Push & Pop

VOL. 9 NO. 5 Newsletter of Sacramento's Microcomputer User's Group MAY, 1985

10th ANNIVERSARY ISSUE!

THIS IS IT FOLKS OUR TENTH !!!

This issue marks our TENTH year as Sacramento Microcomputer Users Group for all types and brands of computers. Our meetings are open to all users !!!

****

SMUG MEETING

SEE BACK COVER AND GO TO THE SMUD TRAINING ROOM

NEXT MONTH OUR MEETING DAY IS TUESDAY MAY 28, @ 7:30 PM

****

TENTH CELEBRATION ON MAY 4th

AT RAEF HALL, AMERICAN RIVER COLLEGE. See map on page 3
SPEAKERS STARTS AT 10:00AM

****

NEXT MONTH.....

TUREO TUTOR STARTED
The first of many tutors

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PUSH & POP

THE MONTHLY PUBLICATION OF THE SACRAMENTO MICROCOMPUTER USER'S GROUP

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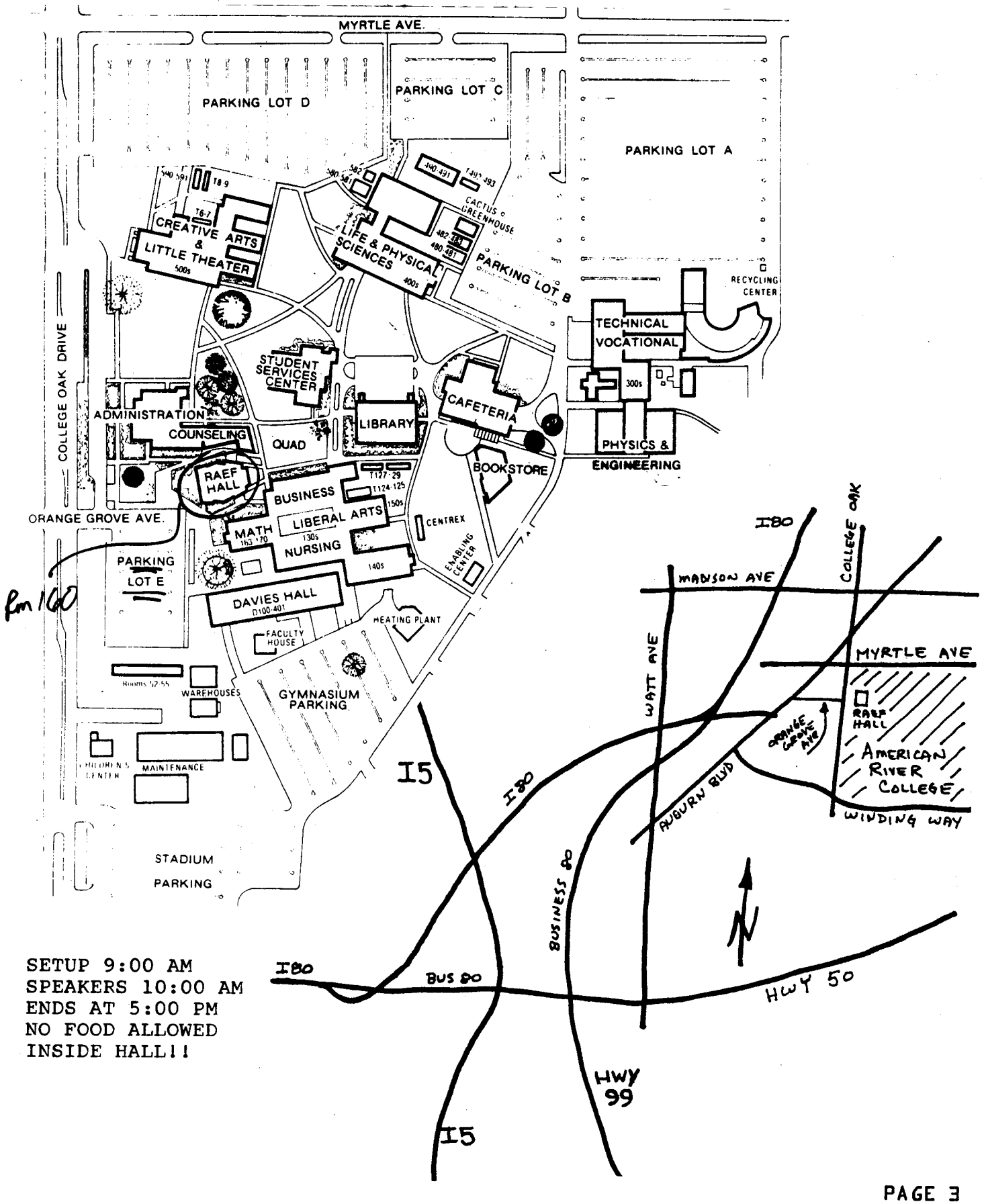
Non-profit organizations, such as computer clubs are free to reprint material from the PUSH & POP provided appropriate credit is given. Organizations for profit must contact the editor for reprint permission.

SMUG 10th Anniversary
Saturday May 4th 9am to 6pm
American River College
Raef Hall Room 160



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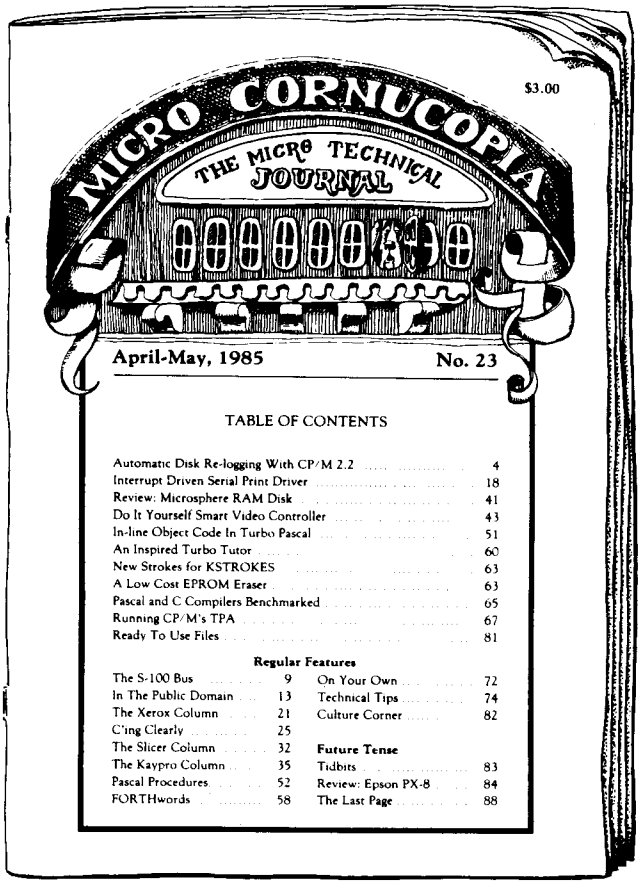

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FROM THE SMUG
PRESIDENT'S SYSTEM

As May approaches, so does our Club's 10th Anniversary. Way back in 1975, a small group of hobbyists got together in Sacramento because of a common interest in the new field of Microcomputing. Before then, only large and medium sized computers existed, but nothing for the small, personal computers. A few tiny businesses were created to sell kits to the experimentor so they could build their very own microcomputer. Many companies came and went since that time and there was an explosive demand by the public for small inexpensive computers. Stories abound of successes and failures of these small computer companies where fortunes could be made overnight and failures were equally as swift. Books and articles have been published about the history of the microcomputer and I couldn't do it justice to cover it in a few paragraphs in our newsletter.

As remote as 10 years seems, many of our Club members have been around since the early days of microcomputing and are eager to share the details and "war stories" of being pioneers. In celebration of these last 10 years, we have decided to hold a 10th Anniversary Celebration on Saturday, May 4th at American River College in Sacramento. An all day affair will include exhibits of early computers and related devices and speakers from both our own club membership and other notable pioneers from the microcomputer world.

Hardware exhibits will include the Altair, IMSAI, SOL and North Star computers as well as other computers and I/O devices. These will be on display with a brief history of each device. How many of you remember the ASR-33, a paper tape terminal that was "hi-tech" just a few short years ago? Come take a nostalgic view of the past and talk to the owners of these marvelous devices.

Speakers will be sharing their personal glimpses of how they started and what they have seen in this fast paced world of microcomputing. Tenatively, speakers include George Morrow, Bill Godbout, Mark Garetz (he and George Morrow were the primary forces behind the S-100 Bus Standard), John Draper (Cap'n Crunch), Dave Thompson (Editor and Publisher of Micro Cornucopia magazine), Dallas Parcher (who has owned just about one of everything), and Charley Foster (with his many personal contacts in the micro world). There are other spearkers that may be scheduled at the last minute and having Comdex the following week may affect George Morrow and Bill Godbout, but we have their tenative agreement to speak to us about their colorful past. An agenda will be available soon with details of exact speaker times. As always, there may be last minute changes.

Also invited to attend will be some of the local computer clubs and most of the local media, both TV and Radio. The hours will be from 9:00 a.m. to 6:00 p.m. at Raef Hall (Room 160) on the American River College Campus in Sacramento. Maps will be available at the next meeting as well as the agenda. We hope to see you there for an enjoyable day of reminiscining.

Ken Benedict

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Smug members gather close to get the first glimpse of the new computer based phone and pen! Note the excitment.
Happy Anniversary and many more from Zack Electronics!

