

Bay Area

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For Businesspeople, Professionals and Home Users  
*NERDS, ILLITERATES,*

27 September - 10 October 1983  
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An interview with

## Lee Felsenstein

- Creator of Osborne 1
  - "Toastmaster" of Homebrew Computer Club
  - Community Memory Project
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Plus—

Osborne Computer's  
Rise and Fall—  
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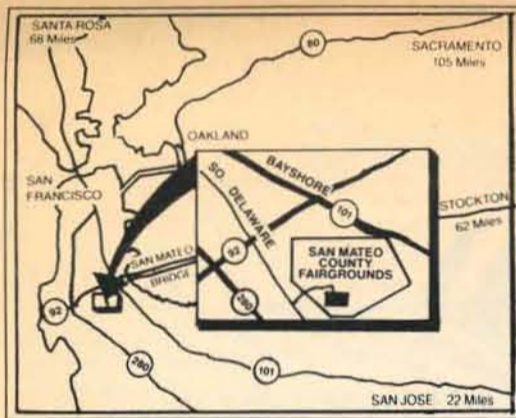
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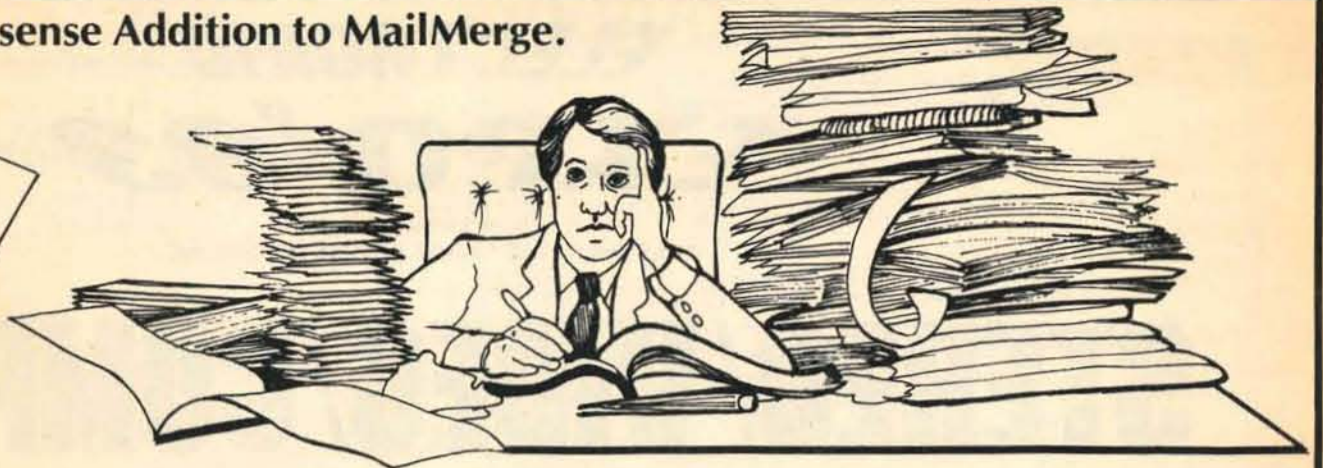
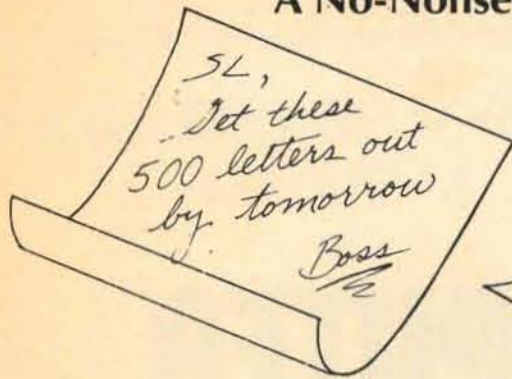
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## We've Moved!

Our search for larger quarters has finally ended. Computer Classifieds has moved from its office at Ashby and 7th Street in Berkeley to new, spacious offices at the Parker Plaza building, 2550 9th Street (South Hall), Suite 208, Berkeley, California 94710.

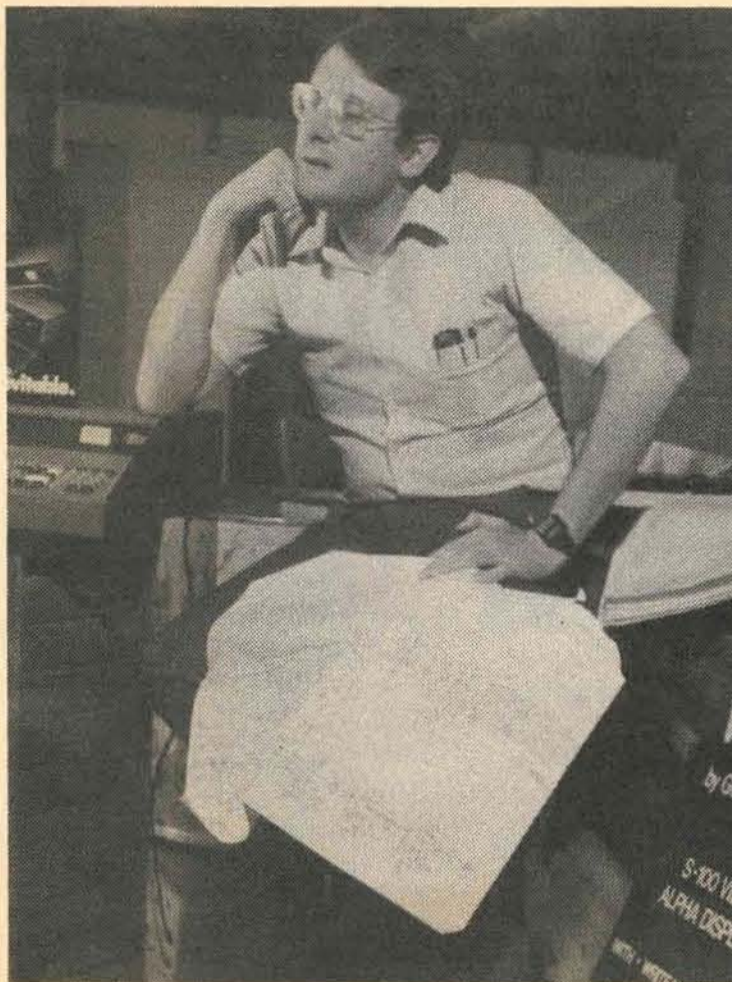
The phone number remains unchanged at (415) 848-6860, and the mailing address is still P.O. Box 2339, Berkeley, CA 94702

# Real Computer People

At 38, Lee Felsenstein is an ancient and prolific figure in the microcomputer industry.

Among his many accomplishments are the Sol-20 computer (the first self-contained personal computer), the Pennywhistle 103 kit modem, and the VDM-1 and VDM-2 video display adaptors. He is perhaps best known for his creation of the Osborne 1 portable computer.

Lee has also been active in the development of this burgeoning industry through his role as moderator of the Homebrew Com-



puter Club meetings from 1975 to the present. The early days of the club teemed with such luminaries as Osborne, Jobs and Wozniak.

His association with the Community Memory Project now spans a decade. Plans are underway to put this exciting and ambitious project on-line within the next few months.

Lee can be reached at (415) 486-2173.

**Computer Classifieds:** Going back a little bit, when did you first become interested in computers?

**Lee Felsenstein:** I became interested in computers in 1960 in high school - excuse me, I became *un*interested in computers in 1960 in high school, when my brother forced me to become the chief engineer of the Central High School Computer Club. He was a senior, I was a freshman, and it was a high school completely filled with over-achievers. I was at least 12, and I had been playing with electronics, generally starting projects without finishing them. My brother had some books from the library, circa 1945 or so, with diagrams in them about computer elements, and he would thrust them under my nose and say, "Can you build this? Can you make this work?" and I would say, "I think so," because I wasn't allowed to say no. He'd say, "Good, why don't we do it?" and so I found myself trying desperately to make vacuum tube circuits go, and I think I did very well considering how little I knew about what I was doing. After that I decided I didn't want to deal with things as incredibly finicky as computer electronics, and went on to play with analog electronics.

In 1970 I was re-hired at Ampex - of course I've jumped ten years. I worked there in 1968 and some of 1969 as a junior engineer in their special products division, and I had dropped out in '69 and spent some time in the Berkeley underground, and ran out of money, as one tends to do in that situation. So at the end of '69 I called my old boss back and asked if I could have my old job back. The job I got was in the program to develop a large scale audio-visual information retrieval system. It was driven by a Nova mini-computer, and I was gradually put in charge of the maintenance of the design of the computer interface, and it was in that period that I overcame my fear of computers. I had my first experience of programming the mini-computer in machine language. Also I had what I call my transcendental experience regarding computer networks when I was sent by Ampex to learn BASIC at the service bureau corporation. They were using computers on a network, since the only computers you could get then were mainframes, and the instructor made note of the fact that the system had done something only he could tell - it sort of hiccupped and was running a little more slowly in the response - and he said, "Well, that's because they switched over from the computer in Los Angeles to the one in Kansas City." And also they told us about if you prefix your file names with a certain number of asterisks it gave them a certain level of public accessibility. And so I put the two together and realized that you could in fact do a bulletin board this way, and you could develop a community of interest in effect, and it did not have to be geographically based, since the files were available anywhere on the network, and could be available at different levels of publicity. This was the kind of media that I had been looking for throughout my previous five years or so, in which I tried to do what I could to assist the underground press, which is one thing I dropped out to do in '69, work with the Berkeley Barb - prior to that in '66 I'd worked for them. I'd seen the underground press turn into something beset with all the evils of what we call broadcast communication. So this experience with the computers made me realize that that technology could form a kind of non-broadcast medium that I was looking to try to facilitate.

**CC:** Something that wouldn't be corrupted, or be subject to...

**LF:** It wouldn't be subject to the same kind of corruption, certainly. Any medium today that's commercial is in the business of selling its audience - readership or listeners - to the advertisers. That's what it's really selling. So automatically, for all the best intentions, the Tribe and the Barb are still in that situation. The concept of a non-broadcast medium is one which is much like telephone conversations, or sending letters. You pay essentially for the burden of the medium.

**CC:** You're talking now about the Community Memory project.

**LF:** Yes. That is my career. This stuff comes out of it and goes back into it.

**"We want Community Memory's business to be communications, we don't want its business to be feeding money into Gulf and Western, or Readers Digest, or whatever."**

**CC:** How would that project maintain itself? How would it be supported or funded? I mean, 25 cents a pop at a terminal, I don't think would really be enough to keep it going, do you?

**LF:** It depends on how many pops. A local system with about 20 to 50 terminals would cost in the region of \$50,000 to \$100,000, and it might have to be replaced every five years. So looking at it from the standpoint of the equipment cost, and also some personnel costs, which is maybe two people, one to stay home and the other to be the circuit rider, works out roughly to something like a nickel a minute. So it's in the right ball park. We're not that interested in the question of how can somebody get rich off of it, we're interested in how it can survive.

We want its business to be communications, we don't want its business to be feeding money into Gulf and Western, or Readers Digest, or whatever. We don't require any particular motive of finance...we want to show that it can be used, and how it can be used. We believe that it's possible, and we can show that it's possible. Beyond that is politics.

**CC:** Is anyone else doing anything like this now, anywhere in the country or in the world?

**LF:** Not that I know of, no. Except perhaps for bulletin boards. First of all, there's a significant quantitative difference because of the limitations of just about all the bulletin board systems. They're usually CP/M systems with about 300 items.

The public accessibility - to people without a terminal - is an important point we've always been concerned with. Community Memory in '73 was, I believe, the first public access computer system that was not set up just for games. The People's Computer Company in Menlo Park had been running for a little while then.

*continued on next page*

## An Inside Look at the Osborne situation — up-to-date interview with Osborne 1 creator Lee Felsenstein.

**Computer Classifieds:** What were the events at Osborne that led to its demise? I know you weren't privy to everything that was happening there...

**Lee Felsenstein:** No, I wasn't. Well, the major point of problems that I could see was in the failure to get organized in an extremely competent and professional way. I think this was put off until too late.

**CC:** Did they ever recognize the problems and try to re-organize?

**LF:** Towards the end they did, but I think that it went on for far too long before these efforts were really made to bear fruit. Adam was trying to look for someone new as President from September of '82. Osborne Computer was structured to be an extremely fast-growing company, theoretically the fastest-growing ever. When I heard that, I always asked if there's a reason why no one else has grown that fast before. I never got a satisfactory answer. Adam said that he wanted to staff the company with seasoned professionals who had done it before, but that really wasn't what happened. The company grew on enthusiasm and a lot of hard work, rather than on the basis of a very experience-based judgment as to what needed to be done. Things needed to be prepared in advance, so that problems such as the inventory control, cost-accounting systems and that sort of thing, couldn't accumulate until they finally broke down. You can't take care of those problems unless you've been involved with them before. You have to know what moves to make before they're needed. So you really do need professionals who've done all that. We didn't really have anyone who'd been involved in such a high-growth operation before.

**CC:** Until Adam brought new executives on board?

**LF:** I don't know that the had been involved in the kind of high growth either. They appeared competent enough, but I think the job they faced was so huge by that time, that they didn't

have much of a chance to make the necessary corrections. The high growth simply multiplied all the problems. The company was in a juvenile growth phase far too long. It should have moved out of it and begun to mature earlier, and it would have had an excellent chance if it had done so, but that would have required possibly even slowing down the growth.

CC: What do you mean by juvenile growth phase?

LF: Well, where you don't worry about consolidating your infrastructure to accommodate the increased demand. What usually happens is that a lot of people have to work very long hours and they still don't get everything done. You have to sort of continually run over the top of the problems rather than get them all the way down to the root.

CC: As a research scientist, what was it like for you working at Osborne?

LF: Well, I wouldn't call myself a research scientist now or then. I'm an engineer, I'm a toolmaker, and I'm an inventor and designer of new products, a conceptual designer. My conceptual design capabilities were subordinated to Adam's from the beginning. Adam always had his agenda of things he wanted to have built, and it was simply left to me to make them come about, however I did not have the experience to be able to say that this particular schedule of things is absurd, I need a staff and I need to be relieved of

## Real Computer People, continued from preceding page

CC: So you actually started in '73 with this idea?

LF: That's right.

CC: And people were able to access the data bank?

LF: They created it. We set up the first terminal in Leopold's Records in Berkeley. We didn't advertise much, because it was really an experiment then, we wanted to see how people would use it.

CC: For those people who haven't read the recent article in the San Jose Mercury, can you explain what you hope to achieve with Community Memory?

*"Community Memory is essentially a tool for the development and re-development of communities."*

LF: Community Memory is essentially a tool for the development and re-development of communities. The critical element is communication, unmediated communication among people, communication of a lateral nature which you could call a kind of grapevine communication. Community Memory is a system that's intended to make that a regular everyday computer-assisted process, i.e., bring the best that technology can bear to that particular need. The aim is to allow people to form communities, to identify communities, identify themselves as being interested in being a part of these communities. Defining communities as a group of people who communicate on a regular basis. Not necessarily so much that everybody's living together, but that they're communicating. For instance there is the investment community, and the intelligence community. I think you can apply that definition to them successfully. They don't all live in a commune. So it's a sort of a public utility, it's one which must be decentralized in terms of its ownership and operation, so it's a kind of process of development of the lump of hardware and software, and the software is much more important in this case, which can be replicated, can be set down in an overlapping fashion, which can communicate among the nodes to substitute communication for resource centralization.

continued on page 17

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# The Answer Woman



The Answer Woman, by Miriam Liskin, is a regular feature of Bay Area COMPUTER CLASSIFIEDS. Readers are urged to send in their general interest questions. Miriam will answer as many as space permits.

