

**THE FIRST  
WEST COAST  
COMPUTER FAIRE**  
A Conference & Exposition  
on  
**Personal & Home Computers**

**PROGRAM**

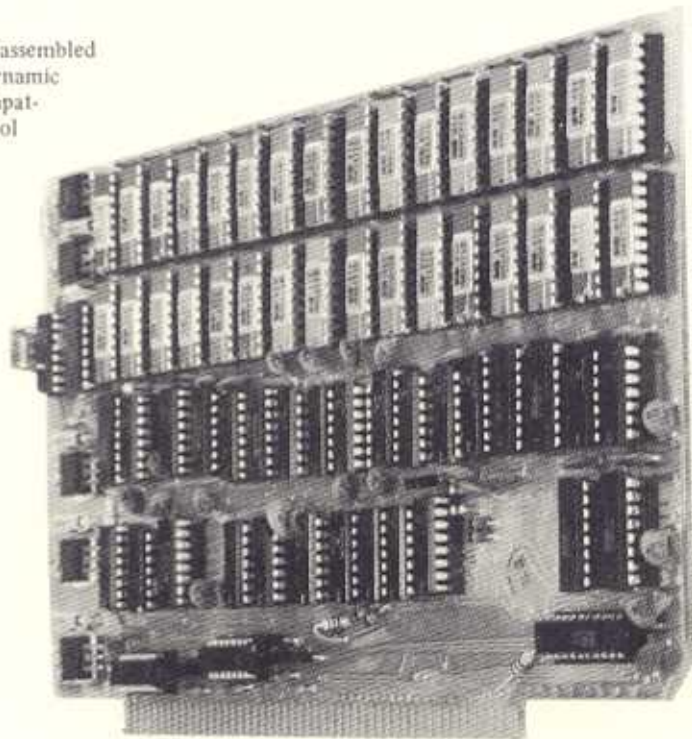
**april 15-17, 1977 • san francisco**

# 16384 BYTES for \$485.00

assembled (with sockets) : tested - burned-in - guaranteed

A new high in S100 bus memory cost effectiveness. Fully assembled (with sockets), tested, burned-in and guaranteed. 4Kx1 dynamic memory chips (the same ones used by the ton in IBM compatible memory systems) combined with self contained control logic, yield a memory system with these features:

- Low power consumption, total board 5 watts.
- Transparent refresh, which means the memory looks static to the outside world.
- No waiting. In fact, XRDY is not even connected to the memory.
- Full DMA capability.
- Reliable, low level clock and control signals.
- Three full days testing at 70° C (185° F).



## BOOTH 200 & 301

### SPECIFICATIONS

Capacity:	16384 bytes
Addressing:	16K boundaries
Bus structure:	S100 - Plug compatible with IMSAI 8080, POLY 88, ALTAIR 8800, BYTE-8, SOL
Address and Data Buffering:	<200 uA, special high impedance buffers - less than one low power Schottky load
Access time:	350 nSec
Memory chips:	MM 5271 (National Semiconductor and others) 4K dynamic

# Dynabyte

**Dynabyte**®

brings to the S100 Bus a state of the art, industrial quality memory system.  
16K on a single board for \$485.00, Guaranteed for 1 year.

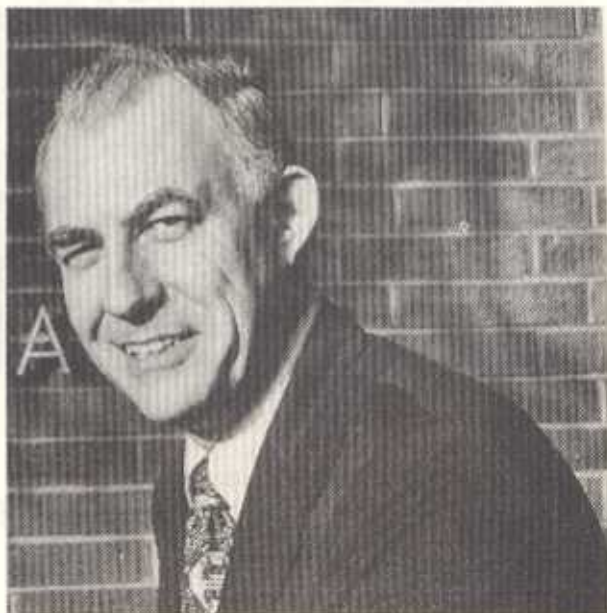
**THE FIRST WEST COAST COMPUTER FAIRE**  
HELD IN  
San Francisco's Civic Auditorium  
WITH  
Banquets in the St Francis Hotel

April 15-17, 1977

**COMPUTER FAIRE**  
Box 1579  
Palo Alto CA 94302  
(415) 851-7664



JIM WARREN, Faire Chairperson  
 &  
 Editor, *Dr Dobb's Journal of Computer  
 Calisthenics & Orthodontia*  
 People's Computer Company  
 Box E  
 Menlo Park CA 94025



ROBERT REILING, Faire Operations  
 Coordinator &  
 Editor, *Homebrew Computer Club Newsletter*  
 Homebrew Computer Club  
 Box 626  
 Mountain View CA 94042



RICK BAKALINSKY, Wandering Minstrel  
 &  
 Midwife-at-Large; Explorer  
 2464-1 W. Bayshore, Sweet 1  
 Palo Alto CA 94303

## VECTORS

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## PRIZES CONTRIBUTED BY EXHIBITORS

(as of 4:10 a.m. on 77 April 7)

The following products have been donated by the indicated vendors to be awarded for the best homebrew exhibits, and to be given away as door prizes at the Faire banquets, and convention, (as of April 2nd).

Announcements of the winners of each prize will be posted at the contributor's booth, and will also be mailed to the winner. Drawings for the door prizes will take place throughout the Faire, and the winners need not be present to win.

COMPANY	QUANTITY	PRODUCTS	RETAIL VALUE
Midwest Scientific Instruments Inc.	1	MSI FD-8 Floppy Disk System, complete with MSI Disk BASIC & FDOS Operating System	\$1500.00
Parasitic Engineering	1	EQUINOX 100 Computer Kit	\$ 599.00
& Morrow's Micro Stuff	1	Power Supply Kit (customers choice for either the Altair 8800 or an Equinox 100 power supply)	90.00
	5	Clock Fix Kits for the Altair 8800 (\$15@)	75.00
Technical Design Labs Inc.	1	Xitan Alpha I System (kit)	\$ 769.00
Cybercom/Solid State Music	1	SB-1 Synthesizer Board for the S-100 Buss	\$ 250.00
	1	VB-1A Video Interface for the S-100 Buss	189.95
	5	XB1 Kit (\$12.50@)	62.50
Southwest Technical Products	1	GT-64 Terminal with matching monitor	\$ 495.00
Computalker Consultants	1	Model CT-1 Speech Synthesizer Board	\$ 395.00
XIMEDIA Corporation	5	OAE Tape Readers (\$75@)	\$ 375.00
North Star Computers, Inc.	1	Hardware Floating Point Board Kit, including Compatible version of North Star BASIC.	\$ 359.00
GIMIX, Inc.	10	Gimix Gobblers (\$30@)	\$ 300.00
MINITERM Associates	1	MERLIN Video Interface Kit	\$ 269.00
ROM: Computer Applications For Living	2	Lifetime subscriptions to ROM: Computer Applications for Living (\$250.00@)	\$ 500.00
VECTOR Graphic, Inc.	5	Motherboards (\$49@)	\$ 245.00
Polymorphic Systems	1	Video Terminal Interface Kit	\$ 210.00
MINI-MICRO Systems Magazine	4	CORVUS Slide Rule Calculator (\$50@)	\$ 200.00
MECA	1	MECADRIVE	\$ 200.00
Godbout Electronics	1	BASIC RAM kit (use with "JOLT", etc.) 4kx8	\$ 88.00
	1	ECONORAM Kit (use with Altair/Imesai S-100)	99.95
Smoke Signal Broadcasting	1	P-38 8K EPROM Board	\$ 179.00
Hayden Book Company, Inc.	10	BASIC BASIC (\$7.95@)	\$ 79.50
	10	Microprocessor BASICS (\$9.95@)	99.50
Tarbell Electronics	1	Tarbell Cassette Interface Kit	\$ 120.00
	2	Tarbell Prototype Boards (\$28@)	56.00
BYTE Publications Inc.	1	Lifetime subscription to BYTE magazine.	\$ 150.00
Component Sales, Inc.	1	Burroughs SELF-SCAN	\$ 150.00
IASIS, Inc.	1	Microcomputer Design Course (6 volumes)	\$ 99.50
	5	Microcomputer Applications Handbooks (\$7.95@)	39.75
Jade Company	2	2708 (8K E-PROM) (\$40@)	\$ 80.00
	16	2107B-4 (4k Dynamic RAM) (\$3.625@)	58.00
Scientific Research	1	Set of all 5 volumes of BASIC Software library	\$ 109.75
Technical Systems Consultants	1	TSC Text Editing System-6800	\$ 23.50
	1	TSC Micro Basic Plus-6800	15.95
	1 ea.	Package I for 1)6800, - 2)6502, - 3)8080 (\$20@)	60.00
Oliver Audio Engineering Inc.	1	OP-80A Paper Tape Reader Kit	\$ 74.50
Digital Research	1	CP/M System Diskette & Documentation	\$ 70.00
Logical Services Inc.	1	Modu-Learn Microcomputer Software Course	\$ 49.95
PAIA Electronics Inc.	1	8780 Equally tempered D/A (for music)	\$ 34.95
PMS Publishing Company	5	The Underground Buying Guide (\$5.95@)	\$ 29.75
Sunset Technologies	1	Gift Certificate	\$ 25.00
Creative Computing	1	The Best of Creative Computing, Vol. II	\$ 8.95
	1	101 BASIC Computer Games	7.50

## Prize Contribution Update as of 4:10 a.m. on 77April 7

Dymax	12	1-year subs to <i>Calculators/Computers Magazine</i> (\$12@)	\$144.00
Parsec Electronics	1	Main board & keyboard enclosures for SWTPC 6800 m-p	\$ 49.95
	1	Printer cover for SWTPC PR-40 Printer	\$ 14.95
Pfeiffer, E & L	10	Hexadaisy Hexadecimal Sliderules (\$3.95@)	\$ 39.50

# CP/M

## LOW-COST MICROCOMPUTER SOFTWARE

CP/M is a low-cost control program for microcomputers which brings together recent advances in computer and peripheral technology. CP/M is an advanced disk operating system designed for use with IBM-compatible diskette-based computer systems which employ the Intel 8080 microcomputer. Previously available only to OEM's, CP/M has been in existence for over three years in various manufacturers' products, and has undergone extensive field testing. The functions of this software package include named dynamic files, program editing, assembly, debugging, batch processing, and instantaneous program loading, resulting in facilities similar to popular timesharing services. CP/M is an 'unbundled' software package which can be easily adapted to any 8080 or Z-80 computer system with at least 16K of main memory and one or two IBM-compatible disk drives. The field-modification manual provided with CP/M has been used successfully by many CP/M users in customizing CP/M for their own hardware configurations.

# DIGITAL RESEARCH

Please send me the following:

- CP/M Documentation (Complete set of 6 manuals) for \$25.00.
- CP/M Documentation and CP/M System Diskette for \$70.00.
- Free CP/M brochure and price list.
- Information concerning high level languages and optional packages.

**NOTE:** IMS Associates and Digital Systems distribute CP/M with their hardware systems.

Bank Americard No. \_\_\_\_\_ Exp. date \_\_\_\_\_  Master Charge No. \_\_\_\_\_  
Exp. date \_\_\_\_\_  Check or M.O. enclosed.

California residents add 6% sales tax. Amount enclosed \_\_\_\_\_

Name \_\_\_\_\_ Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**DIGITAL RESEARCH** Post Office Box 579 • Pacific Grove, California 93950

**COMPUTER FAIRE DISCOUNTS  
OFFERED BY FAIRE EXHIBITORS**

(as of 5:45 a.m. on 77 April 7)

(Discounts for which the Faire has written commitments, as of April 2nd).

