

FILE

Intelligent Machines for Business

16

345 Swett Road, Woodside, CA 94062; (415) 851-7075

79 Apr 11, Issue 6BE

Microcomputer Helps Miami Shoppers Cut Grocery Costs

A community center in Miami uses a small computer to deliver up-to-the-minute information on how to buy and prepare meals that are both nutritious and economical.

The computer is connected to a larger system in nearby Coral Gables. This system analyzes weekly prices for a variety of products at 7 supermarket chains, 25 independent markets, and 9 cooperatives. It reports which items are cheapest at which stores, and proposes menus planned around the best buys from a computerized "cookbook" of 500 recipes.

The Consumer Computer Project, directed by Mike Shulman, is run by the Community Resource Center of Miami, and is sponsored by the Department of Agriculture Cooperative Extension. It was designed to aid low-income families using food stamps, but is also used by middle income families who feel a need to stretch their food budgets, Shulman reports.

The project makes its information as widely available as it can. Computer



printouts are posted in libraries, sent to local media, and mailed to individuals who request them.

The project's small computer, an Apple II from Apple Computer Company of Cupertino, California, is used to enter data into the system in Coral Gables and to receive results. It is also used as an attention-getter, to generate interest in the food program. It can be loaded into the trunk of a small car and taken to shopping centers for demonstrations. Its power requirements are met by the car's battery.

With a crowd of shoppers gathered around, the Apple can present information on current prices, nutrition, and menus. Its disk storage unit can store a complete week of prices, making it possible to answer shoppers' questions on the spot. The computer presents its output on a portable color TV, with computerized pictures of food items forming the background for information display.

Based on the success of the Miami project, 39 additional programs in various parts of the country are planned by 1983.

Energy Initiative Proposal Predates Carter Announcement

It is interesting to note that the proposal for a California Energy Control & Development Initiative, advertised on pages 6 and 7 of this issue, was received about two weeks prior to President Carter's recent speech regarding his planned decontrol of oil prices, and the need for a windfall profits tax on the oil industry.

Once again - as was the case with Proposition 13 - it appears that California may take the opportunity to lead the nation in economic reform.

What Every Computer Should Have

We recently ordered an Equibox from Parasitic Engineering. We ordered it on reputation, never having seen one. When it arrived, we were surprised and delighted to find that it had a suitcase-style carrying handle, built right in to the side of the box. Now *that's* the way a computer ought to be equipped - just like a typewriter, or television, or other convenient personal machine!

Short Course on Small Computers

De Anza College, in Cupertino, California, will be offering a short course in small computers for home, office, and classroom use. The course will be a comparative overview of personal computers which are priced in the \$500 to \$5000 dollar range.

The course will not cover general topics of building and programming microcomputers, but will concentrate on practical applications and demonstrations of several personal computers. The course will also include guidelines for evaluating and selecting a small computer.

The instructor for the course will be Dr. Val Watson of the Computer Advisory Council at NASA's Ames Research Center. Classes will be held from May 14 through June 25, 1979, and tuition will be \$20. For further information, contact Short Courses Office, De Anza College-Flint Center, 21250 Stevens Creek Blvd., Cupertino, CA, 95014

WHAT'S THIS?

Radio Shack now advertises a \$600 computer in prime-time national TV. The San Francisco Bay area supports about 40 retail computer stores. It is estimated that there are now 300,000 to 600,000 general purpose digital computers in use by individuals and companies who were previously unable to afford computerized information processing.

But this next "industrial revolution" is even more significant that simply providing low-cost computing power to anyone wishing it. There are an increasing variety of increasingly "intelligent" machines - machines that can follow complex instructions given by their owners, or make complex or irritatingly methodical tasks easy to do. These range from typewriters with memory and dial-by-name phones, through voice-controlled wheel chairs and programmable videotape recorders, to home energy management systems and machines that can talk. Soon, in the Bay area and other areas around the nation, "electronic newspapers" will be broadcast, with the readers receiving them on a special FM receiver and reading them on their home TV ('soon', in this case, is planned to be prior to the end of 1979). All of these things - and much more - are the offspring of the so-called microcomputer industry.

And, of course, small business people, for the first time, can now afford the data processing power previously reserved - by its cost - for large corporations and government. The microcomputer-based business systems now being marketed are often more reliable, and less difficult to program and use, than have been their much more expensive big brothers.

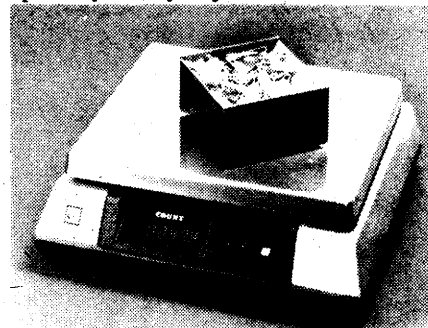
This newspaper is a special edition of a biweekly publication that addresses the low-cost computer market - the *Intelligent Machines Journal*. The occasion for distributing this complimentary special edition is the Fourth West Coast Computer Faire being held in San Francisco in May. This is a major national convention, exclusively addressing the topic of low-cost computing power for home, business and industry.

Many of the products and ideas discussed in articles in this issue will be on exhibit or further detailed in seminars at the Faire. We invite you to come and see *what the next industrial revolution has to offer. It's already here!*

Electronic Counting Scale

If you often receive orders for 513 widgets - and don't wish to ship 512 or 514 - you may want to look into the electronic counting scale made by National Controls, Inc. of Santa Rosa, California.

The counting scale, Model 5832, uses a built-in computer to measure the quantity of any object that has a uniform



weight. It comes with capacities of 10, 25, 50, and 100 pounds; it can count up to 32,000 objects with a resolution of 1 part in 50,000.

Contact National Controls, Inc., P.O. Box 1501; Santa Rosa, CA 95402.

Do not meddle in the ways of wizards, for it makes them soggy and hard to light.

- P. E. I. Bonewits

4TH WEST COAST COMPUTER FAIRE

being held

May 11 - 12 - 13, 1979

Fri Sat Sun
9am-6pm 9am-6pm Noon-5

in

San Francisco's Civic Auditorium & Brooks Hall

Preregistration (through stores & clubs): \$7

On-site registration: \$9

The Intelligent Machines Journal
345 Swett Road
Woodside, CA 94062
(415) 851-7075

WHAT TO COMPUTERIZE

You're interested in computerizing your business, but you're not sure what you want a computer to do. How to decide?

Begin by reviewing your business procedures. They should be fairly logical and consistent. They should enable you to do the routine parts of your business smoothly, the same way each time. You should not have a continual problem with errors, confusion, or missing papers.

If that doesn't sound like your business, don't try to computerize. A computer is a machine that deals with logic; it can't deal with haphazard procedures. If those procedures work well enough for you, just leave them alone. If not, organize them *before* you try to computerize.

If your business procedures are pretty well organized, you're ready to think about what to put on a computer.

One Step at a Time

Don't be too ambitious at first. Choose one area that you can computerize without involving the rest of your business too much. One step at a time is the rule.

If you advertise by mail, for example, your mailing list might be a good place to start. When that is running well, you can think about computerizing more things.

Look for an area where the computer can start saving time immediately for you or for an employee. By redirecting that time into productive work, you can increase your profits.

Some Technical Factors

For your first effort at computerizing, you'll probably want to buy pre-written software. It's cheaper that way, and you can avoid the pain of working out the bugs in a brand-new program if you buy one other people have used.

Choose an application for which

packaged software is available. That probably means some area in which your business is pretty much like any other. If you're a building contractor, for example, think about computerizing your payroll. For your first application of a computer, you should probably avoid cost estimation, where the building trade is unique and where you may have some needs shared by no one else in the world.

Consider how much hardware is necessary for a given application, and how much you want to buy. If you're an investment counselor, a complete investment analysis system may be invaluable to you; but it may also use so much on-line data storage that it carries a six-figure price tag. Start with something simpler, like interest computations or tax computations, and build on it.

Some Applications

Here is a partial list of applications which could reasonably be run on a small business computer:

- Bookkeeping and Accounting
- Payroll
- Billing
- Accounts receivable
- Accounts payable
- General ledger
- Tax computations

Financial Planning

- Depreciation
- Interest on loans, mortgages, investments

Special Business Applications

- Medical/legal: billing for professional services
- Engineering/scientific calculations
- Statistics

- Insurance: premium calculation
- Transportation: route planning and scheduling for trucks, etc.
- Construction, printing, other trades: cost estimation

Other

- Word processing
- Document preparation: shipping labels, warehouse receipts, etc.
- Mailing list
- Customer file
- Inventory control

A New Microcomputer System Is Capable of Detecting Forgeries

A New Orleans company has developed a computerized signature verifier that can detect a forged check without having access to an original of the signature it must examine. Opticode, Inc., plans to offer its Cryptocheck device to banks, and eventually to other businesses that accept many checks, such as supermarkets.

Cryptocheck works by analyzing a sample signature for characteristics such as slant, line thickness, and line thickness variation. It reduces these characteristics to a digital code, which can be printed as a pattern of dots in

ABOUT FEDERAL EXPRESS . . .

We cannot recommend that individuals and companies ship to *IMJ* via Federal Express. While they may provide excellent national television advertising, we have repeatedly found their delivery service to us to be unsatisfactory. On some occasions, they have delivered items to us several days late. On other occasions, they have been unable to find us, even though we are located on one of the major east/west roads on the San Francisco peninsula.

the margin of each check.

To verify a check signature, Cryptocheck analyzes it and compares it to the "recording" of the sample signature on the same check. Its decision is correct 99.8% of the time, its developers report.

The dot pattern printed on the check is not usable for reconstructing the sample signature, Opticode says.

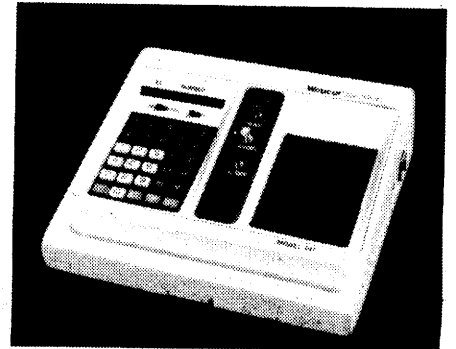
For more information, contact Opticode, Inc., 2745 Lafitte Ave., New Orleans, LA 70119; (504) 486-6222.

DIAL-A-TRON AUTOMATIC TELEPHONE DIALER

Webcor, a division of Leisurecraft Products, Ltd., has introduced the Dial-A-Tron, an automatic telephone dialer which can call up to 32 numbers at the touch of one button.

The Dial-A-Tron does not need to be hooked up in any way to the telephone in order to call numbers automatically. It can operate on either electrical or battery power, and will couple acoustically with the telephone receiver when the receiver is placed on a designated area on the Dial-A-Tron's surface.

Since the dialer can be used either with or without a direct hookup to a telephone or electrical outlet, it can be used anywhere, such as in hotel and conference rooms, and even in some



phone booths. It can be used during a power failure, and its memory will remain intact.

When the Dial-A-Tron is hooked up to the telephone, a built-in speaker allows anyone in the room to hear incoming conversations. Callers can also use this feature to listen for a busy signal or an answering party before picking up the receiver; the unit's hold button may be used to interrupt a conversation momentarily. The unit is compatible with any Rotary or TouchTone system.

The Dial-A-Tron's memory bank will store office extensions, overseas prefixes, and other special number codes; since the unit can store up to any ten digit number, it can also be used to recall a Social Security number, a birth date, or other similar data.

The Dial-A-Tron will redial a number at the touch of a button. It features a cancel button which instantly disconnects outgoing calls for redialing or for calling a new number, and it automatically turns itself off when all calls have been completed. The unit can also be used in conjunction with computer systems for credit card verification, order entry, and automatic fund transfer.

The Dial-A-Tron is 7-1/4" long by 6-1/2" wide. The suggested retail price of the unit is \$150.

Contact Leisurecraft Products, Ltd., 28 South Terminal Dr., Plainview, NY 11803.

**Why Doesn't Someone
Do Something About
Those Oil Companies?**

JIM RANDY PAUL

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We are pleased to announce the first professional time-sharing system in the microcomputer field.

Naturally, it's from Cromemco.

This new multi-user system will do all of the tasks you usually associate with much more expensive time-sharing computers. Yet it's priced at an almost unbelievably low figure.

Look at these features:

- You can have up to 7 terminals plus a fast, 132-column line printer
- You can have a large system RAM memory that's expandable to ½ megabyte using the Bank Select feature
- Each user has an independent bank of RAM
- You can have floppy disk storage of up to 1 megabyte
- You have confidentiality between most stations
- And, make no mistake, the system is fast and powerful. You'll want to try its fast execution time yourself.



PROGRAMMERS LOVE OUR BASIC

This new system is based on Cromemco's well-known System Three Computer and our new Multi-User BASIC software package.

Programmers tell us that Cromemco Multi-User BASIC is the best in the field. Here are some of its attractions:

- You can use long variable names and labels up to 31 characters long — names like "material on order" or "calculate speed reduction."
- You get many unusual and helpful commands that simplify programs and execution — commands such as **PROTECT**, **LIST VARIABLES**, **NOLIST**, and many more.

- No round-off error in financial work (because our BASIC uses binary-coded decimal rather than binary operation). And we've still been able to make it **FAST**.
- Terminals and printer are interrupt-driven — no additional overhead until key is pressed.
- The conveniences in this Multi-User BASIC make it much easier to write your own application software.
- A line editor simplifies changes.

BENCHMARK IT — NOW

In the final analysis, the thing to do is see this beautiful new system at your dealer. See its rugged professional quality. Evaluate it. Benchmark it for speed with your own routine (you'll be agreeably surprised, we guarantee you).

Find out, too, about Cromemco's reputation for quality and engineering.

Look into it now because you can have the capabilities of a fully computerized operation much quicker and for much less than you ever thought.



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Word Processing: Electronically-Aided Typing

A word processing machine can save you money by preparing your typing more efficiently than a typewriter. It offers several other benefits as well: rapid revision of documents, output without unsightly error corrections, and a 'library' of documents that you can modify or piece together to meet future needs without retyping.

A representative word processing machine is the Xerox 800 Electronic Typing System. It has two parts: a typing unit, which occupies about two square feet of floor space and stands desk high.

As the user types a first draft, the storage unit records it on a magnetic tape cassette or on a magnetic-stripped card. The machine has a built-in computer that finds the correct place to end each line, eliminating the need to press the carriage return key except at the end of a paragraph.

The user can enter corrections or additions to the text through the keyboard. The computer inserts the changes in the recorded document. When the user tells the computer to 'play back' the document, the computer types it at about 300 words per minute.

Since text that is not changed need never be rekeyed, the cost of making corrections and revisions is dramatically reduced.

Common Editing and Composing Features

Most word processing machines can insert or delete lines of text or characters within lines. They can automatically 'close up' a paragraph whose lines have been lengthened or shortened during editing.

Many machines have additional features such as automatic centering, automatic justification (making the right margin even), right alignment of figures for lists and tables, and automatic pagination, with running headings or footings on each page.

A particularly valuable feature many machines offer is search-and-replace. This

permits the user to locate an occurrence of a word or phrase and change it if he wishes to do so. A variation is global search-and-replace, which finds every occurrence of a word or phrase in a document or some portion of it. This makes it easy to perform systematic changes in wording, such as changing the name of a product wherever it is referred to.

Some word processing machines can merge text from the keyboard with a recorded document, making it easy to compose personalized form letters or contracts. Some can merge two or more documents, so that you can assemble new documents from prewritten sections of 'boilerplate.'

Other Features

Word processing machines are classified as either 'stand alone' or 'shared logic.' A stand-alone machine has one keyboard, one recording unit, and one 'computer' for editing. A shared logic machine has two or more independent keyboards sharing a recording unit and a computer.

Shared logic systems offer more power and economy to businesses that need several keyboards. However, they are inherently more vulnerable to breakdowns, since a single problem can put several keyboards out of commission.

Different machines display text for editing in different ways. Some use the same typewriter that is used to print final copy. Others use a cathode ray tube (CRT) like a computer terminal or television set. Some CRTs display only one line of text; others display several lines, or a whole page.

CRTs operate silently, display text changes instantly, and reduce paper consumption. Having no moving parts, they are less likely to break. On the other hand, many people find that their displays (usually green letters on a black background) cause eyestrain when used for extended periods. And, some typists, accustomed to paper output, find the screen hard to get used to.

There are different kinds of printing devices for final copy. Some ma-

chines use a spherical printing element like Selectric typewriters. More common is a flat 'print wheel' or 'daisy wheel' with one character at the end of each spoke. The wheel mechanism is simpler and faster - 30 to 45 characters/second, as opposed to 15 for the Selectric mechanism.

Suppose each document goes through only one draft before the final copy. Then, half the 50 pages are original drafts, and the other half are final copies.

With a word processing machine, the final copies need not be retyped; only corrections are entered. Roughly speaking, then, the machine saves one typist 25 pages a day, worth about \$35. The savings come to about \$7000/year. At this rate, a machine like the Xerox 800 (which costs \$14,000 to \$15,000, depending on the features chosen) can pay for itself in about two years.

Many variable factors could change this return. For example, going through more drafts, doing more demanding work like statistical typing, or buying a less expensive machine, would make the machine pay for itself in less time. Doing less typing per day or buying a more expensive machine would make it take more time.

The exact benefit you will derive from a word processing machine will depend on the kind of documents involved in your business, but it is likely to be substantial.