**Question:** I have all of my computer equipment, including printer, disks, and modem on one table. Could the electrical charges from any one of these damage my disks?

**Answer:** In general, it is a good idea to keep floppy disks some distance away from any sources of electromagnetic fields, so when you remove a disk from your system, don't lay it on top of your monitor or system unit. If you store your floppies in a box sitting next to your system, that is probably safe, because magnetic fields decrease rapidly in strength with distance (the strength of the field is inversely proportional to the square of the distance from the source). It is a good idea to

immediately replace disks in their paper dust jackets and return them to your storage box when you are not using them, to protect them from dust and physical damage, as well as stray electromagnetic fields.

There are also a host of problems not directly affecting the disks which can result from the way your system is arranged. Depending on your particular system configuration, you may find you have intermittent problems due to the effect on one component of either electromagnetic fields or radio frequency interference generated by another component. I have seen, for example, a case where a hard disk controller card installed in an IBM PC system

caused persistent wavering of the image on the monitor, which was set directly on top of the system unit. This problem was present all the time, so it was easy to determine the cause. In another instance, in a system with an external printer buffer which was placed on top of a hard disk unit, the printer would hang up at irregular intervals during the day. On the other hand, I habitually set my printer buffer and my modem on top of my S-100 system, which is in turn sitting on top of the floppy disk box, and have never experienced any difficulties. Check all of your system hardware manuals for specific warnings in the section on setting up your system. If there are none, I would suggest simply a watchful atti-

tude during the first few weeks you have your system, so you catch any potential problems before you are fully up and running and risk losing any valuable data.

If you have a letter quality printer or large high-speed dot matrix printer, it should be placed on a separate table or printer stand because the vibration can, in the long run, be harmful to your other system components. I'm sure you are relieved to hear this, because in the short run, the vibration can be very annoying to the operator.

With all of the growing awareness of ergonomics (designing the work station for the comfort and safety of the operator), the problem of providing adequate work space is frequently overlooked. Make sure when you set up your system that you allow enough space to spread out your input materials, printouts, reference manuals, etc. so that you can work comfortably without having to pile things up on top of your computer equipment.

**Question:** I have a Vector System 3005 with a 5-mega-byte hard disk and one floppy disk. I am using FMS-80 to maintain several different mailing list data bases, which vary in size from 50K to 400K. My problem is that when I try to back up the largest file, I get a message "DISK WRITE ERROR = A:". Before I noticed the "A:" in the error message, I tried a brand new formatted disk and it worked the first time, but the second time I used it I got the same error message. I don't think there is anything wrong with the file, because I never have any problems using the file or printing labels or reports. What could this problem be?

**Answer:** Your confusion is due to a combination of the way in which PIP copies files and the terse, and in this case, misleading, error message produced by CP/M.

The problem is that PIP has run out of space on the floppy disk while copying your large file. The CP/M error message "DISK WRITE ERROR" always means that you have run out of space on your destination disk (the disk you are copying TO). On your system, the hard disk is configured as drive A: or as two logical drives, A: and B:. The floppy is referred to as drive C:. Even though the error message mentions only drive A:, it is telling you that you have run out of space on drive C: (while copying something from A:). If there had been a problem reading the file from A: or writing to the disk in drive C:, you would have gotten the message "BDOS ERROR ON A: BAD SECTOR" or "BDOS ERROR ON C: BAD SECTOR".

Your system's floppy disk has a capacity of about 600K, and the size of the file you are backing up is 400K. I assume that this is the only file you are copy-



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theless, because of the way PIP operates, you do not have enough space on your disk to complete the copy. Let's say your file is called MAILLIST.DAT. When you give the copy command, PIP first checks your destination disk, in this case the disk in drive C:, to see if there is already a file called MAILLIST.DAT on the disk. If there is, the new copy of the file will replace the old, but PIP does not write directly over the old file. PIP creates a new file on drive C: called MAILLIST.\*\*\*, and copies MAILLIST.DAT from drive A: into this new file. If the copy is completed successfully, PIP deletes the original MAILLIST.DAT on C:, and renames MAILLIST.\*\*\* to MAILLIST.DAT. If something goes wrong during the copy process, you still have your original file intact on the floppy disk, and the partial file MAILLIST.\*\*\*. "\*\*\*" is the standard extension used by CP/M applications programmers for temporary, or scratch files. If the DIR command ever shows you a file with the extension "\*\*\*", they were created by some program (not necessarily PIP) which opened a temporary output file and was interrupted before it could complete its processing and delete the temporary file. If you TYPE these files, or use STAT to check their size, you will frequently find that they are empty, and you can generally feel free to erase them.

When you are copying the same file over and over onto the same disk, you need to have an amount of free space on the disk equal to the size of the file you are copying onto the disk. Once the file is copied, the space occupied by the old version of the file is freed again, but the space must be there while PIP is working. Until your file grew to a size of 300K, or half the capacity of the floppy disk, you had no problems copying it. The time you used a blank formatted disk, you of course had 600K free and the copy was successful.

This information does not apply only to hard disk systems. The situation is exactly the same if you are copying files from one floppy disk to another. If you are copying multiple files onto a disk, remember that as PIP begins to copy each file, it must at that moment have enough workspace on the disk for a complete copy of that file, and that the space taken up by the original file is regained as soon as the file is copied successfully.

The solution is to erase the original file(s) from the disk before you begin the copy. You don't need to reformat the disk to accomplish this; you can use CP/M's ERASE command: "ERA C:MAILLIST.DAT". More generally, "ERA C:.\*" will erase the entire floppy, after requesting confirmation that you really want to perform this rather drastic operation. Be careful — if you are logged onto the hard disk, and you forget the "C:" you will erase the file(s) on your hard disk. It's always a good idea to have two backup disks if you are

erasing your floppy before making the new backup. You can see that if you had a system crash while making your copy and the file on the hard disk was damaged, you would have no backup left. You might decide to maintain two backup disks for this file, and alternate which disk you use. That way if you lost the file on the hard disk after erasing the most recent backup, you would still have the next-most-recent backup. To use this file, you would need to copy it back to the hard disk and then re-enter whatever information was added to the file since the

backup was made. If your information changes a great deal between backups, and it would be hard to reconstruct the new entries, you can simply back up your file onto two different floppies each time you use it.

If your file grows larger than 600K, you will in fact run out of space on your floppy disk, and will no longer be able to copy the file with PIP. Your system has a utility program called STORE.COM, which will split up a large file or group of files onto multiple floppy disks. If you need to recover the files from the floppies, you must use the corresponding program, RESTORE, to accomplish this. Most hard disk systems have similar utilities (which might have different names) to allow for backing up large files. The Vector utilities STORE.COM and RESTORE.COM require that the first part of the file name be at most seven characters long, so if you anticipate using this method of backup, you could rename your file to MAILLIST.DAT. (In order to continue using the file, you'll have to change the name wherever the file is referred to by other FMS-80 files, which might

be quite a few places!) This is necessary because the files on the backup disks are named MAILLIST1.DAT, MAILLIST2.DAT, etc. by the STORE program, so that RESTORE can check to make sure you are recovering the file in proper sequence. ■

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# Events



Topo, the programmable robot, seems to be taking lessons from playmate Kara Strong, 4, a Berkeley resident. Topo will be among the hundreds of new consumer electronics items featured at "Electronic Expo '83". ■

## "Electronic Expo '83" Coming to San Mateo.

SAN MATEO...Stereo equipment from laser-driven players to car stereos, home and personal computers, home video systems, telephone equipment, microwave ovens and even robots are highlights of "Electronic Expo '83," Friday, September 30 through Monday, October 3 at the San Mateo County Fairgrounds in San Mateo.

The Expo's hours are noon to 10 pm Friday, 10 am to 10 pm Saturday, 10 am to 8 pm Sunday, and 10 am to 6 pm Monday. Admission is \$3, free for senior citizens and children 12 and under. Call (415) 994-8001 for more info. ■

## "WHOSE FIRST AMENDMENT?"

Media Alliance will present a symposium on the impact of telecommunications technology on the First Amendment on Saturday, October 29, 6 - 8:30pm at the Lone Mountain Conference Center in San Francisco, on Turk between Parker and Masonic.

Symposium speakers will discuss who the First Amendment protects — the people of the United States, or the press as represented by broadcasters, cable operators and publishers. Les Brown, editor of Channels, Herbert Schiller, communications professor at UC San Diego and author, and Harold Farrow,

attorney, will address the critical question, "Will regulation or the free marketplace best protect the free flow of information and the diversity of voices?" For information, call Media Alliance at (415) 441-2557. ■

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### ADVANCED COMMUNICATION METHODS FOR TECHNICAL WRITERS

A class geared for documentation managers and technical writers desiring to go beyond the standard approach to technical writing. Class topics will be on increasing reader interest, audience analysis, trends within the industry and new methods for organizing. Class on 3 Monday evenings starting October 24, at Fort Mason in San Francisco. Cost is \$55.00. Call (415) 441-2557. ■

### WRITING CLASSES

California Publishing Institute is offering short courses in Technical Writing; Computer Documentation; Newsletters; Computer-Aided Publishing; and Science Writing. Classes offered weekends and evenings. Call (415) 857-0774 ■

### COMPUTER LITERACY CLASSES

Whether you're thinking about getting a home computer, wondering if a computer would be a help in your business, or just curious what all the talk these days about computers is really saying, there are classes out there that can help.

Dark Star Systems of San Francisco offers classes on a continuing basis on a variety of microcomputer applications, ranging from word processing to data base to spread sheet applications. All classes are offered in beginning, intermediate, or advanced levels. The courses are taught by professionals who are dedicated to providing people with a sound understanding in the course work, in a relaxed hands-on atmosphere.

The next class being offered, Introduction to Wordstar, includes a background on microcomputers and is intended for the novice user. Class fee is \$60, advance registration is required.

Contact Leslie Siler at (415) 931-0748. ■

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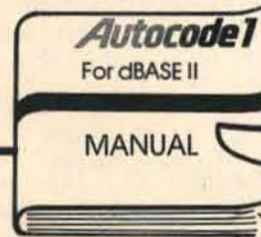


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# Computer Beat

by Steve Rosenthal

## Serial Conversations

If you have information to exchange between computers at the same location, one of the easiest ways is by serial connection. The same serial ports on most small computers that are used to talk to printers or to modems can also be used to talk to other computers.

Over the past few issues, I wrote about how before you hook up two computers, make sure you have compatible voltages and the right connectors. Unless both systems have "RS232C" serial ports, connecting two serial ports together could burn out components in one or both of the computers.

But having two RS232C ports only guarantees that the circuits won't make sparks. To exchange data, you'll have to have the right data connections, right handshaking, and right software.

### Data Connections

Most RS232C serial ports look physically alike (they use a "DB25" connector), but there are two different types. That's because the standard was originally meant for connecting modems to terminals, and one goal was to allow the connection to be made by a straight, pin-for-pin cable. To allow data to flow from modem to terminal on one wire and from terminal to modem on another, the two are wired slightly differently.

On the modem side (technically called the DCE or data circuit-terminating equipment), data is sent out on pin 2 and received on pin 3. On the terminal side, it's the opposite: data must be sent out from pin 3, and received on pin 2. On both, the signal is sent as a voltage relative to pin 7, signal ground.

Whether the connector is a male or female connector doesn't really tell you its wiring. On both modems and terminals, the standard is for female connectors on the device, with male connectors on the cable. In the few cases where that is not so, the wiring is usually otherwise standard except for connector gender.

If both computer serial ports are wired like terminals (or if both are wired like modems), you'll need either a crossover cable or a null modem. The first, as its name implies, is simply a cable which has the wire from pin 2 at one end going to pin 3 at the other, and the pin 3 wire going to pin 2. The null modem is a similar arrangement, but wired directly between two connectors without any length of cable in between — you use it at the end of a cable or between two cables to cross the data lines over (it also may connect certain status and control lines described below).

If one computer is wired like a modem, and one like a terminal, then you're in luck. A simple straight-through cable is all you'll need.


If you don't know whether your computer is wired as a terminal or a modem, you can check it easily if you have any programs which send data out

the serial port. The output pin will change voltage (measured relative to pin 7) when data goes out, the input pin will not.

continued on page 15

**Why advertise in Bay Area Computer Classifieds?**

September 11, 1983



Stan Politi  
Bay Area Computer Classifieds  
P.O. Box 2339  
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Dear Mr. Politi:

I would like to take this opportunity to inform you of the results of our advertising campaign in the Bay Area Computer Classifieds. As you will recall, we ran one ad (8 X 10 inches) accompanied by a "discount coupon" in the August 2nd - 15th 1983 issue of the Classifieds. The coupon allowed show attendees a one dollar discount on the admission price to the COMPUTER SUPERMARKET.

Based upon the number of coupons redeemed at the show, the Bay Area Computer Classifieds ranked number one in our campaign. Other forms of advertising for the COMPUTER SUPERMARKET, while effective, resulted in a significantly higher cost per person attracted to the show. The Bay Area Computer Classifieds was our most cost effective form of advertising.

The next COMPUTER SUPERMARKET will be held on December 10th and 11th at the San Mateo County Fairgrounds. This show will provide the Christmas shopper, hobbyist, and business user with outstanding savings on a large selection of personal computers, software and accessories. I look forward to working with you on the advertising campaign for this show.

Thanks again for your help and your participation in the August show.

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# Guest Features

## COMPUTER

by Alexander G. van Broek

**Labor Code Change:** Section 3351.5(c) of the California Labor Code has been amended to include in the definition of "employee" a person who is engaged by contract for the creation of a specially ordered or commissioned work of authorship, where the contracting parties have a written agreement which expressly states that the work will be considered a "work made for hire," as defined in Section 101 of Title 17 of the U.S. Code (The Copyright Law of 1976).

In the computer field, independent contractors are often hired to write programs. Sufficiently original computer programs are considered literary works of authorship. Under the new Copyright Law the programmer is considered the author (and therefore owner of the copyright) unless the agreement between the parties states that the independent contractor has been hired to produce a work for hire. The change in the Labor Code MAY mean that such people will be considered "employees for the purposes of workers' unemployment compensation disability insurance. The law was passed designating artists as the intended beneficiary of the new legislation, but the actual law says "any person." Employers using contractors may have to pay contributions for these benefit programs, and contractors may be entitled to receive them.

**Agent May Be an Independent Contractor:** A recent Court of Appeal decision in Los Angeles County, *Largey vs. Intrastate Radiotelephone, Inc.*, 186 Cal. Rptr. 520, held that an independent contractor operating under an agreement that expressly stated that the person was not an agent, was nevertheless to be considered an agent for the purposes of finding liability against the employer in an automobile accident. The case concerned whether a company should be held liable because a consultant caused an accident on his way to the office on a Sunday. If the jury had found that the person causing the accident was merely going to or coming from work there would have been no liability. In fact, they found, the contractor often went back and forth from his home to the office in the course of his work.

