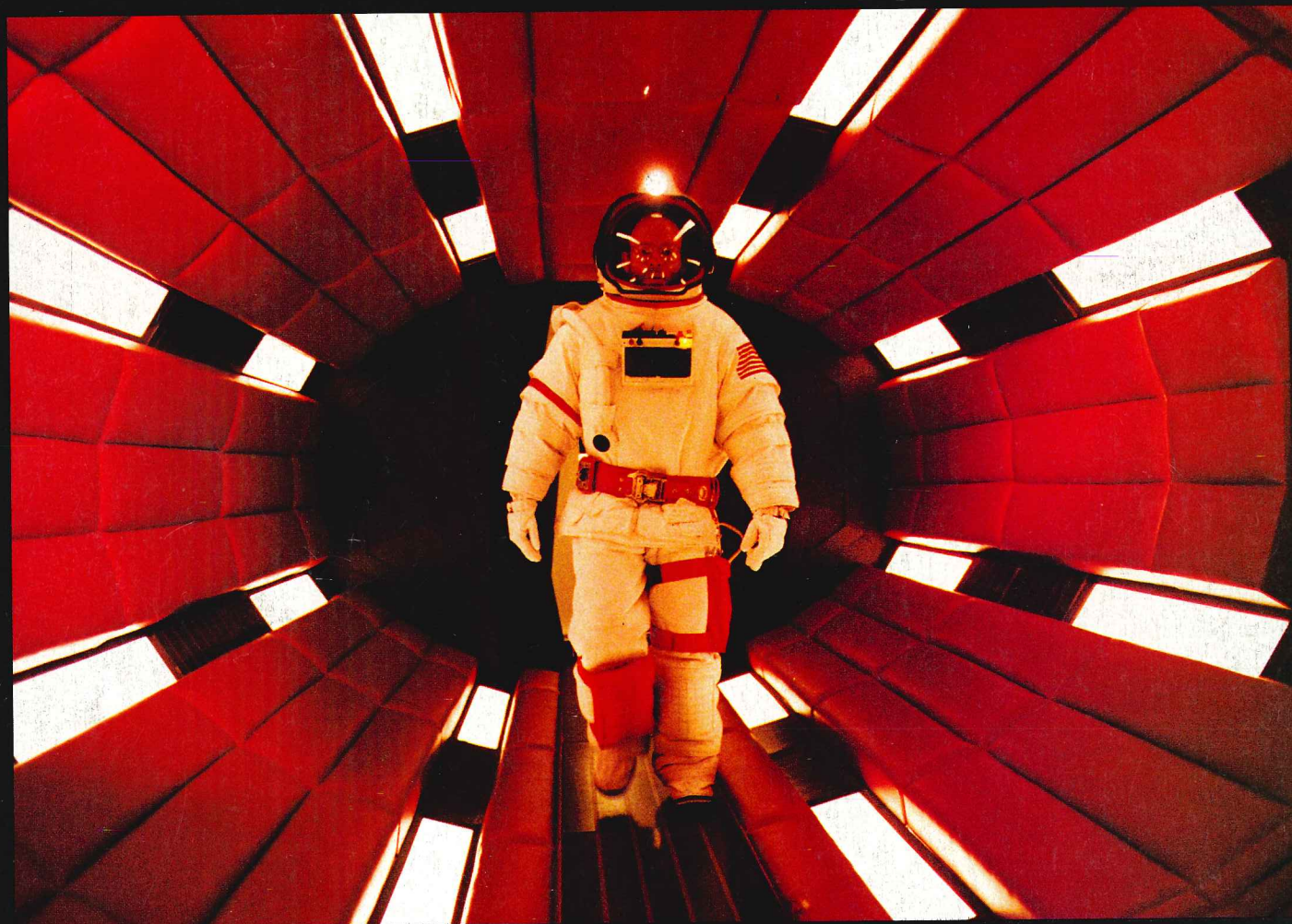


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The Magazine for Kaypro Users
October 1984

Exploring telecomputing



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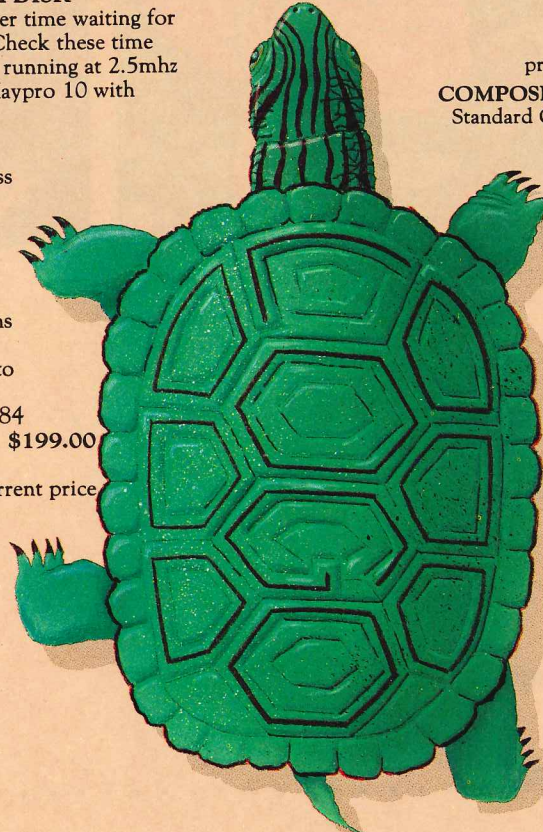
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* Time in Seconds

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	Floppy Disk	Ram Disk	Floppy Disk	Ram Disk	Winchester Hard Disk
Load Perfect Writer	8.37	2.46	7.64	1.76	6.57
Load Perfect Calc	10.35	3.16	9.44	1.87	7.19
Load Perfect Calc + 14KFile	12:04.01	3:33.26	10:48.00	1:51.08	6:20.37
Recalc 14K PC File	10:19.00	2:27.36	9:31.25	1:17.78	5:30.53
Page down PC File	25.24	8.01	22.49	4.32	17.55
Load LADDER.COM	10.90	3.31	9.38	2.12	6.60
WARM BOOT	2.82	.64	2.22	.46	2.69
Load M BASIC	5.79	1.64	5.43	1.12	2.55

As you can easily see even a 2.5 mhz Kaypro with RAM disk is faster than a Kaypro 10 using a hard disk. A 4 mhz Kaypro with RAM disk is significantly faster.

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No More Trips to the Bank
by Kathryn M. Drennan
Money management by home computer

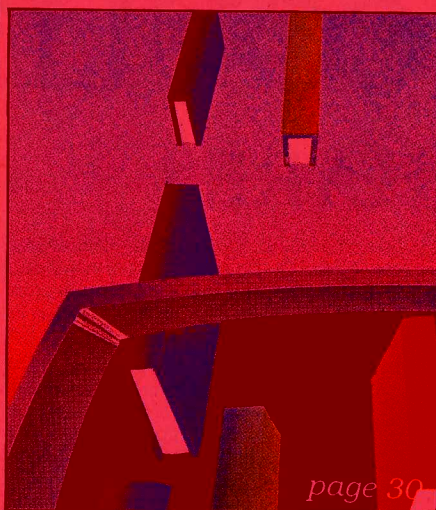
Love that IOBYTE
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Telling your data where to go

Handling Disk Files in S-BASIC
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Examining direct access files

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PROFILES



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Kaypro's Odyssey Files
by Jessica Horsting
An inside scoop on the making of 201

Fast Facts
by Roxanna Wright
Tapping the online world of databases

Those Marvelous Modems
by Tom Enright
A shopper's guide and more

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*Be a traffic cop
to your data.*

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PROFILES is published ten times a year
by Kaypro Corporation, Solana Beach,
CA.

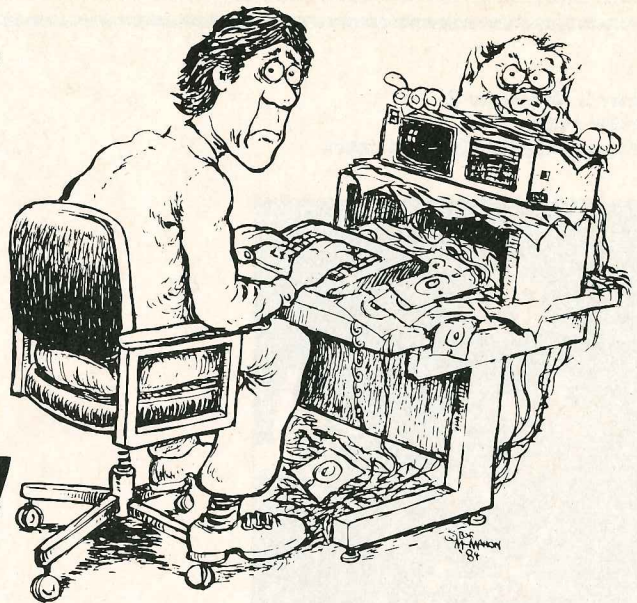
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BEWARE!!

There is evil lurking around your transportable!!

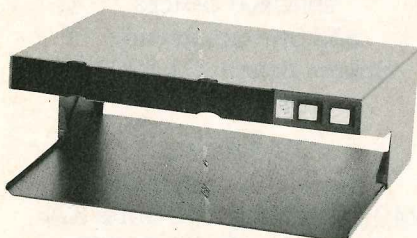


Porta-Enemy No. 1



D.M. aka Deskus Messus

His M.O. is to clutter your desk with diskettes and paper to the point where you can't find anything.

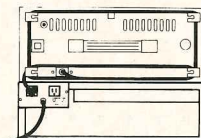
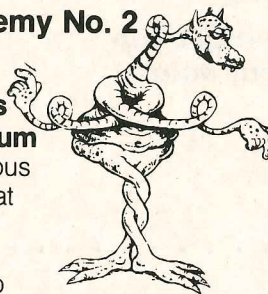


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Porta Enemy No. 2

S.C. aka Switchus Contortium

A dangerous M.O. in that everyday when you come in to turn on your transportable and peripherals, you must lean over in contortionistic fashion to find the switches for both units. S.C. could be very hazardous to your health.

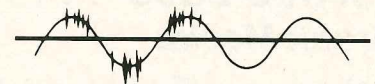


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Porta Enemy No. 3

S.G. aka Surgus Glitchem

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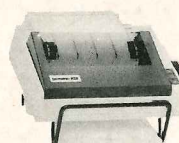


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Beginning with this issue, *PROFILES* is increasing from six to ten issues a year: 8 monthly issues and 2 bimonthly issues.

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Subscriptions are available to everyone who purchases a Kaypro computer, or already owns one. The cost of a six-issue subscription is included in the price of your computer when bought in the United States.

For those in the United States, the situation is straight-forward: just send in your warranty card. Your subscription should begin within two months of sending in the card.

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Back issues are available for \$3.00 each, which includes postage and handling. *However, we only have the March/April, May/June, and July/August '84 issues in stock.* Send requests to our Editorial Offices, 533 Stevens, Solana Beach, CA 92075, Attn. Back Issues.

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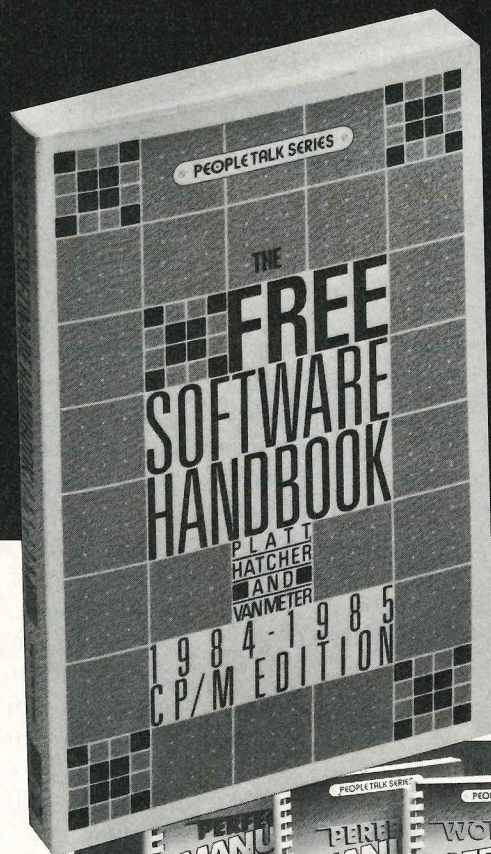
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Letters

Filer correction

"A CP/M Inventory" (July/August) contains an erroneous statement in the section about wild cards. If a disk contains the files

ARTICLE.PRO
ARTICLE.TXT
ARTICLE8.TXT
ARTICLE9.TXT

and the command **STAT B:ARTICLE.*** is entered, CP/M will return only the filenames ARTICLE.PRO and ARTICLE.TXT. To see all four of these filenames, one would have to enter either **STAT B:ARTICLE?.*** or **STAT B:ARTICLE*.***. A wildcard symbol must be used on each side of the period.

Stan Modjesky
Baltimore, Maryland

Mr. Modjesky is absolutely correct. Either a question mark, the symbol for any single character, or an asterisk, the symbol for any group of characters, must be used before the period marking the extent to call back all four filenames.

And a comment

As a wholly self-taught user of Perfect Filer, using only the official (ugh) manual, and then later, Platt & Van Meter's *Perfect Manual*, I am thrilled to find that I not only understand what Francis Pritchard is writing about in the

July/August issue (Q & A), but may even be able to offer a helpful comment.

Perfect Filer will indeed take five sort keys, but in my experience it will sort for *more* than one at a time. I have a list of people who gave me gifts when I retired recently. It's sorted first by department, and then, within departments, by name. I haven't tried to get it to sort anything three or more ways on a single list, but I assume it'll do it. When you combine this capability with the possibility of setting up as many as 20 subsets, you have quite a lot of flexibility for list management. Presumably, you could create one subset that would give you only the members named George who live in Cleveland and are left-handed, red-headed, and have five children, etc. Why not? Perhaps it still will not do everything you say a real DBMS will do, but it's pretty neat. Of course, it's the only list management system I've ever used, so I don't know what I'm missing.

With Perfect Filer, I have made quite an extensive index of my husband's VCR recordings, a name index for a short book on church history, a mailing list for one part of my genealogical contacts, and a couple of other things. I have also figured out how to produce form letters. I am, as you can tell, an enthusiastic user of the Kaypro and of Perfect Filer. Oh, and I'm enjoying PROFILES too.

Marjorie M. Miller
Bowie, Maryland

Help!

While I love my Kaypro 2 and have fairly well mastered Perfect Writer (most of the time), ninety percent of the stuff in your wonderful magazine goes over my head. Terms such as "dump, download, COM files," etc. are meaningless to me.

I have taken many workshops and I end up looking at the inside of a computer. Instructors seem to love to show you how little there is inside. OK, I'm amazed, but what do I do? I've taken a few workshops on programming and, again, I can understand what they do, but I don't want to write programs, I just want to be able to use the ones I have.

I don't want to become a programmer or a computer repair technician, but when I see things about "adding a board" etc., I feel that's where I will have to go! Is that true?

Where shall I turn for help? The local Kaypro club uses terms just like the magazine and is no help. Did you have a number that can be called for help at the Kaypro organization? Incidentally, the 800 numbers do not work in Hawaii, so if you or an advertiser do not include another number, it's impossible to call from here even if one is willing to pay for the call—very frustrating.

Grace Craver
Kaneohe, Hawaii



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PROFILES

LETTERS (continued)

To answer the last question first, please note that in the preface to the Technical Forum we are now publishing both the phone number and the address for Kaypro's Technical Support division. These people can answer most of your software related questions. For hardware problems, you should question your dealer. They have access to resources unavailable to end-users.

Now, as to the rest of the letter. One thing to understand is that **PROFILES** is, in essence, a tightrope-walking act. We are trying to offer beginner's help for the new user and at the same time trying to provide in-depth analysis for more experienced owners. Admittedly, our balance is not always perfect.

As with any new skill, computers demand a certain amount of learning time. The vocabulary of computerese may appear intimidating, but usually the concepts they encompass are pretty straightforward. In order to get the most out of your Kaypro, you're going to have to become familiar with the jargon. Don't worry if you can't understand everything right away—no one does. The pieces will fall into place with some time and lots of patience.

This is not to say that we don't hear your pleas for help; we do. We will publish more articles in the future targeted at the complete novice. As with any endeavor which tries to please everyone however, somebody probably won't be satisfied (as the next letter aptly points out).

On the other hand...

I would like to add my voice to that of David J. Thompson, who wrote in the Letters column about wanting to see more mate-

rial dedicated to the inner workings of the Kaypro. Since becoming a Kaypro owner a year and a half ago I've learned many things about programming, databases, and word processors. But now I feel I need more. I feel I must know what's going on beneath the hood. *Micro Cornucopia* has opened a whole new world, but instead of satisfying my curiosity, it compels me to seek more. I don't know ... maybe it's just that there's a full moon tonight.

Normally I read **PROFILES** from cover to cover, in that order. However, when I saw that there was an article for adding an external video jack (July/August) I jumped right to it. My hat is off to Jim Nickerson, Kurt Bilinski and friends. I have always wanted an external video jack but have always thought the \$69.95 to \$118.00 price tags are outrageous prices. The article has proven my suspicions.

Unfortunately, Messrs. Nickerson, Bilinski, et. al. wrote and designed the project for the newer 2s and 4s. Son of a gun if I don't have an older 2. I've waited a year and a half for an article like this to come out. I'll wait another year and a half if I have to. I will not pay \$69, much less \$118, for something I know I can build myself for \$10. (If I only knew how!)

I doubt **PROFILES** will be running a similar project for the older Kaypros, but I'll continue to hope. Keep up the fine work.

Kerry Hofferth
Tokyo, Japan

Mr. Nickerson replied to this very question in the September issue (page 10). □

Q & A

We welcome and read all your letters. Some of the letters are of general interest and are printed in the Letters column; others are pleas for technical help. Those questions that lend themselves to simple, concise answers are dealt with here, while the more advanced topics develop into articles or discussions in the Technical Forum.

Due to the volume of mail we receive, we simply can't respond personally to every request for assistance. For questions requiring an immediate reply, you can do what we often do: call Kaypro Technical Support at (619) 481-3920, or write to them at Kaypro Software Technical Support, P.O. Box N, Del Mar, CA 92014.

Foreign characters

I am in need of some technical advice about my Comrex II printer. I wish to use the Wordstar program to write in Swedish, which contains 3 letters that don't exist in English. I am aware that Comrex has a daisy wheel for this language, but beyond that I am at a loss.

Robert Buccolo
East Quogue, New York

You can get your printer to use the Swedish characters by installing the correct typewheel in your printer and then setting the printers' dip switches to tell it which wheel has been

installed. Look in your printer manual to see where the dip switches are and which way to set them. WordStar will not display the accent characters on your screen, but the printer should substitute them when it prints the characters on paper.

Surge suppressor quandary

I purchased a middle-of-the-line surge suppressor for \$60.00. After four days of use, it blew, tripping one of the circuit breakers in my home. The suppressor had to be returned to the manufacturer for replacement of one of its parts which is designed to blow itself and the house circuit on a very high surge.

The suppressor is back in operation, though I keep its power switch turned off when the computer is not in use. The manufacturer claims this will protect the computer when I am not using it—by not allowing any current through at all. I wonder whether surge suppressors don't cause more problems than they prevent. If the suppressor will sometimes blow while I am using my computer, the damage to discs and their contents may be greater than any data error caused by an unprotected surge. It seems to me that a power failure induced by a surge suppressor will be more of a problem than the surges themselves. It is a power failure that I worry about most of all (though I keep backups of all important materials).

How necessary or valuable is a surge suppressor?

Harold Fromm
North Barrington, Illinois

From your description it sounds like the surge suppressor tried to swallow a power line glitch that it just couldn't handle. Surge suppressors are supposed to smooth out fluctuations in the power line and protect your equipment and diskettes from voltage spikes. You didn't mention whether any other appliances suffered any damage or if there was an electrical storm in your area when the suppressor died. If the surge protector had tripped an internal circuit breaker, that would have been understandable. But, unless the voltage spike was very large, a surge suppressor should not have suffered any damage.

Whenever any product or activity becomes popular, such as personal computers, the market gets flooded with accessories for them. The major problem facing anyone is separating good products from the not-so-good ones. The December 1983 issue of BYTE magazine has a good article about surge suppression on page 36. The author, Steve Ciarcia, knows his subject and gives you tips on what to look for in a surge suppressor, as well as how to modify a cheap one into a good one.

The only other route open to you is using a backup power source. Backup power sources provide the protection of high quality surge-suppressors plus the advantage of battery power long enough to save any files you are working on and power down the computer. Unfortunately, this kind of protection doesn't come cheap.

Real time timer?

I have a Kaypro 4 with the Real-Time-Clock. My question is what am I supposed to do with the clock? My wrist watch is easier to use for telling time.

Is there a way to combine it with files so I can log in and out to have a record of the time spent on each? As I understand recent tax law changes, the Internal Revenue Service will require that such a log be kept beginning in 1985 in order to deduct costs of a computer used at home. Since much of my work is done at home, I would find it extremely handy to have such a record for tax purposes.

Please advise if the clock program is designed to serve as a means of keeping a record of the actual time spent on the computer, and if so, how one uses it.

Edward K. Eckert, Ph.D.
Saint Bonaventure, New York

The *CLOCK.BAS* program is intended only as an example of how the Real-Time-Clock can be accessed by a program. It was never intended to perform any other function. As far as time-and-date logging of files goes, you're on your own. Creating such a program to log the accessing of each file would be a major project. CP/M 2.2 does not support time and date stamping of files; it never has. A more realistic approach would be to

write a program to log each session at the computer along with some comment on the session. This program would probably have to be run manually at the beginning and end of each session. This would provide a log of computer time

Any program to do what you suggest would have to be written from scratch specifically for the Kaypro '84 series. If you have any contacts in the Computer Science department of your local university, it might make a good project for them.

Subscript blues

I have an early Kaypro 2, WordStar 3.0, and a Star Delta-10 dot matrix printer. My problem is trying to use subscript with my printer. I start subscript with CTRL-PV and stop it with CTRL-PR. This works fine until the bottom of the page. At the bottom of the page where subscript is used, the page number is printed in the small subscript-size lettering and all following pages are in the small lettering.

Is there any way to speedily scroll to one particular page in a large document, make a change on that page, then reprint just that page. Can I resave just the page where changes were made? Saving the entire file is very time consuming. It is also time consuming to wait for WordStar to pick its way through several pages to find the one to reprint.

Constance B. Sanborn
Vicksburg, Mississippi

Since you have WordStar 3.0, which does not support Star printers, someone had to patch the appropriate control strings into WordStar. The first item to check is whether they put in the correct code to stop subscripting. Some of the less expensive

printers are a little touchy about control strings and may not respond the way their manuals claim they do. Running the same test on a copy of WordStar patched for a different brand of printer works fine. Checking or inserting these control strings is a job for a programmer or VERY KNOWLEDGEABLE user, not the average computer owner.

You also said that you have an early Kaypro 2. The earlier Kaypros didn't function with early printers from Star. The problem was corrected in both later Kaypro models and later models from Star. It is just the combination of early Kaypro and early Star printer which doesn't match. Exactly where this leaves you is a little unclear, to both of us. Please note we are now publishing the mailing address for Kaypro Technical Support, not just the phone number.

The only way to speed up WordStar when it is scrolling through a file is to use a faster computer or to have a RAM disk. A RAM disk is a separate peripheral that simulates a disk drive in random access memory. All disk input and output, with a RAM disk, is speeded up tremendously. The new Kaypro '84 series machines have a faster clock speed and this would speed up the scroll a little. Neither of these are cheap solutions!

WordStar cannot search for a particular page in a document, it must search for a string of characters that occurs on that page. Preferably the character string should not occur anywhere else in the document. Commands for searching are on the CTRL-Q menu. The only other choice is to break up a large document into chapters, or sections, of smaller size.

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Foreword

by Terian Tyre

This issue sees the recurrence of a topic we've covered before; we're devoting more attention to it because, frankly, it's the hottest, most exciting, aspect to computing today. People are logging on to do research, conduct business, as well as simply converse. We will look at these activities and what they could mean to you.

Somehow the instantaneous and interactive nature of the medium gets people hooked. Even famous people like the creator of *2001*, Arthur C. Clarke, hard at work on a sequel in his home on Sri Lanka. Check out how he used this new system of communication and a couple of trusty Kaypro 2s to write a screenplay from the other side of the world.

Inner workings explained

Telecommunications can be fairly simple. There are a few things, however, which must be learned first. That's why we're here. Once you have the equipment and understand the basics, you too can get online. *Profiles* can help. "Those Marvelous Modems" covers some of the more technical details of the nifty devices, such as why those screeches are so high-pitched. It explains just what exactly modems do and how they do it so fast.

It even lays bare the great "baud fraud."

We tell you where to go

After you get online, where do you go? This issue introduces a brand new column devoted to just that question. In its debut, "Life at 300 Baud" takes you to three different bulletin boards, one for each part of the country. There is truly something for everyone here, even extraterrestrials. This column will appear fairly regularly, bringing you the best and most interesting boards up and running. We hope you find a favorite.

Of course, not everyone telecommunicates for recreation; some people do it for their living. "Fast Facts" gives you the scoop on what kind of information is available and from which databases. Researchers, writers, and the curious, take note: after reading this article, you may never have to leave your warm dens again. Most everything is online, or will soon be. A handy chart lists some of the best databases, with details on how to find them. A must-read for anyone serious about exploiting this new information system.

Currency and current events

It seems the capabilities of microcomputers are just starting to catch up to their predictions.



Many thought that 1984 would have everyone plugged in to everyone else. We'd be using video phones, computerized kitchens, and have instant access to thousands of services and information banks. All this exists; it's just not commonplace. A little matter called economics jumped into the act. Things are not mass produced until it becomes profitable to do so. There's more than one way to "profit" from computers, however. In "No More Trips to the Bank" we tell you how to save your time and your money through electronic home banking. It's another prediction coming true.

To further help your online quests, our Book Review subject is a handbook which modestly claims to contain "Everything You Need To Go Online With The World."

S-BASIC series continues

Yes, this issue has another article covering some people's favorite topic. This time we discuss data file handling and the sample listing is a much better example of

good program construction than that poor typing program. (Our new Technical Editor, Tom, expands on this; see Tech Forum.)

