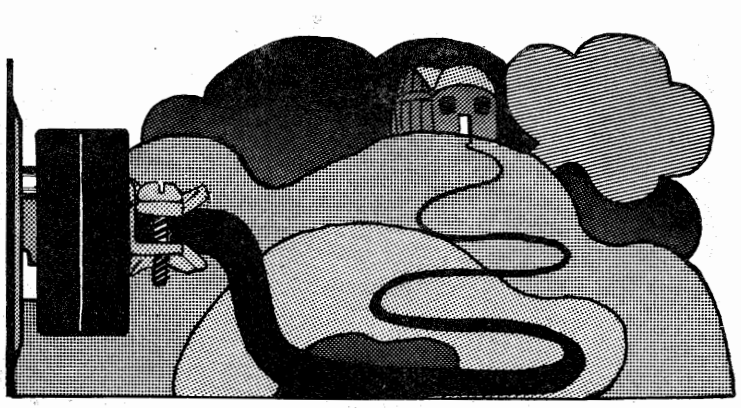
NEWSLETTER

Homebrew Computer Club



Robert Reiling, Editor — Post Office Box 626, Mountain View, CA 94042 — Joel Miller, Associate Editor

Typesetting and Graphics donated by LAUREL PUBLICATIONS; Brent Sack, Art Director, 18385 Main Blvd., Los Gatos, CA 95030 (408) 353-3609

CMOS COOKBOOK BOOK REVIEW

by John Schulein

CMOS Cookbook by Don Lancaster, published by Howard Sams & Co., Inc.

CMOS has been called the first "hassle free" digital logic family. It's ultra-low in cost and is available in hundreds of devices from a dozen manufacturers. With these words, Don Lancaster begins a new book loaded with material to bring you up to date on CMOS technology.

Don Lancaster's first TV typewriter (TVT-1) construction project published in Radio-Electronics in 1973 convinced me to undertake the construction of a home computer. When I saw his article, I decided it was possible to build an inexpensive but fairly powerful I/O device. After some redesign for a synchronous clock, I built the TVT-1 and then went on to put together a home computer system.

Don Lancaster's new book is a great introduction to CMOS and basic logic design. The first chapter explains CMOS basics and usage reles along with other handy infor such as breadboarding, tools, sources, etc. Chapter 2 contains a numeric and functional index to most common CMOS ICs. Also given are a series of data sheets along with a general description of the device, how to use the device and any known usage restrictions.

General logic design is well covered in the third chapter; multivibrator designs are presented in the fourth. Chapter 5 discusses clocked logic and two common CMOS clocked flip-flops—the 4013 and the 4027. This chapter also covers counter designs, touch and proximity circuits, synchronizers, D/A converters, phase detectors and a tuning indicator.

Chapter 6 deals with counters and shift registers; Chapter 7 covers CMOS op-amps, analog switches and phase-locaed loops. The final chapter is titled, "Getting It All Together" and covers several logic designs including a digital wristwatch, a frequency counter, the bit-boffer Digital Cassette Recorder and a TVT-4 TV typewriter.

The book is well done and worth the $9.95 price. My only reservation is that more logic designs with synchronous clocks are needed. □

COMPUTER MUSIC INTEREST GROUP FORMING

The organizational meeting for a new Computer Music Interest Group was held on Wednesday evening, March 9, 1977, at the Community Computer Center in Menlo Park.

According to Jim Holliday, provisional chairperson of the group, it has been organized to stimulate serious interest in this field, both from the local homebrew computer hobbyist community and the musical community. The main focus will be on hardware and software, illuminating the technical "how-to" for the construction of a nicro computer-based music synthesizer system. A mutual educational and information exchange effort will be mounted for this, and the group will be especially interested in providing a forum for those who have acquired some degree of expertise in the field.

The group will place special emphasis on the needs of the creative musician, considering requirements at the top of a top-down design approach. *Next meeting will be at the same location, Wednesday, March 23, beginning at 7 pm. For further details, contact Jim Holliday at (415)348-0852.* □

SANTA CRUZ CLUB GROWS UP

by Joel Miller

The Santa Cruz Computer Club is relaxed, interesting and well organized. A small club with about 30 members, the Santa Cruz club meets at 7 pm on the first Tuesday of every month. Meetings are held at the Mission Hill Junior High School near the intersection of Mission and King Streets in Santa Cruz.

Meetings are generally begun with a demonstration. So far, systems have been demonstrated by Processor Technology, software expert Ed Hall and the *ubiquitous computer junkie* Dan Sokol. National Semidestructor was in last meeting's limelight with a rather long-winded but informative lecture by Wayde Miricle and John Snyder on National's microcomputer products, especially PACE. About 30 members attended this meeting.

Next month's meeting will feature a panel discussion analyzing the pros and cons of various computer kits. Scheduled to sit on the panel are Dan Sokol with his two bits on SOL; Ed Hall, the game of Life wiz; Hank Ebertshaeuser of the now-defunct Santa Cruz Byte Shop and Gary Muhonen, designer of the PROROM memory board. The major areas of discussion will be each kit's capabilities for applications such as education, text editing, graphics, general programming, dedicated applications, etc. Also to be discussed are kit quality, ease of construction and availability of software for the intended use.

For more information, contact club chairman Tom Halvorsen at (408)335-5091. □

REDUCED ADMISSION FOR HCC MEMBERS AT FAIRE

Homebrew Computer Club members may obtain a reduced admission rate for The First West Coast Computer Club Faire by completing the special Homebrew Computer Club Preregistration Form.