SECRETARY'S LINE

It was a cold, windy, rainy night and it was SMUG general meeting night, so away I went to the SMUD Board Room. When I walked into the room, the other twelve or fourteen people that were there looked around. Yep, folks there was not much of a turn out that night. The meeting was very short (ended so early my wife was suspicious). The discussion that occured was about the upcoming May anniversary event. Some of the guest speakers were named (see the President's Message for more about the speakers and the function), the event was described, and help was solicited to make the tenth anniversary a time to remember. First time attendees were asked to introduce them selves, and sequential access was followed by random access. We were on our way home by 9:00 pm, no fight to get us out by 10. Oh, by the way, yours truely made a half fast thought out proposal about a Programmer Workbench (see the Soap Box).
So here I am at 10 pm on the following Thursday, sitting in my shorts and socks trying to get the Board Meeting minutes typed and transmitted to the Editor. My Weinhard's Ale and my daughter's rat (read hamster) are my only company.
The Board Meeting was held at Roy Korb's home, and it started on time. The Board members present were Benedict, Schlegel (late again), McAfee, Warkentin, Mazzarelli, and Montgomery. Bill Kibler (Editor) and Roy Korb were also present.
It was discussed why some of the long term members were not renewing their membership, concern was expressed that perhaps their money had been received, and the fact not recorded. The Board will invesigate, it was mentioned that some of our long term members were constantly on the road and perhaps had chosed not to renew.
The newsletter was the next topic. It was decided that all active members from this and last year would receive a copy of the special May issue of the newsletter. Again, the Editor requested articles for the publication by asking each of those present if he had his article ready. Yes Bill, here it is. Bill Kibler presented a proposed new masthead that is simpler and cleaner. A discussion was held regarding a logo for the club. Didn't we go through this last year?
The Public Domain was the next topic of discussion. Don Bozarth and Bob Ress will be assembling another of those neat collections of Public Domain. According to my past conversations with Don, he is going to have two disks of utility programs ready for the May anniversay. I gave Benedict a disk of MBASIC skill developmental programs (read GAMES) to be included, also pledging to have a sampler disk of programming languages including EBASIC, COBOL, FORTH, and PASCAL (may take two disks).
There was a discussion if the club should use flippies (both sides of a single sided disk) or use two disks. If we used two disks the cost to the club would be slightly more, but the purchaser would have the option of which of the disks he wanted if he didn't buy both.
A short discussion about including some of the smaller clubs under our masthead. Many other groups appear to be doing that very sucessfully. Volunteers are still needed to help with the special event, no skills are needed for many of the areas where we need help. Ken is also looking for hosts for our guest speakers. He intends on popping for dinners for a couple of them, this is a good opportunity to get to know some of the old timers in the field (oh my gawd they are younger than I am).

Don't miss our next general meeting April 23, 1985, and please feel free to attend the next Board Meeting at Bill Kibler's house on Wednesday May 1, 1985. Don't forget the May 4, 1985 anniversary special at American River College (Raef Hall).

SECRETARY'S SOAPBOX

During the last general meeting I proposed the development of a PROGRAMMER WORKBENCH. Just what is a programmer workbench?
Primarily the workbench is a group of individual tools operating within a shell. The tools range from a editor to a compiler. Most of us use these tools individually to program any size system. If you think about it, you probably utilize this concept quite often. For example, most of the experienced programmers I know have a development disk available that contains most of the day to day programs they use to develop, debug and document a program.
Some of the tools might be:
Editor - most desireable would be a full screen editor. The editor would probably have user exits that could allow automatic numbering, inclusion of source files, heirarchy capability and other tailored routines.
Macro Processor - The macro processor would have conditional branching, word replacement, and a library facility.
Library Facility - The library facility would store source and object modules in a compressed format. The source modules would also include macros as well as full programs. Compression would reduce the overall space requirements for the data on the library.
Pre-processor - The pre-processor would include the ability to expand shortened data names, pull source code from the library, convert pusedo code to comments, utilize the standard structured code constructs-interperting them to a target language, and have the ability to line number a program dependent on the language used.
Cross-refernce - Pass a data file, extract the special symbols, extract each data name exclude any reserved words and create a cross reference list.

Some of the tools could be combined into one logical tool, for instance the macro processor, pre-processor, and cross-reference modules could be a single program.
If you would be interested in discussing the concept, please feel free to call me or talk to me at one of the meetings. Would this make a good club, or special interest group project?

Second item, what happened at the West Coast Computer Faire?
I was disappointed that there were very few major manufacturers there. I really wanted to get my hands on a Pivot from Morrow, I would have like to seen the HP Unix box. Who ever makes the box that looks like the IBM PC must have made a mint! There were "PC look alikes" that were so poorly put together that the labels were on crooked. Very little Z80 or CP/M equipment and less software. Noted that Carousel Microtools were holding a clearance sale, they are out of business. I liked the user groups being in the middle of things instead of in the corner. It looked like a class swap meet with all the discounters. Shugart Quad Density 5 1/4 for $89. Good deals.

Dave McAfee

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S               MM     MM       U       U       G       G
S               M M   M M       U       U       G
S               M  M M  M       U       U       G
SSSSSSSSS       M   M   M       U       U       G   GGGGGG
        S       M       M       U       U       G   G   G
        S       M       M       U       U       G       G
        S       M       M       U       U       G       G
SSSSSSSSS       M       M       UUUUUUUUUU      GGGGGGGGG

SACRAMENTO      MINICOMPUTER      USERS           GROUP
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VOLUME 1 NUMBER 1 SACRAMENTO, CALIFORNIA MAY 1 ,1975

THIS IS THE FIRST EDITION OF THE SACRAMENTO MINICOMPUTER USERS GROUP NEWSLETTER, WHICH IS INTENDED AS A FORUM FOR INFORMATION EXCHANGE AMONG MINICOMPUTER USERS IN THE SACRAMENTO AREA. THIS NEWSLETTER IS INTENDED TO SUPPLEMENT RATHER THAN SUPPLANT ANY OTHER SIMILAR PUBLICATIONS SUCH AS THE MITS, SCELBY, MARK-8, INTEL OR OTHERS. ITS PRIME FUNCTION IS TO SPEED INFORMATION EXCHANGE AMONG ITS CONTRIBUTORS.
PRESENT INTENTIONS ARE TO PUBLISH MONTHLY, BUT IF MORE FREQUENT PUBLICATION PROVES ADVANTAGEOUS, THIS CAN BE CHANGED.
CONTENTS OF THE NEWSLETTER WILL BE DETERMINED PRIMARILY BY WHAT MINI USERS SUBMIT. WE WILL PUBLISH PROGRAM DESCRIPTIONS OF ALL SOFTWARE SUBMITTED (AN ACTUAL LISTING IF SHORT); FUNCTIONAL DESCRIPTIONS OF ALL HARDWARE SUBMITTED; AND INFORMATION OF GENERAL INTEREST IN THE FIELD OF MINIS. COMPLETE DOCUMENTION OF ALL SOFTWARE AND HARDWARE SUBMITTED WILL BE RETAINED ON FILE AND WILL BE PROVIDED ON REQUEST FOR THE COST OF COPYING (WILL BE SPECIFIED IN DESCRIPTION) PLUS A LARGE SASE.

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MITS-NOTE: AS OF 22 APRIL 75 MITS HAS BEGUN SHIPPING THREE SERIAL-I/O UNITS, SIO-A, SIO-B, AND SIO-C.

SOFTWARE: +TWO VERSIONS OF BASIC AS WELL AS AN ASSEMBLER AND TEXT EDITOR ARE NOW LISTED BY MITS -- SHIPPING DATES UNKNOWN.
+SMUG MEMBERS ARE PRESENTLY DEVELOPING BOTH FORTRAN AND ALGOL COMPILERS.

HARDWARE: +A SMUG MEMBER IS PRESENTLY DEVELOPING A CRT-DISPLAY SPECIFICALLY FOR THE ALTAIR 8800. THIS IS A DISPLAY ONLY (MUST BE USED WITH AND PLUGS INTO THE 8800). NOT A TERMINAL. VIDEO TO BE FED TO A STANDARD TV SET
+A LOW-COST VECTORED INTERRUPT CARD IS IN THE WORKS, PRESENTLY DELAYED DUE TO MANUFACTURER OF PRIME CHIP NOT ABLE TO SUPPLY.
+LOW COST MEMORY BOARDS IN DEVELOPMENT. WILL USE SUCH CHIPS AS 2102, POSSIBLY 1101, IN STATIC BOARDS. DYNAMIC BOARDS ALSO IN DEVELOPMENT FOR 1103, 2107, 5262. ANYONE WITH TWO, THREE, OR FOUR PHASE CLOCK EXPERIENCE PLEASE CONTACT SMUG.
+ROM BOARDS ALSO, PROBABLY 82S129 OR SIMILAR STATIC ROM. IF ANYONE IS ABLE TO PROCURE LOW COST DYNAMIC ROMS, COULD DESIGN FOR THEM ALSO.

A SMUG MEETING IS SCHEDULED FOR ALL INTERESTED ON 4 MAY 75 AT 3620 PARK DRIVE IN CITRUS HEIGHTS. MAP ENCLOSED. IF YOU GET LOST, CALL 726-2371 (ROSEVILLE EXCHANGE) FOR ASSISTANCE. CHIPS AND DIPS WILL BE PROVIDED -- BRING YOUR OWN BEVERAGE.