It appears from the letters we get that S-BASIC has somewhat of a cult following. And these guys don't miss a trick (they let us know in a hurry when something isn't quite right). Here on the magazine, we think that's great. Together, we can develop and print the lower and intermediate levels of knowledge needed to get people going in this elegant language.

That covers all of our special interest features in this autumn issue. Naturally, the regulars have some tidbits for you too. David Gerrold has more of his thoughts on the micro-revolution, as does our Cottage Computerist.

And don't forget to check out all the New Products. There's always some neat little accessory or software program hiding there unobtrusively.

More is better

Our subscription campaign is in full swing. If you haven't already, pull out that checkbook and *subscribe*. We're the only publication tailor-made for your needs and Kaypro-compatible desires.

And as you can see, we're bringing you all this, more often. Except for one double issue each winter and summer, our visits are now on a monthly basis. Soon we will be arriving regularly in your mailbox on or before the first of the month. Our next issue will be on MS-DOS and Business Applications; don't miss it!

Till next time, enjoy. □

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Up and Running

by David Gerrold

A couple of months ago, Tyler Sperry handed me an Advent twelve-inch cable with which to connect my keyboard to my Kaypro. The standard cable, which comes with the Kaypro, is a black six-inch coil which should be more than long enough for most installations, so the twelve-inch cable struck me as a "Whatever for?" kind of product. Why would anyone want a twelve-inch cable between their keyboard and their Kaypro? At its full extension, you wouldn't be able to read the screen—at least, not clearly.

Tyler explained to me that *some people* like to lean back in their chairs, put their feet up on the desk and hold the keyboard in their lap—and a twelve-inch cable is very useful for that.

I must confess something here—I learned how to type several centuries ago (on one of the old-fashioned kerosene-powered machines so common in the pre-industrial revolution). In those days, typing was considered something of a holy trust. You sat up straight in your chair, addressed the typewriter as if it were an altar, held your wrists firmly *above* the keyboard, kept your fingers on the "home row" of

keys, and NEVER NEVER NEVER looked at the keyboard—because that would slow you down—and we were *Touch Typists*. Yeah! Them was the days!

When I learned how to type, we were taught to respect the work we were doing—else, why do it?—and that attitude has stayed with me ever since. The idea of someone leaning back in an easy chair, putting their legs up on the desk and the keyboard in their lap disturbs me a lot. It demonstrates too casual a relationship with the work. People who are enthusiastic about and passionately committed to what they are doing tend to lean forward into their work, not back *away* from it.

So this particular justification for a twelve-inch cable—that it will allow you to lean back in your chair—does not particularly fit my pictures of productivity.

However, I can suggest at least one good reason to have a twelve-inch cable.

I find the grinding, chugging, whirring, singing, humming noises of the hard disk drive on the Kaypro 10 to be something less than the ideal musical accompaniment for a working environment; plus the so-called 9-inch screen of the Kaypro is really only an 8-inch picture,



good but not great; both facts add up to a terrific reason to tuck the Kaypro into a desk drawer and work off a nice large screen external monitor instead. (There are several external video boards available for Kaypro machines, and sometime Real Soon, I hope to add one to my system.) A twelve-inch cable between keyboard and machine would allow a lot more flexibility in placing the machine.

A couple notes about the Advent cable itself. Although the Kaypro uses telephone-style modular jacks, you should not use an ordinary modular phone cord. It has something to do with excessive voltage drop due to a smaller gauge of wire of those cords. If you want a longer cord for the keyboard-Kaypro connection, you should purchase one designed for the task.

Other than that, the longer cable does not seem to degrade the operations of the Kaypro in any way. It should take those busy little electrons twice as long to get where they're going, of course, but I leave the problem of

Illustration by Joyce Kitchell.

determining just how many billionths of a second are actually involved to someone with 14-digit precision and a better knowledge of the resistance in a twelve-inch Advent cable than I have.

Speaking of chairs

It's called the *Balans* chair and it was designed in Denmark. It doesn't look like a chair at all—it doesn't have a back and you have to anchor your knees on little pads—but it's the best chair I've ever found for working at a keyboard. You may not need it if you

position of natural balance. Et cetera, et cetera. Well . . . surprise. It works as advertised. Since I got it, I haven't had any trouble with my back at all.

This is not a chair for leaning back in and propping up your feet on the desk and putting your keyboard in your lap—but then you already know my feelings about that. This is a chair that encourages you to lean in and go to work—which is *exactly* what I want to do. (You could almost call me a workaholic—except I'm not. My work is too much fun to be

cost anything to look and you might just find something you like.)

Cautionary tales

On the back of the Kaypro 10, there are two sockets for modular jacks. One is for the keyboard and the other is for a light pen. I don't know of any light pens currently available for the Kaypro, or any software either; but I can tell you that it is extremely dangerous to insert the keyboard plug into the light pen socket.

I haven't done it myself, but I am told by one who knows (Steve Laff at Friendly Computer in Santa Monica) that it's a good way to fry the keyboard. It will sizzle and burn and *catch fire*. Don't do it! You will have to buy yourself a new keyboard.

In ordinary use, this shouldn't be a danger—except the two sockets are not only identical, *they are right next to each other*, thereby guaranteeing the inevitable accident for someone who transports his machine a lot . . . and doesn't always pay close attention to what he's doing.

When Steve Laff sells a Kaypro 10, one of the first things he does is caution the purchaser about this particular danger—and then he pastes a write-protect tab over the light pen socket, thereby making this particular accident virtually impossible.

Even if you are absolutely sure that you will never in your life do anything so stupid as plug the keyboard jack into the wrong socket, if you have a Kaypro 10, it only takes a minute or two to install this particular piece of insurance. It could save you a lot of grief.

At least now you can't say you haven't been warned.

Reading racks, part II

Linda Bee of Bee.Mor Enterprises

The chair you sit in can become the hardest part of the job.

only use your computer an hour or two a night—but if you work at your machine (or play at it) several hours every day, the chair you sit in can become the hardest part of the job. (Pun intended.)

Hackers, secretaries and professional writers, pay attention:

I work hard and I work long hours. A couple years ago, I started getting twinges in my back. At one point, it was so bad that I couldn't work more than an hour at a time. There were several things I tried—including isolation tanks, meditation, a specially designed regimen of exercises, and changing my work habits to include frequent stretch breaks. All of them helped. I also bought a Balans chair because it was supposed to be good for the spine and I had a hunch that something about my posture at the keyboard might be causing some of the muscle tension and pain. According to the ads, the Balans chair encourages a more natural posture at the keyboard and allows your body to relax in a

called work.)

The Balans chair does take a couple of days of getting used to, but it's well worth the effort. Fellow author, Larry Niven uses a Balans chair, so does Harlan Ellison, as well as Tyler Sperry, former editor of this magazine.

There are a couple of companies that are selling rip-off imitations of the Balans chair, but they're easy to spot; the rip-off versions aren't rockers. Your best bet is to write to THE SHARPER IMAGE, 680 Davis St., San Francisco, CA 94111, or call them at 800-344-4444 and ask for a catalog. They have four different versions of the Balans, ranging in price from \$99 to \$449. The original Balans is \$185.

Besides, THE SHARPER IMAGE catalog is one of the great wishbooks of our time—a must-see for gadget freaks. I've purchased things from them before, they're fast and they're reputable. (And they're pricey. This is not the Sears catalog. But it doesn't

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Printerizers go far beyond those magazine patches, using an installer that is VERY easy to run. They add from 0 to 5K to WS.COM, depending on the printer selected. The specifics of what will be gained vary from printer to printer, but they all have the same goal in common:

"Give the user easy access to every useful capability of his printer."

Some Printerizations (notably Epson, Gemini, Delta, Radix, and Panasonic) require HexPrintR to access some of the printer's less frequently used options. Call or write (specifying your printer) for details.

HexPrintR[™] changes the WordStar printer control character ^R into a "Hex-Printer" function. For example:

^R 10, 15, 20 ^R

in a file printed by WordStar with HexPrintR installed into it would send the same thing to the printer as the BASIC program statement:

LPRINT CHR\$(H10): CHR\$(H15): CHR\$(H20):

(Not recommended for daisy wheel printers)

PRINTERIZERS ARE AVAILABLE FOR:

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|---|---|
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GERROLD

sent along a CLIP.MOR to be used with the VU.MOR reading rack to hold books and manuals open. She neglected to say if it is now included in the cost of the VU.MOR or if it costs extra. It's a transparent plastic thingie that you can read text through and it works just fine to hold books and manuals open. It's a useful addition to the VU.MOR. Thanks, Linda.

A week later, D.W. Kingery,

the VU.MOR and because of its portability (and other features) would seem to be the better value, but the VU.MOR has a nice elegant "feel" to its design that I like. The people at both companies are very nice. Both units do the job. Both are recommended. Take your pick.

Apple compatibility

I picked up an Apple IIc at the recent Byte Show in L.A. with the

The Apple IIc is not a compleat computer.

President of TWIST, Inc. (Box 1406, Renton, WA 98057), sent me a FAT JACK reading rack to try out. Like the VU.MOR, it fits neatly on top of the Kaypro and holds up books and manuals. It comes with its own page clip—and yes, the sides of the clip are transparent so you can read text through it too.

The FAT JACK is shorter than the VU.MOR so it can accommodate paperback books as well as larger manuals; it's also deeper so that a page of text will be closer to the plane of the CRT, thus minimizing eye-focus changes as you shift your gaze back and forth between screen and manual. This extra depth also allows the storage of a greater number of candy bars.

All of the pieces of the FAT JACK—including the page clip—can be disassembled and stored flat. You can stash it easily in your carrying case if you travel with your Kaypro.

I like having a reading rack on top of the Kaypro. It's one of those "I can't imagine how I ever got along without it" things. The FAT JACK costs a couple of bucks less (\$17.95 + \$1.50 shipping) than

idea of using it as a truly portable notebook computer. Instead of lugging the Kaypro around on trips (which is really not my idea of a good time), it seems to me that I could take the smaller, lighter Apple instead, do my work on the Apple, and then transfer files to the Kaypro when I got home.

Well . . . almost. The Apple IIc is not a compleat computer. After you buy it, you also have to buy software (for example, the Appleworks integrated program is \$250). And, if you want to travel, you'll need to pick up a carrying case and battery pack (another \$250), plus a flat-screen display (\$500-\$600)—when it becomes available. A fully equipped Apple IIc can cost at least as much as a Kaypro 4, and you still won't have as good a keyboard or the full range of useful software. But you will have portability. In other words, portability is expensive, and you'd better be prepared to make compromises.

And then—after all that, you still have the problem of getting a file out of the Apple and into the Kaypro. Or vice versa. Neither the

operating systems nor the disk formats are compatible, and you cannot simply cable the two machines together. None of Apple's connectors are the normal EIA connectors for RS232; they're all DIN standard instead. (It seems to me I should be able to simply dump the printer output of the Apple into the Kaypro, but I may have to have a special cable made for this job. We'll see. If anyone reading this has tackled this particular problem, I'd appreciate hearing.)

While none of this dims my enthusiasm for the original idea, (and I'm certainly having a terrific time playing with SubLogic's *Flight Simulator* while I'm waiting for the flat screen and battery pack), it does give me some thoughts about the cost of incompatibility. The Apple IIc is the best portable computer on the market (at this writing), but how many sales will Apple lose because potential customers can't find an easy way to get their work files out of one machine and into another?

The issue of compatibility is going to be even more important in the future as many users begin to consider the purchase of their second or third machines—especially if they are looking for portability. I may or may not have more to say on this topic in the future.

Meanwhile, the micro-revolution shambles on . . . □

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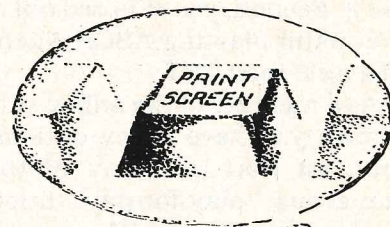
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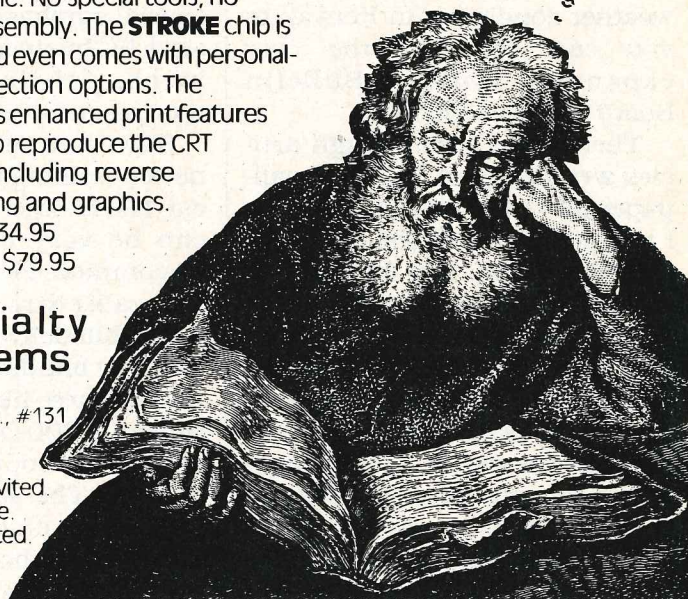
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Life at 300 Baud

by Brock Meeks

WARNING! Reading this column may involve you in a habit-forming activity. You might become part of a sub-culture of the Information Age, commonly referred to as "being online."

In writing this column I have automatically assumed a couple of things about you. First, you own a modem and know how to use it. Second, you're bored out of your skull blasting ASCII Aliens off a nine-inch CRT.

As a member of the online sub-culture you have many options. You can dial into any of the numerous "play-for-pay" information services (which are real handy if you want to keep track of the price of pork bellies or the weather conditions in Kenya), or you can get into the ever expanding world of Bulletin Board Systems (BBSs).

There have been enough articles written about BBSs to wallpaper the Great Wall in China, so I will spare you all the details of how they work. But for those of you just dropping into this world I'll offer this short word.

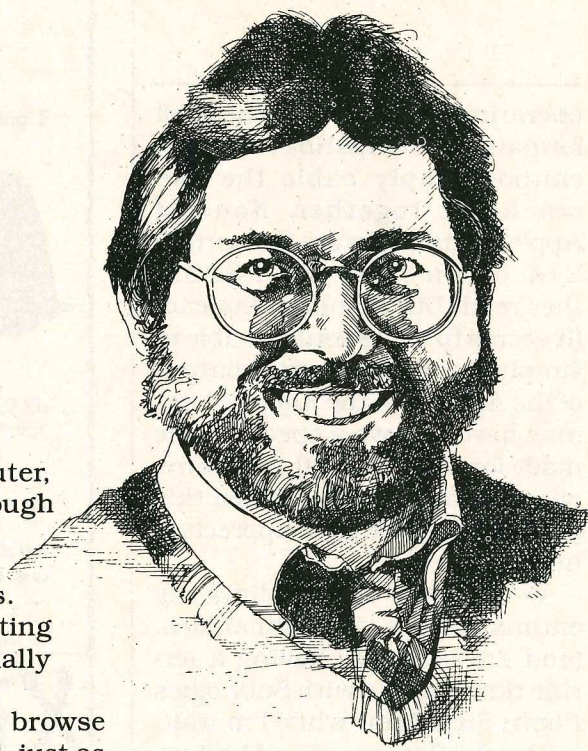
A BBS operates like the usual bulletin board hanging at a laundromat, or in front of the grocery store (or the wall in a public restroom, or your favorite freeway overpass, or ...). All you do is call the BBS via your phone line and modem. After connecting

with the remote computer, the two modems go through a series of screechings that would have made a pterodactyl envious. Once this electronic greeting has ceased, you are officially "online."

Once online you can browse the contents of the board, just as you would at the laundromat bulletin board while waiting for your Levis to dry. If you have something to say, just whip out your cursor and compose. After writing the message, you can electronically tack it to the wall for all to see.

So far, so good eh? Well, the network of BBSs has grown so fast (currently close to 2,000 systems on line) that it has been impossible to keep track of them all. Most of these BBSs have some special emphasis. BBSs are operated by businesses, private citizens, politicians, political groups, and even priests.

Now, bouncing around the nation, looking for the board that carries the information you want can be very costly. (It is not uncommon for the indiscriminate caller to receive the monthly phone bill delivered with complimentary blindfold and cigarette.) And if you're like me, stuck with riding a 300-baud drafthorse, those cross-country calls add up quickly. The solution is to get your hands on some information about those boards *before* you call. The means to that solution?



You've got your nose in it right now.

In this column I'll be introducing you to some of the nation's more interesting and informative boards. Together we will take a look at what is happening on them and get some insight into just why those boards are online in the first place.

This first electronic romp will take us to three very different boards. One is technical in nature, one carries highly specialized message traffic, and the last is, well, the most diversified board in the nation.

So if you're ready, grab that communications disk (there it is, under the coffee mug) and fire up those disk drives. Let's get online.

The reference desk

Board Name: Pro Comm I and II

Location: Tampa Bay, FL

Phone Number: (813)
937-3608/937-6829

Hours of Operation: 24 hrs. daily

Log-On: Password and membership required.

Baud Rate: 300/1200

Data Format: 8 data bits; 1 stop

bit; no parity.

This board operates as both a BBS and an RCP/M (Remote CP/M). You can leave messages and ask questions in a limited message base on the BBS section. There is also a newsletter in the BBS which has the latest about the world of Kaypro from the user's point of view.

The man responsible for this board is Steve Sanders. Steve developed the whole *Pro Comm* system, called K-Net. "There are about 25 boards running the K-Net system right now," Steve told me, "all part of a nationwide Kaypro BBS system. However, there is no mistaking where the 'kids' get their experience— it's right here on my system."

"I guess we have over 3400 files in our library right now," said Sanders, "and we usually have the newest development in public domain CP/M software online the day it comes out." This is why I call it the "reference desk."

Currently there are two *Pro Comm* systems. *Pro Comm I* has 10 megabytes of storage, and *Pro Comm II* is running under a Kaypro 4 with a 16 megabyte hard disk in its belly. To use both systems you must register and pay a \$25.00 yearly fee—cheap at twice the price. You can register and get full information when you first log-on.

There are over 300 users registered now and 65% of them are Kaypro owners. Of those registered only 20% live in the BBS's home state; that is testimony enough of the board's worth.

This board is easy to use, especially in the CP/M section. The help files are well laid out, and Steve has installed the latest CP/M file utilities to make it extremely easy for even the CP/M neophyte to make good use of the

system from their first log-on.

After you have entered the CP/M section of the board, the first command to type is **SYSMAP**. This will give you the layout of the hard disk, eliminating the hide-and-seek game you must play on many RCP/M systems.

After you've charted the system (you did save that screen to your printer didn't you?) you will want to read the help files. Pay attention to the help files on such utilities as **LDIR**, **LTYPE**, and **LUX**. These will help you manipulate the many .LBR files on the system. **LUX** is particularly valuable because it allows you to download only portions of a library. On other boards, you must download the entire library file, which can take up a lot of excess storage. **LUX** could well become one of your favorite commands. (I know my cursor hunts this command down every time I get on this board.) I have not seen **LUX** widely used, so Steve has something of a scoop here—make friends with it, and you'll wonder how you ever did without it.

If your online time is cramped by your 300-baud modem, you can leave Steve a message requesting a disk be sent to you with the files you desire. "We find that users who request disks are getting a better service than having to download for an hour at a time," Steve informed me, "besides, the selling of the program disks is bringing in a little extra money, and that way I can keep adding improvements." For Kaypro owners interested in CP/M software, I can't think of a better board in the nation.

An electronic senator

Board Name: The Political Forum
Location: East Lansing, MI
Phone Number: (517) 339-3783
Hours of Operation: 24 hrs. daily
Log-On: No password/public

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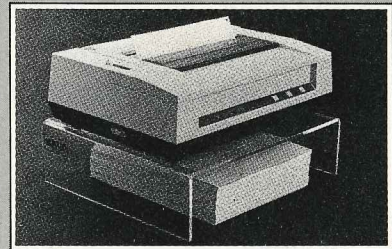


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access

Baud Rate: 300/1200

Data Format: 8 data bits; 1 stop bit; no parity.

This is the only BBS in the nation sponsored by a legislator. His name is William ("you can call me Bill") Sederburg, State Senator of the 24th district. Gordon Williams, a Ph.D and teacher at Michigan State University, is the sysop.

This board carries the distinction of being the pioneer in the effort to integrate telecommunications with politics. How successful have they been?

"In the first three months the Political Forum was online we received calls from over 800 different people," Gordon Williams said. Senator Sederburg stated, "We have been able to reach a large segment of the population, far more effectively, than we ever could have using conventional means."

The board runs under TBBS software, which is the smoothest running BBS program in the nation. The system is easy to manipulate, and commands are executed when you hit a key—no carriage return is needed. This certainly helps speed things up when you're making a long-distance call.

Topics on the board range from the local politics of a defunct nuclear power plant to a lively discussion on the Democratic National Convention. There is even a political rival of Senator Sederburg's online, carrying out a tense discussion of his reasons for trying to have the Senator recalled (he is losing this discussion by the way).

"I handle all my own message traffic," the Senator told me, "you can be assured I personally respond; my staff would never allow so many typos!" In my

involvement with this board I have never seen a message to the Senator go unanswered for more than a couple of days.

Some of the interesting features about this board are the SPEAK OUT section, where you can upload your own soapbox speech; a BALLOT section, that allows you to cast votes on certain questions; CAPITOL COMMENTARY, where guest legislators have uploaded messages or statements of policy; and ISSUES, where Senator Sederburg gives a run down of the more important issues facing the Michigan congress on that particular week.

This is a place to sink your political teeth into. The users of the board take on all comers; you don't have to be familiar with local politics. The board is frequented by at least four or five Ph.D's, but the ordinary user is just that—ordinary. There is one exception. Each caller is helping to shape what may become a standard practice in the near future—legislators online.

Now, I realize you may be saying, "I live in New York; who cares about Michigan politics?" With the experience you gain on this board, you could possibly transplant the same type of system to your state. (Gordon and Bill are more than happy to help you in this type of venture—I know because for months I've been trying to interest my state senator in this kind of system.)

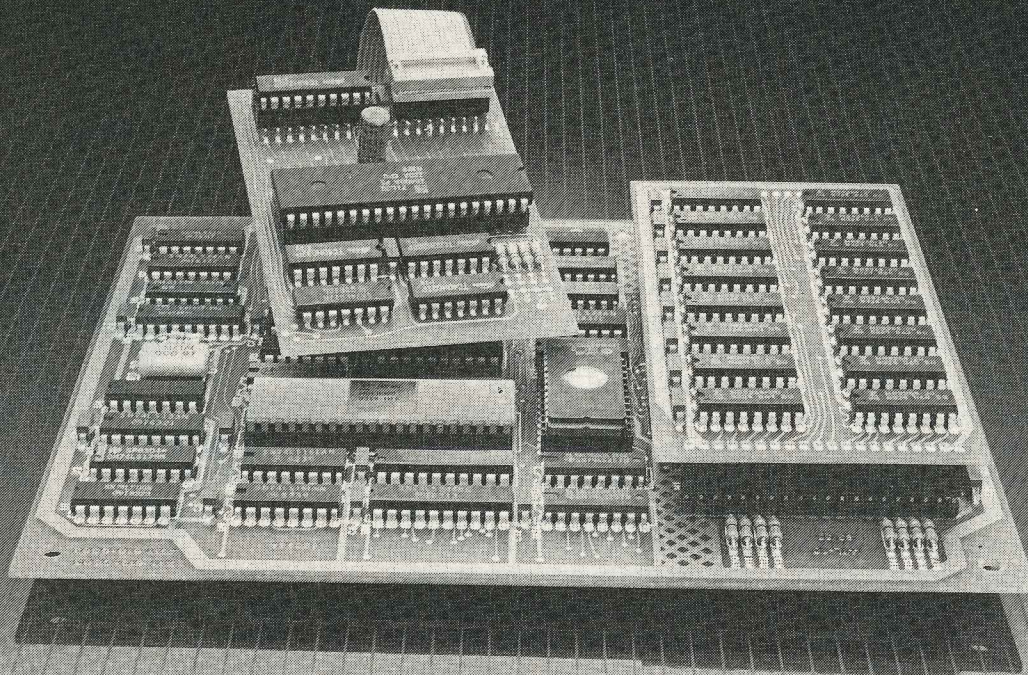
If combining politics with pioneering sounds appealing to you, dial up the Political Forum—and make your cursor count.

For a good time call . . .

Board Name: STUART II
Location: San Francisco Bay Area
Phone Number: (408) 338-9511

(continued on page 75)

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The Cottage Computerist

by David Thompson

This may well be the least exciting column I've written (no battles with magic weapons here) but it's an important follow-up to my missive on structured programming. (Remember how we rearranged a house by moving rooms from here to there?) If you are going to grace this great field with your prowess as a software designer, get a good book on structured programming. However, once you've figured out how to format your ideas clearly, you're still not home free. The final tool you need is a good programming language, and selecting the proper one for the task is not a trivial project.

Of course, if you are a whiz with a language and you are doing a one-time application that would take half an hour to write, it probably doesn't make sense to spend a month learning something else. However, if your application must run extremely fast or is likely to grow a great deal over its useful life, then it makes sense to pick your language carefully, even if it means extra work up front.

Assemblers

Assembly language is the language to use when you want the most control over your system, the smallest amount of code, and

the fastest possible running time. So, assembly language is the usual choice for writing operating systems (e.g. CP/M), code to reside inside monitor ROMs, assemblers, and compilers—anything where size and speed of the program are paramount.

You see, when you are writing in assembly language you are really writing, instruction for instruction, the codes the computer will run. An assembler simply changes the instruction "JMP" (means jump) to a "C3." It's much easier for you to remember (and read) "JMP" than to remember "C3." Also, an assembler can translate names (called labels) into numbers; so if the video screen routine in your system is located at address FF30, you can name that address "SCREEN." Now you can enter JMP SCREEN rather than directly entering the equivalent C3 30 FF. Notice how the address "FF30" is entered backward as "30 FF" (the most significant byte is last) when you are entering instructions directly into the computer's memory. The trade off is that assembly language's control and small code size often cost a substantial amount in terms of programming time.