The special Homebrew Computer Club preregistration admission fee is $7.00 (Normal Preregistration is $8.00; at the door $9.00.) This admission fee covers admission to all exhibits and official conference sessions, April 16 and 17, 1977. The special preregistration form may be obtained at Homebrew Computer Club meetings during March or by sending a stamped and self addressed envelope to the Homebrew Computer Club Newsletter, Attention Computer Faire, Post Office Box 626, Mountain View, CA 94042. Please allow sufficient time for Post Office handling. The completed Preregistration Form must be recieved by The First West Coast Computer Faire on or before April 4, 1977. □

SURVEY TABULATING PROGRAM

by Ed Hughot

The latest computer survey printed in the Feb 16 *Newsletter* shows how the club is growing. One problem with the survey is that, while very nicely printed, it takes some time to determine which brand is in first, second, ..., nth place. And even though it doesn't take very much time to find that IMSAI-8080 is number one, you have to whip out your calculator to figure what percentage of all computers are IMSAI.

These problems are solved by the program shown in Listing 1. The survey results are not only tabulated but also sorted in order of greatest to least total items in the class, the percentages are printed out, and total in all classes is shown. A sample computer run is shown in Listing 2 to demonstrate how easy it is to get the results of a survey.

The program is written in Altair-compatible BASIC and is very general. It can be used for any kind of a survey or even an election. Since the program is so easy to modify it can be tailored to custom applications. For example, if you are only going to use the program for club computer surveys, then the headings are part of the program and not imput data.

Modifications to the program can extend its usefulness. Another count vector could be added. Then you can select which count to sort on. Or the list could be sorted by alphabet or by device (all 8080s, etc.). And a little math at the end would compute and report the number of computers per person and project the number of computers in the club.

Statement 50 shows the string, tally and pointer vectors all dimensioned to 20. To accommodate this amount of string space it is necessary to insert statement 30. The sort-in statements 340-390 are a simple bubble sort. This is very crude, but since there are only 20 classes the technique is justified. Studies on the subject have shown that advanced sorting techniques are not cost effective for less than 100 items.

Note that the data is not sorted at all. A pointer is initialized in lines 310-330 and is sorted instead. This saves moving all of the string and numeric data around. Finally, the object of a survey is to find what is the predominant class. Therefore, in line 350 the test is the opposite of the more typical sort in ascending order.

Editor's Note: Ed will supply the source paper tape with documentation for a $2.00 handling charge. Write Edward E. Hughot, Polyhedral Systems, 437-A Aldo Ave., Santa Clara, CA 95050; copyright 1977, Edward E. Hughot □

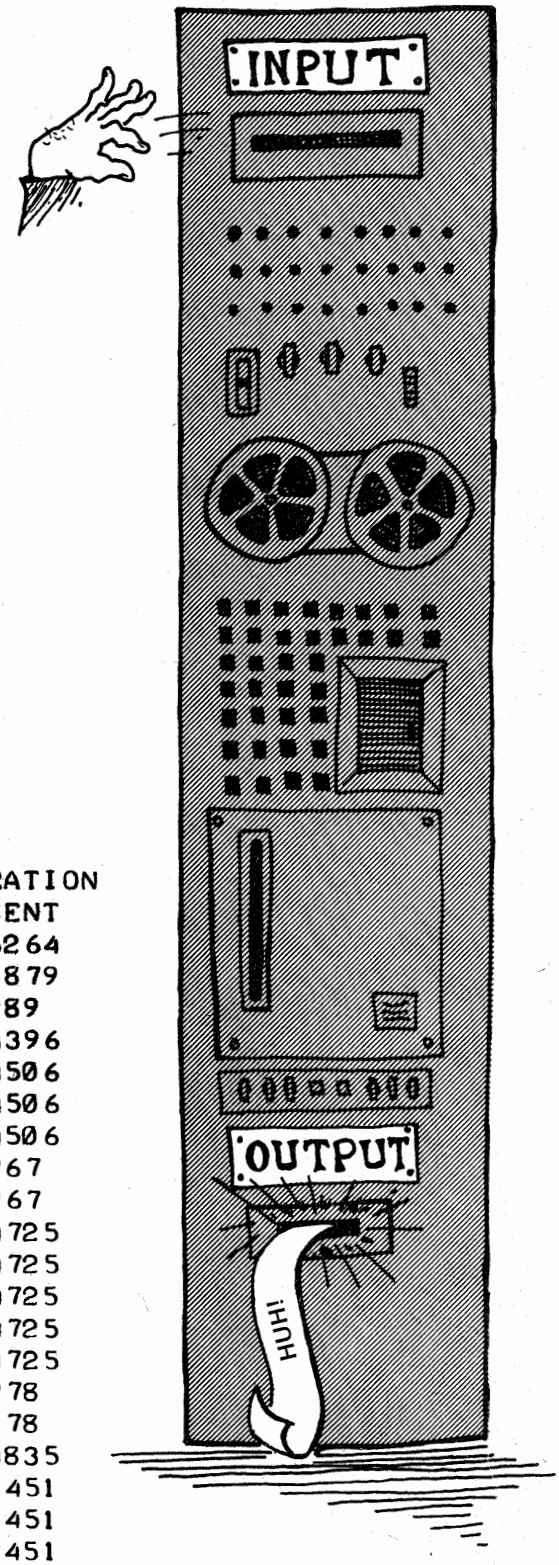
```
LIST

10 REM.  SURVEY
12 REM.  TABULATE AND REPORT SURVEY RESULTS
14 REM.  ED HUGHOT
16 REM.  02/26/77
30 CLEAR 900
50 DIM M$(20),T(20),P(20)
80 PRINT FRE(I)
100 PRINT:PRINT:PRINT
110 INPUT "NAME OF DESCRIPTOR";H1$
120 INPUT "NAME OF DATA VARIABLE";H2$
130 PRINT "  ENTER DATA AS:  V1,V2"
140 PRINT
145 I=0
148 S=0
150 INPUT V$,V
160 IF LEFT$(V$,1)="$" THEN 300
170 I=I+1
180 M$(I)=V$
190 T(I)=V
200 S=S+V
250 GOTO 150
290 REM
300 N=I
310 FOR I=1 TO N
320 P(I)=I
330 NEXT I
340 FOR I=2 TO N
350 IF T(P(I))<=T(P(I-1)) THEN 390
360 Q=P(I)
365 P(I)=P(I-1)
370 P(I-1)=Q
380 GOTO 340
390 NEXT I
510 PRINT:PRINT:PRINT:PRINT
520 PRINTTAB(5);
522 PRINT H1$;
530 PRINTTAB(31);
532 PRINT H2$
540 PRINTTAB(31);
542 PRINT "TOTAL";
550 PRINTTAB(41);
552 PRINT "PER CENT"
600 FOR I=1 TO N
610 PRINT I;
620 PRINTTAB(5);
622 PRINT M$(P(I));
623 Q=T(P(I))
640 PRINTTAB(31);
642 PRINT Q;
650 PRINTTAB(41);
652 PRINT Q*100/S
690 NEXT I
700 PRINT
710 PRINTTAB(31);
712 PRINT S
999 END
OK
```

```
RUN
 4118


NAME OF DESCRIPTOR? MANUFACTURER
NAME OF DATA VARIABLE? SYSTEMS IN OPERATION
  ENTER DATA AS:  V1,V2

? IMSAI-8080,43
? ALTAIR-8800,22
? PTC SOL,5
? POLYMORPHIC-88,5
? OTHER 8080 SYSTEMS,19
? APPLE 6502,6
? SHPERE,1
? AMI BOARD,20
? JOLT,5
? SW TECH PRODUCTS,4
? KIM,4
? OTHER 6800.650←←←←/6502 SYSTEMS,9
? F8,5
? Z80,9
? 8008,9
? TTL,1
? BIT SLICE,1
? RCA 1802,6
? LSI-11,3
? OTHERS,5
? $,0
```