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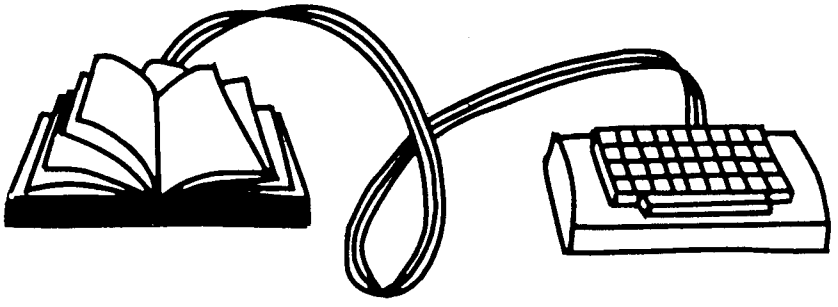

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Twenty-Twenty Hindsight
by
John J. Warkentin

History is strange stuff; what we remember is so often ignored by the historians, and what is historic is often ignored by us at the time.

In 1973 I left a job in Portland, Oregon in order to return to a more reasonable climate within the boundaries of California. I nevertheless intermittantly returned to Portland to visit my old friends at the workplace. On one such visit, one of them brought to work the January 1975 issue of Popular Electronics magazine (Now called Computers and Electronics). Featured on the cover was a computer and a banner "BUILD YOUR OWN COMPUTER!" As we perused the article I doubt that any of the others felt any more historic than I did.

As time passed, the impact of that article was noticed more and more in electronic hobbiest circles. The nature of the articles in electronics magazines changed toward digital electronics and peripheral devices for the Altair (the subject in the cover of the January 1975 Popular Electronics), and the ads in such magazines developed a definate leaning in the direction of microcomputer stuff.

The concept of a personal computer for ME grew only gradually, until I started slowly collecting items needed for putting together a system. Finally in May of 1977 I began to purchase the major parts needed to build a micorocomputer. In the mean time I had heard of a computer club meeting here in Sacramento, and started attending the meetings. This provided the opportunity to meet like-minded enthusiasts, and develop friendships that later proved resources for suggestions and help as my system took shape.

As the opportunities presented themselves, I worked with and on other peoples' microcomputers. This led to the situation that those other systems were operational, but my own was not. Finally toward the end of 1980, the decision was made-- time for mine. In those few years the hobby had spawned an industry, and the products I had purchased were now quite obsolete. Nevertheless, I went ahead with using them to construct a system. One of the things I learned is that if it is available, it is already obsolete. If you decide to wait for the newest item, you will never have a computer system.

Since the time that my system became operational, it has continued to evolve, with newer products with more capability replacing some of the older items. But I can still say, "It's mine", and mean more than merely "It's paid for".

In the years since 1975 the nature of the microcomputer business has changed tremendously. The little black chips are now being incorporated into almost everything except teapots (at least I have not seen any, yet), and a huge industry has developed around it. Funny, 10 years ago, it didn't seem THAT big of a deal...

Popular Electronics®

Editorial

THE HOME COMPUTER IS HERE!

For many years, we've been reading and hearing about how computers will one day be a household item. Therefore, we're especially proud to present in this issue the first *commercial type* of minicomputer project ever published that's priced within reach of many households—the *Altair 8800*, with an under-$400 complete kit cost, including cabinet.

To give you some insight to our editorial goal for this momentous project, we were determined *not* to present a digital computer demonstrator with blinking LED's that would simply be fun to build and watch, but suffer from limited usefulness. High chip costs would have made this a most expensive toy. What we wanted for our readers was a state-of-the-art minicomputer whose capabilities would match those of currently available units at a mere fraction of the cost.

After turning down three computer project proposals that did not meet these requirements, the breakthrough was made possible with the availability of the Intel 8080 n-channel CPU (central processor unit)—the highest-performance, single-chip processor available at this time. As a result, *Altair 8800* offers up to 65,000 words of memory, 256 inputs and outputs simultaneously, buss line expansion, subroutines that are enormously deep, and fast cycle time, among other desirable characteristics. Peripheral equipment such as a "smart" CRT terminal is expected to be available, too, to make up a within-pocket-book-reach sophisticated minicomputer system.

Unlike a calculator—and we're presenting an under-$90 scientific calculator in this issue, too—computers can make logical *decisions* for an accounting system, navigation computer, time-shared computer, sophisticated intrusion system, and thousands of other applications. The "power" of *Altair 8800* is such that it can handle many programs simultaneously.

What we're presenting to you, the POPULAR ELECTRONICS reader, therefore, is a minicomputer that will grow with your needs, rather than one that will be obsoleted as you move more deeply into computerized applications. With minicomputers exhibiting an annual growth rate of some 50%, according to the E.I.A., and with predictions that six out of ten computers sold by 1975 will be mini's, you can be sure that there will be manifold uses we cannot even think of at this time.

There'll be more coverage on the subject in future issues. Meanwhile, the home computer age is here—finally.

Art Salsberg

JANUARY 1975

CHRONOLOGY BY **DAVID H. AHL**

1975

Intel announces the 8080 microprocessor
Motorola announces the 6800 microprocessor
Nat Wadsworth markets Scelbi-8H computer kit
David Ahl publishes first issue of *Creative Computing*
Ted Nelson publishes *Computer Lib/Dream Machines*
Radio Electronics publishes plans for Mark-8 computer

1976

Zilog announces Z80 microprocessor
MOS Technology announces 6502 microprocessor; **Chuck Peddle** sells them at Wescon for $20 each
Processor Technology introduces Sol
Cromemco introduces Z-1 microcomputer
Steve Wozniak designs Apple I; Apple founded by Wozniak and **Steve Jobs**
George Morrow founds MicroStuff (later Thinker Toys and Morrow Designs)
Steve Leininger joins Radio Shack to design a computer
Gary Kildall founds Intergalactic Digital Research (Intergalactic dropped later); introduces CP/M
Michael Shrayer announces *Electric Pencil*
David Bunnell organizes World Altair Computer Convention
John Dilks organizes first national trade show in Atlantic City
David Ahl organizes first personal computing sessions at NCC

First issues of *Dr. Dobb's Journal, SCCS Interface*
100 companies active in field by year end
132 computer clubs in existence by year end

1977

Commodore announces Pet designed by Chuck Peddle
Apple II announced
Radio Shack TRS-80 announced
Heathkit announces H8 and H11 computer kits
North Star Horizon announced
Vector Graphic announces S-100 system
Technical Design Labs announces Xitan
Ohio Scientific announces line of Challenger computers
Ed Roberts sells MITS to Pertec
Structured Systems announces CBasic
Scientific Research sells first applications software disks
Software Records announces 12" LP of programs
First **Microsoft** ads for Basic and Fortran
Scott Adams founds Adventure International
Jim Warren organizes First West Coast Computer Faire
First **Computerland** franchise store opened in Morristown, NJ; 24 stores open by year end
First issues of *Kilobaud, Personal Computing, ROM, Microtrek*
Over 200 active manufacturers by year end

1978

Atari announces the 400 and 800 computers
Exidy announces the Sorcerer
Video Brain computer introduced
More than 20 S-100 bus computers announced
Alpha Micro announces 16-bit S-100 boards
Apple and **Radio Shack** announce 5¼" disk drives
Ithaca Audio (later, Ithaca Intersystems) founded; announces memory chips for TRS-80
Houston Instruments announces HiPlot plotter
Summagraphics announces Bit Pad, first digitizer
Micro Works announces Digisector, first video imaging product
SubLogic announces 3-D graphics software
Personal Software founded; announces two games packages
Ed Zaron founds Muse (Microcomputer Users Software Exchange)
Computer Headware announces Whatsit database manager package
MicroPro International founded; announces *Word-Master* and *Super-Sort*
Dan Bricklin and **Bob Frankston** write *VisiCalc*
Micro Systems Services announces Dial-A-Program (software by phone)
NCC holds first Personal Computing Festival

1979

Texas Instruments introduces 99/4
Radio Shack announces Model II business computer
APF introduces the Imagination Machine
MicroPro announces *WordStar*
Sesame Place Theme Park includes a computer center
Hayes announces Micromodem 100
Novation introduces the Cat acoustic modem
Automated Simulations (now Epyx) offers first package, *Starfleet Orion*
MicroNet announces CompuServe service
The Source founded
Microcomputer Industry Trade Association formed

1980

Sinclair ZX80 introduced—first computer under $200
Radio Shack introduces the Color Computer
Hewlett Packard introduces HP-85
Apple introduces the Apple **III**
Epson announces the MX-80
Exatron introduces "stringy floppy" tape system
Digital Research introduces CP/M-86
Microsoft agrees to work with IBM
Ken Williams founds On-Line Systems
Doug and **Gary Carlston** found Broderbund
Personal Software introduces *Zork*
Xerox, DEC, and **Intel** announce Ethernet

1981

Osborne introduces the first transportable computer
Commodore announces the Vic-20
IBM announces the PC
Microsoft produces MS-DOS (PC-DOS)
Bally computer acquired by Astrovision; re-introduced with Z-Grass
Okidata introduces Microline 82 printer
First color printers announced
Sirius Software founded
Big Five Software founded
Zork relinquished to game writers at **Infocom**; *Zork II* introduced

1982

Commodore 64 announced
Epson announces HX-20, first notebook computer
Grid announces Grid Compass
Wang announces Professional Computer
DEC announces Rainbow 100, Professional 325 and 350 computers
Kaypro announced
Apple announces Lisa
Franklin introduces Apple compatible Ace 100
NEC announces 16-bit Advanced Personal Computer
Toshiba announces T-100 computer
Seven IBM "compatible" computers announced
More than 20 companies announce expansion boards and hard disks for IBM PC
Teleram announces first S-100 bubble memory systems
Sony announces 3½" microfloppy drive
Japanese Fifth Generation Project launched
Three colleges require students to have personal computers