For instance, simple benchmarks that take 10 minutes to run under MicroSoft



BASIC may take only 20 seconds when written in assembler. However, it may take only 20 minutes to write the program in BASIC while it might take anywhere from a day to a week to write the same program in assembly language. The "JMP SCREEN" instruction (in assembly language) would send one character to the screen once you've loaded the character into the "A" register, made sure it is a valid character, and told the screen where to place it. In Pascal you would simply write: `writeln('Do you wish to continue (Y/N)?');` or in BASIC you would write: `Print "Do you wish to continue (Y/N)?"` These will not execute as quickly as a 20-line assembly language equivalent, but you probably don't care. It's going to take the operator a lot longer to react to the message than it will take a program to print it on the screen.

Compilers vs. interpreters vs. assemblers

As mentioned earlier, assemblers give you the least help because

ILLUSTRATION BY JOYCE KITCHELL

they simply translate one human instruction into one machine instruction. The translation is done at assembly time, and the output is object code (another name for machine instructions). Interpreters (MicroSoft BASIC, for instance) read the source program line for line while the program is running. Each line is interpreted each time it is encountered. So, if you have a loop that repeats 100 times, then each BASIC instruction inside the loop will be interpreted into something the machine can use 100 times. Interpreters are notoriously slow.

Compilers, on the other hand, translate one instruction, PRINT, for instance, into a number of machine instructions at compile time. Compilers are different from interpreters in that the translation is done during compilation, not when the program is being run. The output of the compiler is machine code (object code just like the assembler's output). When you run a compiled program, the processor simply follows the machine code instructions. Some compilers generate programs that run about as fast as programs written directly in assembly language.

Pascal

Pascal was designed by Niklaus Wirth as a teaching language. It was developed on a machine which used cards and tape rather than disks for storage, so he developed only limited file I/O operations. Of course, computers have changed substantially and compiler writers have added new file access instructions (as well as some new string handling routines) that have made Pascal much more useful for current systems and applications. However, every compiler writer has his (or her) own ideas how best to extend

the language, so the extensions are consistently inconsistent. If you use the extensions in one Pascal compiler you can be pretty sure that your program won't compile under another version of Pascal without modification.

Anyway, Pascal is in its own when you are writing business and scientific applications. It is not normally used for writing operating systems or compilers.

C

C is a compiled language, but it seems more at home in the hands of an assembly language programmer. C gives you practically all the power of assembly language in a faster-to-write form. Many of the early C compilers didn't support floating point numbers (and some of the more popular ones still don't). You'll still find that only a small minority of C programs use floating points, just as very few assembly language programs use this data type. It's pretty obvious that C was designed by programmers who hated typing. You can do a lot in C with very few keystrokes, which is great when entering programs, but not so great when you go back and try to figure out what the program is doing. C is definitely a systems hacker's language, though C believers are quick to point out that you can write just about anything in this very structured language.

FORTH

The rumor is that FORTH was written by a programmer who was tired of hearing about third generation languages, so out of cussedness he named his new creation FOURTH. However, the system he was on limited him to five-character program names—so we have FORTH. (I'm sure I'll be corrected instantly if this
(continued on page 73)

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Kaypro's Odyssey Files

Telecommunications helps bring 2010 to the silver screen.

by Jessica Horsting

When MGM chief Frank Yablans first asked director Peter Hyams to head the filming of *2010*, a sequel to the science fiction classic *2001*, his immediate response was an emphatic "No way." His reaction was not unreasonable; many professional filmmakers felt *2001* was a definitive film—so complete that no sequel could do it justice. Filming *2010* implied a sacrilege akin to writing the Bible, Part II.

The original film was inspired by an Arthur C. Clarke short story, "The Sentinel." Under the distinctive direction of Stanley Kubrick, and in collaboration with Clarke, the concept of the story was interpreted and expanded into the landmark, feature length space odyssey. Clarke subsequently wrote a novelization of that film, then followed up with a best-selling sequel, *2010*. Both novels examine the consequences of man's first contact with an intelligent, alien life form.

Hyams appreciated both the artistry of the Kubrick film and the renown of writer Arthur C. Clarke. Hyams felt confident he could handle the project, having recently directed two feature films, *Outland* and *The Star Chamber*. But still, he was hesitant. He saw *2010* as "a frightening challenge . . . the first film was a classic."

Apparently, the challenge was irresistible. Hyams agreed to undertake the project.

His next worry involved faithfully translating Clarke's story to the screen. He had been asked not only to direct, but to produce the screenplay based on the best-selling book. His solution was simple and straightforward. Following Kubrick's lead, Hyams solicited the novelist's help: "I wanted Arthur not only to know everything I felt had to be done, I wanted his input—not only his blessings, but his ideas . . ." Clarke in turn was delighted to assist, with the one stipulation that he be permitted to

work from his home.

In Sri Lanka.

A tiny island nation off the coast of India, Clarke's home was 14 time zones and almost 8000 miles from Los Angeles where the film was being made. Hyams thought they could work it out, though the question was *how*? The hoped-for simple solution to Hyams' scripting problems had gotten a teeny bit complicated.

The time differential made conventional telephoning extraordinarily inconvenient, requiring one or both of the men to stay up to ungodly hours in the morning to consult with one another. Using a mailing system would involve extensive, not to mention expensive, delays. The obvious alternative was a computer link. The only problem remaining was to select the hardware.

It was at this juncture that Destiny and the Kaypro Corporation conspired to provide a solution.

Two times 2

While Hyams and Clarke had yet to decide which microcomputer to employ, Kaypro Corporation had already contacted the Sri Lanka Foundation as part of their promotion agenda involving the donation of a Kaypro to the Third World Fundamental Studies Program. The Sri Lanka Foundation is an organization initiated in part by Clarke himself, and he remains an active participant. Clarke has been a long time user of small computers and is intimately familiar with the technology. He was naturally curious to take a first hand look at the gift Kaypro 2.

After inspecting the unit and discussing the virtues with director Hyams, the two men decided the Kaypro 2 would be ideal for their purposes. In exchange for a promotional screen credit, Kaypro agreed to provide twin units to Hyams and Clarke. The production company went one step further and



PHOTO COURTESY OF MGM/UA ENTERTAINMENT CO.

purchased two additional units—one for the 2010 documentary team and one for Clarke's long-time associate Steve Jongeward, who acted as his Los Angeles liaison during production.

Having settled on the hardware, the next problem was a technical one of communications protocol. This was solved neatly by Clarke, Jongeward, and the good advice of Jim Swanner—Kaypro retailer and all-around nice guy.

Most communications programs available for the Kaypro 2 didn't provide the versatility that Clarke and Hyams felt was required. They needed a system that would allow each unit to send and receive lengthy messages with a minimum of time and error, a system that would deliver a missive which

Clarke has legitimized his own prophecy.

would patiently wait to be retrieved on demand, and above all, one that would perform *dependably*. Buzz words like "baud rate," "multifile capacity," "synchronous/asynchronous transmission," and "protocol accommodation" took on new significance for all involved.

But Clarke knew where to turn for help. At Clarke's suggestion, Jongeward contacted Jim Swanner. (Clarke knew of Swanner's expertise in telecommunications, and subsequently wrote the foreword for Swanner's book, *Electronic Mail for Microcomputers*.) Jongeward and Swanner investigated available software to find a program that would fit the bill. Swanner provided Mycroft Lab's MITE (Mycroft Intelligent Terminal Emulator), which features a multifile transfer protocol that was ideally suited to the filmmakers' requirements.

The Kaypros, fitted with Hayes Smartmodems and the MITE program, were installed: one at Clarke's home in Sri Lanka, one at Peter Hyams' office in Culver City.

Clarke and Hyams were ready to get down to business.

Their communications took the form of long, daily "letters" left on their respective machines; questions, solutions, and suggestions that could be thoughtfully laid out and considered—then sent or retrieved instantly. Starting in September of 1983, the two men communicated over aspects of the script for eight months. The result was a screenplay that strayed from the novel in certain respects, but with changes that were a cooperative compromise between the writer and the filmmaker—a rare,

almost unique occurrence in novel-to-film translations.

Birth of a book

Telecommunicating with Kaypros soon became a fact of life for the 2010 production team. The computer link proved so important that it became the focus of a one-hour documentary detailing the filming, "The Making of 2010." (Filmed with network presentation in mind, the documentary is scheduled to air in December as an adjunct to the release of the film.) It was not merely the mechanics of the link that warranted the attention, it was the special nature of the conversations.

The communiques between Clarke and Hyams encompassed more than simple problem solving. The daily "chats" became a chronicle of the evolution of the film. "The conversations are in themselves a documentary," said Jongeward. As an experiment, he began to collect and edit the disk-recorded dialogue. The conversations proved to be such a rich source of material that (with the blessing of Clarke and Hyams) Jongeward developed a book as a companion to the film.

Titled "The Odyssey Files," the volume is a compilation of the communications that took place between September of 1983 and February of 1984. Included in the book is an introduction by Clarke as well as an appendix, titled "MITE for Morons." Chagrined, Jongeward confessed, "Arthur wrote that last part for me." The book promises an unusual glimpse into the creative exchange that characterizes filmmaking. It should also provide a unique record that traces the ideas of the two men from conception to on-screen reality. (One small step for man; one giant leap for the inter-office memo.)

Jongeward admits that the communications link was not always flawless. Most of the difficulties were generated at Clarke's end of the world. Relying on cable-to-satellite-to-cable transmission, the weakest link in the chain was the primitive state of communications technology in Sri Lanka. Steve notes, "It seemed that, for days before or after a monsoon, you could count on cables being knocked down or washed away somewhere near Arthur's home."

Satellite transmissions occasionally posed a problem. "When it became overloaded, you didn't get cut off, you were down!" lamented Jongeward. But neither he nor anyone else complained about the performance of the Kaypros.

Clarke as seer

The communications link between Hyams and Clarke has a significance beyond what has been

(continued on page 74)



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Fast Facts

Speed up your research using your Kaypro to link with an online database.

by Roxanna Wright

Your computer—with modem and communications software—is the key to a vast world of information through “online research.” Online research using the huge files of database computers is faster and more comprehensive than traditional research methods. It is ideal for business people, teachers, students, writers—anyone with an inquiring mind and a need for information.

Over 1,300 online databases covering a wide variety of fields are now available to the telecommunicating public. These databases are kept on large, powerful computers in various locations. Vendors such as Dialog and BRS make the databases available to individuals and organizations all over the world. These users, from the comfort of home or office, hook into an enormous electronic library.

More than just fast

Speed is the most obvious reason to use online services, because so much can be accomplished without leaving your home or office. And once you have the hang of it, calling up online references or full text is much faster than using a traditional catalogue.

But there is another even more compelling reason to use online databases: you can uncover information not available to you locally.

Databases out-perform local library catalogues because they can list many more publications. Library systems catalog only items in their collections. And no local library can afford the 50,000 new American books which come out yearly; nor can they purchase many of the over 100,000 serials (magazines, journals and newspapers) published worldwide. Online databases, in contrast, can afford to list an astounding number of publications. The LC MARC and REMARC databases alone (available on Dialog) contain records on over 3 million books. Compare that to your local library catalogue!

When you limit your search to your library's catalogue, you find listings for only part of what has been written on a topic. An online database can tell you about publications you might otherwise never discover. If the materials are not in your library, it may take some extra effort to obtain them—but they could prove crucial to your work. In many cases, new publications are available online before libraries can acquire them.

Online database references can also be used to discover just how much has been written on a given subject. For example, a writer will find that checking the titles, abstracts or full text of material on a topic is a good way to test the freshness of a writing slant. It can also help develop a new slant, making book and article ideas more attractive.

The entrepreneur, on the other hand, can search online trade literature to find out if a product is already on the market and receiving media attention. Along with the up-to-date census and other statistics online, this can help determine the market for a new product or service.

Instant reading lists

Using a bibliographic database, you can quickly and easily get references for almost any subject. The most affordable database of this type has records which resemble the familiar library catalogue card. Each record indicates author, title, publisher, publication date and subject categories in books and articles listed. One database of this type, AGRICOLA (on BRS and Dialog), includes almost 2 million references on agricultural literature. And, of course, this resource can be used from any farmhouse with a computer and telephone line.

Online databases are particularly good for finding information published in magazines, newsletters and professional journals. Though local libraries may carry indexes which list articles in all



periodicals, such indexes are more expensive to the libraries and more cumbersome for patrons than the online versions. The online vendor Dialog, for example, carries online versions of print publications such as the *Microcomputer Index*, *Philosopher's Index*, and *FINDEX*. Online versions are often more extensive and up to date than the print versions. And other online publications, such as the Dialog online index *NEWSEARCH* (tm), are available only in the computerized form.

A more exact way to find information

Perhaps most important are the many ways you can retrieve online listings. Instead of being limited to searches for the first important word in a title, for example, an online vendor's system may allow you to search for single words that appear anywhere in a title. Even better, you may search for combinations of words anywhere in the title.

With some databases you have to use predetermined subject categories to get results. Others will let you do a free-text search for words or phrases within a listing (in the subject or publication infor-

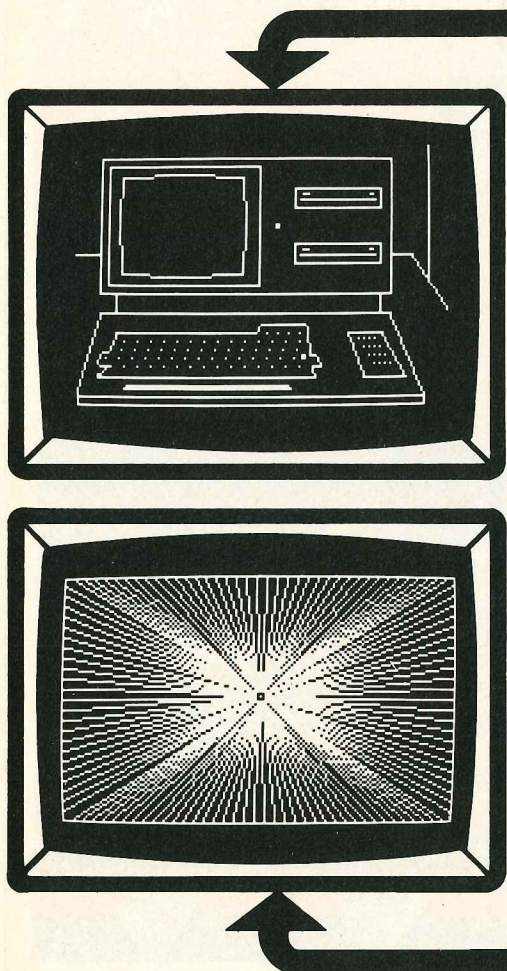
mation, for example). In most cases, you will be able to retrieve far more than you would from a printed catalogue or index. And you will usually be able to obtain more specific information. So you waste far less time on inappropriate materials.

Some bibliographic databases also include abstracts or summaries, so you can get some idea of what an article or book is about before you try to obtain it. And, of course, the more information you have about each reference, the easier it will be to pinpoint the most valuable material. Databases of this type include *Dissertation Abstracts Online* (Dialog) and *Exceptional Child Resources* (BRS and Dialog).

Abstracts ideally contain the most important information in the articles or books covered. It is important to remember, however, that abstracts are by nature incomplete. Therefore, abstracts of the same publication may differ from one database to another.

The full online library

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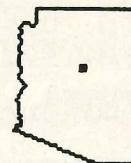
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TRADEMARKS: Kaypro, Kaypro Corp; CP/M, Digital Research Inc.; Okidata, Okidata Corp.; Epson, Epson America, Inc.; M-Basic, Microsoft, Inc.

MAXIMIZE YOUR KAYPRO-FORMANCE

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The External Monitor Adaptor (EMA) provides the ability for the Kaypro to drive an external video monitor. Original characters and video display remain unchanged. In addition, the Kaypro monitor remains operative. Simple plug-in installation. Complete illustrated instructions are included.

EMA Kaypro II & 4	\$ 69.95
Green Monitor	\$149.95
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EMA Kaypro 2'84, 2X, 4'84, 4X & Robie *	\$ 99.95
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Green Monitor *	\$159.95
Amber Monitor *	\$169.95

* Please Note: For all models except the original II and 4 the specially modified monitor listed above must be used.

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ANTI-GLARE SCREEN for all Kaypro Computers

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RS-232 Serial:	6ft - \$17.95	12ft - \$22.95
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Allows your Kaypro II or 4 to compute at twice the standard speed. Word processors, spread sheet programs, etc. will run much faster. The speed (2.5 MHz or 5 MHz) is switch selectable and can be changed at any time without affecting the operation of the computer. Installation requires only minimal technical ability and no soldering is required. Complete illustrated instructions are included.

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"source" databases which contain the full text of the material you seek. Most common in this category: articles from major newspapers, journals and magazines. For example, Dialog and The Source offer *UPI News*, with full text of United Press International wire stories. Newsnet offers full text of newsletters such as the *Solar Energy Intelligence Report* and *The Small Business Tax Review*. VU/TEXT offerings include *The Washington Post* and other respected newspapers.

Also available are full-text reference works such as Dialog's *Marquis Who's Who*, which provides biographies of about 75,000 notable Americans. VU/TEXT's *Vu/Quote* numerical source database provides NYSE and AMEX price quotes.

Getting printed materials

Unlike a traditional library, the online services can provide you with personal copies of documents you need. Users are rarely restricted to simply reading the material on their computer screens: bibliographic or full-text records can be saved on disk and printed out for future reference, usually for an additional fee. In fact, it may be more economical to

pay printout fees and avoid paying for online reading and note-taking time.

In some cases, database users can order copies of publications they have found catalogue-type references for. Although there is a fee for this document delivery, it is especially useful when you would have difficulty finding the material in your town.

Selective Dissemination of Information (SDI), another useful service, automatically provides users with copies of records on specific topics as a database is updated. This is a real time-saver for those who want to keep up with developments in a particular field, without having to search online regularly.

Instant leads

Referral databases tell you who has expertise in the area of your interest, and they may even contain summaries of unpublished material. These are wonderful resources for both background information and interview ideas for nonfiction writers. To search for authorities on hospital pathology, for example, you can look up professional associations of hospital pathologists in Dialog's *Encyclopedia of*

THE KAYPRO STORE...

Shirts, buttons, pens, jackets, and many more items are now available to you through your local Kaypro Dealer. Stop by and ask to see the current collection of Kaypro collectibles!

The image shows a collection of Kaypro merchandise on a dark, textured surface. Items include a white mug with 'KAYPRO' repeated, a black mug with 'KAYPRO KAYPRO', a black baseball cap with 'The Complex Computer' and 'KAYPRO' in script, a white baseball cap with 'KAYPRO' in block letters, a clear glass, a black notebook with 'KAYPRO' embossed on the cover, two black pens with 'KAYPRO' on the barrels, and two small Kaypro buttons, one with '434' and one with '10:11'.

Major U.S. Database Vendors

Vendor	No. of databases	Types of databases	Range of db connect charges per hour*	Startup Fee	Hours/Day Available
BRS 1200 Route 7 Latham, NY 12110 (518) 783-1161	83	Bibliographic, full text, statistical	\$35-\$105/hr (tele chgs \$8-\$14/hr; no 1200 baud chg)	\$50/year, \$18 for manual	M-Sat 6am-4am Sun 6am-2pm, 7pm-4am
BRS After Dark 1200 Route 7 Latham, NY 12110 (518) 783-1161	25	Bibliographic, 2 full text	\$6-\$25/hr (\$12/mo minimum; no tele chg w/Uninet)	\$75 advance incl manual	same hours as BRS
DIALOG 3460 Hillview Ave. Palo Alto, CA 94304 (800) 982-5838	180+	Bibliographic, abstracts, full text, statistical	\$15-\$165 peak & nonpeak (tele \$6-\$8/hr in U.S.; \$10/hr from London; no chg for 1200 baud)	\$50 for manual; \$100 free time during 1st mo.	M-F & Sat 120 hrs/wk
Knowlege Index 3460 Hillview Ave. Palo Alto, CA 94304 (800) 528-6050 x415	23	Bibliographic, abstracts, full text	\$24/hr (no tele or 1200 baud chg)	\$35 incl work-book & 2 hrs free online time	M-Th 6pm-5am Fri 6pm-12am Sat 8am-12am Sun 3pm-5am
Dow Jones News/Retrieval P.O. Box 300 Princeton, NJ 08540 (800) 257-5114	28	Full text, abstracts, statistical	\$36-\$72/hr peak, \$12-\$54/hr offpeak (chgs double for 1200 baud; no tele chgs)	75 incl manual + 1 hr free online time	7 days/week 6am-4am
ORBIT SDC Info. Services 2500 Colorado Avenue Santa Monica, CA 90406 (213) 820-4111 x6194	70+	Bibliographic, full text	\$35-\$160/hr, min. \$125/mo. billed (tele chg \$8-\$14/hr)	req'd training \$115 w/1.5 hrs online time	M-Th all day exc 6:45-7:15pm Fri 12am-5pm Sat 5am-4pm Sun 4pm-12am
Newsnet 945 Haverford Road Bryn Mawr, PA 19010 (800) 345-1301	190	Full text	\$24-\$120/hr (chgs double for 1200 baud; 25% discount offpeak; no tele chgs)	none 1 manual free	24 hrs/day, 7 days/week
VU/TEXT 211 Chestnut Street Philadelphia, PA 19107 (800) 258-8080	16 U.S. + 80 Canadian	Full text, abstracts	\$30-\$105 (no tele or 1200 baud chgs)	\$25 for manual; free training or \$60 online time	24 hrs/day, 7 days/wk

* Read, save and print charges not included.

The above information was provided by vendor representatives August, 1984.

Associations.

Timeliness

Online data has the advantage of being easy to update. And unlike print versions, online publications can be kept up to date and still remain in one package. Information is often available online before it can be published in hard copy or indexes, and long before it can be catalogued in your local library.

Databases are usually created and maintained by someone other than the vendor who sells access. So each database tends to be updated on its own schedule. If timeliness is important to you, check on the frequency of updates on the databases you are interested in.

*If the word "library" makes
your eyelids droop, you will
probably find online research
well worth the cost.*

If you are looking for up-to-the-minute information in a changing field such as medicine or computer science, online databases are indispensable. If you are looking for information published years ago, however, you will find online coverage uneven. Some databases have entries going back decades, others have information covering only the past few years. Publishers who fall upon hard times—government agencies, for example—may lack funds to update databases adequately. Be sure to check on the years and sources covered before you decide which database to use.

The cost

Online database searching can get you the information you need fast—but only at a cost.

A look at the hourly rates charged by some vendors can be a shock, especially when you note that telecommunications and other charges may be additional. But it is important to remember that online research can be completed relatively quickly. The average search costs from \$5 to \$15, according to Dialog Information Services. Cost can be reduced by taking advantage of the lower rates for evening use offered by some vendors. There are even two systems, Knowledge Index and BRS After Dark, which cater exclusively to the after-hours, budget-conscious user.

To keep online costs in perspective, consider that the time you spend on research could be spent in

many other ways. You may recover online costs by being more productive because of the information you gain. And if you count up the hours you spend in libraries and bookstores now, and multiply them by a decent hourly wage, you may find that you have already been "spending" the equivalent of a hefty sum.

And if you dread the chore of tracking down information, if the word "library" makes your eyelids droop, you will probably find online research well worth the cost.

Which vendor?

When investigating online services, your most important decision is about which databases will meet your needs. Some databases are offered by only one vendor, while others are more widely available. Choose databases before worrying about which vendor to use.

To choose a database, first define the subject areas you will want to cover, and make a list of any print publications you think would be good sources. Then look through an online database reference guide, such as Cuadra Associates' *Directory of Online Databases*, or Omni's *Online Database Directory*. Note the sources from which the database records are drawn, and the subject matter covered. You will find several databases in popular areas such as the social sciences, but the coverage usually differs in some way. The size of a database is important, as are the years covered, the number of new records added per update, and the frequency of updates.

*Efficient search methods
can translate into cheaper
online sessions for you.*

If, on the other hand, you want information on a variety of topics, you will want a vendor offering a large number of databases. You may prefer to contact the larger vendors directly; they will supply you with a description of the databases they provide. Look over the database lists carefully to find those which will be most useful for your purposes.

Once you have chosen one or more appropriate databases, then you are ready to shop for a vendor. (To get you started, I have listed the large U.S. database suppliers accessible via Kaypros in the accompanying table.)

When shopping for a vendor, there is more to consider than prices and databases offered. For one thing, the vendors develop their own software for database access. The commands you use to find information—the “search language”—are very important. Some search languages are controlled or defined; that is, the legal words are determined in advance by the database vendor. To find terms necessary for a search you want to make, you will need to refer to a special thesaurus provided by the vendor.

Natural language search systems also exist. For these you will need to refer to a dictionary of English synonyms, so that you will be sure to retrieve all records which treat your subject.

Efficient search methods can translate into cheaper online sessions for you. Menu-driven systems, for example, are usually easy to learn. They are wonderful for the occasional user, the person who uses several different systems, or anyone who finds computer commands very forgettable. But once you become familiar with the search commands, you will want to dispense with the menus. The most economical will be those systems which allow you to modify the number of menus used during a search.

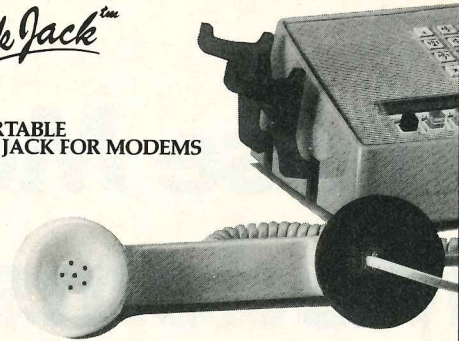
Efficient search capabilities can also make the difference between finding something interesting and finding nothing worthwhile. Use of the terms “and,” “or,” “but not”—called Boolean terms—play an important role in winnowing out relevant information. My search of the *Microcomputer Index* (on Dialog), for example, turned up 2640 articles on computers and 44 articles on women. Without using Boolean search terms, it would then be necessary to look through the 44 listings on women in order to find articles on women and computers. Instead, Dialog users can search for articles which discuss both women and computers. That search would lead to only 20 article summaries— saving time and money.