The important note for consultants and those who hire them is to be careful to keep the relationship simple and straightforward. In this case the consultant was an independent contractor to Company X which in turn had an agency relationship with defendant Intrastate. Furthermore, it was unclear which firm the consultant was doing work

## LAW NOTES

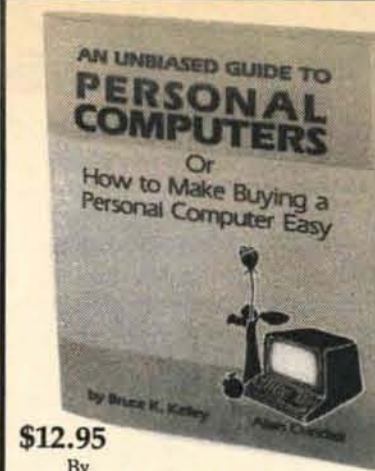
for on the day in question. If your situation involves similar types of complications, be sure that all the risks of liability are adequately insured.

**Real Property Tax:** A more recent Court of Appeal decision, *Security Data, Inc. vs. County of Contra Costa and City of Walnut Creek*, 193 Cal.Rptr. 121, held that the taxing authority could not impose real property tax on the mainframe computer or on the "computer room installation" because all the components were easily removed. The Court found it important that the equipment had wheels, and that the false floor, cabling, and air conditioning were easily taken up. The bank's data processing center was in a leased space in a commercial building. The Court distinguished this case from another involving Bank of America where the computer installation was far more extensive and the building had been constructed specifically for the purpose of housing a data center.

**Extra Cost for Copyright Deposits:** Some owners of copyrights prefer to wait until an infringement occurs before registering their work and depositing it with the Copyright Office. The danger with such delay is that it is not possible to obtain an immediate preliminary injunction to stop infringement. The advantage is that it saves the time and expense of registering works unnecessarily and protects secrets revealed by putting the code on display at the Copyright Office.

The Copyright Office has now thrown another factor into the calculation. In July an Interim Regulation, 37 CFR Part 202, was made effective to solve the problem of the exploding volume of copyright deposits. Deposits will now be destroyed after five years unless the Copyright Office makes a special ruling because of the value of the work, or unless the registrant applies for "full-term retention," has the application approved, and pays a fee of \$135. In cases where litigation is anticipated after five years, it may be a good idea to apply for the full term. Conversely, this is another argument for delaying registration of copyright. Caveat: Delaying registration for more than five years after publication without a proper notice of copyright would be fatal to copyright protection. ■

\* Alexander G. van Broek has worked in the computer field since 1967 as a software consultant on mainframe systems. In 1977 he attended Golden Gate Law School and in 1982 began practicing in San Francisco, specializing in computer-related law.



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By Bruce K. Kelley & Alan W. Cundall

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CHAPTER 2

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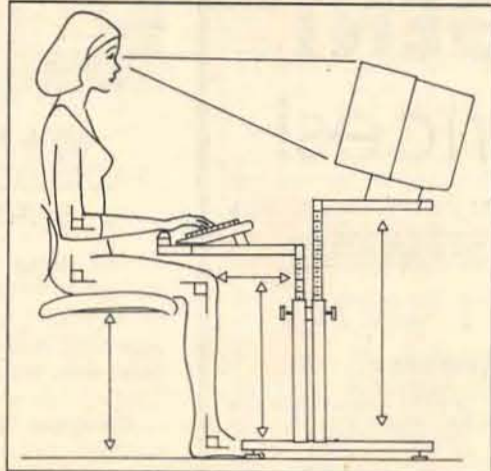
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## Guest Feature

### History of Mass Storage Devices, Part 2 Floppies, Disks and Drives

By Bob Cowart



If you own a computer, it probably has "disk drives". A disk drive is a device which allows a computer to store information onto, and retrieve information from "floppy disks" which are inserted into the disk drive.

A floppy disk is a thin, flexible, circular piece of plastic which is surfaced with very fine particles of iron oxide (much like the particles used on cassette tapes). The disk is then housed in a thicker, but still flexible, jacket large enough to allow the disk inside to rotate.

With personal computers becoming so popular, there is enough talk about different types and sizes of disk drives to confuse even the most seasoned computerholic. If you are a neophyte looking to buy a computer, it's even worse. Advertisements, salespeople and your friendly next-door computer junkie probably all have conflicting opinions about floppy disks and floppy disk drives. What's a shopper to do? Well, follow along and maybe a few of the pieces will begin to fit into the puzzle.

Before the appearance of floppy disk drives, storing large amounts of information (something any useful computer needs to do) was achieved via long, slow, and laborious processes (for details, see my column in the last issue of Computer Classifieds). This, of course, didn't daunt the loyal microcomputer hobbyist who reveled in the technical considerations of PROM burners, paper tape punches and high-speed cassette drives. Inventing Rube Goldberg contrivances and concocting methods for skinning cats nine different, and often arduous ways, are the stuff of which hobbies (and more hobbyists) are born; occasionally leading to the appearance of, eventually, very useful products. The familiar (and indispensable) telephone is a prime example. The microcomputer floppy disk system is another.

In 1977, North Star Computers of Berkeley (where else?), previously known as Kentucky Fried Computers, introduced the first floppy disk data storage system for microcomputers. The appearance of a floppy disk system for microcomputers was a significant milestone for the industry. Almost overnight, microcomputers were transformed from hobbyist-oriented curiosities into what were soon to become practical, efficient tools for small businesses and engineering.

Not that Chuck Grant and Mark Greenberg (founders of North Star) invented the floppy disk drive, mind you. But what

they did do was develop a product which combined two pre-existing technologies. Their software and hardware package could be connected to most of the hobbyist microcomputers of the day and even included a quite advanced (for its time) version of the now popular programming language, BASIC. The package also, necessarily, included the first floppy disk operating-system (DOS) for microcomputers - North Star DOS.

That historic occasion set in motion one of the many continuing battles of the microcomputer world. As other manufacturers hopped on the bandwagon and introduced THEIR floppy disk systems, the confusion began. Each manufacturer sold a different DOS, and many used incompatible types of floppy disk drives and disks.

This meant that two people with computers of different brands couldn't swap floppy disks if they wanted to share programs or other "data" (like text files or databases). This sent people looking for others of their "own kind", forming clubs, called "user's groups" as a means of sharing floppy disks which speak in the same tongue.

What was (and still is) needed are microcomputer floppy disk standards. Which raises an important question: who sets the standards? Those who come first; or those with the best idea? Or maybe - those who have the most clout?

Well, it's beginning to become clearer with every passing day (and IBM microcomputer sold) that market influence is the prime mover in the setting of standards. The IBM standard for floppy disk storage is taking hold. But still, the war wages on, and American ingenuity proliferates. New technology is born every day, so trying to second-guess the future when considering which disk standard is for you may be as futile an exercise as pondering which 78 RPM record player to buy.

However, just to put current technology into focus, here are some of your choices this week.

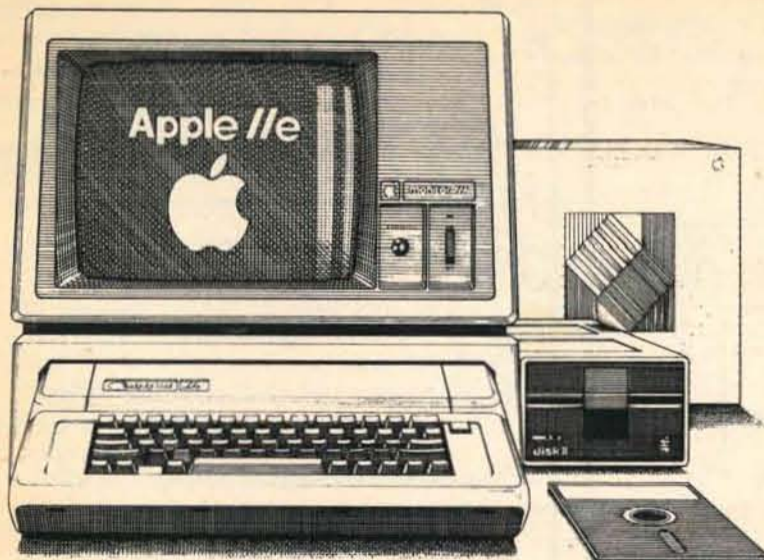
To begin with, there are four floppy disk sizes: 3, 3.5, 5.25, and 8-inch diameters. Additionally, there are rumours of IBM announcing a 4-inch format.

The 3 and 3.25-inch varieties were introduced in large quantities only recently by Japan Inc. (Sony, et al) and some of these are not actually "floppy" in nature. The ones I have seen have hard plastic cases to protect them. They are very convenient

continued on page 16

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### NEW HOW-TO PACKAGE INCLUDES SOFTWARE

The Home Word Processing Service — Start-Up Kit is a new information package which describes in detail how to start a small word processing service.

Designed for the increasing number of people interested in making money with micro-computers, this package includes a manual, several informative pamphlets, and software. According to the manufacturer, the software provides sample start-up, marketing, and operating plans for the immediate start-up of a word processing venture.

Offered at \$29.95, the Home Word Processing Service — Start-Up Kit comes with a full money-back guarantee and is available from South Bay Word Processing at 1558 Oro Vista Road, Suite 290, San Diego, California 92154, (619) 575-8381. ■

Guide to Making Money as Computer Consultant, (\$18.95 paper, 167 pages) and the Consultant's Log, (\$3.00, paper, pages).

High Tech Consulting, John Zarrella, provides essential information for anyone considering a career as a computer consultant. The book describes the qualifications that are needed to become a successful consultant. The book also discusses finding work, setting up a consulting business, the consulting lifestyle, interfacing with clients, setting rates, and collecting payments.

Consultant's Log is a monthly recordkeeping logbook. Each log contains space to record mileage, time spent on each consulting project, and entertainment expenses for a complete month. ■



### EAGLE INTRODUCES LOW COST, IBM PC-COMPATIBLE 16-BIT PERSONAL COMPUTER

LOS GATOS, CA (August 2) Eagle Computer, Inc. has introduced a 16-bit IBM PC compatible personal computer. The Eagle PC comes standard with high-res monochrome 720 x 352

### NEW BOOK DESCRIBES COMPUTER CONSULTING OPPORTUNITIES.

Microcomputer Applications has announced two new publications: *High-Tech Consulting: A*

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pixel graphics on two Eagle PC versions, the PC-1 and PC-2. An optional color monitor adaptor can be added. Two asynch serial ports and one parallel port are also standard.

The 105-key detachable keyboard includes 24 user-definable special function keys, many of which have been labelled with word processing commands.

The PC-1 at \$2,995 features one 320K byte drive while the PC-2 at \$3,495 provides two 320K byte drives. Both have 128K bytes memory along with MS-DOS, CP/M-86, EagleWriter and EagleCalc at no additional charge.

For more information contact: Eagle Computer, Inc., 983 University Ave., Los Gatos, CA 95030, (408) 395-5005.

### ROBOTICS TOMORROW

The Robotics Society of America has published its premier issue of *ROBOTICS TOMORROW*, their official journal. Anyone interested in robotics or who wishes to keep abreast of what's going on in the field of robotics will want a copy.

Direct inquiries to: Robotics Society of America, 200 California Street, Suite 215, Palo Alto, CA 94306, (415) 326-6095. ■

### NATIONAL MEMORY SYSTEMS OFFERS 1 GIGABYTE MEMORY STORAGE ON IBM PC AND PC COMPATIBLES.

LIVERMORE, Calif. — National Memory Systems Corporation introduces the PC-8000 memory subsystem for the IBM PC and PC-compatible microcomputers.

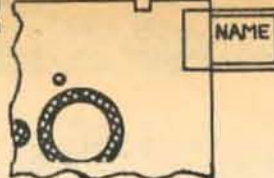
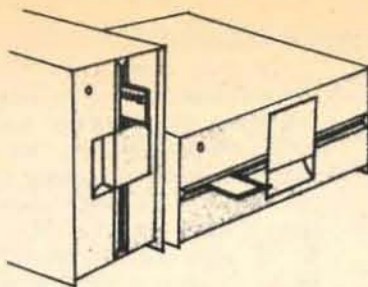
The PC-8000 system attaches up to 1 gigabyte (1000 megabytes) of memory storage to an IBM PC or compatible. This represents 25 times the capacity of any other memory storage peripheral currently on the market, according to company president Victor Weber.

The PC-8000 subsystem is ideal for very large data base applications, software development and as a file server for computer networking.

For further information contact: National Memory Systems Corp., 355 Earhart Way, Livermore, CA 94550, (415) 443-1669. ■



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### Computer Beat, continued from page 11

On a very few computers, the line to pin 7 is not connected. Despite a very clear statement in the RS232 standard that pin 7 is to be used as the signal ground (reference level for signals) and pin 1 as a safety ground connecting the cases of equipment, a few manufacturers have decided that it is easier to connect three pins in a row than those with a gap between. These few models use pin 1 as the signal ground, sometimes connecting it to the case as well. If you run across such a model, first check with a neon tester that there is no power-line voltage on the case and pin 1 before connecting it to pin 7 of another machine.

#### Hardware Handshaking

Most small computer serial ports are wired so they can send and receive signals with just the data lines and signal ground connected. However, on some models, data cannot be exchanged unless certain other "supervisory" lines are also connected.

In a full RS232C connection between a terminal and a modem, two signal lines are used to tell the modem that the terminal is ready. Data terminal ready (DTR), on pin 20, reports that the terminal is electrically ready to send data. Request to Send (RTS), on pin 4, that it has data to send.

continued on page 16

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**Mass Storage Devices,  
continued from page 13**

as they easily slip into, and out of, your pocket (effortless misplacement of your doctoral thesis). And like most of the other types of disks, there is yet to be a standard set. There are very few machines using these disks at present.

The 5.25-inch floppy disk systems are, on the other hand, by far the most popular in the personal computer arena, with Radio Shack, Apple, IBM, Osborne, NorthStar, Kaypro, DEC, Commodore and many other lines of computers using this size. The problem is that most of these machines "write" (store information) on the floppy disks using non-compatible coding techniques.

Only recently, with the realization that IBM compatibility is becoming increasingly important, are computer manufacturers beginning to design machines which can at least "read" (retrieve data) from IBM PC floppy disks even if they cannot "write" (store data) in IBM format. However, even if a computer can read information from a floppy disk, this doesn't mean it can use that information properly.

In my next column I will discuss some more details of 5.25 inch drives as well as of the 8-inch variety.

Robert Cowart was formerly a Technical Support Specialist at NorthStar Computers, Inc., solving hardware and software problems for NorthStar dealers, distributors, and OEMs. He currently writes for Apple A magazine, the User's guide to CP/M Systems and Software, and the International NorthStar Users Association's quarterly publication, The Compass. In addition, he does custom data base programming in dBASE II and small systems sales and consultation. He can be reached at: 540-6667 (Berkeley).

**Computer Beat,  
continued from page 15**

Similarly, three lines report the status of the modem side of the connection. Data Set Ready (DSR), on pin 6, reports that the modem is electrically ready. Carrier Detect (CD), also known as Data Carrier Detect (DCD), on pin 8, says that a connection exists to another modem. And Clear to Send (CTS), on pin 5, says that the modem is ready to accept data from the terminal.

Some serial ports pay attention to one or more of these status lines, and won't receive or send data unless the appropriate signal is present. Since computers are generally wired like terminals, when they require status signals, it is most often the signals saying that the modem is ready.

