

PolyLetter

FREE SAMPLE ISSUE

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FEBRUARY - 1980

*** WHY A POLYLETTER ? *** by Mark Sutherland

Since I purchased my Poly I have been pondering the the idea of starting a PolyMorphic newsletter. Because the PolyMorphic is used mainly as a business, scientific or research computer, it has never been promoted to the hobbist crowd. Consequently finding information relating to the Poly is somewhat difficult. My computer shop is getting tired of three phone calls a day. Also, the computer magazines are too busy advertising TRS 80 accessories to be of any help.

Many times I have worked day and night on a problem only to find that a fellow user had solved the problem six months ago. I had been typing "ZAP PACK" for a year before someone said "Why don't you just type ZP?" (ZP might not work on some older systems). I bet you've solved some problems that someone else is now having. They in turn may have some great ideas for you. Therefore, this newsletter will be a forum, or swap-shop, of ideas. One place where all of us PolyPeople can talk PolyTalk with each other. If you have solved a problem (or have one), had an idea, or even written a game, send it to me and I'll put it in the next PolyLetter.

PolyLetter is not intended for profit. Some paid advertising may appear as an effort to fray the cost of printing and postage as well as inform our readers of new products and programs that are available. I am in the T-Shirt printing business so you may see a few T-Shirt ads from time to time.

PolyLetter is not affiliated with PolyMorphic Systems in any way.

** NO CP/M FOR POLYMORPHIC ?? **

It has been brought to our attention that Lifeboat Associates has put PolyMorphic on the back burner. They were in the process of developing CP/M for the PolyMorphic when they disbanded the project for lack of user interest (they put a very small ad in a hobby magazine; got little response).

We need to get them back on track. If you are interested in CP/M, or just want to help those who do, send a letter to Lifeboat Associates, Suite 506, 2248 Broadway, NY, NY 10024. Tell them you are interested in CP/M for your PolyMorphic.

** PROTECT PART OF YOUR SCREEN **

Two memory locations can be changed to alter or protect part of the screen. In decimal they are 3102 and 3103. Normally the values in these locations are 28 and 24 respectively. In Basic a POKE 3103,25 will lock the top quarter of the screen. Until a POKE 3103,24 statement, the display will scroll only on the bottom 3/4 of the screen.

```
10 POKE 3102,27 \ REM - protect
bottom of screen
20 POKE 3103,25 \ REM - protect top
of screen
30 FOR X=1 TO 40 PRINT TAB(X),"
Screen test "\NEXT
40 POKE 3102,28 \ REM -- back to
normal --
50 POKE 3103,24 \ REM -- back to
normal --
60 IF F<>1 THEN F=1\GOTO30
```

**** MACHINE LANGUAGE PROGRAMING ****

by Bob Bybee

Don't be afraid of machine language! It's easier to use than you might think. We're going to show you how to write a simple program, using machine language.

This program will read the keys you type on the keyboard, and display the character's value in hexadecimal. You can keep this program handy in case someday your keyboard gives you trouble. It will show you exactly what's coming out of your keyboard.

Here's what you do: First, remove all disks from your drives and type ENABLE.

Now type control-Z to get into the Poly "front-panel" mode. (Your manual explains this in detail, but I'm just going to give you the basics.)

Type L2000 (space). The right-arrow on the lower left side of your screen will be beside address 2000. That's 2000 HEX.

Now, here is the program we will enter:

```
CALL 0C20
CALL 03D6
JMP 2000
```

The call to address 0C20 executes a subroutine that waits for a key to be pressed, then returns with that key's value in the accumulator. Then we call address 03D6, where there exists a subroutine that puts the accumulator's value onto the screen (in hexadecimal). Finally, we jump back to the beginning of our program to wait for the next key to be pressed.

The 8080 machine code instruction for "call" is CD. So the first line of our program is written

```
CD 20 0C
```

(notice the called address is written backwards. This is known as "byte-reversed" form. The 8080 is very fond of it.)

The next line of the program goes

```
CD D6 03
```

The instruction for "jump" is C3. So the last line is

```
C3 00 20
```

To enter the program, type the instructions, one at a time, follow-

ing each one with a space: (Remember to type the numeric ZERO, not the alphabetic OH, for 0.)

```
CD space 20 space 0C space
```

```
CD space D6 space 03 space
```

```
C3 space 00 space 20 space
```

Each time you press the space bar, one byte is entered and the address next to the arrow is incremented. If you make an error, use the backspace key to back up to the error.

Program in OK? Good! Now let's run it. Type SP. Then type J2000, press the space bar, and type G. Nothing on the screen should change. But look at the bottom of the screen, and press a key. You'll see the hex value of the key you pressed. Example: pressing the space bar should cause "20" to appear on the screen. You can compare the values you see with a standard ASCII chart. You might also like to check and see what's generated when you press some of Poly's special keys, like the "arrow" keys.

Note... this program provides no way out. It's an endless loop (you've encountered these before, right?) To get out, you'll have to hit control-Z, then type "G" and RETURN, or re-boot.

***** POLYMORPHIC USER GROUPS *****

We know of three PolyMorphic user groups. They are:

Poly 88 users group
1477 Barrington, Suite 17
Los Angeles, CA 90025
Membership Cost: \$5.00
(includes newsletter)

PolyGrip
Jim Cook
P.O. Box 18121
Dallas, TX. 75218
Membership Cost: ?

Southeastern PolyMorphic Users Group
207 Marray Dr.
Atlanta, GA. 30341
Membership Cost: \$5.00
(includes PolyLetter)

If you know of any other user groups please let us know.

**** FOR PROGRAMMERS ONLY ****

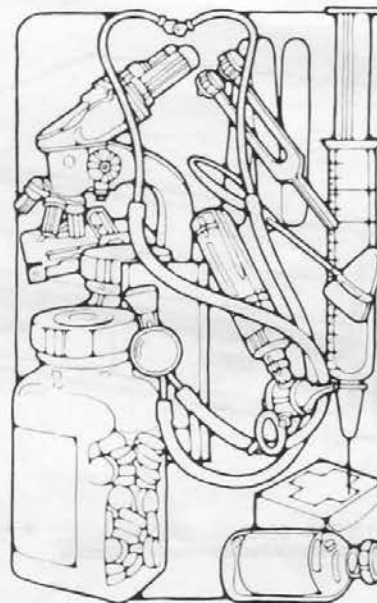
When sending information to the printer sometimes you may want to fool the computer into thinking that the printer is at the top of the page. To do this you will need to do a POKE to the LINE COUNTER memory location.

The memory location for the LINE COUNTER is now located at 12786 decimal, 31F2 hex. This is only for the new operating system EXEC 83 (if you have Pathways and Printer Setup then you have the new operating system disc). The new printer driver now starts at 1 and counts up. The old Printer driver would start at the defined page length and count backwards. To make Poly think you are at the top of the page, put 10 POKE 12786,1 at the beginning of your program.

```
REM -- This program will demonstrate
what a POKE to
REM -- the LINE COUNTER memory
location will do
10 FILE:2,LIST
20 PRINT CHR$(12),"Move paper to top
of page"\INPUTX$
30 POKE 12786,1
40 PRINT:2,CHR$(12),"This is the top"
70 POKE 12786,33 \REM Half page
80 PRINT:2,CHR$(12)
90 PRINT:2,"This is the middle"
REM -- Don't forget this POKE
location is only for the newest
REM -- operating system, EXEC 83,
your LINE COUNTER may be different
```

**** FREE ADVERTISING ****

PolyLetter is looking for programs and products that will be of interest to our readers. Have a program you want to sell? Send us the information and we'll print your ad for FREE. Write the ad the way you want it to appear. Don't forget to mention what system and version of basic the programs are written for. PolyLetter will not advertise any Bootleg Programs. By the way, we would love to advertise a Chess Program.



**** Medical Programs Anyone? ****

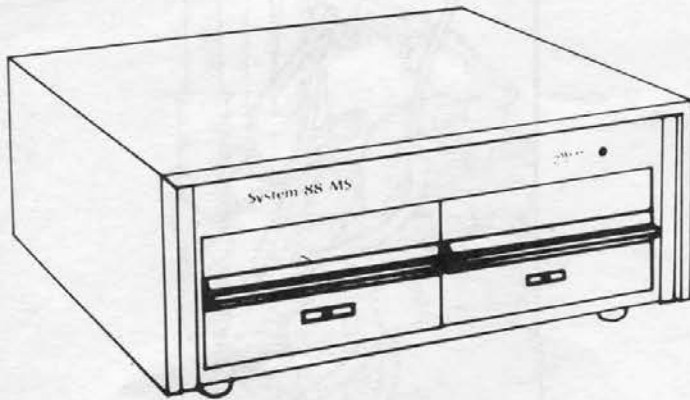
by John Sparti, D.O.

Medical applications in computer medicine is a prime interest of mine. All too often the general public sees computers as mindless billing machines, which reduce people to numbers and all too frequently refuse to correct errors introduced by programers. In my office the computer sends out billing invoices, but I can make changes to humanize the process myself.

What is needed is a group of programs to help physicians take care of their patients. I want programs to help manage the mass of laboratory data, interpret it correctly and to help convey this information my patients in an easily understood form. Programs are needed which take history information, questionnaires for psychological profiles, and symptom complex interpretation for differential diagnosis. Office programs should also include data systems to help manage diabetes, weight, and smoking.

I have compiled several such programs and have modified them to meet the needs of a general practitioner. These programs are available for swap or sale.

John Sparti, D.O.
318 Main St.
Dallas, GA. 30132
(404) 455-5555



**** DSDM MASS STORAGE ****

Has your DSDM (double sided double density) Mass Storage unit eaten any discs lately? Chances are it has. With all its advantages (speed, 2.5 meg storage) the DSDM M/S does have one fault. It eats discs.

In writing this article I have discovered as many opinions for the cause of the problem as there are DSDM mass storage units. Right or wrong, this seems to be the synopsis of the situation: The DSDM mass storage unit uses Remex drives. The DSDM Remex drive has two heads, top and bottom. The top head drops down to the disc only when it is reading, but the bottom head stays in contact with the disc at all times. Because the discs spin continuously the bottom disc wear is extremely predominant. As Donald Moe (with Logic, Inc.) explained, "I ran the confidence test overnight. The next morning I could see light through the disc."

PolyMorphic has discontinued the use of Remex drives in the DSDM M/S units. They will now be shipped with Shugart drives.

For you who have been having problems with the old Remex drives, here are some tricks to help the situation:

1. Filter the dust out. The fans in the back pull air and dust through the unit. Turn the fans in the back around to reverse the direction of the air flow. Attach a very thin piece of foam rubber to the back of the fan. I

used some wires to attach the foam, but some other users found that rubber-bands work better. The foam acts as a filter, removing most of the dust and lint. Be sure the foam isn't too thick, causing the unit to overheat.

2. Keep the heads clean. First, remove the cover, then clean the heads using a high grade alcohol and a long Q-tip. The alcohol needs to be 90% alcohol or higher (available at drug stores). Stereo shops usually carry the long Q-tips. PolyMorphic doesn't recommend the above method because of the possibility of damaging the heads, or knocking them out of alignment (very good possibility). They have a new head cleaning disc available. Just pop it in and it cleans the heads automatically. I clean the heads about every week or so. Check the discs often; if you notice they are starting to get scratched, then clean the heads immediately.

3. By far the most popular solution to the problem of disc wear is not to use Verbatim discs. Verbatim has admitted their disc surface is soft. They have even recalled a few. The best disc to use is Dysan. Some users point out that since using Dysan discs, their problems with disc wear has been eliminated. For you dealers, Dysan discs are available at: Dysan Corp., 5440 Patrick Henry Dr., Santa Clara, CA. 95050, (800) 538-8150. They are expensive.

4. One last suggestion. When leaving the computer for any length of time, pull out the discs. The discs are continually spinning, so the less time they stay in, the longer they will last. You better remember to put them back in however, or the first time you hit RETURN the computer will go into hyperspace, only to return by hitting the load button.

```

10 REM DEF to eliminate cursor
20 PRINTCHR$(12)\Z=FNP(127)
30 PLOT54,25,0\PRINT"No cursor"\
  Z=FNP(127)
40 GOTO 40
50 DEF FNP(P0)
60 Q0=PEEK(3086)+256*PEEK(3087)
70 POKEQ0,P0\RETURN1\FNEND

```



**** USER INPUT PROGRAM REVIEW ****

by Mark Sutherland

In writing good application programs probably about 50% of the program is spent in formatting and checking the user input. We all know the old saying GIGO (Garbage in garbage out). When the computer asks the operator to enter a number, we want a number, not a dollar sign or comma. How much of your programming is involved with checking user input? There must be a better way.

I have dreamed of a program that would allow me to write input screen displays in the Text Editor. While in Basic I could call those forms to the screen from a file. The arrow keys would automatically start working and I could move around the display, changing the data at will. The display would be smart and only allow letters and numbers to be put where they belong. There would be dashes after the field names which

are filled in easily. Once the spaces are filled the cursor would stop and go to the next array. It would be impossible to make a mistake! When all the info is correct, simply hit RETURN and the data would go either to memory, the printer, or a disc. The arrays would be padded to the proper length. If ever the display needed to be changed, I could just return to the Text Editor and change it.

Well my friends, I am happy to say the above program is no dream. I bought the program about a month ago and I am impressed.

The program, FORM.OV, is written by Donald Moe. It's a machine language over-layer that can be called from any Basic program with the CALL command, using very little memory. FORM.OV will put a form, stored as a disc file, onto the screen just as I have described above. More than one form can be used in a program. The arrays can be protected to accept either numbers (phone), numbers with period and minus sign (dollar amounts), upper case letters, all letters, or all letters and numbers. FORM.OV drastically simplifies screen displays and user input. Complete documentation is included. I understand Mr. Moe has many other interesting machine language programs for sale. FORM.OV is available from:

Logic, Inc.
5330 Manhattan Cir., # B
Boulder, Co 80303
(303) 499-5600

***** POLYMORPHIC VISITS GEORGIA ******

Frank Anderson and Bob Martin, from PolyMorphic, came out to the last user meeting of the Southeastern PolyMorphic Users Group. Frank, responsible for Poly hardware, spoke on the new two user system, 48K memory board, and problems with the DSDD mass storage unit (see article on mass storage). Bob, who designs most of the Poly software, gave some advanced information on the new Basic and Editor due to be released in a month or so. They answered some difficult questions and demonstrated the new two user system.