Other features, such as the ability to save a search strategy to use in several databases, can also be important considerations. Try thinking through hypothetical research tasks to see if you would benefit from such capabilities. For example: Are you likely to have questions which do not fall clearly into one subject area? Would you be searching for material on topics which receive little attention? If so, you would probably save money by using a strategy-saving capability. You could quickly repeat your search in several of the vendor's databases without spending precious connect time re-typing the

(continued on page 70)

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Those Marvelous Modems

Selecting your connection to the world.

by Tom Enright

It seems like telecommunications is the number one topic these days. However, in order for one computer to talk to another one, some form of a connection is needed between them. It is possible to wire them together through the serial ports. That works as long as there is only one or two other computers and they're close by. If you want to talk to a computer in another city, the other side of town, or even in the next building, that's not a practical solution. Luckily, the telephone company already has communications lines strung all over the countryside, and equipment for routing your call. All you have to do is teach your computer how to use the telephone.

You already have the computer and you've probably read the reviews on the latest communications software. The last link to acquire in the system is a modem. Telephone lines are designed to carry voice communications, not the digital signals your computer uses. A modem converts a computers' digital signals into audio tones that telephone lines can handle. Even if your computer came with a built-in modem, you might want to use an external one which is faster or has more features.

In case you haven't noticed, using a computer puts a real strain on the vocabulary. Now you've got another new word to learn: modem. What does it mean and who makes up all these words anyway? Like most elements of a computerist's vocabulary, the word has its roots in logic. The word *modem* derives from MODulator/DEModulator and is a description of what the device actually does. We'll define what modulation and demodulation is a little later; right now we're still trying to figure out what kind of a modem you need.

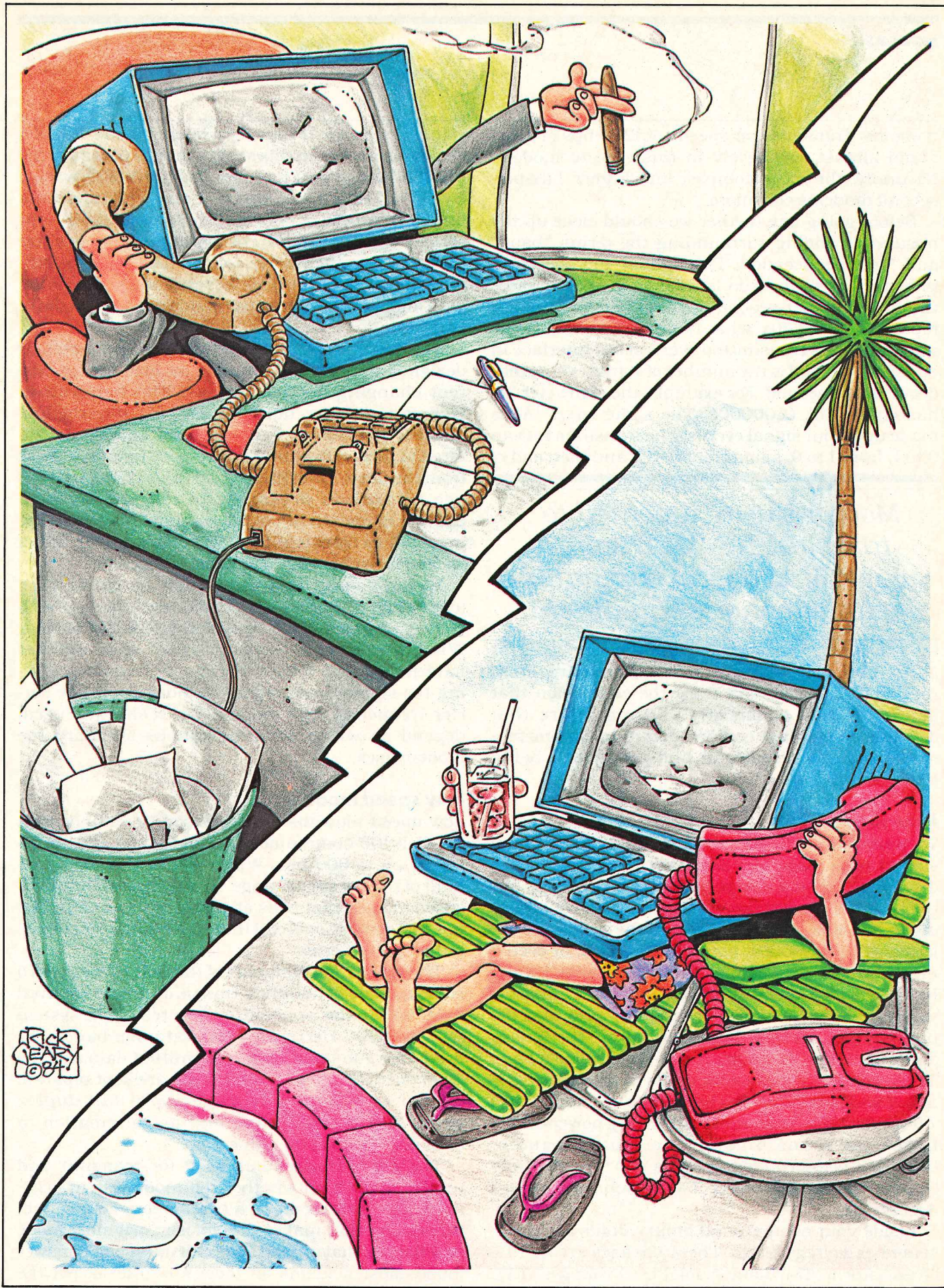
How do you go about choosing a modem? If you

read the advertisements, it looks like there are modems that will do just about everything but turn on the computer and insert a diskette for you. Of course the ones that do all that have a price tag that's a little hard to justify. There are plenty of cheaper modems on the market. It's just a question of which one.

Modems are usually classified by speed and how they connect to the phone line. The two basic types of modem are acoustically coupled and direct coupled. Speed classifications fall into low speed (up to 600 bps), medium speed (1200 to 9600 bps), and high speed (9600 bps and faster). While a variety of speeds are possible, 300 bps and 1200 bps are about the only ones you'll ever see. Direct coupled modems have a connector that accepts a standard telephone plug. Acoustic modems have two rubber cups in which you insert the handset.

Acoustic modems are the oldest type still in use. They usually don't offer much in the way of fancy features. For example, you have to dial the phone manually, just as if you were making a normal call. With all the new designer phones on the market today, you can't count on being able to use an acoustic modem with just any telephone. The major use for this type of modem is for people who have to be able to use their modems from hotels, motels, or pay phones. Unless you get one in trade or snag it at a swap meet, it's hard to even find one anymore. Also, almost all acoustic modems are low speed (300 bps) devices.

Direct connect modems are the ones you see in all the advertisements. These include ones that mount inside your computer, or plug into expansion slots on IBMs or Apples. All the nice features are found on direct connect modems. Auto-dial, auto-answer, and auto-redialing are some properties of direct connect



rick
geary
1984

modems. Transmission speeds of 1200 bps are also found almost exclusively in this type of modem. Naturally, the more complex and higher bits-per-second modems cost more.

Before going any further we should clear up the misunderstanding surrounding the terms "baud" and "bits-per-second". Throughout the computer industry the term baud is used to mean the same thing as bits-per-second. Wrong! Bits-per-second (bps) means exactly what the name says. It is the number of bits transmitted over a serial interface in one second. Baud is the number of signal events that occur in one second. For example, the character "A" has eight bits, 01000001. The same letter "A" is made up of four signal events. The transition is from 0 to 1, from 1 to 0, again from 0 to 1, and then end of

Modems were invented to translate RS-232C square waves into a form compatible with telephone equipment.

the character. This doesn't count the start, stop, or parity bits some software protocols require. From this illustration we can draw the conclusion that baud rate is a constantly varying figure that depends on message content, communications protocol, and the number of bits-per-second being transmitted.

How they work

To understand how a modem does its job, you should have some idea of what the modem has to deal with. When a computer stores something, like the letter "A" for instance, it stores a series of binary digits, not a decimal number. To the computer the letter "A" is 01000001, not "A", CHR\$(65), or even a nice, clean 41 hexadecimal. These binary digits can be interpreted together to represent a number, a series of on/off switches, or anything else that the programmer decides. Most of the time the binary digits are taken in groups of eight bits called a *byte*. There are only two possible digits in the binary system: 1 and 0. Each of the eight digits, numbered 0 to 7 from the right, represents increasing powers of 2—hence the name binary. The binary number 01000001 is interpreted as being 2 to the 0th power (1) plus 2 to the 6th power (64), which adds up to a decimal 65.

Inside your computer all binary digits are represented as voltage levels. These voltages are at TTL (Transistor to Transistor Logic) level voltages. TTL

voltage levels are 0 volts for a binary 0 and +5 volts for a binary 1. When this same signal is passed to the RS-232C serial port it is changed to RS-232 voltage levels, -12 volts for a binary 1 and +12 volts for a binary 0. A byte of information coming out of your serial port is direct current switching from positive twelve to negative twelve volts in time with the binary digits being sent. The net result is a square wave with almost instantaneous transitions from positive to negative.

The major problem is that the telephone system is designed to carry information as alternating current changing (modulated) at audio frequencies. Our square wave does not fit this description. Another problem is that telephone signals are filtered at most sub-stations to remove spurious noise from the lines. This filtering destroys the sharp voltage transitions necessary to tell one bit from another in our stream of information. Modems were invented to translate RS-232 square waves into a form compatible with telephone equipment.

Modems make this translation by modulating (changing) an audio carrier frequency in step with voltage changes in the square wave RS-232 output. When a modem receives a signal from another modem, it has to remove the carrier frequency leaving the square wave signal (demodulate). The carrier frequency, and modulation technique used, depend on which communications standard the modem uses.

Low speed models

Low speed modems are supposed to comply with the Bell 103 communications standard and transmit at up to 600 bps. While 600 bps is the upper limit of the low speed range, it's unusual to find a low speed modem that runs at anything other than 300 bps. Advertisements call them 300 "baud" modems, but we know better.

The most important part of the Bell 103 standard is the method of handling transmitted and received data. Within the bandwidth of the telephone system (300 to 3300 Hertz) two separate sub-bands are used. One sub-band is for transmitted data and the other one is for received data. They are kept separate so that each modem can operate in *full duplex* mode. Full duplex means moving information in both directions at the same time.

The exact frequencies used for transmit and receive depend on whether the modem is in originate or answer mode. In a two modem connection, the modem that makes the call is in originate mode and the one that answers the call must be in answer mode. Most modems on today's market select the

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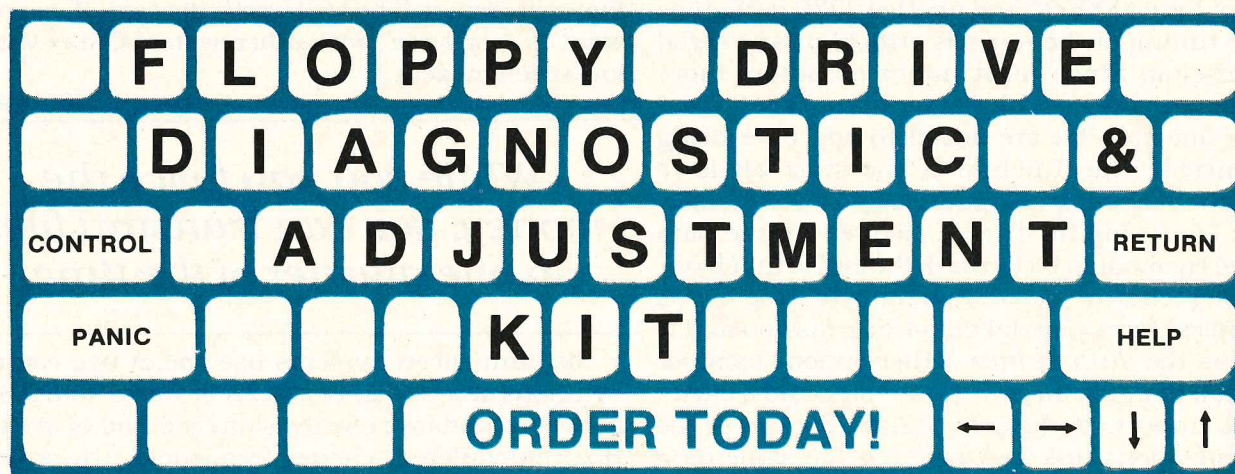
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proper mode automatically, so there's no need to manually select which mode you operate in.

The originating modem transmits a binary 1, or mark, as a 1270 Hertz tone and a binary 0, space, as a 1070 Hertz tone. The same modem expects to receive a binary 1 as a 2225 Hertz tone and a binary 0 as a 2025 Hertz tone. The receiving modem looks at 1270 Hertz for incoming binary 1's and transmits them at 2225 Hertz. The important point to notice is that the originating modem transmits at the same

dard are:

- ▶ The ability to operate in originate or answer mode. Switching between modes under software control of pin 11 of the RS-232 interface.
- ▶ The ability to make the phone line appear to be busy under software control.
- ▶ To be able to disconnect from the phone line if the carrier is lost.
- ▶ The ability to generate the specific tones or pulses required by the public-switched telephone network to dial and access a remote station.
- ▶ Ability to generate specific signal output levels and meet certain signal-to-noise ratios and operational timing characteristics.

Both ends of the communications link should expect the same data format.

frequencies that the answering modem expects to receive on. The same relationship holds true for the originating modem's receive and the answering modem's transmission frequencies.

The proper name for this kind of modulation is Frequency Shift Keying. The result is similar to frequency modulation, but results in a much sharper transition between frequencies than frequency modulation can deliver. It is this sharp delineation between space and mark frequencies that allows digital data to be transmitted over voice lines.

When an originating modem is ready to transmit our letter "A" (01000001), it sends four separate tones. The sequence of tones is: a 1070 Hertz tone (0), a 1270 Hertz tone (1), 1070 Hertz tone for a longer period of time (00000), and another 1270 hertz tone (1). The timing of the tones is critical in any serial transmission. Since most microcomputers move serial data without synchronization, a start bit and at least one stop bit are added to any byte being transmitted. The function of the start bit is to inform the receiving computer that a byte of information is coming in. This is followed by the data byte and then a stop bit to mark the end of that byte.

The sequence of "start bit, data byte, stop bit" is the simplest form of serial data transmission and is known as the *data format*. Other options exist for more than one stop bit, seven data bits, and a parity bit. The important thing is that both ends of the communications link be expecting the same data format. Otherwise the whole thing is an exercise in frustration.

Many modems which claim compliance with the Bell 103 standard follow the standard up to this point, but fall down on the rest of the requirements. Other parts of the Bell 103 communications stan-

Medium speed devices

Medium speed modems (1200 to 9600 bps) are considerably more expensive devices to buy than low speed ones. Personal computer users are unlikely to even see advertisements for anything faster than 1200 bps. Partially this is because commercial databases, or BBS systems, don't support anything faster than 1200 bps. The other reason is that the cost rises exponentially with transmission speed.

While you will pay about twice the money for a 1200 bps modem, you get a device that can transmit files in little more than one quarter of the time. If you will be moving large files, or lots of smaller ones, the faster modem will be well worth the cost. If you only want to "converse" with other systems, stay with a low speed modem.

While you pay twice the money, you can transmit files in one-quarter of the time.

Medium speed modems use one of two communications standards, Bell 212A or Racal-Vadic. Both of these standards use the same method of modulation, but different carrier frequencies. In order to operate at the higher speeds, a totally different form of modulation is used. To impose binary data on an audio carrier at these speeds, the send and receive frequencies don't change to indicate 1's or 0's. Instead, the phase of the signal is altered to indicate a two-bit pattern. The amount and direction of the

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phase-shift encodes which of the four possible two-bit patterns (00, 01, 10, or 11) is being sent. This is Phase Shift Keying, and all the "shifts" are in relation to the previous signal element.

Here we go again, another new word. Any oscillating signal, such as an audio frequency, goes through a repetitive pattern. This pattern is to start at zero volts, build up to a maximum positive voltage and return to zero, then to a maximum negative level and back to zero. This is one complete cycle; the signal has traveled in a full circle of 360 degrees. *Phase angle* is the measure, in degrees, of how far along this circle the signal has progressed. Shifting the phase of a signal can be done faster than altering the frequency. By having each phase-shift carry two bits of data, binary data can be imposed on the audio carrier at a much faster rate than by altering the frequency.

Medium speed modems use two carrier frequencies, one for transmit and one for receive, instead of the four frequencies used by low speed modems. Like low speed ones, medium speed modems use the originating modem's transmission frequency as the answering modem's receiving frequency. Also the receiving frequency of the originating modem is the transmitting frequency of the answering modem.

Both ends of a communications link have to be using the same standard. Many of the higher quality 1200 bps modems can switch between Racal-Vadic and Bell 212A, either under software control or automatically, by recognizing the carrier frequency of the other modem. Most of the higher quality medium speed modems can also operate at 300 bps under the Bell 103 standard.

High speed sets

High speed modems are specialized devices that no hobbyist, or small business user, is likely to afford. These modems transmit in excess of 9600 bps and each one costs more than matched set of Kaypro 10's. It takes some pretty specialized needs to justify buying a pair of these things. Another problem with communicating at this high of a speed is that you'll have to lease time on dedicated communications lines to get reliable data transfer. These factors put high speed modems out of reach for most microcomputer users.

Bells and whistles

Over the last several years, development and growth in the microcomputer industry has spurred similar growth in the products offered by modem manufacturers. Modems have grown from being passive devices, which merely converted digital signals,

into active, intelligent devices.

Development of the "smartmodem" (generic term) has given us modems that have their own command sets, automatic recognition of protocols, phone number libraries stored in the modem itself, and multi-speed devices. While some of the features seem to be overkill, others make today's modem a much more flexible device than one you could buy at any price a few years ago.

All these new features, however, give the prospective purchaser a few more decisions to make. Which features do you really want, and can afford? Some of the capabilities advertised for the new modems duplicate features already available in software. Features like phone number libraries, linking of

The speaker can give you the answer to all kinds of problems.

phone numbers, and automatic redial are offered by a number of communications software packages. You'll have to determine whether the software accomplishes these feats entirely on its own, or uses the capability of the modem to do it.

If you're going to store your phone number library in the modem rather than in the software, it means the modem has to have some amount of RAM. This RAM must have power to it at all times (or have battery backup) or the phone numbers will be lost. Remember, RAM is volatile. This means that anything in RAM is lost when the power is turned off. Do you want to pay extra for that feature? Don't forget that you'll need a communications software package no matter how intelligent the modem is. Almost all top-of-the-line communications software already provide this feature. Unless you're a hacker who enjoys writing his own communications package, this is a feature of doubtful value.

Modems with their own sets of commands have been around long enough that communications software will use the commands to their full advantage. There is even some amount of standardization in this area. Looking at some of the ads should reveal modems advertising "Hayes" compatibility. The Hayes command set is being used by other manufacturers in their own modems. This just makes it easier for software companies to produce a communications package and maybe price it a little lower.

Purchasers also have to decide if they want the

modem to have an internal speaker and/or a row of lights across the front panel. The internal speaker lets you monitor the progress of the call until your modem hears the carrier tone on the other system. Once the carrier tone is recognized, the speaker is switched out of the circuit. You don't want to be subjected to the sound of two modems screaming at each other, it's not a pleasant sound. What the speaker does accomplish is to let you know if the number was mis-dialed, has been disconnected, or changed to another number. You can hear if the operator comes on the line, or if you dialed the wrong number and the phone is answered by a person instead of another computer. You won't be able to speak to the other person, but it's nice to monitor the progress of the call. The presence of the speaker can give you the answer to all kinds of problems when you can't get the other system to answer your call.

The row of indicator lights on the front of a modem keeps you informed of the status of various lines in the modem. This includes everything from whether you forgot to turn the modem on, to if you are sending, receiving, or have lost the carrier from the other system. The little lights blink on and off during your session, keeping you up to date on what is happening. Some people hate the lights, others hate not having them. The decision is up to you. They do make it easier to figure out the problem when something goes wrong during a session.

Conclusion

There you have it. Deciding what you want out of telecommunications isn't the simplest task in the world. But once you know what goes on inside a modem, why some cost so much more than other ones, and what the advertising hype is saying (or not saying), you have a starting point. From there you can build a list of features and capabilities you want in a modem. You will also be in a better position to understand what a salesman is saying (or know when the salesman doesn't know what he is talking about). Communicating with computers is a complex subject. You could very well end up knowing more about it than the salesman does. That can save you from making some expensive mistakes. The salesman is probably not deliberately misleading you, he may just be making an honest mistake in recommending a certain product for your situation. However, there is only one person who can truly judge your needs—you. □

A COMMUNICATIONS GLOSSARY
can be found on page 71.

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No More Trips to the Bank

Keeping track of your money by home computer.

by Kathryn M. Drennan

Over the past few years, a handful of banks around the country have quietly been rolling out a new service that just might be of interest to computer owners. It's for everyone tired of the question posed by skeptical friends and spouses: "If you don't crunch numbers, process words, or like to zap space invaders, what practical use is a home computer?" One answer is that you can use your computer to do your banking from home. And home can be practically anywhere in the world.

For the banks, it is a logical extension of the Automated Teller Machines (ATMs). They hope that computer home banking, in conjunction with ATMs, will further reduce lines, calls, and paperwork, while at the same time attracting more customers.

What they hope will attract you, the customer, is the convenience of doing many banking chores without writing checks, standing in long teller lines, or being put on hold. Instead, you have the option of doing them on the nearest computer and modem handy. This can be your personal computer at home, the computer at work which just happens to be free during lunch, or your uncle's computer, three states away from home.

Electronic home banking is currently available from a few small, local banks and from two titans of the industry, Bank of America and Chemical Bank. All have certain features in common. First, the banks all require that you open a checking account, as this is where the money to be paid out is held. Obviously, you will never have to actually write any checks on this account. You only want it for the computer system, but checks will still be issued to you.

Once your account is opened, the bank issues you the appropriate codes to use with the computer menus. These menus take you step by step through

the process. (Menus can be circumvented on some systems for the more experienced user.) On all systems you can then pay bills to any authorized "payee" and you can transfer money between your own accounts—say, from savings to checking.

You can also check the up-to-the minute status of checking and savings accounts, loans, and certificate of deposits, among other financial dealings, day or night, 7 days a week (although some systems shut down for a few hours late at night). Plus, you can communicate with the bank via electronic mail on a wide range of problems or financial issues.

The systems also share many of the same limitations. You can't pay tax bills, for instance. The IRS has no access or linkage to any of the systems. Also, money cannot be transferred from bank to bank at present. Furthermore, money can't be paid to any merchant who hasn't signed up with the system, nor can money be transferred to accounts of individuals.

Those limitations, however, are seen as part of the security of the system, which also includes certain access codes known only to the customer. According to Sergio Sedita of Chemical Bank, "It's a closed circuit situation, so that if somebody got into the system, the most they could do is pay your bills, which unfortunately we have to do sooner or later anyway."

Neither Sedita nor any of the bank representatives think it's very likely that the systems can be broken into, citing the unblemished record of the ATM systems' computer security. Delores Lutynski of Bank of America points to the Versatel ATM system as an example. "It has been in use since 1979, and there has never been any break into their system causing any customer problems."

Service from the small fry

For all they have in common, the systems do have differences. These are in what they offer and in how they operate. Home banking can be offered directly by a bank, using the packet switching networks like Tymnet and Telenet. It can also be a service offered jointly by the bank and a subscription computer information network.

The first and, at present, only national computer information network making home banking service available to the public is CompuServe. However, General Videotex's DELPHI is about to implement a pilot program, and there may be others with similar plans.

Today, a subscriber of CompuServe, using virtually any type of computer and modem, can sign on with any of three banks: Huntington National Bank of Columbus, Ohio; Shawmut Bank of Boston, Massachusetts; and United American Bank of Memphis, Tennessee.

Information on how to sign up, plus the computer menus needed for using their service once a member, can be accessed by just one command on CompuServe (GO HOM 45). All three banks offer similar services. These are not fully computerized systems, but are basically extensions of their "pay by phone" services. You don't electronically transfer funds from your account to the account of the company whose bill you wish to pay. What you actually do is make a request by computer that the bank withdraw the money from your checking account and send a check to the specified company by a certain date.

And you can't pay just any business, as mentioned earlier. At least five other bank customers must request that a business be added to the list of payees. Then that business must in turn agree to accept one check covering several different people.

If you live out-of-state from the bank you sign on with, you probably won't be able to pay your local gas and electric company, or the florist down the

street, but might be able to pay the Sears bill. The list of businesses you can pay would certainly be a natural consideration in choosing a home banking service. These businesses must in turn agree to "pay by phone" systems.

There are other features to be considered, though. For instance, all three CompuServe banks allow you to buy certificate of deposits via the computer. And, according to Sheree Hultberg, representative for Huntington's BancShare program, the feature of most importance to customers, next to bill paying, is

the ability to keep an eye on their deposits no matter where they are in the world.

"We have customers all over the United States, and also in Saudi Arabia and Australia," Hultberg said. She explained that the overseas customers "work for American companies, and their payrolls are done by American banks, so they have their paychecks automatically deposited to accounts here. They can then know what's going on with their accounts via their computer through CompuServe [which] has a satellite for overseas."

The size of CompuServe's program, for all the services it offers, is relatively small. In fact, while United Amer-

ican Bank and Huntington National both consider themselves full-fledged, if still growing, services, the Shawmut Bank still lists itself as a "pilot program." None of the three banks have more than a couple of hundred home banking accounts at this time.

Much larger, more extensively computerized home banking programs are those offered directly by The Chemical Bank of New York, and The Bank of America in California.

What the big guys can do

The Chemical Bank's home banking system is called Pronto. According to bank representative Ser-



gio Sedita, Pronto isn't currently compatible with CP/M-based systems. However, when asked if it ever will be, he replied: "Yes, I think it will, but probably not this year. We do get requests for that."

Pronto has at least 8,000 customers in the New York state area, and pilot programs have been franchised to eight other banks around the country, including Crocker Bank in California, Union Trust in Connecticut, and Worthington Bank in Little Rock, Arkansas.