COMPANY	DISCOUNTS BEING OFFERED
MECA Parasitic Engineering & Morrow's Micro Stuff	20% discount on all products purchased at the Faire. 20% discount on Deluxe Hardware kit if purchased with an EQUINOX-100 Computer Kit. Clock Fix kit for Altair 8800 for \$5.00 with any other purchase.
Smoke Signal Broadcasting	\$25.00 discount allowed on items priced over \$150.00 ordered or purchased at the Faire. In addition, will be giving away "inflated" wooden nickels worth \$5.00 on the purchase of any item. (Limit- 1 per customer.)
XIMEDIA Corporation	12% discount on all our products purchased at the Faire. IMSAI I-8080 with TDL ZPU Card (instead of 8080) Cooling fan, 22 slot motherboard with 22 pre-soldered Connectors, 44 card guides, \$ 999 Kit or, \$1295 assembled
Cybercom/Solid State Music	SB-1 Synthesizer board for the S-100 bus. Retail: \$250 Faire Discount: \$220
Realistic Controls Corporation	RCC Z//25 FORTRAN IV-MINIFLOPPY Kit. Retail: \$1095 Discount: \$995
Computalker Consultants	10% discount on all items purchased at the Faire.
Digital Research	10% discount on all CP/M documentation purchased at the Faire.
Logical Services, Inc.	10% discount on all products purchased at the Faire.
Midwest Scientific Instruments Inc.	10% discount on all products purchased at the Faire.
MINITERM Associates	10% discount on all products purchased at the Faire.
SAC Sales Group	10% discount on all products ordered at the Faire.
Sunset Technologies	10% discount on all products purchased at the Faire.
VECTOR Graphic Inc.	10% discount on all products purchased at the Faire.
Video Terminal Technology	10% discount on all products purchased at the Faire.
Scientific Research	10% discount on purchases of complete sets of the 5 volumes of BASIC software library.
EXTENSYS Corporation	6% discount on all products purchased at the Faire.
Computer Magazine (IEEE Computer Society)	Computer Society Publications offered at member discount prices.
ROM: Computer Applications For Living	Premier issue of ROM free with subscription purchased at the Faire. This is a Faire exclusive.
Creative Computing	Extra issue of Creative Computing free to subscribers and renewers. Discounts on purchasing 3 or more Creative Computing books.
<b>Discount Update as of 4:10 a.m. on 77April 7</b>	
Advanced Technology Research Assoc.	Blinkies (multi-faceted LED pendants. Retail: \$39.99. Faire Discount: \$29.95.
Board Byters	10% discount on all products purchased at the Faire.
Dymax	50% discount on cash orders, for \$500 or more, for any combination of the following books: <i>Instant BASIC, Your Home Computer, My Computer Likes Me, Games with the Pocket Calculator, Games, Tricks, &amp; Puzzles for a Hand Calculator.</i>
Gnomon Associates	15% discount on all products purchased at the Faire. Gnomon Cassette Controller. Retail: \$69.95. Faire Discount: \$59.46.
Hal Communications Corp.	5% discount on all products purchased at the Faire.
Bell & Howell Schools	10% discount on all products purchased at the Faire.
Integrand Research Corp.	20% discount on cabinet for computer terminal (TVT-2)
National Semiconductor Corp.	10% discount on all products purchased at the Faire. 30% discount on m-p product literature packages Free SC/MP or PACE m-p chip given with purchase of SC/MP or PACE literature package
Parsec Electronics	15% discount on all products purchased at the Faire.
Pfeiffer, E & L	Hexadaisy Hexadecimal Sliderule. Retail: \$3.95 + tax. Discount: \$3.75 (incl. tax).
R.D.C. Enterprises	30% discount on all products purchased at the Faire. Compu/Time CT100 Kit. Retail: \$195. Faire Discount: \$150. C101. Retail: \$147. Faire Discount: \$115. T102. Retail: \$160. Faire Discount: \$125.
Vandenberg Data Products	Vandenberg Data Products 16K Memory kit for S-100 bus. Retail: \$385. Faire Discount: \$308 (plus tax and shipping)



# Meet the most powerful $\mu$ C system available for dedicated work. Yet it's only \$595.\*

\*kit price

Here's the muscle you've been telling us you wanted: a powerful Cromemco microcomputer in a style and price range ideal for your dedicated computer jobs—ideal for industrial, business, instrumentation and similar applications.

It's the new Cromemco Z-2 Computer System. Here's some of what you get in the Z-2 for only \$595:

- The industry's fastest  $\mu$ P board (Cromemco's highly regarded 4 MHz, 250-nanosecond cycle time board).
- The power and convenience of the well-known Z-80  $\mu$ P.
- A power supply you won't believe (+8V @ 30A, +18V and -18V @ 15A — ample power for additional peripherals such as floppy disk drives).
- A full-length *shielded* motherboard with 21 card slots.
- Power-on-jump circuitry to begin automatic program execution when power is turned on.
- S-100 bus.
- Standard rack-mount style construction.
- All-metal chassis and dust case.
- 110- or 220-volt operation.

#### DEDICATED APPLICATIONS

The new Z-2 is specifically designed as a powerful but economical dedicated computer for systems work. Notice that the front panel is entirely free of controls or switches of any kind. That makes the Z-2 virtually tamper-proof. No accidental program changes or surprise memory erasures.

#### FASTEST, MOST POWERFUL $\mu$ C

Cromemco's microcomputers are the fastest and most powerful available. They use the Z-80 microprocessor which is

widely regarded as the standard of the future. So you're in the technical fore with the Z-2.

#### BROAD SOFTWARE/PERIPHERALS SUPPORT

Since the Z-2 uses the Z-80, your present 8080 software can be used with the Z-2. Also, Cromemco offers broad software support including a monitor, assembler, and a BASIC interpreter.

The Z-2 uses the S-100 bus which is supported by the peripherals of dozens of manufacturers. Naturally, all Cromemco peripherals such as our 7-channel A/D and D/A converter, our well-known BYTESAVER with its built-in PROM programmer, our color graphics interface, etc., will also plug into the S-100 bus.

#### LOW, LOW PRICE

You'll be impressed with the Z-2's low price, technical excellence and quality. So see it right away at your computer store—or order directly from the factory.

Z-2 COMPUTER SYSTEM KIT (MODEL Z-2K) (includes 4 MHz  $\mu$ P card, full-length 21-card-slot motherboard, power supply, one card socket and card-guide set, and front panel; for rack mounting) . . . . . \$595.

Z-2 COMPUTER SYSTEM ASSEMBLED (MODEL Z-2W) (includes the above as well as all 21 sockets and card guides and a cooling fan; for rack mounting) . . . \$995.

Shown with optional bench cabinet



## Cromemco

incorporated

Specialists in computers and peripherals

2432 CHARLESTON RD., MOUNTAIN VIEW, CA 94043 • (415) 964-7400

# CONFERENCE PROGRAM

## TUTORIALS FOR THE COMPUTER NOVICE

Saturday, 9:00 AM  
Larkin 103

James S. White  
1202 Riverview Lane  
Watertown WI 53094

*An Introduction to Computing to Allow You to Appear Intelligent at the Faire*

Fred Waters  
1601 Provincetown Drive  
San Jose CA 95129

*A Tyro Looks Back*

Richard J. Nelson  
2541 W. Camden Place  
Santa Ana CA 92704

*The Shirt Pocket Computer*

Lowell Smilen, Ph.D.  
Almal/Stroum Electronics  
5811 Sixth Avenue South  
Seattle WA 98108

*The Sidelobes of Industrial Distribution are Focused on the Home Microcomputer Hobbyist*

## PERSONAL COMPUTERS FOR THE PHYSICALLY DISABLED

Saturday, 1:30 PM  
3 D

Peter J. Nelson & J.G. Cossalter  
Medical Engineering Section, Bldg. M-50  
Division of Electrical Engineering  
National Research Council of Canada  
Ottawa Ontario  
Canada K1A 0R8

*The Potential of Microcomputers for the Physically Handicapped*

Laurence R. Upjohn, Pharm. D.  
7297 Stanwood Way  
Sacramento CA 95831

*An Interface Using Bio-Electrical Signals to Control a Micro-processor System for the Physically and Communicatively Handicapped*

## PEOPLE & COMPUTERS

Saturday, 9:00 AM  
3 D

Andrew Clement  
789 W. 18th Ave.  
Vancouver B.C.  
Canada V5Z 1W1

*If "Small is Beautiful," Is Micro Marvelous?  
A Look at Micro-computing as if People Mattered*

Dennie L. Van Tassel  
Computer Center  
University of California  
Santa Cruz CA 95064

*The Computer in Science Fiction*

David H. Ahl, Publisher  
Creative Computing  
Box 789-M  
Morristown NJ 07960

*Computer Power to the People: The Myth, the Reality and the Challenge*

Kenneth Berkun  
928 J Street  
Davis CA 95616

*Psychology and the Personal Computer*

## HUMAN ASPECTS OF SYSTEM DESIGN

Sunday, 1:00 PM  
Larkin 103

William F. Anderson  
158 Valparaiso  
San Francisco CA 94133

*The Most Difficult Interface: Human*

James Joyce  
Computer Science Division  
Department of Electrical Engineering and Computer Science  
University of California  
Berkeley CA 94720

*Human Factors in Software Engineering*

# NOW!!

## Z-80 Power for the S-100 bus without getting rid of your CPU card

# \$159.95

### assembled

## DUTRONICS

8K STATIC LOW-POWER RAM

(KIT)

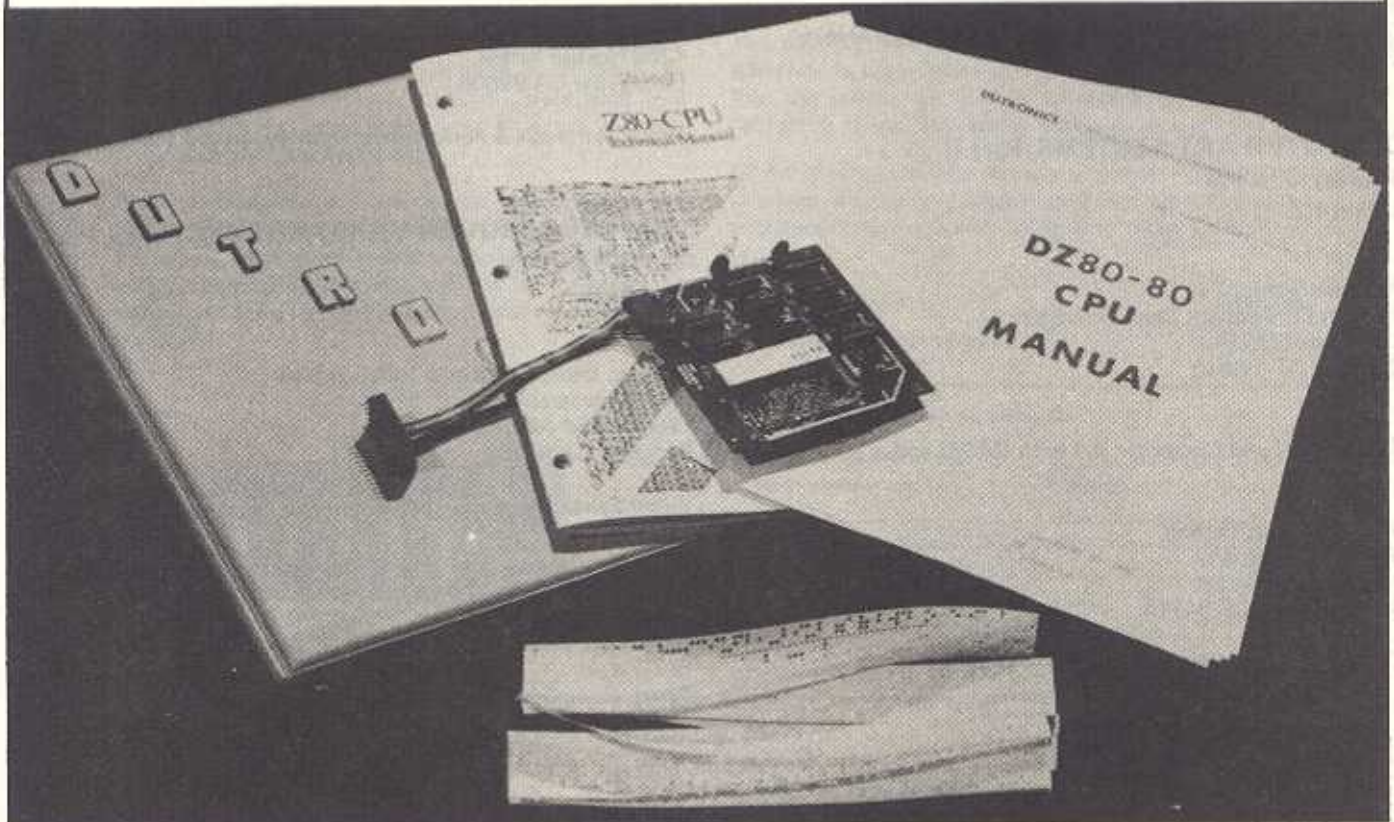
*NORMAL*

\$285.00

*SHOW SPECIAL*

\$225.00

### BOOTH 200 & 301



**LEGAL ASPECTS OF PERSONAL COMPUTING**

Saturday, 12:30 PM

3 D

Kenneth S. Widelitz, Attorney at Law, WA6PPZ  
10405 Louisiana, No. 8  
Los Angeles CA 90025

