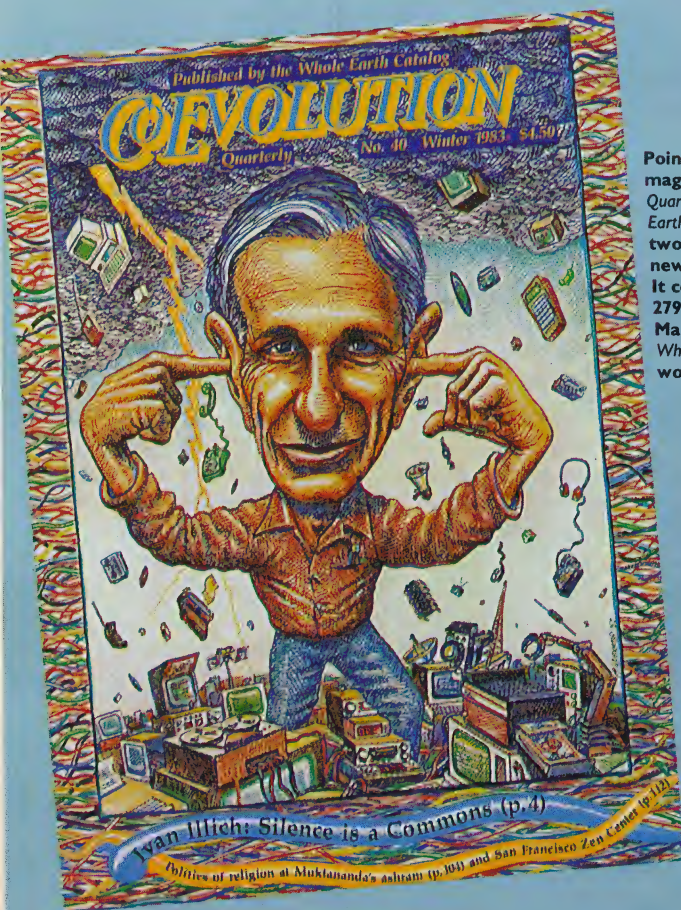
So that's our curiosity. What's the value, and market, of a software (etc.) evaluating magazine that has no commercial allegiances? Why, we could review public domain software! We could critique and encourage the discount mail-order outfits! We could make invidious comparisons between products and make strong clear recommendations! We might even be able to work as a forum for candor — passionate views from all over the marketplace. Readers: Help this magazine learn how to take best advantage in your behalf of its non-commercial peculiarities.

As a public education foundation, Point may receive donations which give some tax benefits to the donor. The machines in this business are expensive. There's no way we can afford to purchase a full set of hardware to review and review with and run our operation with. We are deeply grateful to Kaypro and Hayes for donating much of our present basic equipment (two Kaypro 10 computers and eight Kaypro IIs; ten Hayes Smartmodem 1200s for

our rampant telecommunicating). We are also indebted to Atari for two Atari 800s and to Koala Technologies for four Koala Pads.

Such gifts will routinely be mentioned here — 1) to express our gratitude; 2) to encourage other donors; 3) to alert the reader to potential biases in our evaluation. It's possible that gratitude and lots of use could make us value a product higher than it deserves. A likelier bias would be against some product because of resentfulness that we had to buy it or ignorance because we haven't really seen it up close. (The Radio Shack TRS-80 is a conspicuous gap in this issue's reviews. Soon to be remedied.) So long as we know you know what's going on, your anticipated suspicion should keep us honest.

Nearly all magazines rent their mailing lists (The New Yorker is a rare exception). Computer magazine lists are considered to be extra valuable, \$100/thousand names rather than the usual \$40-60/thousand names. Since we have no advertising revenue,



Point Foundation's other magazine is CoEvolution Quarterly, one third Whole Earth Catalog-style reviewing, two-thirds "conceptual news," 144 pages, no ads. It costs \$18/year from: Box 27956, San Diego, CA 92128. Many of the staff of the Whole Earth Software Review work on both publications.

we may have to rent the Whole Earth Software Review list. If we do, it'll be under the following conditions. Subscribers always have the option NOT to have their name rented, and the option appears on all subscription forms. We only rent to extremely kindred souls — products or services or causes that we have carried or would carry in the magazine — so the subscriber is getting extra information on an interesting item at no extra cost. And we publish in the magazine the names of recent mailing list renters. We've done all this with our other do-good periodical, CoEvolution Quarterly, the last couple years after a decade of purity, and it's worked out surprisingly benignly.