*** NEW POLY SOFTWARE ***

Poly is releasing these new versions sometime in February. Here are some of the improvements:

BASIC:

- 1) Better SAVEP (more protection)
- 2) FILE:n,DEL
- 3) Faster GOTO, GOSUB's
- 4) 128 Byte input buffer

EDITOR:

- 1) Escape library, automatically loads Default values based on file extension.
- 2) Control "E" doesn't clear screen
- 3) Better error recovery.
- 4) Faster I/O (loading)

ASSEMBLER:

- 1) Faster table management.
- 2) LOC pseudo opcode (easily moves program to different address's)

WORDMASTER:

- 1) Better Defaults, Underlining.
- 2) multi-line headers and footers.
- 3) Supports Bold type and Red ink
- 4) Format individual page or range of pages.

**** FREE PROGRAMS ****

Bob Martin, at PolyMorphic, sent me a disc a couple of days ago and asked if I would pass it around. The disc contains 11 assorted programs. Some are machine language, some Basic. If you would like a free copy, send me a 5" SDSS disc. Please include round-trip postage (I don't want to lose money on this deal). If you don't want to go through the hassel of mailing a disc then just send me five dollars and I'll mail you a copy (you might get a used disc). Offer is for 5" SDSS only. Here is a list of the programs:

COMPARE.GO	Compares two files
CLEAN.GO	Deletes all files on disc
DLIST.GO	LISTS all deleted files
ARISE.GO	Undeletes individual file
COPYALL.BS	Copy all non-system files
TBASIC.GO	Tiny Basic (8 sectors)
TBFN.OV	OV for Tiny Basic
CHECKSUM	For sub directories
SZAP.GO	Super ZAP (powerful!)
DUMP.GO	Mem. or disc to printer
USINGDUMP.TX	Tells how to use DUMP.GO
WORMS.GO	Worms crawl off screen

*** THE ULTIMATE PROGRAM ***
by Bob Bybee

At long last, computers can now have the benefit of CLERGE, a high-level structured programming language developed by BMF Associates. CLERGE, Computer Language Enabling Recovery from Glaring Errors, closely resembles a mixture of PASCAL and Latin. It was developed for systems with un-debugged and/or flakey hardware. By using advanced heuristic code generation techniques, CLERGE is able to exorcise hardware problems before they happen, thereby preventing programs from halting or running amok. At the heart of CLERGE is PRIEST, its unique Pre-mortem Run-time Interpreter Employing System Tests package, which corrects memory glitches, peripheral failures, the effects of power outages, ad infinitum. CLERGE is available for PolyMorphic Systems 8810 and 8813, requiring at least 48K of memory. Circle 666 on Reader Card for more information.

**** WANT ADDS ****

Wanted: Used 8813 in good condition. 1 to 3 drives. 32 to 64K
Contact Mark C/O PolyLetter

Wanted: Disc controller card for 88 or 8813. Bob Bybee, 2345 Cobb Pkw. S.E., Smyrna GA. 30080, (404)898-7766

For sale: MITS Parallel interface card S-100 compatible with all documentation, but No software. Contact Mark C/O PolyLetter

Wanted: More want adds. They are free.

*** PUT ME ON YOUR MAILING LIST ***

Name _____
Business _____
Address _____
City, State _____ Z, _____
Phone _____
System _____
Printer _____
Uses _____
Future uses _____
Subscriptions, \$5 per year (6 issues)

Send to: PolyLetter
207 Marray Dr.
Atlanta, GA 30341
Phone (404) 458-9711

PolyLetter



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APRIL - MAY 1980

*** A NOTE FROM POLY ***

Mark asked me to add a few words to the PolyLetter, which I am happy to do. I had originally hoped to write something lengthy but the National Computer Conference (in Anaheim on May 19-22) has been taking most of my time.

I think NCC is going to be a very interesting show this year. We will have a number of new items on display:

(1) The Twin System 8813 - That's right, now two people can use the 8813 at the same time. Each user has 48 K of RAM, his own video display and keyboard, and can run assembly, BASIC, or applications programs independently of what the other user is running. This only works with the double density controller card (8 inch or 5 inch, single or double sided), because the disk control and data transfer is handled by the onboard Z80 slave CPU, not the system 8080 CPU.

(2) A Menu Driven WordMaster II will be ready for demonstration. And,

(3) Last But Not Least, PolyProgram I - this is a Database Management System. We are developing it into a menu driven application generator. It is written in assembly and BASIC but you do not have to know either language to use it. This should cut down the time for writing "Big 5" packages and the like from months to days. These items will be ready for release at NCC. We will show some other things in order to test the interest level at the show. If you can make it we would like to see you there.

Gordon Furman
Marketing Manager
PolyMorphic Systems

We are off and going strong! The first issue of PolyLetter was a success. We have received scores of subscriptions and letters from just about every state in the union. Some of the letters were very impressive, three pages long and written with WordMaster. Many users sent us tips, ideas, and some even sent their programs (one program, the Disassembler by Ralph Kenyon, is reviewed in this issue).

We are happy to announce the addition of Bob Bybee to the PolyLetter staff. He will be associate editor, writer, and our machine language expert. Bob knows the Poly, inside and out.

All you dealers have been super in helping us get started. For example: one Poly dealer, The 21st Century Shop, ordered an additional fifty copies and sent them to many of their customers. Without the help of dealers PolyLetter could never work. Thank you!

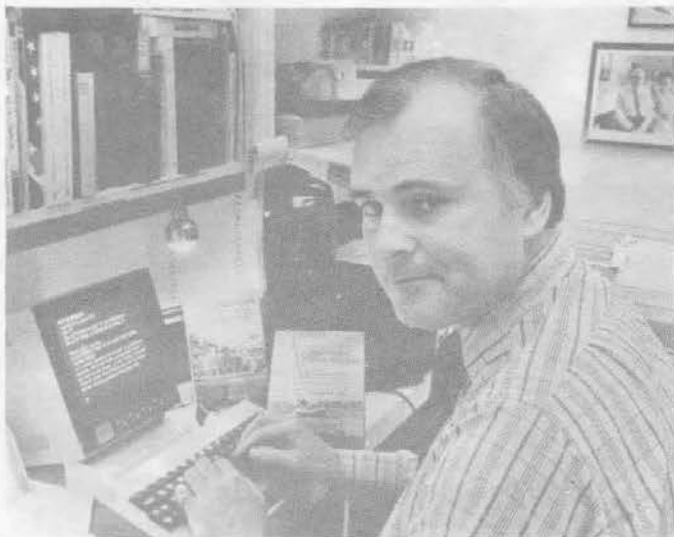
You will find the screen display chart, in this issue, very helpful for plotting out video displays. Feel free to photocopy it.

In next month's PolyLetter we will have articles on reconstructing a disc directory, the global search & change function, machine language calls (from BASIC), and much more.

This is the last "free" PolyLetter, so if you haven't sent in your five dollars you'll never see another one (unless it's a bootleg). We work very hard and we're very much in the red so every nickel helps. Thank you!!!

One last thing, PolyLetter will send a free PolyMorphic T-Shirt to anyone who sends in a program, hint, or article that we print. Please specify your size.

Mark Sutherland



*** USER REPORT ***

There is very little that does not interest Stuart Woods. Stuart enjoys sailing. He dabbles in photography. He is fond of fine wine. He travels. Stuart is a free-lance writer living in Atlanta, and in addition to his other interests, he is now a Poly 8813 user.

"Before I bought the computer," Stuart says, "I did all my work on an electric typewriter, or had a typist do it for me. I had a typewriter that would let me correct mistakes, so I was able to produce halfway-decent copy. Now, with the Poly, I can produce perfect copy, and with much less effort than before."

Why a PolyMorphic? "I first saw a Lanier word processing system, but the \$20 K price tag was too much. I began looking at smaller computers. Most of the stores said their systems would do the job, IF I paid \$500 to have some software written. All I wanted was a keyboard, a screen, a printer, and a box that would let me edit and correct my manuscripts. Then I discovered the PolyMorphic. It was already up and running, doing just what I wanted." Stuart uses a PolyMorphic 8813 with 32K, 3 drives, and a Trendata/IBM printer. "I've never run into a situation where my writing needed more than 32K," Stuart told us.

Stuart's work also found a use for the Mailist program.

His last book, "A Romantic's Guide to the Country Inns of Britain and Ireland," was compiled by hand. But Stuart plans to revise the book next year, and will be using Mailist to write to the inns requesting current information for his next edition. And of course, the new manuscript will be prepared on the computer.

Stuart Woods is an inventor... of a sort: "I invent things in my mind. I ask myself, what if we had a device that could do this... or that. I envisioned a system like the Source, many years ago. My idea was one where you could make requests for information from the New York Public Library." Stuart now subscribes to the Source. "I use the Source for data retrieval," he told us, "mainly from the UPI and New York Times data files." Stuart doesn't use the Source to play games, or to balance his checkbook: "I can do that faster on a calculator, with pencil and paper. I think checkbook balancing programs are grossly overrated. But I would like to see a good astrology program. Does anyone have one for the 8813?"

Stuart used his computer to help out a Presidential campaign in Georgia: "I was able to type out individually addressed letters to a large number of people, then have the candidate sign them. So essentially, he sent out individual letters to all those people, without expending any effort!"

You may see Stuart's new novel, "Chiefs," in the bookstores soon. If you do, be sure and take a look at it -- Stuart did the manuscript on his 8813!

Thank you for bringing us such a fine newsletter! ...One of our programmers stated... "It was like a gift from heaven!"

Diana Moe
Boulder CO

I read your very enterprising mailer at my local computer center. Good luck! Why should Radio Shack be the only game in town?

Joel Rosenblum
Butler, PA

*** A DIS-ASSEMBLER! ***
(PROGRAM REVIEW)

If you've ever used the PolyMorphic assembler, "Asmb," then you've probably wished for a program that would undo the assembly process. That is, a program that would take a machine language file and return it to the original text form that it started in. PolyLetter recently received a "disassembler" program from Ralph Kenyon, an avid PolyUser in Virginia Beach. With his program, DisAsmb, you can take any machine language file and turn it back into the 8080 op-codes from which it came.

How does it work? You give it the name of any executable file (these are usually stored with a ".GO" extention) and it will produce an output file with all of the instructions in their proper places. This output file can be re-assembled, and it will again be an executable file. But the real beauty is that you can look into such files as system overlays, printer driver routines, even the BASIC language itself!

We have used DisAsmb to disassemble several complex programs. It's written in BASIC, and it's long; so it does take a while to do its job. In fact, if you're disassembling a file of more than a few sectors, you might as well go to dinner. But IT DOES WORK! When it's done, you will have a file that contains the proper instructions (8080 mnemonics like MVI, STA, LHLD and so on). And many of the system labels will be properly identified, since DisAsmb has access to a list of system symbols (like wormholes).

If you do any assembly programming, or if you have some machine-code programs on your hands that you'd like to peek inside, you should have a disassembler. You can get Ralph's by writing to him:

Ralph Kenyon
145-103 South Budding Avenue
Virginia Beach, VA 23452

Please enclose a check for \$12.50 to cover all costs. You'll get your disc in the

*** LIFEBOAT ABANDONS POLY CP/M ***

At this writing, we have been informed that Lifeboat Associates of New York is no longer working on CP/M for the PolyMorphic 8813. Lifeboat had borrowed an 8813 from Poly, for use in developing the software, but they have returned it.

CP/M is a set of programs that would allow the Poly to be compatible with many other systems. Once the CP/M operating system is loaded, any CP/M computer will act like any other CP/M computer. (CP/M stands for Control Program for Microcomputers, and is a trademark of Digital Research, Inc.) If CP/M had become available, it would have opened up a vast library of software for PolyUsers... just one look in the classified of any software magazine will show you how much CP/M stuff is out there.

But, we're not going to be seeing a PolyMorphic CP/M from Lifeboat. Perhaps some other software house will pick up the project. We hope so! Any interested PolyUsers should write to PolyMorphic Systems and let them know you are still interested in CP/M. Apparently, lack of interest by users was the reason the project was dropped by Lifeboat. A project of this size cannot be undertaken unless there is a large number of customers willing to buy the finished product. Remember that many programs that are fairly expensive for a Poly, are cheaper when purchased in CP/M. If you expect to be buying any large programs, CP/M is in your best interest!

mail. If you'd like to talk to Ralph, his number is (804) 486-4370.

PolyLetter asked Ralph why he's selling such a nice program for only \$12.50. He responded, "If I priced it at \$100, a few people would buy it and a lot of people would steal it. By making the price reasonable, I hope to make a little money and also keep away from bootleggers." PolyLetter says: "Right on, Ralph!"

TAB →
POKE ↘

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PolyMorphic Screen Display
By PolyLetter

← X

*** THE TOP OF MEMORY IS... ***

by John J. Warkentin

One of the handier features of Poly's operating system is the command-file INITIAL that executes when the system is booted.

But something is missing. Without the INITIAL file, the system tells how much RAM it has. When the INITIAL file is used, this is not reported. If a portion of memory goes out to lunch you won't know it until your 30 K BASIC program crashes in the middle of a 4-hour sort!

The solution was to have the INITIAL file also load and execute a program to report the top of memory, which is found during system initialization and saved in location MEMTOP. Please note that this is in no way a memory test, but only reports the highest memory location the system found.

```
REFS  SYSTEM
REF   USER
REF   MEMTOP
REF   Msg
REF   Warm
REF   DEOUT
REF   WH1
```

```
;
ORG   USER
IDNT  $,$
;
START LXI   H,TEXT
      ;send message to screen
      CALL  Msg
      ;get top of memory
      LHL  MEMTOP
      XCHG
      CALL  DEOUT
      ;put it on screen
      MVI  A,0DH
      ;send out a carriage return
      CALL  WH1
      JMP  Warm
TEXT  DB   'Top of memory is
      DB   0
      END
```

*** MAGNETIC DISK HOLDER ***
(NEW PRODUCTS)

PolyLetter is proud to announce the first in a series of handy accessories that will help you make better use of your computer.

Presenting -- the Magnetic Disk Holder!

Just think! No longer will you be misplacing your important disks. Once you equip your system with our Magnetic Disk Holder (MDH), you'll always know where your disks are.