*What to Do After You Hit Return . . . And Nothing Happens:  
Warranty in the Micro-Computer Industry*

**HERETICAL PROPOSALS**

Saturday, 11:30 AM

3 A

Klaus Holtz  
310 Guttenberg  
San Francisco CA 94112

*Here Comes the Brain-Like, Self-Learning, No-Programming,  
Computer of the Future*

**COMPUTER ART SYSTEMS, Part I**

Saturday, 1:00 PM

Larkin 105

Ronald Pellegrino  
701 Del Mar Avenue  
Novato CA 94947

An exhibition & discussion:  
*Composing Dynamic Laser Light Sculptures Via a Hybrid  
Electronic Wave System*

**COMPUTER ART SYSTEMS, Part II**

Saturday, 2:30 PM

Larkin 105

Rona Gurkewitz  
Western Connecticut State University  
181 White Street  
Danbury CT 06810

*ARTSPEAK and Computer Art with BASIC and a Teletype*

Michael Fisher, Partner  
Multiplex Company  
454 Shotwell Street  
San Francisco CA 94110

*Computer Generated Integral Holography*

**COMPUTER-DRIVEN VIDEO ART SYSTEMS, Part I**

Saturday, 9:00 AM

Larkin 105

William Etra  
42 East 23rd Street  
New York NY 10010

*Digital Control of Analog Video Synthesis Equipment*

Dick Shoup  
Xerox Palo Alto Research Center  
3333 Coyote Hill Road  
Palo Alto CA 94304

*Digital Video Painting*

Terry Craig  
Image West  
845 N. Highland  
Hollywood CA 90030

*Electronically Produced Video Graphics Animation*

Tom DeFanti, Dan Sandin and Larry Leske  
Box 4348  
University of Illinois at Chicago Circle  
Chicago IL 60680

*Roaming Around in Abstract 3-D Spaces*

Jo Ann Gillerman  
4250 Horton Street  
Emeryville CA 94608

*Video Synthesis & Performance with an Analog Computer*

**COMPUTER-DRIVEN VIDEO ART SYSTEMS, Part II**

Saturday, 4:30 PM

Larkin 105

Stephen Beck, Electronic Videographer  
Beck Videographics  
1406 Euclid Ave. No. 3  
Berkeley CA 94708

*Video Synthesis: Expanding Electronic Vision*

Larry Forman, Panel Organizer  
1092 Evergreen  
San Diego CA 92106

*Panel: Computer-Driven Video Systems*

# CT-64 TERMINAL SYSTEM



- 64 OR 32 CHARACTERS PER LINE
- UPPER AND lower case LETTERS
- FULL 8 BIT MEMORY
- 128 CHARACTER ASCII SET
- 110/220 Volt 50-60 Hz POWER SUPPLY
- SCROLLING OR PAGE MODE OPERATION
- CONTROL CHARACTER DECODING—32 COMBINATION
- PRINTS CONTROL CHARACTERS
- USABLE WITH ANY 8 BIT ASCII COMPUTER
- REVERSED BACKGROUND — **HIGHLIGHTING**

**COMPLETE WITH —** Chassis and cover, cursor control, 110-1200 Baud serial interface and keyboard. Optional monitor show in photo available.

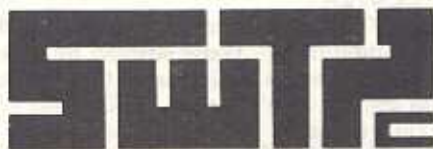
Now you can buy it. The terminal that has all the features that people have been asking us to include. The CT-64 has all the functions that you could want in a terminal and they may be operated by either switches, or through a software program.

All cursor movements, home-up and erase, erase to end of line, erase to end of frame, read on, read off, cursor on, cursor off, screen reversal, scroll, no scroll, solid cursor, blinking cursor, page selection and a beeper to warn you of end of page; all are provided for your use in the CT-64.

You may also switch from upper case only teletype style operation to upper-lower case typewriter style operation. You can reverse the field on individual words to highlight them, or you can reverse the whole screen.

CT-64 is complete with keyboard, power supply serial interface and case. A matching 9 inch monitor with coordinated covers is also available to make a complete system.

CT-64 Terminal Kit	\$325.00
MM-1 Monitor (assembled)	\$175.00



219 W. Rhapsody

San Antonio, Texas 78216

You are right, it's just what I have been asking for.

- Enclose is \$325.00 for the CT-64
- Send the MM-1 monitor too.  Send Data
- or BAC \_\_\_\_\_ # \_\_\_\_\_
- or MC \_\_\_\_\_ Ex Date \_\_\_\_\_

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

Southwest Technical Products Corp.  
219 W. Rhapsody, San Antonio, Texas 78216

**MUSIC & COMPUTERS, Part I**

Sunday, 10:30 AM

Larkin 105

Thomas E. Olsen  
2500 Medallion Drive, No. 57  
Union City CA 94587

*A Computer Controlled Audio Generator*

Carl Helmers, Editor in Chief  
BYTE Publications Inc.  
70 Main Street  
Peterborough NH 03458

*The Kludgehorn: An Experiment in Homebrew  
Computer Music*

Jef Raskin  
Box 511  
Brisbane CA 94005

*A Pipe Organ/Micro Computer System*

**MUSIC & COMPUTERS, Part II**

Sunday, 1:00 PM

Larkin 105

John Chowning and James A. Moorer  
Department of Music  
Stanford University  
Stanford CA 94305

*A Tutorial with Musical Examples:  
The Stanford Computer Music Project*

Marc Le Brun  
Star Route Box 111  
Redwood City CA 94062

*Notes on Microcomputer Music*

John Snell, Editor  
Computer Music Journal  
Box E  
Menlo Park CA 94025

*Design of High Fidelity Real-Time Digital  
Hardware for Music Synthesis*

**SMOKING REGULATIONS**

For ventilation, health and safety reasons, smoking is allowed only in:

1. The Main Exhibits Arena on the first floor
2. The Polk Hall Exhibits area on the first floor
3. Explicitly designated areas of the Polk Hall Cafeteria & Lounge areas
4. The audience-left half of Larkin 103 & Larkin 105 Conference Halls.

**ELECTRONIC MAIL**

Saturday, 1:00 PM

Larkin 103

John McCarthy & Les Earnest  
Artificial Intelligence Laboratory  
Computer Science Department  
Stanford University  
Stanford CA 94305

*DIALNET and Home Computers*

Raymond R. Panko, Ph.D.  
Stanford Research Institute  
333 Ravenswood Ave.  
Menlo Park CA 94025

*CB Computer Mail?*

**COMPUTER NETWORKING FOR EVERYONE**

Saturday, 3:00 PM

Larkin 103

Lee Felsenstein  
1807 Delaware St.  
Berkeley CA 94703

*Community Memory - a "Soft" Computer System*

David Caulkins  
Cable Data  
701 Welch Road  
Palo Alto CA 94304

*Design Considerations for a Hobbyist Computer Network*

Mike Wilbur  
920 Dennis Drive  
Palo Alto CA 94303

*A Network of Community Information Exchanges:  
Issues and Problems*

**MESSAGE CENTER**

A "Messages" bulletin board is located in the Main Lobby of the Civic Auditorium. Those wishing to do so may post 3x5 notes on this board in the indicated locations to:

- \* establish contact with someone
- \* obtain rides or riders
- \* share accommodations ("crash pads"?)
- \* buy or sell used equipment owned by private parties

**EMPLOYMENT EXCHANGE**

An employment bulletin board is located in the Main Lobby of the Civic Auditorium. Those seeking employees or employment may post a 3x5 card indicating their desires or capabilities.

# TSC's MULTI-USER SYSTEM

## BOOTH 114

Would you believe: 4 1200 baud terminals,  
7 different programs, all running at  
the same time, on a SWTPC 6800?  
Seeing is believing! Stop by TSC's booth, #114.

\*\*\* SPECIAL ATTRACTION \*\*\*

TSC will demonstrate 4-user Micro BASIC Plus  
at various times throughout the show!

## COMPUTER MUSIC WITH OR WITHOUT THE COMPUTER!

### EQUALLY TEMPERED DIGITAL TO ANALOG CONVERTER

The PAIA 8780 kit is based on a multiplying principle that allows the module to generate the exact exponential stair-step function required to make even the simplest linear response oscillators and filters produce equally tempered musical intervals. The 8780 uses only six bits of data to generate over 5 octaves of control voltage. In an 8 bit system the remaining two bits are ordinarily reserved for trigger flags, but may be used to extend the range of the converter or provide micro-tonal tunings.

The module is physically and electrically compatible with the complete line of PAIA music synthesizer modules and is easily interfaced to any micro-processor with or without hand-shaking logic.

#8780 D/A CONVERTER Kit ..... \$34.95  
(plus \$1.00 postage)

### WITH A COMPUTER

Both the 8780 D/A and the 8782 Encoded Keyboard easily interface to any processor providing capabilities and control never before possible with music synthesizers.



### THE PAIA HIGH LEVEL LANGUAGE FOR COMPUTER MUSIC DATA ENTRY (We call it a keyboard)

An n key roll-over scanning matrix encoder tied to a 37 note AGO keyboard provides 6 bits of data and both STROBE and STROBE control outputs. Input control lines to the encoder include SCAN (starts and stops encoder clock), RESET, START and RANDOM making the keyboard universally applicable to all computer/processors from the very largest to the very smallest.

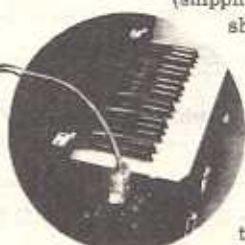
Housed in a trim and sturdy vinyl covered road case, the kit consists of all parts including keyboard, power supply and detailed assembly instructions; software overview for computer applications and detailed instructions for Digital Sample and Hold.

#8782 ENCODED KEYBOARD .. \$109.95  
(shipping wt. 20 lbs. -  
shipped freight collect)



### WITHOUT A COMPUTER

An infinite hold, DIGITAL Sample and Hold and the heart of an entire system of modules that will be introduced over the next few months including: Memories, Polytonic output modules & others.