Many of the print-wheel machines offer proportional spacing, i.e., some letters, such as 'M' and 'W,' are wide; others, such as 'i,' 'l,' and 'j,' are narrower. Proportional spacing allows for these differences when advancing the print head, which both gives a document the appearance of having been typeset and makes it more legible and compact.

Different machines use different media for recording text. The most common media are magnetic-tape cassettes, magnetic-stripped cards, and diskettes. A tape cassette typically stores about 20 pages of text. A card stores one or two pages, and a diskette stores 50 to 100 pages.

A diskette machine can access any part of a large body of text in a fraction of a second because it doesn't have to wind a tape or wait for the user to insert the right card. This makes it easy to rearrange sections of a large document or to make extensive additions.

Tape and card machines need two recording units to give the same capability; the machine reads the old document on one and writes the edited version on the other. This means that tape and card machines work well only when editing proceeds from the beginning of a document to the end, with no skipping around or backtracking.

Economics

Word processing machines justify themselves by saving the time of typing personnel. Some very rough calculations suggest the possible savings.

Suppose it costs \$10/hour to operate one typing keyboard. When fringe benefits and office costs are considered, this figure is probably low. A typist working at 50 words/minute can type an average double-spaced page in 6 minutes. Assuming 70% productivity, that means 7 pages/hour, at about \$1.40/page. Working 7 hours/day, the typist can produce about 50 pages.

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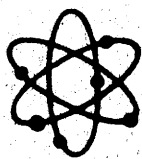
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PET BASIC COMPLEAT: A CASSETTE COURSE

Aresco announces off the shelf availability of *PET Basic Compleat*. Over 400 screens' worth of information is contained in this 2-cassette tutorial designed to teach a beginning PET user how to use and to program his machine. Twenty lessons of PET Basic are covered, including all the major Basic keywords, cursor control, screen editing, and use of the graphic characters. The 170+ page manual which accompanies the cassettes is indexed for quick reference, reproduces all 400 screens' worth of data (except PET's graphics), and includes quizzes and exercises.

PET Basic Compleat can be ordered for \$39.95 from Aresco, P.O. Box 43, Audubon, PA 19407; (215) 631-9052.

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ACS8000-6 _____ \$8990
Double-density Z80 computer with 2 single-sided floppy disk drives (1Mb floppy storage), Shugart Hard Disk, fully interfaced, 32K memory (expandable to 208Kb), rack mountable.

MULTI-USER OPTIONS

- 3 extra ports, 3 16K extra-user RAM _____ \$1220
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Ask for Bob Mann

See us at West Coast Computer Faire

How often have you heard –

having nothing to do with microcomputers

WHY DOESN'T SOMEONE DO SOMETHING ABOUT THOSE OIL COMPANIES?

- * They've doubled prices in five years
... and the legislators do nothing
- * They've repeatedly reaped windfall profits from us
... and the legislators do nothing
- * They've gained control of geothermal lands
... and geothermal production remains miniscule
- * They've moved into solar energy, consuming public R&D funds
... and solar energy development remains trite
- * They are demolishing our entire economy for their private gain
... and *they must be controlled!*

OK –

We the People of California Will Do It!

- * We Californians had the good sense to provide the ballot initiative as an alternative to legislative inaction
- * We proved we could use it to protect ourselves against other ripoffs, with Proposition 13
- * We used it to provide leadership to the entire nation
- * We must now use it to gain economic protection in an area that makes property taxes look like pennies

A proposal for –

A California Ballot Initiative

(the California Energy Control & Development Initiative)

*Replace Monopoly Practices With Competitive Pricing

Break up vertical integration in the oil industry
separate producers, refiners, distributors & retailers
– *let competition and free enterprise return*

*Encourage, Rather Than Hinder, Development of Alternative Energy Resources

Break up horizontal expansion within the energy field
separate oil, geothermal, solar, coal, hydroelectric & nuclear
– *let competition and free enterprise return*

*Take the Windfall Profits From the Monopolists

Rebate part to the public from whom they were ripped off,
Use the balance to fund alternative, *publicly-owned* energy systems
– *If we pay for 'em; we should own 'em*

PLEASE POST

having nothing to do with microcomputers

We Californians Can Do It

- * We are an oil producing state — we can produce more than we consume
- * We have extensive refining capacity
(and we all pay the pollution costs of those refineries)
- * We are the terminal for oil and gas pipelines
- * We are the main Port of Entry for Alaskan oil
- * We have extensive geothermal fields — all underdeveloped
- * We have the technical and geographic facilities to finish developing solar resources

— And, because

We are one of the few states with all of these, and

We are the most populous state in the nation,

We CAN protect ourselves against retaliation by the oil monopolists.

It's Time WE Took Control of OUR Essential Energy Resources

“YOU” IS PART OF “WE”

Donate a Tankful of Gas — \$15 or More

(That was two tanks, five years ago, and it'll be half a tank in three more years — unless we act, NOW!)

- * We need top legal advice in writing an airtight ballot initiative
We know the oil mongers will challenge it in the courts
- * We need massive publicity to get the facts before the public
We know the oil mongers will lay down a heavy barrage of propaganda and scare tactics
- * We need full-time staff — researchers, attorneys, publicists, organizers
Part-time volunteers are great, but we can't attack the oil monopoly with spare-time help

We Must Act — We Must Act Now!

California Energy Initiative, 345 Swett Road, Woodside, CA 94062, (415)851-7075, Director: Jim Warren

- I WILL take action, NOW! I want to help US regain control of OUR economic lives.
- When the Energy Initiative is prepared, send ___ copies for me to circulate for voter signatures. I am a registered voter in _____ county, California.
- I have the time, inclination, and ability to do investigative research for the Initiative.
- My name may be published as a donor and active supporter of the Energy Initiative movement.

Please print or type:

name _____
 mailing _____
 address _____
 city _____ state _____ ZIP _____

Call me when I can help: phone — (____) _____

Enclosed, please find a check, payable to Energy Initiative, for:

- \$16* — a tankful of 1979 gas
 \$30 — a tankful of unrestrained 1982 gas
I'd rather spend it now, once, and hope that I don't have to spend it then, weekly.
 \$50 — sustaining contributor
 \$100 or more — Major supporter

Send to: Energy Initiative
 c/o Jim Warren
 345 Swett Road
 Woodside, CA 94062
 (415)851-7075

(IMJ-6BE)

We CAN Control Our Destiny — We WILL Regain Control of Our Lives

* See? In the time it took you to read from the middle of the page to the bottom, a tank of gas went up \$1 (a sheik sneezed).

NO ONE OBJECTS TO A REASONABLE PROFIT

No one objects to a business making a reasonable profit. No one objects to a major profit derived from innovative creation and invention. No one objects to a profit earned through hard work in a competitive environment.

But the oil companies are making their consistent, windfall profits by monopolizing an essential resource, holding alternative resources off the market, and lobbying sufficiently to prohibit the government from providing us with reasonable protection against their unilateral control of the energy market.

They are reporting windfall profits, in spite of their highly publicized billions of dollars spent on exploration and development; in spite of their considerable tax shelters — e.g., the oil depletion allowance; and in spite of their considerable ability to move money about within their multi-national corporations. In spite of all of their capabilities for spending money and manipulating their financial reporting, they still end up reporting consistent windfall profits.

Their profits are *not* reasonable. Their profits are not derived from innovation or creation. Instead, they derive from a long chain of public ripoffs, dating from long before the Teapot Dome Scandals, and continuing with the oil depletion allowance, and low, fixed-fee leases of public lands for high-profit private development. Their profits are not earned through hard work in a competitive environment, but through monopolization of an essential national resource — much of it being pumped from public lands, and sold back to the public at ripoff prices.

Researchers, Lawyers, Petitioners, Writers, Community Organizers, . . .

Everyone in California is significantly affected by the monopolistic practices of the oil industry. Those practices affect the costs of all goods and services — much more than merely impacting gasoline prices.

If you are willing to take an active part in regaining control over your economy, join the Energy Initiative.

We need researchers to dig out the real data on the energy situation. We need them to document the source of the data being used by the media and the government — often, it turns out that such information is being supplied by the oil companies with no independent verification.

We need top-notch legal assistance. We need it to formulate a ballot initiative that even the oilers' best attorneys can't negate in court. And, we need first rate attorneys to successfully fight the court challenge to the initiative that will certainly be filed by the oil monopolists.

Perhaps most of all, we need you to (1) spread the word of the Energy Initiative, and (2) to sign and circulate the Initiative for voter signatures, once it is completed and printed. *Everyone CAN do something.*

And, as our treasury allows it, we will need full-time, skilled, dedicated staff — receptionists, writers, media specialists, speakers, and so on.

If you are willing to be an energy activist in any way, attach a note to your donation indicating how you can help.

If you have particular talents that would be helpful to the Initiative, please send details and a resume. (We are particularly interested in locating researchers who have experience in the petroleum industry.)

(Please write — do NOT call. We have a limited staff, right now, and time spent talking to callers is time taken away from the massive organizational effort that is necessary if this Energy Initiative is to succeed.)

Eleven Years for a Snoopy Calendar?

Ribicoff Bill Would Make Felons of Most Programmers, Say Critics



Computer legislation critics John James (left) and John Taber discuss the Ribicoff bill.
by Tom Williams

The proposed Federal Computer Systems Protection Act recently reintroduced in the U.S. Senate as SB 240 by Senator Abraham Ribicoff (D-Conn), would go a long way toward creating crimes where none previously existed and making programmers subject to prosecution (as felonies) for acts which have been routine in the data processing industry, according to John James and John Taber, two critics of the bill.

Is there any need for this kind of legislation? James and Taber think not, at least, not at the federal level. Taber: "Computer crime is really a misnomer. What we're really talking about is record-keeping crimes. There is not one crime you can commit with a computer that is not already covered by the law."

John Taber, a systems development programmer for a major manufacturer, said that his main objection to the proposed legislation lay in the threat of potential abuse, which he sees as two-fold. "The first is a threat to privacy, and the second is the danger of jailing programmers for things that are not crimes now and are not even considered wrong," he stated in an interview with *IMJ*. Taber said that because the bill "forbids 'unauthorized access' without specifying what is meant by 'unauthorized access' and without specifying who may do the authorizing," it makes any use of a computer without official permission a federal crime. "And," he added, "'unauthorized use' of computers is very widespread." He stressed, however, that little if any of this routine unauthorized use was for personal gain.

John James, who works as a systems programmer for a San Francisco Bay area research corporation, stated, "The legislative intent of the bill is spelled out very clearly in the Congressional Record... [the intent] is to allow federal prosecution of even the most trivial uses, such as calendars, club mailing lists, and so on, subject to the discretion of federal prosecutors."

When asked how the legislation would affect privacy, Taber said that far from guaranteeing personal privacy, the bill would be an actual threat to it. By creating a whole new area of crime, he said, it would make computer data subject to the investigative authority of the FBI. James added that all the FBI would have to do was to show cause to believe that a crime (unauthorized access) had been committed, and it would

have the authority to seize a company's entire computerized records.

James described this situation as "worse than a fire," insofar as such a seizure would presumably include the off-site back-up tapes and disks, the absence of which would shut down the whole installation.

Taber described yet another area of potential threat to data processing personnel, i.e., that part of the bill which forbids the unauthorized modification of code. This would apply, for example, to a systems programmer modifying or disabling chunks of code not owned by the installation but rented from a software vendor. Most rental agreements do not specify that the user may alter the code, and most vendors prefer that the code not be altered.

"I, as a systems programmer, don't think that I have to even ask my manager to disable the code. If, in my good judgment, that code should be disabled for the good of the installation, I could very well do it without asking my manager's permission. That would be a felony under this law."

James and Taber claim that there has been virtually no input from the computer industry on this bill. Indeed, they pointed out, the only testimony by professionals in the field has been from three specialists in computer security; as James noted, security considerations hardly cover the bill's possible impact on daily operations. Ironically, the changes suggested by these experts were ignored when the bill was resubmitted.

The privacy issue was raised by Senator Joseph Biden (R-Del) during hearings held before the Criminal Laws and Procedures subcommittee of the Senate Judiciary Committee. Biden, who chairs the subcommittee, asked Senator Charles Percy (R-Ill) about the bill:

We are going to be turning to these agencies [FBI, CIA, Intelligence] and saying, "We are going to broaden your jurisdiction now. We are going to allow you legally to get into a number of data banks that you have not had access to before."
... As I read it, just about any computer in America will be accessible for the first time to investigation by a major federal law enforcement agency. Are there any problems with that? Do we have to do anything beyond this legislation to ensure that that does not become abuse?

Senator Percy mentions the possible use of the currently pending Privacy Act, but does not respond directly to Senator Biden's question.

In his testimony before the subcommittee, the FBI's Joseph Henahan referred to the increase in the FBI's investigative powers under the bill as "awesome."

James went on to enumerate what he saw to be the other potential areas of abuse that the bill might create. He noted that, beyond the impact on the data processing industry, the legislation would have a broader societal impact. It would not only make the records of corporations and private individuals more accessible to federal investigators, but make them less accessible to the press, he said.

In the age of the paperless office, when most files and records reside in a computer, if an employee retrieved a memo from the computer without authorization, and 'leaked' it to a reporter, he would be committing a felony. James feels that the discretionary considerations which, in the past, were balanced against such acts — considerations such as the right of the public to know, the right of the press to report it, and, on the other hand, the right of the administrator to keep the information secret — could no longer apply. The only question would be, "Was the information obtained by illegally accessing a computer?"

So, anyone who wished to keep any information secret need only computerize it and destroy the manual copies; thus, civil liberties questions, such as those which arose in the case of Daniel Ellsberg and the Pentagon Papers, would not apply.

Asked what he thought the real purpose of the bill was, Taber responded that he felt the purpose of a piece of legislation was not what the sponsor said it was, but what the bill actually did. "What this bill actually does is threaten privacy, and put most of data processing under the discretionary police powers of federal agencies. That must be its purpose."

James and Taber pointed out one additional effect of the bill if another piece of legislation now before the House of Representatives is enacted. This refers to S.1437, the Criminal Law Reform Bill. S.1437 is a revision of the former S.1, a criminal law revision introduced under the Nixon administration. It contains a sentencing provision which limits the sentencing powers of judges to plus or minus 25% of the nominal sentence. Under this law, conviction under the Federal Computer Systems Protection Act would mean a mandatory minimum sentence of eleven years, the nominal sentence being fifteen years.

HOT FLASH FROM THE FTC

Today, *IMJ* was contacted by an official of the Federal Trade Commission regarding previous articles on the problems Los Angeles computer retailers were having with city requirements for certification of electrical equipment.

Apparently, the FTC has noticed that Underwriters' Laboratories have a near monopoly in the certification business. The FTC is drafting a proposal for a regulation which would establish standards for certification of products. The FTC official told *IMJ* that such a ruling would encourage the development of smaller certification organizations. There would also be provision for a challenge process when manufacturers felt a product was unfairly evaluated.

A further requirement would be that a seal of approval specifies what is actually being certified and what it means. The FTC will be soliciting input from business regarding the proposed regulation. *IMJ* will carry pertinent information in the next issue.

As soon as it comes in the mail, we'll turn around and get the news to you.

—TW, 79 Mar 27

MICRO SYSTEM FOR PROPERTY MANAGEMENT

Applied Management Systems of Whittier, California, has announced a microcomputer property management system, comprised of hardware and applications software, for providing accounting management for income properties.

Property accounting and real estate sales support make up the applications software. The property accounting section is composed of cash receipts, cash disbursements, ledger and property, and file maintenance. The system reports each income property separately, providing current month and year-to-date profit and loss statements, with a percentage breakdown of all items.

The real estate sales support programs, according to AMS, are designed to answer most mathematical problems relating to real estate finance. Programs in this category include several loan amortizations (including balloon payments), rates of return, present and future value formulae, depreciation schedules, and property investment analyses. In addition, there is a personal management program designed to store and recall important dates, such as tax payment dates and appointments. A word processing package is available for an additional charge.

The system includes a CRT terminal, a matrix printer, a microcomputer, and a dual 8-inch disk drive. The turnkey system is priced at \$10,950, including delivery and eight hours of instruction. There are also lease terms available. For more information, contact Applied Management Systems, 6228 Gretna Ave., Whittier, CA 90601; (213) 692-8132.

ALPHATYPE TYPESETS FROM XEROX WORD PROCESSOR

Alphatype Corporation's AlphaComp XWP phototypesetter accepts input directly from the Xerox Series 800 electronic typing system. It can justify text automatically, rearranging line breaks to fit the column width and type size being used. It automatically converts underlined text to italics or bold face, at the operator's discretion.

The AlphaComp operates on text with no special format codes embedded in it. It can compose text files even if they were not originally intended for that purpose, Alphatype states.

The AlphaComp is a desk-top device. It plugs directly into the communications port of the Xerox word processing system.

A separate direct-entry keyboard allows the user to do typesetting without going through a word processing machine. This keyboard allows direct control of typesetting functions such as type style and size, word spacing, and line separation.

The AlphaComp can set type using 3 different face/size combinations. The operator can change the combination in use by replacing optical type elements inside the machine. Type elements are available in sizes from 6 point to 24 point, and in a variety of styles.

The AlphaComp XWP is priced at about \$10,000. For more information, contact Alphatype Corporation, 7711 Merrimac; Niles, IL 60648; (312) 965-8800.