	MANUFACTURER	SYSTEMS IN OPERATION TOTAL	PER CENT
1	IMSAI-8080	43	23.6264
2	ALTAIR-8800	22	12.0879
3	AMI BOARD	20	10.989
4	OTHER 8080 SYSTEMS	19	10.4396
5	OTHER 6800/6502 SYSTEMS	9	4.94506
6	Z80	9	4.94506
7	8008	9	4.94506
8	APPLE 6502	6	3.2967
9	RCA 1802	6	3.2967
10	PTC SOL	5	2.74725
11	POLYMORPHIC-88	5	2.74725
12	JOLT	5	2.74725
13	F8	5	2.74725
14	OTHERS	5	2.74725
15	SW TECH PRODUCTS	4	2.1978
16	KIM	4	2.1978
17	LSI-11	3	1.64835
18	SHPERE	1	.549451
19	TTL	1	.549451
20	BIT SLICE	1	.549451

182

```
OK
```

FAIRE'S EXHIBTORS LIST GROWING FAST

An impressive list of exhibitors have taken display space at The First West Coast Computer Faire.

By March 6, 1977, a total of 146 exhibitors' booths were rented, according to information obtained by the Homebrew Computer Club Newsletter. The organizations that have taken exhibit space are listed in the adjoining list.

The First West Coast Computer Faire will be held at the San Francisco Civic Auditorium April 16th and 17th. A kick-off banquet will be held April 15th at the St. Francis Hotel. □

