MICROCOMPUTER USER GROUP NEWSLETTER

January 1976

Well, here we are again. Hal and I continue to work and somehow the time seems to fly. It's a labor of love (some would say joy). This brings us both a lot of satisfaction. As we mentioned in NL #12 the minimum number of members required to maintain the organization is 30. So far we have received only 25. If you haven't sent in your renewal, and would like to support the organization, you would have to like to send us your membership fee.

I'm now working on getting the December Newsletter out to the membership. The December newsletter will be a special Christmas issue and will include a list of microcomputer clubs in the United States. The newsletter will also include information on microcomputer clubs in Europe and Japan. The December newsletter will be mailed to all members in December. The December newsletter will be mailed to all members in December.

Our next meeting will be held on Sunday, December 11, at 3:00 PM. The meeting will be held at the Los Angeles Microcomputer Club, 6700 Sunset Blvd., Los Angeles, CA 90028. The meeting will be open to the public and all members are encouraged to attend.

As you can see, we are a club that is dedicated to promoting microcomputer usage and sharing information among its members. We are always looking for new members, so please consider joining us. We would love to have you as a member!

Sincerely,

John Ford
5581 El Capitan Ave.
Santa Monica, CA 90404

P.S. In response to Mr. E. Zilinsky in NL #12: I made the same mistake on the Sounding keyboard earlier this month. It was not the Sounding keyboard that was defective, but the Sounding keyboard software. We have updated our software to fix the problem. Please check your software for updates.

As you are no doubt aware, I am the President of the New Jersey Microcomputer Users Group (NJ Microcomputer Users Group). I am also the editor of our club's monthly newsletter, which is distributed to all members. The newsletter contains information about the club and its activities, as well as articles on microcomputers and related topics. The newsletter is published monthly and is available to all members on a complimentary basis.

The NJ Microcomputer Users Group is a voluntary organization that was established in 1974. The club is open to all members of the New Jersey microcomputer community, including hobbyists, professionals, and students. The club's primary goal is to promote the use and enjoyment of microcomputers, as well as to provide a forum for the exchange of ideas and information.

The club meets on the first Saturday of each month at 3:00 PM at the New Jersey Microcomputer Users Group headquarters, 2222 JFK Blvd., Newark, NJ 07102. The meeting is open to the public and all members are encouraged to attend.

As you are no doubt aware, the club is dedicated to promoting the use and enjoyment of microcomputers, as well as to providing a forum for the exchange of ideas and information. We are always looking for new members, so please consider joining us. We would love to have you as a member!

Sincerely,

E. Zilinsky
President
New Jersey Microcomputer Users Group
2222 JFK Blvd.
Newark, NJ 07102
Ken Wilber, Box 3079, San Mateo, California 94402, reports that of those who are interested in his group-discuss不知 what to say. He's received nothing back from Processor Technology or the Digital Group for good computer controllers and software.

Howard M. Brown, 630 Knoll Crest Dr., West Lafayette, Indiana 47906, (317) 724-4221, reports that he's been trying to sell his HP-80, which is worth $4900.00. It's the model number 111. He's been trying to sell his computer for the past three months.

André Vira, Pneumonics W.P.S., Pompton Plains, New Jersey 07444, has some comments regarding two keyboards that he's used. One is a '76 ShopRite keyboard, which he claims is better than the Apple IIe because it has more features and a larger display area.

Jim E. Doney, 469 Frederick St., S.W., Virginia, 91280, has his Mark-67 with 8MB RAM, 128K EPROM, and 64K ROM. He has a lot of experience using the software and has written several programs for it.

James A. Rhy, Box 3774, Pennington, New Jersey 08603, has a HP-48G on order and is interested in systems programming on the 8800. He's interested in learning more about this subject and hopes to find someone who has written similar programs for the HP-48.

**Here's a hot one...** Tom Campbell, 1123 Sandusky, California 94402, is currently building a system using the RMC-16 board. He said that he has good hardware that he is interested in trying out. He is interested in finding out if anyone else has tried any of the systems he is considering.

John D. Brandas, Data Processing, Colby County Schools, Gainesville, Texas 76245, (817) 323-9231, has been having some problems with his Sharp 8000 computer. He has returned it to the manufacturer, but he is still having trouble with the keyboard.

Steve Walsh, 3777 Nefrees Ave., Greenwood, Indiana 46142, (317) 584-8516, has received his new HP-41C. He is very pleased with it and is planning to use it for his work in the field of data processing.

George Butts, P.O. Box 201, Pasadena, California 91106, says that his TI-50 is really needed for his work. He is interested in finding out if anyone else is using this model and would like to exchange information with them.

A. J. Peddie, A. J. Peddie, Inc., 205 Main St., Montclair, California 91766, (818) 363-1601, has a TI-50 that he is using for his work in the field of data processing. He is interested in finding out if anyone else is using this model and would like to exchange information with them.

William G. F. Jones, 374 E. 5th St., Brownsville, Texas 78520, (210) 583-9000, is interested in finding out if anyone else is using a TI-50 and would like to exchange information with them.

John D. Naithe, 1506 55th Ave., South Seattle, Washington 98124, (206) 272-6305, has written a program for his TI-50 that he is using for his work in the field of data processing. He is interested in finding out if anyone else is using similar programs and would like to exchange information with them.

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Dear Reader:

Thank you for your order for the mini computer instruction project.

As you must know, this was first published in the 1978 issue of RADIO-ELECTRONICS. From that time up to October 10, 1979, we have been able to fulfill orders for mini computers. However, our supply is finally depleted.

We therefore regret that we must return your order unfulfilled.

Thank you for your interest in RADIO-ELECTRONICS.

Sincerely yours,

Harold L. Raymonde
Circuit Director

P.S. I received a 如roadcast by FORTNIGHT ENCLOSED A CHECK FOR $6.00 FOR YOUR NEXT 6 ISSUES AND A SAGE.  
SUPPLIERS: POLY PAK CRUISES OUT. 
ON JULY 7 I SENT AN ORDER TO POLY PAK FOR, AMONG OTHER THINGS, 10 50 P.W. TRIMPOTS AT $1.15 EACH. 
AUGUST: RECEIVED ORDER WITH 10 50 OME TRIMPOTS (PART NUMBERS FOR ALL VALUES BUT 1.0) FIFTY OME TRIMPOTS. 
NO OCTOBER: RECEIVED ORDER. 
NOVEMBER: EXCELLENT SERVICE IN CANADA.

DEC. 10: RECEIVED ORDER. 

GENTLEMEN: 

I'M HAVING A MEETING AT MY OFFICE ON FRIDAY, JANUARY 31, AT 7:30 PM FOR THE PURPOSE OF EXAMINING IDEAS, CHARTING SOFTWARE, EQUIPMENT, AND PARTS, AND POSSIBLY ORGANIZING A TORONTO AREA MICROCOMPUTER CLUB. PLEASE PHONE ME AT ABOUT THE 20TH IF YOU WISH TO COME SO I CAN TELL YOU HOW MANY PEOPLE WILL BE IN THE MEETING. WE PLAN TO PLAN FOR COFFEE AND SOME SORT OF SUCK, AND WILL HAVE AN ALTERNATE MEETING If AT ALL POSSIBLE. A MAP IS ENCLOSED.

I'LL SEND FURTHER NEWS AFTER THE MEETING.

Sincerely yours,

HAROLD MELNICK

GENTLEMEN:

I'LL SEND FURTHER NEWS AFTER THE MEETING.

Sincerely yours,

HAROLD MELNICK

This will probably be too late for this meeting but will help you get to the next one.

Fred Brockman, 1600 Kyle Drive, Hanover, CA 95945 would like to jump in soon with some sort of 8080 system along with some version of Lancashire's IVT. He is going to use a 16K 8080 system. At first, I don't know that it will work but will get started on at least a terminal. A second has been built and runs some large jobs on it. Several people know how their own computers at home but are doing nothing with them. Those who are interested, try to figure out what the people like them.

Wallace E. Linn, 800 Alba Street, Honolulu, Hawaii 96818 (808)338-7342 home and (808) 254-6812 office has an ALT-8000 with 256 words memory and is building the Altair 8800 with the help of the customers. He is building a file processor, a BASIC, a word processor, a simulator, a tape reader, and other equipment. A card reader, a diskette reader, and a diskette controller are available.

Irvin F. Hawes, 200 Main Street, Woodward, WY 82801 says that his system has been a stand alone for his students. He did not know anything about the possibilities and price of dot matrices until he got started on at least a terminal. A second has been built and runs some large jobs on it. Several people know how their own computers at home but are doing nothing with them. Those who are interested, try to figure out what the people like them.

Mike Simmons, 800 Alba Street, Honolulu, Hawaii 96818 (808)338-7342 home and (808) 254-6812 office has an ALT-8800 with 256 words memory and is building the Altair 8800 with the help of the customers. He is building a file processor, a BASIC, a word processor, a simulator, a tape reader, and other equipment. A card reader, a diskette reader, and a diskette controller are available.
In the Intel 82800 microcomputer systems users' manual, page 4, it's mentioned that the Intel 82800 microcomputer systems users' manual is being distributed by Intel Corporation. The manual is aimed at users who are interested in the Intel 82800 microcomputer systems, providing detailed information about the hardware and software components. The manual includes instructions for setting up the system, configuring the hardware, and troubleshooting common issues. It is a valuable resource for those who want to maximize the performance and reliability of their Intel 82800-based systems.
Dear Hal and John:

My check for $6.00 is enclosed. Keep up the good work. Please send or cooldown information for high school and college students from the National Model Railroad Association. We would like to get these materials to many students, but we also need to send our congratulations for their generosity and willingness to learn about the hobby. We were pleased to have the assistance of many members, but we also needed to recognize the contributions of many others.

Sincerely,

[Signature]

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13 December 1975

381 Poplar St.

Winnipeg, Man. 60093

Dear Charles F. Dougs

Your meeting at the Chicago Area group with 60 in attendance, the steering committee announced our new Chicago Area Computer Hobbyists Exchange - CACE. We plan to use this as a forum to exchange ideas and information. There are many interesting, unexploited consequences when people start writing computer checks (CODES) for the Treasury. I told them to make sure the checks to CACE were done in a timely manner. The treasurer is to make sure the checks were written.

I have read the meeting minutes and I am interested in the concept of organizing groups in the field. I doubt that these groups will get off the ground but I hope they do. I will be attending one of the meetings and I hope you can come.

Sincerely,

[Signature]

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13 December 1975

381 Poplar St.

Winnipeg, Man. 60093

Dear Charles F. Dougs

I am very interested in the idea of organizing groups in the field. I hope you can come to the meeting.

Sincerely,

[Signature]
Of course, the interest in microcomputers was supplanted by the new beast. What I now see as working on is a book for the PDP-8/L and an install the TVT in the front of my science class room. I have most of the 800 educational programs and will be using as many as possible in the classes. I find that number of these programs can be improved especially in my instrumentation.

The main reason for writing a letter is to ask for something, of course. Could you punch out for me a copy of your Cabrillo Test Quizzes? I have gotten some things from D900 but they are extremely slow this time—and 58256-16K K-9K libraries or a copy of the manual. I would like to get a copy of the manual for a nominal charge. Thanks for helping on this.

Sincerely,

Frank Reussendorfer
3 YR NEW COLO M WINN PREPATORY SCHOOL FOR BOARDING & DAY STUDENTS

Charles Pinto, 369 Willow St., New Haven, Connecticut 06511, ordered the Processor Technology PDP-8/L and received the manual for the PDP-8/L and a copy of the library or a copy of the manual. I would like to get a copy of the library for a nominal charge. Thanks for helping on this.

Sincerely,
There is an error in my Mark-8 interconnection scheme.

The -9v line should read 9v instead of 9v. A guy wired his bus to my scheme as is and I apologized to him.

The Digital Group TTV software works okay but not to my satisfaction. Thus I wrote a new TTV software which lets me to use line feed and carriage return keys as intended, yet they can be overridden by pressing underline key to select Greek letters in JEL. Hence all characters can be utilized, except for DEL which is used to home and erase the 'state.' I am using input Port F and Output Port 1 for awhile. This program is listed below.

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**IMPROVED SIZING TTV/KBD PROGRAM** by L.L. Plate

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```
Send DEL to TTV to home
Output to Port 1
1234567890
A B C D E F G H I
J K L M N O P Q R S
T U V W X Y Z