DETAILS  
ON THESE & MORE  
IN OUR FREE CATALOG

**PAIA**  
ELECTRONICS, INC.

DEPT. 6 CF 1020 WEST WILSHIRE BLVD. OKLAHOMA CITY, OK 73116

**PERSONAL COMPUTERS FOR EDUCATION, Part I**

Saturday, 9:00 AM

3 C

Marvin Winzenread, Ed.D., Section Chairperson  
 Mathematics Department  
 California State University  
 Hayward CA 94542

Liza Loop  
 LO\*OP Center, Inc.  
 8055 Old Redwood Hwy.  
 Cotati CA 94928

*Sharing Your Computer Hobby with the Kids*

Thomas A. Dwyer  
 Soloworks Lab  
 311 Alumni Hall  
 University of Pittsburgh  
 Pittsburgh PA 15260

*Personal Computing & Education:  
 A Time For Pioneers*

Lud Braun, Professor  
 College of Engineering  
 SUNY at Stony Brook  
 Stony Brook NY 11794

*The Things That We Can Do with a Microcomputer in  
 Education That We Couldn't Do Before*

Peter S. Grimes, Curriculum Supervisor  
 San Jose Unified School District  
 1605 Park Ave.  
 San Jose CA 95126

*Classroom Microcomputing: How One School District  
 Learned to Live with the State of the Art*

**PERSONAL COMPUTERS FOR EDUCATION, Part II**

Saturday, 12:30 PM

3 C

Melvin L. Zeddies  
 1854 Pacific Beach Drive  
 San Diego CA 92109

*The Construction, Operation, and Maintenance of a  
 High School System*

**Don't miss our new  
 products.**

1. The RM64 S-100  
 Dynamic Ram Board  
 32K, 48K, or 64K Bytes

2. The CGM 77  
 Game Machine

or you  
 might miss  
 the excitement  
 At Booth 423

**extensys**  
 corporation



Bob Kahn & Lee Berman  
 Lawrence Hall of Science  
 University of California  
 Berkeley CA 94720

*Educating People about Personal Computing:  
 A Major Program at the Lawrence Hall of Science*

*Informal Panel: Computers in Elementary & Secondary  
 Education*

Bob Albrecht, Panel Organizer  
 Box 310  
 Menlo Park CA 94025

Hal Singer  
 Cabrillo High School  
 4650 Constellation  
 Lompoc CA 93436

Jo Anne Ver Plank  
 Community Computer Center  
 1919 Menalto  
 Menlo Park CA 94025

Don Inman, Editor  
*Calculators / Computers*  
 Dymax  
 Box 310  
 Menlo Park CA 94025

[More]





**PERSONAL COMPUTERS FOR EDUCATION, Part III**

Saturday, 4:00 PM

3 C

Franz J. Frederick  
Education Building, Room 112  
West Lafayette IN 47907

*CAI Answer Processing in BASIC*

Lois Noval  
Noval, Inc.  
8401 Aero Drive  
San Diego CA 92123

*Telemath*

Franz J. Frederick, Assoc. Professor  
Education Building, Room 112  
Purdue University  
West Lafayette IN 47907

*Student Records Subroutine for Computer-Assisted  
Instruction Lessons in Extended BASIC*

**PERSONAL COMPUTERS FOR EDUCATION, Part IV**

Saturday, 3:00 PM

3 D

Milos Konopasek & Mike Kazmierczak  
School of Textile Engineering  
Georgia Institute of Technology  
Atlanta GA 30332

*A Question-Answering System on Mathematical Models  
in Microcomputer Environments*

Roger Broucke  
Aerospace Engineering  
ENL-414B  
University of Texas  
Austin TX 78712

*Use of a Personal Computer in Engineering Education*

Merl K. Miller  
Matrix Publishers  
207 Kenyon Road  
Champaign IL 61820

*The Microcomputer Education Process: Where We've Been  
and Some Guesses on Where We're Going*

**PRAMMER**

by XYBEK

**An extraordinary 2k memory board  
for your Altair-bussed computer**

- ★ On-board 1702A PROM programmer
- ★ Space for 1792 bytes of read-only memory (seven 1702A EPROMs)
- ★ 256 bytes of RAM
- ★ Supplied with one 1702A, pre-programmed with stand-alone programming software — no sense switches are used
- ★ Supplied with programming power supply
- ★ PRAMMER's own on-board clock makes it compatible with almost any Altair-bussed system.
- ★ All read and write sequences are generated via an on-board micro-programmed state machine, thus eliminating all one-shots.
- ★ Complete 1702A programming in 18 seconds

**COMPLETE KIT: . . . . . \$209**

(\$189 through June 14, 1977)

**Assembled and tested: . . . . . \$289**

Immediate (off-the-shelf) delivery

California residents please add sales tax.

Master Charge and BankAmericard accepted.

**XYBEK • P.O. Box 4925 • Stanford, CA 94305**

Telephone: (408) 296-8188

Booth 927

[Those interested in personal computers in education should also note the following talks:

Alice E. Ahlgren, "A New Approach to Microcomputer Systems for Education," which discusses time-sharing in an educational environment using an inexpensive micro-computer system. (see the Commercial Hardware section);

Peter J. Nelson, "The Potential of Microcomputers for the Physically Handicapped," which includes discussion of a microcomputer-based system in the classroom for the non-verbal physically disabled.]

**RESIDENTIAL ENERGY & COMPUTERS**

Sunday, 3:00 PM

3 C

Mark Miller  
821 Walnut St.  
Chico CA 95926

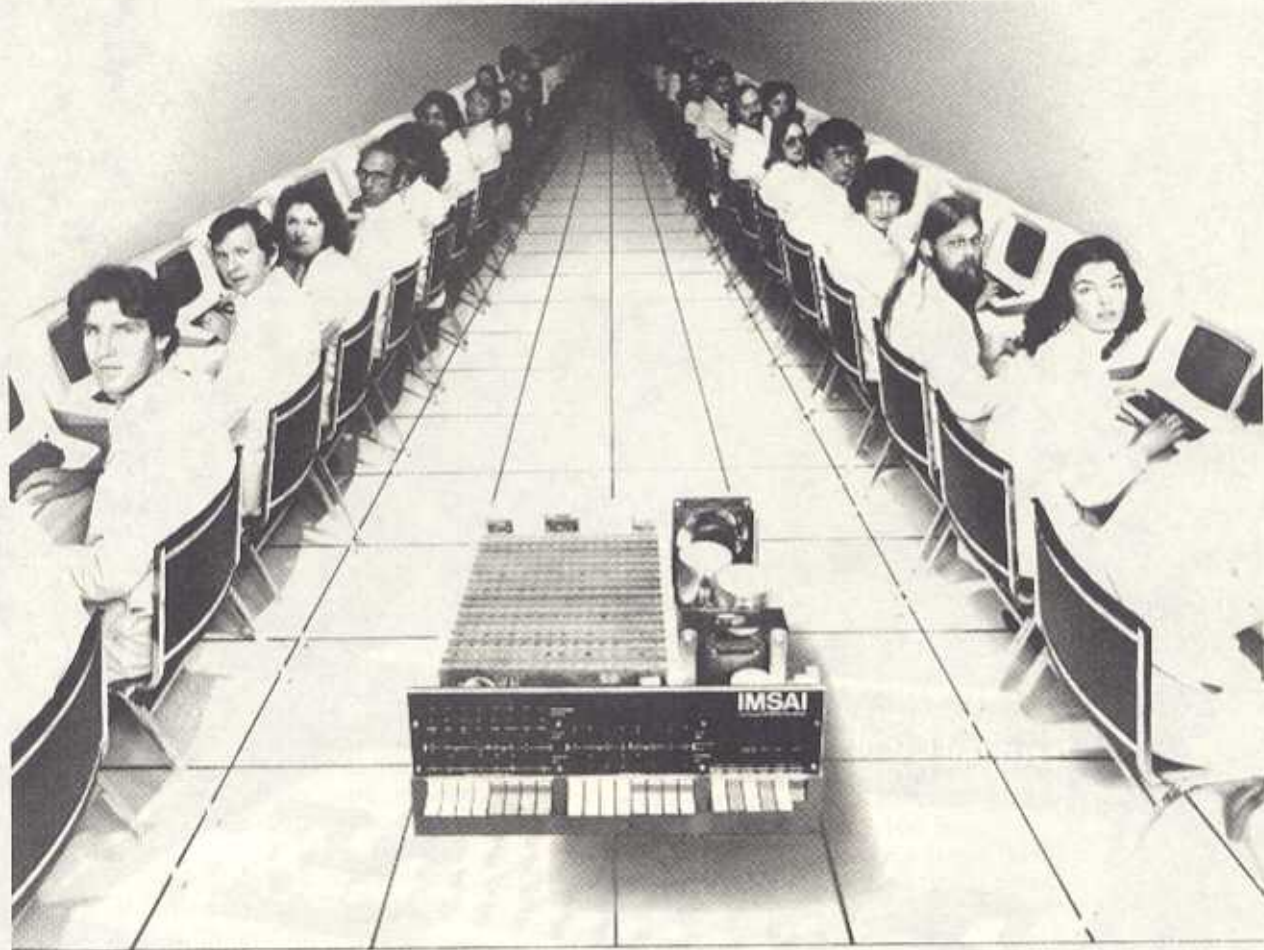
*Microcomputers: A New Era for Home Energy Management*

**SMOKING REGULATIONS**

For ventilation, health and safety reasons, smoking is allowed only in:

1. The Main Exhibits Arena on the first floor
2. The Polk Hall Exhibits area on the first floor
3. Explicitly designated areas of the Polk Hall Cafeteria & Lounge areas
4. The audience-left half of Larkin 103 & Larkin 105 Conference Halls.

# POWER.



## IMSAI Introduces the Megabyte Micro.<sup>TM</sup>

### The Megabyte Memory

Until today, the largest memory you could fit and address in a single microcomputer CPU was 65K.

Now, IMSAI presents an incredible memory system for micros 16 times more powerful than yesterday's best.

Imagine, a full megabyte of power from sixteen 65K RAM boards.

And, to control all this, the IMSAI Intelligent Memory Manager (IMM), the super control board.

You can write protect blocks throughout the full megabyte. Or, map in 16K blocks.

Plus, preset 16 mapping configurations with protect for high speed transfer or rapid change.

All interrupts are fully vectored, and there's an interrupt if an attempt is made to write into protected memory.

There's even a real "time of day" clock.

### 65K, 32K and 16K RAM Boards

Until today, the most memory you could plug into a single slot was 16K.

Now, IMSAI presents memory boards in astonishing multiples of sixteen: 65K, 32K and 16K low power, dynamic RAM Boards. They can be used in any S-100 bus computer individually or in combination to form conventional systems up to 65K bytes.

Every board is fast. With "hidden refresh" and no "wait state."

### The Complete Megabyte Microcomputer System

IMSAI is much more than a megabyte memory. It's a complete microcomputer system: dual floppy disks, terminals, plotters, printers.

IMSAI is also software. The finest peripherals and high level software available. Paper tape, Tape Cassette, and super Disk Operating Systems. Plus, BASIC and Disk BASIC with more high level languages coming.

Until today, the microcomputer's potential was just something you talked about.

Now, you can put it to work. Powerfully.

#### GENTLEMEN:

I'm power hungry!

- Send 65K RAM Board Kit \$2599  Assembled \$3999  
 Send 32K RAM Board Kit \$749  Assembled \$1099  
 Send 16K RAM Board Kit \$449  Assembled \$679  
 Send IMM ROM Control Kit \$299  Assembled \$399  
 Send IMM FROM Control Kit \$499  Assembled \$699  
 Send full catalog \$1.00

Check/MO enclosed. Am't \$

Charge my:  BAC  M/C

—

Exp. Date

Sig.

Send name of my nearest IMSAI dealer

Name

Company

Title

Address

City

State/Zip

## IMSAI<sup>TM</sup>

IMSAI Manufacturing Corporation  
 14860 Wicks Blvd.  
 San Leandro, CA 94577  
 (415) 483-2093 TWX 910-366-7287



# The first complete small computer.

As you thumb through this magazine, you'll see a lot of ads for small computers. For \$600 you can find a pretty good box with a power supply, four slot mother board, CPU module, and all the expected lights and switches.

But you know what? It won't work.

That's because in order to make the computer go you have to buy memory — normally both read-write (RAM) and read-only (PROM), interfaces to the outside world (parallel, serial, and cassette), keyboard, video display module, and software.

Add this all up and it's going to cost you at least \$1,400 for a complete system.

Got the picture?

Now listen to this. The remarkable new Sol-20 Terminal Computer will give you all of the above... plus more!... as *standard equipment* for just \$995, in kit form. This is because the Sol-20 — like no other small computer — was designed from the ground up to be complete.

Here's what the Sol-20 includes as standard equipment:

- 8080 microprocessor.
- Video display circuitry.
- 1024 words of static, low-power RAM.
- 512 words of preprogrammed PROM.
- Custom 85-key solid-state keyboard.
- Audio cassette tape interface.
- Both parallel and serial interfaces and connectors.
- Power supply.
- A beautiful case with solid walnut sides.
- Software that includes a preprogrammed PROM personality module and a cassette with BASIC-5 language plus two sophisticated computer video games.
- Full expansion capability with all S-100 bus (Altair/IMSAI/PTC bus) products.

It's a handsome terminal or computer that will even look good in your living room or office. Small systems start at just \$475.