COMMITTED EXHIBITORS
March 6, 1977

6502 PROGRAM EXCHANGE
ACM, BAY AREA
ACTION AUDIO ELECTRONICS
ADVANCED MICROCOMPUTER PRODS
ALPHA MICRO TECHNOLOGY
ANDERSON–JACOBSON, INC.
APPLE COMPUTERS
BENDER PUBLICATIONS, NCEN&SCEN
BOARD BYTERS
ESCON
BYTE MAGAZINE
BYTE SHOP OF PALO ALTO
BYTE SHOPS OF ARIZONA
BYTE, INC.
CALIFORNIA BUSINESS MACHINES
CENTER FOR STUDY OF FUTURE
COMPTEK
COMPUTALKER CONSULTANTS
COMPUTER DECISIONS MAGAZINE
COMPUTER KITS, INC.
COMPUTER MAGAZINE
COMPUTER ROOM OF SAN JOSE
COMPUTER STORE OF SAN FRAN.
CREATIVE COMPUTING MAGAZINE
CROMEMCO
DATA TERMINALS&COMMUNICATIONS
DAVIS LABORATORIES
DAYTON ASSOCIATES
DIGITAL GROUP
DIGITAL RESEARCH
DIGITAL SYSTEMS
DILITHIUM PRESS
E&L INSTRUMENTS
ECD CORP.
EIDETIC DESIGNS
ELECTRONIC TOOL CO.
ERUDITIOMNIUM
EXTENSYS CORP.
GALAXY SYSTEMS
GIMIX, INC.
GODBOUT ELECTRONICS
HAL COMMUNICATIONS CORP.
HAYDEN BOOK COMPANY, INC.
HEURISTICS, INC.
IASIS INC.
IBEX
IC MASTER&UPDATE
ICOM
IMSAI
INTEGRAND RESEARCH CORP.
INTERFACE AGE MAGAZINE
INTERSIL, INC.
ITTY BITTY COMPUTERS
JENSEN TOOLS&ALLOYS
KILOBAUD MAGAZINE
LOGIC DESIGN, INCORPORATED
MECA
MICRO DESIGNS
MICRO–TERM INC.
MICROCOMPUTER ASSOCIATES
MICROPOLIS CORP.
MICROTECH COMPUTER CO.
MICROTRONICS
MICROMATION, INC.
MIDWEST SCIENTIFIC INSTR.
MINI–MICRO SYSTEMS MAGAZINE
MINITERM ASSOC.
MINNESOTA MINING&MFG. CO.
NATIONAL SEMICONDUCTOR
NEWMAN COMPUTER EXCHANGE
NORTH STAR COMPUTERS, INC.
NOVAL, INC.
OHIO SCIENTIFIC INSTRUMENTS
OK MACHINE&TOOL CORP.
OLIVER AUDIO ENGINEERING
PACIFIC OFFICE SYSTEMS
PAIA ELECTRONICS, INC.
PARASITIC ENGINEERING
PENINSULA MARKETING SERVICES
PEOPLE'S COMPUTER CO.
PERIPHERAL VISION
PERSCI
PERSONAL COMPUTING MAGAZINE
PFEIFFER, E&L
POLYMORPHIC SYSTEMS
PROCESSOR TECHNOLOGY
PROF.&TECH. CONSULTANTS ASSN.
REALISTIC CONTROLS CORP.
RIGEL FOUR
RO–CHE SYSTEMS
ROM MAGAZINE
S.D. SALES
SCIENTIFIC RESEARCH INSTRUMENT
SMOKE SIGNAL BROADCASTING
SOLID STATE MUSIC
SOUTHERN CALIF. COMP. SOCIETY
SOUTHWEST TECHNICAL PRODUCTS
SUNRISE ELECTRONICS
SUNSET TECHNOLOGIES
SYNETIC DESIGNS
SZERLIP ENTERPRISES
TARBELL ELECTRONICS
TECHNICAL DESIGN LABS INC.
TECHNICAL SYSTEMS CONSULTANTS
TELETYPE CORPORATION
TRIPLE I/PHIDECK, ECONOMY CO.
VECTOR GRAPHIC, INC.
VIDEO TERMINAL TECHNOLOGY
WESTERN DATA SYSTEMS
WIZARD ENGINEERING
XIMEDIA CORP.
XYBEK
BELL&HOWELL SCHOOLS
BYTE SHOPS OF ARIZONA
COMPONENT SALES, INC.
COMPUCOLOR CORP.
DIGITAL PROJECTS, INC.
MICRO–COMPUTER DEVICES
MOVONICS

HOW TO GET INFORMATION ABOUT THE FIRST WEST COAST COMPUTER FAIRE

Would you like to exhibit at The First West Coast Computer Faire or get the Silicon Gulch Gazette with news about the Faire? Write to : The Computer Faire, Box 1579, Palo Alto, CA 94302. Ask for the Silicon Gulch Gazette, it's free. Ask for exhibitors' information too if you plan to rent exhibit space.

Potential exhibitors may telephone (415) 851-7664 for current status of available space. □

HCC MEMBER ORGANIZES CONFERENCE SESSION

Dick Sherman, K6EIH, has organized a conference session for The First West Coast Computer Faire on the Application of Microprocessors to Amateur Radio. Plans for this session include the following topics and speakers:

The Amateur and Microprocessors,
Wayne Green, WZNSD/1, Publisher of ***73*** *and* ***Kilobaud.***

C W Man's Utopia—Automatic Reception and Transmission
Ivar Sanders, W6JDA, Ray Boaz, Verne (Andy) Anderson, W6LPM. (A hardware demonstration will follow the algorithm description.)

Ham RTTY—Its Evolution and Future,
Bob Brehm, WB6QFA, with a demonstrationof a microprocessor controlled RTTY station by David Altekruse, W6RAW.

Microprocessor Control of a VHF Repeater,
Lou Dorren WB6TXD (A discussion of control pholosophy and a demonstration using WR6ABM.)

Software Generated SSTV
Clay Abrams, K6AEP (A real scoop! The first all-software generation of video and sync for slow scan television in the known world!) □

S-100 FULL SIZE FLOPPY DISK CONTROLLER

The Computer Hobbyist Products' Floppy Disk Controller Board is designed for use with the S100 Bus and an 8080 or Z-80 type processor, however, the board can be modified to operate with most CPUs. The board will control up to eight drives in a daisy chain arrangement where only one drive is selected at any given time.

The CHP controller Board does not use DMA for data transfer—it uses the interrupt capability of the 8080 type processors for efficient software data transfer. All necessary interrupt vectoring circuitry is included on the board, with selectable vectoring.

The board is constructed of high grade epoxy glass with gold-plated connectors and plated-through holes. The mating connector for the drive cable is included. All I.C.s are socketed, except for the voltage regulators. All supplies are regulated on the board—no Zener diodes.

The CHP Floppy Disk Controller uses the Western Digital FD1771 LSI controller. Complete disk handling for interface to FDOS such as CP/M (copyright 1976,'77, Digital Research, Inc.) can easily be accomplished in less than 256 Bytes of ROM.