256 Spaces output to TTV
Loop if all spaces not outputted
Set space counter to 32
Clear subset flag and A
Input from keyboard
ASCII code?
Not yet, loop back
One in, DEL code?
Yes, go home and erase all!
Save input code
Subset flag non-zero?
Yes, Greek subset to output, Underline code?
No, subset flag non-zero
OK code?
Count one space off
Space counter still non-zero
CR simulated now
Jump to reset this counter and flag
Line feed code?
No, skip LF space countdown
32 spaces to be outputted
Space code
Space code
Space code
Clear count one space off
More spaces to go
Skip to the delay timer
Output keyboard code to TTV
Tick off a space
Space counter still non-zero
Reset to 32
Clear subset flag and A
Skip to the delay timer
Delay timer to debounce keyboard
Return for more inputs
```

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I glued a small piece of Vectorboard with copper bus strips to the shield lid of the 3rd PIP AMP so that the piece is perpendicular to the printed circuit board with the copper side next to TP01. I drilled two holes on the shield side next to a jumper which is removed to open the video detector stage. I removed TP01 and relocated it on the glued piece, thus it can be rewired more easily according to the above modification circuit. I located my direct video input receptacle and D57 switch, which is shielded and grounded, about three inches from the TV side controls. Due to added capacity in shielded cables, the sound trap has to be readjusted. It may be possible that the sound quality will be improved like in my case. As shown in my circuit, three events occur when the switch is flipped to the video input stage. The video detector stage is cut out and the offset voltage regulator is cut in; the source voltage which is tapped from the PIP pin 4 is cut in to the regulator and the sound trap is cut out. The 6.7 volt regulator is necessary to drop the input voltage to about 1.6 volts (white) and the regulator brings it up to 3.4 volts. The sync level is 1.8 volts at the 1st video amplifier base. It requires two 2N5139 and one 1N4148 to match. Credit should go to Don Lancaster as he merely applied his so-called (2) theories with excellent results!

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Laurence L. Plate, Jr.

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- Lower Cassetti, D. L. Pemberton, Sewbrook, Texas 77476, (713) 474-2063, announces the formation of the Mark-8 Users Group (Mark-8 on a Mark-8 Users Group). It has been a
- While members receive free monthly bulletins for members (and even an automatic newsletter which is very nice), Marlow is the president. ... and his contact if you're interested. We also mentioned that the ACM (Association for Computing Machinery) is having its national conference in Houston in Oct 76 and they would like to have a session on the home computer/communications.
Enclosed please find a check for six dollars ($6) for the first six issues of volume 2 of the u-X Newsletter. As an active member of the Correspondence (and I think I represent the majority of the inactive list of the u-X newsletter) staff of one of the larger local clubs (San Diego Computer Society) I feel compelled to make a contribution to this future.

1) "Hot news tips and rumors" - You have a unique opportunity to do this. Other publications are constrained by lack of contacts, advertising, and space. u-X is free of these constraints.

2) "Reader's comments regarding suppliers" - Clubs are not on a first-name basis with the local representatives. The u-X "showcase" section can provide a forum for highlighting products, services, and people.

3) "Summarize local recent events" - You have a problem here - u-X, PCC, Byte, local club newsletters, etc. We are aware of your problem. We are also aware of our problem with your complimentary copy of Personal Systems for November. I am trying to find a compromise of information at the publishing level. There is bound to be some duplication in how we each use this information, but feel this is necessary since we each reach a slightly different set of readers. I hope most of this information will remain in the public domain. I foresee a problem with those who pay for articles and copyright their publications.

4) "Local contacts and group formation" - This is one of my pet criticisms of your ML. Although you have been instrumental in forming many local groups by publishing individual letters and club announcements, they become structured in this area by writing a regular column and/or publishing club announcements. This is not as effective as simply knowing the name of people and knowing groups.

5) "Group procurements" - To certainly appreciate any publicity you can give us, particularly on large items such as the ML computer which is available now at $6.00. The San Diego Computer Society welcomed participation in our group purchases subject to the following conditions: club membership ($2.50 per year). Included in ML is a newsletter, specific addresses for club procurement, and California State sales tax (6%). If substantial out-of-state business develops then we can ask for a tax number so that out-of-state participants will not have to pay tax.

6) "Future accomplishments" - A) Your format of essentially reproducing the ML newsletter is unique and needs to be continued. B) You need a serial number for each feature which will increase the need for club newsletters, group purchases, addresses, hardware and software vendors, etc. C) A unique forum for special interest groups, e.g., u-X MIE user's group. I am in no position for another malice letter, but I do feel the public should be asked to finance this one. In other words, I hope that I can find time to write another one. D) I hope to be able to publish this one when I have a one-page column on the Air Mail system for distribution in the u-X newsletter. John Ford and Richard Schwartz have agreed to help me with this project. E) I have an ML newsletter packet before the publication has been sent out. Let's send them both hope for better luck. For now, I hope the above would help you to build a prayer wheel asking for a check for a dedicated unit.

Applauds for Jim Brick's letter in Vol.1, #12. For all the people that have written in this series, I cannot say in all sincerity that the People's Computer Vol.4, #2 (Sept.) contained the width of a BASIC transistor series that shows you how and gives code. The ACM Special Interest Group on Microcomputers is not a substitute. I mention that the People's Computer Vol.4, #2 (Sept.) contained a discussion of the first version of the u-X newsletter, issue #1. It was dated July 1973, contained 13 pages, had 68 contributors, and attached a BASIC program that allows you to access the school's 360/80, a versatile terminal with a full set of HMA BASIC and assembler, Processor Technology Co's assembler (software package #1 - FANTASTIC bargain), and a subset of MULTICS.

Gary Alvey
National Computer Union
Box 21393
Altanta, Georgia 30322
December 10, 1975

Sincerely yours,

James W. Forschon
3945 N. Everest St.
San Diego, Calif. 92111
This card was designed to provide an I/O interface for the Altair 8800 computer. Additional cards have been provided to facilitate the addition of DIP switches, 8-bit RAM, or other circuits as required. The basic kit provides the necessary parts for the implementation of two I/O ports. Other kit options are being prepared for supplementary functions such as CRT interface, video monitor interface, etc.

Figure 1 shows the layout of the committed areas for the I/O card and the uncommitted areas for the other circuits.

I/O Card Connections (refer to Figure 1)

1. Jumper 1 - If this card is used for I/O functions a few connections have to be made on the board with jumper wires.
   a. Connect EN (pin 12) to 1k ohm pull-up resistor (5 pads).
   b. Connect EIBM (pin 12) to EN and pull-up (2 pads).
   c. Connect SBL (edge conn. pin 1) to SBL (edge conn. pin 2).
   d. Connect SBP (edge conn. pin 5) to SBP (edge conn. pin 6).

2. Jumper 2 - If the ribbon cable for the Universal Card is not used, two jumpers are needed for UT (pin 20)
   a. Connect UT (pin 20) to UT (pin 21).
   b. Connect UT (pin 21) to UT (pin 22).

3. Jumper 3 - If the ribbon cable for the Universal Card is not used, two jumpers are needed for UT (pin 20)
   a. Connect UT (pin 20) to UT (pin 21).
   b. Connect UT (pin 21) to UT (pin 22).

4. Jumper 4 - If the ribbon cable for the Universal Card is not used, two jumpers are needed for UT (pin 20)
   a. Connect UT (pin 20) to UT (pin 21).
   b. Connect UT (pin 21) to UT (pin 22).

5. Jumper 5 - If the ribbon cable for the Universal Card is not used, two jumpers are needed for UT (pin 20)
   a. Connect UT (pin 20) to UT (pin 21).
   b. Connect UT (pin 21) to UT (pin 22).
Dear Computer People:

Peoples Computer Company has been promoting programming in BASIC. Several companies have produced inexpensive microprocessor chips. One of these, Intel has made the Intel 8080 chip. Currently available versions of BASIC take 4 to 6 weeks of reading.

PCC is working on a TINY BASIC. It will be oriented to:
- kids having fun
- teaching BASIC
- games
- elementary school arithmetic
- mathematical recreations
- send you ideas!

It will run on an Intel8/8080 or an ALTAR 8080. It will use 16 bit (double word) integer arithmetic. The design will be public so that others may recognize the I/O and mathematical subroutines for floating point. Specialized functions may be added by the user.

The proposed syntax and grammar for TINY BASIC is described in the PCC newsletter for the I and 2. The design philosophy is to keep it simple and use as little memory as possible. Speed is sacrificed.

PCC would greatly appreciate any help and ideas. Sixteen bit (double word) addition, subtraction, multiplication, division, decimal-binary and round number routines are needed.

Sincerely,

Bernard Greening

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Dear Dale and John,

I READ IN MARK-6: I would like to know if anybody else has these problems:
- A port in Jana mode: Interrupt comments: a bad instruction is in the switch register, then turn Jana on the switch register to anything but the 3 halt instructions—our Mark-6 does the 000 to get out of halt and start running again, the instant the switch register.
- If the 8080 exits .5 second before an input instruction, this causes a hang. I had to be loaded from the value F, A before the input instruction about 090 of the time (after about 15 min. warming). This enables my loader/monitor the display 120/byte halfpenny to display 3 sec. These asynchronous ports are a later version of my circuit in Issue 10.3-4 of Micro 8 without the "speed limiters" mentioned above. The Mark-6 end of the circuit uses 3/4 gates (standard) for each 1/0 port converted to asynchronous mode and 2. 100% overhead in addition to what is already in the Mark-6.

The device used is a flip-flop in a tube (usually 94%) to interface the asynchronous control signals, and sometimes circuits are needed to synchronize with the I/O device.

A future version will allow more than 1 device to be used at the same time by allowing interrupts during the I/O wait, 1 or 2 other devices. If you or anyone else is planning to use 256 more memory bytes, destroy only 1 register (could be modified slightly to push/pop any subset of C through L or with 256 more memory bytes, destroy only 1 register)

Sincerely yours,

Thomas R. Amoth
206 Fox Rd.
Medina, Pa. 1965
(215) 355-6168 12/14/75

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SOUTH FLORIDA COMPUTER GROUP

A brief note to inform everybody about the formation of the SOUTH FLORIDA COMPUTER GROUP - with the main purpose of being a microcomputer information gathering and exchange organization.

Group activities are being coordinated by:
Terry Williamson
P. O. Box 68
So. Miami, FL 33143
(305) 277-7527

The correspondence coordinator is:
Roberto Denis
11080 N. W. 39 Street
Coral Springs, FL 33065
(305) 752-7597

No formal newsletters are planned, there being many good ones in existence. (Have you seen MOSS INTERFACE? It's great.) But as developments break or as group buys occur, a FLASH bulletin will go out to all other computer groups and clubs. There are no membership dues, and all So. Florida computer freaks are welcomed.

We would like to know or be informed of any other group notices.

SOUTH FLORIDA COMPUTER GROUP

(Please note that our name was prematurely published in PCC as South Florida Group, so one and the same.)
NEWS RELEASE

MIKE 2 MANUAL

An extensive Manual has been prepared for the MIKE 2 microcomputer offered by Martin Research. Consisting of over 150 pages, the Manual contains complete circuit diagrams and theory of operation for this 8008-based computer. Included also are software listings for MCR2CUB, a versatile operating program for the computer. Provided free of charge with the MIKE 2, the Manual is also available separately for $25.00 (a certificate worth $15.00 towards purchase of a system is included).

ENCLOSURES: MIKE 2 Manual; Catalog

Martin Research, 3336 Commercial Ave., Northbrook, IL 60062;
(312) 498-5000.

David Schultz, DT # 18, 1960 El Rancho, Ensenada, New Mexico 87532, asked us to publish this paragraph from his latest letter: "I am currently working on a device which will allow a microcomputer to generate continuous speech outputs. I am using with the idea of developing this into a marketable form (probably PC boards and/or a kit). However, I don't know how many hobbyists would want a 'talking' computer. Would this be a useful form of output? Is there much interest in such a device? Please drop me a note to voice your opinion. If I don't get any response, I will assume that there is no interest and will stick to a breadboard version for my own use."
I'm pleased to be able to mail out another newsletter in less than a month. In searching for needs, I find that the dissemination of the chatter from participants regarding what is going on is the most important factor to the microcomputer user group. To that end, several changes will be made. I have been informed that several people are interested in contributing articles to the newsletter. In addition, several people have suggested that we should make the newsletter more frequent. To that end, several changes will be made. I believe that the newsletter will be more interesting and informative if we can make these changes.

The following letter was mailed to the Micro-E Computer User Group, P.O. Box 6036, Billerica, MA 01821. It was received by the publisher of the newsletter. Although Bill Uni, the publisher, could not be reached, he informed me that the letter was received by the publisher of the newsletter. It seems appropriate to include full details on the purchase and acquisition of Altair BASIC, but these rumors can be set to rest. The letter containing this information has been mailed to NTS.

An Open Letter to Hobbyists

To the ne plus, the most critical thing in the hobby market right now is the lack of good software courses, books, and software itself. Without good software and an owner who understands programming, a hobby computer is wasted. Will quality software be written for the hobby market?

Almost a year ago, Paul Allen and myself, expecting the hobby market to expand, hired Monte Daviddoff and developed Altair BASIC. Though the initial work took only two months, the three of us have spent most of the last year documenting, improving, and adding features to BASIC. Now we have 4K, 8K, EXTENDED, ROM and DSK BASIC. The value of the computer tools we have used exceeds $40,000.

The feedback we have gotten from the hundreds of people who say they are using BASIC has all been positive. Two things are apparent, however. 1) Most of these "users" haven't bought BASIC (less than 10% of all Altair owners have bought BASIC), and 2) the amount of royalties we have received from sales to hobbyists makes the time spent on Altair BASIC worth less than $2 an hour.

Why is this? As the majority of hobbyists must know, most of you steal your software. Hardware must be paid for, but software is something to share. Who cares if the people who worked on it get paid?

Is this fair? One thing you don't do by stealing software is get back at MITS for some problem you may have had. MITS doesn't make money selling software. The royalty paid to us, the manual, the tape and the overhead makes it a break-even operation. How you do what you do is prevent good software from being written. Who can afford to do professional work for nothing? What hobbyist can put 3-man years into programming, finding all bugs, documenting the product and distributing for free? The fact is, no one besides us has invested a lot of money in hobby software. We have written 6800 BASIC and are writing 6800 AFL and 6800 APL, but there is very little incentive to do this.

What about the guys who re-sell Altair BASIC, aren't they making money on hobby software? Yes, but those who have been successful in the hobby market will be able to continue their hobby computer business.

I would appreciate letters from any one who wants to pay up, has a suggestion or comment. Just write me at 1180 Alvarado SE, #141, Albuquerque, N.M. 87106. Every letter will be read and considered. How you do what you do is prevent good software from being written. Who can afford to do professional work for nothing? What hobbyist can put 3-man years into programming, finding all bugs, documenting the product and distributing for free? The fact is, no one besides us has invested a lot of money in hobby software. We have written 6800 BASIC and are writing 6800 AFL and 6800 APL, but there is very little incentive to do this.

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February 3, 1976

Bill Nitschke
General Partner, Micro-Soft
Dear Hal:

I believe I sent you a copy of QEX/EXCITEMENT, the newsletter published by the Foinettia Amateur Radio Club. In case I didn’t, I am enclosing a copy of the relevant page. You are welcome to reprint it but credit should be given to QEX/EXCITEMENT.

As I am almost finished with the first pass of the back issues of the amateur radio newsletter, you’ve got more data per square inch than any publication I’ve ever seen. My input buffer can completely clog and I’m not on any good for a couple of weeks while reading them until I get smart and starts reading less at a sitting. That’s a dangerous mix. Seriously, I would be very unhappy if you decide to cease publishing especially since I just found it.

SUPPLIERS

I have gotten very good service from James Electronics and Polyphase; slow but reliable from Ancom; and terrible from Lafayette.

HI STYREN

I have an Altair 8800 (the only way to go) with 8k, parallel 1/0, 4 Alistair cassette, TTY-2, and an elk cheapo cassette recorder by Veboe (about $30) which seems fairly reliable (I can’t load Altair 8k basic but has no errors with any other tape either my own or Alistair). I also have a Model 15 Teletype (sanctified), and small plotter which I hope to interface. I need information on a Garam-Pendan keyboard 97594 71-61 21906-14-61 or at least on the encoder chip which is labeled 97627-6. I’d like a list of the 97627-6.

I was hoping to use the system thru the Amateur Radio to other similar computers, but the 200 is quite different from that. As a professional programmer and I am a professional programmer and I am very interested in developing software that can store and play with hardware, I hope to develop higher level languages, operating systems, advanced games etc. My first projects will probably be limited operating systems and Amateur Radio related programs.

I have my own code generation program running which is unique in that it requires only one word per character in the machine code table which is used by all letters, numbers, punctuation, and up to 200 special codes. I hope to write a program to receive names and codes and others to send and receive TTY (Teletype) code.

I am testing a tape data format that requires a file name, say up to 255 bytes, the characters in the file name are in the file name, and provisions for checksums or parity words. This way all the necessary information is included in the tape file and no auxiliary papers must be kept except possibly a list of program names in the library and a list of machines on the tape so the computer doesn’t have to read the whole tape to find a particular program.

It might also be worthwhile to include in the tape an ASCII comments section describing the program but which section need not be put in memory when loading the tape. I expect a loader to load this sort of file could be written in 256 words and committed to FRAK.

I think I’ve run dry for now. Keep up the good work.

Phone (904) 468-2328

Sincerely,

Glen Charnock

February 2, 1976

Reprinted from QEX/EXCITEMENT, the newsletter published by the Foinettia Amateur Radio Club and edited by Glen Charnock.

You may remember that Dave Weisberg and I had great plans for interfacing our computers through a radio so that the two computers could talk, each other. The basic idea was to sign up for the same radio service and using the radio for switching, some sort of protocol allowing the use of both machines to attack problems too large for one machine. Unfortunately we’re going to have to scrap some of these plans since the present state of the art is as expressed in the following letter dated January 15, 1976.

Dear Mr. Charnock,

This is in reply to a letter dated January 15, 1976. The delay is very regrettable and due to the large increase in the number of applications required in this office. Please accept our apologies for the delay.

You indicate a desire to use microcomputers in conjunction with amateur radio stations so that "two computers could communicate through the radio link." We fully appreciate the significance of your proposal, however, the purpose of the amateur service must be to provide a hobby radio service to amateur licensees rather than an operational point-to-point computer service. Section 97.11(b) of the rules states that the purpose of the amateur service is "the promotion of experimentation and advancement of the radio art. Please note that there is a definite distinction between advancement of the radio art and advancement of the computer art. Accordingly, the interconnection of an amateur radio station with a computer would not be within the scope of the basic and purposes of the Amateur Radio Service.

Of course, computer technology may be employed to assist amateurs in connection with their radio hobby provided computer data is not transmitted over the air on frequencies used for amateur purposes. For example, a computer intriguingly different than the one required for a amateur service, to provide a hobby radio service to amateur licensees rather than an operational point-to-point computer service. Section 97.11(b) of the rules states that the purpose of the amateur service is "the promotion of experimentation and advancement of the radio art. Please note that there is a definite distinction between advancement of the radio art and advancement of the computer art. Accordingly, the interconnection of an amateur radio station with a computer would not be within the scope of the basic and purposes of the Amateur Radio Service.

Please find the following statement to the Commission's Rule 97.11(b). Section 97.11(b) of the Commission’s Guide to Teleprinter Operations contains a list of the International Telegraph Alphabet No. 2 single channel five-unit (start-stop) teletype code. The use of any single channel five-unit (start-stop) teletype code is prohibited. The rule states that the Commission’s Guide to Teleprinter Operations contains a list of the International Telegraph Alphabet No. 2 single channel five-unit (start-stop) teletype code. The use of any single channel five-unit (start-stop) teletype code is prohibited.

The Commission is presently considering the initiation of a Rule Making Proceeding to relax the existing regulations on the Amateur Radio Service. We encourage you to write written comments to this proceeding when it is released to the public.

Your interest in the Amateur Radio Service is appreciated.

Sincerely yours,

John B. Holmes

Chief Engineer

Amateur Radio Club

The Amateur Radio Club will hold its first meeting of the 2023-2024 season on February 23, 2023, at the Omnirent Community Center, 1001 10th Street, Omnirent, CA 90030. The meeting will feature guest speakers and demonstrations of amateur radio equipment. For more information, please contact the club at (310) 555-1234.
In a previous letter I indicated that I had been working on a Daytronics Inc. transformer that might be used as a replacement for the Altair 8800 5 volt transformer to eliminate some of the limitations of the 8800. The following is a description of the work that I did, and the conclusions I reached.

I wrote Daytronics and received a sample of the transformer I had used for testing. The information is sketchy, but it is the first time I have seen the details. The core size is 110 volt input, output voltage will be 9.3 based upon a 7T7 Radio Handbook formula.

The physical dimensions are very nearly the same as the Altair transformer. The new transformer is a 5 volt unit. Included are all the other information contained on the spec sheet I received. Perhaps someone in Cal. (Mountain View) could call Daytronics and find out for sure the above values and see if any are for sale.

I've been told power supplies are easy to design, but I've never done it before. The NEC 5000, 15 volt capacitors. MTS uses 3000 volt, 16 volt capacitors or 11,200 uf total. Any power supply expert can it.

Paul Potter Reinhardt II, 532 Phoebus Run Circle, Apt. 6, Ann Arbor, MI 48104. The following modifications to MTS's Altair are cheaper and more reliable because of a reduction in the number of chips.

Page 3
Microprocessors Unlimited

January 14, 1976

Dear Fellow Microcomputer Fans:

I have enclosed a copy of the Microloader Monitor, a useful tool for any interested party on desktop computers. I would appreciate it if you could provide feedback on the product. Thank you for your interest.

Malcolm T. Wright
366 W. Olive Ave, Apt 6, Sunnyvale, CA 94086

The Chesapeake Microcomputer Club

Vol. 1 No. 3 January 7, 1976

For years I had pushed bits and bytes around in 'number-cruncher' wishing fervently to possess my own computing resources for personal gaming and simulation -- but in those days the crush of technology makes last month antiquity. I could not afford a high-end computer or a suitably equipped (and up-to-date) catalog.

Then came the Intel 4004 and 8008, and computer construction articles in electronics magazines. I rejoiced! No longer would I have to go it alone, wondering where everyone else was; the movement, however, still remained mostly underground.

The Chesapeake Microcomputer Club, INC., the evolutionary end-product of that meeting.

Thirty participants were expected; more than one hundred attended. In the course of the evening presentations were given on PAPAs, the Multik 8080, the Altair 8800, and a system offering of the Digital Group, which introduced the organization form and a flexible structure within which to operate.

The main function of the Chesapeake Microcomputer Club is to provide a forum for COMMUNICATION -- vital in a field which depends on the processing and dissemination of information. I know of a fellow in the Mathematics Department at Towson State University who is developing an interface between an Altair 8800 and a Selectric typewriter; at the first meeting the organization was already at least three persons doing the same thing.

Are you interested in microcomputers, hardware development, software development, and the resources you need to get started? If so, join the Chesapeake Microcomputer Club.

Thank you for your support.

Charles A. Lewis
Chairman

Charles A. Lewis
5435 Woodson Court
West Lafayette, IN 47906

P.S. I have 1100 memory board with chips for sale at $6.50 for Vol. 1 or 2 of the Newsletter. Write or call.

Dr. Mark Seber, 156 Hedgewood Rd, Towson, MD 21204, Director of Ultra Low Cost Systems Development for Digital Equipment Corp, renewed for Vol. 2 of the ML Monitor.
manship and the art of communicating, and that it is within the realm of our capabilities to develop effective and efficient systems of communication.

In the past, we have often been asked, "What is the role of the philosopher in society today?" The answer is simple: the role of the philosopher is to help people understand the world and their place in it. The philosopher's job is to provide a framework for thinking about the world and ourselves, and to help us to see things in a new light.

The philosopher's role is not to tell people what to believe, but to help them to think critically about their beliefs and to question the assumptions that underlie them. The philosopher's role is to help people to understand the world and to make meaning out of it.

In conclusion, the role of the philosopher is to help people to understand the world and to make meaning out of it. The philosopher's role is to provide a framework for thinking about the world and ourselves, and to help us to see things in a new light. The philosopher's role is not to tell people what to believe, but to help them to think critically about their beliefs and to question the assumptions that underlie them.

Sincerely,

Gary Fox

[346 East 94th Street, 26th Floor, New York, N.Y. 10021]

Gary Fox

[January 23, 1974]
I feel compelled to write and contribute something to your excellent newsletter. I am an electrical engineering student at the University of California at Davis with a major in Computer Science. I have recently become interested in the "Micro-8" and have been following the development closely. I have purchased a Micro-8 kit, and I would like to describe some of my experiences and observations.

The Micro-8 is an excellent board of superb quality at a very reasonable price. The documentation on it is clear and concise, making it easy to understand. I have made several improvements to the board, including adding a status display for the ports, and the guys down at Berkeley assure me that they are working on it.

My TV is still working, but I hope that it will be repaired soon. Several people I know have had problems with their video cards. Their power supply constantly fails at the crucial moment, and every time I see it, there is at least one small hole that was not plugged properly. The Micro-8 board is a better design for the money, I think.

The Claire-Fendall keyboards are fine as long as the motherboard holds up. Some boards have bit problems while others have trouble with the strobe line. These can all be traced back to the motherboard. This motherboard is a TI KM-5000 which was manufactured for the keyboard supplier and is not available for replacement. If you're lucky you can usually get around the problem by hooking up a 74140 or 74123 to the motherboard and generating your own strobe pulse, or hooking the keyboard gate to the data lines to generate a missing bit.

I am writing an article for BYTE on a computer-controlled burglar alarm system. I feel that such a system could have definite merits. Any ideas?

I am subscribing to the following magazines: Micro-8, NL, The Digital Group NL and PC Week, The Computer Hobbyist, Byte, Mitsu Users Letter, Peoples Computer Company, and ZMUG (The San Jose Microcomputer Users Group). Of all these, I think NL is by far the best for dissemination of user information. I find your NL has a lot of interesting little tidbits that don't get into any of the others. Please define "CUBING".

Enclosed is a check for $6.00 to cover volume 2 of your NL. Thanking you in advance, I am,

Sincerely yours,

John Moorehead

Page 6

January 9, 1976

Regarding the future of the "Micro-8", although the type is a trifling small and inexpensive, it is the most informative and enjoyable newsletter available. The Micro-8 is still available from most of the computer stores in my area. (Unfortunately, I don't seem to have any time to get it together.) I haven't read the manual as yet, so can't comment on that.

We are presenting several kits that may be of interest to your readers. Here is a list:

- TI-35 Video Terminal $12.00
- Screen Read $11.00
- Manual Qr 950
- Serial Interface $12.50
- Audio Cassette Computer Interface $9.50
- TI-35 Clock/Calendar $4.50
- TI-35 248, 246, and PIP Card $12.00
- All kits are double-sided and plated cards except for the TI-35, which is single sided. All boards are available separately at the following prices:
  - TI-35: $30.00
  - Screen Read: $10.00
  - Manual Qr: $6.70
  - Audio Cassette: $4.50
- We are in the process of working on kits for the 16-bit microprocessor: 44 Digital D.V.M.; and the Pocket Calculator as appeared in Jun. 76 Radio-Electronics.

Have a run, good luck to all at the Cabrillo Computer Center.

Jin Helle, owner

Electronic Discount Sales
150 S. 1st St., Mesa, Arizona 85207
It's been almost a year since I wrote you the 1k reasons (or so) of why I bought an Altair 8800. Time for an update since many are asking the same questions I asked then and my initial answers have changed in the last year or two. So basing this on Volume 2 Number 1 of Micro-80, here's my yearly memory dump.

There were a few questions concerning how MITS designed certain circuits. They are probably wrong, but new circuits are available and are still scarce. Some other technical complaints are valid and are still available. The 1.2 volt supply is a good example. It has been substantially improved and now is substantially better than before.

Another point is that MITS does admit its mistakes and has made some effort to correct the problems. One problem with the hobbyist, unfortunately, is that it costs only $10 if you don't own an Altair or 8800 based unit. So be sure to get a unit to make sure it works. The only alternative I see is to know what the hell you're doing and to make sure it's correct.

Another good point--you don't have to buy from one supplier, you have many to choose from. This is often not true of other suppliers, and has made a difference in the price.

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Another good point--you don't have to buy from one supplier, you have many to choose from. This is often not true of other suppliers, and has made a difference in the price.
As I have it in my system, JINBUH begins at loc $7400' (29680) and likely takes 128 bytes at least 256 bytes of space behind it (for future additions) followed by some RAM for a work area. The memory above 256 bytes of space occupies the last 1K before the 32K middle-of-memory block. The first 256 bytes of space is only used for initial setup of the system and includes a 14-bit FPU and four 7-segment LED display (driven in hex) mounted in that area. Then the second 1K on the upper right side of the memory block is used to store the right side.

JINBUH uses the technique stolen from later in the code and the 7-segment LED display (CLP) for providing a window into memory. The memory above 256 bytes of space is used for something better, this window is called CLP (current location pointer). There is also an ELR (end location pointer) for defining memory-to-memory, memory-to-cassette, and sometimes cassette-to-memory transfers. The 8 bytes JINBUH provides the following commands: LOAD CLP; DISPLAY CLP ADDRESS; EXAMINE MEMORY; EXAMINE NEXT DEPOSIT; DEPOSIT CONTINUOUS (hex keyboard loader); LOAD ELF; DISPLAY ELF ADDRESS ADDRESS; EXAMINE MEMORY ADDRESS; SET BREAKPOINT; CLEAR BREAKPOINT; DISPLAY BREAKPOINT ADDRESS; RETURN FROM BREAK;

// the following display commands operate upon saved breakpoint data; DISPLAY H; DISPLAY DEC; DISPLAY H; DISPLAY DEC; DISPLAY PSK; DISPLAY STACK POINTER; CPU MEMORY TO MEMORY; TAP/STOP (jump to loader tape); UNLOAD (UNLOAD (jump to loader tape)); ROUTINE (transfer control); INITIALIZE (reinitializes JINBUH).

// jump to loc $7700' (4th proc).

The AUX command is provided so that a user may put a function in the 4th proc and get to it without extending the command table that is, no need to burn the 3rd proc (command extension table) for a single command extension.

I have made up a complete JINBUH package which includes EVERYTHING. Complete assembled source listing, command reference tables, hardware tables, and an assemblers manual routines. I will also provide JINBUH press - complete details on how to use it are provided for a $10 fee. The JINBUH package is $10. If you are interested, send a SASE for more info or $10 for the JINBUH package to:

PAN-TEC
290 Sweeney Drive
Sunnyvale, CA 94086

Many thanks for a winning publication - here is my related information.

I should have no problems with the memory expansion (double chip) technique, I'll be happy to answer questions via SAGE.

Thanks again,
Jim Brick

With 10 years experience in communications and electronics but none at all with computers I am still in the learning phases. Any of my inventions is not a part of the 100% worked from Altair. I was not aware of the NUVCO or whatever, but I have not rejected this chip but am leading the NOAA at this time. My equipment will not be removed from Altair. I was not a part of the NOAA 10 years ago. The only reason for being in the field is the sound of software that is available and is not available at reasonable prices. I move to see why the NOAA and possibly the IBM can buy a chip of reasonable price at this time. I have many questions on the subject but not sure how to answer them. The only reason for looking at the chip is the sound of software that is available and is not available at reasonable prices. It moves with the chip.

The small white chip can be used in the Altair 8800

See page 6

For ALTAIR 8800

Conrad
Page 8
January 13, 1976

Altair 680 UPDATE INFORMATION

Dear Customer,

Thank you for your patience in waiting for delivery of the Altair 680 microcomputer.

Due to delays in shipment of the first generation Altair 680, it has been decided to upgrade all Altair 680s to the second generation design. This means that the Altair 680 will include the following items at no additional cost:

1) POR monitor. 1702A PROM chip programmed so that you can immediately load programs. Also contains interrupt vectors for software, reset, maskable, and non-maskable interrupts.

2) Asynchronous Communication Interface Adapter (ACIA). Allows machine to send and receive a character at a time other than one bit. Minimizes software needed for I/O routines.

Contains crystal clock for baud rate synchronization. User-selectable for 200, 300, 1200, or 150 baud rates.

3) Compatibility with all Motorola 6800 software. This software will be supplied from MITS, Inc.

Herewith is my $6.00 to start Volume #3. Please continue your good work with this newsletter if at all possible, as none of the other publications which I am familiar with are doing this.

This includes the 1012a, 1013, TCM, and Interface.

Furtive for me was the news that you had a kilo 2, and I purchased one assembled by Tom Kime a few months ago. Along with it came a whole new batch of cassette interface, since when I have a Model 15 Teletype and it is now: u and running. Warning, if ever you run an old teletype, try to determine if it has a synchronous communications card, or a dedicated type, or a combination. If it has one, you may have to use a special program to get it running, even if it is not used by the computer. Also, according to W158 Communication Technique for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not make towns to always be used by the computer. Also, according to the Specialized Communication Techniques for the Radio Amateur by the American Radio Relay League, Teletype does not m

While these changes will greatly enhance the Altair 680, they will delay initial shipment for 30-60 days from the date posted on this letter. Should this delay cause undue hardships, we are offering you the option to cancel your order.

If you decide to cancel your order, you will be given a 10% discount on your Altair 680 memory boards (to be announced in February and scheduled for delivery in March). Should you order or qualify for the discount, please fill out the enclosed form.

Again, we thank you for your patience.

Sincerely yours.

MITS, Inc.

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MY SYMPATHY goes out to Lee Mats [NL V2/21], whose computer was blown by a cheap T.V. SET transformerless radio and T.V. SET are abbreviations that should never have been permitted by the Underwriters Laboratories. Lee's suggestion to always use an isolation transformer is a good one but there is also a possibility that T.V. SETS have higher voltages other than from the power line which are potentially dangerous to a low-voltage device. If it were my computer to be connected to a T.V. SET with 220 or 40 volts DC plate supply, I would be happier with total electrical isolation (Fig. 3C).

WHY CAN'T WE USE OPTICAL ISOLATORS whose inputs are driven by the COMPUTER? The isolator can be powered by 3 or 4 size D flashlight cells. It's own small power supply or you may be able to steal power for the isolator from the T.V. SET itself (or rectify the filament voltage). In the olden days of tubes, direct connections between stages, units, functions, etc. were relatively inexpensive, for such as pulse waveforms (we called it 'video') was frequently via capacitors, and for those applications where an absolute reference level was important, we frequently used a circuit technique called the 'D.C. RESTORER.' The most basic D.C. RESTORER is really quite simple, the CAPACITOR (of equal value) was selected experimentally to be large enough that the waveform to the T.V. SET was a straight line. The D.C. RESTORER will perhaps wish to look this circuit up in an older reference source along with the 'D.C. CLIPPER' and 'D.C. CLAMP.'

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1539 Ala Moana Place, San Diego, CA 92111

January 26, 1976

Sincerely yours,

[Signature]

HERA SIMMONS

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David O'Meara, 2122 Webster St, San Francisco, CA 94115 (563)

169-4321, extension 2460 or 2461 supplied the following information about the upcoming Douglas DEF-8 compatible machine built around the Interlog 1600 chip. He is now working on a keyboard interface for an original Interlog model 80 and also has many other ideas for the new type. He has designed and finds some graphics hardware for generating alpha-numerics and graphics on a CGD.

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2909 Arlan St, January 25, 1976

San Diego, CA 92110

[Signature]

---

312 N. Atlanta St, Atlanta, GA 30309

January 25, 1976

[Signature]
Software by
Malcolm Y. Wright
Micro-Loader/Monitor Rev.8
September 19, 1975

Introduction
The program that will be described in the following pages was developed to be used on the Altair 8800 computer to simplify the location and name of programs written in code. The complete Micro-Loader/Monitor (only 256 bytes long) can be loaded into one ROM like the 1702A from Intel. The program should be located in the upper most page of memory which is 377, 000.

I/O Used
The Micro-Loader/Monitor program is written around the computer and is only 256 bytes long. It is for the keyboard and card reader interface (0 bit) and for the control output port O02 (optional) is for a tape drive or printer interface (6 or 7 bits) with 0 bit control. Control output ports O02 is for driving the results of the special control code used in the Micro-Loader/Monitor routine.

Input port O01 and O02 are read by the sense switches (A thru ID) on the front panel of the Altair. Placing the sense switches to a zero will select port O02. Placing the sense switches to a zero will select port O01 (keyboard).

Control Codes
X(lower case): Execute a program from the starting address set by the j-code. The program must end with a RET(311) instruction. If you want control to return to the Micro-Loader after execution, use the j-code.

I(lower case): Load registers H & L into memory to be used as the starting address of a program to be executed. *....The 1702A is available prestamped from Solid State Music, 205A Delaware Ave, Santa Clara, Calif. 95050

Write for price quote.

Special Routines
The Micro-Loader/Monitor Rev.8 also has three subroutines written into it. Use a CALL(311) instruction to use them.

Decimal addition routine1 [address 377, 311]
1. Type control code to the starting memory address of the augend.
2. Set register H to the starting memory address of the addressee.
3. Set register L to the number of BCD pairs in the addressee.
   Note: Be sure the augend and addressee are the same number of BCD digits.
   This ->
   15 7421 05
Not this ->
   15 7421 05
   34
   21 0011 05
   0011 0024 15
   0011 0024 15
   0011 0024 15
   X do not care bits
   4. Call address 377, 311.
   5. Results put into memory at starting address and up.

Decimal subtraction routine2 [address 377, 325]
1. Set register H to the starting memory address of the minuend.
2. Set register L to the starting memory address of the subtrahend.
3. Set register K to the number of BCD pairs in the subtrahend.
   Note: Be sure the minuend and subtrahend are the same number of BCD digits, see note on decimal addition.
   4. Call address 377, 325.
   5. Results put into memory at starting address and up.

Binary multiplication routine3 [address 377, 347]
1. Set register A to the value of the multiplier.
2. Set register C to the value of the multiplicand.
3. Set register D to zero.
4. Set register E to zero.
5. Call address 377, 347.
6. Results will be in registers H & L.

Binary multiplication routine3 [address 377, 347]
1. Set register A to the value of the multiplier.
2. Set register C to the value of the multiplicand.
3. Set register D to zero.
4. Set register E to zero.
5. Call address 377, 347.
6. Results will be in registers H & L.

To initialize the program, (be sure to un-protect memory)
1. Turn on computer.
2. Hold c-in-witch to stop position and reset the computer.
3. Examine location 377,000.
4. Set j code to 377,000.
5. Load H & L with the memory address of memory that is in your computer.
   256 max., then type 000-H and 377-L.
   1024 max.
   6. Load the stack pointer by typing CTRL-B.
7. Now load H & L with the starting location of your program to be loaded. Start programming and Good luck.

Change CR to a new character.
1. Initiate program.
2. Type 000-H and 073-L.
3. Type 0, 8, 8, 9.
4. Now select and type in the new ASCII character and carriage return.
   5. Type CTRL-D to get back to octal load.

The Micro-Loader can be set-up to branch to an additional output routine needed for future peripherals like a CRT display, printer, etc. This modification is done by changing three bytes in the HIL location in memory.
First, I apologize for being so long with the enclosed $6 and S&H. I hope you decide to continue the ML.

Second, I hope I can contribute to the ML in the not too distant future. I have a design for a graphic display using 256x256 dots on a standard TV. It uses an 8K block of computer memory to generate it. It's fairly simple and economical since no I/O ports are used and the CPU can use this 8K block of memory if graphics are not being generated (or even while graphics are generated).

I am very busy right now finishing a Master's degree at the Univ. of Florida (with Blended Mobility). I will be moving to Indiana in August to attend Indiana Univ., Med. School. I will have more time to 'play' between now and August and will hopefully get this project finished. I'll let you know how it comes.

Sincerely,

Bill Harrell
Willow, Indiana
ML 97-4

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Steven Edelman
Ithaca, N.Y. 14850

On January 19th, I sent a Bank Draft for registered mail for $600.00 TO THE DIGITAL GROUP, yesterday I got my 'return receipt requested' back. They had received my order on January 17th (that looks like a time difference of 2 days). I hope to have the system up and running in about 1 months after delivery.

I looked at all of the systems and the digital group's looked like the best for me. I went to Colby in the Dayton Kentfield last week and was impressed with their work. I would like to correspond with others who are interested with the Digitial Group System.

One company from whom I've had great service is BESONIA, Inc. Mars, I just placed an order with Delta Electronics and haven't heard from them yet.

Keep up the good work and I hope to be reading the News Letter next month. January 27, 1976

Randy, Kentucky (LOD)
65%+9Hp-408
MICRO-8 COMPUTER USER GROUP NEWSLETTER
Cabrillo Computer Center
4330 Constitution Rd.
Marina, CA 93936

February 2, 1976

Our Model 471 CPU board, based on the 8080, is now being shipped in quantity. It is being used by several industrial customers as the intelligent controller in their equipment.

We have announced a new price for this computer. The 471 CPU board, complete with 8080A microprocessor, comes completely assembled and tested for $149.00.

The board is completely socketed, allowing for easy troubleshooting; all MOS parts are first-quality, as usual—no thermal reject, no factory seconds. Three interrupt levels are provided; DMA is supported; and there is an automatic reset of the interrupts when masked for an abnormal period, while an interrupt request is waiting. The board includes power bus drivers, which allow for full system expansion—25 TTL loads on the data bus, and 30 TTL loads on the address bus. As planned, the 471 CPU board is compatible with our earlier 8080-based computer, and will be compatible with our upcoming MIZE 65 (6502) and MIZE 68 (6800).

A MIZE 3 computer is made up of the 471 CPU board; a 420 Console board (keyboard plus six decoded digits); and a 423 PROM/ROM board (512 bytes of RAM, plus an 8080 Monitor program in 256 bytes of PROM). This three-board system now lists for $395.00, fully assembled and tested.

The new price for our 40S 3X RAM—static, 450 ns access time, 5.0 V at 1.0 A max.—is $195.00, fully assembled and tested.

And, our book MICROCOMPUTER DESIGN went to the press last week in an extensively revised edition, with lots of new material on the 8080. It will be bound as a paperback book, and will sell for $25.00 in single quantities. (Volume discounts are available; first-edition holders can write for details on a special discount.) We expect to be able to ship the first copy of the new book by the beginning of February. We have a special price through March—MICROCOMPUTER DESIGN plus the complete MIZE 3 MANUAL, $30.00 postpaid.

Finally, our modular micro series is now distributed through Semiconductor Specialists—for your readers who are associated with industrial purchasing.

SemiSpecs has offices in LA, Dallas, St. Louis, and a number of other Midwestern cities, as well as in England and Germany.

Keep up the good work!

Sincerely,
Kerry Berland

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Dear Hal & Group:

February 4th

Frequently I write asking for information about the IMSAI 8080 computer. Well, I went ahead and ordered one with 1K of RAM. I am having it sent to my new address in Germany. I will let you know what kind of service I get and how the assembly goes.

Please change my address, effective this date, to read as follows:

Vern Brannon
7450 TSI, Box 6924
APO New York 09012

Sincerely,
Vern Brannon

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Page 12
Micro-8 Computer User Group Newsletter
Hal Singer - Editor
Caprillo Computer Center
4300 Constitution Road
N. Miami, FL 33161
March 10, 1976
No. 3

I tried to get NL No. 3 out in 3 weeks but missed it by a little. You wouldn't believe the number of things that have been going on around here. One of my students has our Centronics line printer running at full speed on a 120 cps serial interface. He has a lot about adding handlers to an operating system in the process. We have three more projects to finish on the MS8 and then can go back to serious micro work. I modify the time share BASI 8E (End 7E) to handle floppy disk 23 and a triple system (separate emulators for a Jue 3, 4, and 5 compatible computer in a couple of years. Everyone automatically says a TV set. He proved that VCR OUT will be cheaper. The circuitry will involve a processor controlled ROM and about 4 to 5 chips—about $25 worth of electronics. Think about that one!