#### Full expansion capability

The Sol-20 system can be tailored to your applications using the complete line of peripheral products from Processor Technology. These include the video monitor, audio cassette and digital tape systems, dual floppy disc system, memories, and interfaces... plus all other peripherals compatible with the S-100 bus.

The Sol-20 greatly simplifies the computer-buying process. It's a splendid package that will excite both present and prospective computer owners.

Our brochure tells all. Write for it today.

Processor Technology, Box Z,  
6200 Hollis Street, Emeryville, CA 94608.  
(415) 652-8080.



## The Sol-20 expandable system.

**Processor  
Technology**  
Corporation

SATURDAY, APRIL 16TH

LARKIN 105

LARKIN 103

3A

3B

3C

3D

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Computer-Driven Video Art Systems, Part I		Tutorials on Software Systems Design		Personal Computers for Education, Part I	People & Computers	10
	Tutorials for the Computer Novice		Bus & Interface Standards			11
		Heretical Proposals				12
Computer Art Systems, Part I					Legal Aspects of Personal Computing	1
	Electronic Mail			Personal Computers for Education, Part II		2
					Personal Computers for the Physically Disabled	3
Computer Art Systems, Part II		Implementation of Software Systems & Modules	Amateur Radio & Computers			4
	Computer Networking for Everyone				Personal Computers for Education, Part IV	5
Computer-Driven Video Art Systems, Part II				Personal Computers for Education, Part III		

SUNDAY, APRIL 17TH

LARKIN 105

LARKIN 103

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11	Music & Computers, Part I	Computers & Systems for Very Small Businesses	High-Level Languages for Home Computers, Part I	Commercial Hardware	Computer Retailing Panel	Microprogrammable Microprocessors for Hobbyists, Part I
12						
1						
2	Music & Computers, Part II	Human Aspects of Systems Design	High-Level Languages for Home Computers, Part II	Homebrew Hardware	Speech Recognition & Speech Synthesis by Computer	Microprogrammable Microprocessors for Hobbyists, Part II
3		Entrepreneurs			Residential Energy & Computers	High-Level Languages, Part III
4						Multi-Tasking on Home Computers
5						

**COMPUTERS & SYSTEMS FOR VERY SMALL BUSINESSES**

Sunday, 10:30 AM

Larkin 103

Michael Levy  
Jethro  
40 Boston Post Road  
Wayland MA 01778

*The Emperor has Few Clothes - Applying Hobby Computer Systems to Small Business*

Bob Barthelow  
Microbyte Computer Systems  
584 Rio Lindo Ave., Suite 4  
Chico CA 95926

*Microcomputer Based Small Business Systems*

**ENTREPRENEURS**

Sunday, 2:30 PM

Larkin 103

Carl Helmers, Editor-in-Chief  
BYTE Publications, Inc.  
70 Main Street  
Peterborough NH 03458

*The Software Dilemma*

Kenneth S. Wideltz, Attorney at Law, WA6PPZ  
10405 Louisiana, No. 8  
Los Angeles CA 90025

*Tax Aspects of Lemonade Stand Computing:  
When is a Hobby Not A Hobby?*

Walter Smith, Director of Marketing  
Quantum Science Corporation  
1100 Alma  
Menlo Park CA 94025

*Consumer Information Systems: A Merging of Data, Text,  
Graphics, Video & Voice*

**COMPUTER RETAILING PANEL**

Sunday, 11:00 AM

3 C

Ray Borrill, Panel Organizer  
Data Domain  
406 S. College  
Bloomington IN 47401

*Computer Retailing*

**SPEECH RECOGNITION & SPEECH SYNTHESIS BY COMPUTER**

Sunday, 12:30 PM

3 C

John Reykjalín & Horace Enea  
Heuristics, Inc.  
900 N. San Antonio Road--C1  
Los Altos CA 94022

*Speech Recognition Systems*

D. Lloyd Rice  
Box 1951  
Santa Monica CA 90406

*The Computer Should Speak YOUR Language*

Alice Wyland Grundt, Ph.D.  
Linguistics Department  
California State University at Fresno  
Fresno CA 93740

*Structured Programming in Speech Synthesis*

**TUTORIALS ON SOFTWARE SYSTEMS DESIGN**

Saturday, 9:00 AM

3 A

R.W. Ulrickson, President  
Logical Services Incorporated  
711 Stierlin Road  
Mountain View CA 94043

*Learning to Program Microcomputers? Here's How!*

Larry Tesler  
Xerox Palo Alto Research Center  
3333 Coyote Hill Road  
Palo Alto CA 94304

*Home Text Editing*

Ed Keith  
655 E. Orangecrest Road  
Glendora CA 91740

*Structured Programming for the Computer Hobbyist*

**SMOKING REGULATIONS**

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1. The Main Exhibits Arena on the first floor
2. The Polk Hall Exhibits area on the first floor
3. Explicitly designated areas of the Polk Hall Cafeteria & Lounge areas
4. The audience-left half of Larkin 103 & Larkin 105 Conference Halls.





GEE, YOU WOULDN'T BELIEVE HOW MANY PEOPLE I HAVE TO TELL TO KEEP THEIR HANDS OFF MY ASP SINCE I BEGAN WEARING THE OFFICIAL FIRST WEST COAST COMPUTER FAIRE T-SHIRT!!

## SHOW what you KNOW!!

Whether you're in the barroom or the boardroom, you may rest assured that The Official First West Coast Computer Faire T-Shirt (official attire for the Computer Faire) will bring to you sartorial splendor. This tri-color T-Shirt (top-o'-the-stack blue, Byte this! violet, up-&-running orange) will amaze your friends, restore hair, and prevent bullies from kicking sand in your face-if your friends are gullible, your alopecia was temporary, and you avoid beaches.

On the other back, who cares?

In separate laboratory tests, Dr Seymour Squintz (who was born outside of a log cabin in the Gaza Strip) stated: "When I go down to the beach of life [in my Official First West Coast Computer Faire T-Shirt] they may still kick sand in my mind's eye, but I see it as cause for the growth of a pearl rather than for the use of Visine."

The fact that Dr Squintz subsequently and tragically incurred major cataracts, vehemently denied he was an ardent voyeur, and accidentally committed reverse self-defenestration, is, of course, unfortunate. And we will probably stop using his testimonial.

In the meantime, whether you're a shareholder or a sharecropper, on the board of directors or simply bored of directors, buy a gross of these discreet garments, and flout them proudly. Equally at home under a motorcycle jacket or a Brooks Brothers, the Computer Faire T-Shirt will positively make you look stunning. Or maybe stunned.

In any case, keeping in mind that you are what you wear, and that, though this T-Shirt may be taken to the cleaners, you never will be, we think you will agree that the proposed investment of \$4 a shirt is modest-at least compared to this solicitation!

AFTER WEARING THIS T-SHIRT, THEY BANNED DATA BUSING IN BOSTON.

So, order generously. For as we sew, you shall reap.

(Please note: Because this is a limited edition, Officials from the Franklin Mint will, at an unspecified time, uproot our cotton plants, shred our silkscreen, and set our copy writer adrift on a small raft, blindfolded, in downtown Billings, Montana.)

If you want to Act Now!, contact the Actors' Guild. If you merely want to set the stage, then buy the Computer Faire T-Shirt.

YES!! Send to me immediately (as ordered) The Official First West Coast Computer Faire T-Shirt(s). I understand they are additionally fabulous for their unique property of both cradling the wearer, and swaddling bystanders-innocent and guilty alike-with exquisite envy. (So that Computer Faire may prepare legal defense for actionable horripilatory incitement, please indicate your first intended bystander:

Yves St Laurent,  EE professor who flunked me,  boss,  janitor,  janitor's tax accountant,  maitre d' at MacDonald's,  cat,  computer club executive council,  tech rep,  cheeky proctologist,  \_\_\_\_\_

I'M GLAD WE DON'T MAKE DELIVERIES TO NOME.



\_\_\_\_ S, \_\_\_\_ M,  
 \_\_\_\_ L, \_\_\_\_ XL SHIRT(S) @ \$4 \_\_\_\_\_

CALIFORNIA RESIDENTS ADD 6% TAX \_\_\_\_\_

1ST-CLASS POSTAGE & HANDLING (\$1/SHIRT) \_\_\_\_\_

TOTAL AMOUNT ENCLOSED \_\_\_\_\_

Please send your order & payment (check or money order), to:  
 Computer Faire  
 Box 1579, Palo Alto CA 94302  
 (415) 851-7664  
 Thank you.

NAME \_\_\_\_\_  
 STREET \_\_\_\_\_  
 CITY \_\_\_\_\_  
 STATE \_\_\_\_\_ ZIP \_\_\_\_\_

THE FIRST WEST COAST COMPUTER FAIRE  
 A CONFERENCE & EXHIBITION  
 ON PERSONAL & HOME COMPUTING  
 KILBEA

**THE PROM SETTER****WRITE and READ****EPROM**

1702A and 2708

- Plugs Directly into your ALTAIR/MSAI Computer
- Includes Main Module Board and External EPROM Socket Unit
- The EPROM Socket Unit is connected to the Computer through a 25 Pin Connector
- Programming is accomplished by the Computer
- Just Read in the Program to be Written on the EPROM into your Processor and let the Computer do the rest.
- Use Socket Unit to Read EPROM's Contents into your Computer
- Software included
- No External Power Supplies. Your Computer does it all
- Programs and Reads Both 1702A and 2708 EPROMS
- Doubles as an Eight Bit Parallel I/O
- Manual included

**KIT COMPLETE — \$165****ASSEMBLED — \$275***Delivery Less Than 60 Days***SZERLIP ENTERPRISES Booth 939**

1414 W. 259th St. — Harbor City California 90710

*California residents please add 6% sales tax.*

BOOTH 425

**LOGIC  
DESIGN  
INC**

**QUALITY** Support for those who wish to dig deeply into digital design.

Breadboarding System, textbook on logic design, and complete schematics for an elegant CPU that will run the PDP8 instruction set .. \$1095

132 IC's ..... \$ 87

TTY Interface ..... \$ 20

Memory ..... \$26/k

BOX 3991, UNIV. STATION  
LARAMIE, WY 82071  
(307) 742-7977

**AMERICAN MICROPROCESSORS EQUIPMENT & SUPPLY CORP.**

THE NATIONS MOST INFORMATIVE, WELL SUPPLIED  
COMPUTER STORE OUTLET WITH AMAZING VALUES I



- Automatic answer modem. Allows KISS System to automatically answer incoming telephone calls from remote terminals or computers. Remote terminals & devices use KISS as if they were connected directly. Password protection for programs, associated files, list protection and additional system security features are also provided.

**KISS STSEM 70 Includes**

- Kiss complete computer system with 32K memory, automatic monitor and interconnections to operate the following;
- Heavy duty general office or industrial Keyboard & Display unit with keys for all letters, numbers and special letters needed with separate numeric entry keypad and many other features.
- Dual floppy disc system & controller with dual DOS and 600,000 Bytes of random access storage (expandable to 4 floppys).
- Printer with 132 columns, upper case & lower case letters, carbon or fabric ribbon, multiple type styles, conventional solid print, (keyboard is low cost option).
- Dual cassette controller.
- 12K Basic language.
- Coresident editor/assembler.
- Full disc files capabilities.
- Several self-teaching business programs including many games.
- Thorough documentation.
- Diagnostics.
- Custom computer table.

OVER 100 KISS SYSTEMS SOLD...