We take pains to pay all contributors to the magazine. Even complaint letters get something (\$15, same as for any published letter). Articles range from \$150 to \$250 at present, along with some extra benefits for authors — a year's subscription, five free copies, participation often in the editing process. We also are seeking, and rewarding with additional honoraria, research assistants-at-large — people who have expertise in a particular area and help us find the great stuff in that domain. The ones who are doing it so far didn't ask permission, they just started providing invaluable information, and formalities came later. Gossip still is our principal medium of research.

Any questions?

—Stewart Brand

FINANCIAL REPORT

WHOLE EARTH SOFTWARE REVIEW & CATALOG May-November, 1983

INCOME

Doubleday Advance	\$567,500
Subscriptions	8,559
Interest	21,578

TOTAL INCOME \$597,637

EXPENSES

Salaries	\$112,798
Taxes, Benefits	1,044
Writer/Contributors	1,933
Typesetting, Prod. Supplies	1,900
Printing (Mag.)	0
Sub. Fulfillment	504
Sub. Promotion	72,004
Distribution	8,668
Office, Computer Supplies	11,299
Equip. Rent/Maintenance	861
Telephone	7,610
Networks	6,749
Postage	1,294
Travel/Entertainment	11,133
Rent & Maintenance, Utilities	27,829
Legal/Professional	5,704
Misc. Other	3,130

TOTAL EXPENSE \$274,460

POINT CORPORATE 27,762

CAPITAL EXPENDITURES 48,809

NET CASH \$246,606

POINT FOUNDATION

Board of Directors Paul Hawken, financial officer; Alan Rothenberg; Huey Johnson; Stewart Brand, president; Irmine Steltzner, secretary.

Office Manager Andrea Sharp
Financial Advisor Arnie Kotler
Agent John Brockman Associates

What We Use Ourselves

Point, the non-profit foundation that publishes this Review, has grown over the years. It encompasses the various editions of *The Whole Earth Catalog*, *CoEvolution Quarterly*, an educational program called *Uncommon Courtesy*, the sale of items featured in *WEC* and *CoEvolution* and now, the *Software Catalog and Review*.

Not surprisingly, bookkeeping has become a multi-headed dragon, constantly threatening to gobble up our long-term office manager, Andrea Sharp. Andrea showed more than casual interest in the new software publications and quickly evaluated accounting packages to see which one warranted an extended test as our in-house system.

Her review of *CHAMPION* follows. As she notes, accounting systems consume large amounts of disk space, a problem solved by the acquisition of a Kaypro 10 which has a 10 million byte hard disk.

I am impressed by how quickly we have gone from voluminous ledgers to an integrated accounting system — a tribute to Andrea and *CHAMPION*. Converting to automated accounting can be a scary business. In this case, it has worked well.

Following Andrea's review is another by Kathy Parks on a game called *Word Challenge* that has attracted quite a following here. We are patently unconcerned if people think that games have no place in the office. They do in a software review organization and the nay-sayers might think about how else they can get office workers to volunteer time to improve their spelling.

—Richard Dalton

CHAMPION

When computers were conceived, bookkeeping must have been one of the tasks for which they were conceived. *CHAMPION*, from CHAMPION Software Corporation of Colorado, has put together a five-module accounting package that makes bookkeeping a bearable activity. You can use the modules — general ledger, payroll, accounts payable, receivable, and inventory — together or as stand-alone functions. The amount of disk storage you have will determine what you can run together and how many months you can run concurrently. These programs are not suitable for small computers. On a Kaypro II (with two 190KB disk drives) I could only run the general ledger module for one month at a time.

The program will automatically produce financial reports — just like the ones your accountant gives you — but herein lies the one complication of using such software. You need to think like an accountant to set up your chart of

accounts and your general ledger unless you want to use the standard one *CHAMPION* provides. This initial setup process could also be done by your accountant since he is undoubtedly using a similar computerized accounting package to produce your financials already.