I was asked if the SASE was a great idea but did not work too well. At least we didn't have to make the checks back (subscriptions are up to about 25% now). Those who did send an SASE will be reimbursed with some kind of worthwhile goodie in it eventually.

Consumer legislation
I think we should get mean and nasty (at least by letter) with any supplier that violates the new consumer legislation. If you want to, you can send a copy of the bill to the proper agency. When I received word that my TV was not working, I was determined to get the money back. The shop people were not too cooperative, but they finally gave in.

Data basics
As always, no paid advertising is accepted. However, I always mention that informative literature that is of interest to you may be sent to me. I try to select stuff that has not been published as an original piece, and I try to do so to be somewhat of a duplication. The NOS8 board that will plug into an ALTIAIR on page 11 is a fantastic item that needs to be known about.

Sprint news
If you are having trouble getting the mailing list for Volume 3 straightened out, you may have gotten 2 copies of Volume 3, but better two than none. Volume 1 is still available at $1.00. Volume 1 is still available at $1.00.

Tiny BASIC Newsletter
Bob Albrecht of FCG sent out the first issue of Volume 2. It is fantastic if you have any deal to make.

Dear Hal,

My Digital Group 8080 System was up and running only 14 hours after it was taken out of the envelope. It consists of the Seding TV and cassette interface, four parallel inputs and four parallel output ports, a 8080A microprocessor, and 2K of 8050A memory. The system also includes a 256 byte ROM, which contains a cassette loader and several other useful subroutines, all of which are user-callable for programming.

Assembly directions were clear, but not Heathkit type, and some knowledge of electronics is assumed. However, I believe that anyone who knows resistor codes and can find pin 1 on an IC can assemble the kit successfully. Software requires a low-power interface with a fine tip. An oscilloscope and a frequency counter were the only test instruments used for final checkout.

I assembled the input-output board, and it worked perfectly the first time it was plugged in. It is the first kit I have ever built. The board and the TV-cassette interface boards were assembled by Robert White and Duke Friend and experienced kit builder. The board works perfectly the first time. The TV-cassette board had the only assembly error, we misread the color codes for two resistors. After we located the error, it took ten minutes to replace them with the correct values. No other problems. All ICs were good, which is remarkable. Two capacitors were not supplied, but we took a turn with Robert White's junkbox.

Software supplied by the Digital Group consisted of a game program like Tic-Tac-Toe, a memory check routine, a Basic game routine, and a System Monitor program allowing for keyboard programming in ASCII from an ASCII keyboard, Cassette read and write routines, and a storage dump routine useful for debugging programs. After working with the supplied software for several days, I wrote a routine to include many of the features of Monitor-8. When I was satisfied with it, I made listings available to other Digital Group System owners, if they want it. The software supplied is good, but should be regarded as just the beginning, not as the final word.

I'm using my system with a surplus Clare-Pendar keyboard purchased from the Digital Group (it works perfectly, but it's not too happy with the feel of the keyboard), and a power supply borrowed from Robert White. My own power supply from the Digital Group has not been received yet. Everything else came from the Digital Group was received within 10 weeks of the order.

Future plans include 8K of memory (already ordered), another cassette interface allowing for motor control, and a scientific calculator interface. Programming is my main interest, and now that my system is running, I can get to work.

Sincerely,
Hal Singer - Editor

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Hal:

Enclosed is a check for $9.50 for NL issues 1-11 of volume 1. (I've got #12, so don't need another.) To me, the NL provides an invaluable source of glibbit, trivial and useful information, and I'd hate to see it leave the scene. Keep up the good work!

As far as the letter from Bill Gates in the 10 Feb issue, I've got the following comments:

1. Pibbited software, as far as I'm concerned, is not the way to go for us. We will not purchase any more BASIC programs that NETS BASIC; doesn't do it.

2. I do not possess a copy of MITS BASIC, nor am I planning to buy one. Starting from TCO's "TINY BASIC", I feel I can write a quite satisfactory BASIC compiler/interpreter of my own. It appears that the NETS BASIC is a little too "basic" (I don't like "black box" software, and NETS BASIC is just that). However, I'm interested in getting out the source listings.

3. As far as Bill Gates's comment, that $40,000 of computer time went into the development of the various BASIC versions, I feel that's quite laughable. To be precise, the actual development charge for IBM 370/168 time, which includes overhead, staff salaries, etc., was $11,000 per CPU hour. If we had three programmers on a project who used 200 CPU hrs in a year for program testing and development, they'd be out in the streets looking for employment quickly. (When I was in school, I wrote a compiler for something on the order of 2 basic 2 more evenings and 1/2 hour of IBM 704 time, the standard student computer at that time.)

4. In Computer News of October 75 (page 3), J. Edward Roberts, NETS president, states "We made a $180,000 royalty commitment to IBM for the BASIC available to our customers." I certainly wish I could have bid on that project.

A price tag like that to me indicates someone getting to try to make rich. Given the top software programs in this neighborhood might make $10k a year, if he's really good.

- The "famous" quote:

Joe Modus

S. A. COCHRAN, JR.
3160 Westwood Drive, #3
Columbus, Ohio 43202

February 23, 1976

Dear Fred:

This letter confirms our phone conversation this evening. As my brief note to you, I have acquired an IMSAI 8080 microcomputer module. I am the only在美国独占者 of the IMSAI 8080 system. I have started working on some basic programs and applications that are suitable for home and hobby. My goal is to produce a simple BASIC interpreter that can be used as a teaching tool in the classroom.

Regarding the keyboard issue, I understand that the problems are due to the nature of the keyboard design and the way it is manufactured. This issue will be addressed in the short term.

I am aware of the issue with the lithium battery and the potential power loss. I am planning to use an external battery pack to mitigate this problem.

Thank you for your patience and support.

Best regards,

Joe Modus
Thanks to Samuel W. Daniel, 402 Juniper St., Vandenberg AFB, CA 93435, for writing in with a letter about his PDP-11, which is a Digital Group (DG) system he is very seriously assembling. He has already completed the hardware of most of the DG memory, and is now testing the versions out on the DG microcircuit system loaned to the Gallo Computer. His own system should be up and running within a week or so.

Denton H. Schaub, Jr., PO Box 25, Gambell, AK 99645 is currently building a Digital Group DG 800 system which he chose because of its operating system concept: TVT, expandable memory, bootstrapped BIOS, cassette interface, microprocessor, RAM, and tape drive. He has also included a digital oscilloscope. A taped version of the DG 800 operating system cassette. In general, he has nothing but praise for the Digital Group. They have sent him parts of the kit as they became available in an attempt to meet his 3-week delivery schedule. He said the instructions were good, and that a certain level of competence is a moderate amount of circuit theory and building experience is best.

Randall H. Webb, 123 Stratford Ave, Wateraka, CA 95003 has a bare bones Altair and has bought the basic ICs from Pnoff and gotten the basic parts of the kit as they became available in an attempt to meet his 3-week delivery schedule. He is extremely impressed with the interface he has so far. He has a keyboard and plans to add 8k of RAM and a system. He has the NEK as a major at MCW and hopes some of his work will earn credit toward graduation.

Tennis Lichnow, 1649 Donnelly Ave, Victoria BC, Canada V8X 1K9, owns an Altair 8800 and has subscribed to Vol. 2 of the NL. He says he hopes to contribute to the NL in the future.

Law Loo, 709 Quintard, Anniston, AL 36201 says he has a buzz 8 x 4 x 13 memory stack, and would like more ideas or ideas on adapting it to the Altair 8800.

Bruce Brown (#HIBTV5460V), 4001 Kenmore Ave, #202, Alexandria, Va 22304 said the newsletter is doing an outstanding job providing invaluable information not obtained through commercial publications, and since someone of his acquaintance is interested in a Digital Group DG 80 system, he thinks we are getting the best from his experience. He uses a homemade 8000 system with 8k RAM, and 8k PROM tied to a NEK 8681 TV raster to provide a "weaselware" remote access terminal.

Bob and Margie Jellison, 33560 Frontcrest, Newark, Ca 94560 recommends a textbook for the Altair 8800: "Digital Electronics - An Introduction" with accompanying workbook ($20.00 each from [illegible], 1501 Page Mill Rd, Palo Alto, Ca). The book is also called the NL 8000.

D. Mark Allen, 2467 Semlock Ave, Norro Bay, Ca 94942 is working on a TVT type writer he is trying to interface with his Altair 8800. He is interested in an 8 or 16 bit parallel modes which he is trying to get to work and should give a baud rate around 2400 if it works.

Vernon T. Kemp, Kemp Associated Enterprises, Inc., 19A Edgmond Lane, Harrington, NJ 08250, recently received a new Altair 8800 new to the NL.

David Gillette, 1131 N, Lotta Dr., Los Angeles, Ca 90063 only recently received the Micro-6 kit, for the first time. He has a Mod 4/7D and requires a floppy diskette interface.

Peter Wolfe, 45409 Highland Rd, Box 152, Redwood City, Ca 94062, Canada vivo 246 says he is one of the approximately 5000 Altair owners, but he bought his as a part kit and is still trying to put together. He said the NL has been a good way to do so when we said "it is quite possible that we may have hundreds of participants.

Jack Kincher, 15435 Meyers Rd, Detroit, Mich 48227 sent in $5.00 for the next issue of the newsletter. He has a Mark 8 and is interested in expanding the memory.

Lee C. Harman, 2944 Snyder Ave, Cheyenne, Wyo 82001 is currently building a MOB-8, but wonders if he is going to be without a computer. His plans call for a kit of 312000s RAM for the MOB SO and also the Basic BASIC. He also wants to learn how to read assembly language. I hope he will be able to do so soon.

Dave Higley, 24220 Harding Rd, Menominee, Mi 49808, has a Mark 8 computer and is building a new TV that is very nice (more than 15.7500/sec, parallel, 9500 baud, 10 rate for serial transmission) with the interface problem may be readability. He promises more details if it is ever finished.

Lodges K. Amstel, Jr., Box 281, Kutztown, Pa 19530, hasn't worked on his Mark 8 for a long time, just received a TVT-16 from Micro Mini Mart, and has added a new cassette interface. He wants to get a Monitor for the Mark 8, but doesn't have the money to buy one.

Scott R. Burnandt, 3320 E 1st St, Inver Grove Hts, Mn 55077, has a Scelbi 88 with 8k RAM and a Digital Group TVT cassette interface. He has also ordered a DG-8000 system and is considering building the 8k 64 x 512 interface from HP. I'm sure he will do it.

Bob S. Buell, 2467 Semlock Ave, Norro Bay, Ca 94942, says he will send the NL and the same day, and found he couldn't put down the NL until he had read all the 3 issues, and he too has been building a Mark 8 computer hobbyist. He has the NEK BASIC tape from MITA, but copied his CPU and had to send it back to MITA for repairs. He is very impressed and now has a Z80 language. He faxed in a note to the NL.

Larry L. Sullins, 218 Shades, Phoenix, Az 85343 says he received the NL and Byl and the same day, and found he couldn't put down the NL until he had read all the 3 issues, and he too has been building a Mark 8 computer hobbyist. He has the NEK BASIC tape from MITA, but copied his CPU and had to send it back to MITA for repairs. He is very impressed and now has a Z80 language. He faxed in a note to the NL.

Martin Haase, Jr., Box 1540, Boulder, Co 80302, expects to have his MGS Technology 8000 system running with 16 kbs of 8080 with 2k of chips and 2k of 8210s, a digital TV and cassette interface which worked flawlessly the first time it was turned on, and a keyboard hooked to a UART interface to the 8080. Future plans include a D and E converters, floppy disk, modem, a line print, 80 dot plot and CRT graphics. His next CPU will probably be an 8080 because of the amount of software available for it. He's also looking at the Intel 8085 and the PDP 11/11. He would like opinions on the Intel 8030.

The Lincon Calculator/Computer Club has just formed at Lincon Guidance and Counseling Center, Agriculture, Agronomy, Animal Husbandry, and Animal Science, and meets during lunch hours to promote computer interests. J. R. Bennett is President, and S. Liberaton is Secretary.

Theodore J. Kamine, 585 Aventon, Palo Alto, Ca 94306 is just now nearing completion of his Mark 8 and many of them are in cold weather countries. He has finished construction, and because of how cold it is, he will now be able to use it. He says he will probably have an 8080 system running before the Mark 8 is working.

John Griffin, 40388 28th Pl SW, Federal Way, Wa 98003, has a mark 8 with 160 RAM, TVT, keyboard, and of course, the NL. If you can get to him, you'll find a good test editor program.

Don Harkel, 1152 E North St, Waukeha, W Is 53186, is building an Altair 8800. Future plans include BASIC, from MITA or someone else. He is looking for a suitable CPU, but hasn't found one yet. He has a Mark 8 and 8080 calculator interface from Micro Mini Mart, and says the board is inaccurately drilled and the assembly drawings are inadequate.

Mike Talbott, 3329 Parkview Ct 6, Columbus, In 47201 (812) 356-2739 (a new address) is getting very close to starting construction of a system based on the 8080, which is more likely the MGS Technology 8000, which still likely get from Ohio Scientific Instruments, Box 32/4, Hudson, Oh 44236.

John James, 1597 Homestead St, Concord, Mass 01742, has a Mark 2 with 32k RAM, TVT-11, and module cassette interface. He reported more problems with the 32k 100k and 32k 100k versions and has no more trouble. He modified the Sunrise Operating System to work on the Mark 8, and used ASCII code learning program, which would randomly send letters, check on correct reception through the keyboard, and print out the correct letters with a list of interesting mistakes made by the user.

Baron R. Basker, 774 Pinecwood Ave, Tujunga, Ca 91020, has worked out an ASCII to Octal loading program which he used with his Mark 8 and a TVT-11. His next project is building a MOB-4800 setup.

Page 3
March 1976

In the issue I just received, I noticed that people are now telling what other newsletters and the things they subscribe to. I currently subscribe to Byte, Pop, Electronics, Radio Electronics, "Electronic Design", "Electronics", "PC Magazine", "Popular Electronics", a pair of "Audio oriented maps", and the Digital Group Clearinghouse, as well as the ML. (My SWIFT TV is still awaiting the leaving hand of a Maintenance Permit, so I can't convey to my PDP how they feel about it...)

With all the pain it has been in and only 's or 's.

Maybe I should not talk about this, but I am finally ready to evict the first of a series of homebrew design articles from the PDP. It is a series of five articles which I have written over the past six months. If it were to be printed in the ML it would galvanize us all in terms of 's, I am currently tightening it up, only 's, "Designing a Personal Computer".

The following is a list of ways, for my system, I have decided on using the ML Technology 's:

1. If the first and time prone to errors.

2. I have no experience in devising the necessary clock circuits necessary for nearly every other 's in existence. 's, it's built into the 6502.

3. MG Tech, has come out with hardware and software manuals which make use of the work easy.

4. The 6502 treats 1/0 devices, as an impenetrable sore, with my up and coming modifications.

5. Due to some of the innovative things I plan to add, I WANT to start nearly from scratch.

6. I do not keep costs as low as possible, a prime consideration has been that the 6502 is almost every bit processor. No chips are doable in small sets, and it's an advantage to make all these new DB chains as possible. No chips are coming out.

7. I do not plan on just designing one system, my NEXT set will almost definitely be based on the Intellis 6502 chip. I am a fervent F8 Frankfurt.

8. I have all the 's documentation on hand. I don't know how long it may take to get comparable info from Intellis, I do know that it will cost a pile from all over the place.

Together, these reasons spell MG Tech, 6502. After I have gathering experiences, and time, I will seem right into an Intellis system. The price advantage of an 6502 over a 6502 is almost nonexistent. The only real advantage of the 6502 is the relative cost of the computer is lower. Depending on the data I have at this time, I am planning a 6502 for $30,000.00 for the digital groups, the memory board, and $350 for the controller (optional.)

120K X 16 K 1688 / 16186 (Paveline Steve Zelenski's deal works out)

Using Jim Brice's big graphics, it is possible to make the memory board accept up to 16 K.

Now I have a problem. Currently, I plan my 6502 card cage as ten lights with a single line super bus, maybe it's a single problem, but I have no current data on bus drivers. (My next room, semester long data library is national's 1974.)

How do you get around bus expansion if you have 8040/8042 reading off of the card in the back, and if you have no problem up to ten slots, but what happens after that. I wish to have to plug all my lines through another set of buses for every ten slots. Also, what is the best way to terminate the data and control bus so as to be 8040 safe??? If these problems are easily solvable, I will seriously consider going to 20 slot cage. I am hoping that the resulting cage will come off as something like IMI's 6800. Please, some help on this.

Finally, I am still interested in getting a WIMP cheap model 32 printer for my MAC terminal. Also, can someone recommend either a good price processor I have access to high school computers, a pair of making of two sided PC boards, or is it cheaper to send my schematics to someone else. If any, MG!!

Yours A. Robbington Computing, 39 Pequot Road
Wallingford, CT 06492

Page 4

Sincerely,

Mark B. Brown

Micro-B Newsletter
At last long I am getting around to writing you! I have learned much from the newsletter and if I did, I contributed.

My background is B.E.E. and I. M. I. hope to get something together in the medical engineering field when I finish my internship and plans are nebulous now.

My system is 6502 based, mostly wirewrap, with Dr. Suding's modifications and F2EV (퓽). A Digital Group cassette interface is working well with the loader program in two 8223 HREP (or must be). The system is tall (though I have built a 6223 program which is controlled by the Mark-8 - programs computer which is controlled by the Mark-8), programs about 8223 in about three minutes (that send a program keyboard and a video monitor program would be better (my next computer .....).

Power supply is a homebrew plug which is ugly but cost effectively designed (10 watts 9v.). The monitor is a 12" color with a video output of 0200 through a transformer which works well.

After writing some programs, I decided that hand assembly was not the way of the future (even with an electric eraser — modified wire wrap paper). On investigating monitors and cassette, I decided the M1 Monitor 8 was the best way to go (even though it is only a "home" cassette). The Monitor 8 was modified so that it could be used with the Digital Group cassette interface. I also couldn't resist adding a few goodies such as software scrolling for the TV, new commands to insert and delete instructions (with automatic adjustment of program 218 and PAL addresses to maintain registration of loop), zero buffer area, and load ASCIIT test into memory. These new instructions coupled with the original functions of the Monitor 8 (symbolic and total load and dump, copy and translate functions, breakpoint insertion, program execution, and editing capabilities) make a very handy monitor in 2K of memory. The modified Monitor 8 will be available through the Digital Group.

I would like to put in my vote in favor of the computer conference as suggested in FL #12 by David Christiansen. This would be an ideal format for the FL to evolve into now that schematics and kits are available for 103 modesta. This would save a lot of paper, postage and delay. It seems like the logical next step.

Please keep up your efforts. We need your open forum, informal forum free of advertising bias.

Sincerely,

Mark B. Brown

March 1976

I would hate to do an audit trail on how I happened to run across your address. To make a long story short, I have been trying for the last six months to plug together enough information on the 8080 to assemble the structure of a small system. Although I have most of the hardware, including the 8080, I can obtain no specifications on the CPU (clock cycle/machine state outputs 50, 51, 52, etc.) My request for project proposals I have sent to a number of electronics, and ignored by Intel. Last week, I obtained a back copy of "The Computer Hobbyist" which mentioned your group.

Could you please provide me with a copy of the MARK-8 plans (logical/schematic). If possible, plus an 8080 user's guide. If not, could you lead me in some direction in which I might obtain these items?

Please notify me of any costs which may be involved.

I would be forever in your debt.

Larry L. Larsen
505 Village Green Parkway
Newport News, Virginia 23602
December 15, 1975

Dear In,

I am writing to inform you that the information in the December 15, 1975 newsletter was not correct. The information in the December 15, 1975 newsletter stated that I was not interested in Altair 8800 back to 102 in 1969. However, this is not true. I had been interested in computer hardware since 1965, and I purchased my first computer system, a Prime 102, in 1969. I have come to the conclusion that if there is enough interest I will make an equivalent sized system and sell it. The purpose of this letter is to gauge that interest.

I am asking everyone that is interested in Altair 8800(*) -48K board to drop me a postcard (or letter) stating their name and address. These are ignored busters. DISCLAIMER: I do not offer Altair(*) products on bid, I sell parts and accessories only. Any references in the Altair 8800(*)(?) is meant for display purposes only. The display boards will contain the necessary parts required to display on a graphic display (approximately 150 IHC components you can read on one side of your display). AC switch will be installed in the graphics display by the board if you have one. The memory boards will have provisions for a 48K display (approximately 150 IHC components you can read on one side of your display). The display will be changed in the graphics display by the board if you have one. The memory boards will have provisions for a 48K display (approximately 150 IHC components you can read on one side of your display).

The positive prices are as follows:

<table>
<thead>
<tr>
<th>Description of Board</th>
<th>Cost (Estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>$15.00</td>
</tr>
<tr>
<td>Memory (Static or Dynamic)</td>
<td>$10.00</td>
</tr>
<tr>
<td>Power supply</td>
<td>$8.00</td>
</tr>
<tr>
<td>Display and control</td>
<td>$10.00</td>
</tr>
<tr>
<td>SET I (1 each CPU, F/ID, and C)</td>
<td>$5.00</td>
</tr>
<tr>
<td>SET II (4 each of either static or dynamic)</td>
<td>$5.00</td>
</tr>
<tr>
<td>SET III (1 each of any display)</td>
<td>$10.00</td>
</tr>
</tbody>
</table>

I am willing to produce any other boards if there is enough demand. Along the same lines I may be able to produce the flip display, connectors (both 200 pin and 100 pin), and ICs. Please check with me at the time of your order. Send your order to Altair 8800*(?) 1111 North Main Street, Kalamazoo, MI 49001. I hope you can keep us informed on your needs, since there are not enough hobbyists here to form a group and make enough to build our system.

If the demand is high enough, I will send out an order form by the middle of January to everyone that sends me a postcard or letter with delivery to be the last part of February or first of March.

Your sincerely,

Jim Rent

PO Box 51016
Sunnyvale, CA 94087

---

Dear People,

Please send a change of address from PO Box 5104 to the above box number, everything else is the same.

Second, please ask in the newsletter if anyone else received the Altair 870 terminal that was offered for a while earlier and whether there is any documentation (scheme sheet, memos, etc.). I and a friend of mine in South Carolina have each one and need the info.

I have sold a set of 480 boards and NOS that I haven't had time to get into (moving etc.) and an helpme friend here with a 6800 system for stock market stuff. I am also working on a alpha-numeric terminal, a 200-pin display terminal usable on a breadboard with a 200-pin display terminal on the computer side.