The hardware is fully buffered from the S100 interface and the connections to the disk drives. Externally adjustable delays are incorporated to accomodate head load delays in the various brands of drives. Access rate (track to track) is controlled by the software imbedded in the access commands. Interrupt vectoring for end of operation interrupt from the FD1771 chip is jumper selectable. Data request interrupts force an enable interrupt instruction to be executed.

Drive selection is accomplished by a normal 8-bit output port, with one line being assigned to each drive. In the unlikely event that more than eight drives might be required, external decoding circuitry could be added, expanding the controller's capability to 256 drives!

Computer Hobbyist Products, Inc. is making this controller available in two forms; kit or fully assembled, tested and burned in. The Controller only costs $300 for one kit, or $375 for the same thing but assembled and tested. Prices for quantities of 50 are $275 each, or $350 each for the assembled and tested lots. The CHP controller kit with one REMEX 1000B Drive costs $850 for one or $800 each for quantities of 25 or more. Add $75 to the last two prices for assembled and tested controller with one REMEX 1000B Drive. CHP, Inc., can be contacted at Post Office Box 18113, San Jose, CA., 95158 □

MICRO COMPUTER DICTIONARY AND GUIDE

by Charles J. Sipple and David A. Kidd

Published by Matrix Publishers, Inc.
Champagne, IL. 61820

Have you ever wondered about the proper definition of baud, LISP, or zero page addressing? The terms are easily found in the MICROCOMPUTER DICTIONARY AND GUIDE. The authors have assembled over 5000 entries in a clear and easy to read and use book. Extensive cross-referencing has been used as an aid in locating terms which one might look for in more than one place.

Newcomers and oldtimers alike can benefit from this book. Its a ready reference with definitions that are up to date. Newcomers should find extensive use for the book as they learn about microcomputer systems and equipment.

In addition to the definitions of microelectronic terms which fill 516 pages approximately 150 pages are devoted to appendices. In the appendices can be found symbols, units and constants of electronics, mathematics, definitions, acronyms, computer language summaries (APL, BASIC and FORTRAN) numbering systems, and much more.

The Microcomputer Dictionary and Guide is available at most computer stores or directly from the publisher. □

CALCULATOR LIB NEWSLETTER

CALCULATOR LIB is a newsletter dedicated to bring to the calculator enthusiast up-to-date information on matters related to calculators. Helping on matters related to "calculator wizardry" of its liberated readers, it acts as a clearing house of collective ideas, limited solely by ingenuity of the human mind.

30 years ago a multi-million dollar monster was built; it consumed 30 kw power for its 18000 vacuum tubes and had no more calculating power than a $400 programmable calculator has today.

Seven years ago, electromechanical calculators sold for $1000—$2000, with barely as much calculating power as the under-$20 electronic calculators have today. Industry did not stop; more and more calculators are being developed for less and less money. Today, the calculator has arrived—it is of the people and for the people. These people, liberated by the calculator, need regular, continuous and timely information.

Editors are Gene J. Hegedus and John DeReyes. The newsletter is published bi-monthly with a subscription rate of 12 issues for $15. For information contact:
TECHNICAL DEVELOPMENTS
Post Office Box 2151
Oxnard, CA 93034 □

RTTY REPEATER LINKS AMATEUR RADIO AND COMPUTER HOBBYIST

Many people interested in computers and communications wonder where a good communications link is that can provide an information interchange between computers hobbyists and well as those just interested in communicating.

The answer is the growing use of the amateur radio teletype repeater WR6ACR. This repeater is utilized for the promotion of radio teletype as a means of cummunications for anyone who is interested. And lately the interest has been computers!

The repeater is located on San Pedro Ridge just north of San Rafael. The frequency is 147.93/147.33 Mhz. Those wishing to use the repeater should use narrow band FM transmission with a two-tone audio keying shift of 185 Hz. (2125-2290). Since the signal is FM, signals from miles around will get through perfect copy almost all the time.

A simple T.U. (terminal unit) that decodes the two tones and keys the printer loop supply is available at low cost. The unit consists of a phase lock loop tone decoder, a function generator to create the two tones when keyed and associated circuitry for autostart.

Printers are readily available and very low cost. A Teletype Model 15 or 19 is available for less than $100 and can be used with your computer providing a conversion program is used to convert from ASCII to the Baudot code which is used exclusively on amateur radio.

Should you want more information call: *Alan Bowker at (415) 453-1853, San Rafael, or if you live in the Peninsula call Terry Conboy at (415) 364-3107, Redwood City.* In addition, a demonstration system will be operating at The First West Coast Computer Faire, according to Alan Bowker. Users of the repeater will be available to answer questions. □

DIABLO PROFESSIONAL USERS GROUP

Diablo Professional users group has been meeting at Diablo Valley College on the 4th Wednesday of each month since November.

The word "professional" refers to two categories. One, the novice in computers—who's an expert in some other field where he makes his living. Two, the expert in computers—who can provide the answers to the first.

For you budding technical types, here's your chance to get in on the ground floor of microcomputer consulting; the novices you'll meet represent a gamut of various industries and professions. They are looking for those with practical knowhow. And in case you don't recognize yourself, you're in the consultant category even if you're a high school or college student—but have been involved in the hardware and/or software μP scene for several years.

Our March meeting will feature a discussion of video display technology and a comparison of the various commercial products available in the small systems market.