I sure got an instant education going through the setup procedure on my own. Once that was done it was easy street. A program like this does such niceties as post all your payroll deductions to the proper accounts in your general ledger at the same time you are printing out your payroll checks. When all modules are used this is a true order-entry system which updates inventory.

CHAMPION is extremely user friendly, with an extensive manual that is logically coordinated to the menu-driven program. There are on-screen "help" functions available throughout the program and a "recovery" procedure should your program crash. *CHAMPION*

Software Corporation lets you purchase their package on a money-back basis. This allows just 200 entries but all aspects of the program can be actually used. Then if you want to keep it, the program is released to you via a "security code" that allows you to continue without losing any work. All software should be sold this way.

Once your system is set up, even a temporary person could come in and run your bookkeeping for you. This is one of the major advantages to having a system like this. There are audit trails for all activities and any accountant could make sense out of what was being done — which rescues you from the potential tyranny of a system run idiosyncratically by one person.

—Andrea Sharp

CHAMPION

5¼" or 8" disk and manual:

8 bit version, \$495/module;

16 bit version, \$595/module

Hardware requirements:

All microcomputers that have CP/M 80 or 86; PC DOS, MS-DOS (needs 64K RAM, 280K for program files).

Information and nearest dealer location available from:

CHAMPION Software Corporation
66 South Van Gordon, Suite 155
Lakewood, CO 80228
(303) 987-2588



Jonathan Riechert

Kathy Parks deals with the daily frustrations of our expanding software library and seemed a good choice to "evaluate" Bit Banger, a therapeutic device for computer owners. She walked away smiling. Bit Banger is available from Bits & PC's, 1850 Union Street, San Francisco, CA 94123 (\$14.95, including six-page manual).

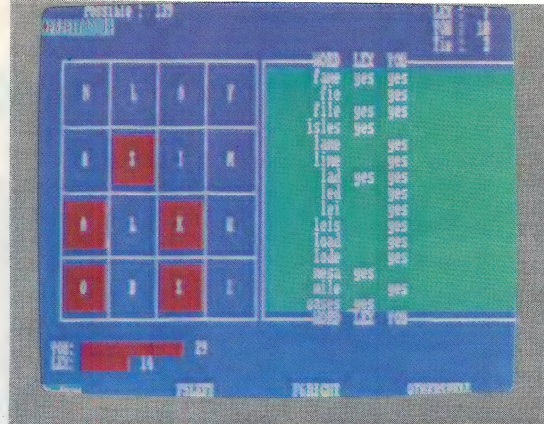
Word Challenge

If you like to stretch and flex your vocabulary and spelling muscles, you probably want to meet Proximity's *Word Challenge*.

I have always enjoyed playing games where the object is to make words out of scrambled letters. One problem I have encountered is finding someone to play with, an opponent with skills roughly equivalent to mine so the competition is fair enough on both sides to keep the game interesting. Few people want to win all the time any more than they want to lose all the time. In *Word Challenge*, your opponent

LEX (-icon) has a 90,000 word vocabulary and plays at any of 26 levels of difficulty. It took a few games for me to figure out my own level of difficulty.

Word Challenge is similar to the Parker Brothers' game *Boggle*. In the standard game, a 4 x 4 grid appears, filled with randomly selected letters; the timer starts, beginning your race with LEX to find the greatest number of words hidden in the square. According to the rules, "letters may only be connected if they touch each other on any side or on any corner . . . in sequence . . . [and] words must be at least three letters long . . ."



LEX scores words entered and its own constructions with relentless accuracy.

The small section of gibberish in the upper left part of the screen was the only problem caused by our violent test (mayonnaise and punched holes) of Proximity's *Clean Disk* recording technique.

While you're looking for words and typing them in, the Scorekeeper searches the word list for all possible combinations in the square, visually and audibly counting down the last ten seconds of the game. Points are given only for words that differ from those which your opponent found. While the words are being listed on the right side of the screen, they are highlighted on the grid, showing exactly how they were formed (in case you don't believe the Scorekeeper).