I have heard that a hobbyist friend here with a 6800 system for stock market stuff. I am also working on an alpha-numeric terminal, a 200-pin display terminal usable on a breadboard with a 200-pin display terminal on the computer side.

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I have heard that a hobbyist friend here with a 6800 system for stock market stuff. I am also working on an alpha-numeric terminal, a 200-pin display terminal usable on a breadboard with a 200-pin display terminal on the computer side.
Interrupts can be set and reset; the assembler symbol table can be accessed; and a program can be executed, all under keyboard control. The utility routines include multiply, divide, ASCII-to-ASCII and BASS-to-ASCII conversions, CTF 1/0, and more.

**Comments**

Sphere has what I consider some major hardware deficiencies (especially the keyboard) and some very good software. Be that as it may, Sphere is one of the few companies that sells a complete system for a reasonable price. However, in its current form, the present state of the documentation probably makes construction extremely difficult for the inexperienced builder. To date, Sphere has been an overall excellent performer, without regard to the individual components, and has been appreciative of any feedback. On the other hand, the delivery times are not as good as had been first anticipated and promised.

In general, depending on the intent of the user, the Sphere system is a pretty good system for the money. After all is said and done, you have a system for the $500, or so, that you have spent and not just a box with front panel switches. Each individual will have to weigh the benefits against the deficiencies and make his own decision on whether to buy and how much, so that the potential buyer can go into his purchase with his eyes wide open. I should note here that my system was delivered.
Dear Sirs,

I just received the Nov. issue of your newsletter, and I was shocked to see the article by G. J. A. Jones, "The Bermuda Triangle - The Case of the Lost Plane," on pages 8-9.

As a veteran pilot and former member of the Air Force, I feel qualified to offer some additional information. The Triangle is not the only known area of unexplained disappearances. There are other similar regions around the world, such as the South Atlantic and the South Pacific. In fact, the Triangle is just one of many theories about the disappearance of Flight 19.

I also believe that the Triangle is not the only factor in the mystery of Flight 19. The pilots had been flying in some of the worst conditions imaginable, and the weather report at the time of the flight was extremely hazardous. The combination of these factors could have led to the tragic outcome.

I hope you will consider this additional information in your future articles and continue to provide your readers with the truth about these events.

Sincerely,
[Name]

---

It seems that the document is a newsletter about aviation, specifically discussing the Bermuda Triangle and Flight 19. The author is offering additional information and correcting some misconceptions about the Triangle. The letter is written in a formal tone and provides a detailed explanation of the circumstances surrounding Flight 19.

---

Dear Gentle People,

Please send Vol. 3 N.1 thru 6 if it has gone. I realize that I am a little late with this but being the eternal optimist I thought I would anyway.

I have been living in London for the last 4 years but am now going home. Home is 120 West Cork, Bozeman MT 59715. Please consider that as an official change of address notice.

I have an Altair 8800 with 1K memory, TVI 11, cassette interface from IMS Associates (if it ever reaches me) and an ASR-33 with a 1155 50 Hz motor in it. Would sincerely appreciate any information as to where I could beg, borrow, etc. a 115v 60 Hz motor for the ASR.

Now for the software, I don't have any. Am interested in MITS Extended Basic but I am not very impressed with dynamic memory and I can't afford static memory. One note of interest is that Mini Software, P.O. Box 7438, Alexandria, VA 22307 is offering PWTRAM AND BASIC software packages for the 8800.

Here's hoping that you are alive, well and still publishing.

---

Dear Sirs,

Please send me information on starting a subscription to Micro 8 News.

I have a MOS 6502 system in operation and would like to possibly submit a construction hints article to your paper.

Very truly yours,

Gerald D. Severson
30 Irving Terrace
Depew, NY 14043

I would like to know if anyone has tried to interface a high speed commercial computer tape to an Alaris BRC for an E-800 computer.

I would very much like to hear from them.

Thank you,

[Name]

---

December 15, 1975

1202 12th Street Court
Miami, FL

Dear Sirs,

I just received the November issue of your newsletter, and I was shocked to see the mention of the Bermuda Triangle. As a former pilot and member of the Air Force, I feel qualified to offer some additional information.

The Triangle is not the only known area of unexplained disappearances. There are other similar regions around the world, such as the South Atlantic and the South Pacific. In fact, the Triangle is just one of many theories about the disappearance of Flight 19.

I also believe that the Triangle is not the only factor in the mystery of Flight 19. The pilots had been flying in some of the worst conditions imaginable, and the weather report at the time of the flight was extremely hazardous. The combination of these factors could have led to the tragic outcome.

I hope you will consider this additional information in your future articles and continue to provide your readers with the truth about these events.

Sincerely,

[Name]
Pardon this rather belated reply. Enclosed is my check for Volume Two of the newsletter. I feel that it serves a very worthwhile purpose, and would have continued in print as well, but think that there must be a better way than having it all fall on the backs of just two people.

I have not written sooner as I have been rather busy getting the hardware working. Martin NIXE is working well, and I certainly recommend the product. Enclosed is a short memory test program for the NIXE. I wrote this before receiving the Martin instruction book. This program is very different from most in the literature in that it only tests one page at a time, but takes each location on the page, writes a zero and reads it back, checks, then writes a one, checks, and keeps doing this for all numbers through 377 (octal) at the one address. When that address is fully checked, it moves to the next, and cycles through the same procedure. This seemed to me to be a little better test than simply writing one number, or of galloping a pattern through the memory.

The other hardware going well, I think, is my NIXE. It seems to run MONITOR 8 properly, but teletype bugs at test time leave me some doubt. Both systems, Martin and NIXE, are intended as development tools for two dedicated applications: a data logger, and a minimally smart teletype terminal for control or data entry.

Again, I appreciate the newsletter greatly, and wish it (and you two) the best.

Don Land

ASSEMBLY LANGUAGE PROGRAM: NIXE MEMORY TEST

<table>
<thead>
<tr>
<th>Label</th>
<th>Mnemonic</th>
<th>OP Code</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>XRM</td>
<td>JRM</td>
<td>330</td>
<td>/start from page top, work down</td>
</tr>
<tr>
<td>LHI</td>
<td>LLI</td>
<td>377</td>
<td>/sets page address</td>
</tr>
<tr>
<td>LOOP</td>
<td>NOP</td>
<td>000</td>
<td>/ still checking address</td>
</tr>
<tr>
<td>LHI</td>
<td>JFZ</td>
<td>001</td>
<td>/next address</td>
</tr>
<tr>
<td>JMP</td>
<td>LOOP</td>
<td>000</td>
<td>/still checking address</td>
</tr>
<tr>
<td>JM</td>
<td>LRD</td>
<td>000</td>
<td>/sets address on page 0K</td>
</tr>
<tr>
<td>XRM</td>
<td>JMP</td>
<td>000</td>
<td>/still checking address</td>
</tr>
<tr>
<td>DIS</td>
<td>DISPLAY</td>
<td>000</td>
<td>/no display of fail address</td>
</tr>
<tr>
<td>PALL</td>
<td>222</td>
<td></td>
<td>/no display of pass message</td>
</tr>
<tr>
<td>HLT</td>
<td>302</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAL</td>
<td>322</td>
<td>/NEX display of fail address</td>
<td></td>
</tr>
<tr>
<td>HLT</td>
<td>322</td>
<td></td>
<td>/NEX display of pass message</td>
</tr>
</tbody>
</table>

MACHINE LANGUAGE PROGRAM

<table>
<thead>
<tr>
<th>Memory Location</th>
<th>Byte Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>250 010 066 377 056 PPF 370 317</td>
</tr>
<tr>
<td>010</td>
<td>271 326 331 110 036 010 124 001</td>
</tr>
<tr>
<td>020</td>
<td>140 002 010 104 006 010 061 120</td>
</tr>
<tr>
<td>030</td>
<td>044 010 250 104 006 010 362 353</td>
</tr>
<tr>
<td>040</td>
<td>106 370 000 000 000 002 061 125</td>
</tr>
<tr>
<td>050</td>
<td>016 320 000 000</td>
</tr>
</tbody>
</table>

NOTES

This program checks one page (256 bytes) of memory at a time. The page being checked is specified by PPF, in the program. Each byte is written, then read, with each octal number from 0 to 377. If the number read is not the same as the number written, the program halts with the address displayed on the NIXE seven segment display register. If all addresses on the page pass the test, the program halts with "123212" latched in the display register.

1975-11-21
D. Land
Human communication via data networks

Computer conferencing adds new properties to organizational communication and already is sufficiently easy for fairly small groups. By Murray Twerski

Office of Emergency Preparedness

There are two major reasons why you should learn more about computer conferencing. First, you are running a very large organization, and other data network communication modes cannot compare with it for the size, speed, and ease of use. Second, your own efficiency in communicating with others, can be significantly improved by knowing more about computer conferencing. We have learned this through direct experience in communication requirements and a wide range of working groups.

The second reason, to develop computer conferencing skills, is an additional benefit of using the system. Computer conferencing can be a very effective tool for learning the skills necessary to use this exciting new technology for your personal or professional benefit.

Verbal versus computer communication

Some people communicate best in the face-to-face situation, whereas others are uncomfortable with face-to-face interaction. A verbal communication channel is not always the most convenient or effective channel. However, by using computer conferencing, we can all become more effective communicators.

Computer conferencing provides the opportunity for subgroup discussion, or perhaps spontaneous discussion among all participants. One general's whisperer's whisper to another general's enclave which cannot be understood by others, or alternatively may be preserved for later use, or even transmitted to the future. Computer conferencing can be used by individuals, or small or large groups, to disseminate information, collect data, and encourage discussion.

Verbal versus computer communication

everyone should learn how to use a computer as a tool for effective communication, and should become familiar with this new technology. The difference between verbal and computer communication is that with verbal communication you have to say exactly what you mean, whereas with computer communication you can say almost anything you want.

Computer conferencing is an exciting new form of communication that has a number of advantages over verbal communication. For instance, it allows you to communicate with people who are in different places at different times. It also allows you to communicate with people who are in different countries and even on different continents. It also allows you to communicate with people who are not physically present.

Computer conferencing is a tool that can help you communicate more effectively. It can help you communicate with people who are in different places at different times. It also allows you to communicate with people who are in different countries and even on different continents. It also allows you to communicate with people who are not physically present.

Computer conferencing is a tool that can help you communicate more effectively...
Here's my six bucks for volume 2. Of all the computer hobby publications I have encountered, the Micro-8 newsletter is unique, and would be greatly missed if it were discontinued. Keep up the good work.

For those of you who may have wondered what has become of Phil Mork, I am alive and well and living in Cleveland, Ohio—flattening my education in engineering at Case Western Reserve University. By Mork-8 now has two whole Xs of 1010, the Digital Group TV & cassette, a two channel analog output, and a SWF keyboard & TV-TF1 retired). I've got the MIL MONITOR-8 modified for the Digital Group TV, up and running and on cassette (Digital Group, 375 head). If anyone out there is interested, I'd be glad to send a copy to anyone who sends me a blank cassette and a SASE for return of same. (Better yet, how about putting some 8080 software on the cassette?) If you use the 8080, you need Monitor-8. My version omits load and dump BWF format and adds cassette load, dump, and verify routines, as well as load and dump ASCII. It files in 2K of RAM with about 300G spare space. I'm fully at home with the PCC's TIPS BASIC, and I hope I'll have that running on my 8080 soon (if I only had more time...)

Get yourself a PICA Gosse Macro (micro) synthesizer. It's not very playable using the supplied microphone controller, but it works well connected to my Mark-6 via an analog output. So far I've written a program that lets me define keys on my ASCII keyboard as notes, allowing me to play tunes by 'typing'. Later, I'll write programs to store tunes for later playback, and maybe control a multiple synthesizer.

Managed to get hold of an EX plotter, but haven't done much with it yet. I'm interested in computer graphics and games, and am kind of thinking about a video graphics display. Guess I'll get myself a fancier computer some day, but I think I'll satisfy myself with the Mark-6 for a while. It seems that about every month a new micro comes out that's better and cheaper than the others. I'm keeping my fingers crossed. Ohio Scientific Instruments/Wes Technology 6020/20 system. They say they'll have a BASIC ROM board, and a PRO-SE simulator board.

If anyone wants further information or has any suggestions on what's doing, feel free to contact me at my Cleveland address.

Best of luck on volume 2:

S. Trim

Feb. 18, 1976

2981 E. 43rd Ave.
Vancouver, B.C.

Secondly I think that your proposal summarize articles from other newsletters is important. There is no one clear place for information in existence with the result that it is difficult to know where to look for any one piece of information. A person is almost certain to miss something of interest to him unless he subscribes to all newsletters, a condition which is both difficult and expensive. Ideally there should be an index of all past and present articles which could be obtained for information on a particular subject. Although this is not vital it might tend to increase the enjoyment of this hobby by getting more time wasted looking and if your note is not for a hobby for enjoyment what are you after? Also it may slightly decrease the cost since you do not need only buy the particular issue you want, a good most humble share. Thank you. Sincerely Yours

G. Trim

WILCOX ENTERPRISES

322-420-8651 (TEN)

CREED Model 75 teletype with interface parts kit and manual (240 bbl)

FOR Naperville - Mod 75 included - Shipped Ground

freight charges collect - please include phone number.

The hardware interface included with the Mod 75's interface to TTL level signals. Three bits of an output port and six bits of an input port are regulated. Information on communication to NDK, ALTARI, SICO and MICRO systems is available.

Unreliable Mod 75's available for parts - prices depend on condition.

Cred manual - 30 pages of info on Creed interface, program for 8080 and 8085, etc. by each

Original Creed maintenance manuals on 4" x 6" microfiche

Paper - Pin feed on roll = $5.00 per page of 12 (0.14 bbl)

Friction Feed - $50.00 per page of 12 (0.14 bbl)

Ribs each

Page 10

Sincerely,

Robert W. Simms

WILCOX ENTERPRISES - 296178-33rd Street; Naperville, IL 60540

150.00

1.00 PP

1.00 PP

1.00 PP

1.00 PP

1.00 PP

1.00 PP

5.00

5.00

5.50

2.00

1.50

1.50
0 ~ 5,000 cps!

NOW LOAD: Monitors, Assemblers, Simulators, Debug Routines, PL/1, FORTRAN IV, etc. Memory Test Routines, Architectural, Subroutines, etc.

FAST!

OP-80A
HIGH SPEED/LOW COST PAPER TAPE READER
$74.50 Kit/$95.00
ASSEMBLED & TESTED

No moving parts. Reads paper tape as fast as you can pull it through!

Small, light, weight, and portable. Just 4.5" x 3.2" x 1.0" and less than a pound!

Easy to connect via standard 8 bit parallel interface.

Comes complete with precision optical sensor array, high speed data buffers, all required handshake logic, 4 status LEDs, black anodized extruded aluminum box, flat ribbon interface cable, assembly and interface instructions, schematics, and software!

TO ORDER: Send cash or money order include $2.50 for shipping and handling. California residents add 6.5% sales tax.

To: MASTERCHARGE/BANKAMERICAN, 2406 26th Street, Santa Monica, CA 90405

Oliver Audio Engineering
7230 Laurel Cyn.
North Hollywood, CA 91605
(213) 765-6960

PLATE SOLID STATE ELECTRONICS

Now open for sales and service

My digital electronics service business will open sometime in early March when all my servicing equipment is delivered and set-up.

The sales aspect of my business is being held in abeyance, pending market survey under progress. Since the market is being flooded with relatively untested and untried microcomputer systems, it will be very difficult to carry them for a given time period as well as to service them this year. However, I will try my best to select worthwhile computers for my business to offer to the public.

I am stressing on consulting and servicing aspects of my business with emphasis to give you the best system tailor-made to your actual needs with mind in your future growth. It is well known that the computer is an universal tool which is highly flexible to meet any given need, but it requires the know-how to utilize properly. Thus, I am offering my 16 years of experience to give this know-how to the client in need.

Lawrence I. Plan, Jr.

NATIONAL TELETYPewriter CORP.
207 NEWTON RD.
PLAINVIEW, N.Y. 11803

Received your note this morning ... and thank you for responding.

Regarding your offer for mention of us in the K-8 newsletter let me cite our activity here. We are in the Teletype business ... buying, rebuilding, and selling. I think the advent of do-it-yourself and assembled micro we've been selling a lot of rebuilt Teletype Model 33ABR's and 33B's to the users. Of course, our goal is to let all the fellow-like yourself know of our existence and the equipment available.

The following is what we have to offer:

- Teletype 33-02/33A (AEB)
  - New $1,736
  - Rebuilt $750

- Teletype 33-01/33CA (USB)
  - New $799
  - Rebuilt $150

Availability is immediate and we POB, New York. Guarantee on any of the above is 60 days. exclusive of carrier damage.

Thank you for your consideration ... and best regards.

Very truly yours,

February 20, 1976

P.S. We contacted you at the suggestion of Dean Lampson, Plaia, Ohio.

MRS

P.O. BOX 1220
POTSDAM, CA. 95220

We have developed a high quality product which allows owners of an Altair 8800 to develop systems with Motorola's 8080 MPU.

This product is a must for anyone who wants:

1. To compare the Intel 4004 with the Motorola 8080.
2. As an Altair 8800 and plans to use the MK6800 MPU for a new design.
3. To have the feasibility of both.

The MK6800 card in an Altair 8800 also allows one to take advantage of all the best features of each processor in software through alternating processors in the same program.

It is a one board pin compatible card for an Altair 8800. No modifications are required and it will not interfere with normal execution of 8080 programs. The MK6800 gains control via software, one instruction. You can return control by either the front panel stop switch or through software, one instruction. It will operate with either fast or slow, static or dynamic memories. MK6800 MPU status signals are brought out on unused bus lines (option), in 01 or 8 clock, TVX, TVX lines for system development. The 8080 processor cared remains in the computer to handle all front panel controls.

The MK6800 MPU has the following software advantages: Increased interrupt structure, Two accumulators, More addressing modes, Better memory instructions, a 16 bit index register.

AN8000 Pricing
MK6800 Complete Kit
$188.75 Plus Tax
MK6800 Complete Kit except MK6800
$97.50 Plus Tax

Here are my 48 bits for the continuation of your newsletter. I thought I sent it for it but it must have slipped my mind. So at our last Chicago Area Club meeting Dr. Douds came up with a easy way to read the fine print of your newsletter and holds up a scnicol gadget. You know what it was? A Sherlock Holmes spyglass. A really great invention to counter all the disadvantages of fine print.

Hope to receive the next newsletter soon.

Sincerely yours,

2-17-76

ELBA TOOL COMPANY, INC.

601 ESTES AVENUE - SCHUMERBURG, ILLINOIS 60527
Tel (312) 894-1400

Computer Speaks Up
At Wright-Patt
PRICE SCHEDULE
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SRI-FB  Microprocessor Board  $3.25
SRI-RAK-2  2K (Words) Static Memory Board  $1.00
SRI-PR  PROM Board  $0.50
SRI-REC  Serial Interface - Control Board  $0.45
SRI-PWR  Power Supply  $0.55
SRI-MBR  Main Board  $0.45
SRI-ENC  Enclosure Assembly - Complete  $1.00
SRI-D  Digital Data Recorder  $1.90
SRI-VI  Video Interface  $1.50
SRI-VI  Video Interface  $1.50
SRI-128  Keyboard Assembly  $1.90
SRI-128  Monitor  $1.25
SRI-128  Tape Reader  $1.50
SRI-128  Floppy Disc System  $2.00
SRI-128  Extra Drives for above  $0.10
SRI-L  Line Printer  $1.05

NOTES:
Specify Tape or Cassette Programs. $5 per 1K words duplicating charge (no charge for the Assembler or Editor software). Additional SRI-ENC may be used for expansion.
All prices subject to change without notice. Allowable amount minimum shipping time is 10 days from date of order.
All items shipped prepaid in continental U.S.

Systems Research, Inc.
P.O. Box 10380, Milpitas, California 95035. 1981-1982-1033

NOTES: Our Basic Program should be done soon! About March. It requires 6K of memory.

The Native Assembler also requires 6K of memory. The Native Editor requires some BASIC.

We now offer the following:

SRI-RAK-2  4K (Words) Static Memory Board (Assembled) $2.00
SRI-VI  Video Terminal RS-232 In-Out  $3.75

If you want the instruction set for the F-8, drop us a line, and we will send it to you at no charge.

By the way, we will also offer about 25 Basic Routines along with the Main Basic. These will include Accounting, Educational, Business, Hobbyist, and many more.

Ladies and Gentlemen:

Yes, actually there is a microcomputer coming on the market that uses a processor other than the 8080 or 6800.

The UT1800 general purpose microcomputer will use the RCA COSMAC single chip CPU, a very powerful little package indeed.

We can't officially release any details on price until the end of March but we thought you would like to know now that your choices are widening. The hardware will be ready in June.

The UT1800 design concept will allow you to start with the simplest low-cost hardware and proceed to the very sophisticated without the usual cost duplications.

What's more, you'll have a standard bus to work with so you can plan and build for a long time to come.

There'll be no objection to mixing and matching with the other guy's hardware.

We have a long range plan.

If our stuff sounds interesting to you, drop us a post card and we'll put you on our mailing list.

INFINITE INCORPORATED
POB 9096
151 Center Street
Cape Canaveral, Florida 32920

Yours truly,

[Signature]
W. J. Hieftje
President

END YOUR MONITORING PROBLEMS WITH A

"PIXE-VERTER"

A modularized mainline video logic system converts a TV monitor into a top pocket video monitor.

FPX-80
30.95 each

- Operates on any channel
- Works on all cameras (indoor, LCD's, transparencies, color scanning, TV input)
- May be used as a VTR booster having 30 pulses per second input between 30 and 50 PPM.

- No direct connection to video camera is required. Experiments with AC/DC with both reducing possibility of shock hazards.

- Meters size (approximate: 1 1/2" x 3/4") allows it to be mounted inside most cameras and VTR's or on back of TV receiver near antenna terminals.

- Requires less than 1/2 watt of power.

- Complete circuit construction including encapsulated cable permits quick and easy assembly. Total time average about 10 minutes.

NOTE: This unit is to be used along with existing cameras or VTR output capabilities such as the TVT video output.

Page 12
After a lot of careful thinking, it is time to announce that the Micro-8 Newsletter will phase out after volume 2. It appears that there is ample money to send out 9 issues and if back issues continue to be ordered I will be able to extend it some more.

Many factors have contributed to this decision. I would like to thank each and every one of you for your support. It has been the most efficient way to accomplish this. Now there are national magazines and larger magazines coming out monthly and in some cases, weekly. This was the goal we set out to accomplish.