The U.S. government spends \$8,000,000 per year, just to store the paper reports that it requires that private business submit to it.

60 Minutes, 79 Jan 14



HOW TO STAY ON TOP

Controlling Your World

Staying on top means keeping things under control. And, when it comes to staying on top of your applications world, we've got a way for you to do it at low cost.

Whether your particular application is business, professional or scientific systems, you can stay right on top of it with the DYNABYTE DB8/2 microcomputer.

Designed For Value. . .

When we designed the DB8/2, we knew that it had to be a dependable performer in handling large quantities of information. So, every design decision was made with quality and dependability in mind. The DB8/2 is a first-class producer.

For example, it uses two quad density 5.25-inch disk drives with our exclusive Dual Density Disk Controller for up to 1.2 megabytes of formatted storage. That gives you more capacity than two single-density 8-inch drives which means a lower cost per kilobyte. The DYNABYTE DB8/2 is the first microcomputer to offer enough storage capacity on 5.25-inch disk drives to fully utilize CP/M,* the most widely accepted disk operating system.

We also supply and support BASIC, FORTRAN and COBOL programming languages. As for applications, packages include general ledger, accounts receivable, accounts payable, word processing and many other CP/M compatible programs.

. . .For Dependability

We've also built in reliability with edge connectors that meet military specifications and a regulated power supply built to U.L. standards. Your DB8/2 will be cool and dependable.

Before we ship it to you, we conduct factory test and burn-in programs to assure reliability of the entire integrated system.

. . .For You

You'll stay on top through our customer support too. The DB8/2 is completely modular to allow speedy support in the field; and our bonded inventory of all sub-system modules means we can deliver replacement subassemblies overnight to almost anywhere in the U.S..

There's More

The DB8/2 has a 4MHz Z-80 processing module with 10 internal timers, interrupt control, real time clock, one parallel and

two RS232 or current loop serial ports with software selectable baud rates from 110 baud to 76800 baud; 32K of RAM, expandable to 64K without paging and up to 176K with paging; a 12-slot, fully-socketed backplane; preregulated 30 amp power supply.

If you need more storage, our DB8/4 Disk System is the mass storage companion to our DB8/1 microcomputer and includes two 8-inch floppy disk drives in either single or double-sided configuration for up to 2 megabytes of mass storage. Like the DB8/2, the combination of the DB8/1 and DB8/4 features our Dual Density Disk Controller, CP/M, 32K of RAM expandable to 176K, 2 serial I/O Ports and 1 parallel I/O port.

All three systems are designed to help you stay on top.

For more information, call Rick Mehrlich at (415) 965-1010, or see your local computer dealer.

*CP/M is a trademark of Digital Research

1005 Elwell Ct., Palo Alto, CA 94303 (415) 965-1010

DYNABYTE

Phototypesetters: A Wide Use in Business

Most modern typesetting systems are phototypesetters. They compose text by flashing the image of each character onto a roll of light-sensitive paper. The exposed paper is developed in a "stabilization processor" that yields finished copy slightly damp, at a rate of several inches per second. The exposed paper is held in a light-proof cassette until it is developed, so that the machine can be operated in room light.

Small phototypesetters make characters by projecting them onto the light-sensitive paper from a moving piece of film. Many large machines make characters electronically by flashing them on a cathode ray tube (CRT).

Small (optical-mechanical) phototypesetters run at speeds of up to 75 lines per minute; the electronic ones can do hundreds or thousands of lines per minute.

All phototypesetters offer a choice of different type styles and type sizes, but they vary widely in the number of styles and sizes they can accommodate without manual switching from one character set to another. The smallest machines allow two or three type styles in a single type face. Medium-size ones allow a half-dozen or more styles and a dozen or more sizes. Some large electronic machines allow dozens of styles and sizes.

The least expensive phototypesetters are generally direct-input machines; they compose one line at a time as it is entered on a keyboard. More expensive machines compose text that is stored on a magnetic diskette or tape cassette. The text can be recorded on the composer itself, on a separate composing keyboard, or on a compatible word processing computer.

Many older phototypesetters take input from punched paper tape, a medium not commonly used in an office environment. Some of these machines can be fitted with accessories that read diskettes or cassettes, or communicate by telephone.

Banks can call the interest they pay on savings deposits "interest."

By law, credit unions *cannot* call the interest they pay on savings deposits "interest." They must call it "dividends."

Fortunately, it's only a minor programming change.

Don't you feel safer, with the government protecting you with such semantic discrimination?

VISC Color Video Disk Player with Stereo Sound

VISC, Matsushita Electric's home video disk player which uses a 30 cm disk similar to an ordinary phonograph record, was shown at the Consumer Electronics Show, in Las Vegas.

The two-hour system, VISC II, which was demonstrated at the Matsushita Electric display at the show, plays 60 minutes



on each side and is designed for recording long programs, such as feature movies or sports events.

The Matsushita VISC system differs from other optical, electro-capacitance, or mechanical compression type video disk systems. Conventional systems require disks made of special materials produced by special processing techniques, and some systems also require highly specialized components in their video players.

Matsushita's VISC system has solved these problems by developing a faster, direct-cutting method for the master disk, combined with a 'Twist Stylus' system that converts the mechanical vibration of the stylus directly into voltage fluctuations.

With the exception of its special diamond stylus, the player unit can be easily mass-produced, since it is designed and engineered around ordinary electronic components and parts.

The player unit is light in weight, and has a simple two-knob operation. There is an on-off power switch, as well as a single control play button which both starts playback and searches the recording for particular segments.

In order to record the high frequency signal of 10 MHz, the conventional mechanical cutting of a master disk takes a great deal longer than the real disk playing time. But the Matsushita direct cutting method makes it possible to record a wide frequency band picture signal as well as two discrete sound signals simultaneously in real playing time. This is accomplished by an ultra precision micro-cutting stylus, ultrasonically driven by a PCM, piezo ceramic material device.

The Matsushita VISC disk resembles a phonograph record. It is made of polyvinyl chloride and can be mass-produced by existing audio record production facilities.

Color signals can be recorded on each side. Audio reproduction gives two-channel sound, which can be used either for stereo listening or for switchable bilingual narration, such as an American movie that can feature either English or Japanese audio.

Marketing plans have not been completed. The system was developed by Matsushita Electric, of Osaka, Japan, the parent company of Panasonic and Quasar.

The government requires extensive — expensive — operations and production reporting by U.S. manufacturers. The information thereby gathered is released, in preliminary form, about a year and a half later (e.g., preliminary information from 1977 was released late in 1978). This makes the vast majority of the information useless for decision-making purposes by the business community or government regulatory agencies, since it is completely outdated.

Micro-Based Dictating Machines by Dictaphone

Dictaphone Corporation has introduced two new dictating systems which use microprocessors to perform many control and diagnostic operations. The transcriber unit of each system contains a Texas Instruments TMS1000 microprocessor.

The Travel Master portable recorder and the Thought Master desktop recorder/transcriber form one system, using standard (C-type) tape cassettes, each of which records 60 minutes of dictation. The Micromite recorder and the Micro Master transcriber form the other system, using microcassettes which record 30 minutes of dictation each.

Each system offers a microprocessor-controlled cueing feature, which Dictaphone calls Q-Alert.

Q-Alert lets the user of the recorder mark any point on the tape by pressing a button. This records a subsonic (15 Hz) signal on the tape. Cue marks can be used for any purpose; Dictaphone suggests using a single mark for the division between two letters, and a double mark for transcription instructions.



The transcription operator must rewind the cassette when it is put into the transcribing unit. As this is done, the microprocessor detects cue marks through the transcriber's erase head, and notes their locations as lighted points on a row of over a hundred LEDs across the top of the machine.

The microprocessor assumes that the tape is fully forward-wound when it starts rewinding, and it displays cue mark locations starting at the extreme right end of the LED scale. If this turns out to be incorrect, it left-adjusts the lighted positions when it finishes rewinding.

After the cassette has been rewound, the operator can wind forward to any cue mark, and play back what is there. An electronic cursor moves across the LED scale as the tape is advanced, showing the exact place to stop.

The microprocessor can also be instructed to pause at each cue mark during rewind, giving the operator a chance to stop it and begin playback.

Pre-computer versions of Q-Alert turned on LEDs with an electromechanical device, and indicated tape position with a pointer attached to a worm gear. The microprocessor gives greater reliability by reducing the number of moving parts. By pulsing the LEDs several dozen times per second, it gives the appearance of continuous illumination while reducing power consumption by as much as 2/3.

Each transcriber's microprocessor has diagnostic programs that service personnel can use to test their operation. No additional test equipment is needed. Computer-related mechanical functions can also be tested. Testable functions include power to the processor; memory integrity; cue recording and detection; end-of-tape indicator; tape position sensor; and LED operation.

The Micro Mite recorder sells for \$259, and the Micro Master recorder/transcriber is \$625. The Travel Master and Thought Master are similarly priced.

Contact Dictaphone Corp. at 105 Oak St., Norwood, NJ 07648; (800) 431-1708.

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Site of the 4th West Coast Computer Faire, May 11-13, 1979

SILICON GULCH GAZETTE

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(415) 851-7075

12-16 Kilopeople Expected at Faire

The 4th West Coast Computer Faire appears likely to be the largest microcomputing convention yet to occur. Faire organizers are expecting 12,000 to 16,000 or more to attend the Faire during its three-day weekend convention. These estimates are based on a variety of data points:

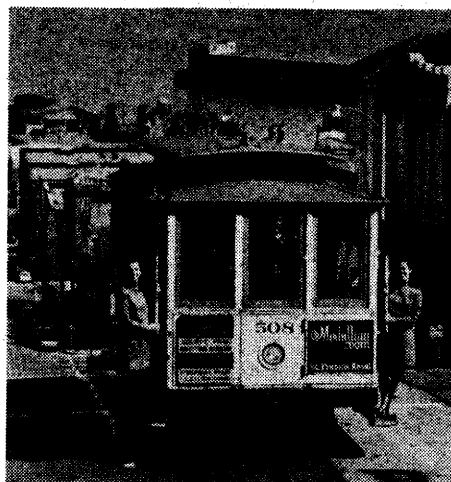
— two years ago, in San Francisco, the First West Coast Computer Faire drew almost 13,000 computer enthusiasts,

— the 2nd Computer Faire, held in San Jose — 60 miles south of San Francisco — over a year ago, drew over 14,000,

— due to a 137,000-copy *Business Edition* being sent to northern California business people, a considerable number of people, new to microcomputing, are expected to attend the Faire for the first time, seeking solutions to their business and government reporting problems,

— the entire consumer computer market has grown, significantly, since the last San Francisco Computer Faire,

— and last, but not least, it's being held in *San Francisco* at an ideal time of the year.



San Francisco Visitors Bureau Photo

4th West Coast Computer Faire
San Francisco
Civic Auditorium & Brooks Hall
May 11 - 12 - 13, 1979
Fri Sat Sun
9am-6pm 9am-6pm Noon-5

Computer Faire Has Massive Products Exhibition

Returning to San Francisco after a two-year absence, the 4th West Coast Computer Faire is shaping up to include the largest microcomputing exposition yet held. Faire organizers estimate that over 270 exhibit spaces will be filled with a wide variety of demonstrations of microcomputer products for home, business, and industry. (Two months prior to the Faire dates, over 210 spaces had already been rented, and more exhibitors were arriving daily.)

Exhibitors already contracted range from consumer manufacturers such as Apple and Atari, through personal computer makers such as North Star Computers and Southwest Technical Products, to companies addressing the small business market — e.g., Alpha Micro, and Midwest Scientific, to name a few.

There are a large variety of software producers. These range from complete disk operating systems such as CP/M from Digital Research, through business accounting and inventory control systems, to a wide variety of computer games and educational packages.

Other exhibitors are offering a wild selection of usual and unusual systems and subsystems — from low-cost color graphics systems and inexpensive hard-copy and soft-copy terminals, to speech synthesis units and electronic music systems.

The 4th Faire will fairly obviously be the largest of the Computer Faires, and that makes it the largest of all the microcomputing conventions that have been held in the past four years, i.e., since the inception of truly low-cost computing power for everyone — home, business, and industry.

FOURTH FAIRE INCLUDES MAJOR CONFERENCE PROGRAM

As has been the case with the previous three Computer Faires, the 4th Computer Faire will include a major conference program. More than 90 speakers will discuss topics ranging from automated home energy management and microcomputer-based 'electronic newspapers' and computerized bulletin boards, through tutorials for business people and discussions of educational applications of micros, to detailed examinations of current developments in systems software and language design for micros.

Broadcast-based digital communications for a wide variety of general and special uses will be the topic of a special, major Faire conference section. This is

the first time this topic — the marriage of microcomputer-based information processing power with a means for inexpensive, massive data distribution has ever been discussed as the exclusive topic of a major computer convention's conference section. The section will include topics that have previously been discussed under such titles as "electronic newspapers" and "computerized bulletin boards." It will also include specific proposals and a report on the current status of the Digicast Project.

The Computer Faire will, once again, publish a complete *Conference Proceedings* — a collection of all the papers and abstracts that were submitted by speakers, backing up and supplementing their Faire conference presentations.

Energy in the Home — Manage it with Micros

Solar Simulator

J. Robin Donaldson and Mark Miller will discuss a "Microcomputer-Based Solar Simulator and Demonstrating Unit."

The speakers have developed a program that simulates the behavior of a small solar energy house on a microcomputer. It enables them to demonstrate solar energy principles and run simulations using the "house" as a model.

Micros in Energy Management

Mark Miller will discuss "Microcomputers in Energy Management Systems." He will describe systems, built into two renovated houses, which use 6502s to control energy collection and consumption. Then he will speculate on the commercial home energy management systems likely to become available within a few years, and on other possible applications of such systems — in simulation, food production, and vehicle energy management.

Dwelling . . . Redesigning

While we are designing computer systems to control the home environment, we should also be designing homes that are capable of being controlled efficiently by computers; as a result, we would get homes that are more hospitable for people as well as for computers. So says Dan Vance Kimball, a designer at Dwelling Design Network, who will argue for such an approach in "Dwellings . . . Redesigning Them to Support Life."

The speaker will discuss some of the criteria for designing an optimal dwelling and some features of designs based on these criteria. He will describe an 8080-based home management system that Dwelling Design Network has

developed as a component of such a house.

Dwelling Design Network is at Box 13860, U.C.S.B. Station, Santa Barbara, CA 93107.

Home Energy Management

Fran Farrand will describe a proposed system for home energy management in "A Real-Time Operating System that Specializes in Home Energy Management." The system would use a microprocessor which polls sensors periodically and turns household devices on or off depending on what it finds. The microprocessor would not be heavily loaded by its home management tasks, and could be used for personal computing, as well.

Electrical Load Management

In "Electrical Load Management," A.I. Halsema will survey the need for more efficient use of electricity in homes, and the potential of microcomputers for meeting that need. He will detail several ways in which computerized load management can save energy, such as turning off unneeded appliances during peak load periods.

Energy Conservation

Rising energy costs and declining computer costs are bringing us closer to the day when home energy management systems will be cost-effective; perhaps, necessary to our economic health. Jack Park will discuss some of the prospects in "Overview of Energy Conservation Possibilities Using Home Computers."

The speaker is concerned with the social aspects of energy management as well as the technical aspects. This means making people aware of the energy costs of their activities and habits, then inducing them to change their behavior.

MELODIOUS MICROS

Play An Orchestra

In "Learn to Play an Orchestra," Cesar Castro and Allen Heaberlin will describe a new digital music synthesizer that can generate high-quality sound (32 synthesis channels, 16 programmable waveforms per channel), and that sells for under \$800. They will discuss the principles behind different kinds of music synthesizers, and explain their new synthesizer's design.

The speakers are associated with Casheab, 5737 Avenida Sanchez, San Diego, CA 92124.

Percussion Music

In "Computer Controlled Percussion Music," Henry L. Pfister will describe a computer-controlled system for creating percussion music on analog 'instruments.'

IF

You receive more than one copy of Our Glorious Gazette,

THEN

You're obviously a true computer fanatic (oh joy!)

AND

are on more than one magazine mailing list.

PLEASE

Pass the extra copy along to a fellow Computer Enthusiast.

Telecommuting

In "Telecommuting Via the Personal Computer," Jack M. Nilles will discuss prospects for replacing 'physical' commuting from home to workplace with 'logical' commuting, in which one works at home through a computer and telecommunications channel.

The potential impacts of microcomputers on telecommuting will be examined, including effects on productivity, energy costs, and development of new service industries.

Electronic Publishing

William Bates, editor of *The Computer Cookbook*,™ will speak on the subject of "Economic Advantages of Electronic Publishing."

Several electronic publishing services are already in commercial operation, Bates points out. Some are general information services, such as the New York Times Information Bank. Others are specialized services such as the medical and scientific indexes maintained on Lockheed's Dialog™ system. And then there are the "broadcast" data distribution systems, such as Digital Broadcasting Corporation's services and the British Post Office's Viewdata.

The speaker will discuss several of the present and proposed systems, including their future, economics, and prospects for expansion.

Democratic Process

Limited access to information often makes 'democratic' institutions function in an oligarchic or autocratic way. In "Digital Broadcasting and the Democratic Process," David Sanders Stodolsky will suggest a way that an information network based on personal computers could promote truly democratic institutions by making information more easily accessible to the people who are interested in it, and more easily avoidable by the people who are not.