Bank of America's home banking system is called, quite naturally, HomeBanking. It's compatible with virtually all computers and modems, including, of course, the Kaypro. It currently has over 14,000 customers throughout California. Although Bank of America officials discount any wish on their part to attract customers outside of California, information about HomeBanking is available in CompuServe's Electronic Mail feature (access code GO BA). A call to their toll-free number (800-652-1111) reveals that out-of-state customers are welcome.

You can open the required checking account and be added to the HomeBanking system by application through the mail. You will then be provided with a Versatel card for withdrawing money from your account in any state using ATM machines which are part of the Plus System. Of course, the out-of-state customer will still have the same problems the out-of-state CompuServe customers have, of not being able to pay local utilities and businesses. On the other hand, it's possible they'll have the advantage of being able to pay a greater number national companies.

Unlike their smaller counterparts, Pronto and HomeBanking both utilize electronic transfer of funds in their bill paying systems. Once you are a part of the Pronto system in New York, for instance, you can instantly pay bills to any of 1,000 authorized payees. Simply enter the appropriate numbers for each payee on your computer. In addition, they have a feature called Put Payment that allows the customer to pay up to 30 payees in one shot.

In California, the HomeBanking customer can pay any of over 600 authorized payees. Like the Pronto system, that list of payees includes local newspapers, florists, utility companies, cable TV companies, hospitals, national credit cards, large department stores, and insurance companies. You can even make loan payments to other financial institutions.

In addition to the features discussed so far, all of the banks have plans for expansion. The CompuServe banks hope eventually to go to electronic transactions for their bill paying. Bank of America,

Chemical Bank and the CompuServe banks are also experimenting with direct electronic payroll deposit. Eventually you may have the option of having your salary transferred electronically from the company's account to your account, or picking up a check.

One feature that Pronto will be the first to offer (in 1984) is a discount brokerage service. It will allow customers to buy and sell stock plus keep their portfolio records on the Pronto system. This may eventually make its way into the other systems, depending on customer response.

Customer costs

Nothing in this life, especially convenience, is free. What does the banking industry want to charge you for the convenience of this service? The fees differ. The Huntington Bank BancShare system, for instance, costs \$4 a month plus a service charge of \$2 for the checking account and additional per check charges. Then, in addition, the customer must pay the usual \$6 per hour CompuServe line charge.

Bank of America's HomeBanking, for another example, costs \$8 a month plus a monthly checking account charge that varies among different types of checking accounts. There are, however, no line charges or long distance phone charges to pay, even for the out-of-state customer. Toll free "800" numbers and Telenet/Tymnet access numbers are provided.

These rates are typical of all the systems, and if they seem a bargain to some, they seem an unnecessary expenditure to others. Bank officials admit that the additional cost, even more than questions of security, keeps some people away. Other people, particularly older customers, enjoy coming to the bank for the human contact it provides.

And, of course, many people still aren't comfortable with computers. All the banking officials agreed that home banking is not aimed at convincing people to go out and buy computers. They don't object, however, to computer retailers using home banking as a selling point. Right now, the banks are merely trying to reach the computer owner looking for a practical use for his or her high-tech tool.

The future

Regardless of any problems with computer phobia or cost, all the banks believe computer banking is the wave of the future. "The whole industry—and even beyond our industry to retailers in general—are trying to reduce the paper flow," said Maury Healy, Bank of America vice-president. "We're seeing a lot of movement into electronic transac-

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Micro Cornucopia . . .

KAYPRO USERS DISKS for KayPro II, 4 and 10

\$12⁰⁰ each

The following are full disks of software assembled for the KayPro. Each program has a .DOC (documentation) file and many come with source.

KayPro Disk K1 Modem software

This disk is absolutely priceless if you will be using a modem to communicate with bulletin boards, other micros or mainframes.

MODEMPAT.COM: Menu selection of baud rate, bits/character, stop bits, & parity for serial port.

MODEM7.COM: Very popular MODEM 7 configured for KayPro.

MODEM7+.COM: This is MODEM7 & MODEMPAT combined - you can communicate with anything!

KMDM795.COM: Super-version of MODEM7 set up for KayPro.

TERM.MAC: Commented disassembly of the TERM program you get with your KayPro so you can configure it for any interface.

SQ/USQ.COM: Programs to squeeze and unsqueeze files for faster transfer.

KayPro Disk K2 Utilities

Really oodles of spiffy little (and big) programs to help you get full use of your KayPro.

ZESOURCE.COM: A true Zilog format disassembler for 8080 and Z80 object(.COM) files. Now you can turn .COM files into .MAC files.

UNERA.COM: Simply enter "UNERA" followed by the name of the file you just erased and presto, the erased file is back! A lifesaver.

FINDBD54.COM: Checks an entire disk, reports bad sectors, and then creates a special file containing those sectors. You save a bundle on disks.

CAT2: This a group of programs which create and maintain a single directory of all the programs you have on all your disks. Even keeps track of which programs are backed up and which aren't.

UNSPPOOL.COM: Use your KayPro II and print files at the same time. Doesn't slow down system response!

DUMPX, DU-77, COMPARE, SUPERSUB, FORMFEED, DIR-DUMP, . . . and all have documentation on disk.

KayPro Disk K3 Games

PACMAN.COM: Despite the KayPro's lack of graphics, this one looks and plays amazingly like the real thing! Keep it hidden.

ZCHESS.COM: Chess with a 1-6 level look ahead.

OTHELLO.COM: You learn it in minutes, master it in years.

BIO.COM: Generates custom graphic biorhythm.

MM.COM: Master Mind.

WUMPUS.COM: Classic wumpus hunting.

KayPro Disk K4 Adventure

This disk contains one 191K game, Adventure.

ADV.COM: This is the latest, greatest, most cursed adventure ever devised by half-mortals. This is the 550-point version so the cave is greatly expanded and the creatures are much smarter.

KayPro Disk K5 MX-80 Graphics

A complete Epson MX-80 printer graphics package including example files. (Same as K19.)

KayPro Disk K6 Word Processing Utilities

A powerful line oriented text editor that looks like Unix's EX, plus a scad of text utilities written in C which handles pretty printing, shortening a file, multiple space output, add tabs, remove trailing whitespace, and more. Also includes **ROFF.COM** a very neat text formatter.

KayPro Disk K7 Small C Version 2 Compiler

This is a greatly extended version of Ron Cain's Small C compiler. Version 2 has more expressions and larger library, true subset of Unix C. Disk contains compiler, documentation, and library—everything you need.

KayPro Disk K8 Small C Version 2 Source

This disk contains the source (written in Small C) of the Small C version 2 compiler. Get K8 if you want to try extending the compiler. (You must have K7.)



KayPro Disk K9 ZCPR

ZCPR: The big news on this disk is the self-installing version ZCPR available only from Micro C. Once you have ZCPR in your CP/M, you'll never go back to straight CP/M! For instance, ZCPR searches drive A for any program not found on drive B, so, even an empty disk in drive B appears to contain every program on A. It's great for text editors, compilers, etc. Works on KayPro II and 4.

EX14: a super replacement for SUBMIT.
Plus many more: **TREK, FIX, FIND, SNOOPY, ALIENS** and **DIF2**.

KayPro Disk K10 Assemblers

We've received a lot of requests for a Z80 assembler. So Dana put in some long hours getting the Crowe Z80 assembler to run on the KayPro (and every other Z80 machine).

CROWECPM: This is a first class Z80 assembler. We use this assembler daily (and we included its source). Takes standard Zilog mnemonics.

LASM: This is a more powerful version of the ASM assembler you received with the KayPro. This will link multiple programs together at assembly time.

PRINTPRN: This program makes it easy to print the listing files generated by the Crowe assembler.

KayPro Disk K11 Library & Checkbook Programs

CHECKS: This has been a very popular group of programs. Categorizes checks so you can keep track which are tax deductible and which get charged to which projects. Includes source and excellent example check files. Very powerful.

LIBR: This is a complete set of library routines which let you group files into a single file called a library. Then CP/M sees them as a single program, but with the library routines, you can list them out separately, run them separately, or divide them up again. Almost like a unix environment.

DISPLAY, VLIST, PGLST: Additional screen and print utilities.

KayPro Disk K12 FORTH

Yep, this is FORTH, one of the most unique, most extendable languages known, and for a paltry \$12.00. This disk contains not just one FORTH, but two, along with an editor, decompiler and 8080 assembler! The editor even uses the cursor control keys.

FORTH: This is true fig-FORTH.

KFORTH: A very nicely extended version of fig-FORTH.

PLUS, all the rest of the FORTH goodies. (Forth Heaven!)

KayPro Disk K13 Source of fig-FORTH

All this disk contains is the 40K ASM source of fig-FORTH with the hooks in place for the KayPro. This disk is for FORTH hackers who just can't leave anything alone. (Look, you probably have faults, too.) The source of FORTH is here because there isn't room on K12. This is the only disk that isn't stuffed.

KayPro Disk K14 Smartmodem Programs

This is the disk for you if you have a Smartmodem compatible modem.

SMODEMK: Smartmodem program set up for the KayPro (and source).

XMODEM: Lets you remotely control your KayPro from a distant computer.

KAYTERM: This is the information you need to run or write modem software on the KayPro.

KayPro Disk K15 Hard Disk Utilities

This disk is for the KayPro 10 or any KayPro with a Winchester drive. With these routines you can not only backup files (with printed directories of the backup disks), you can also break up large files. The backed-up files are not encoded (as they are with KayPro's backup routine) so you can access them on any system.

KayPro Disk K16 Pascal Compiler

This is a real Pascal compiler. It supports only a subset of the language (no records, pointers, booleans, reals or complex) but it generates a real .COM file. Everything is on this disk: the compiler, its source, example programs and documentation.

KayPro Disk K17 Z80 Tools

This is for those of you who are into Z80 assembly language.

XLATE.COM: A very good 8080 to Z80 translation routine.

DASM.COM: An easier to use version of ZZ-SOURCE (the Z80 disassembler). This full disk includes source and documentation for both routines.

KayPro Disk K18 System Diagnostics

Just as we finished editing the routines on this disk, we received a copy of KayPro's diagnostic disk. The memory test and drive exercise, routines on this disk are more powerful than KayPro's versions. (Plus, it's only \$12!) Setup for KayPro II and 4.

KayPro Disk K19 Prowriter Graphics

This is a complete Prowriter printer graphics package written by the same Micro C subscriber who wrote the MX-80 graphics package. Plot points, lines, circles, boxes, and more. Examples, documentation.

Kaypro Disk K20 Color Graphics Routines

PACMAN.COM: This is a deluxe version of pacman for MicroSphere's color graphics board.

PIE.COM: Pie Chart generator.

SKETCH.COM An easy way to sketch color graphic designs. You can even use a joystick with this software (see Micro C issue #15 for joystick interface).

Kaypro Disk K21

SBASIC Routines & Screen Dump

SBASIC: Finally a disk of SBASIC software. There are some good examples of structured programming on this disk (including one program written both ways so you can see the difference).

SCREEN DUMP: This is a screen dump for all Kaypros new and old. You can buy a similar package elsewhere for \$60.

Kaypro Disk K22 ZCPR (Again)

This disk is filled with ZPCR files. You get ZPCR for the KayPro II, Kaypro 4, and the Kaypro 10. This version is fixed so that you can pass control characters (such as cntl-P) to the system and you can choose to have it recognize the semi-colon for drive select (as well as the colon). So you can enter "B;" or "B:" to select drive B. Super neat!

ZPCR, for those of you who don't know, makes CP/M a lot friendlier. It searches drive A for any .COM file it doesn't find on the current drive, the TYPE command scrolls text 24 lines at a time, and a new LIST command outputs a file to the printer.

Kaypro Disk K23

Fast Terminal Software & New BYE

This disk contains interrupt-driven terminal programs for all Kaypros. If you are tired of being limited to 1200 baud when you use your Kaypro as a terminal then take heart. With these programs, your Kaypro can outrun the big boys by receiving and sending up to 19,200 baud without dropping a single character!

Also, a new version of BYE that not only lets you run your Kaypro remotely, but also figures out whether you have a 63K or 64K system so it will run with any Kaypro using an external modem.

Something special for your Kaypro!

Kaypro Disk K24 MBASIC Games & Keyboard Translator

We sifted through many, many games before coming up with these gems. All will work on any Kaypro and all come in MBASIC source.

USOPEN shows you the fairway on the screen. You select the club and direction for each stroke. After you reach the green the display shifts to show details of the green and flag. For one to four players.

DUCK is an offshoot of aliens (pardon the pun). Hunter tries to shoot down ducks while ducks try to bomb the hunter. (Much fairer than real life.)

CASTLE is an adventure in which you select your attributes (strength, dexterity, and intelligence) and you get to purchase arms and protection. Great documentation and very interesting game.

KSTROKES is a keyboard translator similar to Smartkey. Bill Forbes did an excellent job creating this program. You can create and save translation files on disk. The program even includes a table which generates WordStar commands from the Kaypro's keypad! You can define 8 keystrokes at up to 63 characters each.

Kaypro Disk K25 Z80 Macro Assembler

This is a real Z80 macro assembler! Syntax closely follows RMAC and MAC. Also includes pseudo-ops to support conditional assembly etc. No .phase or relocatable code.

Kaypro Disk K26 EPROM Programmer & Character Editor

This is the software for the Kaypro EPROM programmer written up in Issue #18. This software and the programmer turn your Kaypro into a very powerful development system. You can read ROMs, write ROMs, save data on disk and restore data from disk. Plus, you get a character editor which will help you design custom character ROMs for the non-graphic Kaypros!

Kaypro Disk K27 Typing Tutor

NEW!

A complete typing tutor for beginners and experts. Written in Australia, it comes complete with source. This was customized for Kaypro II, 4 and 10 by Barry Cole of WLAKUG.

The documentation says you can learn to touch type in 8 hours (probably a little longer for mortals).

NEW!

New Schematic Packages

Finally, a complete schematic for your portable Kaypro, logically laid out on a single 24" by 36" sheet, plus a very complete illustrated Theory of Operation that's keyed to the schematic. You'll get detail information on your processor board that's available nowhere else.

For instance, those of you with the 10 and new 84 systems get a thorough rundown on your video section complete with sample video control programs in assembly language and Pascal. Of course, all packages contain serial and parallel port details and programming examples as well as complete coverage of the processor, clock, I/O, and disk controller (information that is not even available in Kaypro's own Dealer Service Manual!).

Kaypro Schematic Packages

NEW! Kaypro II & 4 (pre-84) \$20.00
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Micro Cornucopia Magazine

Want to speed up your KayPro? Want to find out what's going on under the KayPro's hood? Want to know who's selling good products and providing good support (and who isn't)? Want to find really inexpensive software? Then you're in the right place.

Micro Cornucopia (Micro C) is the friendly journal for those of you who want to stay abreast of the latest information on KayPros and other single board systems, or want to upgrade your KayPro yourself without paying an arm and a leg. We have regular columns on Pascal, C, S-BASIC, FORTH as well as the popular "On Your Own" feature for those of you who plan to make the KayPro your ticket to independence.

You can get all this and more when you order the special \$2.00 sample copy. In fact, you'll even find out how to turn a KayPro II into a KayPro 4 (or KayPro 8).

Edited and published by David Thompson

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Pro-8 ROM Package

The PRO-8 package from Micro Cornucopia upgrades your KayPro 4 to a KayPro 8 with 784K bytes (96 directory entries) per Tandon 100-4 (or equivalent) quad-density drive. Plus, you can select your own cursor character (and change it at will).

The package includes the new PRO-8 monitor ROM, a disk of formatters and copiers, and printed instructions. (We even tell you how to turn your KayPro II into a KayPro 4.) All you add is one or two double-sided double-density (390K), or double-sided quad-density (784K) drives. You get over 1.5 Megabytes on a two-drive quad-density system!

This new system can read, write, and format KayPro II and KayPro 4 disks as well as KayPro 8 disks. And it recognizes each disk type automatically!

All this for only \$49⁹⁵!

Watch Micro Cornucopia for more KayPro compatibles.

Call or write for information on the other KayPro II and 4 ROMs from Micro Cornucopia.

Plus-4 Decoder Board

With this nifty little plug-in board, your Pro-8 ROM can access up to four 5¼" drives. You just plug a four-drive 34-pin cable into this board and you can add up to two additional drives.

Now you can run any mix of 191K, 390K, and 784K drives as drives A, B, C, and D. You can run your original drives as A and B then add 380K or 784K drives outboard as C and D. You can even run four half-wides inside your original Kaypro!

The Plus-4 Decoder Board for only \$39⁹⁵

Watch for 4-84 and 10-84 compatible ROMs coming soon.

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Love That IOBYTE

Or what comes in, must go out—somewhere.

by David Weinberger

Computers do such a good job of seeming intelligent that it is hard to keep in mind what they actually do. For example, it's fairly common to read that when we type in words what the computer really receives is a series of numbers, for computers understand numbers, not letters. Even that gives the computer too much credit; computers don't understand numbers any better than they understand letters. This can be illustrated by considering IOBYTE.

If you've ever run the CONFIG program included with your Kaypro, you've come across the phrase IOBYTE. In computerese, "IO" means Input/Output; "byte" refers to an eight-bit unit of data. You may know that IOBYTE has something to do with which port your data is sent to. (On the other hand, you may not really be sure what a 'port' is.) IOBYTE is one of the cleverest functions of CP/M, and by understanding what it does one also finds out a bit about how CP/M works.

Some groundworks

Computers process information. This means that some sort of information has to get into it, and some sort of information has to come out of it. The information coming out has to have a destination. Most often, we want it transmitted to the screen; the screen is a cathode ray tube, called the "CRT."

Other times we want to print the data, or transmit it to another computer via modem. This we can do through the connectors on the back panel; these are the "ports." One port, the parallel port, transmits a full byte at once. The others transmit in sequential fashion, one bit at a time. These are the serial ports. The parallel port is especially well-suited for driving a dot-matrix printer. The serial port is at its best driving a daisy-wheel printer or a modem. CP/M refers to the parallel port as the "LPT" and the serial port as "TTY." The term "LPT" is a holdover from

the past when just about the only printers that had parallel interfaces were line-printers. "TTY" dates back to the time when microcomputers all used old-fashioned teletypes as terminals; all teletypes had serial interfaces.

Confused? Maybe a summary would help:

SCREEN	PARALLEL PORT	SERIAL PORT
"CON"	"LPT"	"TTY"
	Parallel data	Serial data
	Parallel printer	Serial printer
		Modem

Ports are actually physical entities on the back of your computer. They function as sockets, places where cables to peripherals (printer, modem, etc.) are plugged in. There is also such a thing as a "logical" device. This term refers to a generic device, to be defined later by the user. The one that will concern us most here is the list device (LST). This device will receive the listing of the program you're writing when you decide to print out a version. (More likely you will be sending word-processing files, not program listings, out to your printer, but it's still called "LST.") You decide whether the LST device will be the console, the parallel port or the serial port.

But how does the computer know where to send the data? That's where IOBYTE comes in.

A question of addresses

When you turn on your computer and insert a disk, the computer automatically reads the information on the first (i.e., outermost) circle on your diskette. These are often called "system tracks." This information is the CP/M operating system. It organizes the computer's memory in such a way that the computer 'knows' how to operate. Pointers to where

most of this information is stored are in the "first page" of your computer's memory. The first page is everything up to memory address #256. (Why this number? Because if you write it in base 16 you get a nice round number: 100. But now you want to know what base 16 is. Can't we pretend I just never brought it up?) When you load a program from a disk (say, a word-processing program or a game), very likely the program places itself in memory starting at location 100H, leaving CP/M intact.

Many interesting things go on in that first page. And at memory address 3 (which is really the fourth, since memory is numbered beginning with zero) is the IOBYTE. CP/M looks at that address to see where it should send its data.

The remarkable thing about the IOBYTE is that it packs so much information into a single memory cell. How does it do it?

To begin, one must understand exactly what gets stored in a memory address. In one sense, a number from 0 to 255 is stored in a memory address. Why this range of numbers? Because each memory address stores a "byte," and a byte consists of eight "bits." (Don't worry, we're getting closer to the explanation!) A bit is an on or an off, a plus or a minus, a one or a zero, or however you care to think of it. Every byte has eight places which are either on or off.

Computers don't know from numbers. That's why I said that *in one sense* a number is stored in a memory address. Actually all that happens is that a pattern of ons and offs is stored. *Humans* find it convenient, however, to translate those patterns into numbers. The first step is to agree to symbolize an on switch with a 1 and an off switch with a zero. Fortunately, we have a way to translate patterns of ones and zeros into numbers: binary math.

Normally, we write numbers in base 10. The rightmost number tells us how many units there are from 0-9. The next number tells how many units of 10 there are. The next number left is how many units of 100. The one after that tells us how many units of 1000 there are. And so on. It is just an accident of fingers that we think in terms of ten, however. We might just as well do it in units of 5 or 16 or 2.

In fact, there is an advantage of doing it in terms of units of two. The rightmost digit will tell us how many units there are from 0-1. The next will tell us how many units of two there are. Then how many units of 2 x 2, and so on. The point is that when you write a number in units of two (also called binary or base 2) you only use ones and zeros. (After all, in base 10, we don't have a one-term symbol for ten.)

A byte gives us 8 places to put a one or a zero. Thus it can be represented by an 8-digit binary

number. Let's say that in one particular byte the first two bits, starting from the right, happen to be 'on' and the rest are 'off'. This could be represented as off-off-off-off-off-off-on-on, or A-A-A-A-A-B-B, or whatever we want. But if we represent it as 00000011, we can interpret it as a binary number. As such it says that there is one one and one two. Thus, this is equivalent to three. The highest 8-digit binary number is 11111111. This number says there is one one, one two, one 2 x 2, one 2 x 2 x 2, and so on. If you do this calculation, you'll find that the total is 255. And that's why the highest number that can be stored in a memory cell is 255.

One of the neatest things about the IOBYTE is how it reminds us that computers do not really store numbers. A byte is a pattern of offs and ons, not a number. IOBYTE makes us remember this by operating purely as a set of switches.

What it does

CP/M divides the IOBYTE into four two-bit units. The first two units tell CP/M what to do with the console data (CON), the middle two tell it what to do with the punch and reader data, and the final unit tells it what to do with the list (LST) data. Kaypro users are only concerned with CON and LST.

As an example, let's look at how CP/M handles the LST unit. There are four possible ways to set the two switches: 00, 01, 10, 11. If CP/M finds neither switch set (00), it sends LST data to the serial port (TTY). If it finds only the first switch set (01), it sends it to the CRT. If it finds only the second switch set (10), it sends it to the parallel port (LPT). If it finds both set (11), the data goes to a device of your own defining.

A similar sort of coding occurs in the other two-byte units. Figure 1 gives you the entire chart of possibilities. Usually the Kaypro version of CP/M assigns the first two-bit unit (CON) to CRT, and the next two to TTY. As Figure 1 makes clear, that means the first is set to 01 and the next two to 00. Thus, we know the rightmost six digits of our eight-digit binary number: 00001. If we set LST to TTY, then the entire number is 00000001. This is an easy number to translate from the binary; it equals one. If we set LST to LPT, the entire number will be 10000001. The left most digit indicates there is 128 and the rightmost digit adds one. Hence, the binary number 10000001 is equal to 129.

But the point is that we humans are the only ones who want to see 10000001 as a number instead of a pattern of offs and ons. To the machine it isn't a number but a pattern of switches. *And that's true for everything that goes on in your computer.*

(continued on page 58)

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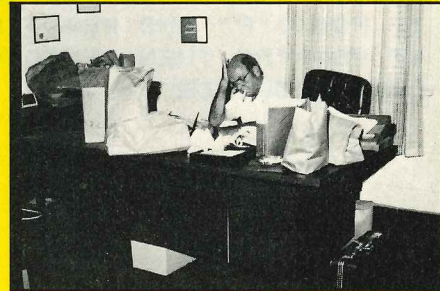
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```

10 INPUT "Type P to for your parallel port, S for serial: ",PS$
20 IF PS$<>"P" AND PS$<>"S" THEN 10
30 IF PS$="P" THEN DEVICE=129 ELSE DEVICE=1
40 POKE 3,DEVICE

```

MBASIC Listing 1.

```

VAR WHICH = CHAR

```

```

100 input3 "Type S(erial) or P(arallel): "; which
CASE which of
    "P": Poke 3,129
    "p": Poke 3,129
    "S": Poke 3,1
    "s": Poke 3,1
    Which: goto 100      rem (Loops 'til you type P,p,S, or s)
END rem (end of case statement)

rem (test it:)
PRINT #1; "This will print on my parallel printer if I typed P or p,"
PRINT #1; "or it will print on my serial printer if I typed S or s."