OVER 21 MODELS TO SELECT FROM

TO MEET YOUR NEEDS !!!**AMERICAN MICROPROCESSORS EQUIPMENT & SUPPLY CORP.**

AT THE CHICAGOLAND AIRPORT  
20 NORTH MILWAUKEE AVENUE  
PRAIRIE VIEW, ILLINOIS 60069  
TELEPHONE: (312) 634-0076

**IMPLEMENTATION OF SOFTWARE SYSTEMS  
AND MODULES**

*Saturday, 1:00 PM*

3 A

Dennis Allison, Consultant  
169 Spruce  
Menlo Park CA 94025

*An Interpretive Approach to Implementing Programming  
Languages*

W. Kahan  
Dept. of Electrical Engineering & Computer Science  
University of California  
Berkeley CA 94720

*Floating Point Arithmetic - How to Get the  
Wrong Answer Sooner*

Roy Rankin  
2273 St. Francis Drive  
Palo Alto CA 94303

*Numerical Calculations on Microprocessors*

Dennis Burke  
4042 W. 139th Street No.7  
Hawthorne CA 90250

*Modular Relocatable Code*

David D. Sheretz  
Medical Information Sciences  
University of California Medical Center  
San Francisco CA 94143

*An Implementation Technique for MUMPS*

**HIGH LEVEL LANGUAGES  
FOR HOME COMPUTERS, Part I**

*Sunday, 10:30 AM*

3 A

Kenneth B. Welles II, Ph.D.  
2623 Fenwick Road  
University Heights OH 44118

*Fortran for Your 8080*

Tom Pittman  
Box 23189  
San Jose CA 95153

*Computer Languages: The Key to Processor Power*

**HIGH LEVEL LANGUAGES, Part II**

*Sunday, 1:00 PM*

3 A

Martin Buchanan  
2040 Lord Fairfax Road  
Vienna VA 22180

*Design and Implementation of HI*

John A Starkweather, Director  
Computer Center  
University of California Medical Center  
3rd and Parnassus  
San Francisco CA 94143

*A PILOT Interpreter for a Variety of 8080-Based Systems*

Jef Raskin  
Box 511  
Brisbane CA 94005

*New Languages for Micros: A Discussion*

**HIGH LEVEL LANGUAGES FOR  
HOME COMPUTERS, Part III**

*Sunday, 2:30 PM*

3 D

Bob Wallace  
Box 5415  
Seattle WA 98105

*EMUL-8: An Extensible Microcomputer User's Language*

**MULTI-TASKING ON HOME COMPUTERS**

*Sunday, 3:00 PM*

3 D

Bob Wallace  
Box 5415  
Seattle WA 98105

*EMOS-8: An Extensible Microcomputer Operating System*

Joseph G. McCrate  
Cromemco, Inc.  
2432 Charleston  
Mountain View CA 94043

*A New Approach to Time-Sharing with Microcomputers*

George Pilipovich  
MVT Microcomputer Systems, Inc.  
Box 62  
Agoura CA 91301

*Microcomputers and Multi-Tasking:  
A New Dimension in Personal Computing*

**HOME BREW HARDWARE**

Sunday, 1:00 PM

3 B

Kenneth B. Welles II, Ph.D.  
2623 Fenwick Road  
University Heights OH 44118

*A Floppy Disk Controller for Under \$50*

Carl Townsend  
Center for the Study of the Future  
4110 N.E. Alameda  
Portland OR 97212

*Interfacing a Selectric to Your Computer*

Robert A. Tuttle, Jr.  
Medical Methods Research  
3700 Broadway  
Oakland CA 94611

*A Fault Isolation Troubleshooting System for the  
Multi Vendor Environment*

William J. Schenker, M.D.  
2086 Essena Ave.  
Walnut Creek CA 94596

*Solenoids Provide Software Control of a Home Cassette  
Recorder*

---

**ADDRESSES OF CO-SPONSORS  
OF THE FAIRE**

Homebrew Computer Club  
Box 626  
Mountain View CA 94042

Southern California Computer Society  
Box 5429  
Santa Monica CA 90405

San Francisco Peninsula ACM\* Chapter  
Box 60355  
Sunnyvale CA 94088

Golden Gate ACM\* Chapter  
Box 26044  
San Francisco CA 94126

Santa Clara Valley IEEE-CS\* Chapter  
701 Welch Road No. 2210  
Palo Alto CA 94304

California Mathematics Council  
3360 Tonga Lane  
Alameda CA 94501

Electrical Engineering Department  
Stanford University  
Stanford CA 94305

Lawrence Hall of Science  
University of California  
Berkeley CA 94720

**BUS & INTERFACE STANDARDS**

Saturday, 9:00 AM

3 B

Tony Pietsch  
Proteus Engineering  
1717 E. Oakdale Ave.  
Pasadena CA 91106

*Standardization of the S-100 Bus:  
Timing and Signal Relationships - a Proposed Standard*

Cesar Castro & Allen Heaberlin  
295 Surrey Place  
Bonita CA 92002

*A Microprocessor Independent Bus*

Gary McCray  
188 Western Avenue  
Livermore CA 94550

*16-Bit and 32-Bit Adaptations of the S-100 Bus Standard*

William J. Schenker, M.D.  
2086 Essena Avenue  
Walnut Creek CA 94596

*A Biomedical Application Using the S-100 Bus Standard*

James T. Walker  
64F Escondido Village  
Stanford CA 94305

*DMA Operation Protocol in the S-100  
Bus Environment*

---

People's Computer Company  
Box E  
Menlo Park CA 94025

Community Computer Center  
1919 Menalto  
Menlo Park CA 94025

Bay Area Microcomputer Users Group  
1211 Santa Clara Avenue  
Alameda CA 94501

Professional & Technical Consultants Assn.  
1 First Street  
Los Altos CA 94022

Amateur Research Center  
Space Science Center  
Foothill College  
Los Altos CA 94022

\*ACM: Association for Computing Machinery  
IEEE-CS: Institute of Electrical & Electronics  
Engineers - Computer Society

# ROM

COMPUTER APPLICATIONS FOR LIVING

## The magazine that actually tells you what to do with your personal computer

ROM is the magazine that helps you *use* your personal computer. Computer games are lots of fun, but there's another whole big world out there. Computer-controlled environments from bathrooms to greenhouses, solar home energy, semirobotic servomechanisms—even the real robot—you'll find them all in ROM.

There's computer aid for the handicapped, instant video home news, voice control that really talks, practical software you can use right now, graphics, puzzles—yes, games too. And lots more every month . . .

ROM opens the door with simple solutions to complicated problems, the best in new peripherals, and great ideas on what to do with it all from Bill Etra, Lee Felsenstein, Avery Johnson, Theodor Nelson, Frederik Pohl, Andrew Singer, Alvin Toffler, Joseph Weizenbaum, Hesh Wiener, and the rest of the top writers in the field.

## Coming Up in ROM

- Why Can't a Computer Be More Like a Man?
- Sheltering Your Computer in Style
- Inside Intel
- Diary of a Distaff Designer
- Micros Hit Wall Street
- The Magic of Memory
- Imagining with IMSAI
- Sailing by Computer
- The Computer Diet
- Building the Tote-a-Terminal
- Play It Again, Sphere
- Fleshing Out Your Robot—Synthetic Skin and How to Make It
- Color Crunching with Cromemco
- The Magic Mystical Bulletin Board
- Adding a Third Dimension to Your CRT
- The Magic Wand Connection

ROM Publications Corporation

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## ROM Helps

Check out where microcomputing is headed in Bill Etra's "ROMifications" column. Then find out why your machine doesn't return your tender loving care in Andrew Singer's column, "The Human Factor." You won't be able to pass up that perennial pea-in-the-Princess-Computer-Company's-mattress, Theodor Nelson, as he keeps the outfit from going to sleep with "The Missionary Position" . . .

Other special regular features include "ROMdiscs," "ROMtutorials" (which lead the novice gently through the maze of microcomputing), "PROM-puzzles," and "FloppyROMs," not to mention lots of surprises every month. And if you have questions, or something to tell us, you get your chance regularly in the "Reader Interrupt" column.

Plus more on art, music, graphics, medicine, psychology, public access, communications—the whole big ball of wax *from the future to you today* in ROM.

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### MICROPROGRAMMABLE MICROPROCESSORS FOR HOBBYISTS, Part I

Sunday, 10:30 AM

3 D

John Birkner  
Monolithic Memories  
1165 E. Arques Ave.  
Sunnyvale CA 94086

*Microprogramming for the Hobbyist*

David C. Wyland  
Raytheon Semiconductor  
350 Ellis St.  
Mountain View CA 94042

*Large Scale Computers for the Hobbyist*

### MICROPROGRAMMABLE MICROPROCESSORS FOR HOBBYISTS, Part II

Sunday, 1:00 PM

3 D

Tom Pittman & Bob Davis  
Box 23189  
San Jose CA 95153

*VACuum: A Variable Architecture Computing Machine*

John R. Mick  
Advanced Micro Devices  
901 Thompson Place  
Sunnyvale CA 94086

*Bipolar Microprocessor Microphobia*

### PRE-NCC COMPUTER CLUB LEADERS PLANNING SESSION

Sunday, 12:00 noon

Room 328

Session Organizer: Rich Kuzmack, President  
Chesapeake Microcomputer Club, Inc.  
Box 87  
McClellan VA 22101

### TOPIC-ORIENTED SOCIAL CENTERS

Please note that the Lounge area of Polk Hall includes topic-oriented areas for those wishing to meet and discuss particular topics from the world of personal computers. Wander in; sit down; relax a bit, and see what sort of interesting conversations develop. The topics include:

- Computers for People, and Computer Dilettantes
- Art, Music, and Computers
- Computer Hardware & Software
- Radio, Computers, and Networking
- Legal & Business Aspects of Personal Computers

### AMATEUR RADIO & COMPUTERS

Saturday, 1:00 PM

3 B

Richard Sherman, Ph.D., Section Organizer  
10595 Orange Tree Lane  
Cupertino CA 95014

Robert C. Brehm  
Promedics Data Corporation  
Box 7454  
Menlo Park CA 94025

*Ham RTTY: Its Evolution and Future*

Clayton W. Abrams, K6AEP  
1758 Comstock Lane  
San Jose CA 95124

*Generate SSTV with Your SWTPC 6800 Microprocessor*

Ivar Sanders, W6JDA  
1161 Ribier Ct.  
Sunnyvale CA 94087

*CW Operator's Utopia - Automatic Transmission  
and Reception*

Lou Dorren, WB6TXD  
107 W Bayshore Blvd  
San Mateo CA 94401

*Microprocessor Control of a VHF Repeater*

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### SAN FRANCISCO EVENTS INFORMATION

You may call (415) 391-2000 to obtain a two-minute, recorded summary of special events, cultural happenings, sightseeings tips, etc., in the San Francisco area.

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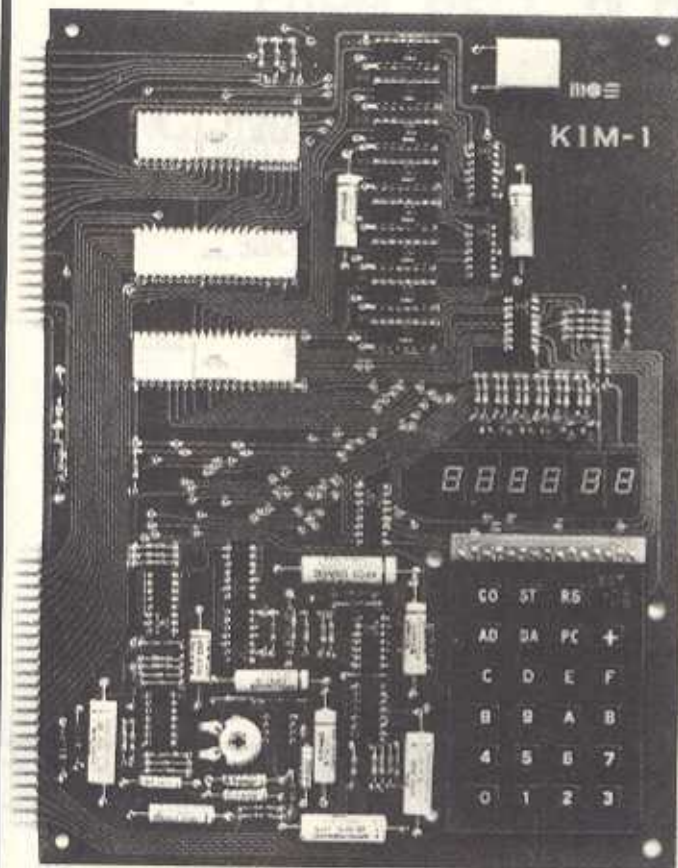
### CONFERENCE REFEREES

The Computer Faire would like to express its sincere thanks for the time and effort expended by the following individuals in refereeing the multitude of papers and abstracts that were submitted to be considered for presentation in the Conference activities at the Faire.