Personal Computer Telecommunications

In "Personal Computer Telecommunications" Dave Caulkins will review the current state of the art in communication nets, pools, and similar structures using personal computers. He will discuss specific systems, their availability, advantages, and disadvantages.

Some of the systems the speaker will mention are: the Community Bulletin Board System, which lets anyone with a dial-up terminal access a regional information pool; PCNET, a distributed data communication network; the Digicast project; and amateur radio/personal computer hookups.

Bit-Oriented Protocols

In "Bit-Oriented Protocols in Serial Data Transmission," Mitch Gooze will discuss a relatively new class of protocols for data communications which combines many of the advantages of asynchronous communication (code transparency, full-duplex operation) with bi-synchronous communication (efficient use of the transmission medium for high-speed communication).

Examples of bit-oriented protocols currently in use are the Advanced Data Communication Control Procedure (ADCCP), the ANSI standard; High-level Data Link Control (HDLC), the CCITT standard; and Synchronous Data Link Control (SDLC), the IBM standard.

Mr. Gooze works for American Microsystems, Inc., which manufactures an integrated-circuit device that can encode and decode bit-oriented protocol transmissions of all three types.

Computers & Communications: Some Lively Horizons for Micros

Videotex & Teletext

Consumer-oriented digital information services are a commercial reality in Europe, and promise to revolutionize the next century as the automobile has revolutionized this one.

In "Videotex and Teletext Systems: Consumer Information Systems of the 80's," A. Terrence Easton will discuss characteristics and implications of consumer information systems, with particular attention to two of the ones now in use.

Two-Way Communication

Future mass media will offer a potential for two-way communication that was never possible with traditional media such as radio and television. Thomas P. Hill will explore that potential in "The Application of Two-way Communication Technology to Information and News Systems."

In conventional mass media, information is 'pushed' at the consumer by the producer. The amount of information is adjusted to fill a certain time slot, and arbitrary (or value-laden) choices are made in order to do so.

In two-way media, the consumer will 'pull' the information he desires out of a large pool. This will change both the kind of coverage the media gives to news and news-like topics and the way that the information they present is organized. The speaker will discuss what some of these changes will be, what effects they will have on the producer and consumer of information, and how two-way mass media may evolve to accommodate them.

Closing The Loop

In "Closing the Loop on One-Way Broadcast Systems," John R. Pickens and Raphael J. Rom will discuss the potential for co-ordinating two new communication media that are developing out of computer technology: electronic mail and digital broadcasting.

A number of configurations are discussed, such as: electronic mail providing input to a digital broadcasting system; manual or automatic 'middlemen' notifying their customers by mail when information of concern to them is broadcast; information services broadcasting summaries of data at no charge; and mailing full-text on request at a charge.

Amateur Radio

In "Enhancing Amateur Radio Through Computer Control," Leonard C. Silvern will discuss SEARCH, a microcomputer-based information system which aids communication between amateur radio operators.

The computer assists an operator in the technical aspects of making a contact, such as logging his activity to meet FCC record-keeping requirements. It also controls a group of microfilm and microfiche devices that give the operator quick access to maps, pictures, and other geographic material. This can provide him with starting points for a rewarding conversation with whomever he contacts.

The use of SEARCH appears to shift the content of radio conversation away from technical topics (transmitters, antennas, etc.) and toward social topics (local economies, schools, recreation facilities, transportation).

Digicast Weather

Digital broadcasting with smart receivers could bring much more complete and timely weather information to people who need it, Dennis G. Baker will say in "Digicast Broadcasting of the Weather."

Digicast weather predictions could go into much more detail than conventional predictions, letting each Digicast receiver select the information its user is interested in. For example, a traveler could select forecasts for his destination; a boater could select marine forecasts; a hospital could select forecasts of events likely to cause deaths or injuries anywhere in its vicinity.

The speaker is an Associate Professor in the Department of Atmospheric and Oceanic Sciences at the University of Michigan, Ann Arbor.

Green Thumb

David Wortendyke will describe "Project Green Thumb," an agricultural information service jointly sponsored by the Department of Agriculture and the Department of Commerce (National Weather Service).

Project Green Thumb provides farmers with a microprocessor that receives text and graphics via telephone, stores them, and displays them on a television set on request.

Computer Mass Communications

Eric Somers believes that current proposals for computer-based mass communication are deficient, in that they would merely modify existing applications of computers and/or communications media. In "S-O-S to MOS - A Proposal for Computer Oriented Mass Communications," he develops a new system design from first principles.

The system characteristics Somers develops are: (1) Unidirectional communication; (2) Using low-speed radio transmission; (3) Several channels for servicing different needs; (4) A smart receiver giving the user a high degree of control over the information received; (5) A mass storage facility at the receiver, letting the user accumulate large amounts of information and manipulate it at high speed.

Satellite

Mark Cummings will discuss the prospects for digital broadcasting by satellite in "Digital Broadcasting: A National Satellite Network of Digital FM SCA Broadcasts." Some of the topics he will touch on include objectives of the system; what SCA equipment will be like, and what it will cost; and what the FCC is doing about SCA regulation.

Slow Scan Television

In "A Slow Scan Television System Using a Microprocessor," Clayton W. Abrams, K6AEP, will describe a system which permits amateur radio operators to transmit video signals in about 1/1000 the bandwidth used by commercial TV. The speaker has developed a slow-scan television system using a M6800 microprocessor and a few inexpensive analog interface cards. He finds it a vast improvement over earlier analog systems (the image quality of which was low) and digital systems (which were very complex and expensive).

The Faire City of San Francisco

During your stay in San Francisco for the Computer Faire, there are endless choices for things to do and see in moments away from the booths and banquets. And, your family will not be at a loss if some of them do not want to catch every motherboard on display.

Children who are not surveying the video games can enjoy the Maritime Museum at the Hyde Street Pier. In addition to the museum itself, five restored old ships float nearby at the wharves; included are the three-masted schooner *Balclutha*, and a replica of Sir Francis Drake's *Golden Hinde*. The Exploratorium in the Palace of Fine Arts is a place where children of all ages can delve into science and technology, working many of the displays themselves. Out near Ocean Beach, Storyland at the Zoo is a fascination for young children, where there are animals to be touched and fed and entertained. In Golden Gate Park's thousand-plus acres, visitors can browse through Steinhart Aquarium or watch the stars in Morrison Planetarium.

For a small city, San Francisco is a shopper's dream. There are cookware stores specializing in French, Italian, and Chinese gastronomic tools; places to get fresh-roasted coffee; and ship-chandler stores with every boating accessory. Department stores, from the elegant Gumps to the chic Magnins, are plentiful on and around Union Square. Union Street (which is not on, or even near, Union Square) contains many small shops, boutiques, and restaurants. For bargain hunters and seekers of the unusual, visitors look to Cost Plus, the warehouse full of the world's imports; the shops in the Cannery, which once was a cannery; and the stores of Ghirardelli Square, once a chocolate factory. Chinatown, along Grant Avenue, brims with food, clothing, novelties, artist's supplies, and window full of puzzling wares.

San Francisco's restaurants, always internationally known, are rated as the top attraction in the City. Here you can find Lebanese, Vietnamese, Peruvian, Indian, and Russian restaurants in addition to the French, Chinese, Japanese, Italian, and German fare. Night life, in the city where topless began, is just as rich in choices; some of it even includes clothed entertainers.

Outside the City, but nearby, Grayline and other sight-seeing services offer tours by bus. North of the City is Wine Country, home of the justly famous California wines, where you can taste and enjoy the environment of excellent wines. On San Francisco Bay, there are ferries, tour boats, and helicopters. One ferry can take you to Angel Island in the Bay for a walk and picnic, or there is a cruise boat with dinner on the Bay. Hikers can walk the Golden Gate Bridge or climb Mt. Tamalpais in Marin County.

Outside the Faire, but related to the hobby or personal computer industry, is the birthplace of the microprocessor, Santa Clara County, south of San Francisco on "the Peninsula." The massive semiconductor industry there has earned the area the nickname "Silicon Valley," and trips to some of the companies can be arranged. There are also a number of retail computer stores in the Bay Area.

SCA Receiver Problems

In receiving a Subcarrier Communications Authority (SCA) signal, the main problem is rejecting the cross talk from the main-channel programming.

In "Subsidiary Communications Authority (SCA) Receivers and an Analysis of Some Receiver Problems," Edison J. Schow will discuss some of the causes of cross talk interference and suggest some possible cures.

MICROS & SMALL BUSINESSES: A BLOSSOMING PARTNERSHIP

Computer Store Illusions

Computer stores are tremendously interested in selling systems to small businessmen, and small businessmen are tremendously interested in buying. But the two groups aren't going to do much business together, Richard G. Lawrence believes. In "Computer Store Illusions in the Business Market," he will explain why.

The typical computer store owner has a lot of expertise with computers, but little with business. He is not able to follow the subtleties of business system design. He is neither trained nor financed to provide the level of technical support most small business systems must have.

"What does the business man really want or seek? The businessman doesn't want a piece of hardware or software. He wants a solution to a problem. He wants a working system. A system that he can go out and plug into the wall and conceivably have working the next day at solving his business problems." Until computer stores can provide that, they don't get access to more than a fraction of the potential market.

Proposal Simulation

Dr. David M. Chereb will discuss "A Simulation of Proposal Strategies" that can be run on a small business computer. The simulation is a program that assigns weights to various features of a contract proposal — quality of product, speed of production, etc. — and arrives at an "optimum" compromise between conflicting factors that should be the most attractive to the customer.

General Accounting

Chuck Bradley of Byte of Palo Alto will speak on "Selecting General Accounting Software" at the Fourth West Coast Computer Faire. His talk will be directed toward the first-time purchaser of a small business computer who wants help in choosing among the 50 or so accounting packages now on the market.

"Making a proper choice of accounting software is more important than the hardware decision," Bradley asserts. "The software is that part of the system which actually performs the required task; it is the primary interface between you and the computer hardware."

Bradley's talk will outline four steps to follow in selecting an accounting system, and will discuss some criteria to use in evaluating the possible choices.

Evaluating Business Software

In "Evaluating Business Software," Greg B. Scott, editor of the *Business Computing Review*, will point out certain characteristics that any well designed software package must have, such as adequate documentation, ease of use, and audit trail facilities. He will also discuss the minimum functions that must be present in specific business applications such as accounts receivable, payroll, and inventory.

Medical Billing

In "Detailed Medical Billing," Andrew L. Bender, M.D., will describe a system which handles billing for a small medical practice. He will discuss the design of the system, the file structure used, and a user's experience in the office where the system was introduced.

The billing system runs on a 48K microcomputer that supports Microsoft Extended Basic, with disk, printer, and CRT.

Painless W-2s

Every January, most small employers get headaches from making out W-2 statements by hand. Small business computers can make the job easier — especially if the statements can be sent to the Federal government on machine-readable media instead of paper.

Jere J. McEvelly of the Social Security Administration will explain how to do "W-2s the Easy Way," citing chapter and verse on many Federal requirements for machine-readable media and data formats.

History of Business Software

In "Historical Development of Business Software," Irwin Taranto will review business software development from the birth of commercial computing to the present. He will point out some of the numerous pitfalls that earlier programmers encountered, in the hope that we can learn from them and avoid repeating their mistakes.

Software Dilemma

William J. Schenker, M.D., will discuss "Software for the Business Professional: A Growing Dilemma."

Dr. Schenker's dilemma is that while hardware costs are plunging, software costs are rising, and will eventually become the limiting factor in computer utilization. Meanwhile, software remains unreliable and difficult to modify.

The solution Dr. Schenker sees is the development of a high-level programming language that would allow non-professional programmers to develop 'homemade' software easily, quickly, and reliably. In his talk, he will detail 13 characteristics he considers essential in such a language.

Moody to Chair Computer Dealers' Meeting During 4th West Coast Faire

Bob Moody of Byte of Palo Alto, and President of the Western Computer Dealers Association, will chair an open meeting of computer retailers during the 4th Computer Faire. The meeting will be held immediately following the Retailers' Show, which will take place Sunday morning, May 13th. The retailers' meeting will take place in the Civic Auditorium, beginning at noon, May 13th. Individuals wishing to have specific items presented for discussion should contact Bob Moody, at (415) 327-8080.

Computer Peripherals: Extending the Machine's Reach/Senses

Universal Home Terminal

In "Programming the Universal Home Terminal," Mark Cummings will describe present and future trends in home computer terminals, including their display capabilities, applications, and programmability. The emphasis will be on information utility applications for people who are not necessarily computer-oriented.

Micro Peripherals

In "The Microcomputer Peripheral: The Unlimited Horizon," Jeffrey D. McKeever will review the development of peripherals for micros, and suggest what the future may hold.

Not only has the microcomputer revolution made the CPU the least expensive part of many systems, but it has spotlighted peripherals as the limiting factor in what is affordable. Thus, further developments in peripherals are necessary to make many applications practical (or even possible) that presently are not.

Computer Literacy

"Computer literacy: It's Not Just For Kids Any More!" will be the topic of Mrs. Bobby Goodson's talk. Mrs. Goodson will describe some of the work being done to define and promote computer literacy.

Computer literacy implies that computers be readily available in schools, so that students can learn to use them — and, one hopes, to program them. As a result, students will learn what a computer is, and what it is not; what a computer can do, and what it cannot do; and what are some of the widely diversified uses of computers in our society.

Terminal-User's Viewpoint

Computer communication by telephone is a confusing topic for beginners (and for some old-timers, too). It's plagued by buzzwords such as "half-duplex," "full-duplex," "protocol," "DAA," and "RS-232."

In "A Look at Telecommunications from the Terminal User's Point of View," Jim Jordon of Moxon Electronics will present an introduction to the topic. His talk will be designed to help computer users who are not engineers to choose and to use communications equipment intelligently.

TV Interface

Tim Ahrens and Jack Brown, Jr. will describe the Motorola MC6847 Video Display Generator in "A Low-Cost Digital System Interface to a Color Television Set." The MC6847 is an inexpensive integrated circuit which can display alphanumeric and graphic information in eight colors and three luminance levels. It promises to be useful for low-cost computer systems and video games.

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being held

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Fri Sat Sun

9am-6pm 9am-6pm Noon-5

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For Micros: Stimulating Simulations

Micros & Architecture

In "Of Microcomputers and Architecture," Thomas Tollefsen will discuss the prospects for computer-aided design in the architect's office, primarily (but not necessarily) with microcomputers. He will suggest some of the needs such software could fill, the requirements it would have to meet, and the forms it might take.

Building Thermal Simulation

In "CALOR: A microcomputer Simulation of Building Thermal Performance," Thomas Tollefsen will describe a program that simulates heating/cooling requirements for small buildings such as houses. The program is small enough to run on a personal computer, and takes into account thermal differences (e.g., changes in outside air temperature, radiation differences as the sun rises and sets), making it much more accurate than the steady-state techniques traditionally used for non-computer simulations.

Radionavigation

Robert G. Huenemann will give a presentation entitled, "Low Cost Simulations of VOR and ILS Radionavigation Systems."

By running simulation programs on a small computer, the speaker has found that aeronautic radionavigation instruments using digital sampling would be more accurate than current analog instruments. He is now developing digital navigation equipment along the lines of his simulation.

Distributed Processing With Micros

Herb Siegel, of Action Computer Enterprise, will describe his company's Discovery Series A™ in "A Distributed Micro Processor System." The Discovery Series A consists of a central computer which manages shared resources (printer and disk), and a group of terminal/computer 'user stations,' each dedicated to one user. Thus, the system combines the dedicated-processor benefits of a personal computer with the economical shared use of expensive resources offered by a timesharing system.

Discovery Series A uses an 8080 or Z-80 CPU in each user station, with an S-100 bus and an extension of Digital Research's CP/M operating system.

Faire Aborts L.A. Dates

5th COMPUTER FAIRE DATES

The Fifth West Coast Computer Faire is scheduled for Feb. 29-Mar. 2, 1980, in San Francisco's Civic Auditorium & Brooks Hall.

Note: The 5th Faire was originally scheduled for early November, and was to be held in the Los Angeles Convention Center. However, after noting the capricious manner in which Los Angeles inspectors are attacking microcomputer products and computer retailers for failing to have bureaucratic certification, the Faire organizers have decided that they are unwilling to pour any money into L.A. via its city-owned convention facility. Instead, they will site the 5th Faire in the more congenial city of San Francisco.

FUDD'S FIRST LAW

If you push something hard enough, it will fall over.

Stores Carry 4th Faire Pre-Registration

The following computer stores invite you to pre-register for the Fourth West Coast Computer Faire for \$7, rather than to wait in line to register on-site for \$9. Computer Faire recommends that before visiting one of these stores, you call and confirm that their supply of pre-registrations has not been depleted.