The easiest way to handle this is to make each computer that needs hardware handshaking provide its own ready signals

*continued on page 17*

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**Real Computer People, continued from page 7**

When we started out we thought that we would have to have one central computer with all the stuff in it, but we began to realize that it's possible — and we haven't proved this yet, incidentally — to keep the stuff stored in the places where it's been entered, and if you can have fast enough and good enough communication among those nodes, then you can get to everything, in theory, from anywhere. And we can temper this with the idea that you don't have to get everywhere. In other words, if you're looking for, oh, a ...

**CC:** A 69 VW?

**LF:** Yes, a 69 VW. You're not that interested in the ones in Montana, or those more than 100 miles away.

**CC:** But if you had 1000 terminals in the Bay Area, how would you be able to access that information if you don't have central storage?

**LF:** Well, it's conceptually easy, although it hasn't really been done. One thousand terminals may be on systems that are, say 50 terminals on a system. That means there are 20 systems. So there are 20 places where the information could be. Now using packet-switching high-speed communications protocols, it becomes possible to set up a kind of mesh network because you're going to keep growing. These new ones are going to keep going down, not according to any master plan, and they'll be tied in on a haphazard fashion to form a physically undirected network. However, everybody has their address on the network, and the packets can go sloshing around there. You would be able to, for instance — and we don't have this software done, so I can't say you can — request that your search go out on a certain number of levels, or that it even be on a random basis, say the first three nodes you hit. Or you could specify which ones you wanted to search in.

**CC:** Wouldn't that be too slow?

**LF:** No, because the intercommunication between the nodes is going to be on dedicated high-speed lines. It's going to use packet switching, which is a way of getting a lot of information funnelled to a lot of different places through one wire. As you get further away it will get slower. So we balance this concept of limited availability against the limited need for people to have information that is physically far removed.

*"If it's a decentralized network of centers, each locally owned and meeting some sort of interchange protocols, who's in charge?"*

**CC:** How would you educate various segments of the public in using this, or in accepting it?

**LF:** We'd let them play with it. That's what we did the first time at Leopolds. People would come up, and we'd say "Would you like to use our electronic bulletin board? We're using a computer." They were just walking up the stairs to the record store, and there we were. They always said "Oh boy, let me try." That was the universal response. We had expected the use would be limited to the obvious things like the most used classified ads, which would be cars, jobs and housing. But it wasn't. Music was a big item because we were set up at Leopolds, and as far as we could tell just about all of the serious musicians' traffic came over to the machine, because this was something that was a matter of sustaining their community and their individual livelihood. They're trying to make a living as musicians, so the biggest identifiable database we collected while the terminal was there was for music, and music-related items. When we moved the terminal to the Whole Earth Access store, the musicians did not move with it. We got a lot of really imaginative stuff there.

**CC:** Do you see this as actually bringing people together physically, on a social basis?

**LF:** Between groups and individuals, yes, I see it that way.

**CC:** So it's kind of a town hall forum?

**LF:** Yes. There's a debate within the group about when we should go on-line for telephone access. We can see the possibilities — where to place terminals in public places to foster local communication structure. . . we'd like to facilitate neighborhood centers.

**CC:** When do you see this going on-line?

**LF:** It looks like it will be this winter.

**CC:** How many terminals would you start with?

**LF:** We don't know precisely, but it will be somewhere between four and twenty.

**CC:** Where will it be?

*continued on page 30*

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**Computer Beat, continued from page 16**

(the actual handshaking between systems for small computers should be done in software). This can be done by wiring pin 4, which says there is data to be sent, directly to pins 5, 6 and 8, telling the port that the interface can accept data, is powered-up, and is connected. If pin 4 does not provide a signal when data is available, pin 20, which gives a true signal whenever the port is powered-up, can be used instead.

Again, in most cases wiring all these supervisory lines won't be necessary, since most small computers only require the two data lines and signal ground to exchange data. But as we proceed to make the connection by building up the layers, correct wiring has to precede the software.

Next issue: software for direct connection. ■

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# Guest Feature

## How Floppy Disk Drives Work

by Derek Younkin

As promised in my last column, this one will be a more in-depth look at the floppy disk drive, but first a few items. I would like to hear from the readers...let me know what some of your maintenance problems are and your comments. Send your questions and laudatory comments to:

Derek Younkin,  
Computer & Video Repair Center,  
2455-M Old Middlefield Way,  
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Send complaints to the Editor!

Special note: All of the figures and sources of technical information are reproduced by permission of Shugart Corporation. References are to the Shugart SA 800/801 8-inch drive system. Thank you, Shugart!

Now to the floppy drive. In ancient computer times (about ten years ago), as the potential market for the desk top computer was evolving, there was a need for a new device. The large and expensive high speed reel to reel drives were just not suited to the mini market. Smaller and less expensive cassette drives were just too slow. What was needed was a compact, efficient, low cost device with high speed and random access to data and different programs. The useful life of both the device and the media would have to be high, and the mean time between failures would have to be low.

By 1973 the first production model of the floppy drive was introduced by Shugart. (In 1973 Shugart produced 1,000 drives; now they produce about 4,000 a day.) This early floppy drive was a quantum jump for the mini-computer. The ability to access data was coming closer to the microprocessor's capability to handle it. The rapid growth of the mini market is the best testament, in my opinion, to the success of the floppy drive.

For the most part, a floppy drive consists of six basic areas:

1. read and write and control electronics
2. a drive mechanism
3. a motor control
4. a read and write head
5. a head positioning mechanism
6. and of course, the removable diskettes

Together these units perform four basic functions:

1. interpret and generate control signals
2. move the read/write head to the desired location on the diskette (desired track)
3. maintain the diskette at the proper rotational speed
4. and when these are satisfied, read or write data

A walk in the park, you say. Well, for me it wasn't. With an early background in civil engineering, I decided to start from the ground up. What is physically happening with the basic element for data transfer between the storage media and the disk drive head? The starting point for me was recording formats. (WARNING: by necessity, the rest of this article contains material that is rated CT (computer technicaleze), and can be hazardous to the overall acceptance of computers by persons over 30.)

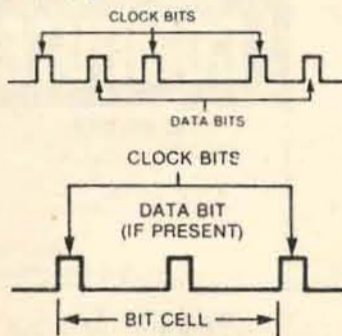

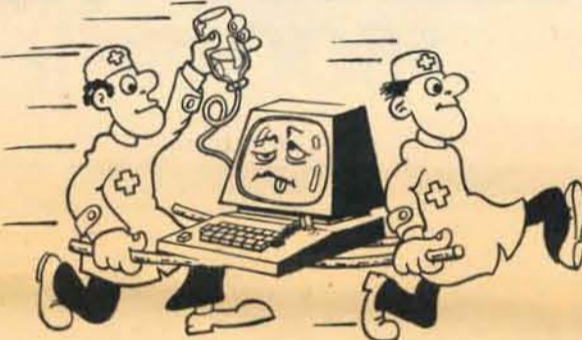


FIGURE 1.



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A bit cell by definition is the period between the leading edge of one clock bit and the leading edge of the next clock bit. A byte then, when referring to serial data, is defined as 8 consecutive bit cells... the most significant bit cell is defined as bit 0 and the least significant as 7.

For FM encoding, a clock bit is written for each bit cell at the leading edge of the cell, and the data is written at the center of the cell. This is represented in figure 1. As you can see, a lot of room is being used for clock bits. Look at figure 3 for a moment.

This shows the physical action that I mentioned before. Simply, the data pulses from the host system cause a flux reversal on the media when writing, and once recorded, the head will sense this flux reversal as a data bit when reading. Figure 4 shows this action for 4 bit cells for the binary 1011.

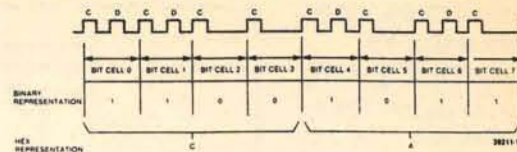


FIGURE 2.

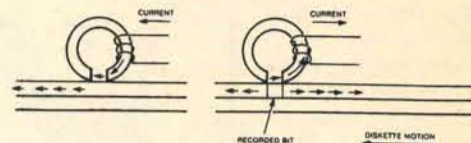


FIGURE 3. RECORDED BIT

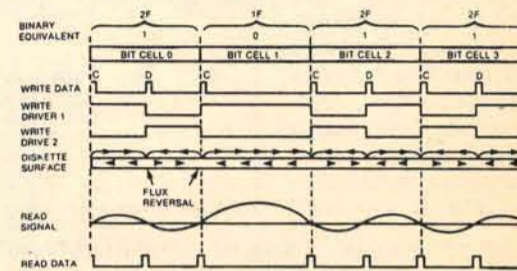


FIGURE 4 1F AND 2F RECORDING FLUX AND PULSE RELATIONSHIP

This system of encoding was widely used in the beginning and is still used in many applications.

Later drives use a format call MFM (modified FM) and the following concept is used in MFM encoding:

1. writes data bits at the center of the bit cell
2. writes clock bits at the leading edge of the bit cell IF:
  - a. there is no data bit written in the previous bit cell, and
  - b. there will be no data bit written in the present bit cell

Look at the bottom portion of figure 5.

In MFM, the write oscillator frequency is doubled while maintaining the same flux changes per inch as FM. Thus the bit cell in MFM is half that in FM. Data transfer rate is also doubled, since a 1 to 1 relationship exists between flux changes per inch and data bits per inch...What happened you say? Think of it as 10 pounds of bits into a 5 pound space...and it's called double density!

There are additional types of recording formats...variations of the same theme. I won't go into them.

continued on page 20



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**Floppy Disk Drives, continued from page 19**

**SECTORING:** Soft sectoring, often referred to as the IBM format, is recognized by the diskette having a single index hole that is used to reference the initial formatting. The data fields are changeable in size which has some advantages when reading or writing long fields of data. The overhead is, however, high. For example, on a 400K disk only around 250K can be used to store data. The hard sectoring format was developed. It has a single index hole placed between any two of as many as 32 equally spaced sector holes. Hard sectoring does not require a pre-formatted diskette when the sector holes are used to designate the location on each

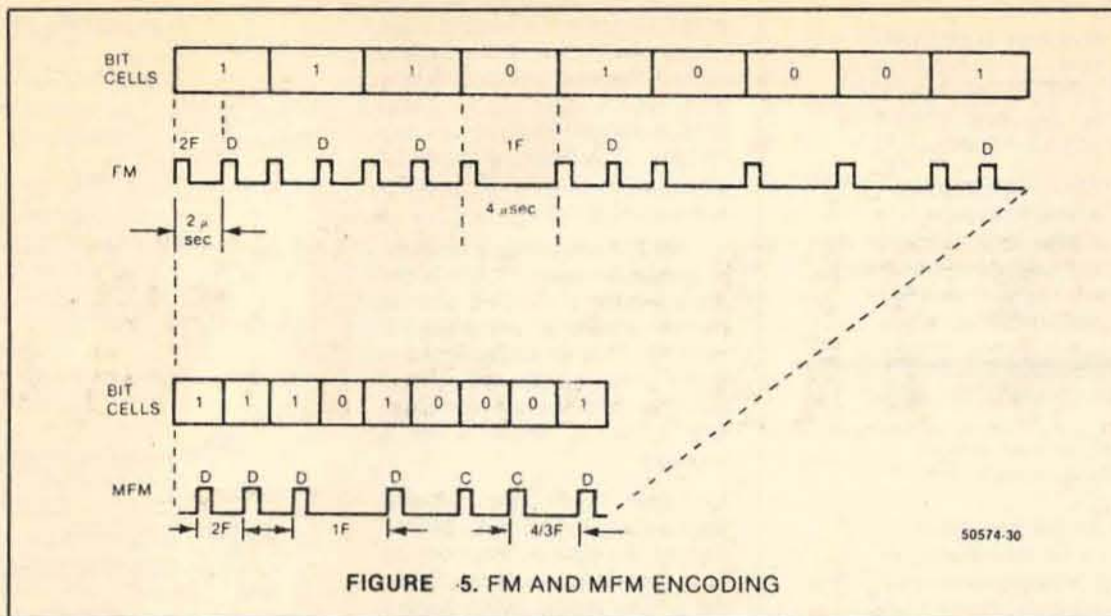


FIGURE 5. FM AND MFM ENCODING

record. The result is far less overhead than in soft sectoring; almost 300K bytes of the same 400K are available.

**READ/WRITE:** The read/write head contains three coils. Two are read/write coils that are wound on a single core and the third is an erase coil. During a write operation, the erase coil is energized which causes the outer edges of the track to be "trim" erased. This is to ensure data recorded will not exceed the .012 inch track width (reference 48 tracks per inch). Thus as one track is recorded it will not "splash" over to another track. For 8-inch drives, the drive motor continuously rotates a spindle at 360rpm (300rpm for a 5 1/4 drives) through a belt drive system. On the spindle there is a hub called a registration hub that positions the floppy and a clamp that fixes the diskette to the hub.

So far, we have discussed what is physically happening to the floppy for the transfer of bits and bytes. We have the drive motor up to speed...now the only major item to accomplish is to position the read/write head at the right place at the right time. The actual movement of the head is done by a separate 3 phase stepper motor. The head is mounted in a carriage which moves radially along the diskette. The stepper motor rotates a lead screw clockwise or counter-clockwise in increments, moving the head in or out. Seeking the head from one track to another is done by selecting the desired direction, loading the head, then giving the desired number of pulses on a step line. Each pulse on the step line will cause the head to move in or out one track. A track counter is not provided, so the host system is responsible for knowing the track position at any time. As power is turned on, the user's system will calibrate the drive by stepping out until the head reaches track 0, indicated by the track 0 output being low. A metal flag mounted on the carriage interrupts a beam of light from the track 0 LED to the track 0 detector...a photo transistor. Other drives will sometimes use a contact switch, backed up by a physical stop for this track 0 detection.

To provide the user's system with a time mark for controlling reading and writing, an index pulse is issued by the drive once per revolution of the diskette. An index LED and index detector photo transistor pair are mounted so that light can shine from the LED through a window in the diskette jacket to the photo transistor. As the light passes through the hole in the diskette, the photo transistor turns on and the index detector voltage rises, providing the time mark.

Now I have covered the basic functions...some for the control signals, positioning the head, the speed, and the read/write function. I hesitate to say all this must be perfectly clear now. Hang on to this article. In the next one I will cover the drive from the standpoint of doing an alignment and the equipment we use.