1983

IBM announces PCjr and PC XT
Radio Shack announces Model 100; **NEC** announces 8201
Sharp announces PC-5000
Epson announces QX-10 computer with Valdocs
ACT announces Apricot
Atari announces 600XL, 800XL, 1200XL, 1450XL computers
Coleco announces Adam
SpectraVideo announces 318, 328 computers
Mattel announces Aquarius computer
Timex announces Timex/Sinclair 2000; withdraws from market eight months later
Androbot announces four home robots
TI announces Professional Computer, CC-40 Portable
TI withdraws 99/4A
Osborne Computer files for Chapter 11
Number of personal computing magazines tops 150; starts to decline
PC publishes largest monthly magazine in history with 774 pages

1984

Apple announces Macintosh, Apple IIc
Hewlett Packard introduces Model 110 Portable
Commodore announces 264 (now the Plus 4)
ACT introduces first upward compatible line of seven computers
Amiga announces Lorraine
Mattel, Timex, SpectraVideo, Victor, Actrix, Computer Devices leave market or sell out
Warner sells Atari to Jack Tramiel
Peak year for educational software
Number of software manufacturers tops 500

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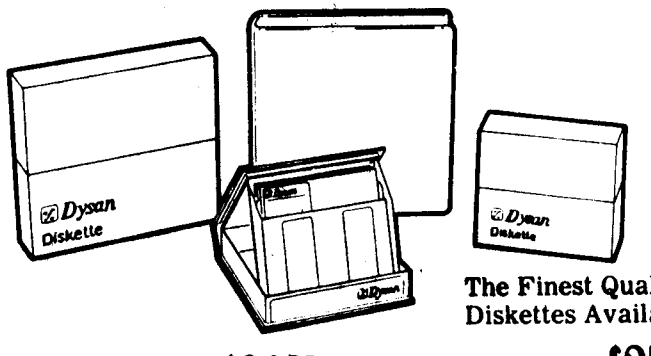

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The Kit Era

Let's take a close look at several early personal computers available in 1975. One of the first, and certainly the most commercially successful, was the Altair 8800 designed by Ed Roberts of MITS. The computer itself was the same size and shape as existing minicomputers (19" x 19" x 10") and housed a motherboard, a front panel with switches and lights which indicated the contents of registers, a power supply, and up to 16 slots for the processor board, memory, and peripherals. The basic computer, in kit form, cost $429; assembled and tested, it cost $621.

It came without memory or interfaces. A 1K board cost $97, and a 4K board went for $264. Interface boards cost between $92 and $128 each. The only mass storage available was tape cassette; hence hobbyists became adept at listening to the horrible rasp of digital data on tape to determine the correct volume and tone settings for their recorders. MITS sold two types of terminal for the Altair, a Comter (CRT) kit for $760 and an ASR-33 Teletype for $1500. Most hobbyists sought out used teletypes which could be had for as little as $300 depending upon the condition.

The cheapest Altair configuration that could run anything other than machine code was an 8K system that MITS sold at a special $995 price. However, to that you had to add a cassette interface and recorder, and a terminal. Hence the total price of an 8K Basic-speaking computer kit was about $1900. Today, that sounds outrageous, but MITS sold thousands of these systems to hobbyists across the country.

The Altair used the S-100 bus, so named because it had 100 pins. In a very wise decision, Ed Roberts brought every signal of the 8080 microprocessor out on the bus; hence it was relatively easy to add memory and peripherals. As a result, companies like Godbout, Tarbell, Cromemco, Processor Technology, CMR, Dutronics, and Polymorphic brought out a wide variety of boards that plugged into the S-100 bus. Several of these companies would go on to manufacture computers —all based on the S-100 bus.

The only other early machine to use the S-100 bus was the IMSAI 8080, announced in December 1975. The IMSAI was virtually identical to the Altair except it had a much cleaner design. The subminiature toggle switches on the Altair front panel were replaced on the IMSAI by rocker switches. It had a much larger power supply, and the board layout was cleaner. Indeed, within a year, the IMSAI was actually outselling the Altair.

As people started adding peripherals to their Altairs, the limited capacity of the power supply reared its ugly head. Hence, Howard Fulmer brought out a beefy power supply to replace the original Altair unit. Ed Roberts had been attacking the board compatible companies, calling them parasites, so in a burst of honesty, Fulmer called his company Parasitic Engineering.

The Scelbi-8B was designed by Nat Wadsworth prior to the Altair. It was built around the 8008 chip, a less powerful processor than the 8080. A 1K machine in kit form was priced at $499. Unfortunately, Nat suffered several heart attacks in this period, dropped the computer project, and went into publishing software and books.

Mike Wise's Sphere 1 was an all-in-one computer built around the Motorola 6800 mpu. With 4K of memory, it sold for $860 in kit form, and $1400 assembled. Sphere was one of the few companies to offer floppy disk drives (8"). However, at a kit price of $6100 and assembled price of $7995, the company didn't sell many dual floppy disk Sphere 4 systems.

Another system built around the 6800 was the Southwest Technical Products 6800. This machine used an S-50 bus and was one of the first systems to incorporate a loader and mini-operating system (Mikbug) in ROM. With 2K of memory and a terminal interface, the kit sold for $450. SWTPC also made a terminal kit for use with any TV set priced at only $175. Dan Meyer's SWTPC is one of the few survivors from the early days. The company is still making 6800 and 68000-based systems, the majority of which are sold on an OEM basis to Fisher Scientific.

Bare bones computer kits on a single board were quite popular in 1975, primarily because of their low price. In general, these units consisted of an mpu, less than 1K of memory, a numeric keypad with a few extra keys, say 20 total, and little else. Some of those available were the Martin Research Mike family, Microcomputer Associates Jolt, Iasis (Computer in a Book), Hal MCEM-8080, National Semiconductor SC/MP, and MOS Technology KIM-1.

Going into 1975, there were just two companies active in the microcomputer field: Scelbi and MITS. By the end of the year, the dream had spread like wildfire and there were 27 manufacturers, two magazines (*Creative Computing* and *Byte*), and ten user groups and clubs. Also, in 1975, Dick Heiser opened the first retail computer store in Los Angeles, and Paul Terrell opened the first Byte Shop in Mountain View. Bill Gates and Paul Allen wrote a Basic interpreter for the Altair, and Adam Osborne self-published *An Introduction to Microcomputers.* But the fun was just beginning!

So far, all the successful computers had been built around the Intel 8080 or Motorola 6800 mpus. However, Federico Faggin, designer of the Intel 4004, had broken off from Intel to form Zilog. Their first mpu was the Z80, a faster, more powerful version of the 8080. Meanwhile, MOS Technology had introduced another chip with an extended instruction set, the 6502. Chuck Peddle of MOS then decided to sell 6502 chips at the 1976 Wescon (a West Coast electronics trade show) for $20 each. The chips of other companies were priced much higher at the time; furthermore, most semiconductor manufacturers sold only to established accounts in large quantities.

One of the customers for Peddle's $20 6502 was Steve Wozniak, then a technician at Hewlett Packard. He had already designed an inexpensive home terminal that used a TV set for a display and the game of Breakout for Nolan Bushnell at Atari, but he had not designed an entire computer. Interestingly, he did not start with the computer itself, but chose first to write a Basic language interpreter for the 6502. When he finished that, he set out to make a computer on which to run it. A few weeks later, in the spring of 1976, he unveiled his computer, the Apple I, at the Homebrew Computer Club.

Talk about a bare bones computer! The Apple I had no keyboard, no power supply, and no case. But Steve Jobs and Paul Terrell were impressed with the machine. Jobs was impressed enough to form a company to sell them, and Terrell was impressed enough to order 50 units for his Byte Shop. There was just one problem—Terrell wanted the machines assembled. To pay for a PC board design, Jobs sold his Volkswagen, Woz sold his two HP calculators—their most valuable possessions. Woz kept his job at HP while Jobs hired his sister and Dan Kottke, a college student, to assemble the units. They were working under excruciating time pressure since all the parts they bought were on 30 days net; that meant they had to deliver the 50 machines to Terrell within 30 days. Terrell got his machines on the 29th day.

In the next few months, Jobs sold another 150 or so computers—mostly to stores in the Bay Area. The price for this little wonder was $666.

Processor Technology introduced the Sol Terminal Computer, the Cadillac of small computers with solid walnut sides and heavy metal case. The basic machine for $995 (kit) came with 1K of RAM, 1K of video display memory, 1K of ROM, 85-key keyboard, serial and parallel interfaces, cassette interface, "personality" module, power supply, five slots for S-100 boards, and the Basic language on cassette. Processor Tech also introduced 16K RAM cards ($529 assembled) and a dual 8" disk system ($1895 kit or $2295 assembled). This was a rugged machine, but unfortunately Felsenstein had not designed it for ease of assembly. Thus, as the market shifted from kits to assembled computers, the factory assembled Sol was overpriced compared with the competition. This, coupled with the low reliability of the Helios disk system, eventually spelled the downfall of Processor Technology.

As the price of ROM and PROM chips continued to decline, manufacturers started building in loaders, monitors, and rudimentary operating systems to make their machines easier to use. The Poly 88 from PolyMorphic Systems, Xitan from Technical Design Labs, Challenger from Ohio Scientific, Intecolor 8001 from Intelligent Systems, and several others all used this approach.

Also, in 1976, manufacturers were starting to offer an interesting range of S-100 boards and peripherals. Of course, memory boards were the bread and butter items with board manufacturers gaining an advantage by charging lower prices than the computer makers. In the add-on board market, companies like Seals, Solid State Music, Mini Term, Vector Graphic, Tarbell, Electronic Control Technology, and Morrow all made the scene. Computalker introduced a speech synthesizer; Comtek, a real time clock; and Percom, Midwest Scientific, and North Star all introduced floppy disk add-ons. Also in 1976, Gary Kildall's new company, Digital Research, announced the first advanced disk operating system, Control Program for Microcomputers, or CP/M. By the end of the year, the number of companies active in the field had topped 100.