#### *Committee of Referees*

Phyllis Cole, Editor, *People's Computer Company*  
Marc Le Brun, Personal Computers Editor, *Co-Evolution Quarterly*  
Bob Reiling, Editor, *Homebrew Computer Club Newsletter*, & Computer Faire Operations Coordinator  
Larry Tesler, Xerox Palo Alto Research Center  
David Wyland, Raytheon Semiconductor  
Jim Warren, [ex-officio member] Editor, *Dr. Dobb's Journal of Computer Calisthenics* & Computer Faire Chairperson

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## WORKING SESSION FOR COMPUTER CLUB NEWSLETTER EDITORS

Sunday, 10:00 AM

Room 328

John Marshall, Session Organizer  
Box 242  
Renton WA 98055

### Content of Newsletters

Joel Miller  
Fairchild Semiconductor  
M/S 14-1055  
464 Ellis St.  
Mountain View CA 94042

### Preparation of Articles

Brent Sack, Art Director  
Laurel Publications  
18385 Main Blvd.  
Los Gatos CA 95030

### Preparation of Camera-Ready Copy

Bob Wallace  
Box 5415  
Seattle WA 98105

### Newsletter Exchanges

Larry Press  
1702 Ashland  
Santa Monica CA 90405

### Teleconferencing

Bob Reiling  
Box 626  
Mountain View CA 94042

### Radio & Telephone Exchange Newsletter

## FREE SHUTTLE BUS SERVICE

St Francis Hotel to Civic Auditorium  
by Gray Line buses

### Saturday, April 16th:

- 8 a.m. to 10 a.m., continuous round-trip shuttles  
(first St Francis departure: 8 a.m.)
- 10 a.m. to 4:30 p.m., half-hour interval shuttles  
St Francis departures on the hour  
Civic Auditorium departures on the half hour
- 4:30 p.m. to 6:30 p.m., continuous round-trip shuttles  
(final Civic Auditorium departure: 6:30 p.m.)

### Sunday, April 17th:

- 9 a.m. to 11 a.m., continuous round-trip shuttles  
(first St Francis departure: 9 a.m.)
- 11 a.m. to 5:30 p.m., half-hour interval shuttles  
St Francis departures on the hour  
Civic Auditorium departures on the half hour  
(final Civic Auditorium departure: 5:30 p.m.)

## 8080 Microcomputer Software For Sale

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Interactive Computers  
P.O. Box 36584  
Houston, Texas 77036

## COMMERCIAL HARDWARE

Sunday, 10:30 AM

3 B

Richard Erickson, President  
Sunrise Electronics  
228 N. El Molino  
Pasadena CA 91101

*A Computerized PROM Programmer, PROM Emulator, and Cross Assembler System*

Alice E. Ahlgren, Ph.D.  
Cromemco, Inc.  
2432 Charleston  
Mountain View CA 94043

*A New Approach to Microcomputer Systems for Education*

Phil Roybal  
M/S 470  
National Semiconductor  
2900 Semiconductor Drive  
Santa Clara CA 95051

*The New Microprocessor Low Cost Development Systems*

Glenn E. Ewing, Senior Engineer  
IMSAI Manufacturing Corp.  
14860 Wicks Blvd.  
San Leandro CA 94530

*A Megabyte Memory System for the S-100 Bus*



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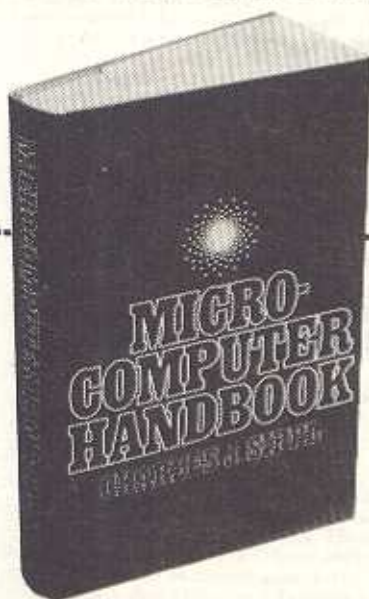
**MICROCOMPUTER HANDBOOK** BY CHARLES J. SIPPL

Microcomputers, tiny yet powerful and capable, have changed the characteristics of performance for all computers.

This volume serves as the basic guide to all computer users, designers and students who must learn to use these low-cost microminiaturized control devices. \$19.95

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Room 308  
Dr. Franz Frederick  
Room 112, Education Building  
Purdue University  
W. Lafayette IN 47907  
(317) 749-2589

[Computer controlled "turtle"]

Room 304  
Laurence R. Upjohn  
7297 Stanwood Way  
Sacramento CA 95831  
(916) 453-2476 x 3305

[Direct human interface!]

Room 304  
Dave Arnold & Don Hanson  
116F Escondido Village  
Stanford CA 94306  
(415) 497-4971

[100% Homebrew system]

Room 304  
Joseph V. Jaworski  
7051 Natal Drive No. 128  
Westminster CA 92683  
(714) 835-6000 x 426

[Low cost 6800 Hardware design]

Room 303  
Center for Contemporary Music  
Mills College, Box 9991  
Seminary and MacArthur Ave.  
Oakland CA 94613  
(415) 635-7620

[Oracle Booth!]

Room 301  
Donald C. Schertz  
764 Toyon Drive  
Monterey CA 93940  
(408) 646-2982

[Multi voiced music synthesizer]

Room 305  
Tony Williams & Jim Coe  
PO Box 369  
Mill Valley CA 94941  
(415) 383-7074

[Computer generated &amp; controlled audio]

Room 312  
George Ledin Jr.  
Computer Science Department  
Harney Science Center  
University of San Francisco  
San Francisco CA 94117  
(415) 666-6530

[Time share game playing &amp; small computer building exhibit]

Room 308  
Arthur Weigel  
671 Iris Ave No. 14  
Sunnyvale CA 94086  
(408) 734-8102 x 550

[Self learning system]

Room 307  
Nishan Urkumyan  
321 Cory Hall  
University of California  
Berkeley CA 94720  
(415) 642-3730

[Computer driven locking system]

Room 307  
Dennis L. Wong  
11266 Monterey Court  
Cupertino CA 95014

[Micro disc Business Application]

Room 307  
Steven S. Shaw  
6520 Beadnell Way No. 2E  
San Diego CA 92117  
(714) 452-4016

[Computer Color Graphics]

Room 307  
Daniel L. Wright & Richard Fish  
280 Perrymont Ave. Apt. 1  
San Jose CA 95125  
(408) 297-3000 x 3828

[6800 Based Home Micro System]

Room 307  
Ken McGinnis, M.D.  
Box 2078  
San Mateo CA 94401  
(415) 343-5611

[Dual Homebrew System]

Room 307  
John S. French  
846 Tamarack Ln.  
Sunnyvale CA 94086  
(408) 745-4763

[Homebrew Micro System]

Room 308  
Don R. Donfray  
770 Lakehaven Dr.  
Sunnyvale CA 94086  
(408) 245-7100

[Complete Small Computer System]

Room 308  
Ben J. Milander  
1439 Kinsport Ln.  
San Jose CA 95120  
(408) 256-1832

[Homebrew 8080 System]

**TELEPHONE MESSAGES**

Pacific Telephone staff is manning a Message Center in the Main Lobby of the Civic Auditorium. Those wishing to have messages posted on Pacific Telephone's message boards may call (415) 864-9900.

# Complete Control.



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Intel developed the world's first single chip microcomputer. IMSAI has built the system to put it to work. Instantly!

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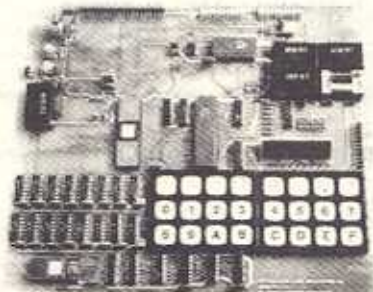
Intel designed the 8048/8748 single chip microcomputer with one thought in mind. Complete control. Everything you need is there: CPU, RAM, 1K ROM/EROM, I/O, timer, counter, interrupts...

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				E & L INSTRUMENTS C/O I/M, INC. 80 W. EL CAMINO REAL, #C MT VIEW CA 94040 (415)961-2828	201