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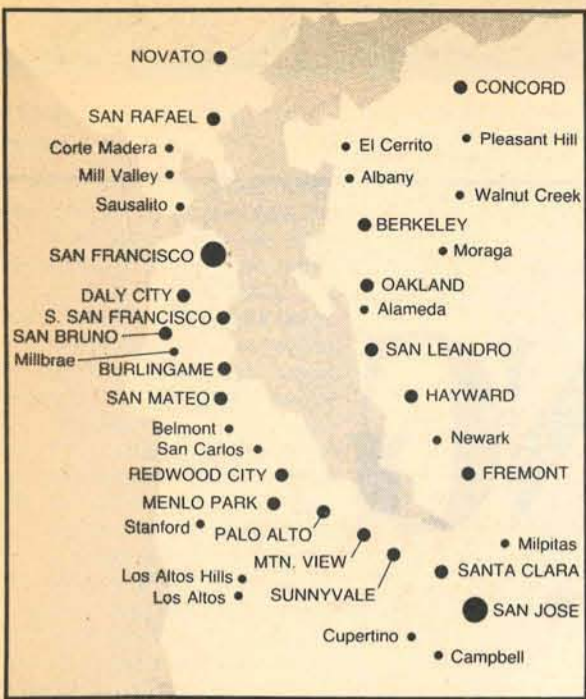
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manufacturing engineering duties, etc. I was one of two engineers there, for far too long, and the management for various reasons didn't see a fire and they didn't try to do anything about it. I kept the fires damped as long as I could, but it's my fault for not having brought attention to them sooner in my area, and I think this was probably repeated in everyone else's area. Everyone else made such an effort to hold on, on the grounds that Adam knew best, and management knew what was going on and this is really such a great new thing, that they didn't want to spoil it by being the one that brought the bad news. And I didn't either. I was not received well when I did.

LF: At times I did, yes. But again I didn't really feel I had the necessary experiential background I do now. I had to counter two particularly strong egos, Tom Davidson and Adam Osborne, and that's a pretty hard job, which I wasn't able to do. As a result I had to spend most of my time fighting production problems, trying somehow to arrange to have four products designed at once, the peripherals, and things kept getting later and later. I also had to take on the responsibility essentially for the ROM development software engineering, although that was passed over to Tom Hogan very rapidly.

CC: So you tried at times?

In a typical situation I had one software engineer and Tom Hogan had another software engineer. Now very quickly they were put under one roof and set to working on the same problems, upgrading and maintaining the ROM, but it started out that I found out there was a software engineer hired into marketing. Now again I couldn't say this is wrong for the following reasons, based on my experience. It just didn't seem like the right thing to do. None of these was the kind of thing that really was fatal, but it all piled up. Adam got more and more impatient, waiting for new products that didn't come. I got completely burned out working incredibly long hours, and feeling that someday everything was going to be better, but it never was. It just got worse. Adam eventually, when it became obvious that I had not taken care of the UL problems — I assumed that the General Manager had engaged a lab that was taking care of them — relieved me of the Vice Presidency of Engineering and gave me the title of Research Fellow. Since we didn't have a new Engineering VP at that time, I had to stay and do that. They brought another guy in and I had to let him alone to build up the Engineering Department as he saw fit, and I don't think he did that well. He wound up being another Research Fellow. We now have a very competent Vice President of Engineering, but a little bit late. That in a nutshell shows what is going on. The guy they brought in as the second Vice President of Engineering had worked as a chief engineer under Tom Davidson, the General Manager. But Davidson's judgment ... well, while the guy was fairly good in certain technical areas, he was not the guy to get for that kind of job. And we didn't really know how to call that shot, we didn't really know how to evaluate that very well. So it's those kinds of errors and failings in judgment that compounded, there really wasn't the judgment in there to be able to look into the future, and say, "Look, we need to take care of this, or it's going to get up and kill us. I know it looks like we've got it under control now, but it is serious, we've got to do this."



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CC: Would you say that if Adam Osborne had not spread the word prematurely about the Executive I and the IBM-compatible board, that the company would be in an excellent financial position right now?

LF: I think that Adam had a tendency to talk out of school, in effect. Whether it would have been better, I think so. But on the other hand, when the Executive I was priced, I thought that the price was too low, that it would compete with the Osborne I. I asked the Vice President of Marketing, Georgette Paris at that time, "Isn't this going to kill it?" In fact I asked it in an executive committee meeting, and everyone said "No, no, we're going to offer a special of some sort with the Osborne I." Well, I couldn't say, "No, your marketing judgment is wrong," because I didn't have anything to say that my marketing judgment was any better, but it just felt like that was a problem. Once you had that situation, then you had a real problem, because they planned on selling Osborne I's and Executives, and suddenly they didn't sell any Osborne I's, and they didn't sell any Executives in part because Adam felt, well, we were already months late with the Executive I. That thing had been under development for about eighteen months, using a contractor. It was also done from Adam's opinion of what he should have, and that was holy writ, in terms of product definition. The rest of us simply remained to realize it. I don't think the company ever really did develop a means of deciding what its products were to be, other than Adam saying this is what they are. They are in that process now, and have been in that process in the last few months, learning how to figure out what a new product should be. But up until then, I mean, the t-shirts that the company had, said, "Adam says I can." And I think that says it all. If you have that kind of over-riding philosophy apply to the organization of the company, you're going to have some fun, but you're also going to have some problems later on.

Since the products were not "on time", according to Adam's schedule, I don't see how we could have kept him from speaking about them, because he took them so personally.

CC: He didn't really step back and let other people...

LF: That's a very hard thing for anyone to do, and I didn't see it happen there. And I don't think it happened with me, either.

To follow up on this, I suppose, are my own plans for now, which I want to mention. I have gotten myself into debt, and I'm going to be taking some leave of absence in order to consult and try to sell some products of my own, in order to raise the money to

keep my own company going.

CC: Which is what?

LF: Goleemics.

CC: What is the purpose of Goleemics?

LF: It's a corporate embodiment of my own consulting activities, that's all. It was under Goleemics that I designed the Osborne I, and Goleemics got the stock for that, under the contract. I had been an individual doing business as LGC Engineering until such time as I got a project which required that I hire several people, in which case I didn't want to be an individual employer, so I formed a corporation — that's what Goleemics is. I want Goleemics to be about developing products and systems which uti-

continued on page 30

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# Calendar

## SEPTEMBER

28. **Free seminar by Donn Parker on Computer Security.** Parker will focus on system vulnerability to outside tampering via modem. Free, public welcome. Computer Literacy Bookstore, 7 pm, 520 Lawrence Expressway, Sunnyvale.

Sept. 29 to Oct. 2.

**1983 Computer Showcase Expo**, Brooks Hall, San Francisco. (800) 325-3330.

Sept. 29 to Oct. 2.

**Computers in Health Care '83, Sacramento.** Call Vi Wesner or Mary McAdams (916) 927-5722 (916) 927-3481.

## OCTOBER

1. **Atari Bay Area Computer Users**, Fort Mason Center, S.F., Sept. 3, 10am, Rm. C-100. 3. Napa Valley Commodore Computer Club, 7:30, 2680 Jefferson St. Napa. (707)252-6281.
4. **Silicon Valley Color Computer Club**, 7:30, Dysan Aud, Santa Clara.
6. **FAMOUS**, Bechtel, 50 Beale St. (415)948-6460.
6. **South Bay TI Users, 6:30 informal**, 7:30 business, The Farm Bureau Building, 1386 N. 4th St. San Jose.
9. **Local Color of S.F.**, 6:30, 141 Tenth St. S.F.
- 10 to 12. **Fall Conference of the Society for Computer Applications in Engineering**, Planning and Architecture Inc.(CEPA). St. Paul, Minnesota. Contact Patricia Johnson, (301) 762-6070.
10. **APLBUG**, contact Bob Korsan, (415) 854-7600
11. **FOLLK**, 7:30, call (415) 753-6555.
11. **Peninsula Apples**, 1933 So. El Camino, San Mateo.
12. **Computer Professionals for Social Responsibility/ Palo Alto**, 7:30, First Presbyterian Church, Lincoln & Cowper, Palo Alto.
12. **Independent Computer Consultants meeting**, 7 pm, call Bob Tamer, (415) 531-0668.
12. **Silicon Valley Computer Soc.**, 7:30, Foothill College, Building F, Los Altos, (408)243-1154.
13. **SPHINX**, 7 pm, Lawrence Hall of Science, Berkeley.
14. **S.F. Apple Lisa Club**, 708 Montgomery, S.F. Ed Rosenzweig, (415) 485-0714.
15. **S.F. Apple Core**, 10 am, Bld.C, Fort Mason, SF.
- 15 & 16. **Computerfest '83**, West Valley College, 14000 Fruitvale Ave, Saratoga, Tradeshow & Seminars. Call (408) 867-0440.
17. **SF IBM PC Users**, Bldg.C, Fort Mason, SF.
18. **HP1000 Bay Area Users Group**, 7 pm, H.P. Corp.
18. **S.F. Commodore Users**, 7:30, Lake Merced Boathouse. Headquarters. (408) 746-8285.
18. **SBUG**, 7 pm, Dysan Aud, Santa Clara.
19. **Original Apple III'ers**, the Business Apple Group, 7:30 pm, 555 Franklin.
- 19 to 21. **National Software Show for all operating systems**, Trade Show Center, S.F.
20. **IBM PC Club**, S.F., 7pm, contact Emil Brioski, (415) 626-0620.
20. **dBASE II Users of Marin**, 7 pm, Firemans Fund Bldg, Lucas Valley Road.
20. **Micromate Computer Users**, call (415) 941-2796.
20. **East Bay Timex Sinclair Users**, 1125 University Ave, Berkeley.
29. **Northwest Computer Swap**, 10-5 p.m., San Mateo County Fairgrounds, (408) 266-6768.
- 28 to 30. **Applefest**, Moscone Center, S.F. Contact (800) 343-2222 for exhibit information.

## NOVEMBER

5. **Computer Swap America**, Santa Clara County Fairgrounds.

■ See Networking Resources section for phone numbers and additional information

■ Times and locations of meetings may differ. Call first and save needless travel.



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Carrier mounted continuous letterhead and  
envelopes imprint available. Continuous let-  
terhead, clean edge, 20 lb., imprint avail-  
able. Small quantities. Data binder, heavy  
polymer, 9 1/2 by 11, excellent for presenta-  
tion and storage. Standard computer forms.  
A complete line of checks, invoices & state-  
ments. Call for local dealer location. (415)  
434-3340.

### Diskettes - Introductory Special

(Reg. \$29.95) DS/DD soft sector, box of 10  
for \$24.95. Computer Parts Mart, 3200  
Park Blvd., Palo Alto, CA 94306. (415) 493-  
5930.

## BUSINESS & FINANCE

### Business Opportunities

#### Business Opportunity

Earn extra money! Cash in on home com-  
puter boom by becoming an independent  
sales representative for exciting new micro  
computer multi-level marketing company.  
No inventory required. Be your own boss,  
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sales or technical background needed. Call  
Ken or Justine, (415) 527-2322.

#### Extra Income Breakthrough

One-stop, world-wide shopping via home  
computer! Unprecedented ground-floor,  
multi-level opportunity. High \$\$\$ potential.  
Lucrative prize/bonus plan. Free details.  
(415) 366-8934 or write DARTON, Box  
3176, Redwood City, 94064.

#### Selling your business?

A low-cost ad in Computer Classifieds can  
get you the results you want!

## EMPLOYMENT

### Agencies

#### CONTRACT PROGRAMMERS

Business Applications, familiar with North-  
star, IBM, Apple, Hewlett-Packard, and  
Commodore micros. Send resume to NCS,  
P.O. Box 4097, Fremont, CA 94539.

## Job Opportunities

### Wanted Exp Electronic Salesperson

Sell 3M OXIDATION ARREST PAPER. Over  
300 leads from NEPCON show. If serious  
current acct's are yours. Sannell & Assoc.  
Authorized Dist. (415) 398-1640.

### How To Get Rich With Your Computer

Send SASE for details to: H. Enterprises,  
P.O. Box 247, Fremont, CA 94537-0247.

### SERIOUS HACKERS!

Indulge your wildest software fantasies  
while helping us change the industry for the  
forces of good! If you are among the rare  
breed that knows the secrets of making  
microcomputers, disks, and modems tell all,  
there is a bright future for you at ENIGMA  
LOGIC in Concord. Requires background in  
both micro hardware and assembly lan-  
guage software.

(415) 427-1615, ask for Fred.

### Have a job to offer?

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get you the results you want!

## Wanted

**Programmer, entry level.** Completed  
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Call Bob Underwood, (415) 431-0946.

### Tech Troubleshooter/User Liaison

Programmer/Analyst 9+ years expe-  
rience at NE Insurance company, flu-  
ent IBM 370 COBOL, JCL, Assem-  
bler, CMS, DLI, DMS seeks  
permanent 20-30 hours per week  
position as a problem solver for your  
applications programmers and  
English speaker for your customer  
departments. Charles Belov, 2269  
Market St. #134, S.F. CA 94114 or  
call (415) 558-9336.

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With OYX, WANG, MAI BASIC FOUR expe-  
rience seek temporary work in your office.  
Competitive prices/excellent references.  
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negot. contracts, setup sales organ. For  
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Jose, CA 95150.

### SOON TO GRADUATE

B.S. in Math & Comp. Sci. from U. of Ill. 2  
yrs exp. in programming, 1 year in opera-  
tions. Exposure to all major languages.  
Graduation date: June 1984. Please send  
inquiries to Mark S. Keneipp, 2201 Lin-  
colnwood Dr. Evanston, Ill. 60201 or call  
(312) 869-1176.

**VERSATILE EXECUTIVE** - mktg., sales  
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**Highly motivated, energetic,** husband-  
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job(s). 1 yr. exp. as computer operator;  
courses in COBOL, FORTRAN, PASCAL,  
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526-5397.

**FORTH Programmer Seeks Challenges!**  
Knows FORTH internals, 8080 FAM, bit-  
slice; Martin Schaafl, (415) 454-6761 eve.

### Looking for a job?

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## CONSULTANTS

### Programmers

#### SOFTWARE SOLUTION

Programming service for your IBM PC.  
Good rate, reliable. (415) 668-9127.

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## commodore

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## Humor



By Bruce Whitefield

# Classifieds

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Intensive 9 month courses feature hands-on training in a small class environment. Highly successful placement includes R & D and Service Technician positions. Call the School of Communication Electronics in downtown S.F. for a free catalog. (415) 392-0194.

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Offered at the introductory and advanced levels. Instructor: C.J. Wallia, Ph.D., Editor-in-chief, Electronic Publishing, Microsoft Press. Write for catalogue to: California Publishing Institute, 580 College Ave., Palo Alto, CA 94306. (415) 857-0774.

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C.P.I. offers courses in Technical Writing and Editing; Computer Documentation; Science Writing; Computer-Aided Publishing; Newsletters; Promotional Writing; & Advanced Seminars. For catalogue: C.P.I., 580 College Ave., Palo Alto, CA 94306, or call (415) 857-0774.

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Computers are a student's best friend... When they are programmed and operated by the experts at College Connection. The College Connection computers will provide virtually any student with four to 25 sources of financial aid for the higher education he wants and needs. Processing fee is only \$39.00. Results are guaranteed! All aid sources will be matched to the needs, interest, and requirements of the individual student. For free information, write or call:

### De-Stressing Techniques for the Computer Age.

Learn:

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- Work Station exercises (TM).

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## PUBLICATIONS

**Specialized Literature** & graphic design for the microcomputer industry. Customized promotion, advertising, newsletters, documentation. Typeset by telecommunication. Mailing lists, direct mailing. Brice Publishing, 126 West 25th Ave. #1, San Mateo, CA 94403. (415)574-1608.

**WORK AT HOME WITH A COMPUTER?** Subscribe to DATA-TIPS, the newsletter for home business users of personal computers. \$24 per year, sample \$1. Deane Editorial Services, 1675 Kasba Street, Concord, CA 94518.