The MDH is a very simple device: a 10 pound, 30,000 gauss permanent magnet that can be attached to any steel surface. Buy several! Put one on your computer; one on your fridge! Then just set your disk on it, and it will be held in place automatically. We've received several phone calls from customers telling us how fond they are of their MDH. (They all said they would have written, but somehow the WordMaster program disappeared from all their system disks.)

Watch this space next issue - as PolyLetter presents the Ronco Veg-O-Matic Word Processor!

*** POLYTALK ***

PolyLetter wants to promote idea exchange between PolyUsers. Send in your questions or problems, and maybe we can help you out!

I have an 8813 and an Okidata printer, and cannot get the two to talk. Any suggestions? Robert Teall, 1720 N. Sherman Ave., North Platte, Nebraska 69101.

Would like to get some game programs for my children. Can we work out a trade? Diana Moe, 5330 Manhattan Circle, Suite B, Boulder, Colorado 80803 (303) 499-5600

If you need to make another drive your system drive, as when imaging large disks, try this: Type "EN", then "boot 2" (or whatever drive number you want to use). Make sure your new drive has a system disk in it! G. R. Gamble, Des Moines, Iowa.

For contributing his tip, G. R. wins a free PolyMorphic T-shirt from PolyLetter. If we use your tips, you can win one too!

*** DISK OF THE MONTH ***

Each issue, PolyLetter will be making available to PolyUsers a disk with some utility and/or fun programs on it. Here's what we're offering this month:

CONTROL-U.GO Transmits what's on your screen to your printer. All you have to do is hit control-U. Works with Szap or front panel to print out memory dumps quickly and easily. Also an easy way to get listings of your data files, program menus, etc. After printing what's on your screen, automatically returns to whatever the program was doing before.

COUNT.GO Counts the number of words in a file, for you writers. Machine language, so it runs FAST! (Don't blink!)

CALENDAR.BS Prints a calendar for any year after 1582 (that was the year they changed calendar systems, and we lost eleven days of our lives).

To order, send a check for \$15 to PolyLetter. Ask for the April Disk-Of-The-Month. We can provide you with either single-sided single-density 5" disk, or double-sided double-density 8". (If you don't specify, you'll get the 5" version.)

Bravo! We need more exchange of info between PolyUsers. Keep up the good work and keep the faith - Poly can survive!

Roger Lewis
Los Angeles

I have always felt the need to have someone else to talk to about the system. Your PolyLetter should help fill that void.

Ken Jenkins
Silver Spring, MD

*** POLY-ADS ***

Your ads will be placed in PolyLetter free of charge. Since we don't charge for this service, we do request that you subscribe to PolyLetter when you send the ad (if not before). If you don't subscribe, how will you ever know we ran your ad?

WANT TO BUY: HARDWARE

WANTED: Shugart SA400 SD drive, any cond. G.R. Gamble, 5615 NW 63rd Place, Des Moines IA 50323, (515) 278-5332

WANT TO SELL: HARDWARE

FOR SALE: Used 8813/56K/3 drives, with software galore. \$4700. Dan Ellis, Byte Shop, 1555 Morse Avenue, Ventura CA 93003 (805) 647-8945

FOR SALE: Standard Poly keyboard, used, \$85. Laton Allison, Box 201, Stanberry MO 64489 (816) 783-2172

FOR SALE: Two Soroc model 120, new. Robert Teall, 1720 N. Sherman Avenue, North Platte, Nebraska 69101

FOR SALE: Centronics 779, new, \$900. Two Poly 88 system 12's, used, no kbd or memory, \$750 ea. Many other hardware and software items, write for newsletter. Poly 88 Users Group, 13022 Psonas Way, Los Angeles CA 90066

FOR SALE: 8813/40K/3 drive, 1 yr old, \$4500. Poly I/O board, \$45. Poly 88 chassis, \$300. 8813 disk power supply, \$30. Alpha Micro Computer Shop, Santa Barbara CA (805) 963-1325 (ask for Steve)

FOR SALE: 8813/32K/3 drives/12" monitor/new keyboard/TI 810 printer (upper and lower case). Carson Hood, 4084 Malabar Dr., Montgomery Alabama 36116 (205) 288-9557

FOR SALE: 8813/3 drive/48K, with keyboard II. \$3500 including shipping. Contact Glen at PolyMorphic Systems, Inc. (805) 967-0468.

WANT TO SELL: SOFTWARE

FOR SALE: Real estate management system, also other utilities for general database management. Micro-Systems Design, 1114 State St., Santa Barbara CA 93101 (805) 965-0385

FOR SALE: Terminal program for inter-computer transfer of data. Also Text File Combiner program. Custom software. LOGIC, Inc., 5330 Manhattan Circle, Suite B, Boulder CO 80803 (303) 499-5600

FOR SALE: Radio station traffic and billing software. Joel Rosenblun, WISR radio, 357 N. Main St., Butler PA 16001 (412) 283-1500

FOR SALE: Depreciation Schedule program for 8813, \$200. C.E. Vermillion, (816) 361-3218

FOR SALE: Legal Time Accounting software for 8813. \$800. 21st Century Software, 3201 Carew Tower, Cincinnati OH 45202

FOR SALE: Sort overlay. Inventory package. Disassembler. Relocator. Custom software available. Advance Business Systems, 2117 Division St., Evansville IN 47714 (812) 476-5014

*** PUT ME ON YOUR MAILING LIST ***

Name _____
Business _____
Address _____
City, State _____ Z, _____
Phone _____
System _____
Printer _____
Uses _____
Future uses _____
Subscriptions, \$5 per year (6 issues) _____
Send to: PolyLetter
207 Marray Dr.
Atlanta, GA 30341
Phone (104) 458-9711

PolyLetter



PUBLISHED BI-MONTHLY

JUNE - JULY 1980

*** LETTER FROM THE PUBLISHER ***

I appologize for this PolyLetter being a little late. We have been in the process of moving. Please notice our new address.

We are pleased to announce the addition of three new members to the PolyLetter staff. Ken Williams, a free lance programmer working mainly with PolyMorphic computers, will be reviewing programs. Ken who uses a Poly in his ceramic business, also has taught courses in computer programming. Ralph Kenyon, from Virgina Beach, will be contributing articles under the heading "ExtraPOLYations". Ralph is a expert assembly language programmer. Ralph's favorite pastime is disassembling all the PolyMorphic Operating system. You may have seen some of Ralph's articles in past PolyLetters. Last but not least, Charles A. Thompson, a lawyer from Dallas TX, has allowed PolyLetter to publish his "Addendum to the PolyMorphics manual", a clever compilation of the hidden, obscure and undocumented goodies in the Poly operating system. Because the Addendum is over sixteen pages long we will publish it, one chapter per issue.

Many readers suggested that we poke holes in PolyLetter so it can be put in a loose leaf binder. We didn't get the holes, but we did give you some space on the left. We hope you find the new format to your liking.

Mark Sutherland

Polymorphic: from the Greek "poly" (many) + "morphous" (form, shape or structure).

*** POLYLETTER HAS TIME SHARING ***

Bob Bybee, our own resident genius, has developed our own Poly Time Sharing computer. From any phone you can actually operate OUR Poly 8813 from YOUR computer or terminal. It will automaticly answer the phone and allow complete access to the computer. Programs can be run. Drives, programs and files LISTed and BASIC programs written and SAVED. BASIC or Machine Programs may be sent or received. Anything can be run by phone except the Editor or printer. Even Super Zap works via Ma Bell.

The possibilites are endless. Programmers can fix those program bugs and never leave the office. The office computer can be run from home. A salesman can check inventory or enter orders while on the road. One computer could be used by many.

Our system is still experimental, but if you would like to try it out, call Bob at (404) 952-5355 (eveings) We have this issue of PolyLetter and some misc. programs available. All you need is a modem, software, and phone.

*** About PolyLetter ***

PolyLetter is written on a PolyMorphic 8813 using WordMaster. Many of the articles are send to us via Phone Modem. We use the facilities and computers at Flash Graphic, which is a T-Shirt printing company owned by the publisher. Flash Graphic, which has a annual gross of over two million, uses two PolyMorphic computers. Both are 8813's, one is a twin system with a DSDD mass storage and the other is a 64K with three 5" drives. Bob Bybee, the associate editor uses a 8813 built into a North Star chassis.

*** HOW TO SAVE 'SAVE' ***

PolyLetter has discovered that there is a bug in Exec/83. The machine language SAVE command won't work right if you try to SAVE part of memory onto a disc file.

We believe the problem can be fixed by eliminating one instruction in the system overlay Dfn3. The instruction is in the 5th sector of Dfn3, and is loaded at location 24C6 hex. You can use Szap to look in the 5th sector of Dfn3, bytes C6, C7 and C8: they should be 22 62 2E. Now, use Szap to change these bytes to 00 00 00, effectively eliminating them.

PolyLetter does not guarantee that no ill effects will result from this change... but we have tried it and it seems to work. If you are using Exec/83, we suggest you keep at least one system disk with this patch on it.

*** POLY - ADS ***

Your ads will be placed in PolyLetter free of charge. Since we don't charge for this service, we do request that you subscribe to PolyLetter when you send the ad (if not before). If you don't subscribe, how will you ever know we ran your ad?

WANT TO SELL: SOFTWARE

FOR SALE OR TRADE: Cash disbursements/accounts payable system. \$200. Payroll/personnel system, provides all reports, checks. \$500. Documentation for either, \$15. Keith Whiteman, 816 Story St., Boone IA 50036

WANT TO BUY: SOFTWARE

WANTED: Attorneys billing program. Must have itemized billing, be able to sort cases, etc. Contact Robert H. Measle, 256 Wilson-Downing Rd., Lexington KY 40503

*** THE PROGRAMMER'S CALCULATOR ***

by Bob Bybee

Texas Instruments has a new calculator that should interest you machine language buffs. It's called the TI Programmer, and yes, it is the first calculator from TI that doesn't have a number. It just has a name.

In addition to doing standard checkbook arithmetic, +, -, * and /, this calculator can work in base 16 and base 8! You can instantly convert from one base to another, or you can do calculations in any one of the bases. To assist in tracing your programs, the unit also has logical operations: SHIFT, AND, OR, XOR, NOT, and two's complement. It uses the usual TI "algebraic" entry mode, and has several levels of parentheses for complex expressions. It also has a constant key and one memory.

If you ever work in machine language, or if you do any BASIC that involves PEEKs and POKEs, you will be instantly hooked by this calculator. The first day I had it I found myself doing programs that I never would have attempted before. Here's an example of how it works:

You know a SSSD 5" disk has 350 sectors. How much is that in hex? Turn on the calculator (it comes on in base 10 mode), key in 350, press HEX. Answer: 15E. Wasn't that easy? How long would it take you to do that kind of conversion by hand? (Or what about doing a hundred of them?)

The TI Programmer is available through TI's outlets, including many business supply stores; many computer stores also carry it. It lists for about \$60, but you can probably find one for around \$50.

```
10 REM send screen output to printer
20 POKE 3109, PEEK(3133)
30 POKE 3110, PEEK(3134)
40 PRINT "This goes to printer."
50 REM now back to screen
60 POKE 3109, 127 \ POKE 3110, 0
70 PRINT "Back to normal."
```

*** BASIC MACHINE LANGUAGE CALLS ***

```

Z=CALL(0) \ REM boot the system
Z=CALL(127,X) \ REM same as PRINT CHR$(X)
Z=CALL(279) \ REM enter front panel (Be Careful!!!)
Z=CALL(909) \ REM do a carriage return
Z=CALL(914) \ REM do a form-feed (clear screen)
Z=CALL(919) \ REM print a space
Z=CALL(924) \ REM print a TAB
Z=CALL(977,0,0,X) \ REM print X on screen as 4 Hex digits ( X < 65536 )
Z=CALL(982,X) \ REM print X on screen as 2 Hex digits ( X < 256 )
Z=CALL(1036,0,0,0,MEM(A$)) \ REM print A$ on screen
Z=CALL(1024) \ REM cold start the disk system
Z=CALL(1027) \ REM warm-start the system (go to Exec)
Z=CALL(1054) \ REM flush type-ahead buffer

POKE 11667,3 \ POKE 11668,4 \ REM control-Y will now return us directly to Exec
POKE PEEK(3086)+256*PEEK(3087),127 \ REM blank cursor

```

*** FOLDING STRINGS ***

When comparing or sorting strings, it is often necessary to NOT discriminate between upper and lower case. You can go through a string, character by character, checking and "folding" lower case to upper case as necessary. Or, you can use a program like the following:

```

10 DIM A$(1:20),B(20)
20 M=MEM(A$)-1
30 INPUT A$
40 MAT B=PEEK(M+#)
50 MAT IF B>96 THEN POKE M+#,B-32
60 PRINT A$\PRINT
70 GOTO 30

```

Array B does not need to be as long as string A\$. B only needs to hold the number of characters you want to fold. B should not be longer than A\$.

*** What have you got anyway? ***

PolyLetter is making a list of users that have a modem or who are on the Source. If you have a modem please drop us a note. We are also interested in how you are using Poly, what programs you have, and who wrote them. This information will help us build a list of all programs available for the Poly as well as get a feeling for what kind of information is of interest to our readers. Don't forget to tell us if you ever got burned on a bad program or company.

*** FOR SALE: MODEM KITS ***

Smyrna Software is making available a complete kit of all parts required to interface your Poly with a standard modem.

The Smyrna Software MK-1 includes

- Terminal software
- Special modem cable
- Complete instructions.

The MK-1 does not require making any changes inside the 8813. It plugs into your printer port, in place of your printer.

The MK-1 features two terminal programs, which run at 300 baud. They allow you to store incoming data on disk, and transmit the contents of a disk file. MODEM-T.GO will transmit and receive text and BASIC programs and files, and MODEM-M.GO is used for machine code files and compressed BASIC. The software is supplied on 5" SSSD diskette. (Contact us for price of 8" DSDD.)

Note that this kit does not include a modem. We recommend a low-cost acoustic modem, such as the "Cat" by Novation. Such modems are now available for around \$175.

To order, write to Smyrna Software, 2345 Cobb Parkway SE, Box Q-15, Smyrna, Georgia, 30080. The MK-1 price is \$100 postpaid to anywhere in the U.S.

**** POLYLETTER VISITS POLYMORPHIC ****

Many of the letters we have been getting ask the question: "What's happening at PolyMorphic? Are they still in business?" Well, I have some good news! After touring the plant in California I am happy to report... PolyMorphic is better than ever and doing fine.