Another factor is the time required. As club newsletter editors will testify, these things eat up an enormous amount of time. I have enjoyed every minute of it. I have found the Micro-8 Club very rewarding. I am sure the students in my classes have gained immensely by becoming aware of the exciting movement that is destined to permanently change our world. One of the students learned that the students in another city were writing this newsletter and another installment on ALTRAIL 8800 Interfacing. Backissues (EDM) cost 65 cents and are must reading. A subscription in 90 per 9 issue is an absolute steal. If these guys had 20,000 plus subscribers like BITE has they could produce material that would keep you busy for 20 hours a day. If you aren't a subscriber, subscribe now and get on the telephone and round up at least five more guys. If a lot of people do this, it will ensure that the TCG will have ample money to hire clerical help so that they can concentrate on writing articles. If you haven't received no. 7, 8, or 9, drop them a note with a copy of your cancelled check. I'm sure they just mislaid a part of the mailing list.

RISMA8 Problem

So far as I can tell to date I have not received 9 that was printed on page 2 reports that he has received a full and complete refund of 3/31/76.

SOGS Award

The SOGS surprised me with the presentation of a trophy at the last meeting. It is not clear exactly how this was accomplished. Sea World Society, Southern California and also Us are making a great effort to save the sea world. SOGS has sponsored a number of events that I thought were of great benefit to all. I would have to presume to assume that SOGS are in the process of doing something.

I would like to express my greatest appreciation to the SOGS for this award which is probably the only one that I have ever received. I won't be the only one that appreciates this as the SOGS would not have existent were it not for you. I will try to get a picture of the whole event and the students and the computer center in the next NL. Thanks again to the SOGS for this honor.

SUBSCRIPTION FORM

<table>
<thead>
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<th>Issue</th>
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I would like to say a few words about the Micro-8 software flap. The most logical action was to tear up the letter and forget about it. I would not have to be treated as a learning experience for all of us in this infant field of computer programming, in a most competitive area. Micro-8 software I believe is one of the best and is worth the price.

The logic behind my comments on the Micro-8 software is that the letter is not a complete argument. It is more or less a comment to suggest the possibility of doing something.

May I also say that the Micro-8 Software is available from Bill Gates' Micro-soft Letter.

Bill Gates' Micro-soft Letter

It has been interesting to follow the progress of what has happened in the growth of software. It is quite obvious that the most important action was to tear up the letter and forget about it. I would not have to be treated as a learning experience for all of us in this infant field of computer programming. It is more or less a comment to suggest the possibility of doing something.

The logic behind my comments on the Micro-8 software is that the letter is not a complete argument. It is more or less a comment to suggest the possibility of doing something.
Dear [Name],

I am writing to receive a sample of your [product]. Enclosed are bucks for a subscription. I am a programmer on a JSP/145 installation here in [Production City] and I just got interested in [Product Name]. I am using a PDP-10 and a DEC PS/2000 terminal, and I found your product very interesting. I have been using [Product Name] for several months, but I need some good advice on what kind would be best for extensive real-time applications. I would like to try your device and see how it works. I am not familiar with [Product Name], but I have some experience with DEC equipment. I would be happy to discuss any technical details with you.

Sincerely,

[Your Name]
Dear Hal:

Enclosed is my contribution to the Micro-5

K.L. Also I want to say that you are doing a great job, keep it up.

Please note, before I go any further, this is an untuned circuit, fresh off the drawing board, and may have a few bugs in it. I've checked it several times but we never know until power is applied.

**A BRIEF DESCRIPTION**

Until now all scrolling circuits have operated in basically the same manner, all lines move one position and the poor top line is wiped out. What good is that, unless you don't want the top line. All this does is give you once only reading of your copy.

My version on the other hand stores the top line, which may be recalled at any time for re-reading.

Made to plug into the MDSHORF board socket of the TTY-II, it operates as follows:

If the cursor is on the top line and receives a "SCROLL" command or cursor UP command all lines move one position (see drawing) now line 0 is line 1, line 1 is line 0, etc.

If the cursor is on the bottom line and receives a "GOV DOWN" command the lines all pop up one position causing line 0 to be stored.

The first step is to redefine the memory, and instead of having two pages of 16 lines of 32 characters we now have one page of 32 lines of 16 characters.

These lines are arranged kind of like a continuous loop belt, with a window (known as the display window) in the middle. This window can only show 16 lines but the belt can move so that any 16 consecutive lines can be displayed.

The added components (8 IC's and some resistance) are mounted on a small board which plugs between the memory board and the main board. There are a few connections, however, which cannot be plugged up off the memory board and solder jumpers must be used.

The only trouble breaking to be done is to pins 4 & 5 of IC-5.

**Just a couple of final notes:**

After you design a P.C. Board for this you can decide which pins to use. Also note that any of the 3 or 4 inputs can be used as long as the groups are kept separate (ie. As tied together or brackets and the other connected to IC5, don't mix 'em).

If you haven't built your TV yet, you can mount these components on the board and make it one board.

I hope this works if you build it.

Sincerely,

Michael G. Scott
Dear Mike,

March 22, 1976

I have seen your newsletter only occasionally, and I am glad to be able to read it again. Thank you for sending it to me.

The question is: can you get in touch with my former employer, Bob Brown, to ask him to send me your newsletter again? I believe he can provide me with more information about the Mk 8 computer than I can provide, and I would be grateful if he could send me more copies. Thank you for your help.

Sincerely yours,

Richard F. Hayes
Reactor Radiation Division
National Bureau of Standards
Washington, DC 20234
January 18, 1976

It was delightful for Jim Brock (NL #12) to introduce himself as a "Senior Systems Analyst (whatever this is)." In precisely the same manner that he does his work in a computer systems programing, with peripherals (I/O drivers, interrupt processors, etc.) and forth. Prior to this I had many years of trying to explain to people a little programing with the "big fellows" and this will be the subject of my letter.

Sooner or later many of the microcomputer users will become interested in numerical methods through BASIC or otherwise. Permit me to list some books which may be of value to them:


These books were written with the particular problem of the beginning in mind and are intended to be thought through with problems and language independent (flow charts are used). It was written for intelligent high school and college students and expects some computer exposure but not very much. The second book makes many references to FORTRAN but it does not have many truly useful when both books were additional authors but I did not have room for "et al."

Grunenbeer speaks of a classic work by Hastings. A more recent work is


which costs entirely too much but is very good for those of you who are hung up on approximations to various functions. This book will probably not be an easy book to read but is of greatest value for its scale of coefficients for approximating polynomials. It just as Jim Brock, I am more of a "homework" with minimal exposure to try covered walls but I found that I would read

4. J.B. Scarborough, Numerical Mathematical Analysis. The Johns Hopkins Press, 1962 (Fifth edition, maybe there is a later one)

You can perhaps find an earlier edition that the fifth in a used book store but these are not satisfactory because they did not address the particular problem of the computer and programming.

A genuine treasure trove, a big, hard bound book at a reasonable price from the Government Printing Office:

5. N. Abramowitz, Handbook of Mathematical Functions. AMS 55, NBS

At one stage of life in love with the Hewlett-Packard HP-65 and in the normal course of things I joined the HP-65 users group. The owner of a -65 can join this group for free but anything larger can join the HP-65 wills which has an enormous collection of programs available for a reproduction charge. For a microcomputer user to be most simile, in effect, the functions of the HP-65, which is to say that he must provide such as the sine function, square root function, etc. Numerical analysis, the HP-65 programs are guaranteed to be fairly short as such Usually on even a small necessary microcomputer. A similar resource to be available soon is the users group for the Texas Instruments SR-52 programmable.

Those of you who are interested primarily in mathematics and scientific algorithms rather than in "doing things themselves" should give some consideration to the purchase of the SR-52 for $400. The HP-65 at $800, suddenly seems expensive.

If you find programmable pocket calculators attractive, there are a few tips of importance to keep in mind. An important one is that the calculator must have tests that permit conditional branching and/or program stepping. It is worth noting that programmable calculators do not have conditional tests. Most such calculators do not permit subroutines. The SR-52 allows subroutines to one level while the SR-52 allows two levels.

The T.I. SR-52 has some kind of interface because an optical printer is to be supplied for it. Surely to attract the minds of the engineers that designed the circuit would not make a strong surface, which by itself persuades them that the surface and eliminate the future possibilities of data collection, etc. The SR-52 is unique in allowing both indirect and indexed addressing. (It is not truly indirect but the effect can be obtained.)

Sincerely,

Webb Simmons

P.S. Next volume 2, NL's 1 thru 6 of the Micro-N Newsletter for $6.00 if its. My check will be returned in the NL envelope if it doesn't.

Webb Simmons
1559 Alaska Place
San Diego, Calif. 92111

January 18, 1976

I haven't decided on hardwares yet, which AVI, SONY, REXROTH, or some other, which vendor's s or what to build this machine around. Be as eager to hear your comments and the comments of others expressed in the Micro-N Newsletter. I hope you'll be able to keep it up for a while longer.

as far as peripherals are concerned, I like the thinking of Jim Ley of KSL, to horloge, who suggests a multiplex (or octal) keypad and display (rather than your usual oasis, display for a start). Peripherals are, I think, is easier to read and easier to key than the usual plotter, display switches and lights. In his article demonstration microcomputer it is connected to the MPU by dedicated I/O. Now one outputs the keyboard, one can go to a teletype imprimr or vido display, later adding cassette tape storage and such eventually the project.

Sincerely

Webb Simmons

Be sure a computer club in the New York City area. We had our first weekend name and address to your name is correct, however, from myself or yourself.

R.M. Foote
Beavertail Park
(212) 331-2946
The AM8600 board has provisions for several jumper options which must be implemented.

**OPTION 1**
The first option depends on how you wish to restart the MX8600 MPU. You are offered the choice between using the "reset" switch or the "external clear" switch. If you are using dynamic memories you should use the "external clear".

Connect a one thousand ohm resistor between points A and B for the "external clear" option. Connect the resistor between B and C for the reset switch option.

**OPTION 2**
The second option is concerned with the MX8600 input output device control. It is normally recommended that you use the 8080 for I/O since the MX8600 uses memory locations for I/O. Connecting a jumper wire between J and L will allow using the address for memory. Putting a jumper wire between J and H will reserve the top 256 bytes of memory for I/O less than the very top 8, which are intercept vectors for the MX8600 MPU.

**OPTION 3**
We provide the user of our board with the option of bringing out some of the MX8600 signals on unused pins on the bus. The following signals are brought out to the bus with this option:

- **MX8600 5 MHz clock**: Pin #14
- **MX8600 6 MHz clock**: Pin #15
- **MX8600 R/W**: Pin #16
- **MX8600 I/O**: Pin #17

If you wish these signals brought out on your bus you must connect a jumper wire between F and G.

**OPTION 4**
The last option offered is concerned with the signal called "BIH" on pin 48 of your bus. Normally, a jumper should be soldered from P to N. This will allow the data lights on the front panel to be active while the MX8600 MPU is running. If Option 2 was selected for I/O operation then this jumper should be connected from N to P. This will sync BIH to the MX8600 5 MHz clock.
I believe that one of the most important functions of your very fine newsletter is to make the hobbyist aware of unscrupulous mail order suppliers. We are all aware that we are taking a risk any time we put a check in the mail to a supplier.

In hopes that my experience with Mini Micro Kart will save some other hobbyist a lot of grief, I am sending this account of my experience.

I ordered a Mark-8 kit from Mini Micro Kart in June, 1975. I received nothing from them until mid-August when I received a packet containing four integrated circuits (minus the 8008, and 8265/8267 multiplexor) and a request for additional money to cover the cost of a "better" memory board (2110's) as they were not going to supply the standard Mark-8 board. I sent an additional $15.00, bringing the total I have sent them to $179.45.

It is their C-M-1000 board. The documentation is trash and the board is not compatible with the standard Mark-8 boards. I also received the circuit board for most of the rest of the kit (minus the LED Register Display board).

After waiting seven months, I still do not have (1) the 8008 CPU, (2) the two 8265 and two 8267 multiplexors, (3) the LED Register Display board, and (4) any resistors or capacitors. Three letters and two phone calls have been totally ignored.

In speaking to Mr. Naury Goldberg by phone on January 2, 1976, I was told that they do not now have the LED board, have not started to produce it, and may try to buy it from some other supplier to fill their orders. Mr. Goldberg did not seem to feel that a seven month delay in delivery was unreasonable as the "had had problems".

I certainly will never buy anything from Mini Micro Kart again. Other hobbyists will, of course, take their own chances, but if anyone would care to give me a call (401-728-2869) or drop me a note, I can tell them that had bad experience with Mini Micro Kart. My experience is completely documented with copies of letters, phone calls, and telephone notes.

Please keep the Micro-8 newsletter going. Unfortunately, it appears we hobbyists are still in a jungle when dealing with suppliers and the newsletter is invaluable in showing the way.

Bob Wallace, designer
PO Box 5415, Seattle, Wash. 98105
February 23, 1975

Bob Wallace
Lompoc, California

Dear Bob,

The Retail Computer Store is open in Seattle, and I'll be handling publications for them. We'll like to carry the newsletter; accordingly, enclosed is a subscription order for 5 subscriptions and some back issues. Keep up the good work!

Sincerely,

Dave Gillespie

Richard N. Rubinstein, M.D.
7711 Elba Road
Alexandria, Virginia, 22306

Gentlemen:

Enclosed is $6.00. Please enter my subscription for Volume 2.

I've got a 2KB byte Altair 8800 with AST-31, ACR, EXTENDED BASIC (Fantastic!), and Assembly language up and running.

I'm very satisfied with the system and hope to get a floppy disc system this year. The system is used primarily to store confidential patient records (in a secret code for extra protection), but it doubles as a bookkeeping and billing system and is also used for statistical work, games and household accounting. Other than that it's useless.

I recently attended the first meeting of the Washington-Baltimore Computer Hobbyist Club. About 80 people packed into a small meeting room rented at the Colony 7 Hotel. The club elected temporary officers, arranged a meeting schedule, provided technical lectures and system demonstrations. The elusive Joe Cimino was on hand, newsletter going soon. We're meeting on the second Wednesday of every month.

Sincerely,

Richard N. Rubinstein

January 4, 1976

I found out about your group from Arthur Eleclama, associate editor of Radio-Electronics magazine. I'm interested in building a minicomputer but I don't have any idea which features are more important than others. I have two years of electrical engineering (1st at Stevens' Institute of Technology in Hoboken, N.J., and 2nd at New York Institute of Technology in N.Y.). I'm familiar with BASIC and PORTHON IV. I would like to build a system similar in operation to either the XEROX 8000 or the IBM 370.

Input would be from a keyboard preferably with ASCII code. Output would be either hardcopy from the typewriter or visual on a television screen. A memory library would be kept on cassette. Sample use would be an inventory of post-war Lionel trains which could be updated periodically by entering new acquisitions via keyboard and verifying proper numerical entry via television screen, with availability of hardcopy for away from home reference, (i.e. when at collector's meets).

I would like to communicate with someone who could guide me towards the equipment which could meet my needs. I would appreciate any help or suggestions where I could get help that you can supply. Thank you very much for your time and efforts.

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Sincerely,
SPEECH PLUS!® CALCULATOR ANNOUNCEMENT

**SPEECH PLUS!®** is now accepting orders for the **SPEECH PLUS!** talking calculator. The price is $395.

With first shipments scheduled for February, 1976. This low price, together with its powerful capabilities and high convenience, will make it a very convenient, hand-held, completely portable calculator now available.

Over a year of research and development has gone into designing the **SPEECH PLUS!®** from the ground up as a talking calculator for the blind. Advanced speech synthesis and integrated circuit technology have resulted in a unit which measures only 2" x 4½" x 1½" (10mm x 11.5cm x 3.8cm) and weighs about a pound (0.45 kg). The lack of moving parts (except for the keyboard and speaker) in **SPEECH PLUS!®** makes it a highly reliable unit.

The algebraic logic we have used is an easy, natural way for people to do arithmetic. For example, to add 3 and 4, one press '3' and then '4' (a single keystroke). To subtract, one press '4' and then '3' (a single keystroke). For multiplication, one press '3' and then '4' (a single keystroke). For division, one press '4' and then '3' (a single keystroke). The results of this study (which were widely circulated in a final report in 1970, several published papers, and several public presentations) led to the conclusions that:

- The **SPEECH PLUS!®** is a trademark of Teleseon Systems, Inc.

SPOKEN WORD OUTPUT FROM YOUR OPTACON??

Would you like to have an accessory unit plugged into your Optacon which would speak the words as you scanned them with the Optacon camera? This question has concerned the Optacon engineers for some time, and in the 1960s the Optacon was being developed at Stanford Research Institute and Stanford University. A feasibility study sponsored by the National Eye Institute was conducted by this group at SRI from 1960 to 1970 which considered and tested many alternative approaches toward meeting the unfulfilled needs of the blind. The results of this study (which were widely circulated in a final report in 1970, several published papers, and several public presentations) led to the conclusions that:

- The Optacon should be widely disseminated as a portable reading aid to provide for many reading needs of the blind as a stand-alone device.
- It appears technically feasible to develop an accessory to the Optacon which would provide spoken word output. This accessory would be plugged into the Optacon and would provide the optical character recognition (OCR), orthographic-to-phonetic conversion, and speech synthesis functions (either in an accessory electronic unit at the user's location or remotely via telephone lines).

With this accessory, reading rates up to 200 words per minute could possibly be achieved on a restricted set of type styles and documents. These could be achieved by a blind user hand tracking with an Optacon camera (automatic scanning could also be provided for by an Automatic Page Scanner (APS) if desired).

The conclusions from the 1970 study directly affected the Optacon design in that provision was made in the 100 to 200 word per minute range on a restricted set of materials to be used by the user to test the feasibility of the Optacon as a reading aid.
Thanks for the copy of the Harv-Article. I am sorry
to say it was very pretty horrible. I was unable to
duplicate it. I will hold on it until I can try it again
while I am working on the 'E' devices. Maybe you
could offer a suggestion on a unit -- I want be able to
run in BASS since I am as able to use that now and an 
down to: KITI AALTOR, EBOR or a SRF 6000 with
lots of additional memory on either
one. Hope you can shed some light on this or I will have
to flip a coin. Maybe you can suggest a better unit than either
it would like to keep it in that way.

Dave Matal, 28 Splitrail Road
Connecticut, NY.

I desperately need direct contact with SRS-600A system owners who have used or program
entry techniques, including: cassette, keyboard, tape
interface (with (?) will use info on TTY-1 program for
interface as well. All related expenses would be reimbursed.

The system is basically sound. I've seen much of it working
at SRS, but I can't seem to get what I needed there before I moved

Gerald McKeef, Box 602, Glendale, CA 74447

Gerald also mentions, "I'm going to school to be brought up to
date in electronics [taking language machine this semester]
and when I finish I hope to find employment back in California.
I'm a TV broadcast engineer and am hoping to qualify for experimental/
developmental/field work, also a WOSP.

Hi,

While setting-up the Mike-2, I found a need for a memory test routine
low-priced 2120's aren't so reliable. Borrowing heavily from the RC's
digital group, and Mike 2 monitor. I come up with a test routine that checks

--

Start

Lead P with zero's

Load P -- unread

Write P into memory

Read memory into P

Conditional jump P/F

Write P into memory

Read memory into P

All test routines are as

After all locations are tested, P is incremented, routine repeated,

... until...

... (not used)

This routine is is by no means a very efficient routine. It does test
all bits between the designated addresses, and displays the problem
location. If you're interested, I'll supply a source listing.

And thanks loads for the effort you people out west are putting out.

P. S. In answer to your comment on "CABER" - our steering committee
has teel goals and lot of action. But we really have to blame, for
without the Newsletter, there wouldn't be any local groups

2951 S. King Dr.

Dear Bail John,

I've been trying to keep going! Now also as I am going
to be able to decide which system to start into
when I finally get the hard copy. Right now I'm thinking to hold off for a 16
such as 2120, 1120, 1221. I like the idea of being able to use
the most flexible and powerful CPU you can find, 'cause the
peripherals are going to be most of the way. So
den I either may have to slip in with a small

3 - way scanner sometime. On the other

hand......

Steve K. Roberts

Sincerely,

73 -- Wayne
The following letter was received from Sphere Corporation, Part of the separation involved rights to the Micro-Sphere. If you acquire a Micro-Sphere, it may be in your best interest to contact Sphere immediately and find out where your order stands. Let us know what you find out.

TO WHOM IT MAY CONCERN

March 13, 1976

We are very proud and pleased to announce Marco C. Tyler as acting President of Sphere Corporation. He was one of the original incorporators. His appointment was backed by the Micro-Sphere operations. He has been president for the design and development of the Sphere 1.2.3.4.5.

Sphere Corporation product delivery to be continued. The Sphere 510 through 5400 (the former System 1-4) will be completed. When Mr. Tyler at the head, Sphere Corporation will be the key acquisition and develop business applications with which the new System 500 series (a logical version of the System 4 with a 40x25 character display) will be marketed to the small business environment.

William H. Tyler, President, Sphere Corporation

Chairman of the Board

Sphere Corporation

410 North 400 East

Salt Lake City, Utah 84104

November 2, 1976

The Amateur Computer Society

899 North 200 East

Salt Lake City, Utah 84104

Stephen Ray continues to deliver extremely valuable information in his Amateur Computer Society column同事们. He has compiled lists of descriptions of hobby systems and is now updating the hobbyist edition. I've replicated a couple of things from 93. We're trying to run an organization like his but with-out an adequate number of participants. Please send off 5 notes for a membership. When you can afford it, 5 notes are up to 5 notes for a membership. All clubs should order the back issues for the club library. When you can afford it, that puts you in the hobby. Paper is needed for future software.