## SERVICES

### Legal

#### COMPUTER LAW

Software marketing & publication agent, software escrow service, contracts & licensing agreements, hardware purchases & leases, copyright preparation, business formation, business litigation. Full DP legal services at fair prices. Duane L. Tucker, Attorney at Law, 126 West 25th Ave, Suite 3, San Mateo, CA. 94403. (415)574-1530.

#### Protect Your Software!

Bay Area Lawyers for the Arts

- Lawyer Referrals
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- Arts-Law Publications
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Fort Mason Center, Building C, San Francisco, 94123 (415) 775-7200

### IF YOU DON'T NEED AN ATTORNEY

terrific. If you need help with agreements, hardware or software sales, copyrights, trade secrets, or other civil matters, call me. Alexander G. van Broek, Esq. 1182 Market St. Suite 307, San Francisco, CA 94102. (415) 863-2311. No charge for first half hour. At Civic Center BART.

### Repair

**Floppy disk drive repair** and alignment. Call CLAYTRONICS, (707) 552-4458.

### CRT TERMINAL REPAIR

\$49 labor in most cases. (415) 653-3123.

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#### Electronic Manufacturing Jobshop

We cater to the enterprising electronic/computer entrepreneur who has designed a WIDGET and is in need of low cost, high quality manufacturing. Call CLAYTRONICS, (707) 552-4458.

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Able assistance in hi-tech sales growth and increased profitability.

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\$27 per hour with computer rental, \$30 per hour on your machine.

Call Judy (408) 265-6460.

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Victor 9000. MS-DOS, CPM. All periph, software. Lge stor. \$450/mo. (415)531-4707.

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With QYX, WANG, MAI BASIC FOUR experience seeks temporary work in your office. Competitive prices/excellent references. Call (415) 524-1824. Ask for Shirley.

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Reasonable rates. Letters, mailing lists, transcription, resumes, text/theses, tables/charts. Selection of printwheels. Apple III with Qume letter quality printer. Free rate sheet & quotes. Pick-up & delivery available in San Francisco at reasonable rates. Please call Chris, (415) 921-0358.

### Word Processing Plus

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### Payroll Processing

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### COMMERCIAL DATA

P.O. Box 2184  
Richmond, CA 94802



Turn your unwanted or used computer equipment into CASH with a low-cost ad in the Bay Area Computer Classifieds.



## Typography

### Generic Typography 655-9402

Offers computerized typesetting for businesses: store your information on our floppy disk and update it before you go to press. Camera & graphic art services are available. Located in Emeryville in the heart of the Bay Area. Call or write for brochure: 1360 59th St., Suite F, Emeryville, CA 94608.

## PERSONAL CONNECTIONS

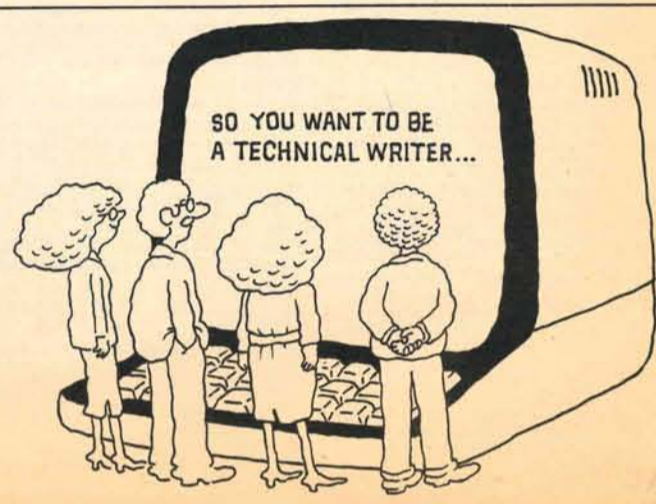
**Computer Owners, Users, Shoppers** wanted for paid participation in research project. Roger, (415)989-4507. 989-4530 M-F 9-5.

### Why Are Computers Here?

What is their role in the cosmic play? Individuals with similar concerns are invited to form a discussion group. For details, please call George, (415) 845-0112.

### Looking to make contacts?

A low-cost ad in Computer Classifieds can get you the results you want!



### TECHNICAL WRITING PORTFOLIO CLASS

The Portfolio class offers writers the opportunity to gain the actual experience of producing a user manual for a computer software application. Start a job hunting network and learn resume and interview techniques. 10 week lab/lecture. Call Priscilla Burgess at 322-4585.

## Free Business Seminar

**A LIFETIME OPPORTUNITY TO:**

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- Acquire, Learn and Sell Home Computers!
- Buy at a Discount!

EKOS, the exciting multi-level marketing company is seeking motivated self-starters. Join us in this free seminar to learn how you can participate in the billion dollar home computer boom!

**BERKELEY** Berkeley House Motor Hotel, 920 University Avenue. 7:00 PM, THURSDAY, Oct. 6.

**CONCORD** Holiday Inn, 1050 Burnett Ave., 7:00 PM, WEDNESDAY, Sept. 28; Oct. 5, 12, 19. Or contact the Zmaks at (415) 672-8488.

**MT. VIEW** Oakwood Garden Apts., 555 Middlefield Rd., Up-Stairs Club House, 7:30 PM, THURSDAY, Sept. 29. Or contact Pete Angelbeck/Bob Sherwood (415) 967-7563 or (415) 949-2445.

**NAPA** Holiday Inn, 3425 Solano Avenue. 7:00 PM, TUESDAY, Oct. 4.

**OAKLAND** Holiday Inn, 500 Hegenberger Road. 7:00 PM, WEDNESDAY, Oct. 5.

**SAN FRANCISCO** Cathedral Hill Hotel, Van Ness & Geary, 7:00 PM, THURSDAY, Sept. 29. Or contact Fred Wright (800) 874-4809.

**SAN RAFAEL** EKOS Center, 2165A Francisco Blvd., 7:00 PM, WEDNESDAY, Sept. 28; Oct. 5, 12, 19 & 26. Or contact Fred Wright, (415) 485-1911.

**SAN MATEO** Contact Frank Jaramillo for reservations at (415) 570-6664. Meetings at 7:00 PM on TUESDAY, Oct. 4 and 11.

**SANTA ROSA** El Rancho Tropicana, 2200 Santa Rosa Avenue, 7:00 PM, TUESDAY, Oct. 4.

San Rafael (415) 485-1911

# EKOS

San Rafael (415) 485-1911

# Networking & User Groups

## ASSOCIATIONS

**American Computer Association, Bay Area Chapt.**  
1803 Golden Gate Ave.  
San Francisco, CA 94114  
(415) 931-3736  
Meets: Above address.  
When: Call for times.  
Purpose: Networking for small computer-oriented businesses.

**Assoc. of Women in Computing**  
55 Sutter St., Suite 44  
San Francisco, CA 94104  
Meets: Great Electric Underground, B. of A. Center, 555 California St. S.F.  
When: 1st Wed., 5:30 cocktails, 6:30 meeting & speaker. \$5.00 members, \$10.00 non-members. Public welcome.

**Chinatown Resources Computer Advisory Board,**  
615 Grant Ave., 4th Flr.  
San Francisco, CA 94108  
Andrew Legros, David Hemphill, (415) 391-7583  
Meets: Monthly, call for info.  
Purpose: Assist. in curric. devel. & program implementation for computer training center providing Asian immigrants & refugees with marketable skills for modern office work.

**Data Systems Unlimited Industry Advisory Board, Goodwill Industries of S.F.**  
980 Howard St., P.O. Box 548.  
San Francisco, CA 94101.  
Terri Straw, (415) 362-0778  
Meets: Quarterly & committee meetings.  
Purpose: To lend expertise to DSU Instructor & Goodwill staff in: program, curriculum, student evaluation, graduate placement, internships, fund-raising. Join other DP reps assisting disabled trainees.

**Golden Gate Word Processing Exchange**  
1005 Market St., Rm 207,  
San Francisco, CA 94104  
Karyn Kelly, (415)348-0856 or (415)864-8205, ext.676  
Meets: The Front Page, S.F.  
When: usually 3rd week  
Purpose: Professional non-profit word processing association providing informational and educational service to members.

**Independent Computer Consultants Assoc.**  
3373 Guido Street  
Oakland, CA 94602  
Bob Tamer, (415) 531-0668  
When: 2nd Wednesday  
Purpose: Promote professionalism within industry, increase awareness of ICCA services, provide independent networking resource.

**Peacenet**  
DRC, 942 Market St., #207  
San Francisco CA 94102  
Martha Henderson, (415)495-0526  
BBS (415)896-0893  
Meets: call for info.  
Purpose: Improve information exchange in peace movement, match computer skills & resources with peace groups' needs. BBS for exchange of info related to peace.

**Professional & Technical Consultants Assoc.**  
1190 Lincoln Ave., Suite 3,  
San Jose, CA 95125  
Dan Lombard, (408) 287-8703  
Meets: in Cupertino  
When: 2nd Thursday  
Purpose: Promote consulting (and member consultants) as a viable source of specialized knowledge. Also produces seminars.

**BULLETIN BOARDS**  
**ATARI BBS,**  
(415) 587-8062, 24 hrs.  
Messages, downloads general info. on Atari software & hardware.

**Disk Byters**  
John Rovner, (415) 489-0388  
Purpose: BBS 300/1200 baud, all home computers, messbases, file transfers, 8 word bit, no parity, 1 bit stop.

**Golden State BBS System,**  
(415) 897-2783.  
300/110 baud, 24 hrs a day.  
Purpose: education, file transfers, and message exchange.

**Rich and Famous**  
229 7th Street,  
San Francisco, CA 94103  
BBS#(415)552-9968  
Purpose: RCP/M remote system on line for software trade and message exchange.

**Silicon Valley Interchange, Remote CP/M NCB.**  
24 hrs, 11 meg hard. Specializing in very recent releases, telecommunications, and Apple CP/M programs. (408) 732-9190. Ed Svoboda, Sysop.

**Trade-A-Board,**  
(415) 392-6302  
Purpose: For trading public domain software, data bases and whatever else is desired.

**DISTRIBUTORS**  
**Berkeley/Oakland Technicom Distributors Grp**  
1089 57th St., #3  
Oakland, CA 94608  
Lenny Schmall 415-653-3499  
Purpose: Forming support group for Technicom distributors.

**TRAINING**  
**A.C.E., Art, Computers and Education**  
3155 Avalon Ct.  
Palo Alto, CA 94306  
Ken Sakatani (415) 648-8471  
Meets: varied Palo Alto locations  
When: monthly during school year.  
Purpose: non-profit org. of educators & others involved in arts and uses of computers/ computer graphics in education.

**CODE-Coordiators of DP Education**  
109 Minna St., Suite 605  
San Francisco, CA 94105  
Thomas L. Manz, 415-477-1022  
Meets: Member companies  
When: 2nd Thursday  
Purpose: Information exchange among members and EDP training organizations.

**Young Ideas TV Show & Workshop for Youth,**  
Red Cross  
1550 Sutter St.  
San Francisco, CA 94109  
Keith O.St.Clare, 415 386-1936  
Meets: Red Cross, 1550 Sutter St. San Francisco, in the Auditorium.  
When: Wed. 2:30 - 6:30  
Purpose: Teenagers learn to operate simple audio-visual & computer equipment & produce a weekly cable TV show.

**USER GROUPS**  
**20/64**  
P.O. Box 18473  
San Jose, CA 95158  
Don Cracraft, (408)978-0546  
Meets: San Jose  
When: First Sunday  
Purpose: User Group for Vic-20 and C-64.

**APL Bay Area Users Group (APLBUG)**  
514 Wisconsin Ave,  
San Francisco, CA 94107  
Bob Korsan, (415)282-9051, (415)854-7600  
Meets: call for loc.  
When: 2nd Monday eve.  
Purpose: discussion of APL related issues and developments, speakers, social events.

**Apple Hardware Hackers,**  
P.O. Box 550  
San Carlos, CA 94070  
Bob Runyon, (415) 593-0824  
Meets: Call for info.  
Purpose: To promote hardware tinkering.

**Apple Union,**  
526 34th Ave.  
San Francisco, CA 94121  
Paul Kangas, (415) 386-4575  
Meets: 526 34th Ave & Geary,  
When: Last Sun.  
Purpose: info exchange, support, barter hardware, share, swap meet.

**Atari Bay Area Computer Users Society**  
P.O. Box 325,  
El Cerrito, CA 94530  
Meets: Ft. Mason Center  
When: 1st Saturday  
Purpose: Informal association of Atari Computer owners.

**BAKUP-Bay Area Kaypro Users & Programmers**  
P.O. Box 20181  
Oakland, CA 94620  
Meets: East Bay/Burlingame.  
When: First Thursday.  
Purpose: Share information on Kaypro portable computers.

**BAYMUG**  
Box 248,  
Pleasanton, CA 94566  
V.K. Bailey, (415) 462-0422  
Meets: East Bay/Burlingame.  
When: First Thursday.  
Purpose: BAYMUG is a general computer club.

**Bay Area Epson Users Group Meeting,**  
R.S.V.P. to Soleil, (415) 753-1040  
Meets: Sunset Computers, 2329 Irving St. S.F.  
When: 1st meeting Oct. 6, 6:30 - 8:30.  
Please RSVP.  
Purpose: first organization meeting for Epson users.

**Bay Area Micro Decision User's Assoc., BAMDUA,**  
P.O. Box 5152, Berkeley, 94705  
Sypko Andreae, (415) 658-0152.  
Meets: West Branch Berkeley Library, 1125 University, Berkeley.  
When: last Tuesday, 7:30 p.m.  
Purpose: support network of Morrow Designs' Micro Decision owners. Newsletter \$9/yr.

**Bay Area SCRIPT Users Group**  
c/o M.Rood, CSG, Federal Reserve Bank of SF,  
101 Market St.  
S.F. CA 94120.  
Mike Rood, (415)974-2445, Dave Sonnenfeld, (415)645-3895.  
Meets: Contact above for info.  
Purpose: Users of IBM's Document Composition Facility (SCRIPT/VS). Info-sharing; customization; programmers, text editors, technical writers, DP trainers.

**Byte Bandits of America (TRS-80)**  
780 Manx Ave.,  
Campbell, CA 95008  
Sam Brown, (408) 379-2774  
Meets: Monthly, in Campbell.  
Purpose: Non-serious club for fun only, bring your computer & programs for reviewing.

**Christian Computer Users Group**  
P.O. Box 70781  
Sunnyvale, CA 94086  
Harvey Teas, (408) 243-3888  
Meets: call for info.  
Purpose: Exchange information programs, promote computer use in Bible education, school & church administration, Regular micro systems & non-denominational.

**Columbia User Group, S.F.**  
P.O. Box 210547,  
S.F., CA 94121-0547,  
Judith Sager, (415) 221-2339  
Meets: Call for information, this is a new group, first meeting will be early October.

**Computer Prof. for Social Resp.(CPSR) San Jose**  
P.O. Box 53197,  
San Jose CA 95153-0197  
Jack Kroll, (408) 463-2200 day, (408) 739-2729 eve.  
Meets: Bay View Savings Bank, Santa Teresa & Bernal, San Jose.  
When: last Thurs, 11:30 am.  
Purpose: Non-profit organization of computer professionals dedicated to education about computer technology regarding the arms race & nuclear war.