People were hungry for information, and new clubs were springing up like dandelions with 132 in existence by the end of 1976. Some of the club newsletters were decidedly professional—among them, Interface put out by the Southern California Computer Society and the newsletter of the Amateur Computer Group of New Jersey.

REASONS FOR NOT LIKING EASY-TO-USE SOFTWARE

Ted Nelson

I. THE OLD WAS GOOD ENOUGH

I learned it, why can't you?
What's complicated about it?
I had no problem learning.
All you have to do is just look in the manual.
That easy stuff is for kids.
This sort of thing is all right in its place, but not for computer professionals.

II. THE OLD WAS BETTER

It's discipline that's good for you.
It's really elegant/logical, if you just take the time to study it.
They've taken away the logical beauty and covered it with mud.
Computers were not meant to be used so fast.
Such things were not meant to be.
What's the matter with these people?
The next generation won't know what it means to type a command line.
If someone wants to sit here acting like a damn fool, that's all right,
but count me out.
I say it's stupid.
It's all sizzle. Where's the beef?
Six months from now it'll be some other fad.

III. THE NEW IS BAD

We're losing sight of basics.
This is just a symptom of what's wrong with the world today.
They keep wanting "more features," never less.
Kids shouldn't see this stuff -- they'll get a false sense of reasonableness.
Where will it end?

IV. WHAT'S TO NOT LIKE

I don't like the mice.
Look at all you have to go through to do a simple [...]
I want to be able to do it with one keystroke.
Yeah, this sort of thing is fine, but look who has to maintain it.
If people are too stupid to use computers *right*, they don't deserve to.
I have better things to do than coddle morons.

V. TO HELL IN A HANDBASKET

Maybe some people just shouldn't use a computer.
Things shouldn't be made easy -- it destroys character.
If it becomes this easy, use of computers
will pass out of the hands of those who really understand them.
It will cause unemployment.
It will cause widespread social disruption.
If you make things too easy, they'll be overused.
It will strain the people.
Everybody will want one.
Mice will give people misshapen arms.
Our fingers will atrophy from not using the keyboard.
They want to reduce people to a lump of jelly.
If God had intended computers to be used that way,
He would've given us light pens instead of fingers.
A man is a man and a computer is a computer,
and if we let them get this close together,
the next thing you know...

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In addition to newsletters and meetings, clubs started holding conferences and shows, although honors for the first big microcomputer conference go to David Bunnell who organized the World Altair Computer Conference in March 1976. It was followed two months later by the first Trenton (NJ) Computer Festival organized by Sol Libes and the first Midwest Area Computer Club Conference which drew a staggering 4000 people. End

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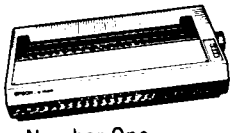

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Popular Electronics
JANUARY, 1975

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ALTAIR 8800
The most powerful minicomputer project ever presented—can be built for under $400

BY H. EDWARD ROBERTS AND WILLIAM YATES

THE era of the computer in every home—a favorite topic among science-fiction writers—has arrived! It's made possible by the POPULAR ELECTRONICS/MITS Altair 8800, a full-blown computer that can hold its own against sophisticated minicomputers now on the market. And it doesn't cost several thousand dollars. In fact, it's in a color TV-receiver's price class —under $400 for a complete kit.

The Altair 8800 is not a "demonstrator" or souped-up calculator. It is the most powerful computer ever presented as a construction project in any electronics magazine. In many ways, it represents a revolutionary development in electronic design and thinking.

The Altair 8800 is a parallel 8-bit word/16-bit address computer with an instruction cycle time of 2 μs. Its central processing unit is a new LSI chip that is many times more powerful than previous IC processors. It can accommodate 256 inputs and 256 outputs, all directly addressable, and has 78 basic machine instructions (as compared with 40 in the usual minicomputer). This means that you can write an extensive and detailed program. The basic computer has 256 words of memory, but it can be economically expanded for 65,000 words. Thus, with full expansion, up to 65,000 subroutines can all be going at the same time.

The basic computer is a complete system. The program can be entered via switches located on the front panel, providing a LED readout in binary format. The very-low-cost terminal presented in POPULAR ELECTRONICS last month can also be used.

PROCESSOR DESCRIPTION

Processor: 8 bit parallel
Max. memory: 65,000 words (all directly addressable)
Instruction cycle time: 2 μs (min.)
Inputs and outputs: 256 (all directly addressable)
Number of basic machine instructions: 78 (181 with variants)
Add/substract time: 2 μs
Number of subroutine levels: 65,000
Interrupt structure: 8 hardwire vectored levels plus software levels
Number of auxiliary registers: 8 plus stack pointer, program counter and accumulator
Memory type: semiconductor (dynamic or static RAM, ROM, PROM)
Memory access time: 850 ns static RAM; 420 or 150 ns dynamic Ram

INAPPROPRIATE, INEXACT AND OUTRAGEOUS

Does that have a familiar ring? The calls from the faithful are beckoning ol' APRIORI, EXEGESIS & RETORIC, a la 'Bozarth, past Vice Prex. Since Don didn't hear the call in time, I decided that I had some obligation to fill in temporarily.

by Bob Schlegel

In this our TENTH year, I felt obliged to recall some of your old nostalgia for the post-Lerseth pre-Duran era of Quinn & Schlegel. In fact, its been so long since I cut and pasted a Push'n Pop I have to strain to remember those all-night sessions typing and editing articles. It always seemed worth it, tho, because of all the warm feedback and reactions to the Zingers I tried to hide in the Letter portion. In reality, that feedback may have only come from a small handful of you, but to me, it seemed to come from a large and diverse spectrum of SMUGGERs. Ever since Al Duran brought us into the new era of a pertinent and proud newsletter, I've meant to say that THANKS to all of you, both for your support and your understanding of Push'n Pop, the way it was.

This issue of Push'n Pop is going out to a lot of old freinds whose names have since dropped from the SMUG rolls; and to all of you, I say 'Hello' and y'all c'mon back. No matter how you may be engrossed in your slick tightly-wrapped factory-built PC, surely you recall the life and times of SMUG, the challenge of finding the right computer that would finally do what you always knew one could do, and the racey baudacious Random Access.

Part of our program May 4, at RAEF Hall, AR College, will feature some of those old freinds and personages from the SMUG scrapbook. Surely a moment or two of debate will occur to establish finally which Club really organized first... Homebrew (Mountain View), New Jersey SIGM, or SMUG! The organized and random periods of Saturdays celebration will shine with both our very own celebrities as well as the distinguished personages mentioned throughout this magazine.

Finally, I thought I'd bring up some old memorabilia that might jar old memories... In going through old Push'n Pop's, I encountered many fond memories from my Murphy's Law calendar, those ingenious ads from Ron at Zackits (now Zack's), and some of those outrageous articles I stuck in the letters when nothing else came in. Lotsa good stuff in them, tho. Like the dBASE II undocumented flaws, how to recover a crashed Wordstar file, how to use DU-77, and many great CP/M mods from John Moorhead. ...The story of my freind who I discovered with a prosthesis... Traditions we can never displace, like the now-traditional Tektronics Tanker Anchor Lee Whitehead would bring home from the Santa Clara County Swap meets, John Quinn's 45 degree twist to the IC pins to keep them from vibrating out of the sockets! And so many timely product reviews from Dallas Parcher... complete with demonstrations. Such a rich heritage!

Occasionally unintentional discovery and blown covers surfaced... like an evening afer a board meeting when Al Duran and I worshiped for an hour at the church of the bent elbow. When the P&P hit the mailbox Kathy knew for sure the board meeting didn't last til 1 A.M.

Just 'cause you're coming Tuesday, we've added a special speaker event, a bit 'o the Blarney from Martin Maxwell, not-so-recently-returned from a teaching sabattical in Ireland, where the inconsistencies between Leprechauns and Micros so frustrated him that he rushed back and immediately stumbled into an IBM-PC. Martin has an extensive Micro-computer back-ground stretching from the XEROX 820, Osboren and ZORBA, clear out to the PC-XT and Networks and the ITT PC's. He was featured at the 10th West Coast Computer Faire speaking on Humor in Micro-Computing. So, with Martin as an incentive, we hope to see you Tuesday night. And again, no misunderstanding, we want to see you at the 10 year anniversary at RAEF hall, as well. You'll be richly rewarded and thoroughly entertained. Don't be missin' any of it!

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SPECIAL EVENTS

WILLIAM GODBOUT

William J. Godbout has been involved in the computer industry since 1959; while at IBM his experience spanned the transition from vacuum tubes to transistors. After completing military service in 1967, he founded Godbout Electronics. Having worked with microprocessor technology since its advent, in 1973, he established CompuPro of Hayward, CA as a manufacturer and supplier of microcomputer components and systems.

Godbout, a nationally recognized authority on the IEEE 696/S-100 bus standard, has designed several microcomputer components and systems.

The use of microcomputers in daily business operations gives managers direct, local control over information resources that is impossible when dealing with a mainframe maintained by "high priests" in a data processing department.

The real value of microcomputers in the workplace is in the amplification of *individual* human effort and human skills, raising the individual's productivity by improving his creativity. Increased productivity is vital to bringing about the reindustrialization of the U.S. and its conversion from a "smokestack society" to an "information society."

One of the ways to speed this conversion to an informattion society is by developing a matrix of management skills within which to employ microcomputers, workstations, mainframes, communications, networks, and all the other rapidly developing electronic tools available.