For the last several months Poly has been putting most of their effort into R & D (Research and Development). Some of their new releases to be expected are: new Word Master, Two User System, PASCAL, CP/M (that's right), DataMaster II (a new data base management system, with screen forms, machine language sorts etc.), a new BASIC, improved Editor (w/auto loading of user defined keys), and PolyNet (a high speed communication system between computers). Still in the works is Poly's own 10 meg Hard Disc system. WOW!

As many of the projects are released or near completion, Poly will start to beef up promotion and dealer support (much needed). Poly has hired an award winning advertising firm to create and place full-page ads in a number of business/computer magazines. The ads will start this month. Won't it be fun to see the name "PolyMorphic" in print?

The PolyMorphic plant was clean and efficient. Young engineers bustling around with equation laden-papers. Scattered throughout the plant were "THINK" posters and dissected Poly 8813's. Everyone was very friendly and eager to help. I was suprised how young they were. The average age couldn't have been over 27. The feeling I got at Poly was like a family, everyone working together trying to make PolyMorphic the best.

After coming to Poly with some anticipation, I walked away feeling good. Poly is here to stay.

***** Did you know? *****

Apple Computer Company bought three Poly 8813's to help with their word - processing and documentation!!

***** POLYTALK *****

PolyLetter wants to promote idea exchange between PolyUsers. Send in your questions or problems, and maybe we can help you out!

I would like descriptions of some programs that are available for the 8 inch disk system. We 8 inchers seem to be left out! Horace E. Gilbert, 1142 Highcliff Ct., Cincinnati, Ohio 45224.

I am using a computer system made up of PolyMorphic and North Star hardware. If anyone else is using a "hybrid" system, I would like to hear from them. Contact Bob Bybee c/o PolyLetter.

***** DONALD MOE IS BACK! *****

Donald Moe, one of our more active Poly dealers, who wrote the famous Form.OV form display, sent us a seven page report called "Don's bag of Tricks" PolyLetter will print some of these "Tricks" every issue:

```
REM -- Initialize a printer from
      BASIC
10 Z$="Name"+CHR$(13)
20 Z=CALL("Prnt",2,0,0,MEM(Z$))
```

```
REM -- Display any integer number,
REM -- 0 =I =65535 as HEX number
10 PRINT"I = ",I," "
20 Z=CALL(977,0,0,I,0)
```

```
REM -- To delete existing file
10 Z$="Filename.DT"+CHR$(13)
      D=MEM(Z$)
20 D1=INT(D/256) \ D0=D-D1*256
30 C0=PEEK(11719) \ C1=PEEK(11720)
40 POKE 11719,D0 \ POKE11720,D1
50 Z=CALL("Dfn2",1,0,0,0)
60 POKE 11719,C0 \ POKE 11720,C1
```

```
REM -- To rename existing file
10 Z$="Oldname Newname"+CHR$(13)
      D=MEM(Z$)
15 D1=INT(D/256) \ D0=D-D1*256
20 C0=PEEK(11719) \ C1=PEEK(11720)
30 POKE 11719,D0 \ POKE11720,D1
40 Z=CALL("Dfn1",4,0,0,0)
50 POKE 11719,C0 \ POKE 11720,C1
```

More of Donald's Tricks next issue.

*** GLOBAL SEARCH-AND-CHANGE ***

by Charles A. Thompson, Attorney
Suite 316, 6060 N. Central Expy
Dallas, Texas 75206

Mark Sutherland asked me for a regular article on the lesser known 8810/8813 capabilities. I'd appreciate comments and suggestions.

The title should perhaps be "Global Search - and - Destroy". It's handy, but can be deadly. You must carefully consider each command, as Poly is simple-minded and follows orders implicitly. Do a lot of experimenting on test material before you use this feature.

It's available in the text Editor beginning with Exec/76 (Edit/80). (1) To initiate, invoke the Editor and put the cursor where you want changes to begin. The Editor will search from that point to the end of text in memory. (2) Enter ESC colon (:) to get a double cursor. (3) Enter a "circumflex" ("up arrowhead" upper left on the keyboard) and F or f. The circumflex is "CTRL". Therefore, ^F or ^f is CTRL F (which is how you set up a manual search). (4) Enter upon which you will base your changes. You can include spaces, carriage returns, etc. (5) Enter another circumflex and a left bracket ([). This is ESC (which, as in the manual mode, activates the search).

(6) Enter control characters in the order you want them executed. You can use several control characters, or none. All Poly control characters can be used. See Chapter 11, 1979 Users Manual. Use the circumflex (CTRL) plus the character. For example, ^W is CTRL W (delete one word), ^d (delete one character), ^d^D (delete two characters), etc. (7) Enter character(s) you want added, including spaces and carriage returns. (8) Type ESC to start the action.

Let's assume a text file where "separate" is misspelled "seperate". Your entries would be:

```
ESC :      --initiate it
^Fsepe^[^Da --find "sepe", change
ESC      --do it
```

If you want to be sure not to change "sepe" in some other word, do it:

```
ESC :
^Fseperate^[^Wseparate
ESC
```

Screen update. Use ^[^U as your last command to see the changes made (they occur quite rapidly). Abort with CTRL Y, ESC.

Step-by-step. Go one item at a time by using ESC CTRL H (^[^H).

```
ESC :
^Fsepe^[^[^H^Da
ESC
```

does the same thing as above but stops before making the change. The cursor will be replaced with a flashing question mark, and nothing more will happen until you make a decision. If you want the change, type ESC and the Editor will make the change and look for the next occurrence. If you do not want the change, abort by typing CTRL Y once, then ESC. (WARNING: type CTRL Y twice and you'll be bounced out of the Editor.)

User defined keys. Keys defined with the ESC= routine can be used in global search-and-change. It's tricky, though.

I have a 16-page (and growing) "Addendum to the Poly Manuals." It contains many hidden goodies and techniques for the Poly 8810 or 8813. I'll be happy to send you a copy for \$4.00 (which is about my reproduction, handling, and mailing cost). The first printing of 50 copies is depleted, so please allow four weeks to give me time to accumulate orders and have enough copies reproduced.

*** MODEM: CURE FOR LONELY POLY ***

Is your computer suffering from loneliness? PolyLetter has received many inquiries from Poly owners who are isolated from their fellow computers. If you own a system with only 8" drives, or double density 5" drives, you've noticed the problem getting software in your disk format.

PolyLetter recently acquired a modem. Now our computers can transmit and receive any kind of programs and files. As a matter of fact, most of the text in this issue was sent over a modem as our writers were planning this PolyLetter.

All it takes to get started is a modem, a little hardware, and a simple program to allow your Poly to interact with other Polys. You can find out more from your PolyMorphic dealer or by reading the Smyrna Software ad in this issue.

There is probably no other accessory you could buy for your computer that would cost so little, and yet open up so many possibilities for you. You will be able to exchange ANY program with ANY other modem-owner! As an added bonus, you can use your modem to access time sharing systems like the Source. PolyLetter is now on the Source, account TCD125.

The best type of modem to get is an acoustic coupled, "originate and answer" modem. This will give you the most flexibility, and allow you to connect with any other system.

PolyLetter is ~~considering~~ ^{WE DID - PAGE 1} installing an auto-answer modem in our office. This would allow anyone with a modem and a Poly to call us, and "download" the programs and other information contained in PolyLetter. Let us know what you think of this idea.

*** BOMB SHELTER ***

What do you do if your main disk drive bombs? Or if you suddenly find yourself in the middle of the Poly "Front Panel" mode? What if you're in an endless loop, and not even control-Y will save you?

If your answer to these questions is to have a nice long cry, we may be able to save you some tears. You can use the Front Panel to recover from some embarrassing situations, and usually have your program intact when you get back up! Here's how.

Let's say your main disk drive has quit. It won't even move! When you try to boot, you get an "ERROR 306" or other doomsday prophecy. Hit control-Z. Type L2D92, and hit the space bar. Then decide which disk you think you can trust... let's pick drive 2. Type a 2. Type a space. Then type SPJ403, hit a space, and hit G. With any luck, the system will boot up from drive 2 (you do have a disk in there, don't you?). What you're doing is called "warm-starting" the disk operating system. Warm-start means the system will not initialize EVERYTHING, it will assume that

certain things are already in place (like the system drive number you entered).

Let's take another example. You can warm-start most system programs, including BASIC. To do this, you could type (at the EXEC level, \$) the command REENTER. Or you could go into the Front Panel, and type SPJ3203, space, and G. If you do this, your BASIC program should still be in memory. You can do also do this if a sudden outburst of static electricity sends your system from BASIC into the Front Panel.

Our new address:

P o l y L e t t e r
3123 Oakcliff Industrial St.
Atlanta, GA 30340

Call us at:

(404) 458-9711 -- Mark Sutherland
(I usually work very late)
(404) 952-5355 -- Bob Bybee

NEWS FLASH -- Donald Moe has lowered the cost of his form input program, Form.OV (see review issue one), to \$250.00. His address is 5330 Manhattan Cir., Boulder CO 80303

*** LITTLE-KNOWN ERROR MESSAGES ***

Surely by now you have encountered many stubborn error messages from your Poly. It can really be frustrating when you type in a fifty-three character command line, only to have the simple-brained machine respond with "I CAN'T FIND THAT FILE," or other such nonsense. Of course it can find the file! Just because you misspelled it by one or two letters... is that such a big deal?

Well, if you think you've seen them all... if you're sure you've seen EVERY POSSIBLE error message... if you think there is NO ERROR MESSAGE ANYWHERE in the Poly that hasn't crossed your path yet... you are WRONG, disk-breath! Because PolyLetter has come across several error messages that only happen to users under very unusual conditions (such as an all-night session debugging mail-order programs). And here they are:

ERROR 803 - Power switch off, or plug out of socket!

ERROR 526 - Obscenity in input line... no recovery, data and disk destroyed!

ERROR 775 - Misspelled command

ERROR 649 - I don't like that file

DIO says: I can't read directory - door open or bagel caught in drive

DIO says: I won't read TRS-80 disks!

If you have encountered any other messages that your fellow PolyUsers should know about, please write us.

We have heard that Jade has a CAT phone modem on sale for something like \$145 or so. Their phone number is toll free at 800-421-5809 or inside Calif. 800-262-1710.

The purpose of PolyLetter is to create a forum of ideas for users of Poly equipment. One year (six issues) subscription, \$15.

Editor: Mark Sutherland
Associate Editor: Bob Bybee
PolyLetter
3123 Oakcliff Industrial St.
Atlanta, GA 30340
Phone... (404) 458-9711

PolyLetter is not affiliated with PolyMorphic Systems in any way.

PUT ME ON YOUR MAILING LIST:

Name _____
Business _____
Address _____
City/State _____ Z _____
Phone _____
System _____
Printer _____
Uses _____
Future uses _____

*** POLY - HINTS ***

PRINT-AT

We received a lot of tips this time from you PolyUsers, and we were somewhat surprised that one of your favorite subjects was the 'PRINT AT' statement found on some other computers (but not Poly). Several people sent us ways to make the Poly do a PRINT AT, which basically involves going to a certain place on the screen and printing something.

```
Lon Amick uses the PLOT
statement to do a PRINT AT. His
routine will move the cursor to any
position on the screen, and he
numbers the screen as 0 to 1023.
100 Y=47-INT(A/64)*3
110 X=2*(A-INT(A/64)*64)
120 IF Y<0 OR Y>47 THEN RETURN
130 PLOT X,Y,0\RETURN
```

continued

continued from page 7

```

G. R. Gamble also uses the
PLOT to move the cursor around
the screen, in this fashion:
100 DEF FNP(H,V)
110 N1=2*H-1 \ N2=48-(3*V-1)
120 PLOT N1,N2,0 \ RETURN \ FNEND

```

```

Norman Shimmel provided us
with his version of a PRINT AT.
He first memorizes the cursor, then
later replaces it.
100 REM save the cursor address
110 Z6=PEEK(3086)\Z7=PEEK(3087)
120 REM now move the cursor where
130 REM you want it and restore it
140 REM later with this statement:
150 POKE 3086,Z6\POKE 3087,Z7

```

```

PolyLetter has stolen ideas
from all of the folks above, and
come up with a complete PRINT AT
function:
10 DEF FNP$(A$,L)
15 IF L<6144 OR L>7167 THEN 75
20 REM store present cursor location
25 C1=PEEK(3086) \ C2=PEEK(3087)
30 REM install new cursor location
35 POKE 3086,L AND 255
40 POKE 3087,L/256
45 REM put up the string
50 PRINT A$,
55 REM remove new cursor
60 POKE PEEK(3086)+256*PEEK(3087),127
65 REM restore old cursor
70 POKE 3086,C1 \ POKE 3087,C2
75 RETURN "" \ FNEND

```

To call this function, use the format
 100 PRINT FNP\$(A\$,L), or
 200 PRINT FNP\$("This string",L),
 where L is the memory location on
 the screen to start printing. Use
 the screen chart in our last issue
 to help you find the right L.

FREEZING THE SCREEN

Norman also expanded on a
 subject we talked about before:
 Freezing part of the screen. Here
 is his complete list of POKES to
 affect the screen:

To Freeze:	POKE:
top 1/4	3103,25
top 1/2	3103,26
top 3/4	3103,27
nothing	3103,24

bottom 1/4	3102,27
bottom 1/2	3102,26
bpttom 3/4	3102,25
nothing	3102,28

Finally, Norman tells us how
 to freeze the entire screen:
 POKE 3108,201 will lock the screen,
 and POKE 3108,205 will return it to
 normal.

BASIC TIME-CLOCK

```

Dan DeForest reminds us that
the Poly real time clock has
more precision than the BASIC
TIME(X) function will let you see:
TIME(X) gives you the least
significant 2 bytes, totalling up to
2^16 60ths of a second. This is
only about 18 minutes. The two most
significant bytes can be accessed at
PEEK(3074) and PEEK(3075). Thus,
for the longest running clock you
can get, add up this mess:
10 T1=TIME(1)
20 T2=PEEK(3074)
30 T3=PEEK(3075)
40 REM T=clock value
50 T=T1+65536*(T2+256*T3)

```

This will give you a number
 that could be up to 10 digits
 long! If you need all that
 precision, better use a DIGITS 10
 command too.