Byte Shop of Hayward*

1122 B St
Hayward CA 94541
(415) 537-byte

Byte Shop of San Francisco*

4014 Geary Blvd
San Francisco CA 94118
(415) 387-2513

Computer Demo of San Rafael*

509-B Francisco Blvd
San Rafael CA 94901
(415) 457-9311

Computerland of Dublin*

6743 Dublin Blvd
Dublin CA 94566
(415) 828-8090

Computerland of Hayward*

22634 Foothill Blvd
Hayward CA 94541
(415) 538-8080

4TH WEST COAST COMPUTER FAIRE

being held
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Computerland of San Francisco

117 Fremont St
San Francisco CA 94105
(415) 546-1592

Digital Deli

80 W. El Camino Real
Mt View CA 94040
(415) 961-2670

MicroSun Computer Center*

2989 N. Main St
Walnut Creek CA 94596
(415) 933-6252

The Computer Store (Napa Valley)*

6526 Washington Street
Yountville CA 94599
(707) 944-8885

Tech-Mart*

367 Bird Rock Ave.
La Jolla CA 92037
(714) 459-2797

Micro Byte Computer

2626 Union Ave.
San Jose CA 95125
(408) 377-4685

Computerland Los Altos

4546 El Camino
Los Altos CA 94022
(415) 941-8154

Computer Plus

1324 S. Mary Ave.
Sunnyvale CA 94087
(408) 735-1199

Byte of Palo Alto*

2233 El Camino Real
Palo Alto CA 94306
(415) 327-8080

Computerland of El Cerrito*

11074 San Pablo Ave.
El Cerrito CA 94530

Computerland of Walnut Creek

1815 Ygnacio Valley Rd
Walnut Creek CA 94598
(415) 935-6502

Kepler's Books & Magazines

825 El Camino Real
Menlo Park CA 94025
(415) 854-0509

Marin Computer Center

70 Skyview Terr No. 301
San Rafael CA 94903
(415) 892-6846

Electric Brain

3038 N. Cedar Ave.
Fresno CA 93703
(209) 227-5843

Byte Shop

6041 Greenback Ln
Citrus Heights CA 95610
(916) 961-2983

Sunshine Computer Co.

20710 S. Leapwood Ave.
Carson CA 90746
(213) 327-2118

Computerland

289 E. Highland
San Bernadino CA 92404
(714) 338-5075

*These stores will accept mail-order requests for pre-registrations if your check or money order is accompanied by a stamped, self-addressed, business-size envelope. Please note that Computer Faire will be making *NO* individual pre-registration sales.

Please see future issues for additional outlets through which Faire preregistrations will be available.



A scene from San Francisco's First West Coast Computer Faire

MACHINE CODE FOR TYPESETTING COPY

Pandick Press's Convert-O-Type service produces typeset output from text recorded on a word processing cassette or diskette. Pandick converts the text to a form compatible with its typesetting computer, inserts codes to control typesetting functions such as type size and column width, and sends the customer composed proofs. These can be hand-corrected like proofs from any other printer; Pandick then corrects the input and produces composed copy.

Since many of Pandick's customers are legal and financial firms who need typesetting for government reports, it emphasizes good quality with fast service. Its standard service delivers composed copy overnight.

With 5 printing plants distributed across the nation, Pandick says it has enough reserve capacity to give fast service on a reliable basis. If one plant is overloaded, Pandick says, it can transmit work to and from another plant by telephone.

Pandick's computer recognizes many document features automatically. For example, it can recognize the start of a paragraph or the columns of a table without special identifying codes. It can recognize underlined text on some storage media and convert it to italics automatically.

Among the input media Pandick accepts are Vydec diskettes, IBM System/6 diskettes, and IBM mag cards. It can accept data by telephone from many communicating word processing systems. It can also read text typed with any Selectric typewriter that is fitted with an optional character recognition (OCR) type element.

Pandick Press's San Francisco plant is at 645 Harrison St., San Francisco, CA 94107; (415) 543-4433. Its national headquarters are at 345 Hudson St., New York, NY 10014; (212) 741-5555.

DISTRIBUTE FREE GAZETTES TO FRIENDS & ASSOCIATES

The Computer Faire would be pleased to ship you any reasonable quantity of *Gazettes* you wish to request, for distribution to your friends, professional associates, and fellow employees. These are available without cost; the Faire will pay all charges, including UPS shipping fees.

Just write or call and tell us (1) how many you wish to receive, and (2) where to ship 'em (it must be a street address: UPS is prohibited from delivering to a P.O. Box).

Typically, a *Gazette* will include a variety of information of general interest, as well as — of course — all the details of the forthcoming West Coast Computer Faire. Call or write:

Computer Faire
333 Swett Road
Woodside, CA 94062
(415) 851-7075

System Design Consulting
ERIC D. SAVAGE & ASSOC.
Micro Computer Specialists
29 Southwaite Ct., Orinda CA 94563
(415) 376-9096

Computer System Packages for
Contractors — General Business Accounting
Medical-Dental Accounting & Insurance Billing
Booth 1219C — 4th West Coast Computer Faire

Computer Classes in the San Francisco Bay Area

Many places in the Bay Area offer introductory classes for small computer users. Such classes are an excellent way to become familiar with computers before you decide whether to buy one, or what to buy.

Most classes teach how to operate a small computer, and how to program one in Basic, the most common programming language for these machines. They include "lab" time with hands-on computer experience.

Some of the classes are oriented mainly toward businessmen, while others draw businessmen, hobbyists, and students in varying proportions. Most such classes meet once per week for several weeks, and cost under \$100.

San Francisco

ComputerLand of San Francisco offers classes in small computer applications and Basic programming. The class meets on Saturday morning or Tuesday evening, lasts 5 weeks, and costs \$40. Orientation (toward business or hobby uses) depends on the make-up of each class. Call (415) 546-1592.

Peninsula

Byte Shop of Palo Alto holds no-fee seminars on the uses of small business computers. It also offers classes periodically. Call (415) 327-8080.

ComputerLand of Los Altos is planning to offer classes giving an overview of small computer hardware and an introduction to programming in Basic. The classes will meet one evening a week for about 4 weeks, and will cost \$40. Call (415) 941-8154.

The Marin Computer Center in San Rafael, a non-profit educational group, offers introductory programming classes designed to make people feel comfortable with computers, and to help them decide what system to buy. The classes meet Tuesday evenings or Saturday mornings for 6 weeks. The cost is approximately \$36 for the class, plus \$12.50 for a one-year membership in the Center. Call (415) 472-2650.

East Bay

The Acalanes Adult High School District is offering an introduction to small computers and Basic programming in Walnut Creek. The course meets

Monday evenings for 5 weeks. There is a small registration fee. Call (415) 935-0170.

The Lawrence Hall of Science in Berkeley offers two introductory courses for adults and teenagers. "Introduction to Computing in Basic" meets two nights a week for 8 weeks, and costs \$80. This course does not use small computers in its lab. "Beginning Programming on a Personal Computer" meets one night a week for 8 weeks, and costs \$57. Call (415) 642-5132.

ComputerLand of Dublin offers a course in Basic programming and pro-

gram design techniques which meets Tuesday evenings for 7 weeks. The Lawrence Livermore Laboratory Recreation Association offers the same course on Wednesday nights; its course is mainly for Laboratory personnel, but 25% of the seats are open to the public. Both classes require a \$10 donation. Call ComputerLand at (415) 828-8090.

ComputerLand of Hayward offers introductory and advanced courses in Basic programming, which meet one night a week for 5 weeks, and cost \$50. Many of the students are businessmen who plan to purchase systems from the store. Call (415) 538-8080.

The only way to amuse some people is to slip and fall on an icy pavement.

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THE COMPONENTS OF A COMPUTER SYSTEM

Most computer systems come in component form; you can assemble a system from components to suit your needs and you can mix components from different manufacturers to get the best combination at the best price. Most small computer systems include the following components:

CENTRAL PROCESSING UNIT

The central processing unit (CPU) is the part of a computer that actually computes. It executes a computer program (a set of instructions prepared in a special form that the computer can understand) and this causes it to do some useful task, such as computing a payroll or keeping track of an inventory.

"Central processing unit" is a term from the world of large computers. In the small-computer world, the CPU is often just called "the computer." All the components together are called "the system."

INPUT AND OUTPUT

The CPU needs some device for getting information in (input) and getting results out (output). These are usually called "I/O devices" or "peripherals."

The most common input device for small computers is a typewriter-like keyboard. It can be used to give commands to the computer, to enter data, or to create programs.

The most common output device is

a display unit with a cathode ray tube (CRT) like the one in a television set. (Many hobbyist systems are actually designed to use television sets). Commercial CRT terminals usually display 24 or 25 lines of 80 characters each. They can display information very quickly, filling the screen in a second or less.

Another common output device is the character printer, which records information on paper one character at a time. Many character printers form each character out of dots made by a matrix of wires hitting the paper through an inked ribbon. Some use solid character elements as does a typewriter; these give superior quality output, but cost more. All character printers are slow: 30 characters per second is the most common speed. Some dot matrix printers operate at speeds up to 180 characters per second.

A few small computer systems have line printers for applications in which a character printer is too slow. A line printer prints a line at a time at speeds of at least 100 lines per minute. Line printers cost more than character printers, and their type quality is poorer.

STORAGE

Most business computer applications require storing data for later use. There are two major ways of storing data: on magnetic tape, and on disk.

Magnetic tape equipment is relatively simple and cheap. Many small comput-

ers use an ordinary audio cassette recorder with a special interface. More expensive systems use special digital tape drives which are higher in price, but faster and more accurate.

Disks are spinning platters on which data is magnetically recorded in concentric rings.

Disks have the advantage over tape that they can deliver any desired piece of information to the computer in a fraction of a second, whereas tape has to be wound forward or backward to the right place.

A disk's "random access" capability is essential for applications such as inventory control, in which it is impossible to predict what data will be needed at any given time.

Disks read and write data more quickly than tapes: disks common to small business computers handle thousands of characters per second; tapes handle hundreds of characters per second. Since disks make a computer much more powerful and easy to use, virtually all small business systems have them.

There are three kinds of disks: floppy disks, minifloppy disks, and hard disks; a separate disk drive is needed for each. Floppy disks are made of flexible plastic, are 8 inches in diameter, and spin inside protective cardboard sleeves. Each disk can store approximately 300,000 characters of information. Mini-

ches in diameter. They usually store 100,000 to 200,000 characters of information.

Hard disks are made of rigid metal; they are the most expensive kind, as well as the fastest and the most reliable; they can store from 1 to 100 million characters of information. Hard disks are not commonly found on small business systems; in fact, the presence of a hard disk is one of the important things distinguishing a medium-size computer from a small one.

Storage devices are also often considered to be I/O devices. They function as I/O devices insofar as they can be used to write (output) a tape or disk, which can be saved for reading (input) later.

COMBINATIONS OF COMPONENTS

Components are often combined into single units. The following combinations are common:

CPU and keyboard. This combination appears in many hobby-oriented machines, which are designed to be used with a television set for output.

CPU and disk. Many CPUs have one or two floppies or minifloppies in the same chassis.

Keyboard and CRT display. This combination is called a CRT terminal. It can be used for access to a large computer with timesharing service, as well as for I/O on a small one.

Keyboard and character printer. This is a "hard copy terminal," also useful for timesharing.

Computer Consumer's Guide: Choosing Hardware

To find the right computer system for you, go to several stores, and talk to a salesman in each one. Compare their suggestions. The same kinds and brands of equipment should keep coming up. This will narrow your attention from the dozens of computers and hundreds of attachments that are available to a handful of choices that would fit your needs.

The system you buy will probably include components from different manufacturers. It's much like buying a stereo system; the receiver may come from one company, the turntable from a second, and the speakers from a third. Be sure *each* component you buy is fitted to your needs. Don't hesitate to propose substitutions to a salesman if you think they would benefit you.

As you near the time for choosing a system, make a list of the features you need, and use it to check out each possible choice.

The list should be fairly specific. If you want a computer to type correspondence, for example, one requirement should be "printing letter-quality output on letterhead paper."

Be prepared to separate the features you need from the ones you

merely would like to have. You may have to jettison some of the things you'd like in order to stay inside your budget.

Your System's Capacity

Pay attention to the capacity of the system you buy. This will determine how much work it can do.

Some aspects of system capacity are: processing speed; main storage, which limits the size of the program the computer can hold; and secondary storage (magnetic tape or disk capacity), which limits the amount of data the computer can hold for processing.

In most cases the critical measure of capacity is secondary storage. For example, if you want to maintain a mailing list of 1000 subjects with 200 characters of data about each one, you need a system with at least 200,000 characters of secondary storage.

If you buy a system that can handle your current needs, but no more, you will probably have to replace it within a year. Get something that can meet your needs for three or four years, or that can be expanded as your needs grow. If you hope to computerize more aspects of your business in the future, make allowances for that.

NEW MAILING LIST PROCESSOR

The new mailout list processor includes seven modules — Build, Sort, List, Update, Extract, Letter, and Help. The new Sort module sorts thousands of addresses on zip or address/title. Merges or extracts are sub-filed based on codes stored with addresses. The processor prints envelopes or labels in one or more columns, and processes letters against mailing lists.

The list processor is available in three versions: Microsoft Basic version, Commercial CBasic, and the Radio Shack TRS-80 version. A dual disk is required. (The company requests that you state the version desired when you order). Dealer pricing is available in quantity ordering.

Send SASE for more information to the Center For the Study of the Future, 4110 N.E. Alameda, Portland, OR 97212; (503) 282-5835.



Examples of some typical computer components. Clockwise from top left: A CRT display terminal; A cassette tape drive; A floppy disk drive; and a CPU cabinet containing processor and memory. Center: A typical computer system showing keyboard, CRT, and printer.

The Computerization of Small Businesses

A. Terrence Easton

Significant advances in computer technology have benefitted modern business organizations which have taken electronic technology into their management hearts. All too often, however, it has been the large company which applied new machines and services to stimulate growth and streamline operations. The small business was locked out, either through prohibitive costs or through a simple lack of knowledge about alternatives.

The past few years have witnessed a reversal in this "technology gap" due to the introduction and acceptance of the new desk-top microcomputer. This fifty-pound wonder is a far cry from its room-size ancestors and the price tags have collapsed with the same rush as those of the pocket calculators. Radio Shack, for instance, offers a complete system on which a business can maintain its accounts receivable, payroll, and mailing lists, for under \$1,000.

An average system costs about \$4,000 and usually consists of four basic components: a video terminal with keyboard for typing in instructions and data to the computer; a Central Processing Unit, literally the computer "brain"; a printer for typing the invoices, mailing labels, checks, and reports; and a disk memory, a mass storage device similar to a 45 RPM phonograph record, but made from a magnetic substance similar to recording tape.

Using the microcomputer, the small firm can automate much of the tedious, redundant work including accounts payable; invoicing and payroll functions; stock control and reorder reports; and quarterly and yearly tax reports including depreciation schedules. The microcomputer can also be used to keep tabs on stock market investments; compute leasing versus purchase payment tables; and analyze complicated financial transactions, presenting its findings in easily-readable management reports.

Law firms keep client accounts on microcomputers; real estate agencies maintain lists of house buyers and properties; landlords even issue rent bills using the machine's capabilities.

The business owner can use the computer in his spare time to learn a new language, play chess, or sharpen his accounting skills.

The microcomputer is more than the physical equipment or "hardware," however. An equally important element is the ease with which the computer may be instructed or "programmed" to carry out tasks. These instructions are usually called "software," and the ability of a specific manufacturer to sell its product often depends on the availability of previously developed software packages. These programs enable the machine to perform the previously mentioned functions without requiring the purchaser to develop these features himself, which would be a time-consuming mechanical process.

Luckily, most microcomputers today use the popular Basic software language, which is extremely easy to learn and simple to use. Thousands of programs which enable the microcomputer to perform tasks from cost accounting to playing video games are now available in Basic. Nearly every college or university offers a beginner's course in Basic and a number of books provide a complete survey of equipment, manufacturers, and features. *The Home Computer Handbook* (Bantam, paperback) is one of the best.

The bigger chain stores specializing in sales of microcomputers are Byte

Shops, Computerland Stores, and Radio Shack. Microcomputer conventions are a new phenomenon sweeping the country. One such show in the west is expected to draw 15,000 people, many of them small business owners.

Word Processing Systems: The Electronic Secretary

A cross between the typewriter and the computer, the word processing system of today is often a microcomputer-based machine especially designed to do high-speed text preparation and letter generation.

The most popular model has been the IBM Mag Card, which is basically a fancy Selectric typewriter connected to a magnetic memory storage device. The Mag Card typewriter can retain a page of typed information on a small, black plastic card. Frequently typed form letters, mailing lists, and manuscript text revisions are popularly handled with the older Mag Card I, the current Mag Card II, and Mag A machines.

Newer competitors, such as Xerox and Lanier, offer cassette-based machines with similar features and higher speeds. Extending features upward, IBM offers a complete line of computerized word processing systems, which appear (and are, in fact) to be identical to minicomputers. They utilize separate printers to prepare the letters, can store thousands of documents internally, and use a video screen to prepare the entry text.

Word processing systems start at several thousand dollars, but good used equipment is available from a national organization, The Word Processing Exchange, (800) 521-3085 (Ann Arbor, Michigan). If your business frequently uses form letters, or if it does much proposal work, a word processing system may speed up your document production by as much as 100%. Many attorneys have virtually automated their offices by storing all their legal forms and documents on word processing systems.

Facsimile and Telex: Communications Tools

These two document-oriented communications services are expanding rapidly throughout the U.S. and Canada. Worldwide Telex service for business communications is more popular than the telephone and is growing at a faster rate.

Facsimile

Facsimile machines allow a user to send a page of typewritten material, including drawings, across town or across country in six minutes using ordinary telephone and FAX machines. If one uses the Speedfax Service provided by Southern Pacific Communications (Burlingame, California), a single page can be transmitted within 4 minutes to any of 60 cities in the U.S. for less than \$1.00. Both sides must, of course, have compatible FAX machines.