Meetings are held in the College library large conference room from 8—10 pm, on the 4th Wednesday of each month. (March 23rd, April 27th, May 25th, etc.) DVC is near the Willow Pass exit of Freeway 680. *For details write or call: Bob Hendrickson, Electronics Dept, DVC, Pleasant Hill, CA, 94523; (415) 687-8373.*

LOW COST MICROCOMPUTER USES ULTRA-FAST Z-80 μP

Cromemco has announced availability of a new microcomputer designed for dedicated applications. The low-cost Z-2 microcomputer features high speed and state-of-the-art power. A high-speed 4 MHz version of the Z-80 microprocessor, generally considered the standard for the next microprocessor generation, gives the Z-2 more power and greater speed than other microprocessors.

The Z-2 contains the fast (250 ns cycle time), powerful CPU card, a motherboard with 21 card sockets and a 30 A heavy duty power supply capable of meeting virtually all power needs including floppy disk drives. The circuitry is enclosed by a metal cabinet designed for either rack or bench mounting. The Z-2 is supported by high-speed (4 MHz) dynamic RAM memories. Substantial software includes a monitor, assembler and a control—BASIC interpreter specifically designed for microprocessor control applications. Kit price is $539; delivery is from stock to 30 days. For more information contact Joe McCrate, Cromemco, Inc., 2432 Charleston Rd., Mountain View, CA 94043 (415)964-7400.

BITS OF INTEREST

AS A TOOL FOR THE ARTIST

The computer is a versatile tool for the musician, writer, graphic artist, conceptual artist and the dramatic artist. A class with simple programs, special purpose languages, games, graphics, dialogues and other entertainments introduces the sutdent to the computer applied to the needs of the artist.

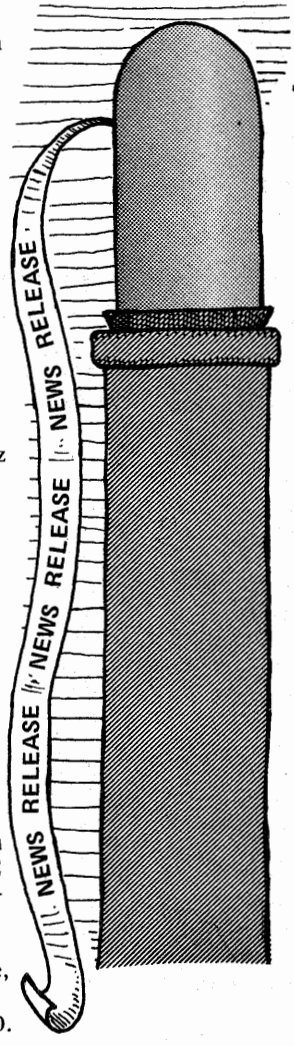
Even if you are a computer professional or personal computing addict, come anyway.Class held at DeAnza College, Art 11, Wednesday 2:30—4:30 pm. Spring Quarter. Instructor—Gregory Yob, 326-4039 (work), or 446-6182 (home).

NETWORK

I am studying the possibility of setting up a hobbyist computer network with between 3 and 200 hobbyist computers spread over California (the USA?, the world?) communicating to each other in a message switched mode. Preliminary research indicates this scheme is practical for the transfer of modest-sized messages or files between any two computers in the network. Anyone interested in learning more, participating, helping, etc. please write or call Dave Caulkins, 437 Mundel Way, Los Altos, CA 94022; (415)328-4211 days, (415)948-5753 eves.

NEW LIFE FOR OLD ALTAIR

For over two years, San Jose Speedway has been the test bed for a computerized race scoring system. Scientific Computerization of Racing Equipment has an Altair-operated scoring system and display sign up and running. The sign is 62 feet long by 8 feet high with a giant moving serial display similar to the little Burroughs Panaplex™. A modified MITS CT256 terminal writes advertising on audio tape and then reads from the tape to the sign. The terminal keyboard provides instant display of track information and announcements. *—Dave Corbin*



UNDERGROUND BUYING GUIDE TELLS ELECTRONIC HOBBYISTS WHERE TO GET IT

Saratoga, CA. —A new directory has just been published that helps amateurs, CBers, experimenters and computer hobbyists locate equipment, parts, supplies and services.

Over 600 sources of standard and hard-to-find gear are listed in the handy guide. Many of the 600 sources are mail order firms and discounters. All are firms that do business with electronic hobbyists.

The first section of the book lists the firms alphabetically, their complete mailing addresses and phone numbers. A list of the products or services offered is provided along with key product information, minimum order amounts, shipping charges, etc.