DOUBLE SPACING

Ralph Kenyon is back, with a
 way to double space the printed
 output from your BASIC listings
 (or anything else). You must be
 using a printer that does not
 require special timing (nulls). To
 get double spaced output, simply

define a new printer that is exactly
 like your normal one with these
 exceptions:

Answer YES to the "Special
 Timing?" question. Then
 request one "null" after a line
 feed, and none after tab, return or
 backspace.

Finally, define the "null"
 character to be a line feed!
 (You may also want to change your
 "lines per page" specification to be
 half of what it was.)

PAGE TITLES

Ralph also found an undocumented feature of the PAGE command: you can give it a string, and that string will be printed at the top of your new page. Like so: \$PAGE This is a new page. Ralph says this trick works in Exec/78 and 83, and maybe others as well.

IMAGE

More on IMAGEing disks: Dan DeForest points out that it is possible to IMAGE from the system drive, even when it doesn't contain a system disk; IMAGE is smart enough to request that you give it a system

disk before it tries to return to Exec. Or if you prefer, Keith Whiteman tells us that you only need three files on any disk in order to IMAGE it successfully: Exec, Cfid, and Dfn1. You can copy these files onto your data disk, after first using POP, TOGGLE, TweakSys, or a similar program to make them un-system files. (Editor's note: Since system functions have been known to vary from one version of Exec to another, you may find you need files other than the three listed. If so, try Dfn2 or Dfn3.)

For their trouble, all of the folks mentioned above will receive a PolyMorphic T-shirt, along with PolyLetter's thanks.

A REVIEW OF TWO MACHINE LANGUAGE SORTS

Sorting in BASIC can be a real slow and inefficient process especially when you must first read records from a data file and then write a sorted index out to disk. How many times have you wished that the sort function was built into your operating system or BASIC as it is in some languages such as COBOL. We have received copies of two sortmerge utilities that do just that. These systems come from Advance Business Systems, Inc in Evansville, Indiana and from the Micro Mart in Siou Falls, South Dakota.

The system from Advance Business Systems has been developed by Dan DeForrest and is extremely versatile. Dan's sort may be called from BASIC to sort an array which resides in RAM. The syntax for the call is

```
10 Z=CALL("ssrt",0,0,0,MEM(A$(1)))
```

In the example, the overlay "ssrt" is called to sort the array, A\$. Since the sort routine uses a machine language version of the Shell Sort, it is extremely fast. An array of 1000 items (5 bytes each) will be sorted in 30 seconds while an array of 100 items will be sorted in 1.5 seconds. I have converted many of my old data base systems to take advantage of the "ssrt" overlay and have found the conversion to be relatively painless. For example, if you have installed your BASIC sort routine as a subroutine that you call from some part of your program then you merely replace the 'GOSUB' with a 'CALL' to "ssrt".

In using the "ssrt" overlay I have found one minor nuisance when using "ssrt" from within a BASIC program. That is that the entire array must be sorted. For example, if array A\$ is DIMensioned as DIM A\$(1000:5), the sort will sort 1000 elements of A\$. At present there is no way of specifying how many elements of A\$ are to be sorted. However, I am told that later versions of "ssrt" will allow the programmer to specify the number of elements to be sorted. Until then, there are many ways to get around the problem.

The other sort utility from Advance Business Systems is a sort-merge system that will read your data file and create a sorted index on disk using any key field or combination of key fields. The advantage

of this utility is that it will allow the programmer to sort extremely large files that would not fit in BASIC.

The system is called from EXEC and is given the parameters as illustrated below.

```
$ SORT <1>Data, <2>Index,L1000,=2,1-7,15-25,
```

This command would read the first 1000 (L) records of the data file 'Data' and create an index file on drive 2 called 'Index'. The index file would be sorted on the 1st through the 7th bytes and the 15th through the 25th byte. Consider the following example.

The data file called 'Data' looks like this :

FIELD	BYTES
Name	Bytes 1 through 15
Occupation	Bytes 16 through 25
Sex	Bytes 26 through 26
Age	Bytes 27 through 28

Record number	contents of record		
1	John Doe	Teacher	M25
2	Larry Smith	Salesman	M26
3	Jack Able	Teacher	M30
4	Alan Clark	Teacher	M24
5	Susan Jones	Writer	F23

Now suppose that you want the file sorted by occupation and within the occupation by age. No problem ! The call to the sort utility would look like this.

```
$ SORT 1 NAMES , 2 NAME-INDEX,L5,=2,16-25,27-28,
```

Given this command, the program will read the data file NAMES and create the index file, NAME-INDEX, using drive 2 as a scratch disk (more on that later). The newly created index file will be of the form 1st key, 2nd key,last key, relative position.

```
NAME-INDEX
Salesman 260002
Teacher 240004
Teacher 250001
Teacher 300003
Writer 230005
```

Notice that the program has sorted the teachers together and has further sorted them by age (24,25,30). The last four bytes of each index record indicate the relative position of the indicated record within the original file.

The scratch disk that was mentioned earlier is a disk that is designated for workspace by the system. If your file is too large to fit into RAM at one time, then the system will create smaller sorted indices on the scratch disk. After all of the scratch indices have been sorted and written to the scratch disk, the system will automatically merge the scratch indices into one big index. The disk directory of the scratch disk is not up- dated so the scratch indices are lost after they have been used and take up no disk space.

continued

The Advance Business Systems sort-merge is a well written piece of software and is well supported by the company. The system sells for \$500.00 and may be ordered from

ADVANCED BUSINESS SYSTEMS, INC
2117 DIVISION ST.
EVANSVILLE, IN 47714

We also received a sort-merge utility from The Micro Mart. The first positive impression that you get of this system is the documentation which is thorough and professionally done.

In general, the system accomplishes three functions.

1. TAG SORT OR MERGE SORT. File X is sorted and outputted as file Y. The output file may be on the same disk or on any other disk.
2. IN-PLACE SORT. The sorted file remains in the same location except that the records have been rewritten according to the sort parameters that the user has specified.
3. MERGE. Up to 25 ordered input files may be merged to a single output file.

The utility is invoked from EXEC by typing..

```
$ SORT/MERGE <optional parameters>
```

The program then displays a menu of the three basic functions.

```
ENTER OPERATION TYPE : 1. FOR SORT ONLY;  
                      2. FOR MERGE ONLY; OR  
                      3. SORT/MERGE;
```

The system then prompts the user according to the selection made.

The SORT/MERGE system has several powerful file-handling functions which make it extremely versatile.

1. SORT WITH DATA SELECTION. The sort may be requested to sort only those records with a specific data content. This could be used in a mail list data file to sort only those addresses in a specific state.
2. IN-PLACE SORTING UP TO AN "END-OF-DATA" INDICATOR. This feature is useful when you have files which contain unused records at the end of the file. The system, in this case, assumes that the first record is a pointer and disregards it in the sort. It sorts all records, in place, from the second record until the "END-OF-FILE" is reached. The records after "END-OF-FILE" are left unchanged.
3. SORT-MERGE-PARAMETERS. Sort merge fields may be specified with one to five field definitions. A field definition is of the form <position>, <length>, <mode>. The position indicates the starting column number within the record, the length indicates the number of columns to be considered after the starting position, and the mode indicates whether the field is to be sorted in ascending or descending order. This is a very useful tool. Consider the problem of sorting an invoice file where you want the output to be in ascending order by customer number with each customer's list of invoice numbers listed in descending order. This program handles the problem with ease.

The Micro Mart sort merge utility is a good buy at \$200.00.
It may be ordered from

THE MICRO MART
601 WISWALL PLACE
SIOUX FALLS, SD 57105

I N C O N C L U S I O N

The programmer who is armed with both of these sort-merge utilities could handle almost any sorting and/or merging problem with ease. We used both systems in conjunction with Donald Moe's Formatted entry system, which provides fixed length fields automatically, (see the first PolyLetter) with great success, producing efficient programs with a minimum of programming time.

Your comments regarding your experiences with the reviewed programs or any other software. If you have a program you would like reviewed, give me a call.

home (404) 241-6734
office (404) 768-4814 - closed Monday's

Ken Williams

PolyLetter

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FIRST CLASS

PolyLetter

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** POLYMORPHIC HAS NEW PRESIDENT **

We have received word that Richard P. Eastman is the new President and Chief Executive Officer of PolyMorphic Systems. Mr. Eastman has an MBA and a BS in marketing, and an extensive background in both management and marketing, having founded and managed several companies successfully. He is 42 years old, single and in excellent health. Also, he has received a dozen or more awards as an author and lecturer, and is an active pilot.

Don Gallant will continue as Chairman.

*** NEW WORDMASTER ***

Poly has released a new menu-driven WordMaster II. It includes an expanded Editor and Formatter, and is accessed through a menu system that makes it simple to use.

Some of the features are:

Formatter: Supports bold print, subscripts, multi-line headers and footers. You can use the default features so that many documents won't require formatting commands in the text file.

Editor: User-defined keys are automatically loaded when you edit a file. You can create your own "libraries" of escape key sequences. Interaction with the user is much improved, with messages such as "all of the file is not yet in memory." Many helpful hints are provided to assist in use of the global search and other advanced features.

The new WordMaster requires at least 48K, although some of the features may be used on a smaller system.

*** CP/M - AT LAST ***

In the first issue of PolyLetter we told you that Lifeboat Associates was about to drop the project of adapting CP/M for the PolyMorphic. (CP/M is a trademark of Digital Research, Inc.) In the second issue we confirmed our fears. This time we have some good news!!! PolyMorphic will soon release their own CP/M compatible operating system (maybe by the time you read this). Though incomplete, this is the information we have:

1) A kit will have to be installed by you or your dealer. Once the kit is installed, an 8813 will run either CP/M or the regular Poly operating system.

2) You will need at least 56K, part of which needs to be the new Poly 8K board.

3) The CPU and VTI board will need to be adapted (some re-wiring).

4) If you have DSDD drives then an additional kit will be needed to allow reading of SSSD disks.

5) Northstar CP/M disks and software can be read.

6) Nobody knows what the cost will be.

PolyMorphic told me that the package will be released within a week, but don't hold your breath. A week to Poly sometimes means a year or more. (as in the case of their BASIC, WordMaster, and new operating system. All due to be released FEB 1980). To purchase the kit, check with your dealer. If they don't have it PolyLetter will be stocking it. --Mark Sutherland

*** 16 BY 64 DISPLAY ***

A common objection to the Poly system is the 16 line, 64 characters per line screen display. Many other systems use a 24 by 80 screen, often with a video terminal such as the ADM-3 or IQ-120. PolyMorphic responds with this information:

The Poly screen is memory-mapped, which allows such features as the screen-oriented Editor and the graphics in BASIC. You lose these abilities in a display which is not memory mapped.

The video display used by Poly (which also handles interface with the keyboard) has been in production for many years. It has been tested through experience, and is part of a reliable system. Any changes involving the video system would require starting from scratch, as Poly manufactured and tested a new version. There would, no doubt, be bugs (as there are in the early versions of any new device).

An 80 by 24 display would take up more room in memory. This would force significant changes in the Editor, BASIC, and parts of the operating system.

Interestingly, IBM's new computer (the model 5120) uses a 16 by 64 display.

So, in spite of some demand, Poly is not currently planning a larger display.

*** THE FORMATTER ***

The first time we used the new Formatter we got some very strange-looking output.

**** BACK ISSUES ****

We have had a lot of requests for back issues of PolyLetter. If you would like one or more of the 3 back issues, the cost is \$3.00 each. or \$8.00 for all three (about the same as our subscription rate plus postage). The program disc that was free in the FEB-MAR issue has gone up to \$15.00 (inflation). The issues published so far are:

February-March6 pages (with Form.OV review, 88/MS tips, screen & printer hints, disk full of PolyMorphic utilities)

April-May6 pages (with famous Screen Display Chart, Disassembler review, Disk-Of-The-Month #1)

June-July12 pages (with BASIC machine calls, Global Search/Change, Print-At, Machine Lang. Sort reviews, Exec/83 "SAVE" patch, TI Programmer review, modem kits, and lots of BASIC tips)

*** FLAKY 16K MEMORY BOARDS ***

Poly produced a batch of 16K memory boards with a defect, which some of you may have encountered. The symptoms are: System goes into hyperspace unexpectedly (jumps into front panel, flashing screen, or just plain dead). The symptoms may happen at any time, but often occur after the system has been running long enough to develop some heat.

If this happens in your system, and you have any 16K boards, have a QUALIFIED service person check the 5 volt regulators on the 16K cards. Some of the early 16K boards had a solder mask (green coating) on the 5 volt regulator mounting holes. This prevented the mounting nuts from making contact with the card's ground system, and the regulator would not function properly. It is not necessary to unsolder the regulator to check for this problem, simply remove the regulator mounting nuts on the reverse side of the card.

*** UNDER THE DOUBLE INTEGRAL ***

Once upon a time (1/t) pretty little Polynomial was strolling across a field of vectors when she came to a singularly large matrix.

Now Polly was convergent and her mother had made it an absolute condition that she must never enter such an array without her brackets on. Polly, however, who had changed her variables that morning and was feeling particularly badly behaved, ignored this condition on the grounds that it was insufficient and made her way in and amongst the complex elements.

Rows and columns enveloped her on all sides. Tangents approached her surface. She became tensor and tensor. Quite suddenly, three branches of a hyperbola touched her at a single point. She oscillated violently, lost all sense of directrix and went completely divergent. As she was reaching a turning point, she tripped over a square root which was protruding from the erf and found herself, apparently alone, in a non-Euclidian space.

She was being watched, however. That smooth operator, Curly Pi, was lurking inner product. As his eyes devoured her curvilinear co-ordinates a singular expression crossed his face. "Was she still convergent?" he wondered. He decided to integrate improperly at once.

Hearing a vulgar fraction behind her Polly turned around and saw Curly Pi approaching with his power series extrapolated. She could see at once, by his degenerate conic and his dissipative terms, that he was bent on no good.

"Eureka!" she gasped.

"Ho, ho!" he said. "What a symmetric little polynomial you are. I can see you are bubbling over with secs."

"Oh, Sir" she protested, "Keep away from me. I have not got my brackets on."

"Calm yourself, my dear" said our suave operator, "your fears are purely imaginary."

"I, I" she thought, "perhaps

he is homogeneous then!"

"What order are you?" the brute demanded.

"Seventeen," replied Polly.

Curly leered. "I suppose you have never been operated on yet?"

"Of course not!" Polly cried indignantly. "I am absolutely convergent."

"Come, come," said Curly.