Fax suppliers include Xerox and Burroughs, but perhaps the fastest growing company is QUIP, an Exxon affiliate which rents their model 1000 machine, on a month-to-month basis, for under \$40. Fancier machines, such as the Xerox 410, rent for several hundred dollars monthly, but can send a page anywhere in less than two minutes, and can operate completely unattended, enabling literally hundreds of documents to be sent to a distant location overnight. FAX machines are popular with advertising agencies, and architectural firms, which often need to deliver drawings and sketches to faraway clients. Interestingly, each day, the Wall Street Journal copy is transmitted via facsimile from its New York offices to its regional printing plants.

Telex and TWX

Telex and TWX (higher speed) services, both supplied by Western Union Telegraph Company, are two similar message transmission networks which allow any subscriber to be connected instantaneously to over one million subscribers worldwide. Frequently used for quickly sending invoices and written confirmations, typed telex or TWX messages can be sent to one or more distant locations even if the receiver is unattended. Costs range from about \$0.17 to \$0.90 per minute of message for 400 to 600 words in the U.S. to up to \$4 per minute for overseas transmissions.

It is also possible to send mailgrams at a rate less expensive than those charged by the regular public mailgram operators; one can even access stock market quotes and other computerized services via those systems. Monthly rental costs average about \$90 for each service, complete with teletypewriter terminal supplied by Western Union.

It is interesting to note that the transmission of a telex message is considered to be a legal document by the courts and many quotes and bids are sent this way. Graphnet, a N.Y. company specializing in communications services, provides a service system allowing a FAX machine to reach a telex or TWX machine, or vice-versa, making those two different systems compatible.

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Jacquin's Postulate on Democratic Governments:

No man's life, liberty, or property is safe while the legislature is in session.

Computers for Business People

DDC Publications has published a new book for people planning to buy a business computer system.

The book, entitled *Winning the Computer Game*, by Chris Kloek, presents a business computer guide both for the layman and for systems houses and consultants.

The book describes both the circumstances in which a company should not computerize and those in which it should, as well as how to buy systems and services, and how to live happily with them. *Winning the Computer Game* also discusses custom versus packaged software, contract negotiation, and financing alternatives.

The 178-page guide costs \$12.95; Master Charge and Visa are accepted. A 30-day return privilege is provided.

Contact DDC Publications, 5386 Hollister Ave., Santa Barbara, CA 93111.

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PERS5 prints Job Cost Report, quarterly \$41 run, Annual W-2 run.
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LEDGER5 - produces PROFIT and LOSS STATEMENT.
LEDGER6 - produces BALANCE SHEET. Assets, liabilities and owners' equities are shown by account and by totals.

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PAY1 initializes A/P and adds RECORDS to Transaction file.
PAY2 - changes or deletes Transaction and Master records.
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PAY4 - reports all outstanding A/P for a single customer or all customers, followed by Cash Requirements.
PAY5 - reports all outstanding A/P for a single date or a range of dates, followed by Cash Requirements.
PAY6 - lists both the Transaction and the Master files.
PAY7 - PRINTS checks and accumulates and journalizes A/P (creates entries into the MICROLEDGER's JOURNAL file).

ACC'T RECEIVABLE

REC1 - initializes A/R, adds A/R records & PRINTS invoices.
REC2 - enters receipt of customer payments, changes or deletes Transaction & Master records.
REC3 - reports outstanding A/R Broken down into four categories: under 30 days, 31-60 days, 61-90 days, over 90 days.
REC4 - produces statements of A/R for a single customer or for all customers followed by Cash Projection.
REC5 - produces a report of all A/R outstanding for a single date or a range of dates, followed by Cash Projection.
REC6 - lists Transaction & Master Files, and accumulates & journalizes A/R (creates entries into MICROLEDGER's JOURNAL file).

INVENTORY CONTROL

INV1 - initializes both Transaction and Master files, adds & updates Transaction and Master records; initializes JOURNAL file, restarts Master file.
INV2 - runs, issues or receives Transactions, creating inventory records. It also journalizes and accumulates Transactions (creates entries into MICROLEDGER's JOURNAL file).
INV3 - lists both Transaction and Master files.
INV4 - supplies Stock Analysis Report, and the ABC Analysis.
INV5 - produces the report showing Allocation of all materials used year-to-date by JOB Control Classification codes.
INV6 - computes and provides the E.O.Q. (Economic Order Quantity).

In-House Typesetting: Within the Reach of Many Businesses

Many businesses are cutting their publishing costs by moving typesetting operations in-house. If your company uses a moderate amount of typesetting service, you can, too.

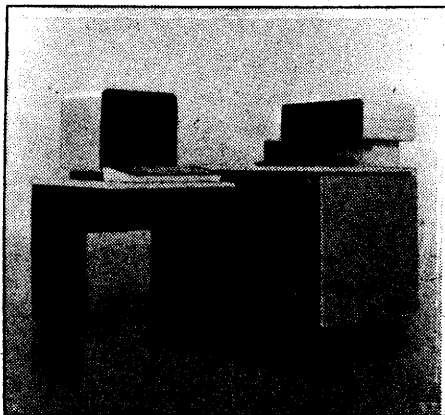
In-house typesetting is practical because today, most printing is done by offset lithography. This process prints from a photographic image of the document being printed, rather than from slugs of metal. Today, camera-ready copies can be produced in the office.

The most dramatic saving associated with in-house typesetting comes from eliminating the need to keyboard documents twice: once to make a manuscript and once to compose camera-ready copy. With an in-house typesetter, documents can be prepared on the typesetter in the first place.

Some typesetters have a communications option that lets them "talk" to a word processing computer, directly or by telephone. Others accept the same recording media as word processing machines. Either arrangement makes it possible to prepare a document on a word processing machine, then to transfer it electronically to a phototypesetter. Once it is there, formatting codes can be inserted and the document can be composed with little effort.

Another advantage of in-house typesetting is faster service. Composed copy can be produced in minutes instead of days. No more worry about deadlines . . . no more publishing of data that is outdated before it is printed . . . no more problems getting service outside business hours.

In-house typesetting also saves money by making it practical to typeset documents that otherwise would be typewritten. A document usually covers 30% to 60% less paper when typeset than it does when typed. (Try typing this article, and compare the typed version to the original!) That means less paper, less press work, and



less mailing weight. For documents printed in editions of a few thousand or more, typesetting more than pays for itself in printing and mailing costs saved.

A typeset document is more effective than a typewritten one, because it makes a better impression on the reader. He is more likely to read it, believe it, and keep it — and that is the point of having it printed in the first place.

Educational Comic Book From Radio Shack

An updated edition of Radio Shack's educational comic book, "The New Science Fair Story of Electronics . . . the Discovery that Changed the World!" is now available for free distribution to schools, clubs, youth groups, and interested individuals.

The 24-page, full-color booklet traces the development of electronics from ancient times to the present, focusing on the human interest side of science, according to the company. Topics included are magnetism, ancient use of batteries, electricity in nature, the development of "wireless" communications, TV, radar, the transistor, electronics in aviation and space exploration, and the computer age.

Opportunities in Computer Retailing

by Jonathan Sachs

Computer retailing is a young business, but a rapidly expanding one. You may be tempted to cash in on its growth by opening a computer store yourself.

One of the first computer stores in the San Francisco Bay area was Robert Moody's Byte Shop of Palo Alto, opened in June, 1976. By February, 1979, there were 27 retail computer stores in the Bay area — and the number is still growing.

What It Takes

As with any retail business, opening a computer store requires familiarity with the product sold and some merchandising skills; of the two, the merchandising skills are the more important.

If you are comfortable with electronics and complex machines, you can learn enough about computers to manage a store while you are preparing to open one. You can hire experienced assistants to manage day-to-day matters such as answering customers' technical questions and hooking the gadgets together so that they work correctly.

It takes a fairly large investment to start a store. Robert Moody estimates that \$250,000 is necessary today. If the store is successful, it should start turning a profit in three to twelve months.

When you formulate your business plan, you will have to decide what sort of business to go after. Do you want to sell to hobbyists, to commercial users, or to both? This decision will influence many factors, including the product lines you carry, the kind of publicity you seek, and the kind of employees you look for.

Find an 'angle' to distinguish your store from others in the area. The angle should not be a mere gimmick; it should be a product or service that is promotable, unique, and genuinely useful. It may be a device or computer program you have the exclusive rights to sell. It may be experience and con-

tacts you have that make you uniquely able to help computer users in a particular business such as construction or printing. People will come to you from dozens of miles away if they perceive you as offering something they want that isn't available elsewhere.

Plan on offering a broad range of customer support services. The days are past when a computer store could make it just by selling machines. Your customers will want help setting up their systems and learning to use them. They will need maintenance to keep the machines in running order. Some may want contract programming services, business planning aids, programming classes, and books; others will want information about clubs, users' groups, and computer-related public events. Be prepared to provide all these things, or to refer your customers to places where you know they will be serviced promptly and competently.

Help in Getting Started

A good way to bring technical expertise into your business at the beginning is to form a partnership with a computer person you know and trust. Having such a person in the business can also help you qualify for loans.

If you don't have a partner, you can get help in setting up your business from a consultant who specializes in organizing computer businesses. A good place to start looking is the Western Computer Dealers' Association (WCDA). Started by Robert Moody in 1977, the WCDA is composed of both computer retailers and manufacturers. The members meet monthly to discuss problems and exchange information. The WCDA can be reached through Moody at the Byte Shop of Palo Alto, 2233 El Camino Real, Palo Alto, CA 94577; (415) 327-8080.

Computer Store Franchises

One way to get help in opening a store is to go to a franchise. The leading franchiser in the retail computer field is ComputerLand, the headquarters of which are in San Leandro, California.

ComputerLand gives its franchisees assistance every step of the way, from developing a business plan and selecting a site, to publicity, setting up the store, and managing the opening. It gives each franchisee six days of training at its headquarters, and its marketing and technical staff provide continuing support after a store is open.

ComputerLand's volume enables it to buy equipment at a discount. It tests each product thoroughly before approving it for sale by its franchisees, so that no store need worry about the quality of equipment it sells.

ComputerLand looks for franchisees who have some computer background, and who are experienced in sales and management. It prefers persons who know how to manage a volume business with many employees, and who would be capable of operating more than one store. A franchisee needs about \$50,000 liquid equity to invest in the business during the first six months of operation.

ComputerLand is at 14400 Catalina St., San Leandro, California 94306; (415) 895-9363.

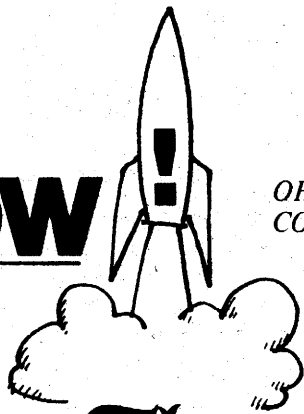
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Computer Consumer's Guide: COMPUTER STORES

If you are considering investing in a small computer to use in your business, it will pay you to learn something about the field before you start placing orders. A computer is a substantial investment. You should give it as much thought as you would give to any other equally big purchase.

Don't be scared off by the aura of mystery that many people see around computers. You can easily learn enough to choose your equipment wisely, and to use it well. You only need to be willing to give it some time and attention.

Two Ways to Buy

Computer vendors fall into two groups: manufacturers who maintain their own sales staffs, and "computer stores," i.e., retailers who sell equipment made by others.

Almost all medium and large computers are sold by their manufacturers. Small ones, often called "microcomputers" or "personal computers," are sold both by manufacturers and by stores. For marketing reasons, though, a given brand of equipment is almost never sold both ways.

Manufacturers are all oriented toward the needs of people who buy computers to use in their work (although some meet those needs much better than others). They generally sell or lease complete computer systems, and they do their own installation, maintenance, and training. If you are inex-

perienced and want to computerize your business with a minimum of attention to the process, they can be the best way to go.

Manufacturers are expensive, though. The sales force, repairmen, and instructors all cost money, and you pay for them when you buy the product.

Computer stores have varying orientations. Some serve the needs of businessmen, while others cater to hobbyists. They do not necessarily install or maintain the systems they sell, or train their customers, although such services are available. Since they don't try to offer the comprehensive service the manufacturers do, they can save you a lot of money, but you must be prepared to take care of yourself more.

Suppose you decide to buy a computer system from a computer store. How do you find a store you can rely on?

Avoid the hobby-oriented stores. They generally won't understand your needs, and will offer little follow-up support. They may promote systems which are low in cost, but such systems are not built to stand up under the continuous use required by business applications. Hobbyists can tolerate these things. When the welfare of your business depends on a computer, you can't.

How do you tell the difference? Advertisements are a clue. If a store is plainly going after the do-it-yourself crowd, you can pass it by. Unfortunately, some sellers of hobby machines try to

appeal to business users with slick, impressive ads, so look deeper.

Price is a good guide. Genuinely similar systems usually sell in the same broad price range. If three stores offer you computers between \$3000 and \$4000, and a fourth comes in with a system "just as good" at \$1200, be skeptical!

Ask the advice of other computer users. Don't hesitate to consult people outside your own kind of business, but stick to those whose systems are roughly the same size as the one you expect to get.

As you enter a computer store, ask yourself who it's meant to attract. Businessmen? Electronics freaks? Teen-agers? If the decor is tasteful and understated, you may be in the right place. If it's something out of Star Wars, you're probably in the wrong place. Similarly, find out what the store's computers are set up to demonstrate — business systems or video games?

Tell the salesman what kind and size of business you have, and what you want a computer for. Also let him know how much — or how little — you understand about computers.

Expect him to ask you questions. If he recommends a system without doing this, either he isn't giving you the attention you deserve, or he doesn't know enough about business computing to be helpful.

Small Typesetter from IBM

IBM Corporation makes several "strike-on" type composing machines similar to Selectric typewriters. They are designed to be used with little additional training by typists familiar with IBM Selectric typewriters.

The Electronic Selectric Composer has a 8,000 character memory that allows the operator to edit and reproduce text, although the contents of the memory cannot be saved when the machine is turned off. It offers proportional spacing, and accepts printing elements with 7 type sizes from 6 point (want-ad size) to 12 point (Pica typewriter size).

By using format codes embedded in the text, the Electronic Selectric Composer can be made to compose justified, ragged-right, or centered lines; multiple columns; dot leaders; and tabular material.

The IBM Mag Card Composer is a similar machine which records data magnetically on a flat card with a 5,000 character capacity. The advantage is that the card can be used to preserve a document when the machine is turned off or used for another task.

IBM composing machines are distributed by the IBM Corporation Office Products Division, which has offices in most major cities.

Computer Consumer's Guide: Installation & Training

Before you buy a system, find out what kind of help the seller will give you in setting it up and learning to use it. The store should be willing to show you what to do on an "over-the-counter" basis, but professional installation and training will probably not be a part of the deal. They may be available at additional cost, and if you find you need these services, plan for them as part of the cost of the system.

You should learn how to hook up the components of your system, to check it out, and to prepare it for use. You should also learn to do routine maintenance, such as changing printer ribbons.

It is important to find out enough about the system's innards so that you can respond intelligently when you have a problem. You should be able to reach an informed opinion about what component is at fault — central processor, keyboard, or printer, for example — and describe the problem to a repair person.

Each piece of hardware and software you buy should come with a user's manual containing, at a minimum, the information mentioned above. Look over the user's manuals before you select a system. Are they detailed enough for you? Do they seem well written? Are they understandable, or would you have to be a programmer to figure them out?

Find out what kind of support you will get if you have questions after the system is up and running. If the store values repeat business, it should give you a certain amount of free help. But don't expect too much; the store can't pay next month's bills out of last month's receipts.

The best and cheapest kind of continuing support is your own resourcefulness. You can answer many of your own questions by experimenting with the computer, studying books, or joining a users' group or club where you can exchange ideas with others. This is what "personal computing" is all about. You'd be surprised at how much you can learn, and how fast.

(Out of Thin Air . . .) Wanted: WATER STORAGE TANK

We are in the process of constructing new facilities in a rural area, and are in need of a relatively large water storage facility — e.g., 10,000 gallons or larger. Our preference would be a used redwood tank in good condition, at least 10' high by 10', diameter. Leads will be appreciated. Send 'em to: Jim Warren, 345 Swett Road, Woodside, CA 94062; (415) 851-7075.

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Want ads must be typed in upper and lower case. Payment must accompany the ad copy. Ads and payment should be sent to: IMJ, 345 Swett Road, Woodside, CA 94062.

Have you gotten your copy of Don Lancaster's outrageous new book, *The Incredible Secret Money Machine* yet? \$6.95 autographed and postpaid from Synergetics, IMJ-7 Box 1077, Thatcher, AZ 85552. VISA accepted. Quest your tinaja NOW!

CPM USERS: Try our CLIENT SCHEDULE PACKAGE. Hundreds sold: Used by professional people to keep up with their fast-paced world. Includes the source code and easily adapted. On CBASIC or MICROSOFT (Specify). Order now and save %10 (only \$67.50). Computer Company, P.O. Box 5102, Pueblo, CO 81005.

ADVENTURE for the TRS-80 Level II 16K. You've GOT to play this game! If after 3 days you're not satisfied, return tape with reason, for refund! Currently 2 ADVENTURES, each \$9.95. Both for \$14.95. S. Adams, 241 Canterclub Tr., Longwood, FL 32750

Microcomputer Business Programs Index: Over 70 listings, all available on disk. Updated quarterly. \$8, The Computer Store, 6526 Washington St., Yountville, CA 94599.