**Computer Prof. for Social Resp., Palo Alto**  
437 Mundel Way,  
Los Altos, CA 94022  
Dave Caulkins, (408) 257-9963 day, (415) 948-5753 eve.  
Meets: First Presbyterian Church, Lincoln & Cowper, Palo Alto.  
When: 2nd & 4th Wed, 7:30 pm.  
Purpose: see CPSR San Jose.

**Computer Prof. for Social Resp., East Bay**  
127 Sunnyside Ave.  
Piedmont, CA 94611  
Bruce Joffe, (415) 768-0288 day, (415) 654-5263 eve.  
Meets: Beach Elem. School, Lake & Linda, Piedmont.  
When: alternate Thurs, 8 pm.  
Purpose: See CPSR San Jose.

**Contra Costa Micro Users Group**  
1955 N. 6th St.  
Concord, CA 94512  
Kevin O'Halloran, (415)827-4454  
Meets: in Concord, call for info.  
Purpose: Information exchange, software support, & education of Micro-Users.

**DBase II Users Group/Marin**  
34 Lassen Lane  
Novato, CA 94947  
Shirley Anne Anderson, (415)499-7207 Wk, (415)892-0522 H.  
Meets: Incas Valley Rd, Fireman's Fund Bldg.  
When: 3rd Thurs, 7-10 pm.  
Purpose: Information sharing & support for

users of Ashton-Tate's DBase II.  
**Diablo Valley Commodore Users (DVCUG),**  
c/o Braver, 762 Ruth Dr.  
Pleasant Hill, CA 94523.  
Ben Braver, (415)979-2393.  
Meets: Educational Media Services, 2371 Stanwell Dr., Concord.  
When: 7:30, 2nd & 4th Thurs.  
Purpose: C-64 and Vic-20 users, public domain software library, computer lab with 11 C-64's and 50' TV available at meetings.

**E. Contra Costa T.I. Users**  
2800 Gentrytown Dr. #35  
Antioch, CA 94509  
Joe Nowak, (415) 757-7278  
Meets: call for loc. after 6 pm.  
When: 7 pm, 2nd Thurs.  
Purpose: Texas Instruments users group covering programming techniques & sharing info about new hardware & software.

**East Bay Color Computer Club**  
Marty, (415) 540-8833  
Dave, (415) 278-8588  
Meets: call for info.  
Purpose: Support use of the Color Computer, demo new products, assist each other with modifications.

**East Bay Timex/Sinclair User's Group**  
654 40th Street  
Richmond, CA 94805  
Rick Link, (415)234-3310  
Meets: 1125 University Ave, Berkeley  
When: 3rd Thursday  
Purpose: Explore and have fun with the TIMEX/SINCLAIR computer. Come and see what a \$50 computer can do for you!

**FAMOUS - S.F. Alpha Micro Users.**  
739 Anderson Dr.  
Los Altos, CA 94022  
Bob Fowler, (415) 948-6460  
Meets: Bechtel, 50 Beale St. S.F.  
When: first Thurs.  
Purpose: Info sharing on all Alpha Micro products, semi-formal presentations.

**FAUG - First Attache Users Group.**  
449 1/2 Douglas St.  
San Francisco, CA 94114  
Charles Raisch, (415) 647-8160  
Meets: Monthly - contact Charles Raisch.  
Purpose: Provide information, support & public domain software for Attache users.

**FOG-First Osborne Group**  
P.O. Box 3474  
Daily City, CA 94015  
Gale Rhoades, (415) 755-4140  
Meets: Various locations  
When: Monthly  
Purpose: Portable CP/M systems users. Clearing house for many local groups.

**FOLK-Friends of LISP/Logo & Kids**  
254 Laguna Honda Blvd.  
San Francisco CA 94116  
FOLK, (415) 753-6555  
Meets: call for location  
When: 7pm, 2nd Tues.  
Purpose: promote use of microcomputers as indep. educational alternatives. Curriculum advising for educators, workshops.

**Forth Interest Group**  
FIG Hotline, (415) 962-8653  
Meets: Rm 916, Chabot College, Hayward  
4th Sat, 1 pm.

**HP 100 Users Group**  
c/o Marine Terminals Corp,  
289 Steuart St.  
San Francisco, CA 94105  
Rick Hencken, (415)271-0461  
Meets: monthly, in SF/Palo Alto.  
Purpose: support users, information referrals, workshops, contributed library, newsletters.

## Computer Classifieds

### Publishing Dates and Display Advertising Deadlines

(Classifieds deadline is still the Monday before week of publication)

Issue	Publishing Date	Advertising Deadline
10	October 11	September 30
11*	October 25	October 14
12	November 8	October 28
13	November 22	November 11
14	December 6	November 25
15	December 20	December 9
16	January 3	December 22
17	January 17	January 6

\*Applefest issue  
(Please note: unless otherwise indicated, deadline for display advertising is now the second Friday before date of publication.)

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**HP 1000 Bay Area Users Group,**  
1250 E. Arques Ave, M/S 140  
Sunnyvale, CA 94086  
Paul Vallis, (408)746-8285  
Meets: HP Corp. headquarters  
When: 3rd Tues, 7 pm.  
Purpose: Exchange information (problems, solutions, etc.) & provide input to the HP International Users Group.

**HP 1000 International Users Group,**  
289 S. San Antonia Road,  
Los Altos, CA 94022  
William Crow, Assoc. Man., (415)941-1943  
Meets: each fall, next international conference will be in Ft. Worth, Texas.  
Purpose: Indep. non-profit assoc. of HP1000 business computer users. Software library, bi-monthly magazine.

**HP 200 Oakland-SF Users Group**  
484 Lake Park Ave, #250  
Oakland, CA 94610  
Charles Turner, (415)561-9192  
Meets: new group, call for info.  
Purpose: support for users of HP Series 200 Personal/Technical computer, not affiliated with Hewlett Packard.

**HP 3000 International Users Group,**  
289 S. San Antonio Rd.  
Los Altos, CA 94022  
William Crow, Assoc. Manager, (415)941-9960  
Purpose: Independent, non-profit association of HP3000 users. Software library. Two annual international conferences, next Oct/83 in Scotland. Bi-monthly magazine, quarterly technical journal.

**Homebrew Computer Club**  
P.O. Box 626,  
Mountain View, CA 94042  
Meets: Fairchild Audit., Stanford Medical Centre, Palo Alto.  
When: 7:30-10:30 pm.  
Purpose: Computer hardware and software exchange and forum.

**Homebrew Robotics Club**  
91 Roosevelt Circle,  
Palo Alto, CA 94304  
Richard Prather, (415) 494-8499  
Meets: ALZA Corp., 950 Page Mill Rd, Palo Alto.  
When: last Wed., 7:30 - 10 pm.

**IBM PC Club,**  
P.O. Box 661  
San Francisco, CA 94101  
Emil Max Brioski, (415) 626-0620  
Meets: Holiday Inn, Van Ness.  
When: 3rd Thurs, 7 pm.  
Purpose: Support, teamwork, new ideas, creation of new programs, discounts for soft & hardware.

**Local Color of San Francisco**  
Box 421242,  
San Francisco, CA 94142-1242  
(415)641-1132 voice, 552-8567 loop  
Meets: 141 10th St. SF.  
When: Second Sun, 6:30 pm.  
Purpose: Meetings, support & publications for color computer and TDP-100 owners.

**Micro-Mate Hackers**  
12155 Edgecliff,  
Los Altos, CA 94022  
C. Lindell, (415) 941-2796  
Meets: PWEEB Information Systems, 253 Martins Ave., Mntn. View.  
When: 3rd Thurs, 7:30.  
Purpose: Information exchange, mutual support (sw/hw), CP/M library, special interest groups and telecommunications.

**NEC Computer Club,**  
P.O. Box 500,  
Benicia, CA 94510  
Norm Chezem, (707) 745-4614 eve.  
Meets: 3rd Tues, Albany, call for loc.  
Purpose: Information sharing on PC-8000 & PC-8800.

**Napa Valley Commodore Computer Club,**  
c/o Liberty Computerware,  
2680 Jefferson St.,  
Napa, CA 94558  
Mick Winter, (707) 944-2797, meeting loc: (707) 252-6281.  
Meets: 2680 Jefferson St. Napa,  
When: 1st & 3rd Monday, 7:30.  
Purpose: Comm. 64 & Vic-20 users.

**Northern Calif. Pick Users,**  
P.O. Box 6759, Oakland, CA 94603.  
Joe Leonard, (415) 343-9094.  
Meets: 3rd Tues, call for location.  
Purpose: Users of Microdata Reality, ADDS Mentor, Prime Infos, Ultimate, Pertec, Zebra, Altos, Data Media and other 'Pick' operating systems.

**Original Apple III'ers, the Business Apple Grp.**  
1850 Union St. #494  
San Francisco CA 94123  
Don Norris, (415)921-3774  
Meets: Calif. Bar Assoc., 555 Franklin St. SF.  
When: 3rd Wed., 7:30.  
Purpose: Apple III users group, emphasis on business. Publish public domain software & Open Apple Gazette.

**Peninsula Apples**  
122 Elm Ave,  
San Bruno, CA 94066  
Rick Black (415)953-0693day (415)588-RICK eves  
Meets: 1933 S. El Camino, San Mateo  
When: 2nd Tues.  
Purpose: Apple Users in N. Penn, share ideas, trauma, programming hunts.

**PicoNet - a CP/M User's Group**  
P.O. Box 591566,  
Mountain View, CA 94039  
Marleen Wright, (408) 448-0881  
Meets: Stanford Linear Acc. Comp. Audit, Sand Hill Rd, Menlo Park.  
When: 2nd Thurs., 7 pm.  
Purpose: Educate the public.

**Robotics Society of America**  
200 California Ave., #215  
Palo Alto, CA 94306  
Dr. Walter Tunick, (415)326-6095  
Meets: call for meeting information.  
Purpose: promoting experiments with robots and artificial intelligence on a hobbyist level.

**S.F. Apple Lisa Club,**  
P.O. Box 538,  
Fairfax, CA 94930  
Ed Rosenzweig, (415) 485-0714  
Meets: 708 Montgomery, S.F.  
When: 2nd & 4th Friday, 6 pm.  
Purpose: Trade information about the Apple LISA.

**SBUG - S. Bay TRS-80 Users Group**  
P.O. Box 60116, Sunnyvale, CA 94088  
BBS # (408) 737-SBUG  
Meets: Dysan Aud. 5201 Patrick Henry Dr. Santa Clara.  
When: 7 pm, 3rd Tues.  
Purpose: 200 member TRS-80 club with lectures, library, & BBS.

**SF FOG - (SanFran chapt. of First Osborne Grp.)**  
1662 11th Ave,  
San Francisco, CA 94122  
Byron Davies, Pres. (415)334-2851  
Meets: St. Aidans Church, Diamond Hghts Blvd. & Gold Mine Dr, S.F.  
When: 4th Thursday.  
Purpose: Information exchange, public domain software, instruction, group purchases, etc.

**SPC Apple**  
2245 Vestal St.  
Castro Valley, CA 94546  
Walter Albers, (415) 581-5398  
Meets: Thornton Jr. High, 4357 Thornton Ave., Fremont.  
When: 7:30 pm, last Wed. of month.  
Purpose: information sharing, public domain disk for members.

**SPHINX**  
1348 Rudgeard Road  
Walnut Creek, CA 94596  
Milt Lee, (415) 939-1825  
Meets: Lawrence Hall of Science, Berkeley  
When: 7 pm, 2nd Thursday.  
Purpose: Commodore Users Group, PET, CBM, VIC-20, "64", large tape and disc public domain library.

**SVCS Silicon Valley Computer Society**  
P.O. Box 60506,  
Sunnyvale, CA 94088  
Elvin Bollet, (408)243-1154  
Meets: Foothill College, Bldg. F, The Forum  
When: 2nd Wed., 7:30 pm. Purpose: IBM PC users group.

**San Francisco Apple Core**  
Call for meeting info: (415)566-2342  
Meets: Fort Mason, main floor, bldg. C, S.F.  
When: usually 3rd Sat, 10am to 12.

**San Francisco Commodore Users Group**  
278 27th Ave. #103  
San Francisco, CA 94121  
Roger Tierce, (415)387-0225  
Michael Rochester, (415)928-2151  
Meets: Lake Merced Boathouse  
When: 3rd Tues.  
Purpose: Commodore Vic/64 users support, public domain library.

**San Francisco PC Users Group**  
4411 Geary Blvd, Ste. 33  
San Francisco, CA 94118  
Meets: Bldg. C, Fort Mason Center, S.F.  
When: 8 p.m., 3rd Monday.  
Purpose: support, speakers, buying collective & newsletters for IBM & IBM compatible computer users.

**San Francisco Victor Users Group,**  
P.O. Box 498, 1850 Union St.  
San Francisco CA 94123  
Darrel Bross, (415) 586-5788  
Meets: La Bettola Restaurant, 391 Broadway, SF.  
When: 3rd Sunday, 5 pm.  
Purpose: Offers workshops, software library, newsletter, info sharing.

**San Jose IBM PC Club.**  
Russ Williams, (408) 463-3429.  
Meets: Cafeteria, IBM Santa Teresa Lab.  
When: 2nd Thursday.  
Purpose: Club for IBM employees and family only.

**San Leandro Atari Computer Club,**  
127 Hermes,  
Hayward, CA 94544  
Bill George, (415) 538-2449.  
Meets: San Leandro Community Library, 300 Estudillo, San Leandro.  
When: 1st Tuesday, 8 pm.  
Purpose: General Atari club, special interest groups, guest speakers & computer forums.

**Santa Cruz Kapro Users Group**  
1005 Cedar Street  
Santa Cruz, CA 95060  
Michael Coughlan, (408)425-7166  
Meets: Rarebit, 1005 Cedar St. Santa Cruz.  
When: last Tuesday of month, 7:00 pm.  
Purpose: local group of Kaypro Users.

**Silicon Valley Color Computer Club**  
P.O. Box 61593  
Sunnyvale, CA 94088  
Shawn Jipp, Lynn Johnson, (408) 749-1947, BBS (408)733-6809  
Meets: Dysan Aud., 5201 Patrick Henry Dr., Santa Clara.  
When: First Tuesday, 7:30-10 p.m. Purpose: To encourage info exchange on TRS-80 color and TDP-100 computers.

**Software Entrepreneurs of Silicon Valley,**  
4010 Moorpark Ave, #213  
San Jose, CA 95117  
Dr. Michael Frazier, (408) 246-1103  
Meets: 4010 Moorpark Ave, #213  
When: Last Mon, 7:30  
Purpose: Mutual support group for entrepreneurs. Software & entrepreneurial business are the megatrends of the future!

**South Bay T.I. Users Group**  
16380 E. La Chiquita Ave.  
Los Gatos, CA 95030  
Byron Monroe, Membership (408)356-5632 (408)730-0555eve  
Meets: The Farm Bureau Bldg, 1386 N. 4th St. San Jose.  
When: last Thurs, 6:30 informal, 7:30 business.  
Purpose: mutual assistance with T.I.99 series, programming problems, etc.

**Stanford/Palo Alto IBM PC Users**  
P.O. Box 8292,  
Stanford, CA 94305  
Kevin Ohlson, (415) 494-2574  
Meets: Stanford campus  
When: last Wed, 7 pm.  
Purpose: info exchange, instruction, collective buying, public domain software.