"Let us go to a decimal place I know and I will take you to the limit."

"Never!" gasped Polly.

"Exchlf!" he swore using the vilest oath he knew. His patience was gone. Cushing her over the coefficient with a log until she was powerless, Curly removed her discontinuities. He stared at her significant places and began smoothing her points of inflexion. Poor Polly. All was up. She felt his hand tending toward her asymptotic limit. Her convergence would soon be gone forever.

There was no mercy, for Curly was a heavyside operator.

He integrated by parts. He integrated by partial fractions. The complex beast even went all the way around and did a contour integration. What an indignity! To be multiply connected on her first integration! Curly went on operating until he was absolutely and completely orthogonal.

When Polly got home that evening, her mother noticed that she was truncated in several places. But it was too late to differentiate now. As the months went by, Polly increased monotonically. Finally she generated a small but pathological function which left surds all over the place until she was driven to distraction.

The moral of our sad story is this: if you want to keep your expressions convergent, never allow them a single degree of freedom!

origin unknown

donated by Harold C. Kinne, Ph.D.

*** MORE GOODIES FROM CHARLES ***

by Charles A. Thompson, Attorney
Suite 316, 6060 N. Central Expy
Dallas, Texas 75206

"LOG"/"NOLOG" is part of the printer-driver program, beginning with Printer/30 and later versions (generally, from Exec/78 on). If LOG is in effect, everything typed on the keyboard (as well as the usual printer output) will be printed by the printer. This works in BASIC and Exec. To use this feature, from Exec (\$ or \$\$ prompt), type "Printer LOG". To cancel, type "Printer NOLOG".

"boot" is used (with the system ENabled, \$\$ prompt) to reboot the system, and make another drive the system drive. To use, type "boot 2" (or 3, or whatever drive number you want to use). There must be a system disk in the drive to be booted. The booted drive remains the system drive until "boot" is used again or until the Load button is pressed. "boot" does not affect the printer-driver in Exec versions prior to 83. In Exec/83 "boot" does a complete reboot, including loading the default printer parameters.

"flip" is a command which causes all alphabetic input from the keyboard to be swapped: capitals become lower case, and lower case becomes caps. Give the command "flip" when in Exec. Only the letters A-Z and a-z are affected. "flip" remains in effect in BASIC and the Editor.

"fold" causes ALL alphabetic input to be capitals. Lower case letters a-z are converted to upper case. Type "flip" from Exec.

"FULL" will cancel either "flip" or "fold". In Exec, type "FULL".

I have a 16-page (and growing) "Addendum to the Poly Manuals." It contains many hidden goodies and techniques for the Poly 8810 and 8813. Copies are available

*** POLY LETTERS ***

Dear Mark:

Your PolyLetter is GREAT! I learned more about my 8813 by reading your PolyLetter than anything else I have read, since reading the manual.

Keep up the good work, and please keep the information coming.

Dr. Paul Hoffman, Jr.,
Bethesda, MD

Dear Mark:

I updated to a Poly 8813 dual disk. Is there any interest in Poly A00 BASIC and tape ASMB on EPROMS? It works great in the Poly 88. RAM was separated from program to do the above. Also have Electric Pencil on EPROM. My friend (8813) and I will submit stuff later.

Richard J. Jacobi, 913
Whann Avenue, McLean, VA 22101

Dear Mark:

I have a short modification of the real-time clock program in the June-July Issue. It initializes and prints the time.

```
10 POKE 3074,0 \ POKE 3075,0
20 PRINT CHR$(12)
30 T1=TIME(0)
40 T1=TIME(1)
50 T2=PEEK(3074)
60 T3=PEEK(3075)
70 T=T1+65536*(T2+256*T3)
80 H=INT(T/216000)
90 M=INT((T-H*216000)/3600)
100 S=INT((T-H*216000-M*3600)/60)
110 PLOT 40,20,1
120 IF S=S1 THEN 200
130 IF H=0 THEN 150
140 PRINT H," HRS",
150 IF M=0 THEN 170
160 PRINT M," MIN",
170 REM
180 IF S=0 THEN PRINT " ",
    \GOTO200
190 S1=S \ PRINT S," SEC ",
200 GOTO 40
Sam Black, Chicago, IL
```

from me for \$4.00 to cover handling, reproduction and mailing. Please write to the address at the top of the article.

*** FIRST LOOK AT NEW EDITOR ***

FLASH! PolyLetter received the new WordMaster II disk shortly before press time. It has some VERY nice features! For example:

Ctrl-Y will no longer abort the edit. You must type ESC Ctrl-X if you want to abort. You will get a message:

Edit aborted---FILE NOT UPDATED (Type REENTER to resume editing)

Ctrl-Y is now used if you select a special feature (such as global search) and change your mind... Ctrl-Y will bring you right back to the text you're editing.

ESC Ctrl-G is used to select a new global search-and-replace. This one prompts you as follows: Enter the search string:

Enter the replacement string: Validate each change? (Y or N):

When the question mark appears type one of the following: Ctrl-Y quits global search/replace, ESC skips this change and continues, RETURN makes remaining changes, <any key> does this change and continues.

If you want to do it the old way, ESC-colon is still there.

You will now be warned if you have a file that is too long to fit into memory all at one stroke:

WARNING: You can't move any further, but you still have more text to read from the disk. Use control-A to read some of it into memory.

The "user-defined" key function has been greatly expanded. When you edit a file, a set of escape-key definitions is automatically loaded. This set has many of the formatter commands, in the squiggly braces. You can create your own files of escape-key definitions, write them to the disc with ESC Ctrl-W, and load them in later with ESC Ctrl-L.



*** SPECIAL VIDEO CHARACTER SETS ***

If you have a need for special symbols on your Poly video screen, we have been informed of a dealer who will do it. Any characters or symbols that can be formed using a 7 by 9 dot matrix may be used.

Some of the possibilities are foreign alphabets, math or science symbols, or perhaps symbols to match special symbols on your printer.

For information, contact:

Mr. OSTERGARRD
Strandboulevarden 63, DK-2100
Copenhagen 0, Denmark.

*** NEW POLY PERSON ***

As part of their effort to increase dealer support and improve customer relations, Poly has added a new employee. Her name is Brenda Bradford (nickname Bebe), and her position is Customer Support and Public Relations. Bebe has already published the first edition of a newsletter for Poly dealers. Some of the information in this PolyLetter was lifted from that newsletter (with Bebe's blessings).

We at PolyLetter commend Poly for taking this action. We hope this will mark Poly's return to the Public Eye, with increased publicity and better communications between Poly, the dealers, and the users.

Unfortunately, we had to obtain a "bootleg" copy of the new WordMaster in order to write this review. Poly has not yet sent us the disk or the documentation. Come on, gang! We're trying to help you!

*** POLY ADS ***

FOR SALE:

8813/48K/3 dr \$4,000
 8813/48K/2 dr \$3,600
 88/MS Single Sided \$3,100
 Poly 88 system 16 \$1,000
 The Computer Center, 302 Commercial
 St., Waterloo, IA 50701 (319)
 232-9504

FOR SALE:

Poly 88 with BASIC on 12 EPROMS,
 plus 16K program memory, KB,
 monitor, tape recorder, tapes,
 games, utility programs, manuals,
 Price \$1500. Richard Jacobi, 913
 Whann Ave, McLean VA 22101

FOR SALE:

Poly 8813, 48K, 3 drives, KB,
 monitor, programers guide & disc
 \$3500 or make offer. Also Diablo
 2300 matrix printer. Barbara L. S.
 Royal, 3513 Linda Circle, Des
 Moines, IA 50310 (515) 255-3203.

WANT TO BUY:

Cash paid for working SSDD/MS. G.
 R. Gamble, 5615 N. W. 63rd Place,
 Des Moines, IA 50323 (515) 278-5332

PROGRAM WANTED:

A very good income tax program to
 check all tax returns. Merrill
 Cottingham, 814 Story St., Boone, IA
 50036 (515) 432-3100

PROGRAM WANTED:

Vehicle Maintenance Program wanted
 for Polymorphic 8813/2, 48K. Must
 be able to keep track of complete
 maintenance history of at least 20
 vehicles. Should "remind" when
 service is due. Bruce Buckley,
 McCormick Equipment Co., 11591
 Grooms Road, Cincinnati, OH 45242
 (513) 489-0100

SOFTWARE FOR SALE:

Disassembler: Produces re-entrant
 output file w/SYSTEM labels.
 \$12.50.
 Directory Rebuild: \$15.00
 D.C.Hayes MICROMODEM 100 terminal
 operating system: \$85.00.
 CopySelf DataDisks w/tailored Exec
 of only 3 sectors! \$15.00
 "Select Data File Records" general
 file utility: \$65.00 Ralph Kenyon,
 145-103 S. Budding Ave., Virginia
 Beach VA 23452 (804) 486-4370

The purpose of PolyLetter is
 to create a forum of
 ideas for users of Poly equipment.
 One year (six issues)
 subscription, \$15.

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 Associate Editor: Bob Bybee
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PolyLetter is not affiliated with
 PolyMorphic Systems in any way.

PUT ME ON YOUR MAILING LIST:

Name _____
 Business _____
 Address _____
 City/State _____ Z _____
 Phone _____
 System _____
 Printer _____
 Uses _____
 Future uses _____

*** NOT ONE BAD CHECK ***

PolyLetter now has over 200 sub-
 scribers. Of all the checks we
 recieved, not one has been bad.
 Obviously PolyPeople are good honest
 people with good checks. Thank you!

*** OOPS! SYSTEM DISK OUT ***

Have you ever pulled out your system
 disc, then accidently hit a return
 only to get an un-recoverable error?
 Try closing the door (with a system
 disk inside) and hit control-Y. You
 may be up and running without having
 to re-boot. This little trick works
 great on an 8813 with 5" drives, but
 it doesn't help much on systems
 with Mass Storage. -- Bob Bybee

*** DONALD MOE IS BACK - AGAIN ***

Donald Moe, one of our more active Poly dealers, who wrote the famous Form.OV form display, sent us a seven page report entitled "Don's Bag Of Tricks." PolyLetter will print some of these "Tricks" every issue:

```

REM Using Assembly code programs
  in string arrays
10 DIM A1$(1:5),A2$(1:4)
REM Put character at cursor location
20 A1$=CHR$(42)+CHR$(14)+CHR$(12)+
  CHR$(119)+CHR$(201)
30 A1=MEM(A2$)
REM -- Move cursor to new location
40 A2$=CHR$(34)+CHR$(14)+CHR$(12)+
  CHR$(201)
50 A2=MEM(A2$)
REM -- Put Character 127 (kill cur-
  sor) at cursor location
REM -- Z=CALL(A1,127,0,0,0)
REM
REM -- Move Cursor to X,Y
REM -- Z=CALL(A2,0,0,0,(16-Y)*64+X+
  6144)
(Editor's note: what Don is doing
here is to actually make a small
machine language program and put
it into a string array. The array
is run by using a CALL to its
memory location, either A1 or A2)

```

```

-----
REM -- Put message at X,Y
10 DEF FNZ(X,Y,M9$)
20 Z=CALL(A2,0,0,0,(16-Y)*64+X+6144)
25 PRINT M9$,
30 Z=CALL(A1,127,0,0,0)/RETURN 0
40 FNEND

```

```

-----
REM -- Turn off cursor at location
10 Z=CALL(A1,127,0,0,0)
(The above two tricks will only work
after the first program is run)

```

```

-----
REM -- Flush keyboard buffer
10 Z=CALL(1027)

```

```

-----
REM - Kill cursor after screen clear
10 PRINT CHR$(12) / POKE 6144,127

```

```

-----
REM -- Shut off screen display
10 POKE 3108,201

```

```

-----
REM -- Turn it back on
10 POKE 3108,205

```

More of Donald's Tricks next issue.

*** POLY 88 USERS, UNITE! ***

The first computer produced by PolyMorphic was called the Poly 88. It is still an excellent computer for uses where disk storage is not required, or the "good old" cassette-based 88 can be upgraded to use the Poly disk system.

At any rate, PolyLetter has received many letters from owners of the 88, across the country. We are always happy to hear from Poly owners, but we ought to acknowledge that we lean toward Poly's disk systems. The most active 88 user's group that we know of is run by Roger and Pat Lewis, 1477 Barrington, Suite 17, Los Angeles, CA 90025. They publish a newsletter and have a large assortment of cassette software available.