GEORGE MORROW

George C. Morrow is founder and chairman of the board of Morrow, Inc., maker of desktop personal computers and add-on boards and disk subsystems for S-100 bus systems. Morrow founded the company in his garage in 1976 as Thinker Toys. A self-trained logic designer, he created products including I/O, memory, and other S-100 boards. Morrow, Inc. entered the personal computer market in 1982 with the Micro Decision line of low cost computers.

Before 1976, Morrow lectured in calculus at the University of California at Berkeley (where he began designing and programming computers), worked as a technician at Shockley Transistor, and held more than 100 other positions, most of them as a short-order cook. He served as first chairman of the IEEE 696 S-100 bus standard subcommittee. He holds a B.S. in physics from Stanford University, an M.S. in mathematics from the University of Oklahoma and has completed the doctoral program in mathematics at UC Berkeley.

OTHER SMUG GUEST SPEAKERS

John Draper (Captain Crunch)

Draper was the world's premier "phone phreak", that is, someone who uses electronic or other devices to outwit telephone central circuitry and make free calls or otherwise exploit the system. Draper virtually invented phone phreaking and was for many years its leading practitioner, the legendary "phirst phreaker." In the fall of 1977 Draper was visiting Woz at Apple and expressed interest in (and designed) a digital telephone card for Apple. An early applications program for the Apple (by him) was a simple word processor, EasyWriter (like Electric Pencil).

Mark Garetz

Mark is one of the driving forces behind the new designs from Godbout and was instrumental in the S-100 Standard, of which he will have much to talk about.

David Thompson

David is the editor of MICRO CORNUCOPIA which started out as a newsletter for BIG BOARDs. His magazine now covers all single boards like Kaypro and Xerox's, and now the S-100 with Dave Hardy and Sol Libes. He will speak on "The Big Board, Xerox, and Kaypro: Early Single Board Clones."

EDITOR'S TIME

This was the great issue which I have now finished and it is back to a more normal size and style next month. I still will run some old stuff, but mostly as fillers (like our issue no.2). I hope you enjoyed this look back, it sure was hard work and in no way did it really cover all of the past 10 years. The 10th year issue of CREATIVE COMPUTING has the largest review of those ten years and was the source of much in this issue.

I will be starting to call people again, looking for those promised articles and features. I haven't got much response from members, but then I've been busy elsewhere which is going to change. So if you have promised me an article, lookout, I will be after you at the next meeting, for sure!!

I didn't get much chance to cover the upcoming event, but next issue should have a review of what went on. I know it will not be needed as everyone will be there, but some of the P&P's go outside of California. We need to remind you that some of our locals will also be speaking, and unfortunately they were not covered in this issue. I promise to make up for it next month, by reviewing their talks.

Some last minute news is about the meeting where we will have a speaker. It will be a very entertaining time this month so don't miss it (it also should be a dry night). We got lots of new things planned for you, and will be glad to add anything you think will make it better, so stop by and be active. Remember we deal with all kinds of systems and can help just about anybody out of a problem.. Bill Kibler

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Computer Bits

By Jerry Ogdin

A NEW BREED OF HOBBYISTS

FOR many years, the thought of having one's own digital computer was only a dream because they could cost anywhere from $100,000 to several million.

But in the late 1960's, Digital Equipment Corp. announced its $24,000 PDP-8, raising hopes of forward thinkers for that elusive home computer. With the 1970 introduction of the microprocessor IC (CPU-on-a-chip), representing the "heart" of a full-blown digital computer in a single IC package, they knew it was just a matter of time before prices dropped.

Not content to wait, amateur computer users banded together during the early '70s to share ideas and equipment. In fact, many of the successful applications of microprocessors on the market today owe their origination to these hardy souls, who experimented with building personal computers.

The breakthrough in low-cost microprocessors occurred just before Christmas 1974, when the January 1975 issue of POPULAR ELECTRONICS reached readers with the first relatively inexpensive unit—about $400 in kit form—that competed in performance with much costlier commercial units. The aftermath is heartwarming to electronics hobbyists—CPU prices are plummeting, and at least one major manufacturer drastically cut the price of its microprocessor.

People interested in computers fall into three major groups: (1) Strong background in "hardware," the physical electronics equipment; weak in "software," the instruction programs needed to make the computer perform some useful task. (2) Strong background in "software," weak in "hardware." (3) Interested amateurs who have no experience in either sector, but find the world of computers an exciting challenge they'd like to tackle.

So it's not surprising to learn that small hobbyist groups are springing up all over the country, where competent and enthusiastic programmers who cannot read a wiring or logic diagram share ideas with electronic engineers and technicians who work with computers daily, but still find the mysteries of software virtually a black art. For example, a recent letter addressed to POPULAR ELECTRONICS from Hal Singer (hardware editor) and Steve Diamond (software editor), Cabrillo Computer Center, 4350 Constellation Road, Lompoc, CA 93436, stated that they represent a user group of 300 hobbyists actively constructing microcomputers, and would like to encourage participation in their group by persons planning to build the *Altair 8800* computer that debuted in POPULAR ELECTRONICS' January 1975 issue. The group published four newsletters, which can be received by sending a self-addressed manila envelope with 50¢ stamp to the address above.

What's a Computer? A computer is a deceptively simple kind of device if you look at it from a "black box" viewpoint, not trying to understand all the electronic "innards."

All computers are fundamentally alike from the largest to the smallest. And the humblest of computers can perform the same work as a huge computer can, except that it takes more time to do it! With a suitable program (software) in its memory, a computer can be a game player, a home accounting machine, or an environmental controller; and in many cases, it can be all of these things at the same time.

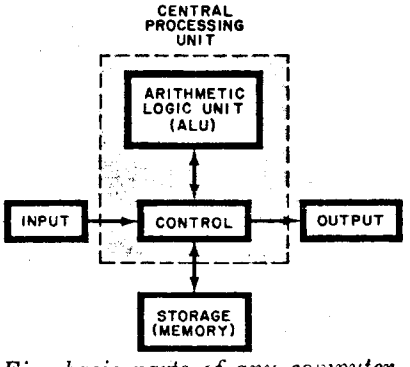
No matter how large or small, a computer must have five basic elements, as illustrated.

1. The Arithmetic Logic Unit (ALU) performs additions, subtractions, and all the other arithmetic and logical operations on the input data (something on the order of a super calculator). It is the features of the ALU that determine the ultimate potential power of the computer.

2. The Control portion orchestrates the movement of data and instructions from one part of the computer to another by taking the operational instructions that were inserted (programmed) into the memory and using these to perform some function to change the input data to output data.

3. The Memory (more properly called Storage, but the two words are used interchangeably) is used to hold operational instructions for the computer, and store intermediate results, commonly used tables, and other pertinent data.

4. The Input Circuit allows the computer to accept data from the outside world. The actual input can come



Five basic parts of any computer.

from a single sensor, a two-wire system, or a complex network of things to be monitored. Anything that can be converted into computer-acceptable data can be used as the input.

5. The Output Circuit delivers the data generated by the computer to some form of device that does the appropriate work. Without output capabilities, the computer serves no useful purpose.

The ALU and Control circuits are often combined and called a Central Processing Unit (CPU). Years ago, the CPU was awesome—a few feet high, a couple of feet deep, and several feet long. With the advent of large-scale integration (LSI), a complex CPU can now be contained within a single integrated circuit having 40 or less pins. Interestingly, there are now over 25 microprocessors to choose from, if you elect to build your own computer.

Editor's Note. It is hoped that this quarterly column will serve as a clearing house for computer hobbyist groups and others with interests in the field. If you are a member of such a group, or want to be, write to Computer Bits, Popular Electronics, 1 Park Ave., New York, NY 10016.

Our congratulations to SMUG on its many contributions over the past ten years to the growth in understanding and use of computers within the community. May there be many more such milestones.

We have always enjoyed supporting *"true believers,"* and have always appreciated the many kind words we have in return received.

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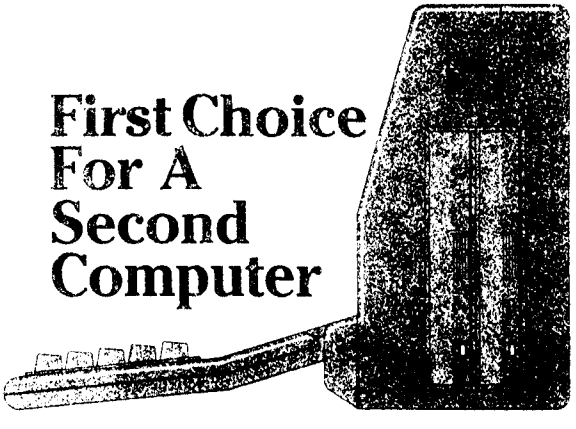