**T.S.U.N.A.M.I., Timex Sinclair**  
3325 Pierce St.  
San Francisco, CA 94123  
Wall Gaby, (415)921-6077 eve, (415)775-8800wk  
Purpose: To encourage a national Timex Sinclair Computer Fair in San Francisco.

**TRS-80 Users, Contra Costa**  
Betty McBride, (415) 939-5285, 932-8856  
Meets: Concord, call for location.  
Purpose: New group - information sharing, problem solving, support for professional, business & educational users, both new & seasoned.

**Timex Sinclair Peninsula Users Group**  
263 Gateway, #107,  
Pacifica, CA 94044  
George Mockridge, (415)359-3198  
Meets: Peninsula Hospital, Burlingame  
When: 3rd Sunday, 1 pm.  
Purpose: Computer users group for Timex Sinclair, have software library.

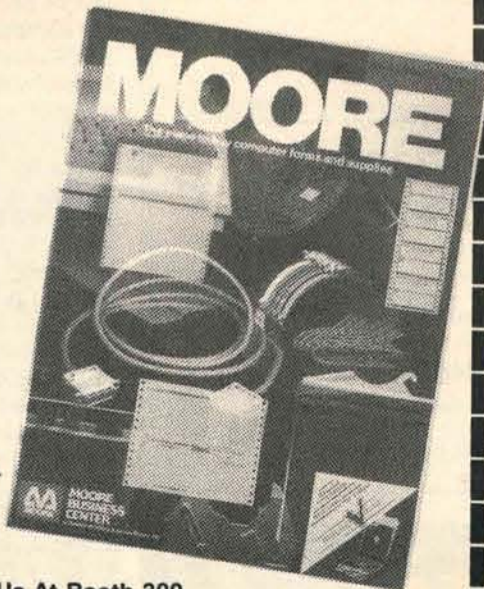
**dBASE II User Group/Silicon Valley,**  
P.O. Box 190,  
Mountain View, CA 94042  
Info: Melissa Gray, (415) 965-3267, directions: Diane Biltz, (408) 739-4540.  
Meets: Ponderosa School, Multi-Purpose Rm, behind school, corner Ponderosa & Iris.  
When: 1st Wed, 7 - 9:30 pm.  
Purpose: Share ideas, problems, solutions & support for all levels of dBASE II users.

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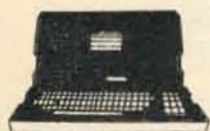
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**An Inside Look,  
continued from page 23**

lize a non-verbal interface with computers, one in which you don't have to convert your information into characters or symbols that represent characters, but you can use tactile input, video output, audio both ways, and these other kind of touchy-feely qualities to interface with computers. I think that this requires a certain kind of learning with computers which is, I think, happening with video games, but is not recognized even in the general field of microcomputers. So I have some products that will be coming out, I'll be trying to license them for manufacture, and one of them is almost ready now. So I'm going to try to peddle those around, I'm going to try to do some consulting, I'm going to try to raise a lot of money that way.

**CC:** Are you looking for venture capital?

**LF:** Well ... I don't think so. I may be looking for capital in a limited partnership sense, and I stress the "limited" aspect of it. I'm not interested in playing the stock game, certainly not now. Golems will be selling what I call Database Engines, which are multi-user Sequitur systems, with UNIX and X.25. These are one step removed from the final application, they do not have any applications software in them, but they have the sequiter relational database system and again, and X.25 package. I intend to sell them as the word implies, as engines to applications vendors who want to put their own what I call "layer of chocolate" on it, in terms of an applications front end, using the programming interface that will also be supplied. We'll have an exceedingly powerful database underneath all that to work with. I'm doing that in a kind of support of Community Memory, but I'm in business to do this. So I'm a Plexus OEM, I'm selling computers, and basically I'm trying to sell them as a package with the software, and I'll be advertising some of that. I've also accepted a position as a columnist for InfoWorld, and I'll be talking about all these things in print as a kind of general critic at large. ■



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**Real Computer People, continued on page 17**

**LF:** We don't know for sure if it will be San Francisco or Berkeley.

**CC:** What kind of equipment will you be using?

**LF:** Well, we're going to try first with a supermicro 68,000 machine. I'm getting a Plexus. But we don't know if that's going to be able to handle the load. It's our best guess right now as to what we'll need running UNIX, and with the biggest disk we can organize.

**CC:** Are there any legal problems that are looming because of this?

**LF:** There's some really interesting legal questions which might have to be solved by legislation, in terms of "What is this animal?" Does the first amendment cover it? Is it sort of a public utilities common carrier? What does it take to be a common carrier, or do we want to be? Who's responsible for what? If it's a decentralized network of centers, each locally owned and meeting some sort of interchange protocols, who's in charge?

**CC:** Before getting to Osborne and Homebrew Computer Club, is there anything else that you feel we should add about Community Memory?

**LF:** I would like to point out the fact that my career in microcomputer designs stems from Community Memory specifically, because I have been applying these criteria of conviviality, and also doing system thinking. One of my numerous aphorisms is "Think System". That's what I'd like to print out on little signs and hand out to everybody.

**CC:** Broaden your concepts, in other words.

**LF:** Yes. What I see with Japanese engineers, and I've talked to some of them, is that I'm trying to get them to do a system, and they're trying to build a collection of components, and there's all the difference in the world between them. They can't seem to think outside their own little boxes. I've had occasion to have discussions with Japanese companies regarding designs. I had expected I would be able to give them some specifications and they would turn out these really neat little designs, but it hasn't proved to be the case. All I ever got back was a kind of shopping list, about, "Let's put a microprocessor in to control the parallel port", and that kind of stuff. I was amazed. But in Japan, apparently, a manufacturing engineer has higher status than a design engineer, and what I saw there was pretty typical of a manufacturing engineering approach.

The systems thinking is what I got off track on there. I've done some other things, like a video processor, large scale for special effects done for Bill Etra. I put a lot of work and effort into that, but it's never been finished. All along I kept asking myself, "By the way, why the hell am I doing this?" And I've never really been able to reconcile myself to that sort of question while I'm doing something. I have to be able to answer that question before I can do well on designing something.

*"I think that we can have the benefits of village life without the idiocy of village life, and that this technology is going to be the key to that."*

**CC:** What's your criteria?

**LF:** Essentially, I want to do things that are going to be useful, in the kind of context that Community Memory is going to require. In other words, things which people will be able to learn their innards first-hand, be able to control themselves, and ideally be able to reconfigure as the world changes. The things they do should be things people need to have done, and that's kind of an individual decision, and I get to make my own decisions there. Just doing a great neat design in a military context is not something I'm interested in doing.

**CC:** Can you talk about what you're doing at Osborne?

**LF:** At Osborne I'm a research fellow, and I call that company consultant and chief daydreamer. Recently, fortunately, I've become less of a company consultant, which is to say somebody who could always be asked a question, "Oh by the way, Lee, what does this mean?" That gets a little dreary at times. The chief daydreamer part is, I've become more and more aware, a very definite function within the company. I also have competition because Adam considers himself a chief daydreamer. He wouldn't use that word, but I mean that kind of vision and foresight. There's all kinds of room for different sorts of vision. My vision operates in a technical area, so mainly I work it from a standpoint of how something can be done. It's a lot of fun to come up with ideas for what else you can do with the same design. A slight change in the way of looking at it opens up a lot of doors for different uses. So I'm working on new designs, and new products. I had come through a time where I was the sort of administrator of the design group, and I'm not a good administrator. I don't want to be one, but I was one by default. I get frustrated because I don't get to do the designs. I used to think I'd get frustrated if I didn't get to build the machine itself, by hand, and I lived through that one with the Osborne I, but just barely. Now I'm able to let someone else do the technician work. It's a kind of jack-of-all trades, master-of-none situation, and I guess I've decided to become more of a master of the conceptual design of a product. When somebody comes to me, what they've got is a wish. They would like a magic box, which does such and such. Then I start working at that point, and I start looking at the corner of the room and saying, "Well, now, how about this?" Some visions appear to me, in a certain sense, and I don't really know much about the process, but I start sketching out some possibilities. So that's where I consider the production process starts. That's what happened with the Osborne. Adam said, "I want to have a computer," and he knew pretty much what he wanted to have in it. In the production, cooperation is of the utmost importance. There's really nothing much to be gained in a competitive fashion there. In the administration or the marketing pyramid, that seems to be all they do.

I missed the whole process of climbing through the organization. I got out at a very early point, junior engineer, effectively just out of college. I went self-employed for a while, and went through all this

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other stuff, and then came back in up near the top. Now that's got to put a kind of strange perspective on things, and I don't really know how to judge it, I'm talking about things I've never experienced. So at Osborne, as well as being the only video designer, and therefore the best, in house, I try to maintain a kind of conceptual design holding things together. Compatability along our product line is very important, and that takes some thinking ahead. You have to do that trick that Herbert talked about in Dune about looking after the future through a thousand corridors, and you move your head a little bit and the corridors move, and you have to see what the outcomes are and where you want to go, and what corridors you might or might not be able to take. That's approximately the kind of thing I work on there. Other people do it too, but I'm the chief daydreamer.

**CC:** Are you one of the first members of the Homebrew Computer Club?

**LF:** Yes, I was in the first meeting.

**CC:** Homebrew seems to be very famous because of all the famous people that have come out of it, like Wozniak, Jobs, and whoever else.

**LF:** Bob Marsh started his company because of Homebrew Computer Club. That's the best part about it, so many things got started because there was that medium there.

There are special purpose communities, and the Homebrew Computer Club formed one. That was its heyday, that was when you could get everybody in one room, although it was a pretty packed room at that point. But you could and you did get a very active mix of information where people could decide, "Hey look, if I build that, I can sell it, and why don't we go off and do it?" And showing their designs around and stuff like that.

**CC:** But that doesn't happen any more, does it?

**LF:** No, it doesn't.

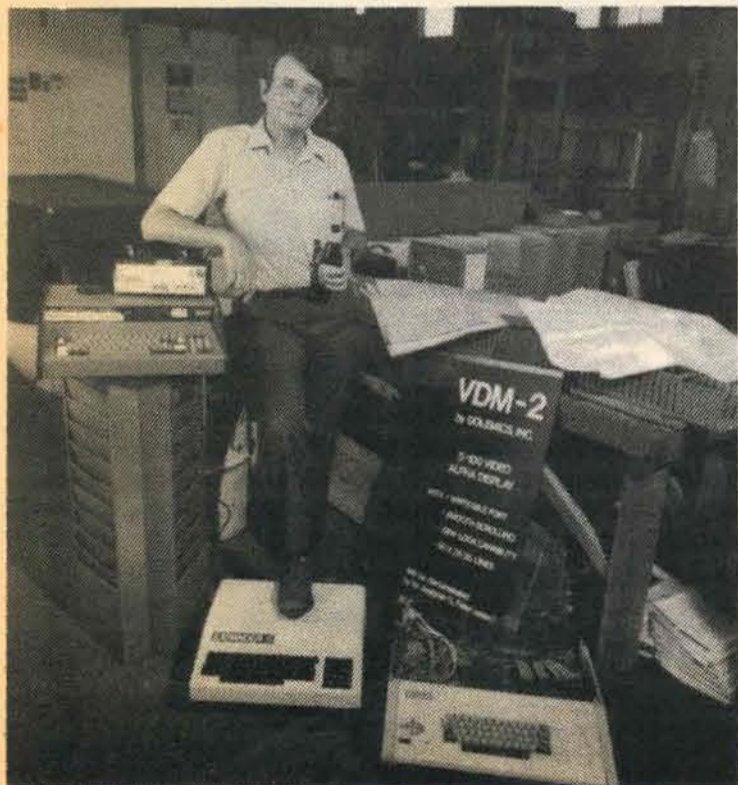
**CC:** Do you see the direction of the club changing, is there a particular evolution to it?

*"I'm interested in empowering the imagination, and making daydreaming a respected profession."*

**LF:** It's real hard to say what the club is at the present time. About 100 to 200 people come to meetings. It's a kind of social scene, you might say, a lot of old familiar faces. And it's pretty tame compared with the old days. It's been suggested we should be the user group for pre-users, sort of you get in and ask some questions, and then you'll know something about where to go. They can get some opinions, make the connections and find out who to come back to and ask when they finally know what they want to ask. That's probably what it ought to turn out to be, but I'm not going to push it.

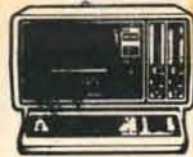
**CC:** In closing, is there anything you'd like to add? Are we all going to be sitting at home with our terminals and not travel to an office? Or all have little dedicated machines, and we'll buy chips at the local newstand?

**LF:** I would hope that none of those consumerist fantasies are going to be realized. I think that we can have the benefits of village life without the idiocy of village life, and that this technology is going



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to be key to that, and it's got to be a technology which is down at the ground level in the hands of the people who are going to be using it. It's not going to be one which keeps us locked up at the terminal, with no need to step outside your door, it's dangerous out there anyway, stay at home, live the rest of your life at home with your terminal. I'm somewhat antithetical to that, let's say. I think that the potential social transformations are significant. It's not going to happen just because the equipment's there. It's going to take a systems approach on the part of the people who use it, who can combine the technology with their visions, their daydreams of what their lives could be like. I have certain opinions about what that might be, but I can't impose them. There is not even a mechanism to impose them. I would say that being a daydreamer is a lot of fun, and it's a necessary task. I don't know where we'd get my replacement at Osborne, if I had to go. It's a tough problem. We need as many daydreamers as we can find, and we need people whose daydreaming overlaps, to daydream about the really important issues, which is essentially the structure of society and where it's going and things like that. Technology is a tool that they can use, and I'm trying to make it as usable for them as possible, but I cannot in my efforts create people who can be applied daydreamers. All I can do is hope to make it easier for people who might otherwise give up. I'm interested in empowering the imagination, and making daydreaming a respected profession. It's also something that everybody does, as part of their ordinary life. I have a second cousin who just graduated, and he's becoming interested in computers. I was at his graduation, and I talked to him, and it turns out he was not a technical bug, he's not that interested in the software or the hardware, and I said, "Then is it the rest of it, how they're used for everything else," and he said, "Yes." That was what interested him. For that, the kind of education you should look at is to learn as much as possible about the rest of the world. I benefitted from that kind of education that I actually had in high school, a kind of liberal arts education, and I've been able to apply it time and time again. So I was not going to talk him into being an engineer, because we're going to need fewer and fewer engineers. We're going to need more people to whom a computer is a tool they understand and can use, and also who are educated in the best sense of the world about the rest of society and the rest of the universe. I want to make sure that the technology goes out that way, and I'm not necessarily interested in dragging people in and capturing them within the technology. ■

**Classified Ad Form on Page 25.**

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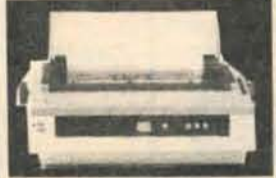


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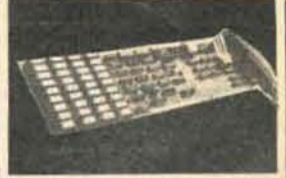


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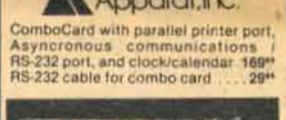
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