If you are interested in acquiring a Poly 88, they are still available from Poly. We understand the U. S. Navy recently purchased several 88's, in fact. The basic 88 has room for 5 cards in its cabinet, and has 2 unused ROM sockets on the CPU board which could be used for custom programs.

```

REM                                RENERR
REM Renumbering Error Locator program is written in
REM Poly BASIC C01L by Norman E. Shimmel - 6/20/80.
REM The BASIC program being examined by RENERR must
REM end with the RUN command (auto execute). It is
REM recommended that the ORIGINAL program be tested
REM rather than the RENUMBERED program since the
REM act of renumbering can cause the erroneous line
REM to assume a value that is valid, but incorrect.
REM Only the four key words GOTO, GOSUB, ELSE and
REM THEN along with the accompanying line numbers
REM are tested. ON GOSUB, and ON GOTO key words are
REM tested for the first occurring number only. The
REM program assumes that standard spacing, (one
REM space between words) has been used. It has not
REM been tested for programs lacking spaces between
REM words though it should work. If this program
REM does not detect the error, it probably occurred
REM in an ON GOTO or ON GOSUB line.
10 PRINT%0BI,CHR$(12),TAB(19),"Renumbering Error Locator"
20 DIM TS(1:200),FS(1:40),WS(4:5),NS(1:6),YS(1:1)
30 PRINT\INPUT"Does the program end with a RUN command? ",YS
40 PRINT\IF YS<"Y" THEN PRINT"Sorry, that's a must!"\GOTO 520
50 DATA "GOTO","THEN","ELSE","GOSUB"\MATREAD WS
60 INPUT"Enter BASIC program DISK and NAME : ",FS
70 FILE:2,LIST
80 FILE:4,OPEN,FS+ ".BS",INPUT
90 K=0
100 INPUT:4,TS
110 IF TS (<)"RUN" THEN K=K+1\GOTO 100
120 DIM L(K),L1(K)\MAT L,L1=0
130 FILE:4,REN
140 FOR N=1 TO K\INPUT:4,TS
150 IF LEFT$(TS,3)="REM" THEN L(N)=0\GOTO 170
160 L(N)=VAL(TS)
170 NEXT
180 PRINT\PRINT"Array of line numbers now exists.",
190 PRINT" ( 0's are REM lines )"\PRINT\PAUSE 120
200 FOR X=1 TO K\PRINT L(X),\NEXT\PRINT

```

```

210 PRINT\PRINT%,"Testing ",K," lines"
220 PRINT\PRINT"Test ...",
230 FILE:4,REM
240 FOR N=1 TO K\REM
250 INPUT:4,T$
260 PRINT N,
270 IF LEFT$(T$,3)=""REM" THEN 470
280 M=LEN(T$)
290 FOR F=1 TO 4\REM
300 IF F=4 THEN S=4 ELSE S=3
310 FOR R=1 TO M-S\REM
320 IF MID$(T$,R,R+S) (<) W$(F) THEN 450
330 REM
340 P=R+S
350 P=P+1\IF P>R+S+2 THEN 450
360 Q=ASC(T$,P)
370 IF Q<48 OR Q>57 THEN 350
380 N$=MID$(T$,P,P+5)
390 T=VAL(N$)\X=0
400 X=X+1\IF X>K THEN 420
410 IF L(X)=T THEN 450 ELSE 400
420 PRINT\PRINT\PRINT T$\L1(N)=L(N)
430 PRINT %,"Line",T," has NOT been found!"
440 PRINT\PRINT"Test ...",N,
450 NEXT\REM
460 NEXT\REM
470 NEXT\REM
480 FILE:4,CLOSE
490 IF MAX(L1)=0 THEN PRINT\PRINT"No error detected!"\GOTO 520
500 PRINT\PRINT\PRINT"Errors occurred in the following lines:"
510 MAT IF L1>0 THEN PRINT L1,
520 PRINT%\PRINT"Program has ended."
RUN

```

LINE COUNTER

WORD COUNTER

GROUP COUNTER

*** DISK OF THE MONTH ***

In our April-May issue we offered a DISK OF THE MONTH with some utility and fun programs on it. Here is what we are offering this month:

Szap.GO Written by PolyMorphic, this program is a MUST for every programmer. With it you can change information in the directory, delete or undelete files, reconstruct a directory, find lost files, lengthen files, look in memory, change data in files, edit fixed length files, change system to non-system and vice-versa and more. It allows you to actually SEE a disk or memory. Yes Super Zap is tricky, and you can screw up, but it is very, very powerfull! It was offered in the first issue, but we think it is so important we are offering it again.

POP.GO Called by many other names (BIT,etc), this program changes the system bit, a System file will become a non-system and vice-versa.

COPY-SUB-DIR.BS Will copy all files on a sub-directory to another disc or sub-directory. It creates a command file that can be edited before runing.

Cursor.GO This interesting program will change the cursor to any character. Written by Ralph Kenyon.

ROOM.GO Ever filled up a directory, and found out to late? This program will tell you how much room left in the directory.

POKE.BS A do-nothing crazy BASIC program using the arrow keys.

To order, send a check for \$15 to

PolyLetter
3123 Oakcliff Ind. St.
Atlanta, GA 30340.

Ask for the August Disc-Of-The-Month. Available SSSD 5" or DSDD 8" at \$5 extra. The disc will be shipped on a system disk, containing Exec-83.



*** POLYMORPHIC T-SHIRTS ***

That's right folks!! Now you can have your own PolyMorphic T-Shirt! The tan shirt is American made, featuring a 50/50 blend of Poly(ester)-Cotton. The distinctive "PolyMorphic" logo is screen-printed in brown ink. Available in Sm, Md, Lg, & XLg. Cost is \$6.00 ea. Send order to:

Unbelievable T-Shirt Offer
PolyLetter
3123 Oakcliff Ind. St.
Atlanta, GA 30340

E x t r a P O L Y a t i o n s

by Ralph Kenyon

Everyone knows the machine can only read binary numbers (strings of 0's and 1's like 01110110). Imagine trying to wade thru a page of that! Well, we condense the 0's and 1's to the digits 0 thru 9 and the letters A thru F. That's not much better, because we now have to wade thru a bunch of 21001875237CFE1CC2830C76C38B0C (An actual program!)

This is what is known as a machine language program. To remember these various combinations easier, a set of mnemonics were invented. MOV A,B; LXI H,18H; etc. A large program was written to convert these human readable codes into the machine readable codes. This program is called an "assembler" (because it assembles the machine code program). In the PolyMorphic Systems software, the program which is the assembler is called "Asmb.GO". The machine code program is sometimes called the object program. The programs written using the mnemonics are called assembly language programs.

To make the job of assemblers easier, there is a prescribed format for assembly language programs. There are four areas or "fields" used on each line of the program. Illustration:

```
<field 1> <field 2> <field 3> <field 4>
```

These fields are used for special purposes and must be kept in the right format. Here's what they mean.

<field 1>: Label field - This field has a label or is blank (It may contain a tab or spaces.) The label is used to refer to the line, similar to line numbers in BASIC, except that you don't have to have a label on every line. Example:
START

<field 2>: Opcode field - This field has the assembly language mnemonic op code, or instruction. Examples are MOV, JMP, RAR, ADD, CPI, etc. Example: (of both a label and an opcode)
START JMP
The label (if used) and the opcode must be separated by a space or a tab.

<field 3>: Argument field - This field has the arguments, or data, used by the opcode. Different opcodes require different arguments. When there are two arguments, they must be separated by a comma. There must be a space or a tab between the opcode and the arguments. Examples:
START JMP HERE
HERE MOV A,B
LXI H,0403H

<field 4>: Comment field - This field is reserved for comments. The assembler simply skips over it to find the end of the line. However!!! This is the most important field. Here is where you put your documentation. This field is marked by a semicolon ";". Example:
START JMP HERE ;Skip over the version data.
VERSION DB 'Program version 6',0 ;Program Identifier
HERE MVI A,'?' ;Load a ?
CALL WH1 ;Put it on the screen
LXI H,0403H ;Get the warm start address
PUSH H ;Put it on the stack for return.
;Note that any line beginning with a semicolon
;is completely ignored!

Well, now, lets write a quick and simple little program. Use the editor to create a text file that will be an assembly language program:

\$EDIT PROGRAM

First we open that system library file so we can get the system data.

```
REFS    SYSTEM
;"REFS" is a 'pseudo'-opcode which tells the assembler to open
;a library file.  SYSTEM is the name of the file to open.
```

```
REF     WHO     ;System input wormhole

;"REF" is a pseudo-opcode which tells the assembler to look up an
;item in the currently open REFS file.  WHO is what to look up.  WHO
;is the address of a routine which reads a character from the keyboard.
```

```
REF     WH1     ;System output wormhole

;WH1 is the address of a routine to output a character to the screen.
```

```
REF     Warm    ;Address to warm start system (goes to Exec)
REF     USER    ;Address of start of user memory
```

;Now we are going to use another pseudo-opcode to tell the assembler where to start the program counter.

```
ORG     USER    ;First instruction to be in user memory
```

;We also have to tell the assembler where to load and start the program. This is done with the "IDNT" pseudo-opcode.

```
IDNT    USER,USER    ;Load and start at user memory
```

;(some programs might start somewhere else.)
;When you List the disk in ENabled mode, you will see the La (Load Address) and Sa (Start Address) of machine code files. The data you put after IDNT will go into these entries of the disk directory.

;Now, we can get down to some actual programming (finally).

```
START  MVI     A,12    ;Put ASCII 12 (form feed) into the accumulator
        CALL    WH1    ;output it to the screen, clearing the screen
```

```
        MVI     A,'H'  ;Put ASCII H in the accumulator
;The single quote ' is used to tell the assembler that the stuff
;is to be treated as actual data instead of as labels or numbers.
```

```
        CALL    WH1    ;Put it on the screen
        MVI     A,'i'  ;Put ASCII i in the accumulator
        CALL    WH1    ;Put it on the screen
```

;Now we have cleared the screen and printed the word Hi

```
        MVI     A,'.'  ;And a period
        CALL    WH1    ;Out with it
```

```
CR      EQU     13     ;ASCII code for a carriage return
;The "EQU" pseudo-opcode assigns (EQUates) a value to a label,
;in this case, the value of a carriage return to the label CR.
```

```
        MVI     A,CR   ;Put a carriage return into the accumulator
        CALL    WH1    ;Out with this too
```

;Now we are on the next line of the screen

```
        JMP     Warm   ;Go back and warm start the system
; (turns control back to Exec)
```

;Suppose that instead of the JMP Warm, we do something else. Remove that JMP Warm statement, and try this:

```

ESC      EQU      1BH      ;ASCII code for Escape character

LOOP     CALL     WHO      ;Get a character from the keyboard
         CALL     WH1      ;Put it on the screen
         CPI      ESC      ;Was it an Escape?
         JNZ     LOOP     ;If no then go do another
         JMP     Warm     ;If it is escape, then we do this
         ;JMP To the warm start

```

;Now, we keep looping until an ESC is typed on the keyboard.

;Of course, there's one more administrative item.

;We have to tell the assembler we are done.

;For that, the pseudo-opcode "END" is used.

```

END      ;Cant have any more lines after this

```

Now, if you have been writing this with the editor, your program should look something like this:

```

REFS     SYSTEM
REF      WHO      ;System input wormhole
REF      WH1      ;System output wormhole
REF      Warm     ;Address to warm start system
REF      USER    ;Address of start of user memory

ORG      USER    ;First instruction to be in user memory

IDNT     USER,USER ;Load and start at user memory

START    MVI      A,12    ;Put ASCII 12 (form feed) into the accumulator
         CALL     WH1    ;output it to the screen, to clear the screen
         MVI      A,'H'  ;Put ASCII H in the accumulator
         CALL     WH1    ;Put it on the screen
         MVI      A,'i'  ;Put ASCII i in the accumulator
         CALL     WH1    ;Put it on the screen
;Now we have cleared the screen and printed the word Hi
         MVI      A,'.'  ;And a period
         CALL     WH1    ;Out with it

CR       EQU      13     ;ASCII code for a carriage return

         MVI      A,CR   ;Put a carriage return into the accum
         CALL     WH1    ;Out with this too

ESC      EQU      1BH    ;ASCII code for Escape character

LOOP     CALL     WHO    ;Get a character from the keyboard
         CALL     WH1    ;Put it on the screen
         CPI      ESC    ;Was it an Escape?
         JNZ     LOOP   ;If no then go do another
         JMP     Warm    ;If it is escape, then we do this

END

```

Now exit from the EDITOR with the usual ESC CTRL-E. When you list the disk, you should see the new file: PROGRAM.TX

The next one of those administrative steps is to assemble the program. (Reminder: the program you just created is usually called a source listing or an assembly language source program. The executable machine code is called an object file, and its name will end in .GO) To assemble the program, type:

```
$Asmb PROGRAM OBJECT
```

The first name after "Asmb" tells it the name of the input file. The second name tells Asmb what to call the output file. You should get the following display:

```
Macro-88 version 3.3 08/10/79
```

```
Hardcopy? (else video display) (Y or N):
```

```
...Type in a Y or a N. You will then get:
```

```
Full listing? (else errors only) (Y or N):
```

```
...Now type in a Y or a N. You will then get:
```

```
Symbol table printout? (Y or N):
```

```
...Again, type in a Y or a N. You will then get:
```

```
Pass one. ...and a bit later,
```

```
Pass two.
```

Finally, you will get an error count. (even if you picked N to all the above questions. If you picked Y, you will get some other stuff too.)

If all goes well, and if you followed the directions closely it should, you will now see the file: OBJECT.GO on the disk.

To run this program, type

```
$OBJECT
```

You should see the screen clear, the word "Hi." and the cursor on the next line. You should be able to type anything and have it put on the screen. Use ESC to get out of the program.

One of the most important steps in beginning to program in any language is to do a simple program, so you can get some output. This feedback is very important. It lets you know that you have done something right. It proves that you can crawl or walk and gives you the courage to believe you can soon run and even fly.

I would appreciate any feedback at all from you gentle readers about these articles. What kinds of stuff do you want to know? At what kind of levels? Etc.

I will be happy to answer any questions. I am at area code 804-486-4370, usually between 10:00 and 11:30 pm (Eastern time) Monday thru Friday.

PolyLetter

3123 OAKCLIFF IND. ST.
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PolyLetter



Issue #5

PUBLISHED BI-MONTHLY Oct.-Nov.-Dec. 1980

*** CP/M IS NOW AVAILABLE! ***

Poly has finally released CP/M, an operating system which will give Poly owners access to SCADS of software. The cost of adding CP/M to Poly is extremely reasonable, too!

On a new Poly, factory-installed CP/M will start at \$200. (It will be an option, not something every new Poly will have from now on.) Kits to upgrade your present system to CP/M will be available from dealers, who will do the hardware modifications for you. It involves several changes, and we can't say what the dealers will want for this service. If you don't have a dealer handy, Poly says you can send them your system and they will upgrade it for you. That will cost \$250 and up, depending on your system. Contact Poly for details: (805) 967-0468.

Poly CP/M will require an 8K memory card (one of Poly's new ones which is especially designed for CP/M), plus a 5" SSSD drive and controller to read North Star CP/M disks.

The price you pay for CP/M will include the necessary disks, the seven (7) CP/M manuals, Poly's CP/M manual, and the software license. (CP/M is a trademark of Digital Research, Inc.)

*** MEGABYTES AND MEGABYTES ***

Poly expects to release a Hard Disk unit in mid-November. It will look much like the MS, with one of the 8" floppies replaced by an 8" Winchester drive. The unit will include a single 8" floppy for backup, and it will be able to read your present 8" disks. Price has not been released. We have a picture of it on this issue's photo page.

*** POLYLETTER WANTS PROGRAMS ***

Do you write programs?

PolyLetter is looking for two types of programs: Short ones for the Disk-Of-The-Month, and full-blown packages for sale through PolyLetter.

The Disk-Of-The-Month contains short, handy or fun programs for distribution to other Poly People at low cost. No royalties are paid to the writer for programs used on the Disk-Of-The-Month, but you can put your company name all over the documentation if you like!

We are also looking for other program packages, such as accounting programs, sorts, inventory control, or other sophisticated applications programs. These will be sold thru PolyLetter, and arrangements will be made with the individual programmer for royalties. PolyLetter will act as an advertising and distribution medium.

Sounds good? Contact PolyLetter for details. We can swap programs by phone if you are equipped with a modem.