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I-8080 Box + S.D.-ZPU + EXP-22	\$749
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I-8080 Box + TDL-ZPU + EXP-22	\$839
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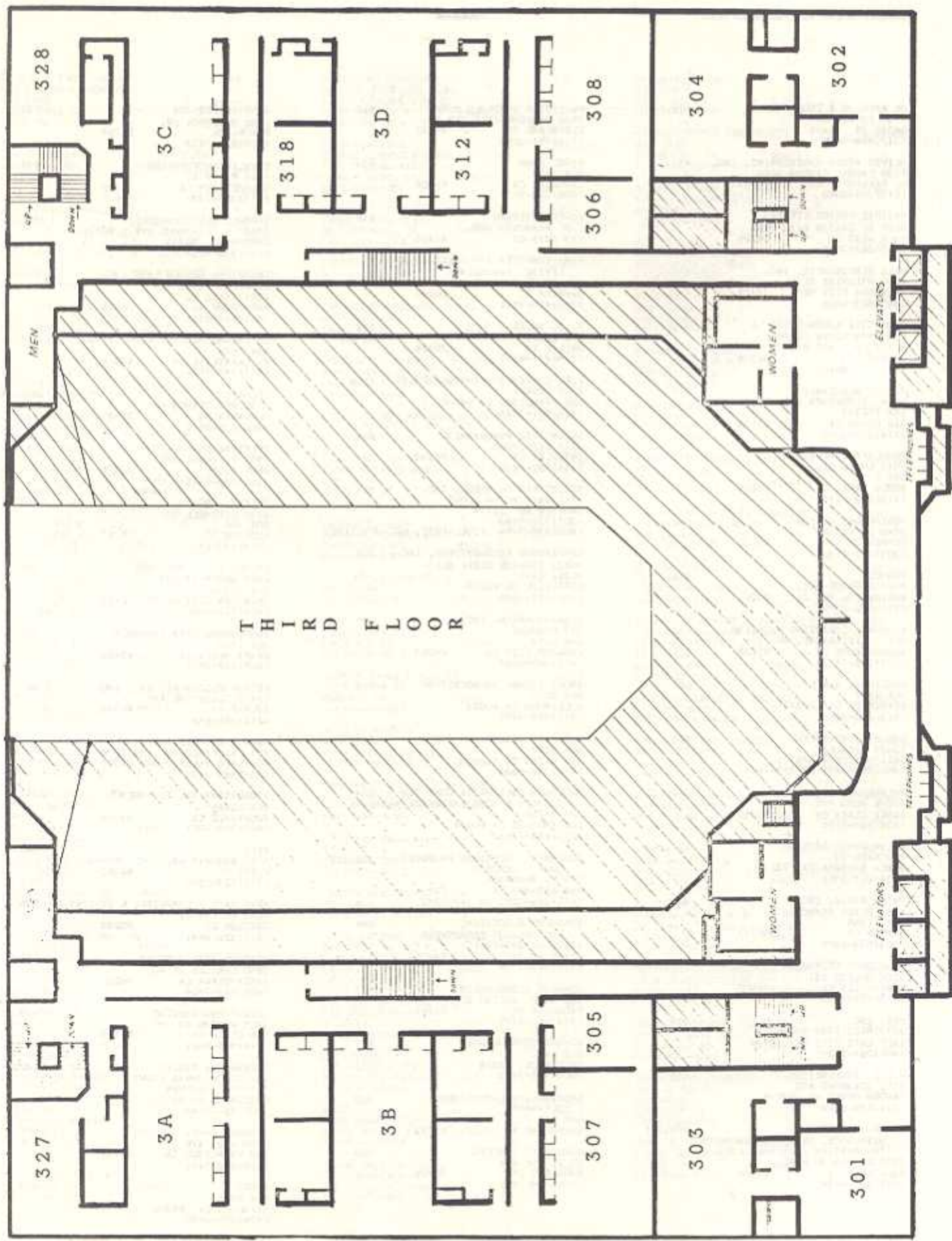
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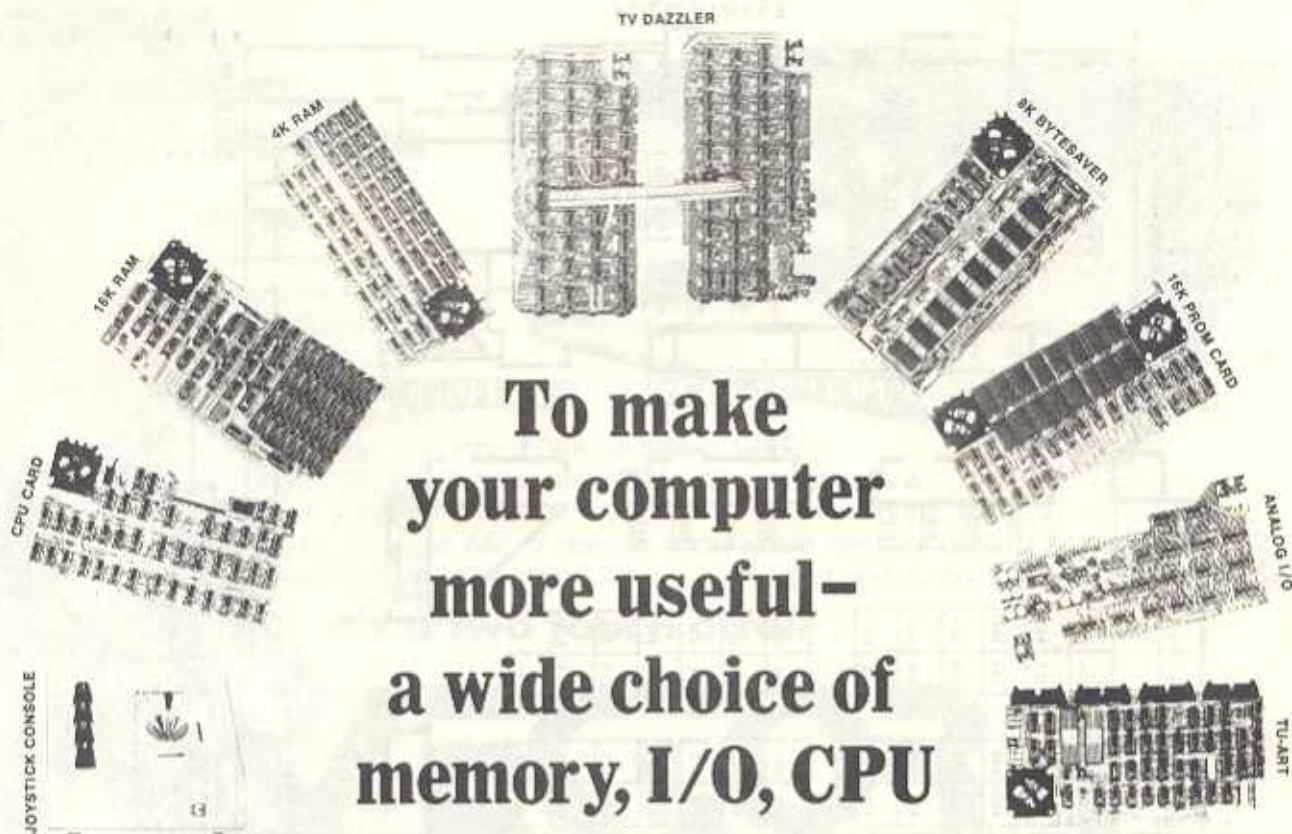
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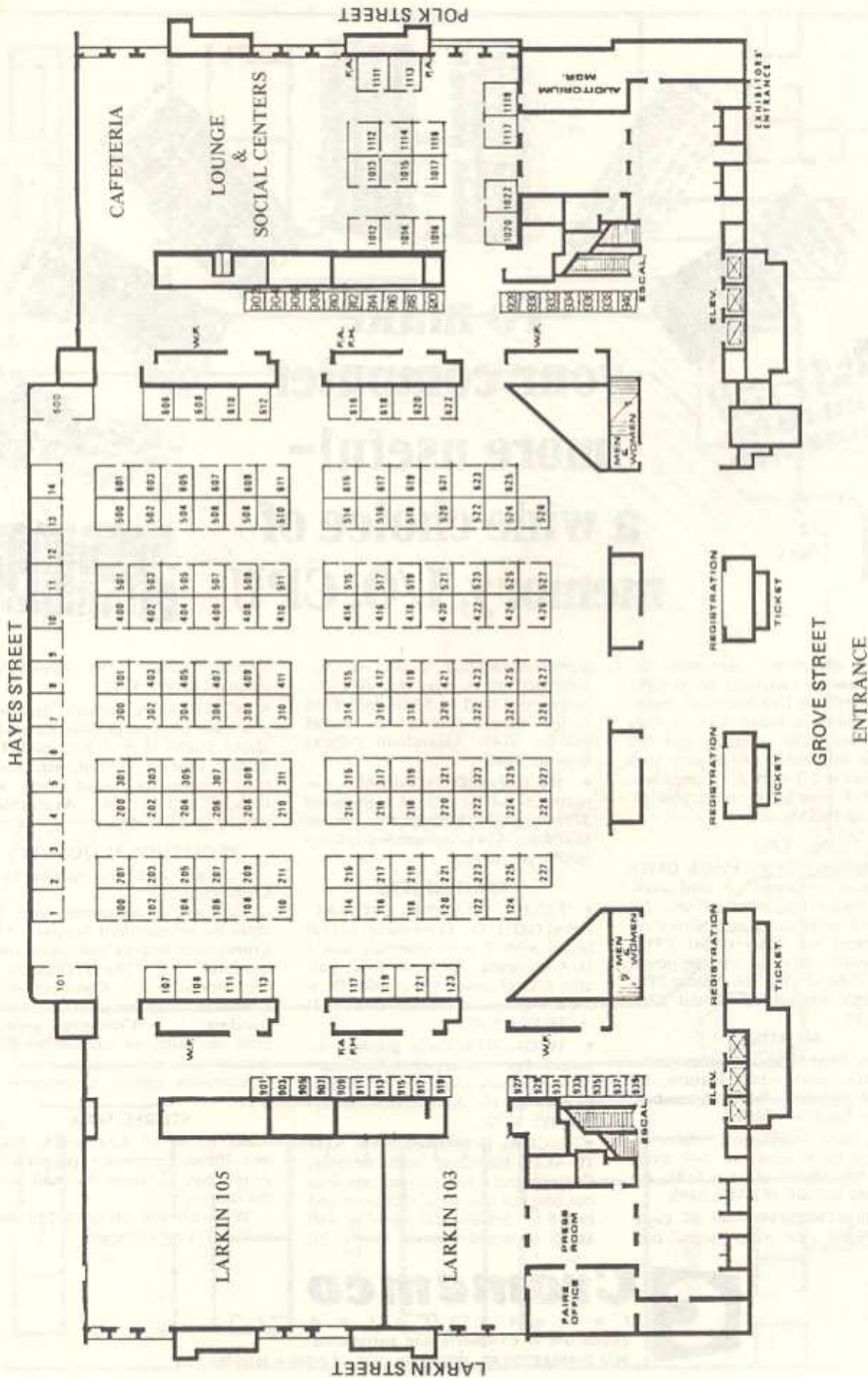


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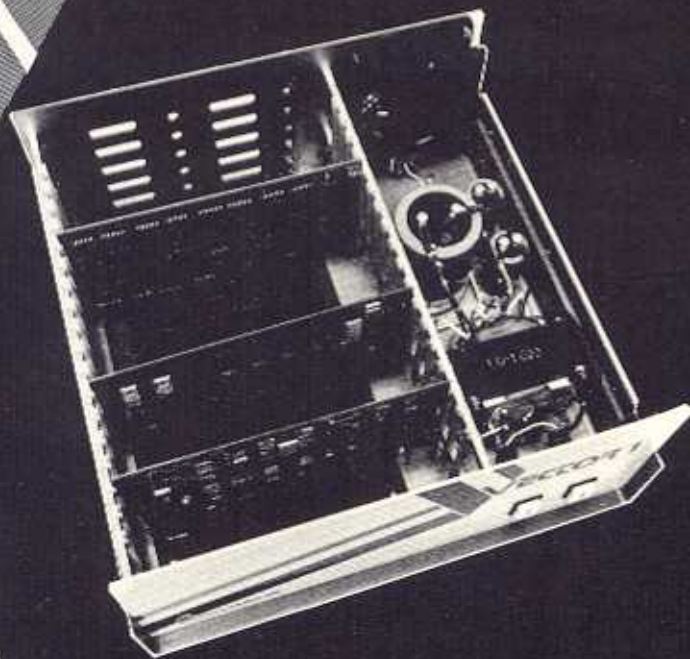
# Now. THE PERFECT MICROCOMPUTER

## TECHNICAL INFORMATION

The VECTOR 1 is an exceptionally versatile general purpose byte-oriented digital computer. It is based on the 808A Microprocessor and the common S-100 bus structure. The Intel 808A provided with the VECTOR 1 has 78 basic machine language instructions and a minimum instruction cycle of two microseconds. There is room for up to 64K of directly addressable memory using a parallel 8 bit word/16 bit address and 256 separate input and output devices can be addressed.

**It's a two touch affair**

# VECTOR 1



## DESIGN FEATURES

The VECTOR 1 incorporates improvements in mechanical, thermal, and electrical design compared to competitive computers. A mechanically rigid heavy .093" gauge cabinet retains its structural integrity even with the cover removed. A low noise level fan is standard, and cross ventilation uniformly cools each circuit board. The power supply components transfer their heat directly to the case bottom for cool operation. A line filter is provided to prevent transients on the power line from causing memory errors, a common problem.

NOT AFFILIATED WITH VECTOR GENERAL INC.

## EASE OF CONSTRUCTION

The mechanical assembly of the case and card guides is simplified through the use of special fasteners and snap together components. No sheet metal screws are used. By providing a system monitor program on PROM, several advantages are achieved: Wiring cables and unreliable front panel circuitry are eliminated allowing the 8080A MPU to operate as it was intended. The computer can load cassette tapes or communicate with a terminal through an I/O board as soon as the power is turned on, eliminating tedious loading of bootstraps with front panel switches. Since all of the electronic circuitry is on plug-in boards, trouble shooting is simplified.

## COMPATIBILITY

All of the current 8080A software is compatible with the VECTOR 1, with the exception of minor patches to the I/O routines, as are most boards for the S-100 bus.

## POWER SUPPLY

The 18A 8V and 2.5A  $\pm$  16V custom supply provides sufficient power for a full 18 boards. The transformer has a multiple tapped primary, all class B insulation and the 8V supply has a 150,000 mfd filter capacitor.

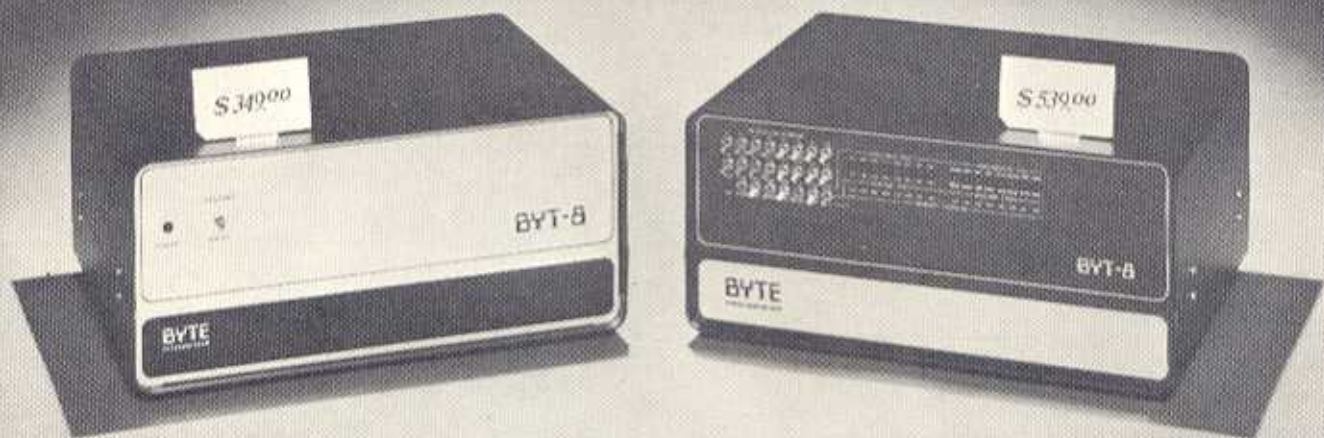
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