END

```

S-BASIC Listing 2.



I KNOW IT'S QUITTING TIME, BUT WOULD YOU
MIND IF WE JUST SAT AROUND FOR A WHILE
AND TALKED — ?

Making it perform

But how to use it? Easy. Both MBASIC and S-BASIC have the command POKE. With it you can put any value into any memory cell. For example, "POKE 3000,127" would put the number 127 into memory address 3000. IOBYTE is memory cell 3. If you poke it with 1 ("POKE 3,1"), your computer will print out through the serial port; if you poke it with 129 ("POKE 3,129") data will go out through the parallel port. If you want an MBASIC program to give you a choice, you can add the following lines:

See MBASIC Listing 1.

Here is a way to get the same effect in S-BASIC:

See S-BASIC Listing 2.

What, then, does the CONFIG program do to configure your disk? Remember that the CP/M instructions are on the first track off the disk (so long as you have SYSGENed it). On the second track is some information specific to the Kaypro, including the IOBYTE instruction. CONFIG writes the number to be entered as the IOBYTE in the appropriate spot on your disk (Track 1, Sector 21, byte 33h, to be exact). That's all there is to it.

So don't let appearances fool you: computers are dumber than we can imagine. □

(continued on page 68)

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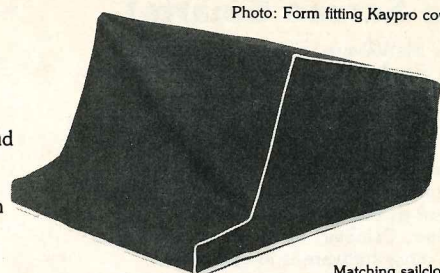


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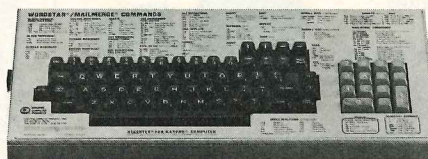
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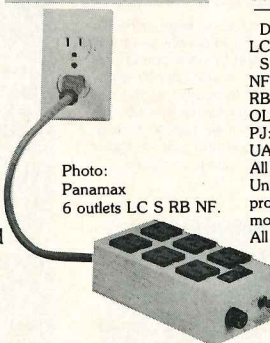


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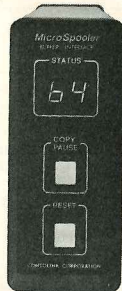


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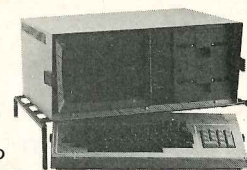
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Handling Disk Files in S-BASIC

Delving into the secrets of direct-access files.

by R. D. Christian

Disk file programming in S-BASIC is an area in which some readers have expressed their need for guidance. It just so happens that disk file management is a corner of S-BASIC which I've been poking around in. Having been in the same state of need myself, I am impelled to (take detachable keyboard in hand and) offer some assistance. This will truly be a labor of love on my part, because with each successful session of experimentation with S-BASIC disk files, I have come away further impressed, even exhilarated, with the complete control available in this language. It gets out to your disk file precisely what needs to be there.

Direct-access files are the subject of this discussion. This type seems to receive less attention than do serial files; perhaps that is because programming procedures are more difficult. In many cases, however, direct-access files can be the much better choice. They are particularly appropriate in those cases in which each primary subject of the file consists of a set of several descriptors. One example I can immediately call up from my own background concerns the bending strength analysis of an airplane wing. In this example, the structure of the wing is mathematically modeled as a finite number of primary bending elements: stringers and skin-strips. Each of these elements must be described to the analysis methodology in terms of:

- 1) Coordinates, i.e., X and Y location of each stringer or skin-strip element
- 2) Cross-sectional area of each element
- 3) Allowable stress of each element to prohibit buckling
- 4) Other data peculiar to each primary element.

If desired, these descriptors could be grouped as they are listed above and filed in separate "drawers." There could be a serial file containing all the coordinates, another serial file containing the cross-

sectional areas, and so forth. But then it would be necessary to rummage around in all these drawers whenever you wished to assemble all information about one particular, primary subject of the file. It would be much better to have all the information about each primary subject in one location, and go directly to it. Then, if changes are required or if the need to check for correctness of the data for a particular element is desired, either can be done in a very orderly and efficient manner.

This article includes the source listing for a very brief S-BASIC program which illustrates a direct-access, binary disk file. The experimenter with this type of file will be pleasantly surprised at the speed with which file contents can be manipulated. There can even be a satisfying emotional payback achieved with mastery of S-BASIC's logical and orderly file-management procedures. Remarks have been included with the program source statements in several key locations. Refer to this program listing to make the best use of the following discussions concerning the intended results of program operation.

S-BASIC's two way street

A standout feature of S-BASIC is its capability to readily input and output to the same file. In the example program, the series of statements beginning with line #4 and ending with line #210 illustrates the use of a single channel to conduct both operations: reading and writing to an individual record of that file. This feature is pointed out in the S-BASIC manual, but it is easy to draw an incorrect assumption. The example in the manual infers that it is acceptable to write back to the file only the *changed* item of a record which also contains other items. I have experimented at length with records containing more than one data item, as in the exam-

ple program, and have never succeeded in writing the changed item, by itself, back to the file. To the contrary, my work has shown that it is necessary to write *all contents* of the record back to the file, and this is pointed out by some remarks in the included program.

Using the XAMN utility, it's possible to observe what happens after an attempt to write only the changed item of the record: that record of the file is filled with ASCII blanks, ending in a carriage return/line feed sequence. This should not be viewed as a major problem. It's no big deal to write the entire record back to the file. We are, after all, talking about the capability to reach into a file

Strange things find their way into disk files which are left open.

which may be very large, easily extract one of its elements (statement #200), change a portion of that element and replace it in the file. In my opinion, that's a very useful feature of S-BASIC. Other, more well-known languages allow a file channel to be defined for only one mode of operation, either input or output; operations in both modes is not provided for. (Neither is it provided in S-BASIC, for serial files.)

Numbering nuance

The procedures which write records to disk files involve a particular characteristic of S-BASIC which should receive special mention. Statement #100 in our listing begins the series of statements which compose and write each record to the disk. It should be noticed that the numbering system for the data entries in the file begins with 0,0. This numbering origin also applies to the channels which are set up to communicate with files; the first channel defined in the FILES statement is always channel zero.

The program could have been written, however, such that this idiosyncrasy of S-BASIC would be transparent to the operator. In actual practice, the prompts in statement #333 might be expressed as: J+1 and I+1. Similar provisions could be made in statements #444 and #555, which provide for changing stored data. If these steps were taken, a numbering system originating with the more familiar 1,1 would then be presented on the screen, while the requirements of S-BASIC for the actual transfer of data to the disk would also be complied with. This nicety carries some extra baggage with it, however.

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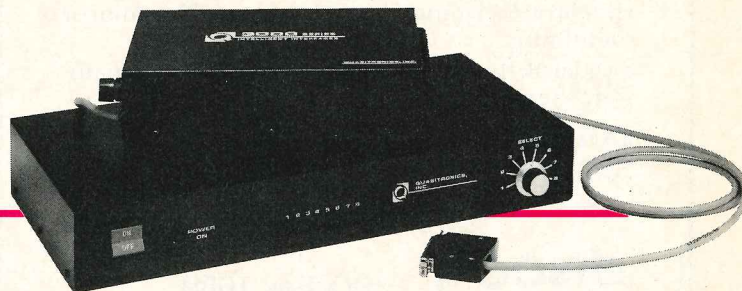
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S-BASIC

It would be necessary to insert two additional statements immediately ahead of statement #200: (1) J=J-1 and (2) I=I-1. I deliberately chose not to construct the more familiar prompts in the example program in order to emphasize this characteristic of S-BASIC which can be the source of much disappointment if not understood and faithfully adhered to.

Taking care of details

In our example program, the TESTFILE, in which the input data is to be stored, will be placed on the currently-logged drive by the form of the CREATE statement shown. The choice of where the created file will reside must be made at compile-time; it should also be determined that at runtime enough space for the file will be on the diskette in that drive. The required space can be readily calculated as the product of the number of records expected and the length of each record as it is expressed in the FILES statement. The file can, of course, be directed to either drive by including the drive identity with the filename, e.g., B:TESTFILE. The complete identity of the file must be given in all subsequent open and close statements.

Disk file programmers should discipline themselves to take the positive step of closing the file immediately after completing transactions of each type: input or output and *whenever in doubt* whether the file should remain open. It requires only a microsecond to reconnect a channel to the file and the user shouldn't be all that concerned that the computer may work a little harder than it perhaps absolutely needs to. Strange things find their way into the contents of disk files which are left open at a time when they should not be!

Some comparisons

Having now invested quite a lot of time in learning S-BASIC, I'd like to compare it with other languages. In my opinion, S-BASIC is terrific. MBASIC can't hold a candle to it. In terms of logical file management procedures, ease of command of the compiler, and the ability to construct such conveniences as menus, S-BASIC runs rings around FORTRAN-80. I can't imagine a need for any more data types than the six provided. Convenience of program documentation is enhanced in no small amount by its COMMENT statement. In all areas of which I'm aware (except the square root function), it produces numerical computations which are as useful as those from the Microsoft duo, albeit, slower in execution. True 8080 machine code output from the compiler provides source code security and the ultimate

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in transportability of execution files.

With its WHILE-DO, REPEATUNTIL, and CASE statements, S-BASIC is more like PASCAL than any other implementation of BASIC which I have known. In addition, S-BASIC is really fun to use. After a couple of decades of laboriously constructing output formats in FORTRAN programs written to solve engineering problems, I relish the ease with which tidy output can be produced in S-BASIC. As for the variety of string-handling provisions, I wish only for the addition of a procedure to right-justify a substring being packed into a bedstring.

Like FORTRAN, the syntax of S-BASIC is bold and self-sufficient, uncluttered with parenthetical after-comments and punctuation (although the programmer is at liberty to add as much of this as he wishes). While FORTRAN may, for the present, still be the better number-cruncher, the microcomputer-spawned languages are rapidly gaining ground in that area. Where these languages really show their colors is in string-handling and provisions for interaction between the operator and the program, and S-BASIC is a very good example. The TEXT statement, for instance, makes it incredibly easy to con-

struct menus.

Worth your effort

Learning the ins and outs of S-BASIC disk file procedures has not been without some moments of anguish. Documentation in the manual for this subject is not much better than for other procedures, and I have stumbled plenty of times. Still, in the process of converting some of my old FORTRAN engineering programs into S-BASIC code, I've never altered an impression formed very early: this language has almost all the basic features to be a really heavy hitter. Perhaps if enough of us become serious users we can yet smoke its' creator, Gilbert Ohnysty, out into the open and persuade him to tune it up some.

Precisely because of its comprehensive features, S-BASIC is not for the "week-end tire-kicker." But if the programmer is willing to invest serious effort and to make the commitment to keep poking around in some not-too-well-explained areas, I can guarantee that the endeavor will return twice what is put into it—plus pure exhilaration. □

S-BASIC Example Program

```

0001:00 COMMENT
0002:01
0003:02 FILETEST
0004:02 <c> R. D. Christian, 1984
0005:02
0006:03 This program is written to get acquainted with direct
0007:03 access file I/O. The purpose of the file will be simply
0008:03 to create a disk file, write data into and out of it,
0009:03 including changing data, in order to become familiar with
0010:03 the processes. For demonstration of the programming pro-
0011:03 cedures a small file is created containing three records
0012:03 of five fields each.
0013:03
0014:04 END
0015:03
0016:03 CREATE "TESTFILE"
0017:03
0018:03 REM
0019:03 REM Record length - Five fields of four bytes per field.
0020:03 REM
0021:03
0022:03 FILES R(20)
0023:03 DIM REAL X(3,5)
0024:03 VAR CHANGE=REAL
0025:03 VAR RESPONSE=CHAR
0026:03 VAR I,J:=INTEGER
0027:03
0028:03 1 PRINT CHR(26)
0029:03 PRINT " Input field values for each record. For"
0030:03 PRINT "simplified demonstration, program is set up"
0031:03 PRINT "to take integers of a maximum of two digits"
0032:03 PRINT "per field."
0033:03 PRINT
0034:03 FOR J=0 TO 2
0035:04 FOR I=0 TO 4
0036:05 333 PRINT "Record ";J;" Field";I,
0037:05 INPUT2 X(J,I)
0038:05 NEXT I
0039:04 NEXT J
0040:03
0041:03 REM
0042:03 REM Create each record from the input data and write to disk.
0043:03 REM
0044:03
0045:03 100 OPEN #0;"TESTFILE"

```



```

0046:03      FOR J=0 TO 2
0047:04          FOR I=0 TO 4
0048:05              WRITE #0,J;X(J,I)
0049:05          NEXT I
0050:04      NEXT J
0051:03      CLOSE #0
0052:03
0053:03      REM
0054:03      REM      Read data back and print for verification, if desired.
0055:03      REM
0056:03
0057:03      PRINT
0058:03      INPUT "Print input file ";RESPONSE
0059:03      PRINT
0060:03      IF RESPONSE='Y' OR RESPONSE='y' THEN 2 ELSE 3
0061:03
0062:03  2      OPEN #0;"TESTFILE"
0063:03      FOR J=0 TO 2
0064:04          FOR I=0 TO 4
0065:05              READ #0,J;X(J,I)
0066:05          NEXT I
0067:04      NEXT J
0068:03      CLOSE #0
0069:03      FOR J=0 TO 2
0070:04  444          PRINT "Record ";J
0071:04              FOR I=0 TO 4
0072:05                  PRINT USING "    ###"X(J,I);
0073:05              NEXT I
0074:04          PRINT
0075:04      NEXT J
0076:03      PRINT
0077:03
0078:03      REM
0079:03      REM      Change data if desired.
0080:03      REM
0081:03
0082:03  3      PRINT
0083:03      INPUT "Change data (Y/N) ";RESPONSE
0084:03      IF RESPONSE='N' OR RESPONSE='n' THEN 5
0085:03      REM
0086:03      REM      Begin change procedure.
0087:03      REM
0088:03
0089:03  4      OPEN #0;"TESTFILE"
0090:03
0091:03      REM
0092:03      REM      Identify record and item to change.
0093:03      REM
0094:03
0095:03      PRINT
0096:03  555      INPUT3 "Record # : ";J;      Field to change :";I;
0097:03      INPUT2 "      New value :";CHANGE
0098:03
0099:03      REM
0100:03      REM      Record may be fetched with no data.
0101:03      REM
0102:03
0103:03  200      READ #0,J
0104:03
0105:03      REM
0106:03      REM      Replace former fields.
0107:03      REM
0108:03
0109:03      X(J,I)=CHANGE
0110:03
0111:03      REM
0112:03      REM      Write entire record back to disk.
0113:03      REM
0114:03
0115:03      FOR I=0 TO 4
0116:04          WRITE #0,J;X(J,I)
0117:04      NEXT I
0118:03  210      CLOSE #0
0119:03
0120:03      REM
0121:03      REM      Make multiple changes if desired.
0122:03      REM
0123:03
0124:03      PRINT
0125:03      INPUT "Another change (Y/N) ";RESPONSE
0126:03      PRINT
0127:03      IF RESPONSE='Y' OR RESPONSE='y' THEN 4
0128:03
0129:03      REM
0130:03      REM      Print changed file if desired.
0131:03      REM
0132:03
0133:03      INPUT "Print changed file (Y/N) ";RESPONSE
0134:03      PRINT
0135:03      IF RESPONSE='Y' OR RESPONSE='y' THEN 2
0136:03  5      INPUT "Enter all new data (Y/N) ";RESPONSE
0137:03      PRINT
0138:03      IF RESPONSE='Y' OR RESPONSE='y' THEN 1
0139:03
0140:03      END
0141:03      ***** End of program *****

```


There are times when you want to change the IOBYTE temporarily. It's for moments such as these that STAT was invented. But some of us (particularly those with single-sided disks) don't want STAT taking up space on every disk. And nobody likes using STAT, what with its secret code words ("DEV:","TTY:") and its contrary nature.

Here is a very short assembly language program that switches the LST device IOBYTE from whatever it was to the other possibility. To run it, you merely type in its name. It will then tell you what the LST device was and what it has been changed to. To change it back, just run it again. It only takes up 1K on a single-sided diskette. (Remember, resetting the machine restores your computer to whatever the disk originally set the IOBYTE for.)

must be able to type. If you can do both those things, success is around the corner. Using WordStar in non-document mode, or Perfect Writer, open a file called SWITCHIO.ASM. Type in the program. You may skip any line that begins with an asterisk. Likewise, you may skip from any semicolon to the end of the line. You need not get the indenting right. Leave no blank lines, and don't leave out colons and other such "details."

Once you have it all typed in, and have saved the file, put it in drive B, and your CP/M diskette into drive A. While logged on to drive A, type: **ASM SWITCHIO.BBZ**. When the machine is done working, type: **LOAD B:SWITCHIO**.

You will now have a copy of SWITCHIO.COM on the disk in drive B. That's all there is to it. □

To assemble the program

To assemble this program requires two basic programming skills: 1) You must be able to read 2) You

FIGURE 1

switches set	LST	PUN	RDR	CON
00	TTY	TTY	TTY	TTY :
01	CRT	PTP	PTR	CRT :
10	LPT	UP1	UR1	BAT :
11	UL1	UP2	UR2	UC1 :

TTY Teletype (serial)
 CRT Console (screen)
 LPT Line printer (parallel)

Inoperative with the Kaypro

PTP Paper tape punch
 PTR Paper tape reader
 UP1 User-defined punch
 UP2 User-defined punch
 UR1 User-defined reader
 UR2 User-defined reader
 BAT Batch processing (input RDR, output LST)
 UL1 User-defined list device
 UC1 User-defined console


```

*****
*                               SWITCHIO                               *
*                               *                                       *
*                               by David Weinberger                     *
*                               *                                       *
*    August, 1984                                                       *
*    Changes Iobyte from serial to parallel or vice versa             *
*    Sets PUN and RDR to TTY (i.e.=00), which doesn't                 *
*    matter to us KayPro users.                                         *
*                               *                                       *
*    May be used and copied freely, but >>NOT<< for                   *
*    sale, promotion, or re-sale.                                       *
*****
;
; SYMBOLS TO BE USED AND WHAT THEY STAND FOR
    Iobyte equ 3
    Prntmsg equ 9 ; CP/M print-message function
    Prntchr equ 2 ; CP/M print-character function
    Bdos equ 5
    cr equ 13 ; ASCII value of carriage return
    lf equ 10 ; ASCII value of line feed
;
; SET UP
    org 100h ; begin program at usual spot
    lxi sp,stack ; set up stack for CP/M to play with
;
; MAIN PROGRAM
    lda Iobyte ; Register A gets content of IOBYTE
    cpi 1 ; Is Iobyte 01? (i.e. serial?)
    jnz par ; If not, jump to Parallel
;
; SERIAL BECOMES PARALLEL
    lxi d,sermes ; Load with series-message
    mvi c,Prntmsg ; Print-message function
    call bdos ; ... and execute the message
    mvi a,129 ; Put 129 in Register A
    sta Iobyte ; and store what's in A in Iobyte
    jmp done ; And we're done.
;
; PARALLEL BECOMES SERIAL
par: lxi d,parmes ; Load with parallel-message
    mvi c,Prntmsg ; Print-message function
    call bdos ; ... and execute the message
    mvi a,01 ; Put 1 into Register A
    sta Iobyte ; and store what's in A in Iobyte
    jmp done ; And we're done.
;
; FINISHING UP
done: call 0
;
; MESSAGES AND SPACE SET ASIDE FOR THE STACK
sermes: db cr,lf,'Was serial, now is parallel.',cr,lf,'$'
parmes: db cr,lf,'Was parallel, now is serial.',cr,lf,'$'
        ds 64