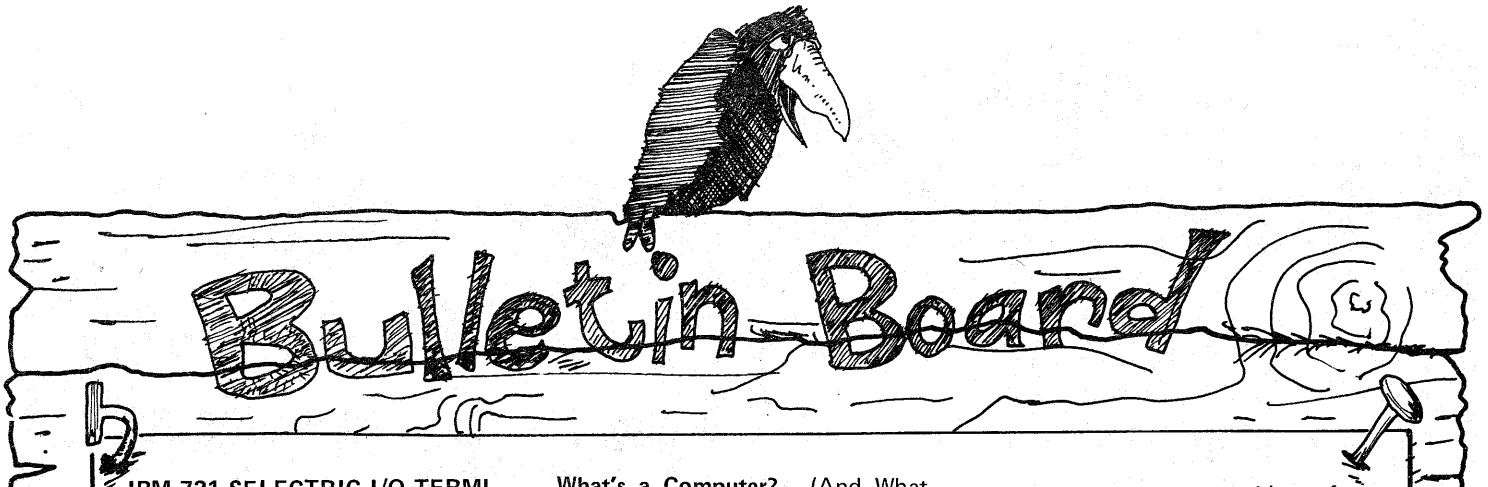
You'll find everything from million dollar mail order firms with many product lines to week-end garage operations offering a low-cost accessory for a microcomputer or CB transceiver. The second section of the book is a breakdown of pruducts and sources in over 200 categories. Under each category is a listing of all firms that sell or manufacture the items cross referenced to the first section. For instance, there are over 25 sources of low voltage (12.6 VDC to 13.8 VDC) power supplies and over 50 sources of digital ICs.

The buying guide contains many prices and sufficient detail that you can make your purchase decisions directly from the book or obtain additional information to make your choice. Catalog prices, if any, are listed.

The last section of the book includes sources by state so you can buy from the firm nearest you when there are several choices. You'll find local firms that you didn't know existed.

The guide easily pays for itself by the savings you make in buying from the least expensive source. In addition, you'll save countless hours of shopping and hunting for hard-to-find items. You won't have to worry about making a poor buying decision—you can easily review all products from the convenience of your living room chair.

The UNDERGROUND BUYING GUIDE is available direct mail from PMS Publishing, 12625 Lido Way, Saratoga, CA 95070. The price is $5.95 plus .55 postage and handling. Californians add .39 sales tax. Moneyback guarantee within 10 days if not completely satisfied. For further information contact Dennis A. King, PMS Publishing, 12625 Lido Way, Saratoga, CA 95070; (408)996-0471.



IBM 731 SELECTRIC I/O TERMINAL— This terminal has never been used except for occasional manual typing. Equipped with sprocket feed platten. Takes all IBM Selectric typewriter fonts. Prints upper and lower case. Will trade for quality video terminal or $625 cash. Joel Miller (4i5) 962-3372 days or (408) 353-2663 evenings.

For Sale—WANG COMPUTER SYSTEM—2200A with cassette, CRT, keyboard, 12K usable RAM, full BASIC in firmware. $4,500 (an $8,000 value). Al Leung 364-6746, Box 5272, Redwood City, CA 94063.

IBEX 16K PROM Board kits are still only $85. S-100 compatible. Uses 2708s, even T.I.s new ½ price ones ($32.50). IBEX 1010 Morse, Suite 5, Sunnyvale, CA 94086.

Group Buy— I'm setting up a group buy on used TTYs. Approximately $250 ea. John Swartz (408) 739-3770.

I am forming a group— to gather input for creating a new bus structure. I need your ideas as to what you would like to see (or hate to see) in a new, logically and technically thought out standard bus. Contact John Schwartz/IBEX, 660 San Miguel, Sunnyvale, CA 94086. (408) 739-3770.

Isolation Transformers—5 kW rating primary has seven taps from 95 to 240V. Electrostatically shielded secondary 117V 50/60 Hz at 40 amps. Shipping weight approx. 100 lbs. New—$95. each. Dennis Trimble (408) 224-0606 evenings.

There once was a computer scientist who fed his machine with all the knowledge of man and then asked the question, "Does God exist?" To which the computer replied, "There is one now." David L. Ambrose

What's a Computer?— (And What Can I Do With It?) —A class for family and friends of computer people who always wanted to know about computers but didn't want to ask them. Learn how computers work, find out what jargon means, play some game and start programming. There will be four sessions which include a lecture, discussion and time and the terminals. Held on Tuesday from 7 to 9 pm beginning April 5. Cost is $25. ACM members' families get a $5 discount. Enrollment is limited to 15. Community Computer Center, 1919 Menalto Ave., Menlo Park, CA 94025 (415) 326-4444.

Terrence Gregory, President of Nousou, Inc. will discuss microkit systems at the March 30th meeting.

IBM SELECTRIC I/O—This is a brand new IBM selectric I/O terminal. Originally $1600, I am only asking $800 for this beautiful terminal with sprocket feed platten. Also for sale—one Motorola 6800 proto board fully assembled and working, $175. Call evenings, Rick Parfitt (415) 564-1332.

For Sale—GATES ACOUSTINET— Sound proof cover for any Teletype models 32, 33 with paper punch. Table top model—complete/perfect condition. $100. Call Tom (415) 388-9220 or write Box 383, Mill Valley, CA 94941.