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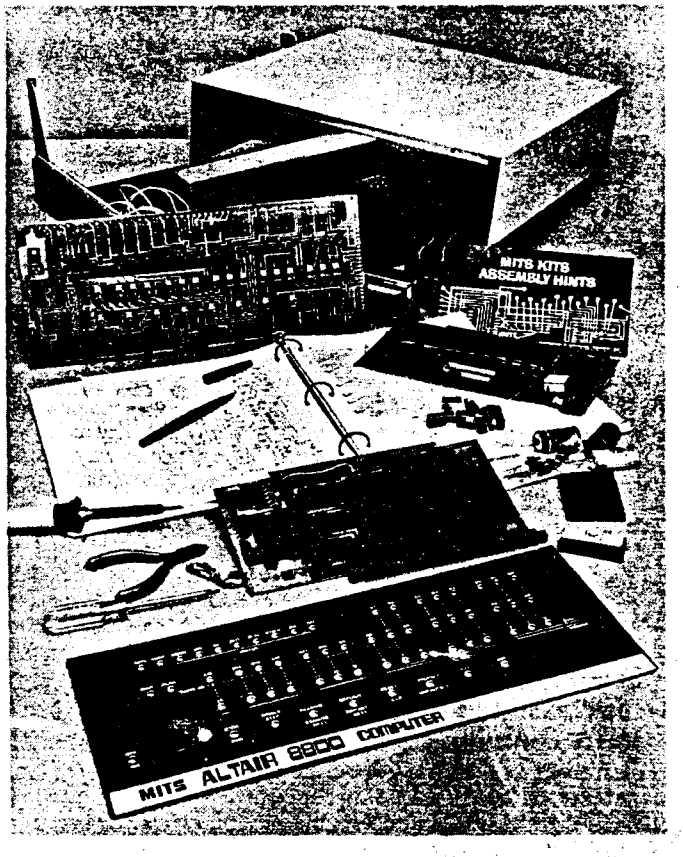

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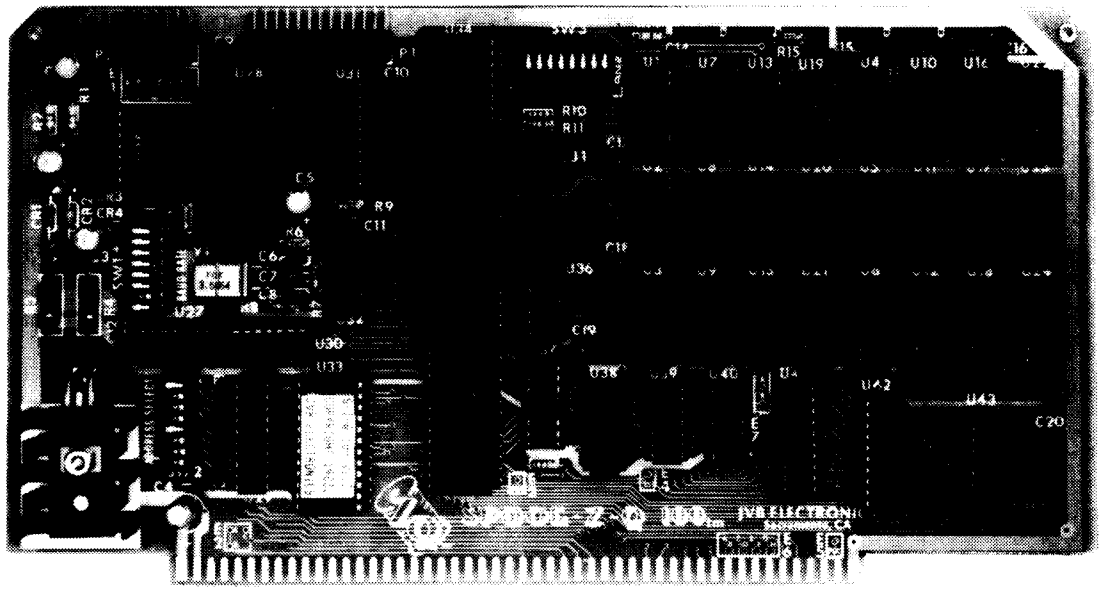

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Spool-Z-Q 100 interfaces to both serial (RS232) and parallel (Centronics standard) printers. The on board computer takes care of all the details of handshaking and protocols, as well as storing and retrieving the characters to be printed. Once the character to be printed is written to Spool-Z-Q 100, the host computer is free to go about its business, it never has to deal with that character again.

Spool-Z-Q 100 is available as a 32K, 64K, 128K, 192K, and 256K buffer. Any size Spool-Z-Q 100 is fully socketed for and expandable to 256K characters by just plugging in industry standard 4164 memory chips. Only 6 chips are required for each 64K of character storage thanks to our innovative proprietary character storage algorithm which enables us to store text as 6 bit quantities while still allowing the proper buffering of any possible 8 bit value. In addition, full time internal space character compression allows Spool-Z-Q 100 to store many more pages of printing of data containing many spaces (listings, reports, etc.). While a 256K buffer can hold 60 to 100 pages of dense text, with space compression it can hold several hundred pages of a listing or report which has a lot of "white space."

Hopefully, your local S-100 products dealer should already have Spool-Z-Q 100 in stock. If not, you can order directly from JVB Electronics. Everything we sell comes with a 15 day trial period, and Spool-Z-Q 100 is no exception. Try it out in your system. If it isn't exactly what you need, send it back. Your money will be refunded immediately.

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THE EDITOR LOOKS BACK THROUGH THE PAST

When the club decided on celebrating it's 10th year, we talked about what you were doing then. Several other features in this issue also deal with 10 years past, but for me a look back a little father was also in order.

I joined the navy in 1964 and got trained on a computer like system. This unit worked using all the normal logic but used very small tubes in most circuits. Like transistors these tubes were either on or off, making possible flip-flops and the like. Each card would contain four flip-flops, which now would be in one IC, at one hundreth the size.

After my stretch in the service I went to work in radio and TV where little of the new technology was appearing. True, there were more transistors, but little of the IC's and no processors. There were some regular computers around then, but mostly the very big mainframes. My first experience in broadcasting with the new chips, came about 1973 when KBHK was putting together a new remote control for their Sutro tower installation. I was the only tech on staff with maintenance experience on logic system, so the task of installation and removing the bugs was mine. And bugs there were a plenty. It was a form of hardwire microcomputer but not as smart, and with a few wiring errors. Once the unit was cleaned of the problems it worked fine and set the stage for my later intro into computers.

About this time I got the traveling blues, and went to work for a geophysical outfit, where we used a portable calculator. This was a Fredien unit and was about the size of a Kaypro, but with only 256 program steps possible. It sure made a difference for us, as we became the first and for a while only group who was able to do our calculations in the field. This decreased the amount of labor and time for letting the client know where to drill (which saved them lots of money!). I have only to consider what we would have been able to do had we systems like what is available now. I sure would have got more sleep as we spent every night calculating and plotting our data (usually till midnight or later).

When my traveling stopped, I decided to go to college on the GI bill, but decided some extra money would help. One day in early 1976, I answered an ad in the chroncile for people to solder boards at home, from some company called IMSAI. When I called them a voice from the past step out and said hello. I went to high school in Novato and last I knew of Joe Killian my buddy of many years, was his plans to go to college in L.A.. Well, here he was in Oakland as a partner and working manager of IMSAI. I didn't get the job (lived too far away), but I did start keeping track of both Joe and IMSAI.

I plugged away at college and got my degree, learned some programing, bought a TRS-80, and in simple got started. For me it was like finding a second home, where anything was possible and I was in control of it. The TRS-80 didn't stay long as it was far too limiting, in came an IMSAI. Used but who cares, beside I knew one of it's designers, and could always call for help. I spent some time trying to get it running, but only discovered I had some bad disks, a few bum chips here and there. I was able to fix some of it but finally decided it was time to call Joe. Of course by now IMSAI was gone (replaced by Fisher-Freitas who I also got to know well before they too closed down, much later) and Joe was now at Micropro.

This was now about 1979, and things were starting to move, and so was Micropro. When I called Joe, I wasn't sure who was asking the questions. As it turned out he needed a good technician and quick. I guessed I passed the test as next week I started helping the design engineer Glen Ewing work on a single board system. Wordstar was selling well, but a really good system, designed just for it was missing. Well at least that was the idea, and to help it along had just come a company called Seagate, under the leadership of Shugart (the disk drive maker) and had produced a mini whinchester. At this time there were not any hard disk controllers so this was a rather risky business venture, both for the design and that Micropro was mostly known for it's software and not it's hardware (they had already made a few accessory boards with little sales results).

Well I really learned alot there but, could see troubles down the line. The products release time fell behind and production was slow getting started, and before long everybody had beat them to the market. Some European interest liked the design, and bought it, after that I lost track of it and Micropro. Which moved me to great Sacramento and more micros.

For me this trip back in time was fun, and until I recently read the parts in "FIRE IN THE VALLEY" on the IMSAI people, I had no real idea why some of the people I worked with acted the way they did. These early est'er had been a part of something big, but lost it all and were trying now to get it back. I had drive to get ahead, but also some common sense, which the est'er lost somewhere along the way. I didn't get rich then, but I had fun, both then and now in reviewing the past, and I hope you had fun too.

Bill Kibler

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SMUG IS 10 YEARS OLD !!!

THE BYTE BROKERS IS ALSO

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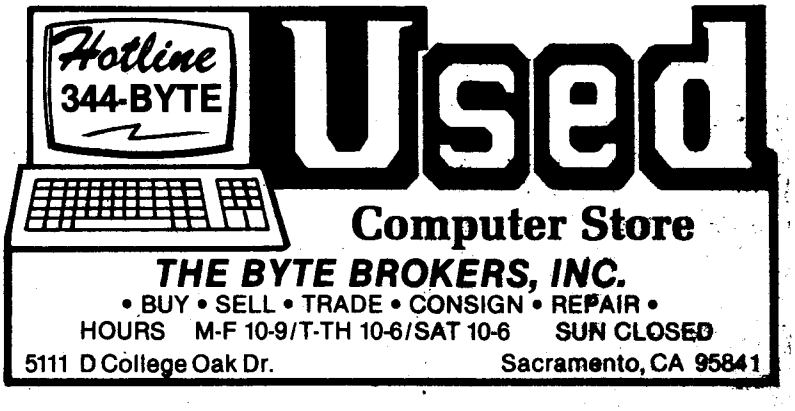


SMUG'S RCP/M NEWS

The month of March was significantly different from the previous two months, with many more callers and much more file transfer activity. This is good... we want to see as many using the system as possible.