After a few rounds of the standard game with LEX, you will probably want to vary the contest by exploring some of the options presented on the menu screen, which lets you play harder, easier, slower, faster, in color, try different scoring methods, create your own square or even hear the words spelled out musically during scoring(!). Another option lets you play in a mode that duplicates squares, reproducing a particular layout for an opponent in case you want to compete with a human being. Nearly every round has sent me to the dictionary to check words I didn't know; for me, this makes LEX the perfect opponent.

A special feature that Proximity has implemented in *Word Challenge* is an error-correcting technique they refer to as *Clean Disk* (patent pending). After reading in their press release that "... even major damage such as holes punched on your disk, or scratches made on the media will not result in the loss of data ...", I first scratched the

disk, which seemed to have no result. Emboldened by this, I punched a hole in it. This vandalism resulted in a little line of nonsense appearing above the playing board, but didn't affect the game or scoring. Neither did a second puncture. I recklessly smeared mayonnaise on the read/write window, thought of the effect on the disk drive, sprayed the area with Fantastik and finally dried the (poor, little) diskette with a tissue. Whatever *Clean Disk* does, it works, because this *Word Challenge* disk still operates. As librarian for the Review's software library, I feel like demanding that all disks should be *Clean Disks*.

—Kathy Parks

Word Challenge

5¼" disk, manual/\$39.95 list price

Hardware requirements:

- IBM PC; 64K, one disk drive
- Apple II, II+, IIe, Apple III using Apple II emulation; 48K, one disk drive
- Compaq; 64K, one disk drive
- Franklin Ace; 48K, one disk drive
- Osborne I; 64K, two disk drives

Information and nearest dealer location available from:

Proximity Technology, Inc.

3511 N.E. 22nd Avenue

Fort Lauderdale, FL 33308

(800) 323-0023

in Florida, call collect: (305) 566-3511

(*Clean Disk* sounds to us like a particularly good idea for messy adults and parents of small children; if it intrigues you as well, look for other software that may be using this feature.)

"Or from Computer Literacy"

As a convenience for *Whole Earth Software Review* readers, Computer Literacy has agreed to provide by mail order all books (or nearly all) reviewed in this publication and in the eventual *Whole Earth Software Catalog*. Terms below. There is no financial connection between our two organizations.

Computer Literacy is an unusual bookstore. It sells only computer-related books. (That that is still unusual says something not very complimentary about this field — products such as books that cost less than \$40 are beneath commercial concern, even though they're essential for everybody.)

Located in the spleen of Silicon Valley, Sunnyvale, California — just off the Lawrence Expressway — the bookstore is a civilized haven in a savage landscape. Storekeeps Dan Doernberg and Rachel Unkefer are select about which of the current deluge of introductory computer books they stock, and they take pains to have the hard-to-find classics, the newest titles and little-known innovative works. Total inventory is several thousand titles. They also sponsor free talks in the store by luminaries in the computer business.

If books are needed in a hurry, they will do expedited special ordering (costs more).
—Stewart Brand

Computer Literacy's Rachel Unkefer passed on this information about new books that have caught her eye:

The IBM PC Connection — Telecommunications for the Home and Office by Neil L. Shapiro, Byte Books (McGraw-Hill), \$16.95.

Good introduction to modems, information services, directory of bulletin boards. Not 100 percent machine specific (IBM). Good explanations, although somewhat skimpy for the price.

RS-232 Made Easy: Connecting

Ordering from Computer Literacy

Send your book orders to:
Computer Literacy Bookshop
520 Lawrence Expressway,
Suite 310
Sunnyvale, CA 94086

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TELEPHONE ORDERS: (408) 730-9957 for credit card orders only. No CODs.

HOURS: 9:30-11:30 AM and 2:00-8:00 PM Pacific Standard Time.

Computers, Printers, Terminals & Modems by Martin D. Seyer, Prentice Hall, \$15.95.

The first introductory book on the hardware aspects of data communications and how the RS-232 interface works with printers, etc. Has charts on how to connect various flavors of hardware by brand name (pin assignments for making printer cables). Looks good for do-it-yourself non-hackers.

WHOLE EARTH *Software Review*

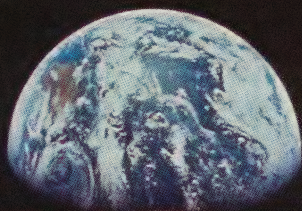
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That's what we're doing. This first issue of the *Whole Earth Software Review* is a start. But don't stop imagining an ideal computer magazine, because we need your ideas as well. Our goal is to create a comprehensive, interactive, objective forum for sharing news, ideas, and recommendations.