stack: db 0
end

```


DATABASES

(continued from page 37)

search commands.

Other search capabilities offered by some vendors include the tailoring of bibliographic displays, so that you see only the type of information important to your search. You can look at titles only, for example, passing on the author, publication date and subject listings. Here again you would economize on the hourly and display fees.

With a little help from a librarian

With your trusty Kaypro and modem, you can reach many databases yourself. But if you would like to test drive online research, if you would like to use a database only occasionally, or if you want to use vendors not accessible with a Kaypro, your library may be able to help.

Many public and academic libraries now offer online research services, often as an extension of the Reference Department. For example, the Cleveland, Ohio Public Library offers online searching of over 200 databases through its Library Research Specialists. They currently charge from \$20 to \$40 an hour for researchers' time, plus \$1 to \$3.50 a minute for online search time. LRS Information Specialist

Kay Brenneman says that their business-related searches usually run from \$40 to \$200.

The academic libraries of the University of California provide online searching services for faculty, students and even the general public. The libraries on the nine California campuses offer searching via major online vendors such as Dialog, BRS and MEDLINE. Fees are charged to people not connected with the university.

To use library online searching services, you must make the effort to go the library, and you may have to wait a day or so for results. The compensation is that these library services are staffed with professional online searchers. They have already invested in the training offered by vendors. And because they are frequent and experienced online searchers, they keep up to date on the system changes and new features which may elude the occasional user.

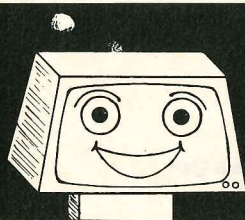
Most libraries charge their patrons for the use of the online search service, sometimes including an hourly charge for the time of the librarian who works with you. However, this can prove less expensive than doing it yourself, for two reasons. First of all, libraries qualify for high-volume discounts from vendors, so the online charges you pay will be less than if you accessed the database yourself. Second, as they are able to plan searches and carry them out more quickly and efficiently, they will use less online time than you would.

An additional advantage to doing online research at the library is that, of course, you will also be able to find some of the publications in the same location. Publications the library does carry will be easy to locate. And they may be able to help you obtain things not in their collection, by arranging a loan from another library or by finding the address of the publisher.

Should You?

Only you can decide whether, and how often, you should do online research. The convenience, speed and comprehensiveness of the services are indisputable. Some systems are difficult to master, while others are fairly user friendly. But the cost, especially for new users, can be considerable. Your financial resources, and the ways you can use information, will determine whether the cost of online research is justifiable.

A last warning: online research is addictive. Once you begin, you may find it as indispensable as your Kaypro. □



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A Communications Glossary

ACOUSTIC COUPLER: A modem designed to transmit and receive data through a telephone handset. The handset is placed in a cradle consisting of two rubber cups, one for the earpiece and one for the mouthpiece. Sometimes called a "Data Set."

ANSWER MODE: When your modem is set up to answer the phone, it is in answer mode, and the audio tone it sends is high-pitched. When your modem is set to originate the call, it is in originate mode, sending a lower-pitched signal. For communications to occur, one modem must be in answer mode and the other must be in originate mode.

ASCII: Stands for American Standard Code for Information Interchange. This code is used by nearly all micro- and minicomputers to represent printable characters and control peripheral devices.

ASYNCHRONOUS: Most personal computers communicate asynchronously. Transmission is controlled by start and stop bits to indicate the beginning and end of each character being transmitted.

AUTO DIAL/AUTO ANSWER: A feature offered by higher quality modems. Auto Dial allows you to dial your phone from the keyboard or a telephone number list. Auto Answer allows the modem to answer the phone when it rings.

BAUD: Baud refers to the number of signal events that occur per second on a serial data line.

BELL 103: Bell model 103 is a modem communications standard for low speed data transfer (up to 600 bps).

BIT: A single binary digit. A byte is made up of eight bits.

BUFFER: A temporary storage space in memory used to hold data to be transmitted, or received from, a peripheral device.

BYTE: A byte is a unit of binary data consisting of eight bits. One byte is roughly one character of information

(a letter, digit, space, punctuation symbol, etc.). Bytes are measured in multiples of 16; e.g. one kilobyte (1K) is 1024 bytes, and one megabyte is 1024K (1024 X 1024).

CARRIER: The digital signals produced by your computer are translated to sounds by a modem. These tones carry the digital information superimposed upon them. Variations in the tone of the carrier are decoded by the receiving modem and translated back into digital signals.

CHRISTENSEN PROTOCOL: A commonly used error-checking protocol for error free file transmission to and from CP/M systems. To use the protocol, both computers must be using a program that supports this protocol. The Christensen protocol essentially simulates synchronous transmissions in an asynchronous environment.

CONTROL-Q (Q): The XON character from the XON/XOFF protocol.

CONTROL-S (S): The XOFF character from the XON/XOFF protocol.

CONVERSATIONAL MODE: When two personal computers try to link up in communication, and both are in terminal mode, one computer has to "echo" each character typed and displayed in order for both computer screens to display data. To simulate "echoplex" in a personal computer, use conversational mode, which is a form of terminal mode that operates a half-duplex conversation on a full-duplex or half-duplex line.

DOWNLOADING: The act of receiving data from a host computer into a file on your system. Downloading of data can occur with or without error-checking.

ECHOPLEX: In full-duplex communication, the "host" system send every character you type back to your computer for display. By using echoplex and terminal mode, you can be sure that communication is occurring because you can see the character

(continued on page 76)

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Comparative Income
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Enter Credits
Report Generation
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Aging Report
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G/L Transactions Register
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Payroll Register
Payroll Worksheet
Paychecks
Monthly Summary
G/L Transactions Register
Unemployment Tax Data
Schedule 941-A
Form W-2

PROGRAMS

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Calculate Payroll
Print Payroll Register
Print Checks
End-of-Month Processing
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Yes, we use these systems internally and see them from the user's point of view. We have, however, outgrown the A/R system this month, if that helps you in making a decision!

COTTAGE

(continued from page 25)

rumor is incorrect which is one of the real joys of writing a column.)

FORTH is a really strange bird. It isn't entirely a compiler and it isn't entirely an interpreter. To write a program in FORTH you will spend most of your time creating a new language for your application (the compilation part) and then you write a very small program (the interpretive part) in your new language.

One problem I have with FORTH is that I don't find reverse polish notation very readable. In fact, it's a royal pain.

In BASIC you could write:

10 a = 5

20 b = 8

30 Print a*(a + b)

In FORTH you could do the same thing by writing:

5 8 over + * .

FORTH is a particularly good language for dealing with robots, telescopes, and other controller applications. You can define words to handle the control functions you'll need and then the programs practically write themselves. However, don't expect to see many complex number crunching or database type applications written in FORTH. (If you are really interested in FORTH, a very good beginner's book is *Starting FORTH* by Leo Brody.)

Conclusion

No one has ever claimed programming is *easy*, but it doesn't have to be especially difficult either. The first thing to learn is what the different languages are good, and not-so-good, at doing. This can be correlated to the archaic ritual of dueling: choosing the right weapon (pistol, sword, mace) could save one's life. Likewise, selecting the most appropriate language for the application can save you time, energy, and even sanity. □

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reported above. At the risk of understating the case, what we have here is serendipity of cosmic proportions. By participating in the link, Clarke has, in a sense, legitimized his own prophecy.

A little background should make this clear.

Arthur Clarke is not a formally trained scientist, but he has gained tremendous respect from the scientific community for his innovative thinking about the applications of technology. He is no stranger to computers and telecommunications. In fact, he is credited with originating the concept of communications satellites.

In an article appearing in a 1945 issue of *Wireless World* (titled "Extraterrestrial Relays"), Clarke described his concept: three satellites orbiting 22,000 miles above the earth, parallel to

the equator, relaying radio and television signals all over the world. Triangulated properly, they would allow radio signals to circumvent the obstacle posed to such signals, namely the curvature of the earth. The satellites would eliminate the need for signal repeaters which had long been used to get signals from hither to yon.

In hindsight, Clarke's solution seems elementary. But when his idea was accomplished a few years afterwards by the then fledgling NASA, Clarke was awarded the Franklin Institute's Gold Medal for his prediction.

It is the technological outgrowth of his 1945 idea which allowed Clarke to stay in his comfortable Sri Lanka surroundings while participating on a film being made halfway around the world.

Similar prophecy is also inherent in the Clarke-Kubrick collaboration, *2001*. The events depicted in that film have been reproduced, bit by bit, in real life. The 1968 film preceded and accurately simulated such events as the space walk, the moon landing, Skylab, the shuttle program, and cooperative ventures in space. There were a score of tiny details theorized by the first film that have since been substantiated as fact with almost uncanny accuracy.

That sort of precision is Clarke's stated wish for 2010. His career as an author, inventor and technological seer is guided by his fervent commitment to scientific accuracy. In turn, director Hyams seems determined to faithfully translate Clarke's vision to the screen—with a little help from their Kaypros. □

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Log-On: Password required
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Data Format: 8 data bits; 1 stop bit; no parity
If you have never been to San Francisco, call this board and then decide if you still want to go. This board is a capsule of the City—residing on a 40 megabyte hard disk.

Sysop Nick Turner has developed his own DOS to run the board on his Apple II. When I asked Nick how the BBS received its name he told me, "I'm involved in the Big Brother program here. One day my little brother was checking out the computer and asked if it had a name. I said, 'Come to think of it, no. What should we call it?' He decided it should be called Stuart. Many mods later the result is Stuart II."

Just why did Stuart go online in the first place? "The computer got bored," Nick said, "after it had run all the possible math calculations I could come up with, it still needed something more—the BBS was just the thing."

This board uses its own "tree based" operating system. "Think of the board as an upside down tree," Nick says, "a message is originated, and as more messages are added on, it sort of spreads out on the bottom, the way a tree does on top." The board is confusing at first—but don't be put off. The help files are so extensive no one can get lost on this system. There is even a 'bail out' command—just type OJ. This command will pop you back to the opening message no matter what.

If you try to dive into a discussion before reading the help files I guarantee you will end up somewhere around the ALIEN SIG. ALIEN SIG? This is a group of people who believe they come

from outer space—seriously.

Now we come to where Stuart shines; it's in its SIGs. There is so much hidden here, I cannot possibly cover it all. But let's run down a few of the features.

There are Special Interest Groups (SIGs) with separate discussions of politics, TV, religion, games, the occult, science fiction, music, dating, and my favorite: the Strange Little SIG, home for those miscellaneous users who don't fit into any other SIG.

There is an online newspaper that includes classifieds, reviews, and weather reports. There is even a Journal of Stupid Design, where you can write up the latest blunder you have discovered. It also has reviews of everything from movies to breakfast cereals. Stuart is the only BBS I have ever found that carries a serious discussion about Jack-in-the-Box. That includes not only the food, but the guy who dresses up in the bunny suit and does their commercials.

"The system is user-designed," according to Nick. "If they want something new, they just add it." The Stuart II users are really a community unto their own. That community includes regular callers from New York, Rio De Janerio, Hawaii, and Podusky, Maine. (Ok, so I lied. I made up Podusky, Maine.) The regular users include a prominent author, a Berkeley physicist, and a local politician—all under assumed names of course.

Why should you call Stuart? Let's have some of the users tell you.

"The people and others—let's not discriminate on the basis of species or planetary origin—that use this board seem to have more to talk about than computers . . . talk is on an intelligent level," said URSA, a data processing professional.

"Unlike other places the people are nice and the system is clean—or was it that the people are clean and the system is nice . . .," remarked Nobody Important.

"I call Stuart because of the tree structure, the variety of subjects, and because the sysop is so enthusiastic about the board," explained ULMO.

This is a fantastic board, and unbelievably popular. Nick reports an average of four seconds between calls to Stuart, and two of those seconds are eaten up because Stuart has to recycle. If you are going to call this board (and you really should) I must warn you that it can become a habit. There is something for everyone here. And if you don't see what you want, you can create your own space for it! If you don't become a regular caller, at least stop by. You might just be dropping in on the nation's best BBS.

Disconnected . . . please call again

That rounds up our first look at this rapidly expanding field of computer use. I hope you've enjoyed the trip. In the coming months we will be dialing into some of the more specialized BBSs beginning to crop up. I hope that together we can find you a "homebase," a place where your particular interests are served.

This column lives and dies with your input. If you like what you see, write to me in care of *PROFILES* and let me know an area you would like to explore. Chances are good there is a BBS out there with just the information you want.

And if you run into my cursor on one of the boards, drop me a few phosphorescent letters. Until then, I'll see you next time when we gather on this corner to talk about life—at 300 baud. □

GLOSSARY

(continued from page 71)

you typed—which means the host computer “echoed” them correctly.

EIGHT-BIT DATA: When you set up a communications line, you decide whether or not to allow the transfer of all eight bits of each byte. Transfer of only text information requires only seven bits of each byte. The movement of binary files, programs, etc., requires all eight bits and an error-checking protocol.

ELECTRONIC BULLETIN BOARD: See CBBS.

ELECTRONIC MAIL: The larger information services like The Source and CompuServe, offer a service known as electronic mail. This service gives any user the ability to compose and store the text of a message on the host system for retrieval by another user. Smaller local bulletin boards offer a similar service for registered users of that system.

ERROR-CHECKING: File transfers between computers should have some method of verifying that the data transmitted is the same as the data that was received. The method used to check incoming data is known as error-checking.

FULL-DUPLEX: Transmission of data in both directions simultaneously.

HALF-DUPLEX: Transmission of data in one direction at a time.

HERTZ: A measure of frequency, the same as Cycles per Second.

HOST COMPUTER: The system being called is the host system in any communications link.

LOG FILE: A file containing the record of a communications

session.

MODEM: A modem is a device used to allow your computer to use telephone lines to communicate with another computer. The modem converts digital data from your computer into audio signals acceptable to the telephone system.

ORIGINATE MODE: When your modem is set up to make a phone call, it is in the originate mode. In originate mode the transmission frequency is low-pitched and barely audible to humans. In answer mode (when your computer is answering the call) the transmission frequency is high-pitched and therefore much more noticeable to the human ear.

PARITY: Data stored in ASCII format (printable text rather than binary programs) uses only the first seven bits of an eight bit byte. The eighth bit (frequently called the parity bit) is sometimes used to detect errors in transmission. The parity bit will be 0 or 1 depending on two factors: whether even or odd parity is being used, and how many 1s exist in the seven bit value being transmitted. In even parity a byte will always have an even number of 1s in the byte; odd parity always has an odd number of 1s.

RCPM: Remote CP/M systems are electronic bulletin board systems set up for the exchange of public-domain software.

RS-232C: Recommended Standard 232 modification C. Electronics industry recommendations for serial communications. Originally developed to define interface for telecommunications devices, now used for interfacing all serial devices.

SEVEN-BIT DATA: Pure text files (ASCII files) use only seven of the eight bits of every byte. Text files can be transmitted using only seven bits of data, leaving the eighth bit for parity.

SYSOP: The SYStem OPERator of an RCPM, CBBS, or Electronic Bulletin Board system. Usually the SYSOP is also the owner of such a system.

TELECOMMUNICATIONS: The transmission of data to and from computers and terminals via phone lines, cable, optical fibers, TV, FM radio waves and communications satellites.

TERMINAL MODE: A communications program, or subroutine, that makes a personal computer look like a terminal to a host computer.

UPLOADING: The act of sending data to a host computer for storage in a disk file.

XON/XOFF: A popular communications protocol used between a computer and serial devices like terminals or serial printers. Also used in communications between computers. □

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Book Review

The Complete Handbook of Personal Computer Communications

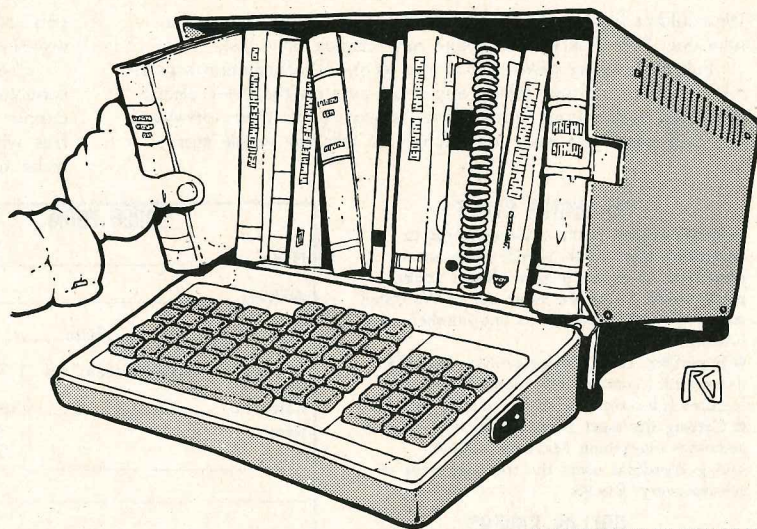


ILLUSTRATION BY RICK GEARY

Reviewed by Roy Katz

Your friendly free public library, like freeways, isn't free, but then neither are databases. Yet, as Alfred Glossbrenner points out in *The Complete Handbook Of Personal Computer Communications*, databases can be very cost-effective for executives, professionals, students and anyone else who uses a computer.

This book is a comprehensive guide on how to use your computer to communicate with the world. Furthermore, Glossbrenner has an uncanny ability to describe how complex subjects work, such as sophisticated communications services, in plain, crisp and precise English.

The book takes readers on a detailed walk through the major information services which can be accessed by personal computer. These include The Source, CompuServe, The Dow Jones News/Retrieval Service, The New York Times Information Bank and several of the encyclopedic database services. Always the good tour guide, Mr. Glossbrenner pauses to point out the significant features and benefits of these services. He also keeps his eagle eyes wide open to warn potential users—and current users—of faults or problems

which they may encounter.

Glossbrenner describes which information services are available, and what you should know about their capabilities and costs to intelligently choose between them. For example, in describing the differences between information utilities, such as The Source, and encyclopedic services like DIALOG and BRS, he notes that the former provides, "information on many different topics without telling more than you usually need to know. The utilities also offer online shopping, banking, and communications options."

On the other hand, the encyclopedics "are designed to give you information in depth. They specialize in providing information and only information," says Glossbrenner. Furthermore, "when you need to find information on where to find information, nothing can match an encyclopedic database."

Useful tips

One of the outstanding features of this book are the dozens of "Online Tips." These are boxes with ideas and recommendations which may not be specific to the discussion at hand, yet provide additional insight into using your

computer for various types of communications. In one of his many tips, the author suggests keeping your printer toggled on whenever you access an encyclopedic database "since you will find it more convenient to refer to the printout of your session while you are online."

Another tip remarks on the extensive nature of the financial information which is available from services such as the Dow Jones News/Retrieval Service and others. "If you know what you are doing, you can virtually eliminate the need for a 'full service' brokerage firm and the services its higher fees support," writes Glossbrenner.

In discussing the cost-effectiveness of encyclopedic databases, the book states they can provide users with almost unlimited access to information resources you might not otherwise be able to locate. Glossbrenner points out that a sample search for five keyword searches covered over 500 magazines and journals from all over the world, yielded seven bibliographic listings of relevant articles, three fact filled abstracts, took under 11 minutes, and cost only \$15.56.

Although some individuals may consider \$15.56 to be a

rather large fee, you get what you pay for. After all, accessing an encyclopedic database directly from your computer can save you "from driving to your library (or paying someone to do it for you),

erence books covering all 500 journals, let alone copies of the journals themselves, \$15.56 begins to seem like a real bargain," writes Glossbrenner.

In summing up the experi-

trick is to relax, and congratulate yourself for being on the cutting edge of the Information Age."

The Complete Handbook of Personal Computer Communications is a timely, relevant and factual resource book which should be kept within easy reach of your Kaypro. □

"When you need to find information on where to find information, nothing can match an encyclopedic database."

consulting a variety of printed indexes, and then going to the library shelves to locate the volumes, reading the articles and paying for photocopies. When you add the fact that very few libraries are likely to possess ref-

erences of new users of these information services, Alfred Glossbrenner acknowledges that many are often overwhelmed. "That's a perfectly natural reaction considering all that you have to choose from," he says. "The

The Complete Handbook of Personal Computer Communications—Everything You Need To Go Online With The World

By Alfred Glossbrenner
St. Martin's Press, New York, 1983,
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Technical Forum

by Tom Enright

Last month's comparison of S-BASIC and MBASIC has drawn quite a bit of comment from our readership. We have more than a few letters taking Mr. Weinberger to task for his programming technique, and us for publishing code with errors in it.

Mr. Weinberger didn't represent his code as the height of elegance. In the opening comments he stated that many features of the TYPER program existed merely to demonstrate their use. The program is meant to get you thinking of how *you* would do it. If our mail is any indication, he has succeeded rather well on that score.

Several of you have sent us your own version of the TYPER program. Some of them are very good. Unfortunately we won't guarantee to publish anything that is sent in unsolicited. It takes more than an elegant piece of code to make a good magazine article. On some rare occasions, the author of the code may end up being asked to write an article to go with his program. This is not to say that we don't appreciate, or learn, from these submissions ourselves; we do. None of us can become expert in all computer languages. S-BASIC, a much misunderstood and frequently

maligned dialect of BASIC, is a good example. In order to understand S-BASIC, it helps to have a grounding in PASCAL or one of the other highly structured languages. The departure of Tyler Sperry leaves us without a Master S-BASIC programmer on staff to catch all those mistakes.

This brings us to the errors many of you have found in the TYPER program. That's our fault. We should have checked the code a lot closer than we did. Production pressures led us to publish the code without reading it closely enough. This is not an excuse, just an appraisal of how we messed up. Following this month's Technical Forum is a revised listing of the TYPER program, with all errors corrected.

The major error in the TYPER program is the routine for selecting WHICHPRINTER. I/O Channel #1 is always CP/M's LST: device as defined in the IOBYTE at memory address 3. Most people will have only one printer; whether that one printer is serial or parallel is irrelevant. If you have a serial printer, you should already have used CONFIG to alter the IOBYTE to define the LST: device as TTY. Kaypro delivers all computers with the LPT, parallel port, as the default LST: device.

For those who have both serial and parallel printers, replace the WHICHPRINTER routine with one that will poke 127 decimal into memory address 3 for a parallel printer or 1 decimal for a serial printer. Mr. Weinberger has an article in this month's issue about IOBYTE. At the end of his article is an S-BASIC listing to accomplish this very operation.

The response to last month's S-BASIC article has brought out the fact that some confusion exists about what "structured programming" means.

Structured programming follows naturally from "top-down design." Top-down design is a method of logically planning the steps required for a program to accomplish a desired result. The first thing to think of when designing a program is what you want it to accomplish. Obvious, right? Anyone can take good program design to this point. It is the steps following the first one that most people fall down on. Once the main task is defined, you must define what sub-tasks are required to accomplish the main task. Then you break each sub-task up into its component actions. You keep this up until, at the lowest level, each task performs one, and only one, logical act. These are basic tenets of

good program design.

This design method should result in a program with three main sections: an initialization area, the main body, and subroutines or processes called from the main body. In the initialization area variables are declared and assigned their initial values. The main body should contain only minor processing steps and calls to subroutines or processes. Minor processing in the main body should only be examining values returned from processes and controlling which process is to be called next. The processes, or subroutines, should do all the actual work.

Most of us have seen what happens when a programmer violates the basic tenets of good design. The program is never really planned, it just grows. In BASIC this is usually signaled by

an abundance of GOTO statements, transferring control all over the place. It is darned-near impossible to follow the control flow in a program like this. This practice has given the poor GOTO a bad name. Some people have taken the rather hard-line attitude that structured programming totally forbids use of the GOTO instruction. This is a rather extreme view and banishes a valuable programming instruction. It is the misuse of the GOTO that is poor practice, not the GOTO statement itself.

Misuse of GOTO can stem from one, or even both, of two causes: neophyte programmers, and hackers with "small memory" syndrome.

Neophyte programmers are the ones who try to code everything using a small subset of a language. Seeing that BASIC is

just about the first language that anyone learns, it suffers the most abuse. It's not that they're consciously trying to use only a subset of the language, they've just never learned how to use all the control structures available. (Conscious use of a language subset is excusable when you're writing "portable" code that has to run on a variety of machines. This includes some machines with only a subset of the language.) The neophyte programmer, no matter how much experience he has, will always produce "spaghetti code" typified by the super-abundance of GOTO statements. Neophyte, in this sense of the word, is a state of mind—not a measure of experience.

In contrast to the neophyte is the "hacker" who has never realized that he has more than 32K of

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memory to work with. This fellow learned how to program on a small machine with a limited amount of memory. Since the machine had only 32K of memory in the first place, the BASIC interpreter was smaller and only had a subset of the language. When the "hacker" moved up to a machine with more memory, and a more complete BASIC, he figured those fancy control structures weren't really needed. After all, he can write "really compact" code using only IF and GOTO. Sometimes he can even read his own code a week later. But not always. If someone else has to try and read the code this fellow generates, good luck.

It takes more than luck to write a program that is structured, modular, and readable. Readable code should be easy to understand, make extensive use of

mnemonic variable names, and have a smooth flow from the top down. This means each block of code needs to have a line or two of remarks to explain what it does. You may have to come back to your own code in six months or so; a few strategic remarks can make a world of difference. Some dialects of BASIC, such as S-BASIC, do not allow a top-down control flow. In this case, a bottom-up flow would be your best choice. As a matter of fact, S-BASIC almost forces the bottom-up structure because you cannot call a procedure unless it has already been defined. This forces the programmer to put the lowest level procedures right after his declaration and initialization section.

Another feature of structured code is that each block or procedure has only one entry point

and one exit point. Having two exit points from a procedure is tacky and amateurish. So is having a GOTO statement jump to somewhere outside the procedure. Notice that using a GOTO entirely within the procedure is quite acceptable. The same rule applies to FOR-NEXT loops and subroutines. As long as the GOTO doesn't throw you out of the procedure or subroutine, it's fine. The GOTO is at its best for downward-moving jumps past short sections of code. It is at its worst as a substitute for more sophisticated, and logically direct, programming statements.

Example programs published in this magazine won't always be highly-structured works of art. If the article is good, and the program illustrates the concept the author is trying to get across, we'll do some minor cleanup and print it. There is no way we are going to rewrite every piece of code we publish. An example of this is the article on S-BASIC file handling in this issue. The program listing that accompanies the article violates some of the rules laid down earlier in this column. However, the listing plainly illustrates the concepts of S-BASIC direct file I/O. On that basis the listing is a good tutorial.

One major purpose of the listings accompanying magazine articles is to get readers thinking of how they would write the same thing. Don't just sit there, get started on your "great American program." □

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by Arthur C. Clarke

In his Introduction to Electronic Mail For Microcomputers (by Jim Swanner, published by Howard W. Samms, 1984), Arthur C. Clarke talks about his experiences using electronic mail during the making of 2010:

"This is really a note of thanks to Jim Swanner for introducing me to the marvels, and occasional frustrations of electronic mail. Although I am sure that Peter Hyams and I would still have managed to get *2010* to the screen without the use of this new medium of communication, it would not have been half as much fun.

In a few more years, electronic mail will be taken for granted, and everyone will wonder how we ever managed to run the world without it.

Today, however, it is still so new and revolutionary that, in the case of computers, the novice is likely to be overwhelmed by the different systems and brand names. Jim Swanner's book is an excellent guide through this trackless jungle and I wish it every success.

For my own feelings to this new medium I can't do better than quote from the introduction to *The Odyssey* by Arthur C. Clarke

and Peter Hyams, Del Rey Books.

'Once I had learned its operation, the system I was using vanished from my field of consciousness. (In computer jargon, it became transparent.) This was particularly striking in my dealings with Peter Hyams; though I had never met him, and didn't even know what he looked like, we very soon became old friends, trading jokes and insults in the files we exchanged, and even more so in our real-time dialogues. Perhaps the most unexpected development of all was that, after some thirty [years] of purely business correspondence, I found myself writing chatty letters again, full of random musings, accounts of local activities, and similar matters of not the slightest redeeming social value. It may have been the excitement of playing with a new toy, or the stimulus provided by virtually instantaneous feedback from the other side of the globe—whatever the explanation, I became a regular electronic gossip, at least until the call of duty dragged Peter away from the console and he had no time to reciprocate.

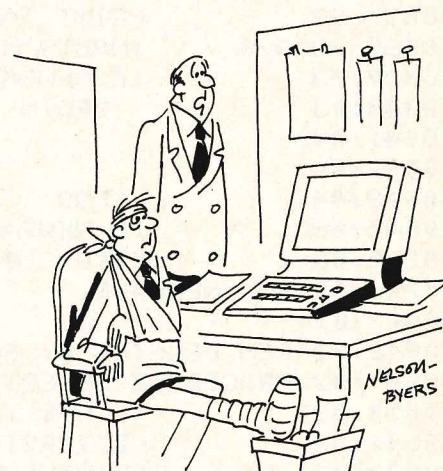
As I type these words on Archie's keyboard late at night here in Colombo, today's file is

already stored in a billion microscopic magnets on the current "B" disk drive. In a few minutes I will type SEND, and my Kaypro will start replaying B:AC156 by cable and satellite to its twin in Peter Hyams' office at MGM. And in exactly a week's time, I will be following it, at a slightly slower speed.

Soon I shall be meeting an old friend for the first time. I wonder if we will still like each other . . .'

P.S. I am happy to say that we did."

Washington, D.C., May 21, 1984



MAYBE YOU SHOULD HAVE ASKED INSTEAD OF
DEMANDED —

REVISED TYPER LISTING

```

0001:00 COMMENT
0002:01
0003:02                TYPER
0004:02                <c> David Weinberger, 1984
0005:02
0006:03 END
0007:02
0008:02 REM *****  INITIALIZATION  *****
0009:02
0010:02                VAR LINE,N,X,F=INTEGER
0011:02                VAR DUMMY,CHRINPUT,NEWPAGECHOICE=CHAR
0012:02
0013:02                DIM CHAR LETTERSTRING(100)
0014:02
0015:02 REM *****  PROCEDURES  *****
0016:02
0017:02 REM PRINT OUT A LINE
0018:02 PROCEDURE PRINT.OUT
0019:03                FOR X=1 TO N
0020:04                    PRINT #1;LETTERSTRING(X);
0021:04                NEXT X
0022:03                PRINT #1;CHR(13);CHR(10);
0023:03                PRINT CHR(13);CHR(10);
0024:03                N=0
0025:03 END
0026:02
0027:02 REM REMOVES NON-PRINTING CHARACTERS
0028:02 PROCEDURE NEW.INPUT
0029:03                CHRINPUT=""
0030:03                GOTO 50INKEY
0031:03 END OF NEW.INPUT
0032:02
0033:02 REM BEGIN A NEW PAGE
0034:02 PROCEDURE NEWPAGE
0035:03                PRINT STRING$(79,45);"P";
0036:03                LINE=0
0037:03                PRINT TAB(54); "CR=SPACE  N-BEGIN NEW PAGE"
0038:03 320                INPUT3 NEWPAGECHOICE
0039:03                IF NEWPAGECHOICE=CHR(13) THEN
0040:03                    BEGIN
0041:04                        PRINT TAB(79);"<"
0042:04                        PRINT #1;CHR(10);
0043:04                    END
0044:03                IF NEWPAGECHOICE="N" OR NEWPAGECHOICE="n" THEN 30
0045:03                GOTO 320
0046:03 END NEWPAGE
0047:02
0048:02 REM DELETES BY BACKSPACING
0049:02 PROCEDURE DELEET
0050:03                IF N=0 THEN 50INKEY
0051:03                LETTERSTRING(N)=""
0052:03                PRINT CHR(8);" ";CHR(8);
0053:03                N=N-1
0054:03                GOTO 50INKEY

```