Five hundred sixty-three calls were logged by the system, up considerably from 266 the month before. File transfers also showed a dramatic increase: 491 versus 156 the previous month. I am particularly happy to see the number of uploads increase, as there is usually a dearth of such activity. Last month the ratio of ups to downs was 1:25. In March it was about 1:15.3. Even so, there is room for improvement in this area.

==========

Number of files received	30
Number of files sent	461
Total files transferred	491

==========

Number of files sent at 300 baud	226
Number of files sent at 1200 baud	235
Total number of minutes of transfer time	5078
Percentage of files sent at 300 baud	49
Percentage of files sent at 1200 baud	51
Percentage of send time at 300 baud	31
Percentage of send time at 1200 baud	69

==========

Report all files that were sent 6 or more times:

Count	Filename	Library
10	RBS	DOC
24	DISKMENUDIR	
6	CLUBS	DOC
6	NEWBASE5AOM	
6	NULU11	LBR

Normally I report on files that were sent 3 or more times, but in March there were a total of 39 files that met that criteria, too many to list in this report.

==========

March saw a number of changes to the system. The most user-oriented one was a coordinated modification to BYE and RBBS that permits the caller to re-enter RBBS from CP/M without having to log on again. Since a significant number of files pertaining to dBase and WordStar are now on the system, I have set up separate areas for them. Use the SYSMAP command to locate the new areas.

A commonly asked question is, "When is the best time to call the system?" It is easier to answer the inverse of the question-- the WORST time to call is when it is most convenient for YOU. That will be the time that everyone else is calling. The most activity seems to be in the evenings after 9PM. During March approximately 1/9 of the available time was utilized to transfer files. If we assume that an equal amount of additional time was spent in RBBS, then the system was in use only 1/4 of the total available time. You should have no problem getting onto the system, if you call at the right time!

I plan to start a series of tutorials in this space covering the operation of the the RCP/M from the caller's viewpoint, with the idea of providing some information that can help the caller to utilize the system more effectively.

TUTORIAL part I

Initial logon sequence: The system depends on the caller for establishing the baud rate. After calling the system, the SMUG RCP/M waits for a carriage return or a Control-C to be transmitted by the caller. The testing sequence is 300 baud, then 1200 baud. The low-speed caller will get in with one key-entry, while the high-speed caller will have to hit a key twice.

The next thing the system asks for is the number of nulls you need. It is amazing how many callers don't understand what a null is. Look on it as basically a unit of delay that the system should wait after it sends a carriage-return/line-feed to the caller. In the good old days this was to allow time for the print-head to return to the left side of the paper. In this age of CRTs you may not require any, or maybe 1 or 2, depending on your software/hardware. I occasionally call the system using a printing terminal at 300 baud, and 4 nulls suits quite nicely. From home at 1200 baud I ask for 2 nulls. This prevents dropping the first 1 or 2 characters from the beginning of the line.

At this point RBBS will print a bulletin, which may be bypassed or cut short with a control-K. Read it at least once a month in case an important announcement is posted.

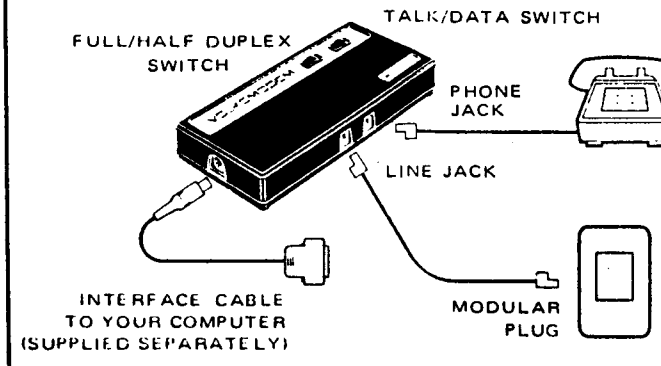
You will then be prompted for the date. The format of your reply is checked... don't forget the slashes and the correct number of digits. If your response is judged incorrect, the prompt will be repeated.

Next, you are asked for your name. It is important to use the same spelling each time you log on, else the system thinks you are a different person. If you use the message portion of the system this is particularly important, as the system will let you see your mail only if the name for which there is mail matches your name. Richard Lastname is definately not the same person as Rich Lastname. By the way, capitalization is not of importance at this point.

The last item I will discuss this month is the password. The purpose of the password is to protect you. It is used to make sure you are you. The main purpose is to allow only you to read and kill your private messages. The case of the characters in the password IS important... "a" is NOT the same as "A" in the password. Secondly, REMEMBER your password. If you don't, you can still log on to the system if you use a DIFFERENT name, but then you will not receive any mail addressed to your previous name.

Next month I will discuss some of the internals of RBBS.

Introducing Volksmodem



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Inputs	MARK (OFF) 0 to −25V SPACE (ON) +2.5 to +25V
Data Format	Serial, binary, asynchronous
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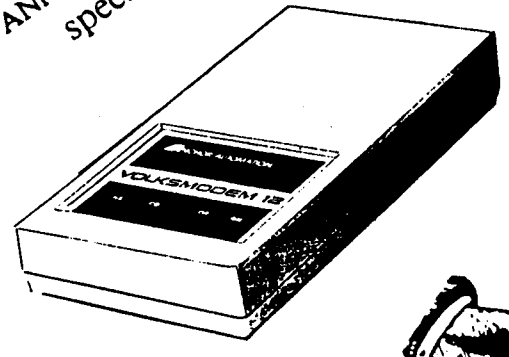

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Those who need software on 5-1/4" disks can make arrangements with Dave McAfee at the meeting or by calling him at 487-1103. The formats available, (all soft-sectored, single-sided), for $5 each, are:

MORROW MICRO DECISION- DEC VT-180 - NEC PC-8001A
TRS-80 Mod-I (Omikron) - TRS-80 Mod-III (MM CP/M)
ZENITH Z-1000 - KAYPRO II/4/10 - TI PROFESSIONAL
HEATH w/MAGNOLIA - IBM PC w/CP/M-86- SUPERBRAIN
OSBORNE 1 (SD&DD) - XEROX 820 (SD&DD) - ACCESS

You can review a printed copy of the latest CPMUG & SIG/M library indexes at our club meeting. Custom copying of CPMUG or SIG/M volumes other than those offered this month can be done for the same price as the regularly offered volumes by Bob Ress. You must, however, make special arrangements with Bob at the meeting. Copying onto member provided 8" disks can also be arranged with Bob for $2.50 per volume.

- Editor

SIG/M Volume 207 CP/M 86 Library Utilities, Vfiler and Dump for NEC APC

207.01	APC-DUMP.LBR	16K	NEC APC dump program
207.02	APCVFILE.LBR	74K	VFILER for NEC APC
207.03	VFILEAPC.CMD	9K	/
207.03	BIDUMP86.LBR	11K	CP/M 86 bidirect. dump
207.04	BISHOW86.CMD	2K	Improved CP/M 86 SHOW
207.05	BISHOW86.LBR	12K	/
207.06	LTYPE86 .LBR	10K	LTYPE for CP/M 86
207.07	LU86 .CMD	19K	CP/M 86 library util.
207.08	LU86-2 .LBR	39K	/
207.09	PRINT86 .LBR	15K	CP/M 86 PRINT utility
207.10	TYPESQ86.LBR	7K	CP/M 86 Typesqueeze
207.11	USQ .CMD	18K	Unsqueeze for CP/M 86

SIG/M Volume 206 Library, Printing and Sorting Routines in CP/M 80 and 86

206.01	ENCOL .LBR	79K	multiple column listing two sides of paper
206.02	HJELP .LBR	59K	HELP files, even squzed within a library
206.03	QSORT .LBR	20K	Quicksort to order the lines of a file
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MONTH 1985	BOARD MEETING	COPY DEADLINE	ADVERTISERS DEADLINE	PRINTER DELIVERY	MAILING DATE	MEETING DATE
MAY	2 THUR	10 FRI	13 MONDAY	17 FRI	20 MON	28 TUES
JUN	6 THUR	7 FRI	10 MONDAY	14 FRI	17 MON	25 TUES
JUL	4 THUR	5 FRI	8 MONDAY	12 FRI	15 MON	23 TUES
AUG	1 THUR	9 FRI	12 MONDAY	16 FRI	16 MON	27 TUES

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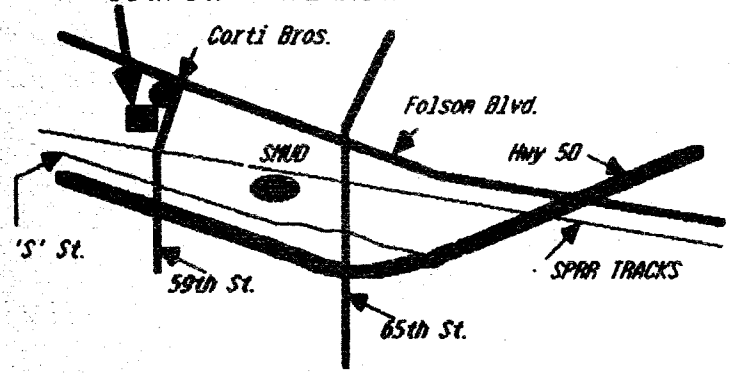

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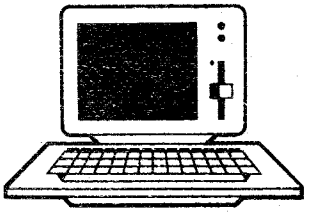

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