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Reader Survey

You've seen this kind of form before. Usually, the purpose is to build impressive reader statistics to help sell ads. We don't sell ads; we want to know what interests you so we can keep our editorial content relevant to our readers.

Which sections did you like:	most?	least?
Writing/Word Processing	_____	_____
McMicro	_____	_____
Telecommunicating	_____	_____
Learning/Playing	_____	_____
Mail Order Buying	_____	_____
Public Domain Software	_____	_____

Other: _____

Any comments? _____

Which software program do you use or like most? _____

Why? _____

_____ Please check here if you would like to write a review about a program or book. We will send you information about writing for the **Whole Earth Software Review**.

What software packages would you like us to review?

What type(s) of computer(s) do you usually use?

Please return this survey to the **Whole Earth Software Review** Subscription Office, P.O. Box 27956, San Diego, CA 92128. If you are not also ordering a subscription at this time, please mail the survey directly to our editorial offices at 150 Gate Five Road, Sausalito, CA 94965.

—Thank you!

The First Bug

It was the summer of 1945. The US Navy was rushing to finish Mark II, the first American large-scale digital computer. "It was a hot summer with no air conditioning, so all the windows were open," wrote Navy Captain Grace Hopper in the *Annals of the History of Computing*. "Mark II stopped, and we were trying to get her going. We finally found the relay that had failed. Inside the relay — and these were large relays — was a moth that had been beaten to death by the relay. We got a pair of tweezers. Very carefully we took the moth out of the relay, put it in the logbook, and put scotch tape over it. Now, Commander Howard Aiken had a habit of coming into the room and saying, 'Are you making any numbers?' From then on if we weren't making any numbers, we told him that we were debugging the computer. To the best of my knowledge that's where it started."

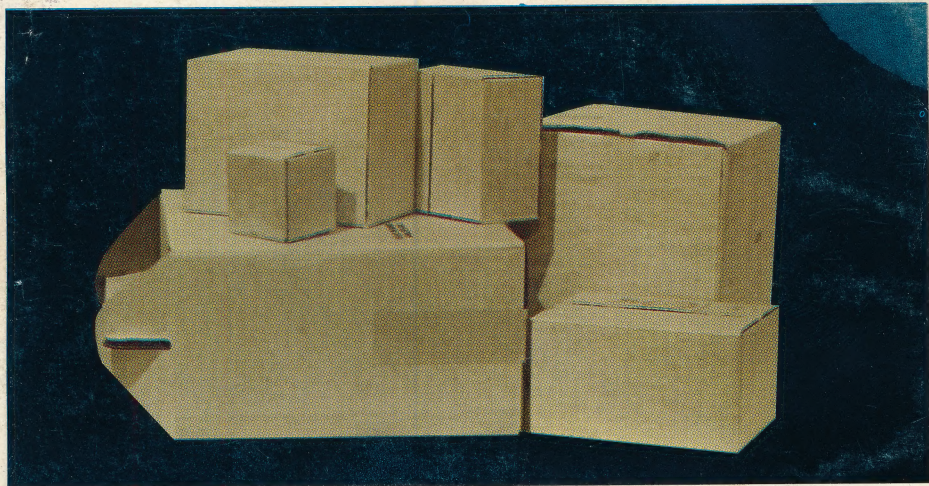
This logbook page, with the first computer bug still taped to it, is at the Naval Museum at the Naval Surface Weapons Center in Dahlgren, Virginia.

—Art Kleiner

(Research help by Annette Jarvie and Kathy Parks)

0800 Andam started
1000 " stopped - andam ✓
13 sec (032) MP - MC 1.982647000
(033) PRO 2 2.130476415 (63) 4.6159250
conv 2.130676415
Relays 6-2 in 033 failed special speed test
in Relay 10.000 test
Relays changed
1100 Started Cosine Tape (Sine check)
1525 Started Multi-Adder Test.
1545  Relay #70 Panel F
(moth) in relay.
First actual case of bug being found.
1630 Andam started.
1700 closed down.

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