FOR SALE: 1 ea. MITS 16-MCD, \$165; MITS 4-MCD, \$35; Acoustic Modem, \$60. Darrel Van Buer, (213) 820-6436.

PET GAMES from SOF-TOUCH, Box 422, Logan, UT 84321. FREE LIST.

Space Settlements, an in-depth design study of a 100,000 person "Space Colony" by G. K. O'Neill and others. Softcover, 185 pages, illustrated \$6
The Possibility of Intelligent Life Elsewhere in Universe, softcover, 123 pages, illustrated \$3.50
COSMIC ENTERPRISES; P.O. Box 303, Dept. IMJ, Antioch, TN 37013.

EMPLOYERS:

Find a mighty micro person via an employment ad in the *Intelligent Machines Journal*, reaching 20,000 or more computer fanatics. It's only \$20 for a 1-inch ad.

- Dialogue -

LETTERS TO THE EDITOR

The Intelligent Machines Journal is primarily intended to serve two purposes: 1) to provide fast-turnaround news distribution for the explosively-changing microcomputing community; and 2) to provide a medium for effective national dialogue that is not possible in the monthly periodicals that have a 2-6 month lead time on editorial content.

To fulfill the second purpose, the Journal actively solicits letters from the readers for publication. On the average, a letter accepted for publication will be published within a week of its receipt.

Letters for publication may address topics mentioned in previous issues of IMJ, or may focus on entirely new topics. Carefully-reasoned, responsible analyses and evaluations of topics, issues, and products are particularly desired. Documentation and references, where appropriate, are also highly desirable, and will be published with the letters, when useful.

We reserve the right to edit correspondence for the purpose of clarity and brevity. We will not publish correspondence that is sent anonymously, although we will withhold a writer's name, upon request.

Letters for publication should be directed to:

Correspondence Editor
Intelligent Machines Journal
345 Swett Road
Woodside, CA 94062

COMPUTER FUNDAMENTALS FOR SMALL BUSINESSES

A self-instruction program for new computer users is available from Info 3, publishers of audio cassette courses in data processing. The course, "Computer Concepts for Small Business," is designed to help small businessmen select and install their first computer.

The course covers basic computer concepts, how computer systems are developed and used, how to select a computer, and how to organize a small computer operation.

Contact Info 3 at 21241 Ventura Blvd., Suite 193, Woodland Hills, CA 91364; (800) 423-5205; in California, (213) 999-5753.

Profuse Praise for a Repair Service

Dear Sir: 79 Mar 8

I would like to commend publicly and recommend National Computer Works in Venice, California. My Persci floppy disk recently ceased operation for (at the time) unknown reasons. After contacting the manufacturer I was told their repair turn-around time was 60 days. This was far too long to be without a system.

I contacted a newly formed company called National Computer Works whose President, Fred Richardson, had just left Persci as former head of their repair department. He is also the person who conducted the training courses at Imsai and Cromemco on repair of the Persci drives. My drive left via P.S.A. Friday afternoon and returned working perfectly the following Tuesday evening.

Talking to Fred I find he is interested in helping hobbyists and small businesses who cannot afford to go two months without a system. He hopes to be able to keep turn-around time at a week or less.

In my opinion his charges are more than reasonable. He has a fifty dollar minimum, and charges for parts and time above the minimum are extra.

Fred Richardson may be reached at the following address:

National Computer Works
1731 Washington Blvd., Suite C
Venice, CA 90291
(213) 823-8797

I have nothing but praise for him and his company and wish him the success he so richly deserves.

Richard B. Travis
266 Bush Street
San Francisco, CA 94104
(415) 398-3365

Micro-Controlled Photocopier

Canon U.S.A. has introduced a photocopier that is microprocessor-controlled. The NP-80 copier, a table-top unit, can produce 32 copies per minute, and can use two different sizes of plain paper, according to the company.

The microprocessor regulates many of the machine's internal functions, including bias voltage on the developer roller, drum charge, and toner supply. It can diagnose operating problems in the copier, and can correct them automatically in some cases.

Canon USA, Inc., Copier Division, may be contacted at 10 Nevada Dr., Lake Success, NY 10042

ELECTRONIC PUBLISHING

Electronic publishing is likely to make printed information available faster and cheaper than ever before. In fact, in some fields electronic publishing is already here.

One example is the *New York Times* Information Bank, a computer-based service which carries abstracts of the *New York Times* as well as abstracts of other periodicals. An Information Bank subscriber can access the bank through a computer terminal and the telephone system. He can make the computer search for all abstracts that meet certain specifications, e.g., all abstracts dated 1968 that refer to OPEC and OIL, but not to IRAN. The chosen abstract can then be printed on the screen, to be read through the terminal if desired.

The *Times* Information Bank charges \$90/hour for use of its facility. Most of its subscribers are organizations such as research libraries and government agencies.

The British Post Office operates a different kind of service, called Viewdata. For a few hundred dollars, a Viewdata subscriber can buy a television set equipped with a special decoding device that enables it to receive Viewdata text as well as regular television programs. Any information stored on the Viewdata system can be requested by making a telephone call to a computer; the computer transmits the information over the air waves, keyed so that only the particular decoder will pick it up.

Viewdata has a capacity of about 250,000 pages of text. The Post Office lets anyone purchase space in the system for any kind of text, including advertising.

Electronic publishing has several advantages for the publishers. First, it reduces the investment that must be made in a publication before seeing a return; the publication can begin to be sold as soon as the text has been entered into a computer system. Printing, binding, and shipping are no longer necessary. Second, a publication can reach the public very rapidly, allowing the publisher to react more quickly to fast-changing public tastes than is otherwise possible. Third, there is no need to guess how large an edition to print; the computer will make a "copy" of each publication whenever a copy is requested.

Electronic publishing has several advantages for the publisher. First, it reduces the investment that must be made of the art. (The quality of a television image is much poorer than that of a photograph in a newspaper). There are also a number of legal implications to be faced, e.g., the FCC regulates the content of radio and television transmissions in the United States; presumably, it would have jurisdiction over electronic publishing media too, raising serious questions concerning how to ensure continued freedom of the press.

As the problems are solved, however, electronic publishing is likely to play a larger and larger part in our lives.

Computerized Postage Scales/Meters

Postage scales that compute a package's postage automatically - even for Parcel Post and UPS service, for which the postage depends on destination as well as weight - are now available.

The computing scales contain tiny computers that are programmed to calculate postage. Rates are stored on a magnetic disk or a plug-in circuit board that the user can replace when rates change.

For instance, FME Corporation, of Hayward, California makes the Model 9730 computing scale. It measures 1st through 4th class and international rates; it can handle packages up to 10 pounds.

Another example, Gateway Systems Corporation, of St. Louis, Missouri, offers the Libra MRX computing scale. It provides for a variety of special rates such as certified, registered, book rate, and library rate. Its capacity is also 10 pounds.

From Zip to Shipping Zone

Two companies make scales that don't have to be told to what shipping zone a package is going. They find the zone automatically from the zip code. They are the Postmaster Elite scale from MOS Scale International, of Costa Mesa, California, and FME Corporation's Model 9800.

FME's Model 9800 has several attachments that further increase its usefulness. One prints a record of packages weighed, as well as the rate of shipping mode for each. The other enables the scale to send this data to a computer, for automated billing or other purposes.

Postage Meters

Pitney Bowes Corporation, of Stamford, Connecticut, offers the Parcelmatic II postage meter, which weighs a package, computes postage, and prints a postage tape in one operation. The machine can be purchased with an imprinter that records charges directly on an invoice.

FME Corporation makes an interface device that connects its Model 9800 computing scale to its standard postage meters, so postage can be metered at the same time as packages are being weighed.

Companies mentioned in this article can be contacted at the following addresses:

FME Corporation
31285 San Clemente St.
Hayward, CA 94544

Gateway Systems Corporation
7110 Oakland Ave.
St. Louis, MO 63117

MOS Scale International
3178 Pullman Ave.
Costa Mesa, CA 92626

Pitney Bowes Corporation
Walnut & Pacific Streets
Stamford, CT 06904

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Send check or money order for \$29.95 (+\$1.80 sales tax for California residents) to Department D, Ardini Associates, 135 Shadow Mountain Ct., Pleasant Hill, CA 94523.

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See the Want Ad Section for Details.

BUYING A COMPUTER vs. BUYING A COMPUTER SERVICE

by Jonathan Sachs

By dealing with a computer service company, you can computerize your business without buying a computer. Going to such a company may be a good or bad move for you to make, depending upon your needs.

Buying computer service involves less initial expense than purchasing a computer, and requires less of your attention. A service company can do things for you that a small business computer cannot.

On the other hand, having your own computer can be more economical in the long run. It also lets you experiment with new applications, a thing you might be reluctant to do if you were paying an hourly rate for a service.

Two Kinds of Service

Computer services fall into two major classes: service bureaus and timesharing services. A given company may offer either kind of service, or both.

A service bureau packages its services so that all you have to do is to supply the input data and pay for the results. It happens to provide the service on a computer, but you are not directly concerned with the computer at all. Many financial services, such as payroll, billing, and bookkeeping, are offered this way.

A timesharing service lets you use its computer to do your own work. You communicate with the computer through a terminal that connects to a telephone. You share the computer's resources — its time — with other customers who are using it simultaneously; hence, the name "timesharing."

Most timesharing companies have a library of pre-written programs their customers can use, and they offer consulting service for special needs. Most tend to specialize in one kind of service, such as commercial data processing or engineering. Some boast unique services such as investment portfolio analysis, computerized typesetting, or management systems tailored to specific industries. Others offer access to collections of data not available elsewhere, such as legal records, census figures, or economic statistics.

Buying Your Own Equipment

Buying a computer usually means a capital investment. Using a timesharing service means a smaller investment for a computer terminal; using a service bureau means no investment at all.

Whether to buy equipment or service is often a financial decision. Depreciation and tax credits can make it attractive to invest in equipment. On the other hand, the debt or front-end expense may not fit your financial situation.

Consider how you and your employees would feel about having computing equipment in your place of business. If you worry about damage or theft, or if you would have trouble getting the equipment to a repair facility if it broke, you may wish to keep down your investment in hardware.

On the other hand, there are tangible benefits to having your own system, foremost of which is security. Most service companies try to make their systems secure, but any data you store there may be exposed to destruction or theft by the service company's employees or its other customers. You can't control these things. In contrast, you can protect data stored on your own computer simply by restricting access to the computer.

Hardware and Software Capabilities

Consider the kind of applications you have for a computer. Small business systems have grown tremendously in power over the last few years, but they are still much smaller than the systems that service companies maintain. Many applications involving large volumes of data simply can't be handled by a small system. If your application turns out to be one of these, you will have to buy service — at least, until small-computer technology develops enough to fill your needs.

Some specialized computer programs are only available in versions that run on big computers. If you want to use such a program, you must go to a service company.

"People" Services

Many service companies give their customers a high level of support. They offer consulting services of a known quality; they have personnel on hand to solve routine problems free of charge. Often, they assign to each account a technical assistant who can develop a personal relationship with the people he serves.

Consider whether this kind of "hand holding" is important to you, or whether you can acquire the expertise yourself or hire your own experts. Anything you can do for yourself will probably save you money.

Fitting Service to Your Needs

Service bureaus are best adapted

to fill data processing needs that are very regular, such as a payroll that is done every other Friday. If your needs are variable, you are better off using a timesharing service or buying your own computer. If your needs are evenly spread over time, you will often find it much more economical to buy a computer. But, if you can't avoid large fluctuations in work load, you may find service more economical. To meet your peak load, you would have to buy a large computer whose power would be wasted most of the time.

Cost

A service bureau presents you with a constant expense that will continue as long as you use the service. A purchased computer involves a capital investment (which may be spread out by a lease or loan), followed by smaller continuing expenses for maintenance and supplies. A timesharing service involves both; the service is a continuing expense, and the timesharing terminal is an investment.

Most service companies require a minimum volume of business with each of their customers, so figure on needing a few hundred dollars of service a month before most firms will do business with you. For services that require little of the supplier's attention, your volume can be less.

If you go to a timesharing service, plan to pay \$1000 to \$3000 for a typical terminal. If you need special equipment, such as a high-speed printer or a terminal that can do word processing on its own, you will pay more.

If you buy a computing system, the price will depend on how much computing power you need. Decide roughly what

capabilities you want, then ask several vendors to propose systems and costs.
Computer Retailers' Association

The Computer Retailers' Association will hold its annual meeting of members at the National Computer Conference in New York on Tuesday, June 5, 2:30 - 4:30 p.m., at the Sheraton Centre in the Regency Ballroom. All stores are invited to attend.

There will be an extensive Personal Computing Show (139 booths) at the Sheraton Centre (formerly Americana), Tuesday, June 5 through Thursday, June 7. There will be some program sessions on Monday, June 4, and the NCC sessions and exhibits open Monday, June 4.

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345 Swett Road, M/S 012, Woodside CA 94062
(415) 851-7075

\$9.50 / 13 issues (1/2 year) \$18/26 issues (1 year)

by Jim Warren, Digicast Project Director

The Digicast™ Project will distribute information to the general public, and to selected "readers" via FM radio broadcast. The transmissions will be in machine-readable, digitally-encoded form. The information — initially only in alphanumeric form — may include:

- international news
- national news
- regional news
- local news
- special-interest news, e.g.,
 - computer news
 - electronics news
- stock quotes
- commodities quotes
- sports results
- theatre & entertainment listings
- show schedules
- etc.

In other words, a Digicast transmission may carry all of the information that is currently "broadcast" in a newspaper or magazine — if it is in alphanumeric form.

Of particular interest — both for its utility to the reader, and for its ability to finance the system — is the transmission of advertising, especially including want ads and commercial advertising, such as:

- employment ads
- used autos & equipment
- computer sales & trades
- community bulletin board notices
- house & apartment rentals
- real estate ads
- sales at computer stores
- grocery store specials
- department store sales
- etc.

Such buy & sell advertising need not be "classified" — at least, not in time, nor

Digicast Holds High Potential

proximity to similar advertising. It can be transmitted upon receipt. The Digicast receiver can do the classifying and selection on the basis of words in the ads, and keywords in an optional "headline." Let your computer do the walking.

(Although we computer hackers know that the receiver must be a computer, let us not traumatize the average, anti-computer layperson by calling it that. Let's just say it's a Digicast receiver — functionally similar to those friendly ol' favorites, the TeeVee, and radio, but primarily useful for receipt of information, rather than entertainment.)

WHY IT'S BETTER

As an information utility — exclusive of entertainment functions — a Digicast system combines the best aspects of newspapers with the most desirable features of radio broadcasting, and avoids the worst aspects of both.

Production units have already proven in commercial broadcasting environments that information can be transmitted at 4800 baud (480 characters per second) over standard FM channels. An engineer directly involved in the design of that system has stated that a trivial modification to the hardware could double that transmission rate. This means that one to two orders of magnitude more alphanumeric information can be transmitted per day than is currently "transmitted" in any major metropolitan daily newspaper.

That is far too much information for the average layperson to consume each day. But, then again, so is the

content of a newspaper. No attempt is made to read all of any newspaper. One merely scans the headlines — key-word lines — in desired sections — sorted files — for items of possible interest. Even that would be tedious if there were 10-20 times more text; a task that one would much prefer to turn over to a methodical, reliable assistant.

If the information is delivered to the information consumer in human-readable form, then such an assistant should most appropriately be a human. However, if the information is delivered in machine-readable form, then the "editorial assistant" can be one of our dandy devices — a computer — brave, clean, courteous, quiet, never bored, reliable (most of the time) . . . and much less expensive than a human.

This is probably the ultimate technique for buy-and-sell shopping. You know those free tabloids that are delivered to your home every week? They are loaded with good buys in their copious want ads. However, you can never find anything . . . unless you spend all Saturday morning reading through the ads. This is true even when the ads are classified — which they often aren't — since the same person who is selling the automobile you'd love to buy is also selling a washing machine. And, of course, Murphy's Law clearly mandates that the ad you seek will be classified under household appliances rather than used cars.

With Digicasting, if you seek a used Honda for under \$3,000, simply instruct your Digicast receiver to watch for and save all articles containing the character string "Honda", and a number less than 3000 (and probably greater than 78, to avoid a "hit" on a year number).

If you wish to maintain an up-to-the-minute stock portfolio, tell your receiver to watch for all occurrences of specific stocks in stock quotes, and — when it sees one, pass that stock quote (in fixed format, of course) on to your stock analysis program running in background mode.

If you are keeping up with kangaroo migration in New South Wales, give your Digicast receiver the obvious keywords. Note that, due to the much greater information transmission capacity of Digicast in comparison to a newspaper, such relatively obscure news would be much more likely to be available on the Digicast than in your friendly, local — provincial — newspaper.

Ahah! But what about newspaper clippings? How can one clip one's newspaper when there is no paper to clip? The answers are several:

First of all, how often do you clip newspaper articles? Secondly, are you interested in the paper, or in the content? Obviously, the content can be as easily saved in machine-readable form on magnetic media as it has traditionally been saved in human-readable form on paper media. Thirdly, can you find news that you clipped months ago? If it is saved in machine-readable form, then your handy-dandy editorial assistant can greatly facilitate your retrieval of elderly information from dust-laden files (if you keep the dust away from the read-write heads). Finally, of course, you can always attach a big, heavy, expensive hard-copy device to your Digicast receiver — the size and weight of a portable typewriter, available for \$500 or less — and thereby consume natural resources, if you simply *must* have printed notes of historical data.