```

0055:03 END OF DELEET
0056:02
0057:02 REM ***** END OF PROCEDURES *****
0058:02
0059:02 PRINT CHR(26);
0060:02
0061:02 TEXT 0,&
0062:03
0063:03          TYPED INSTRUCTIONS
0064:03
0065:03          This program allows you to type line by line directly to
0066:03 printer. The line won't print out until you hit the carriage re-
0067:03 turn. You can correct any mistakes on the line before printing it
0068:03 by using the backspace key, which will delete as it goes.
0069:03
0070:03 CTRL-C ends the program.
0071:03
0072:03 &
0073:02
0074:02 REM WAIT FOR USER TO READ INSTRUCTIONS
0075:02
0076:02 25 INPUT3 DUMMY
0077:02
0078:02 PRINT CHR(26);
0079:02 ECHO OFF
0080:02
0081:02 REM ***** MAINLINE *****
0082:02
0083:02 30 LINE=LINE+1
0084:02 IF LINE=56 THEN NEWPAGE
0085:02 PRINT USING "##";LINE;
0086:02 PRINT " ";
0087:02
0088:02 50 INKEY INPUT3 CHRINPUT
0089:02 IF CHRINPUT=CHR(8) THEN DELEET
0090:02 IF ASCII(CHRINPUT)<13 AND ASCII(CHRINPUT)>8 THEN NEW.INPUT
0091:02 IF ASCII(CHRINPUT)=3 THEN 999END
0092:02 IF N>71 AND CHRINPUT#CHR(13) THEN NEW.INPUT
0093:02 N=N+1
0094:02 PRINT CHRINPUT;
0095:02 LETTERSTRING(N)=CHRINPUT
0096:02 IF CHRINPUT=CHR(8) THEN LETTERSTRING(N-2)=" " AND N=N-2
0097:02 IF N=65 THEN PRINT CHR(7)
0098:02 IF CHRINPUT=CHR(13) THEN
0099:02     BEGIN
0100:03         PRINT.OUT
0101:03         GOTO 30
0102:03     END
0103:02 GOTO 50 INKEY
0104:02
0105:02 999END
0106:02 END
0107:02
0108:02          ***** End of program *****

```


New Products

The following new product listings are not reviews, and should not be considered as tested endorsements. We have looked at some of the products, but we do not necessarily have hands-on experience with them.

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Approved by the FCC, the product has a one-year limited warranty.

\$39.95. Control Industries, Box 6292, Bend, OR 97708 (503) 389-1969.

Marina billing program. Complete billing and accounts receivables for marinas and yacht clubs can be done with this software. A list of names, addresses and telephone numbers for berth rental tenants can be kept, along with information on rentals, electric meter readings, electric bill amounts, current balances due and other charges. The Marina Program can also insert comments on each printed monthly bill.

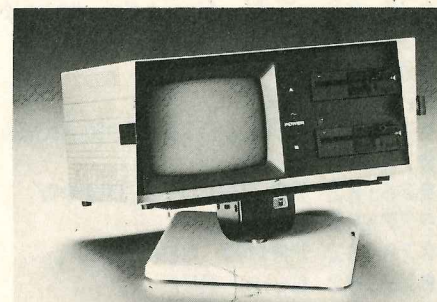
Requires C-BASIC. Demo disk is \$25.00.

\$500. Marina Program, Office Computer Systems, P.O. Box 91, Corte Madera, CA 94925 (415) 453-9960.

Tilt and swivel computer stand. The ERGOTRON™ pedestal base stand can be easily adjusted with one hand for maximum viewing comfort. It requires no pins, levers or knobs like other stands. A full tilt of the monitor, plus 360-degree rotation gives the user great flexibility in placement.

The stand's base is made from white injection molded plastic and has non-skid feet. The mounting plate for the monitor is black anodized aluminum.

\$129.95. Ergotron, Inc., P.O. Box 17013, Minneapolis, MN 55417 (612) 724-4952 On West



Coast contact: PC Rep, 4000 MacArthur Blvd., Suite 3000, Newport Beach, CA 92660 (714) 851-6436.

Database directory. Data Base User Service allows subscribers to access via modem a list of publicly available online databases. The service is basically a database of databases, providing detailed descriptions so that computer users can pinpoint the database most suited to their needs.

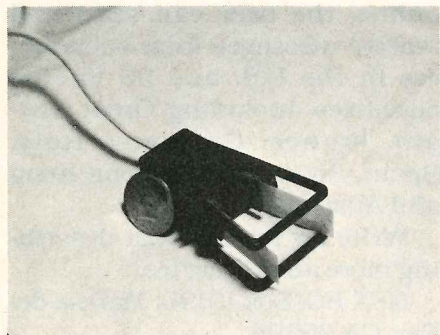
In addition to online access, subscribers to the service receive *DataBase Directory*, an annual printed directory; *DataBase Alert*, a monthly newsletter; and use of DataBase Hotline, a telephone help line that links directly to the editorial staff of the service.

A one-year charter subscription includes the 600-page directory, 12 issues of the newsletter, semiannual cumulative indexes and binder, plus a user number to access the online service and toll-

free hotline.

\$185. Knowledge Industry Publications, Inc., 701 Westchester Ave., White Plains, NY 10604 (914) 328-9157.

Internal fan. The Dragonfly Fan mounts inside your computer to prevent overheating. No soldering



is required; it plugs into an AC outlet. The fan is also quiet and won't cause TV interference.

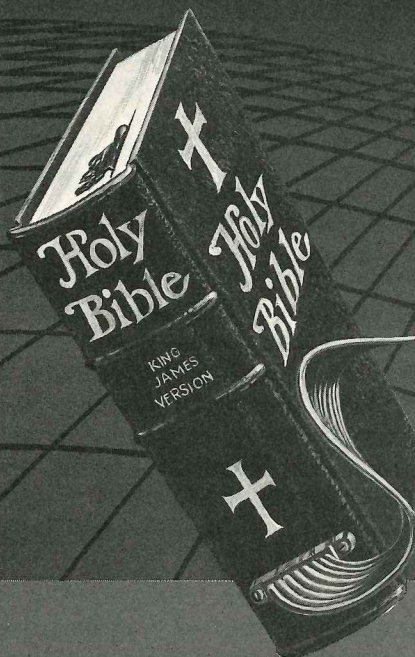
\$18. Dragonfly Software, 729 Westview Ave., Philadelphia, PA 19119.

Print style selector. THE STYLIST utility program will send complex codes to your Okidata 92 printer. Ten different print styles can be selected from the menu, including correspondence quality and condensed (132-column) printing. Designed for easy use, the program has extensive on-screen help options. Price includes manual.

\$9.95. Requires MBASIC. Stockmaster Software, c/o Jeremy Young, 3 Anders Lane, Pomona, NY 10970.

dBASE II search utility. Data retrieval from dBASE II is now easier with dSEARCHER Query Utility. This program features simple query syntax, with the ability for immediate reports when doing single database searches. Errors in search and report specifications can be easily corrected with the screen editing and recall facilities.

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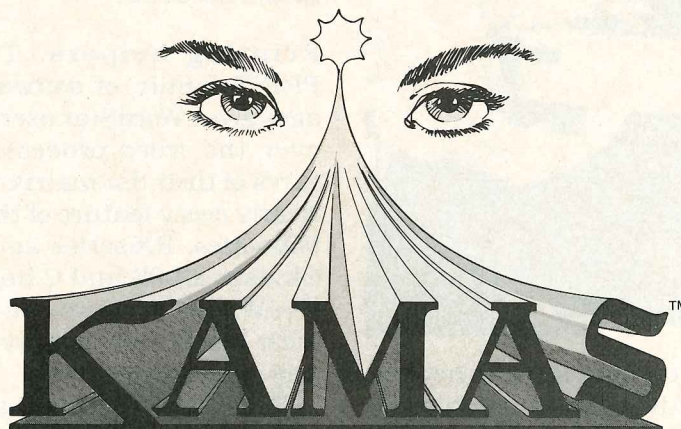
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NEW PRODUCTS

dSEARCHER can also do multiple searches, and automatically generate code. Reusable search programs can be created, which lets you link files containing "like" data. An unlimited number of files can be searched because disk switching is allowed. The program includes a tutorial.

\$79. Micro Byte, P.O. Box 245, Burke, VA 22015 (703) 569-6473 or 451-8717.

Computer luggage. This computer bag features 100% waterproof materials (including zippers), specially reinforced bottom and side panels, extra



padding on both top and bottom, and a lifetime guarantee on materials and workmanship. Made from nylon, the COM 275 is also stain resistant. Two types of interior padding, including a high-impact foam, protect the computer from accidents and mishandling. Nylon handles on each side allow two people to carry the bag, while an adjustable shoulder strap with a non-slip shoulder pad allows one person to carry it. Seven padded interior dividers with velcro fasteners are provided so the bag can be partitioned to carry smaller items.

The bag comes in black, smoke and rust colors.

\$129. Kiwi, Norther Mercantile, Inc., 6721 N.W. 36th Ave., Miami, FL 33147.

BBS log book. This book helps you keep track of phone calls and related information when accessing bulletin board systems. It also includes a section to record long-distance calls and a personal directory for storing frequently called numbers, including BBS's, databases and other services.

To aid any computer and modem owner who calls other computers and information services, the BBS Log Book will organize information such as password, time on and off, access numbers, dates and more.

\$5.95. Atmospheres, 1207 Eighth Ave., Brooklyn, NY 11215 (212) 788-6799.

Printing helpers. The WS-PRINT family of software packages gives WordStar users control over the word-processing features of their dot matrix printers. Nearly every feature of the Epson MX-series, RX-series and FX-80, Okidata ML92 and C.Itoh 8510A (ProWriter) printers can be used with WordStar's dot commands and control characters.

WS-PRINT packages are separate programs which handle the print processing outside WordStar. Features include: boldface, underlining, italics, line height, microjustification, proportional spacing, sub- and super-scripts, and varied width printing.

\$39.95. Wheatland Design Laboratory, 2601 Belle Crest Dr., Lawrence, KS 66044.

International communication service. Personal computer users can send an electronic message from Los Angeles to Paris for

about \$3.50, according to SST, originators of the Tina International Message Service. They claim to receive messages at about 5% of the cost of conventional telex at 20 times the speed.

A subscriber dials a local number and is given instructions on his computer screen. Once online, the user can send and receive messages from subscribers in the U.S. and 50 foreign countries, including Great Britain, France, Germany, Italy, Spain, South Africa, Hong Kong and Australia.

Write for free booklet describing more about service.

SST, P.O. Box 10190, Marina del Rey, CA 90295.

Print-screen functions. The STROKE and STROKE+ allow the user to print an exact copy of the screen with only a single keystroke—at any time from any program. These programs won't interfere with applications programs.

The STROKE prints a text copy of the screen, ignoring graphics and Greek characters. The STROKE+ does the same, plus a full, dot-for-dot, graphics copy of the screen.

From \$34.95 to \$54.95 for the STROKE, \$79.95 for the STROKE+. Specialty Systems, 12610 Central Ave. #131, Chino, CA 91710 (714) 947-1627.

Communications software. BLAST™ offers full-duplex, error-free asynchronous communications among computers from 70 different micro, mini and mainframe vendors. Any system with BLAST™ (BLocked ASynchronous Transmission) can transfer data with any other computer with BLAST™ either via modem/phone connection or through Tymnet's™ packet-switched network.

BLAST™ operates with any modem at any speed and supports file transmission and reception at both ends simultaneously. BLAST™ uses a CRC (cyclic redundancy checking) algorithm to detect errors as they occur and requests retransmission of the bad data.

IBM mainframe versions are available for \$2495; for mini-computers, the cost ranges from \$495 to \$1295. The software price for microcomputers (including Kaypro) is \$250.

Communications Research Group, Inc., 8939 Jefferson Hwy., Baton Rouge, LA 70809 (504) 923-0888.

File comparison program. CMP compares two ASCII files and finds discrepancies between them. Especially useful to pro-

grammers, this software can tell them exactly what was changed when they redesigned a program. CMP finds moved blocks, lines that have been inserted, deleted or changed in moved blocks, inserted lines, deleted lines, and changed lines.



It has an option for comparing formatted text files by sentence, rather than line by line. The program also generates a report of its findings, which may be sent to a file.

\$149. White Heron Corporation, 26739 Basswood Ave., Rancho Palos Verdes, CA 90274 (213) 378-4429.

Statistical system. The Statistical Design Analysis System (SDAS) automates the calculations involved in planning and interpreting statistical studies. It is useful to all involved with learning and applying statistics in academic situations, business and industry.

The system is fully menu-driven, includes on-line help messages, provides editing of input and does error checking. Sepa-

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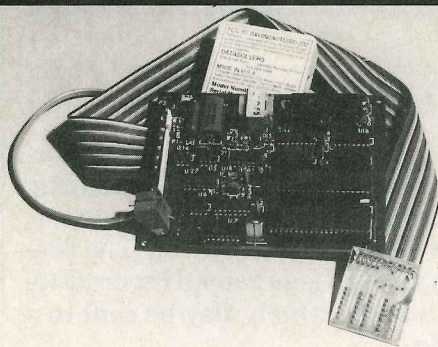
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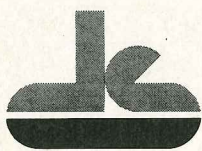
In 1983 we presented to you, the Kaypro user, the **DS300AD**, 300 baud, internal modem for 2's, 4's, and 10's. It became a success overnight with its included software, simple installation, and economical price (retail \$199.00). We sold hundreds of these auto-dial/auto-answer modems to you, (and continue to sell large numbers each month). Continually, however, we have had people say, "I love the idea of an internal modem package which I can install ... one complete and priced right like yours, but ... **HOW ABOUT 1200 BAUD, SMARTMODEM CAPABILITIES?**" To answer the obvious need for an internal Hayes compatible 300-1200 baud smartmodem, we developed the **DS1200SMT**.

The **DS1200SMT** works on all Kaypro models (even the new 2-84 and 4-84). The menu driven software, which comes with the package at no additional charge, is state-of-the-art and on diskette. When installing the modem you won't need to worry about soldering, drilling or modifying your computer. It's an easy process which will take you only 10 to 15 minutes. And yes, you can do it!

Let's face it, 300 baud is o.k., but 1200 baud is where it's really at! For only \$427.50 you can have the **DS1200SMT** along with (for a limited time) a \$50.00 credit on NewsNet, the new business information network. Both the **DS300AD** and the **DS1200SMT** are current in regards to shipping and both have a 180 day warranty.

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rate programs do t-tests, analysis of variance, regression models, contingency tables, goodness of fit and analysis of proportion designs. A confidence limits program includes power analysis for miscellaneous designs and automates finding confidence limits for 12 situations. Also, a statistical distribution program provides 18 options to calculate cumulative, inverse and non-central probability functions. The system is coded in compiled Fortran.

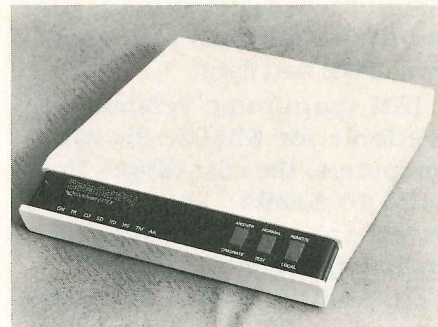
\$199.95. Mountain Sunrise Software, Box 1287, Springfield, OR 97477 (503) 726-1348.

Security modem. Data Sentry modem can prevent data theft and other security breaches on computer systems, without requiring encryption or programming changes. An optional companion device, Remote-ON, will turn a computer's power on or off from a remote terminal once security has been cleared.

Data Sentry uses a call-up, call-back and password sequence to thwart data thieves. The security routine requests the phone number of someone wanting access. Then it hangs up and looks through its list of authorized numbers. If the caller's number is authorized, Data Sentry dials the caller back and requests the password. The caller gets three tries to give Data Sentry the right password. Without it, the modem won't return further calls from that number. A lower security mode, ideal for traveling business people, lets users program Data Sentry to call back any number from which it gets the correct password.

Data Sentry has all the features of conventional intelligent modems including 300 or 1200 baud, full-duplex, asynchronous

operations with auto-dial, auto-answer, auto-speed and auto-parity selection. A battery backup protects data during power fluctuations. Data Sentry also keeps track of user passwords and



phone numbers.

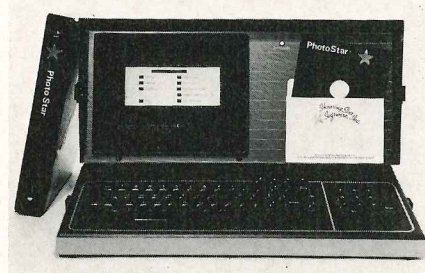
\$895 for Data Sentry, **\$144** for Remote-ON. Lockheed-Georgia Company, Marietta, GA 30063 (404) 951-0878.

Multi-user BASIC. PLUTO BASIC, a business BASIC interpreter, enables up to three users on one computer. It is compatible with Basic Four Business BASIC and Science Management Corporation BASIC. With PLUTO BASIC, Business Basic programs can be operated on the Kaypro. The program supports keyed or direct files, and will access CP/M text files.

\$950. Kaypro 10. Southwest Data Systems, 3017 San Fernando Blvd., Burbank, CA 91504 (818) 841-1610.

Software for photographers. PhotoStar™ helps photographers organize their photos and transparencies into a streamlined filing system. PhotoStar™ maintains a stock library inventory, prints mailing lists and labels for slides and prints, does client invoices, maintains business records, and tracks the use history of each image. It has a keyword search facility to find individual transparencies. An enhanced version, PhotoStar+™, comes

with a cross-referencing capability called Photofile™ for storing and locating transparencies in large stock libraries.



Both programs come with complete documentation and are menu-driven, with onscreen instructions for all functions.

\$695 for PhotoStar™ and \$995 for PhotoStar+™. Shooting Star Software, Inc., P.O. Box 2878, Alameda, CA 94501 (415) 769-9767.

Typographic editor. microWORD is a text editor that writes files directly compatible with existing typesetters. The company that developed the microCOMPOSER front end system for Compugraphic typesetters designed this software specifically as a typographic editor.

microWORD allows the user to redefine the entire keyboard to represent specified strings of information. Format codes, plain text, or text with mixed format codes may be entered from a single key. These string definitions can be reviewed and changed at any time without affecting the text file.

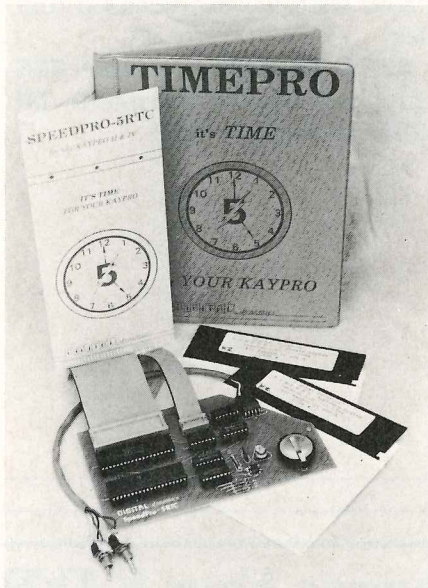
This editor's control functions are the same as those used in WordStar. However, the "help" menu in microWORD differs from WordStar in that all the commands are displayed on a single screen which can be called instantly, without the delay of screen overlays.

Now a standard part of microCOMPOSER systems, micro-

WORD is also available separately for \$75.

Cybertext Corporation, Box HH, Arcata, CA 95521 (707) 822-7079.

Speedup board. The SPEEDPRO-5RTC doubles the speed of a pre-1984 Kaypro 2 or 4. It also



equips the computer with a battery backed-up real time clock/calendar and software to use its time and date capabilities. Powered by a lithium battery and rated for a minimum life of one year, the clock/calendar continues to keep the time and date current, even when the computer is off.

The software with this package, TIMEPRO, comes with 12 programs. They do such features as continuously displaying time and date on the screen, stamping and updating the time/date on disk files, keeping track of appointments for executives, and timing an event.

\$159.95. Digital Dynamics, P.O. Box 5653, Tacoma, WA 98405 (206) 627-0797.

Software that adds proportional spacing to WordStar. The publishers of *Proportional Spac-*

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ing on WordStar now have a software program that makes the modifications described in the book. Proportionstar™ modifies any version of WordStar to perform proportional spacing (where an "M" takes up more space than an "i") on popular daisywheel and thimble printers. It lets you do so without calling another program from WordStar.

The program is menu-driven and makes the patches in less than a minute, saving the user the trouble of doing it manually.

\$75 (includes a copy of *Proportional Spacing on WordStar*). Writing Consultants, 11 Creek Bend Drive, Fairport, NY 11450 (800) 828-6293 or in NY: (716) 977-0130.

Data base system. INFO-80 Application Development System

is targeted for the beginning as well as the advanced computer user. It includes building blocks for file definition, data entry and editing, file sorting and merging, record access and selection, report and letter writing, file format conversion and menu driven job control. INFO-80 can be intermixed with word processed text files.

\$395. The Software Store, 706 Chippewa Square, Marquette, MI 49855 (906) 228-7622. □

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Users' Groups

by Richard Conde and Peggy Lloyd

You can sit and cogitate, speculate, or hesitate all you want, but the truth of the matter is: telecommunications has achieved lift-off and is heading for the eighth dimension fast!

Let's face it, you've taken the initial plunge and bought a computer. Not only were you the first computer whiz on the block, but you've become an interior decorator as well. Notice how the dining room has been transformed into the new computer room. This is, of course, due to the electronic shrine permanently perched on the dining room table. (Never mind how all the family members are hunched over from eating their meals off the coffee table while sitting on the couch.)

You have survived all the B:DOS errors and the nine-inch thick stack of documentation, due in part to joining your local user group and sharing your experiences at the monthly meetings with all the other computer pioneers (proving there is safety in numbers).

Now, you find yourself once again on the threshold of a new frontier, pondering "to modem or not to modem; that is the question." Well, all I can say is, you've come a long way and—don't stop now. Read further and see how one user group in California has plugged in to this newest form of instant communication.

A board is born

Many of us have seen the movie *War Games* and some of us even read the article about bulletin boards in the November/December 1983 issue of PROFILES, which was fairly in depth. Now, let us tell you how it can really happen.

Words like 'download, upload, and SYSOP' have a fantastic ring. After discovering that you can now have Telex through Western Union's electronic mail service "Easy-Link" and watching a 13-year old tapping into New York, I had a flash of inspiration. Turning to Jay Pickett (a known RBBS user), I exclaimed "KWEST has to have a bulletin board! I'm tired of simply being the librarian."

Jay's answer was an immediate "Let's do it!" and off he went mumbling something about XMODEM, BYE and finally the name, Al Cobb. It seems Al already had a bulletin board and a good program to run it.

Ken Mitchell, owner of CBS, was cornered and asked "Could he, would he help us out?" A place was cleared and a Kaypro 10 was borrowed from a friend. A printer and modem were furnished by Ken. A week later, K-WEST's bulletin board was up and running.

By this time, Jay and Al had brought in Randy Tinch of the Mission Viejo KUG, and within three weeks a full CP/M and Public Domain Library were checked out. Documentation was found and the first three cooperative

boards were online. By the fourth week, Al, Jay, and Randy had the system locked. Subscribers from Al's old board joined. Then from out of nowhere, new names appeared and a new life for Kaypro users began in Costa Mesa, Mission Viejo, and Torrance.

I borrowed a battered 300 baud modem and rushed home. Looking at the back of my Kaypro, I found a hole labeled 'J3 modem serial port' and plugged in the jack. Lights came on. I typed ST (for SuperTerm) at the A>, and pressed D, then dialed my first number. A message flashed up, asking "How many nulls?" As a first-time user, I went into shock. "Q'est-ce que c'est nulls?" (What are these nulls?)

Our BBS, EasyOn 10, was alive and well and online, at last.

Peggy Lloyd is the Chairperson of the K-WEST User Group. EasyOn 10 is a product of JARCO. Those interested in joining the EasyOn 10 Network can contact JARCO at (213) 328-4759 (talk) or (213) 618-0151 (RBBS); 806 West 219th St., Torrance CA 90502.

The numbers for the three boards are:

K-WEST RBBS—(714) 432-9272; SYSOP Jay Pickett

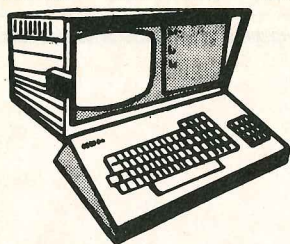
Mission Viejo RBBS—(714) 581-1556; SYSOP Randy Tinch

Torrance RBBS—(213) 618-0151; SYSOP Al Cobb. □

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Kug Update and Invitation

KUG, the International Kaypro Users' Group, invites you to join the more than 15,000 members from around the world.

As a member, you will receive the bi-monthly **KUGRAM®** newsletter that is read in all 50 states and 23 countries worldwide. The articles and programs in **KUGRAM®** are aimed at the first time user and the "pro." We have received welcoming comments from both.

Our column on CP/M, titled **CP/M STUFF**, is regarded as a fine tutorial in working with the KAYPRO operating system. Others include **BOX 100** (letters from members), **CHAPTERS** (new chapters from around the world), **IN RESPONSE** (answers to the many questions we receive), **VENDORS** (suppliers of Kaypro compatible products) and **REVIEWS** of software and hardware for the Kaypro Computer.

KUG also operates its own Bulletin Board and is a SIG (Special Interest Group) on CompuServe (GO PCS 25). You can meet and communicate with other **KUGGERS** through this electronic medium.

The **KUG** library has excellent public domain software such as **GAMES** (Adventure, Pac-Man, Eliza and more), **UTILITIES** (programs to make your file handling easier), **HELPS** (helpful hints on MBASIC, SBASIC, CP/M and others), and programs for MODEM, BUSINESS, STATISTICS, MULTI-FORMATS plus contributions from members that are constantly being added and updated.

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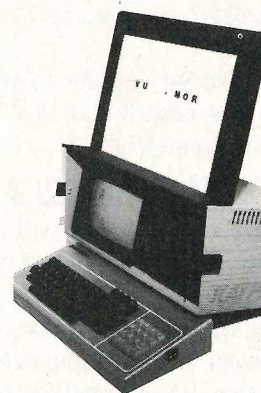
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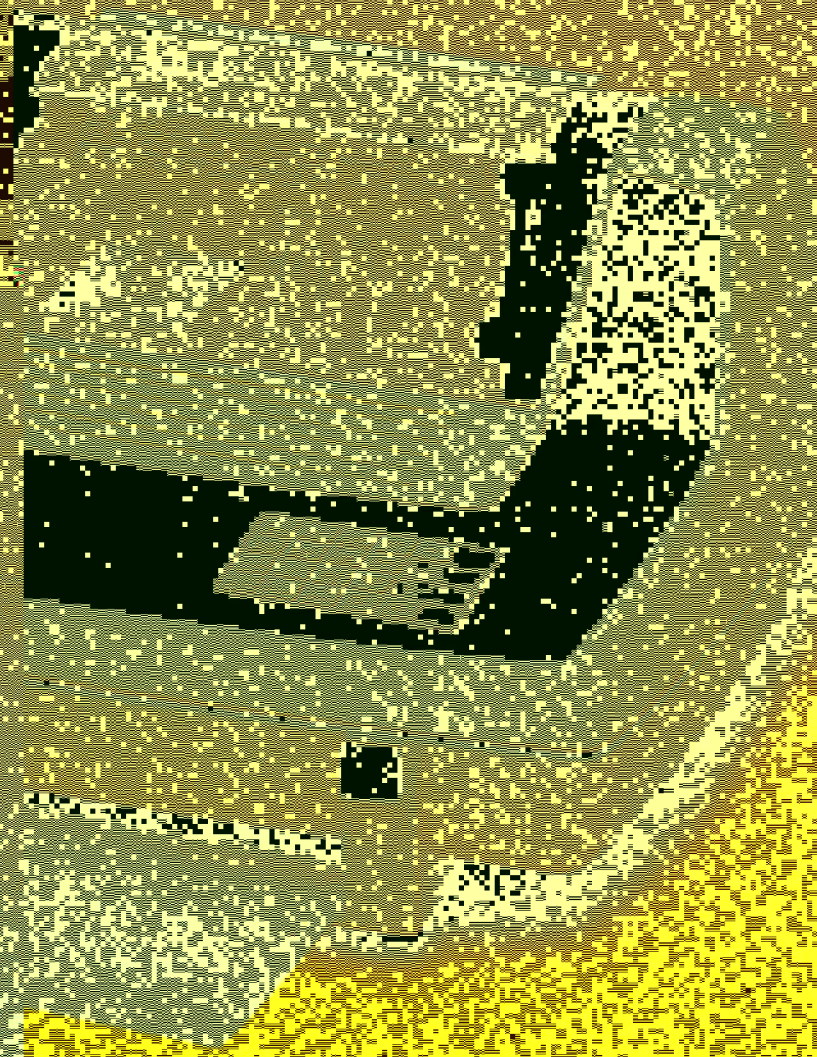
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