Incidentally, the Scalbi (Machine Language Programming for the 6800 and similar microcomputers) is highly recommended by many microcomputer manufacturers. In the second edition, type on both sides of the page (the first was all in Teletype capital letters on one side of the paper). This is 80 notes which includes 5 notes for a membership and 2 notes for a Scalbi (similar microcomputer).
I will now update some of the material that appeared in a recent article in the Oct. 1975 issue of "Eigen", the newsletter of the Japanese hobbyist group. There are three main changes in this update:

1. The price of the 6800 microcomputer kit has been lowered to $99.50.
2. The availability of the 6800 microcomputer kit has been expanded to include a complete kit, including the necessary hardware and software.
3. The availability of the 6800 microcomputer kit has been expanded to include a complete kit, including the necessary hardware and software.

As always, we encourage you to provide us with any information, suggestions, or comments that you may have.
SCCS MICROCOMPUTER SPECIALS

- AM 6560 CPU .................................$33.95
- AM 6560 CPU .................................$90.95
- AM 6560 CPU .................................$74.95
- CI 6560 CPU 16 bit CPU .....................$71.95

Each microprocessor package is delivered direct from the factory. AM 6560 is pin and functionally equivalent to the Motorola 6800. AM 6800 same as Intel.

- AM 6560 MC88 .................................$49.00
- AM 6560 MC88 Universal Synchronous Receiver/Transmitter ..................$9.95
- AM 6560 PD88 Parallel Interface Adapter ...........................................$9.95
- AM 6560 ACTA Asynchronous Communications Chip ..........................$9.95
- AM 6560 TAC ..................................$19.50
- CI ATY-153A UART .........................$7.50

- AM 2560-2 Static RAM ....................$1.99
- AM 2561-2 Static RAM ....................$2.95
- AM 2561-4 Static RAM ....................$3.95
- AM 4420-2 256 Dynamic RAM ...........$23.95
- Intel 1108A ..................................$9.00

- PROTO KIT

SPECIAL GROUP BUY (25 KEYS) ........$1,009.00

AM 562 X 100 PROMOTIVE KIT. FEATURES INCLUDE ALL THE FLEXIBILITY A CAPABILITY OF THE MOTOROLA 6800 SIMPLIFIED TO ONE PCB.

KIT INCLUDED:
(1) 562 X 100 PCB
(2) 6800, 6801, 6802, 6803, 6804, 6808, 6810, 6811, 6815
(3) 6820 RAM (Monitor Program)
(4) 6833 RAM
(5) Prototype Manual

MAJOR FEATURES: 256 Bytes RAM, 256 Bytes EPROM, 768 Bytes User RAM

This was also available at the last SCCS meeting and illustrates some of the great advantages of being a member of a large active organization.

ADVANCED MICRO-ELECTRONICS
614 Santiago Avenue
Long Beach, CA 90814

$14.95

SCCS SPECIAL!

Everyday you want to know about microcomputers.

REGULAR PRICE $17.95

Your price $14.95 only when you sign up at the SCCS User Group Center, 4250 Constellation Road, Long Beach, CA 90813.

You'll save $3.00! You'll save $3.00! It's that simple, but you can try if your interests are the same as mine.

-- James Martin

MARTIN RESEARCH, 3133 Commercial Ave., Northbrook, IL 60062 (312) 686-3000
The answer to the bug user's prays is contained on page 11. This BASIC is made to order for a few dollars, but then SCLB! INC. does have money and complete source listings will be available. We will be giving away any bug exterminator Feb 12th, and if you can find a friend or two and share the book, that will make the price a little easier to handle.

Also, a lot of bugs exterminators for the tiny BASIC newsletter. It appears that Bob Albrecht is going to make this the most exciting software information source ever and a must subscription for every computer hobbyist.

To anyone inconvenienced by the missing address for the PIXIE-INVERTER, it is AIV DL-1815, 12TH & BROADWAY, KANSAS CITY, MISSOURI 64103. Sometimes I get too good at trimming things down.

If you have an 6800 or a 8080, you need a CRAPER! It's a weekly printed and folded cardboard sheet that pulls into a 4"x4" with a summary of either the 6800 data or 8080 instructions on the front and on which way you fold it up. Contact John Scolton, Microcomputer Techniques, 17011 S. Drexel St., Irvine, CA 92705 for information. Include a 4x4 at least base.

In the classified ads in RE and PE there is a small ad for a 44000 with 8030 and 8040 offering it. I was giving the ad for a 44000 $200 for what they sent out.

Harold L. Kivier, 2801 Henderson Ct, Wheaton, Ill. 60187: I have been holding off you the closing reply to Bill's letter in the hope that I would be able to report that I had interfaced my typewriter with my 8080. As a result of the 8080 user group at the University of Illinois, I have been able to get the help I needed to make the connection. I am forming a user group at the University of Illinois and will be able to send them to you. I am a student at the University of Illinois, in writing letters on the decision in which Johnson, a computerize on the university's computer system, has been working on some projects.

Richard J. Michaels, 1059 Bishop St, Dover, DE 19901: I have been holding back a little longer reply to Bill's letter in the hope that I would be able to report that I have interfaced my typewriter with my 8080. As a result of the 8080 user group at the University of Illinois, I have been able to get the help I needed to make the connection. I am forming a user group at the University of Illinois and will be able to send them to you. I am a student at the University of Illinois, in writing letters on the decision in which Johnson, a computerize on the university's computer system, has been working on some projects.

More later.

Gary Coleman
Secretary, Cleveland Digital Group
Chairman, N.A.E.C.

P.S. Go to the New Jersey Group's Computer Festival!!!
In Bill Gates's "Open Letter to Hobbyists" dated February 3, 1976 and published in numerous publications including this issue of "The Analytical Engineer," we express our concerns about the use of hobbyist software and the difficulties hobbyists face in writing and distributing software.

The author says that hobbyists should not be charged for their software as other professionals are. Are we not entitled to compensation for our work? Are hobbyists criminals if they do not conduct their business like professionals? Why should they be treated differently from professionals?

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A SECOND AND FINAL LETTER

Since sending out my "OPEN LETTER TO HOBBISTS" of February, I had been hoping to receive and an opportunity to speak directly with hobbyists, writers and microcomputer users. As a result, I am writing this letter to clarify some points made in my earlier letter.

Earlier this month, I noticed that the microprocessor market was very slow. This was due to the fact that there were no major advancements in technology at the time. However, the recent releases of new microprocessors and the increasing demand for them have created a shortage of supply.

I am writing this letter to express my concern about the situation. As a computer systems designer, I have noticed a trend among hobbyists to purchase the latest technology, even if it is not necessary for their needs. This is causing a strain on the market, as the demand for the latest technology far outstrips the supply.

I would like to urge hobbyists to consider the long-term implications of their purchases. It is important to make informed decisions and to consider the benefits and drawbacks of new technology before making a purchase.

Please take the time to carefully read and consider my letter, and let me know your thoughts and concerns. I value your feedback and hope to have a productive conversation with you.

Sincerely yours,

John W. Baker

PS: Please let me know if you have any questions or concerns about my letter. I am available to discuss this further at your convenience.

---

Dear Charles,

I received your letter and appreciate your concerns about the shortage of microprocessors. It is evident that the demand for new technology has exceeded the supply, leading to a strain on the market.

I agree that hobbyists should consider the long-term implications of their purchases. It is important to make informed decisions and to consider the benefits and drawbacks of new technology before making a purchase.

I would like to urge hobbyists to consider the long-term implications of their purchases. It is important to make informed decisions and to consider the benefits and drawbacks of new technology before making a purchase.

Please take the time to carefully read and consider my letter, and let me know your thoughts and concerns. I value your feedback and hope to have a productive conversation with you.

Sincerely yours,

Bob Wallace
TINY BASIC AVAILABLE FOR THE 6800

A version of Tiny BASIC has been developed for the Motorola 6800. A four-page instruction manual is now available for $1 from:

Tim Eastman
Post Office Box 9513
Santa Cruz, CA 95062
(408) 578-4964

We had originally planned to make our source code uncopyrighted, however, we no longer believe that Tiny will be in production. We have changed our minds in response to the news that Tiny BASIC will be available for the Apple II.

John Eastman

BYTE SWAP

We are experimenting with offering a "Byte Swap" section. We will do this as long as we can afford it (in terms of time and postage). If we can do it, we will advertise the resulting increase in our circulation (and printing costs).

Please follow these instructions when submitting articles. Add the following to the end of your article:

"This article is submitted with the permission of the Byte Swap Editor."

John Eastman

COMPUTERS THAT TALK - UPDATE

Jim Day had an article in the most recent issue of PCL discussing the use of a Vortex packet to allow a computer to simulate speech. The article is available in hard copy for about $1.00, or you can order a copy of the magazine for about $15.00 from the PCL office.

John Eastman

A BIT OF BLUE SKYING

February 19, 1976

Bob,

By now all eyes have turned to the California & Orthodontia. But I suggest that as Tiny BASIC matures, we may want to experiment with the architecture of BASIC or some other language. As an article in the latest issue of the magazine notes, the current trend is towards a set of computer words and concepts. Tiny BASIC, as currently written, doesn't contain many such words or concepts. However, we may want to consider adding a few to the language.

John Eastman
DEAR HAL ET AL:

I GUESS IT HAD TO HAPPEN. THE END OF THE MICRO-B
NEWSLETTER I MEAN. GUESS THOSE OF US WHO HAVE BEEN WITH IT A WHILE THOUGHT IT WOULD GO ON AND ON AND ON...
Greetings

There is a viable alternative to the problems raised by Bill Gates in his incoherent letter to computer concerning "tipping off" software. If software is free, or so inexpensive that it's easy to play it for free, it doesn't have to be," says the letter.

Example: There are at least five versions of Tiny BASIC available, and running on almost 3000 processors. A convenient version of Tiny BASIC for Intel 8080 is available for free. A version for the 8085 and AMI 86 also costs $5, including complete user documentation. If the price is still too high, complete user documentation and implementation details for one of the versions has already been published. The included complete source code.

An example is welcome to try it and reasonable. No one will yell, "Stop!"

All details of a second version will be published before the second release. Several more versions will be published shortly thereafter, including a cross-assembled version created using the mod facilities of the IBM 6030 Amman.Varies are expected shortly thereafter for the K80 Technology 6030, and Spinetta 2650. Note Tiny BASIC is, essentially, BASIC using array-pointing operations, one of which is a built-in calculator to obtain floating-point computation. It is explicitly designed for small memory sizes.

Example: Gary Kishlak, who built the FL/M. compiler for Intel and the FL/AM compiler for the Spinetta 2650, is making an entire floppy-disk operating system available. He plans to sell a disk and complete documentation for not much more than what it would cost to duplicate them.

Even good-quality software systems such as spreadsheet control, has been designed and made available. The documentation costs only $2, including complete source code for the mathematical library that he includes in his package.

Information on all of these systems—much more is being published in a new revenue from baseline information—can be found at various locations on the internet. Dr. Don's "Journal of Computer Culture & Orthodoxy." The Journal is publishing all available details. For instance, the first issue contains complete designs for Tiny BASIC and Spinetta user documentation for the K80 Technology version, complete details for using a calculator to obtain floating-point computation, and a 16-bit, binary-decimal conversion mechanism. For information on the new systems, see the second issue.

The second issue contains complete implementation details and associated source code for the first version of Tiny BASIC, complete documentation and source code for the main simple language for Atari 800, and design notes on a forthcoming high-level language for IBM 8080/8085 microprocessors, two articles on a $10K phoneme generator kit for mirrors that allows unlimited English speech synthesis, and a quick note on the 6000 version of Tiny BASIC.

The third issue will include complete details and code for the second 8080 Tiny BASIC which includes I/O arrays, a simple debugger for the 8080/8085, a keyboard loader for text mode, details of a context to generate public-domain graphics software for FrontPage's TV board, and much more. The Journal is also publishing carefully selected, good stuff from the growing computer culture club newsletters. Additionally, it is publishing complete indexes to all major computer hobbyist publications and selected articles from other publications, lists of hobbyists and their equipment, seed lists for home computer users, and so on. Finally, it is actively pursuing a consumer advocacy role relative to the home computer user.

This is true of all of this information. The Journal is publishing complete information on software, design notes, schematics, etc.—in a form available for little more than the cost of reproduction. The Journal came into being, explicitly to aid creation and distribution of these informations. In the same ways, it creates a sort of manufacturer's guild.

It is reasonable to expect that free and inexpensive software will become increasingly available to and through the hobby computer. This is true, in spite of the efforts of some SHAKEING in the business and industrial environments.

There are two major implications to this new form of software. First, it suggests that hobbyists are developing home-grown hardware and software, just for the fun of it. Second, the "fun" rather than "work"—they have shown a great willingness to share and distribute what they develop. This is at least an unknown phenomenon. It is the usual practice in most other hobby environments, and is certainly true in the academic environments.

1. Hobbyists are developing home-grown hardware and software, just for the fun of it. "Fun" rather than "work," they have shown a great willingness to share and distribute what they develop. This is at least an unknown phenomenon. It is the usual practice in most other hobby environments, and is certainly true in the academic environments.

2. As with the industrial micro and mini markets, hobbyists have learned to be wary of purchasing hardware from manufacturers who provide no software support. Through common sense and, by observing Mr. Gates' expertise, those who wish to sell software for significant sums of money must realize that they are not only selling software to the hardware manufacturers. They need to enhance their products in a highly competitive market.

3. Consulting quality: A significant minority of computer hobbyists are also experienced computer professionals. It is their (two) play as well as work. The competency level is more than sufficient for the design and implementation of excellent systems software.

Finally, the approach used in producing the Tiny BASICs will be continued and expanded, a sort of modified Chief Programmer Team approach. An experienced does the overall design and outlines the implementation strategy (via the Journal and other hobby publications). Following those directions, the more experienced amateurs do the necessary back-work (exciting them, but drudging for the "old pros." Since it is a synthetic effect, the implementations are almost certain to share their work with the designers, and hence, with the larger community of home computer users.

It's amusing how much "good stuff" becomes available when the producer thinks of their labor as "play" instead of "work." All who wish to do so are invited to join with the publishers of Dr. Doehls Journal in the pursuit of available funtimes.

S. A. COCHRAN, JR.
ATTORNEY AT LAW
P.O. BOX 9701
TULSA, OK 74106
April 5, 1975

Dear Sir:
The Burroughs Model 1550-2 Communicating Typewriter

April 4, 1975

A. SWOSZKO: Model 1550-2 Communicating Typewriter

April 4, 1975

JAMES G. CALLAS, M.D.
RICHARD E. WALLACE, M.D.
4321 NE 18TH ST.
SAN RAFAEL, CA 94901

April 7, 1975

Thought the following hint might be of help to users of Processor Technology's super I/O board in running MITS BASIC. The trick is to invert the status signals.

Jumper the channel select, in area 8, to pin 12 to pin appropriate channel to find the new output to 00. Connect the output to the inputs of another gate to the output. The inputs of another gate and the output to the gate from the CPU. Works great.

Sorry to hear the NF is folding, but we'll all have a far piece from those old days, struggling with the wretched 8080 boards and worse instructions, that you did so much to clarify, as well as the early uncertainties of whether the Altair would turn out to be any good. Now you have to move on (and hopefully faster) too.

Regards,
Jim

P.S.: Thanks to Max Womac for his short brief on the remedies available where delivery is delayed.

April 5, 1976

Would you please send me a copy of any schematics you have for an entire type uo tape reader. (You've promised such in several 11 issues!) I have a mechanical upset, (cartridge type) tape read recorder with a photoelectric read head that burns out transistor type electronics. I'd like to update the electronics and interface it with the IBM 8080.

I now have an IBM 8080, with 8K of Proc, 50 to 75 I/O's, 25-35 cruising circuit board, and sweeter keyboards. I have the IBM Basic on order (soon to be received.)

The IBM 2680 is a real monst tr e and its in a nice 12" case. Does anyone have a schematic for the 2680 data cassette transport? May 1974, page 208, "The 8080/8085" gives these by R.C. (not cns r.) with a 1000-4 gate. I have ordered four 128K: Right part of a 32K RS/232 part of a 32K purchase and have had no difficulty in dealing with INDH.) They promise 100% of INDH calls in 3 months. I got a total of the 2680, your product is vastly superior to the Altair, and I have been basic methods that owners are in charge of the basic methods that owners are in charge of. The basic methods that owners are in charge of the basic methods that owners are in charge of. I did something like that, answering the big question of the small location of the small location. R.C. basic methods that owners are in charge of. The basic methods that owners are in charge of.

That's all.

GARY ALEY, ALEVA UNIVERSITY, BOX 23179, ATLANTA, GA 30322

John Anthony, JOHN ANTHONY
**Man's Best Friend**

A building engineer decided that a microprocessor system could be designed to maintain his apartment and that it would be more cost-effective than having a maid or getting a dog. The microprocessor system was programmed to do absolutely everything for him. It woke him in the morning, made him his coffee, put food in the refrigerator and returned empty dishes to the dishwasher, watered his plants, paid the bills, and called the plumber when necessary. He could even hire maids if he wanted. It even included a maid service as an emergency. It also gave the engineer a sense of security, and the maid service handled all the security aspects. It also included a maid service as an emergency. Finally, after a long pause, the microprocessor responded: 'Not taught. I have a brainout.
Dear Hal,

Again, many thanks for the information via the phone call last night. Here's our 8¼' and hope for continued success with the newsletter.

In regards to our problem with Tim Barry's Creative Computer, another phone call last night (alas, hopefully) solved the question. It seems the flu bug got hold of the computer bugs and printing etc. was delayed. We were promised shipment in mid-April and letters are now going out to all who paid and/or ordered offering refunds if desired.

Sincerely,

John Taylor

5 April, 1976
Dear Reader:

We hope you and your students have enjoyed building the projects featured in this year's "Electronic Projects Newsletter. With the variety of projects covered this year, I'm sure many of your students have found the "right" project for them. Next year's students will no doubt gain the same enjoyment and learning experiences which come from creating an electronic device from a handful of parts.

Your subscription expires next month, so now is the time to send us your renewal. This will insure a continuing source of student-tested project plans, in a format designed for easy reproduction.

As your file of project plans grows, you will be able to offer your students an even greater selection of projects. When a student selects a project in which he has a strong interest, the learning is far greater than it would otherwise be possible.

Your school's purchase order is welcome, or you may include payment with your renewal. Either way, your renewal fee will insure a continuing source of project plans for the year ahead.

Sincerely,

ROBERT DEMP, Editor

Please renew your subscription.

Enclosed is my check for $ ________.

NAME______________________________

SCHOOL____________________________

ADDRESS____________________________

CITY______________________________STATE____ZIP CODE_____

MiniMicromart

THE ELECTRONIC PROJECTS NEWSLETTER

ROBERT DEMP

BOX 1026

FREMONT, CALIFORNIA 94538

March 15, 1979

Dear Mr. Demp:

I would like to thank you for the "Electronic Projects Newsletter." I have enjoyed building the projects featured in this year's edition. I especially liked the circuit card kit that we received. It was easy to assemble and worked well.

Please send me the following:

1) Circuit Card Kit 1-495
2) Circuit Card Kit 1-496
3) Printed Circuit Board 1-497
4) Printed Circuit Board 1-498
5) Printed Circuit Board 1-499
6) Printed Circuit Board 1-500
7) Printed Circuit Board 1-501
8) Printed Circuit Board 1-502
9) Printed Circuit Board 1-503
10) Printed Circuit Board 1-504

Thank you for your help.

Sincerely,

[Signature]

March 15, 1979

Dear Mr. Demp:

I have received your 1026 newsletter and I was very pleased with the projects that were included. I especially enjoyed the circuit card kit and the printed circuit boards.

Please send me the following:

1) Circuit Card Kit 1-495
2) Circuit Card Kit 1-496
3) Printed Circuit Board 1-497
4) Printed Circuit Board 1-498
5) Printed Circuit Board 1-499
6) Printed Circuit Board 1-500
7) Printed Circuit Board 1-501
8) Printed Circuit Board 1-502
9) Printed Circuit Board 1-503
10) Printed Circuit Board 1-504

Thank you for your help.

Sincerely,

[Signature]
Proposed MicroComp Publication Schedule

Issue # 7 -- middle of Sept.
Issue # 8 -- middle of Oct.
Issue # 9 -- middle of Nov.

SCS Newsletter Reprinting Service

Consideration of the SCS newsletter reprinting service was on the agenda for the next meeting. Due to some business interests in the area it is expected that SCS will have to report on making sure that the reprint service is cost-effective.

Experience With Suppliers

I got thru placing several hundred dollars worth of component orders and thought I'd report my results:

1) Solio State Music, 2102A Walsh Ave., Santa Clara, CA 9505
   Fantastic 5 day service. All items received except some 74LS157's which were off the catalog but which I ordered anyway. The $3600 value of the order was $1.50 cheaper than any place I've tried so far.

2) Electronic Sales, 138 N. Main St., Mesa, AZ
   Fantastic 6 day service. I ordered the TCH interface kit for $28.50. It came with a good quality plastic thru PC board, an IC's, resistors, and capacitors. I ordered the schematic parts list and it was shipped quickly. (21 volt). The parts are listed to be shipped within 10 days. You can then assemble them on your own. The board is a 7410 and 7400 on each.

3) D. E. Sales, PO Box 2869, Dallas, TX 75238
   Excellent 7 day service. I ordered 2102-1's at .31/.29 and asked if there were any 1702A's available. I received diagonal 2102-1's and a free 7410 with free shipping costs on each. You can't argue with service like that.

4) Bill Goodnight, Oakland Airport, CA 94612
   Quick delivery and a real bargain. I ordered 8000 catalog items and got them out of volume. Which ones? The ones I didn't get are the ones that were out of volume.

Factory Prototyping Kits Are Great but Where Do You Get A 4040?

One of the most exciting developments that will certainly benefit the computer hobbyist is the rapid proliferation of manufacturers' kits and prototype boards. You have to be very selective. Some examples:

1. MCI Tech 85-280, partial kit, $5.00 (see below)
2. Fairchild 85-1, partial kit, $3.50
3. HP 85-280, partial kit, $4.00
4. HP 85-280, partial kit, $4.00
5. Intel SE 9002, $5.00
6. Apple 85-280, $4.50