Thus, Digicasting will provide more information, and provide it in a more usable form than can newspapers or radio and TV. Additionally, one need not be "listening" when an item of interest is broadcast in order to receive it. Fewer trees will need to be harvested to make paper. Less energy will need to be used to run printing presses. Less fuel will need to be burned to distribute heavily-edited news a day late. At least some of the commercial broadcast bandwidth can be put to use to provide information, as opposed to consuming all of it purely for entertainment.

Digicasting will not replace newspapers, magazines, radio, or television. Rather, it will compliment and supplement these facilities — to the extent that they serve an information distribution function, as opposed to an entertainment function. Digicasting will simply provide much more information in a much more usable form, much more economically, and with much less delay. It will provide the access to data that makes the difference between home computers being challenging, stimulating, entertaining, toys . . . and their becoming significant and pervasive utilities that provide assistance to the general public.

HOW IT'S DONE

Alphanumeric information can be coded in digital form, making it readable by computers. Digitally-encoded information can be transmitted by radio. In particular, the Digicast will use the subcarrier channels that are inherent in FM broadcasting. Each FM transmitter can generate several broadcasts, carried on these subcarriers, as well as their "main" broadcast. In fact, one subcarrier, appropriately coded electronically, is often used to transmit stereo (that's how you can tune to a single channel, but receive the two signals that make up stereo). By using a different analog encoding, the same subcarrier is often used to carry Muzak and other background music services — which remain undetected by your home stereo receiver due to their different "coding."

Every FM broadcaster has at least two licensable SCA's — SubCarrier Allocations. The Federal Communications Commission has already adopted a policy explicitly allowing use of SCA's for transmission of digitally-encoded information on commercial and nonprofit "broadcast band" FM channels. There are several commercial FM stations currently running such transmissions on a production basis, with several others running them on an experimental basis. Note: Generally, the broadcast station owners are willing to lease the use of their SCA's, in a manner analogous to a printing press owner selling time on his or her press to a publisher wishing to produce a newspaper or magazine. Only a small percentage of publishers own their own printing presses. There is no necessity for broadcast-based information distributors to own their own broadcasting stations.

The hardware additions to the transmitter are minimal — a subcarrier module that costs on the order of \$5,000, and a minimal computer system, sufficient only to accept incoming data from the editorial offices, and buffer it long enough for transmission.

The hardware on the receiver end is minimal or significant, depending on how you look at it. There must be the FM receiver — a module that can receive the analog FM signal, convert it to digital form, and interface to a receiving computer. For those who already own their

Digicast Could Help Save: NEWSPRINT USE UP 22% BY 1985!

According to an economic forecast recently released by the American Newspaper Publishers Association, consumption of newsprint-quality paper will rise from last year's record 10.2 million tons to 11.2M tons in 1980 and 12.5M tons by 1985. The study, "Future Newspaper and Newsprint Growth 1977-1985," was produced by Dr. John G. Udell, the Irwin Maier Professor of Business at the University of Wisconsin, and an economics consultant to the ANPA.

Digicasting — the distribution of news and information in digital form via broadcasting — could potentially reverse this resource consumption curve. Newspapers are becoming more expensive to produce and distribute. The raw material is becoming more expensive,

and production labor continues to increase in cost. Distribution costs increase over time as transportation and labor costs increase, and as the number of readers increases. Editorial costs — the cost of producing the original news and information — although somewhat on the rise, are by no means the major areas of exploding newspaper costs.

Transmitting alphanumeric and graphic information in machine-readable form via commercial and non-profit broadcast channels not only provides far more information per period of time than does a newspaper, providing it in a far more usable form (given an appropriate receiver), but it also avoids most of the costs of newspaper production and distribution, and completely avoids the cost increases due to increased readership in a given area.

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Digicast™ Project

own computers, this is the only hardware addition they need. It can immediately be built and sold for approximately \$100, with cost reductions by a factor of 4 or 5 predictable in a small mass market the size of the current consumer computer market.

The rest of the receiving hardware — for practical purposes — must include a CPU, sufficient memory to double-buffer articles (holding one complete article while it is being recorded on mass storage media, while accepting the next article coming in over the Digicast) and provide program storage, mass storage — e.g. cassette tape — and, a terminal or keyboard and alphanumeric output device. All of that is already available from a variety of vendors, generally priced around \$700 (though that price floor is predicted to drop to about \$300 in early 1979). These prices are in the contest of a very small consumer market. With Digicasting addressing a much larger mass market which is its obvious potential — anyone interested in information — mass production can reasonably be expected to reduce the cost of a receiver to perhaps \$150 - \$400 (excluding a video monitor; the receivers will initially be FCC-approved for connection to television sets, and later be integral parts of TV sets, as is now the case with the teletext receivers in England).

The software is a complete free-for-all. At a minimum, there must be double-buffering subroutines, probably interrupt-driven. There must be a keyword scanning routine that can monitor incoming text and ascertain whether or not the "Master" has indicated an interest in each article. There must be routines allowing the user to enter and revise keywords and article selection instructions, and allowing the user to retrieve and examine articles that have been saved.

Beyond that, there is essentially no upper limit to the variety and complexity of the software that may be desired — and salable. Obvious possibilities include stock portfolio programs using stock quote transmissions, real estate programs using fixed-format real estate sales listings, indexing programs for automatically indexing temporarily and permanently saved articles, etc.

THE CHICKEN-EGG PROBLEM

Digicasting is not yet in operation. Those using the described technology, now, are using it to transmit management newsletters and information between corporate offices and store or bank managers.

If there were already a number of receivers in place within the reception area of a broadcaster, almost certainly that broadcaster would initiate some kind of service to reach those receivers. But there aren't. On the other hand, if an FM station in any of the high-technology areas that have a heavy "concentration" of home computers (e.g. the San Francisco Bay area, the Los Angeles area, parts of New Jersey, etc.) began transmission, there is equal certainty to the hypothesis that a multitude of receiver modules would quickly appear and be interfaced to the local friendly computers . . . if for no other reason than to allow the computer fanatic to better justify the time, money, and affection directed to his or her tinkertoy. But they haven't.

The Digicast Project proposes to break this chicken-egg loop (hopefully hatching a chicken, rather than laying an egg) by initiating transmission in at least the San Francisco Bay area, and possibly in several

other areas. We plan for the system to be operational before the end of 1979.

COMPATIBILITY

It is not sufficient, however, to merely create isolated transmission facilities, designed on an ad hoc basis, with little or no thought given to compatibility and uniformity of systems. In order for manufacturers of receivers and programmers of software to choose this as an acceptable marketplace, they must know that their products can be used in more than one area — used with the broadcasts from more than one transmitter. For this reason, and because it is relatively obvious that no one company will be able to monopolize such operations, the entrepreneurs wishing to initiate transmissions, manufacture hardware, or develop software must cooperate to some extent. They must at least work together in such areas as defining protocols for the FM transmission scheme, for the digital encoding to be used, and adopt uniform low-level (unidirectional) communication protocols. If software is to be of widespread applicability, then standards must also be adopted for article formats, keyword and indexing content, etc.

An additional advantage of cooperation is that designers of the system can take advantage of each other's knowledge, suggestions, and constructive criticism. This increases the likelihood of an error-free design with no gross malfunctions and possibly without unnecessary limitations. This is particularly important in that whatever designs are initially adopted and put into operation will undoubtedly set a standard with which everyone will have to live for the foreseeable future. We have multitudes of examples that this is true, not the least of which are our 525-line television and the Altair bus. It is of great importance that, at the least, the hardware aspects of Digicast facilities be very carefully thought out and designed for maximum potential, and minimum limitations.

GONNA CREATE A HELLUVA MARKET

As stations begin transmitting information, a number of viable markets will be created as quickly as the products can be manufactured to fill them, e.g.,

- * Digicast receivers that will accept analog broadcast input and produce digital output — parallel, serial, S-100, RS-232, . . . and probably 370 channel-compatible,

- * Demodulators for installation in such receivers,

- * Interfaces between the demodulators or receivers and PETs, TRS-80s, TI machines, etc.,

- * Special-purpose hard/soft turnkey systems, e.g., to receive and summarize stock reports, commodities sales, real estate listings, credit card and bad check fraud alert information, etc.,

- * Receiver software limited only by the imagination and data being transmitted,

- * Information sourcing and information production for transmission,

- * Equipment and software for the transmission and reception of graphics and fax data,

- * Key-wording and article indexing systems appropriate for on-the-fly scanning by Digicast receivers,

- * (You fill in the blank:)

If in no other way does Digicast have a high market potential, it will cause an instant market in each transmitter area of all of those owners of personal computers who would just love to prove to their spouses and non-computer-crazy friends that their fun machine is also a

useful machine . . . it can receive the local "electronic newspaper."

It also has one of the selling points of CB radio — "I can receive something you can't receive," i.e., electronic on-upmanship

IT'S ALREADY BEING DONE!

Currently, there are about half a dozen companies transmitting digitally-encoded alphanumeric information to paying customers via regular FM subcarriers. dozen companies transmitting digitally-encoded alphanumeric information to paying customers via regular FM subcarriers. Almost all of the receivers are currently little more than printers, creating hard copy of whatever is transmitted. It appears that no one has yet added significant intelligence or information processing power to the receivers — yet, most of them are making money, and have a growing list of clients.

So far, all of these systems are transmitting special-interest information to a very select set of business customers; no one has yet addressed the general consumer market. Currently operational systems include a fraud alert system for banks; management information for some grocery store chains; commodities reporting for agribusiness clients; and some variations on the concept of "electronic mail."

Additionally, there are groups in the San Francisco Bay area, Minneapolis area, and Florida area, that hope to transmit — at least on an experimental basis — to a more general receiver audience this year. The Minneapolis group reports that it expects to be allowed to transmit the UPI wire service as part of its information production.

THE FIRST DIGICAST WORKSHOP

The Project has just completed the First Digicast Workshop, held at Stanford University, January 18-19. This workshop involved broadcast engineers and consultants, computer communications and networking experts, subcarrier receiver manufacturers, and individuals who are currently using subcarriers and experimenting with digital subcarrier transmissions. This first workshop was for the purpose of investigating how best to find the missing link — how to close the communication link between digital data arriving at an FM transmitter, and have it received by a distant computer. At the end of the first day of the Workshop, a protocol was roughed out that would allow 4800 and 9600 BPS transmission. The following morning, one of the engineers in the group announced that he had breadboarded the design the previous evening, and it appeared to work . . . at least, in the lab environment. Another member of the group — a broadcast engineer working for a local station that currently has a Special Temporary Authorization (STA) from the FCC to experiment with digital subcarrier transmission on their FM channel — announced that he had reasonable hopes that he would be able to begin at least off-hour experimental transmission in the next month or two. Another member — the Vice President of one of the two largest manufacturers of subcarrier receivers — volunteered free experimental use of their own, company-owned, FM station, and is currently sending the necessary equipment to assist the Bay area experiments.

THE COMPENSATION COROLLARY:

The experiment must be considered a success if no more than 50% of the observed measurements must be discarded to obtain a correspondence with theory.

NOMDA Preparing Studies

& Services for Members

By Jonathan Sachs

The National Office Machine Dealers' Association (NOMDA) has begun a group of studies on microcomputers and their impact on the office machines market.

The studies are meant to give guidance and support to NOMDA members who wish to sell microcomputers, explained Jim Ayres, chairman of NOMDA's Education Committee, which is overseeing the studies.

One study is investigating the computer market as it now exists. Committee members are studying the operations of computer stores to find out: what kind of personnel they hire; who their customers are; how they promote and sell; and what costs they incur in the sale and support of small business systems.

Another study is both exploring different methods for procuring systems (e.g., the merits of marketing single-source systems versus assembling systems from OEM components) and studying the markets perceived by NOMDA members (for example, whether there is a need for systems that handle both word processing and data processing functions).

Software Development Considered

Software is an important aspect of the effort, Ayres says, and the committee contemplates developing high-quality business applications for NOMDA's members. It has commissioned Retail Sciences, Inc., of Atlanta, Georgia, to develop a plan for producing and marketing such applications.

If developed, the applications would be distributed and supported by NOMDA. One likely strategy would be to license them to qualified manufacturers at nominal rates, enabling those manufacturers to offer hardware with NOMDA software to NOMDA dealers. NOMDA would put its own reputation behind the software, and would offer its members training in how to use and to sell it.

Adaptability to a variety of systems would be an important feature of such an application package, Ayres noted. For that reason, the committee is evaluating Pascal as a possible development language.

Education

NOMDA has commissioned a group of professors at Western Illinois University to design a computer-selling seminar for its use. The seminar will last 30 to 40 hours, and will most likely debut just before NOMDA's national convention in 1980.

The National Office Machine Dealers' Association is located at 1510 Jarvis St., Elk Grove Village, IL 60007.

For More Info about DIGICAST™

The *Intelligent Machines Journal* will carry all available information about Digicasting and the Digicast Project. It also carries regular feature articles about a variety of topics and projects using digital communications by radio, television, and cable and phone lines, to supply services for home, business, and industry.

Subscriptions to *IMJ* are \$18/year (26 issues). A subscription form may be found, elsewhere in this issue.

Letters and written suggestions are welcome. However, due to staff limitations, correspondence will be answered only if it is of benefit to the Project, or if it can be answered with a form response.

Once Digicasting is operational, the staff will be expanded to include full-time information and public relations personnel. At that time, consumer questions and requests for general information will receive more personal attention.

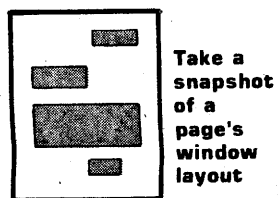
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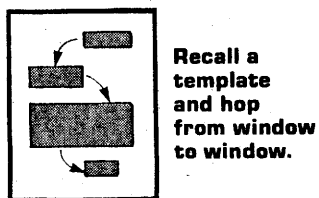
■ **Modular Hardcopy Driver.** Drive a Gume® Sprint-5 or TTY-like device directly now, Diablo, NEC and other hardcopy devices soon.

■ **Pure Text.** Wordsmith files are pure text with no control characters mixed in. This universal format keeps you as compatible with the world as possible. What you see on the screen is what you get as hardcopy.

■ **Page Templates.** Snapshots of the block layout of a page can be saved as named disk files, then later recalled and superimposed on the current page. Use such "templates" for standard multicolumn layouts, common letter formats, and fixed-field forms. A single keystroke dispatches you quickly from block to block as you fill in your page.



Take a snapshot of a page's window layout



Recall a template and hop from window to window.

■ **File Switching.** Moving from document to document to examine, copy, move and change text is like rolling off a log. You're not confined to one disk file at a time anymore.

Simplicity

■ **Auto Word Break.** Forget the right margin. Wordsmith notices when you won't be able to complete the current word and moves it to the next line for you as you continue typing.

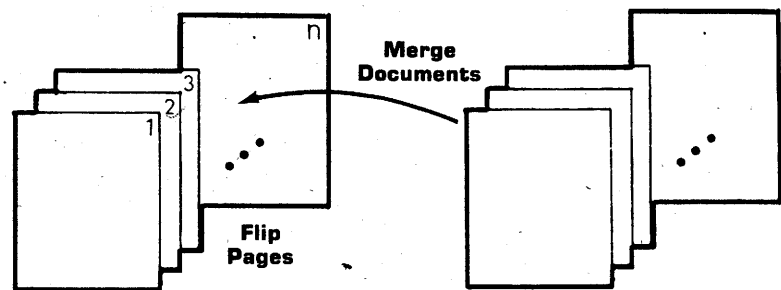
■ **Understandable Commands.** The most frequently used commands are single keystrokes. The rest are easily remembered abbreviations.

■ **Informative Status Lines.** The top two screen lines constantly display page number information, document name, cursor position, tab stops and status/error phrases. You're always in touch with your document.

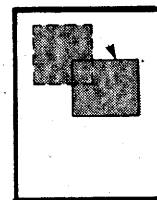
Page 3 of 8	File=ADV1	Cursor row 28, col 43
↓	↓	↓

■ **Protection Against Catastrophic Errors.** It's nearly impossible to ruin your document with a single bad command. Wordsmith's page oriented design and double-checking user interface help you do what you mean!

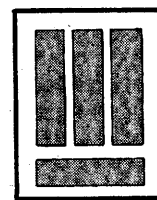
■ **Page Oriented Philosophy.** A document is a collection of pages. The screen displays one entire page at a time. Simple random access page flipping commands take you quickly to any page in the document. Equally efficient commands allow you to insert, delete, copy and move pages both within one document and across documents.



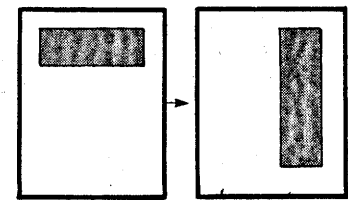
■ **Extensive Block Manipulation Capabilities.** Using "windows", portions of text, charts, etc., can be quickly and effortlessly moved around on the current page, or across pages. The shape and size of any window can be changed in real time, with the contained text automatically reformatting itself (heeding word and paragraph boundaries) to conform to the new shape.



Move Text Blocks



Set Up Multiple Text Regions



Change Text Shape

■ **Instantaneous Formatting.** Compacting (extraneous blank deletion) and right justifying are simple commands that tidy up a full page or window's worth of text in the blink of an eye. Random access cursor movement, line and character insert and delete, line and page split and join, and a host of other line and character level commands help you put text in its place quickly and accurately.

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