SUNTRONIX graphics driver—factory assembled and tested, list at $130, sell for $100; MNH-AE 1900 Baud MODEM, list $1000, sell for $35 with documentation, you pay shipping (20 lbs.) Wm. J. Schenker, M.D., 2086 Essenay Ave., Walnut Creek, CA (415) 939-6295.

Wanted—½" tape cartridges for Ampex CDR1 data recorder. Dean Bennett, 517 Hillbright Place, San Jose, CA 95123.

Club Library—Gordon French, club librarian, has lots of interesting material and is able to loan it to anyone with a definite need, but... please adhere to the following:

Limit your telephone calls to the hours of 7 pm to 9 pm weekdays only. This is important. Gordon's phone number is (415) 325-4209 in Menlo Park. Be specific with your request and Gordon can probably help you—he cannot randomly review the contents of the library for you.

No reproductions will be made of any materials.

All materials loaned must be returned so they are available for others to use in the future.

HOW TO GET THE NEWSLETTER— Anyone interested in computers as a hobby may receive the NEWSLETTER by sending a request to the **Homebrew Computer Club Newsletter,** P.O. Box 626, Mountain View, CA 94042. The NEWSLETTER is distributed monthly at the club meetings and is also mailed to individuals who are unable to attend the meetings.

If you have an input to the NEWSLETTER, send it in and it will be published as quickly as possible. However, the editors cannot promise that everything sent will be published. All manuscripts must be typed and carefully proofed. All listings and diagrams should be as clear and easy to read as possible.

The NEWSLETTER is made possible by your donations. Please remember that we must pay for postage, labels and printing. Donations may be given to **Ray Boaz** at the club meetings or sent to the above address.

contents

CMOS Cookbook/Book Review ____ 1
Computer Music Interest Group Forming ____ 1
Santa Cruz Club Grows Up *by Joel Miller* ____ 1
Reduced Admission for HCC Membera at Faire ____ 1
Survey Tabulating Program *by Ed Hugbot* ____ 2
Faire's Exibitors List Growing Fast ____ 4
How To Get Information About The
First West Coast Computer Faire ____ 4
HCC Member Organizes Conference Session ____ 4
S—100 Full Size Floppy Disk Controller ____ 5
Micro Computer Dictionary And Guide
by Charles J. Sipple and David A. Kidd ____ 5
Calculator Lib Newsletter ____ 5
RTTY Repeater Links Amateur Radio
And Computer Hobbyist ____ 5
News Release ____ 6
Diablo Professional Users Group
Low Cost Microcomputer Uses Ultra Fast Z-80 μP
Underground Buying Guide Tells Electronic
Hobbyists Where To Get It
The Computer As A Tool For The Artist
Hobbyist Computer Network?
New Life For Old Altair

(408) 353-3609 **LAUREL PUBLICATIONS** (408) 353-3609

LAUREL PUBLICATIONS **GRAPHICS** LAUREL PUBLICATIONS

Drafting Illustrations Composition Lay-out Photography Advertising

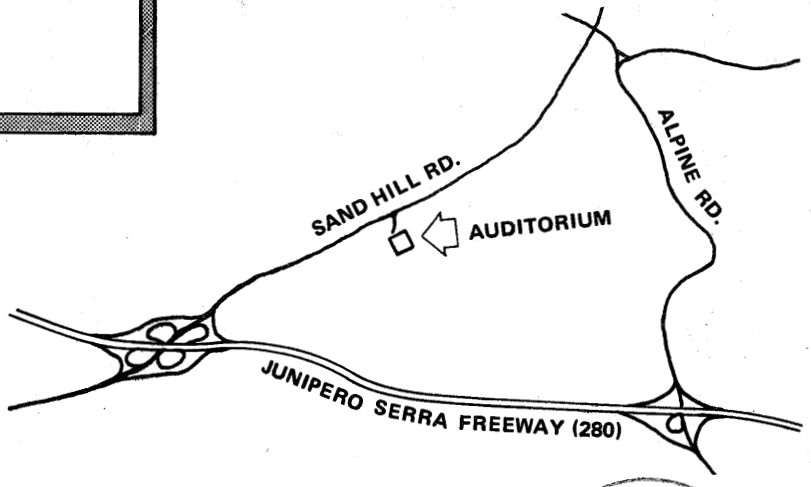
TYPESETTING

Books Magazine Articles Technical Manuals Periodicals Newsletters

PUBLICATIONS

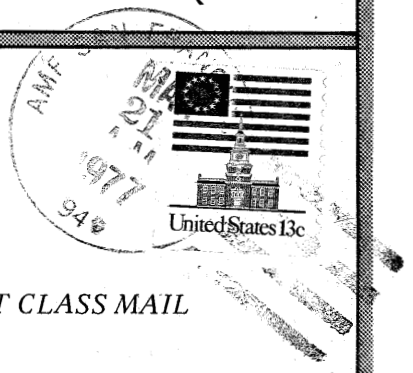
(408) 353-3609 **LAUREL PUBLICATIONS** (408) 353-3609

The Homebrew Computer Club meets at 7 pm at the Stanford Linear Accelerator Center Auditorium. Dates scheduled for March are the 2nd, 16th and 30th, for April are the 15th and 29th, and May the 13th and 25th. The dates and location are subject to change. If a change does occur, every effort will be made to provide advance notice in the NEWSLETTER.



HOMEBREW COMPUTER CLUB NEWSLETTER

P.O. Box 626
Mountain View, CA 94042



FIRST CLASS MAIL