The key to having the hobbyist benefit from these fantastic kits is to make sure that each one has a complete set of documentation that includes a complete set of instructions for assembling the kit. If the documentation is complete and the instructions are thorough, the hobbyist can assemble the kit in a reasonable amount of time. If the documentation is incomplete or the instructions are not clear, the hobbyist may not be able to assemble the kit correctly. The documentation should include a schematic diagram for each module, a list of components required for each module, and a step-by-step guide for assembling the kit. The hobbyist should also have access to a troubleshooting guide in case any of the modules are faulty. The hobbyist should also have access to a troubleshooting guide in case any of the modules are faulty. The documentation should also include a warranty for the kit if the hobbyist is not satisfied with the kit. The documentation should also include a warranty for the kit if the hobbyist is not satisfied with the kit. The documentation should also include a warranty for the kit if the hobbyist is not satisfied with the kit. The documentation should also include a warranty for the kit if the hobbyist is not satisfied with the kit. The documentation should also include a warranty for the kit if the hobbyist is not satisfied with the kit. The documentation should also include a warranty for the kit if the hobbyist is not satisfied with the kit. The documentation should also include a warranty for the kit if the hobbyist is not satisfied with the kit. The documentation should also include a warranty for the kit if the hobbyist is not satisfied with the kit. The documentation should also include a warranty for the kit if the hobbyist is not satisfied with the kit. The documentation should also include a warranty for the kit if the hobbyist is not satisfied with the kit. The documentation should also include a warranty for the kit if the hobbyist is not satisfied with the kit.
The important aspects of the DIGITAL GROUP's business philosophy the customers should be aware of are:

- They do not formally announce a product until it is ready to be put into production and can be delivered as advertised.
- Each machine is backed by a 1-year warranty for parts and labor, with an optional 3-year warranty extension.
- All products are designed to be future-proof, with software and hardware updates available to ensure compatibility with future technologies.
- The company is committed to providing excellent customer service, with a dedicated support team available 24/7.
- The DIGITAL GROUP prides itself on being a pioneer in the industry, continually pushing the boundaries of what is possible.

In terms of the technical specifications, the DIGITAL GROUP is known for its high-quality components and robust design, ensuring reliability and longevity. They also offer a wide range of customization options to meet the specific needs of each customer. For more information, please visit our website or contact us directly.
Dear Hal,

Sorry not to have written in such a long time. First, I'll compliment you on the continence of the ML and its tremendous usefulness to the hobbyist. I've finally completed work on my Monitor and Loader Program for the ROG along with full documentation of the source code and hardware add-ons. As indicated in the enclosed "ad" which you may wish to run in the ML, I am offering a $7 package to interested readers for $7.50 postpaid. In writing the program, I've tried to make it as easy to use as possible and still stay under 1K memory usage. If you'd like, I'll send you a free copy in appreciation for what you've done for us hobbyists.

Although the program development itself only a week or two, the write-up of the source code took nearly a month of sporadic typing. Hence, I've decided not to release my ML text editor TEKTEX to the public as hand assembly and documentation of the source code is too time consuming. I know this is exactly the type of software people are looking for, but I cannot take the time away from my other work to prepare it. Any suggestions on how to distribute such programs would be appreciated.

I finally gave up on my Budding Cassette circuit and purchased a National Multiples Corp. 607 Digital Data Recorder ($10.00 -- see ad in MTL). Delivery time by UPS was great -- only 5 days. And, the unit has performed flawlessly at 300, 600, 1200, and 2400 baud. After several long dumps and recoveries of an entire 14K at this latter rate, I feel confident to use 2400 baud for all my storage. The people have also announced the CC-74A which has a variable motor speed control allowing for the matching of one recorder to another of the same or different users. ($149.00 I think.)

Seebly's Galaxy Game for the ROG/ROU is really great! Running in under 1K, this game has captured the imagination and excitement of the BASIC and FORTRAN versions of JUMP. Their well documented book is available for less than $10.00. See the list ads for details.

The newest news for me is that I've finally entered into a purchase contract for DEC's new DATSYSTEM 310 word processing system for use in our real estate business. Based around the PDF-8 processor, it features dual floppy disc drives, a basic character CRT, and a type quality printer. Delivery is to be before August 17. I may also be purchasing their scientific operating system giving me FORTRAN, BASIC, and assembler. So, while I'll always remain a fondness for the ROG, it's on to better things!

Sincerely,

William E. Severance, Jr.
Center Lovell, Maine 04016
Tel: (207) 925-2271


ROBERT B. LEGGE
PO Box No. 30,085
Ave Alvaro Ramos 1142

Dear Hal:

Following your recommendation, on April 7 I sent TINY BASIC $3.00 for the first three issues of Dr. Dobbs Journal etc. and another dollar for airmail postage, which amount proved to be grossly insufficient. Nevertheless, TINY BASIC have already airmailed me the first three issues of their R.I. and I consider it very good indeed.

To continue, of course, they need more subscriptions and I hope you might request all readers of your ML to support their enterprise, by sending $10 for one year's subscription (ten issues). Foreign postage or Airmail is extra, of course. I am continuing my own subscription with them, and of course sending them the extra airmail postage.

Your newsletter continues to arrive quickly, by Air. I hope you will get around to answering some of my letters & queries, soon. Please publish my revised address as above -- our P.O. Box number has been changed.

Best regards and good wishes - Sincerely:

Page 3

SPECIFICATIONS FOR MICRO-COMPUTER SYSTEM

Micro-computer with CPU board, cabinet, power supply and expansion capability.

Bootstrap loader on ROM or PROM

16K RAM 32K RAM

Serial I-O interface with two RS-232 Ports

Single floppy disk drive

Extended BASIC Software (Multi-user)

Disk operating system software

Should be able to handle TV-type terminals in a "Time-share" mode (program monitor) Diagnostic software to help pinpoint electrical malfunctions

May 13, 1976

We are about to order a microcomputer system for use in our school, being counselled by finances to implement teaching of programming in the BASIC language and running of non-high school educational programs.

We would appreciate it if you would share with us any information you might have about the reliability of the following systems.

1. Altair 8800
2. IMEI 8800
3. B.S. 300

The components we are considering are listed in the general description on the attached page.

Your comments on such things as difficulties in kit building, quality of BASIC software, ongoing maintenance, and manufacturer support would be very helpful.

Please feel free to respond with informal notes. Whatever information you can send will be very much appreciated.

Sincerely,

Donald K. Geyer
Coordinator Educational Computer Concepts Curriculum Project

P.S. We have heard rumors that there is a university writing BASIC software for the 8800, but we have not been able to find out which one. We would appreciate any information you might have about this too.

Member North Central Association of Colleges and Secondary Schools
Since we are not adding the memory continuously through a single address line/page, the cursor count bit is not modified to indicate the complete range of the 69 address bit. This modification will eliminate the occasional output of the cursor count bit and a comparator. The designer used a 74LS283 counter to allow using only one page with the cursor count bit through a computer cursor position interface and still minimize the components required. The additional 74LS37 (IC1, Figure 1) is attached to the 74LS283 to allow 74LS283 to generate the cursor count bit. We then use the original cursor counter 74LS37, after disconnecting the 7th bit flip-flop with a 74LS283 counter to the 74LS37 which is connected with the 74LS283 counter. The cursor count bit generated by IC1 is tied to pin 15, 103A on the main board and is sent to the external connector of the 74LS283 counter. 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NOTE: Connections D70A, D71A, D72B and D72C are for the seventh ASCII data bit and will not be used when the Screen Read option is not being used.

The memory board is now complete and is ready for testing on the main board.

Figures 1: If the DS memory board is not being used, you may be able to use the DS memory board by using the DS memory board and the DS memory board. The main procedure follows:

1. Connect the DS memory board to pin 8, 1202 on the main board.
2. Carefully bend pin 12 of six new memories out to so that it is parallel to the chip.

FIGURE 4
DS MEMORY BOARD

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Carefully position each of these chips on top of the existing memory chip on the board. solder each of the 12 chips to the pins of the existing memories. You should have six 1202 resistors in the top of the existing 2102. Note: Use grounded soldering.

Carefully connect the RS pins of the new chip together with a length of wire. This is the pin 10 of the auxiliary board.

Connect the RS wire to pin 9, 1207 on the main board.

You now have two pages of data which are automatically rolled over by the page flip-flop 1207 which enables the DS line of either six 2102.

Early TTP-II MEMORY MODIFICATION

The early TTP-II memory modification may be different than the later TTP-II memory modification.

The TTP-II memory modification is implemented on the TTP-II memory board. It has one of these units installed. The TTP-II memory modification will require the following additional procedures:

1. Connect pin 8, 1207 to pin 1, 10G.
2. Connect the RS wires to pins 1, 2, 3 and 4, 10G.
3. Connect pin 8, 1207 to pin 9, 10G on the auxiliary board.
4. Connect pin 8, 1207 to pin 9, 10G on the auxiliary board.
5. Connect pin 8, 1207 to pin 10, 10G.
6. Connect pin 8, 1207 to pin 11, 10G.
7. Connect pin 8, 1207 to pin 12, 10G.
8. Connect pin 8, 1207 to pin 13, 10G.
9. Connect pin 8, 1207 to pin 14, 10G.
10. Connect pin 8, 1207 to pin 15, 10G.
11. Connect pin 8, 1207 to pin 16, 10G.

You are now ready to shut the power off and install the memory board. Turn the power back on and enjoy the 40 character line display. Don't forget to review your TTP-II schematics with the modifications that you have made.
...
April 13, 1976

I have just finished reading that I Am A and feel that I must express my disappointment and disagreement with the answer that the N. I. has to offer. I feel that you and your associates have done a great deal to assist the advancement of the hobby of computing to date. This is not the appropriate time to tell it.

I also understand that publishing the letter must take a great amount of time and effort on the part of the person who writes it, as well as the time of the students whose presence is noted [the handwritten address on the letter] and do appreciate it.

I will try to keep the file of Alcatel-4X by increasing subscription costs etc. I somehow don't feel that DITF, PCC, TDC or any of the other available publications can replace the services which you have provided. I do hope that you will reconsider and ensure that a few of your computer enthusiasts will write expressing their concurrence. Should you ever have the opportunity to phase-out, I would like to extend my thanks and gratitude for the services which you have rendered as well as my best wishes for your future activities in whatever field they may be.

I would like to say also, that I am in full agreement with you, Dr. Michael Kagan regarding WITS Basic. From some of the correspondence I have seen, I believe that Bill Gates' greatest problem stems from the fact that he had an ineffective marketing plan for the software or is grossly naive in both.

NOTE: I am attempting to locate a copy of information on schematics or schematics or a list of donatoh for Electronics Report Program #178 which I have recently prepared. I would be happy to pay for any copies or other associated expenses. Thanks.

what a pity that he nor Ed Roberts could not understand that if the price for WITS was right, they probably would have sold the package to better than 10% of all pilot purchasers, particularly if the package had been included in the initial purchase. They may have got less per package but they surely would have raised more per package. I do not have a copy of the WITS Basic and I do not intend to either purchase or use it.

I have, however, placed orders with Process Tech. for their AIS-4, SIM-1, EFT-8 and the recently announced TONAL. I'd much rather pay $680.00 for the firmware and feel that I could receive something for my money than a "scrubbing" which is the feeling I get every time I come across Basic.

One other very interesting point is the announcement by INSAI of the inclusion of 4K Basic in their initial Basic hit. I believe that Ed Roberts as far as the Basic is concerned that the same would extend only for firmware copy. I must ask that this is true but INSAI makes the purchase look so easy I think they are very reputable. I might be taking a scrubbing anyway but the fact that these people do make you feel that you have been loved and kissed in the process.

I have a lot of respect for some of the things that WITS have done in the past year but the "Basic" controversy and Bill Gates' name calling do not go down well. These people have succeeded in alienating a very great number of their past.
Recently there has been a lot of discussion about using tape recording standards, and out of that discussion came the "Kansas City" standard, and the hardware featured in this magazine in March. Unfortunately, there haven't been very much said about the data as it is used with the new standard. I believe that the user of the format is just as important as the hardware, and that if we are really going to be able to freely exchange data we must develop a standard that everyone will be able to use.

If your tape data routine uses a leader of 1800 in duration and doesn't specify the area in memory where it will store the data, you are looking for a leader of all ones, and not a leader of all zeros. You also have to find the load limits specified on the tape, and you are going to have to read the tape without changing its speed. If you do not load the tape correctly, you could get a sticky, or even if your routines are INT 12, and I don't really want to do this sort of thing, but if you have a tape that is in a bad condition you can determine the exact location by using a different data format before you get your "Kansas City" interface on-line.

Also, I suggest that you place the following at the start of the tape:

1. A leader of between 60-100 bytes of all 8's. This would last 3-5 seconds at 300 baud per second. That gives plenty of time for the AGC to lock up, and enough time for the tape to get seated in the drive.
2. A "J" byte would show the end of the leader and trigger the software to look for the first data bits. I chose the "J" byte because it is a relatively unused code for addressing purposes.
3. The next four bytes on the tape would be the low and high start address and the low and high stop address, specifying where in memory the tape data is to be loaded.
4. Data bytes follow.
5. After the last data byte there would again be one "J"-byte. This provides an immediate check on the program length. If the last address has been loaded and the next byte is other than a "J", an error has occurred.

After the "J" byte would be the checksum byte. The checksum routine calculates the checksum by adding each data byte in the accumulator, ignoring any overflow, and writing the checksum byte on the tape. The read routine calculates the checksum in the same way, and compares the two. This method is not as error free as the cyclic redundancy check used by the TCI routines, but it uses less software. In general, the speed of the interface and the software. In general, the speed of the interface and its size is still less important.

After the checksum would come a trailer of 25-50 bytes of all "F", which only separate one program from the next. Length of the trailer is really unimportant.

This format doesn't use blocks of data, but again because of the low speed of the interface, and the amount of time it takes to load a program into memory, it is not as efficient as the memory mapping software. The software for this format can be relatively short, especially if the interface uses a UART and perhaps interrupts instead of timing loops for reading the tape. This format for data format is the same, there will be other suggestions for this format. And if you do get into the discussion now, we can all start exchanging taped programs sooner.

-Epp
Thank you for your letter and for your interest in Western Data Systems.

Enclosed is the article which you requested. Also, I am enclosing a picture of the 370/02A to give you a better look at how dynamic this new product is. We have decided to use the name DATA HANDLER for the computer instead of the technical name 370/02A.

I will send you complete information on delivery and purchasing as soon as we get it back from the printer. If you have any questions please feel free to call me at anytime.

Sincerely,

Cindy A. Indihar
(Marketing Manager)

THE DATA HANDLER
FROM WESTERN DATA SYSTEMS

Western Data Systems has just introduced a new microcomputer called THE DATA HANDLER. It combines the Mos Technology 6502 microprocessor with the latest state of the art technology producing a high performance microcomputer at a price anyone can afford.

The high speed operating capabilities of the Data Handler are enabled by the use of full function hardware controlled front panel, a large group of plug ins (to minimize noise at high operating speeds) on the P.C.B. and 2002 type RAMs.

Slower accessing memories (IBOM and ROM) may be used, although this will reduce the cycle speed to within the limits of other microcomputer kits.

I would be interested in purchasing a unit for school evaluation purposes. I appreciate all the additional technical information and delivery details before writing out a check.

I would be delighted to print an informative writeup on the system. Please let me know if you would like to send a copy of the Mos 6502/2 Newsletter but truly informative articles are nearly always printed without cost, I hope you will be willing to submit such a technically informative article.

Thank you very much for your letter. Hope to hear from you soon.

Sincerely,

Harold L. Singer
Micro B Newsletter Editor

IBM 1052-2 (1/0) $850, 1053-2 (2/0) $980, you pay shipping, these are heavy-duty electronics; IBM Maintenance Plan coverage by my hospital in research project less than 100 hrs; full set of manuals; MI, J. SCHNEIDER, M.D., 2086 Assembly, Walnut Creek, 94596; 415/939-6295.

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UNIVERSITY OF PENNSYLVANIA
PHILADELPHIA 1974

DEPARTMENT OF MATHEMATICS E1

S. A. Cochran, Jr., Ens.
P.O. Box 607
Tyler, Texas 75701

May 3, 1976

Dear Mr. Cochran:

I saw your letter in the Micro-8 Newsletter concerning the Burroughs typewriter. I am unable to satisfy your desire for a manual since I do not have one, but I am quite willing to share the results of my experimentation. I have been able to get my unit to work (although I have not fully understood its mysteriousness).

I do not have any information about your equipment. I shall assume that you have both the typewriter and the box of control electronics. (I didn't get the card reader.) After coupling the two units via the cable supplied, one has access only to the 25 pin connector for input/output use.

I tracked the wires in this I/O cable; the results are shown on the attached sheet. The numbers on the outside ring are the pin numbers of the 25-pin connector. Note that #8 (connected to a white wire) goes nowhere. #2 is serial data out. #3 is serial data in in on-line control. The unmarked leads from the transistors disappear into the jungle of ICs.

Data Format:

0 bit ASCII with MOS selected to give even parity. Transmission is serial at 150 baud — start bit, 8 data bits. 1 stop bit. Furthermore, 1 is positive voltage and 0 is negative. (This is contrary to the RS-232 convention.)

On-line operation: The on-line switch should be on, and #5 should be positive. I permanently connected #5 to #20.

Transmit: Transmission starts by depressing the switch marked ‘Transmit’. This produces the following sequence: a typewriter in the usual sense while simultaneously transmitting the ASCII codes for the keys. Transmission ends by depressing the switch ETX. This does several things, but the relevant ones are: the code for ETX is sent out from #2 and it is followed by transmission of the system parity.

Home computer terminals feasible by 1985

On-line operation. reception: This description assumes that one has just completed a transmission from the typewriter. Transmission from the CPU starts with ETX. This causes the 'receive' light to go on. Characters can now be sent out to the typewriter, with the system-parity byte being developed. Once the system-parity byte which originated from the typewriter, then each character sent from the CPU (not counting the initial ETX) is exclusive-orred with the developing system-parity byte. Transmission ends with ETX, followed by the value of the system-parity. If all is well, the typewriter will emit an ACK output to the CPU, and will start to type.

Apart from ETX, ETX, ACK, the functioning control characters are CR and HT.

Bullet: The control electronics has a buffer memory of approximately 140 bytes. The message from the CPU to the typewriter is stored in this buffer until the ETX and system-parity arrive, at which time the printer will start. If the message is too long, the procedure is as follows: keeping a count of characters, the CPU sends ETX, test, ETX, parity not to exceed the buffer size. When ACK is received from the typewriter, one can send the next installment, following the same format ETX, test, ETX, parity, but this time setting the starting value of the system-parity to zero. This process can be repeated as often as one wants.

Note that ETB may be used instead of ETX with some minor changes. Also, on my machine sending control characters DC1 or DC2 from CPU to typewriter has some mysterious effect which I have not yet figured out.

There are some built-in protections against time-wasters. If no action occurs for more than 30 seconds, the error light comes on and everything disconnects. Pressing 'reset' reactivates the machine.

Because of the voltage involved in the Burroughs, I connected my computer (Altair 8800) to the typewriter via 2 opto-couplers.

Please let me know if this information has been of any value to you. If your letter to Hal Singer should cause a manual to appear immediately, I would very much like to have a copy, and would certainly be willing to pay the cost of Xeroxing.

Sincerely yours,

C. G. E. C. Y. C. E.

Oscar Goldman
Professional

H.W. Parker

November 11, 1976

Dear Emil:

I am glad that you received my letter this time. The last time I wrote was when your group was working on a TMS article. I read in the back issues that you got a lot of response that time. I hope we will get some more soon. I received all the back issues in good order and had quite a bit of reading to catch up on before my trip back. I am sure that there are some who are interested in this work, and some who are not. I am sure that many people have found out that the 8080 is still in use, and that there are many people interested in it. In the past, I have put a lot of time into this problem. I am still interested in it, and I am planning to do some more work on it. I am also interested in the microprocessors, and I am planning to do some more work on that. I am also interested in the microprocessors, and I am planning to do some more work on that. I am also interested in the microprocessors, and I am planning to do some more work on that.

Sincerely,

H.W. Parker

New York City

April 10, 1976

Dear Bob:

I am glad that you received my letter this time. The last time I wrote was when your group was working on a TMS article. I read in the back issues that you got a lot of response that time. I hope we will get some more soon. I received all the back issues in good order and had quite a bit of reading to catch up on before my trip back. I am sure that there are some who are interested in this work, and some who are not. I am sure that many people have found out that the 8080 is still in use, and that there are many people interested in it. In the past, I have put a lot of time into this problem. I am still interested in it, and I am planning to do some more work on it. I am also interested in the microprocessors, and I am planning to do some more work on that. I am also interested in the microprocessors, and I am planning to do some more work on that. I am also interested in the microprocessors, and I am planning to do some more work on that.

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