This issue is our biggest one yet! We hope you enjoy it, and that you will forgive us for delaying our next issue until January. We're going to start publishing on the "normal" bi-monthly schedule, so our next issue will be January-February, 1981. Your subscriptions are still good for the full number of issues you paid for.

In our next edition, look for: Murphy's Laws of computer programming; update on Hard Disks; the workings of Command Files; details of Exec/90 and BASIC C02; Index of PolyLetter/1980; and whatever YOU decide to send us!

*** THE C. A. THOMPSON METHOD ***

by Charles A. Thompson, Attorney
Suite 316, 616 N. Central Expy
Dallas, Texas 75206

This time I have a few BASIC hints for you.

ASC is documented in the manual as providing the ASCII value of the first character of a string. For example,

```
>A$="PolyLetter"
>PRINT ASC(A$)
80
```

BASIC versions C01L and forward will also return the value of ANY character of the string, as:

```
>A$="PolyLetter"
>PRINT ASC(A$,4)
121
```

which gives the ASCII value of the fourth character directly.

CALL can be used to access machine language overlays from BASIC. The format is

```
Z=CALL("Name",A,B,D,H)
```

where Name is the name of an overlay on the system disk, named Name.OV, and the variables A,B,D and H are passed to the overlay in registers A, BC, DE and HL respectively. A must be between 0 and 255, the others must be between 0 and 65535. On exit from the overlay, Z will be given whatever was in the HL register pair.

In some versions of BASIC you can also invoke the Printer Driver with this trick, like so:

```
Z=CALL("Prnt")
```

This will cause the Printer Driver to start execution, and you will be able to manually enter any changes you want to make to your printer specs. (This does not appear to work in BASIC version C01L and Exec/83.)

*** PROGRAMMING THE 8085 ***

The Poly Macro-88 assembler ("Asmb.GO") can be used to write programs for the new 8085 microprocessor. All it takes is adding two instructions to the basic 8080 instruction set, and the macro capability of Asmb.GO makes this easy. The two instructions are RIM, code 20 hex, and SIM, code 30 hex. You can define macros to explain these instructions to the Macro-88 assembler, as follows:

```
RIM      MACRO
#L      DB      20H
        ENDM
```

```
SIM      MACRO
#L      DB      30H
        ENDM
```

Now the instructions RIM and SIM may be used in your program at will. Adding these instructions effectively turns Macro-88 into a cross-assembler for the 8085.

EVAL is undocumented and un-debugged! But it is there, starting with the BASIC on Exec/77. Try this in your BASIC:

```
10 DIM S$(1:100)
20 INPUT S$
30 PRINT EVAL(S$)
40 GOTO 20
```

Enter some EXPRESSIONS into this, such as 4*A+SQRT(B)/PI. EVAL is supposed to interpret expressions containing operators and variables. It appears to work, but Bob Martin at PolyMorphic warns that it's not documented. In Bob's words, "If an undocumented command takes you to lunch, YOU did it, and not Poly." So have fun, but don't run your payroll through this particular feature.

I have a 16-page (and growing) "Addendum to the Poly Manuals." It contains many hidden goodies and techniques for the Poly 8810 and 8813. Copies are available from me for \$4.00 to cover handling, reproduction and mailing. Please write to the address at the top of the article.

*** PRINTER POKES ***

When in BASIC, you can POKE some locations to change the printer driver specifications, or to make the printer think it's not where it is! Here are the magic locations and what they contain.

12786: Line position (LPOS). Holds the line number where the printer thinks it is on your page. Varies from 0 to LPP minus one (see LPP below). Counts up.

12787: Character position (CPOS). Holds the print head position on the current line. Varies from 0 to CPL minus one (see CPL below). Counts up.

12788: Lines per page (LPP). The number of lines per page you specified when you defined the printer (usually 66).

12789: Characters per line (CPL). The number of characters the printer is allowed to put on a line (usually 80 or 132).

12790: Top margin (TOP). The line number where the first printing on the page will occur. Counts in the same way as LPOS, so if PEEK(12790)=0, you will start printing on the first line of the page.

12791: Bottom margin (BOTTOM). The line number where the last printing on the page will occur. Counts in the same way as LPOS and TOP, so if PEEK(12791) equals PEEK(12788) minus one, your last line of printing will be on the last line of the page.

12792: Left edge offset (EDGE). The number of spaces on the left side of the page which will be blank (usually 0).

Any of these parameter may be altered with POKE statements. For example, to make the printer think it is now using short paper on which you can only fit 40 lines, do a POKE 12788,40 in your program. To set a top margin of five lines, POKE 12790,4.

These POKES are for Exec/83 only. Your mileage may vary.

*** NEW OPERATING SYSTEM ***

The new operating system, Exec/90, has been released. It includes a faster BASIC (version C02), a Printer Driver with hardware handshaking, and the new Editor/Formatter we described last issue. Your old BASIC programs will work with no changes!

PolyLetter is reviewing the new operating system, and we expect to be distributing it shortly. Call PolyLetter for prices!

*** NEW LETTER-QUALITY PRINTER ***

Radio Shack has introduced a new daisywheel printer which represents a price breakthrough. It is Qume-like, but slower, at 43 cps, but as fast as the Diablo. It is of Radio Shack manufacture, and uses Qume printwheels in addition to Radio Shack's own. There is a 90-day warranty on the printer. Price: \$1950. An additional \$200 for form tractor. The unit uses a parallel interface, so it is not directly compatible with the Poly.

Stuart Woods

The purpose of PolyLetter is to create a forum of ideas for users of Poly equipment. One year (six issues) subscription, \$15.

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Uses _____
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*** DECIMEXAMAL ***

by Mike Stanford

There's a very simple way to convert decimal to hex. It's so simple that I'm sure it must be well known, but I haven't read about it yet, and perhaps you haven't either. All you need is a pocket calculator that can divide, and the little table below.

0	0.0		8	0.5
1	0.0625		9	0.5625
2	0.125	(10)	A	0.625
3	0.1875	(11)	B	0.6875
4	0.25	(12)	C	0.75
5	0.3125	(13)	D	0.8125
6	0.375	(14)	E	0.375
7	0.4375	(15)	F	0.9375

Now, say you want to convert 39722 decimal to hex. First enter this number on your calculator, and divide it by 16. This seems to give an answer of 2482.625. Find the decimal part of the number in the table above; .625 is labeled A, so A is the least significant digit of our answer. Now, divide the 2482.625 by 16. On my calculator this comes to 155.16406.

The decimal part of this number lies between labels 2 and 3 in the table above. It is of course always the lower label that we are interested in, so the second place digit in our answer is 2. Now we divide the calculator display by 16 again, to get, if I'm not mistaken, 9.69775.

The decimal part of this, .69775, lies between labels B and C in the table, so the third digit of the answer is B. The most significant digit of the answer is of course 9, but just to prove the method, let's do one final division by 16, giving an answer of 0.606. On the table this lies between labels 9 and A, giving again a most significant digit of 9. Final answer is 9B2A.

We can check this the usual way by working it back to decimal in the reverse order. Enter the 9, multiply by 16 (=144), add the B (11) (=155), multiply by 16 (=2480), add the 2 (=2482), multiply by 16 (=39712), and add the A (10), to get our final answer of 39722, which is what we started with.

*** USING EXEC FROM BASIC ***

Here are two ways to get Exec stuff done from BASIC... The first way uses the user-programmable interrupt character. We tell Exec the character to watch for, and also where to go when it gets one. Using this method, you can type a control-E at any time (even while the program is running) and get into Exec. Typing a CON (continue) command will resume exactly where you left BASIC.

```

10 POKE 11673,5 \ REM put
    control-E into UCHR
20 POKE 11669,54 \ POKE 11670,4
    \ REM put Iexec into UVEC
30 REM Now, we can type control-E
    at any time and we will be put
    instantly into Exec.
40 REM Before leaving BASIC, be
    sure to do this:
50 POKE 11673,0 \ REM disable this
    feature (safety!)

```

The second way is to put some commands in the keyboard buffer using OUT 0. The EXEC command tells BASIC to go to Exec, then your command(s) are executed. The first CON tells Exec to return to BASIC. The second CON tells BASIC to resume, after the STOP statement. The whole process begins when the STOP is executed.

```

10 R$=CHR$(13) \ REM carriage
    return
20 OUT 0,"EXEC"+R$+"DISPLAY"+R$+
    "CON"+R$+"CON"+R$
30 REM Put your commands to Exec
    instead of "DISPLAY" command
40 STOP
50 PRINT "BASIC resumes by itself!"

```

If there is any chance that the commands you give Exec will result in errors (if you're going to try and delete a file, and the file may not exist, for instance) then you should put a ? in front of each command.

Like this:

```

60 OUT 0,"EXEC"+R$+"?DEL OLD-DATA"+
    R$+"CON"+R$+"CON"+R$

```

Even if OLD-DATA doesn't exist, processing will continue and your applications program won't bomb.

*** HOW BASIC STORES VARIABLES ***

-- String Variables --

The BASIC function MEM will give you the memory location where a string begins in memory. But here are a few more details about that string:

Let M=MEM(A\$). The length of A\$ is stored as two bytes in locations M-1 and M-2, M-2 holding the least significant byte. If LEN(A\$)=6, then PEEK(M-1)=0 and PEEK(M-2)=6. You can determine LEN(A\$) by:

LEN(A\$)=PEEK(M-1)+ 256*PEEK(M-2)

You can also POKE numbers into these locations to change the length of A\$. The characters in A\$ are stored in locations M, M+1, M+2, and so on. When your program starts, all the locations reserved for A\$ are zeroed, but they will acquire values as your program defines A\$. It is NOT safe to assume that all values in locations past PEEK(M+LEN(A\$)-1) are zero. They may not be.

If you are using an array A\$, beware! The function MEM(A\$) will return you the location of the HIGHEST entry in A\$, not the first entry: MEM(A\$)=MEM(A\$(N)) if A\$ is dimensioned DIM A\$(N:m). If you want MEM(A\$(1)), you have to ask for it specifically.

-- Numeric Variables --

BASIC stores numbers in this fashion: Let M=MEM(A). Then PEEK(M) is the exponent of the number, A. PEEK(M)=65 if A is between 1 and 9; 66 if A is between 10 and 99, etc. If A is between .1 and .9, the exponent is 63, and so on down. If A is negative, PEEK(M) will have 128 added to it. In each case, the exponent is determined by the power of 10 which is nearest to A.

The digits of A are stored in memory backwards from M. PEEK(M-1) holds the least significant two digits of A; PEEK(M-2) has the next two digits, and on down, until PEEK(M-4) holds the most significant two digits. (This applies only for 8-digit precision. If you are using more or less precision with a DIGITS

*** STUF FOR SALE ***

The MicroStuf Company of Atlanta, dealers in North Star computers and software, has some items which are suitable for PolyMorphic or other S-100 computers.

- SSSD 5" drives: \$250
- DSDD 5" drives: \$699
- Disk drive cabinet- holds two 5" drives and has power supply and cables: \$125
- 32K dynamic memory with parity check (can also be used for 24K): \$699
- LA36 Decwriter terminal: \$875
- GE Terminet 300A printer (with tractor feed): \$695
- Televideo TVI 912 video terminal (as is): \$395
- 4108 Dynamic memory chips (tested and burned in): make offer!

Contact Bob Strong, The Microstuf Co., PO Box 33337, Decatur GA 30033, or call (404) 491-3787.

*** ADDRESS AND PHONE ***

FOR SALE: A compact "core address book" indexed on last names, designed for individuals and small businesses. Searches on any keyword (name, address, etc). Controlled Dump allows output based on any field, or any two fields combined by AND, OR, and NOT. Alphabetize, locate phone numbers, print mailing labels, or organize your business prospect list.

For complete details, send name, address, and \$1 to cover costs, to Frank Stearns, Linear Systems, PO Box 261, Cheney WA 99004. Or call (509) 235-6019. SourceMail: TCB203.

command, you will have a different number of bytes for each variable.)

Each byte contains two digits. To get the most significant digit of A, we would need INT(PEEK(M-4)/256). Each digit is stored in Binary-Coded-Decimal (BCD) format, and takes four bits.

Finally, if A is zero, all bytes (including the exponent) will be zero.

*** OPERATE YOUR POLY REMOTELY ***

Now, you can leave your Poly at work and use it at home... or anywhere else. With a video terminal (or another Poly), a pair of modems, and the Smyrna Software Remote System, you can operate nearly every function of the Poly by remote control.

The Remote System ties your Poly's printer-port into a modem. Using an auto-answer modem, you can leave the computer unattended, dial into it from anywhere over standard phone lines, and then operate the system totally by phone! You can run programs, access any disk drive, delete or pack, type, list, or almost anything else.

Your total cost for such a system is much less than buying another system. For example:

Video Terminal	\$700
Acoustic Modem	\$170
Auto-Answer Modem	\$300

So for \$1170 (estimated) plus the cost of the Remote System package, you have almost doubled the usefulness of your \$10,000 computer system. Add this to the fact that your salesman can use the computer while on the road... add the fact that your programmers can work 25 hours a day now... You can easily see how the Remote System will pay for itself in a short time.

The Remote System includes the following programs:

- Remsys the main operating program
- Config sets up parameters for different types of terminals
- Local disconnects the Remote System
- CHAT allows the remote and on-site users to converse

Also included is the Special Modem Cable, needed to connect a modem to the printer port with NO hardware changes inside the Poly!

To order, send a check for \$175 to Smyrna Software, 2345 Cobb Parkway SE, Box Q-15, Smyrna GA 30080. Order the RS-3 Remote System. Software is supplied on 5"

*** TI 820 PRINTER INTERFACE ***

I was recently asked to connect a Texas Instruments printer, model 820, to a Poly 8813. The interface procedure was a bit unusual, so I thought it might be interesting to those of you with similar units.

The TI 820 is totally programmable from keys on a small front panel keyboard. You can enter the baud rate, form size, characters per inch, and many other options thru this keyboard, and they are memorized by the printer. The options I selected were: 9600 baud (the highest rate that Poly can use), Half-Duplex, hard-wire (as opposed to operating thru a modem).

The TI 820 does not use the Clear-To-Send line to tell the computer when it is ready to receive characters. Instead, you can choose from a number of options that will indicate a "busy" condition, none of which are standard as far as Poly is concerned! So, a little trickery was necessary.

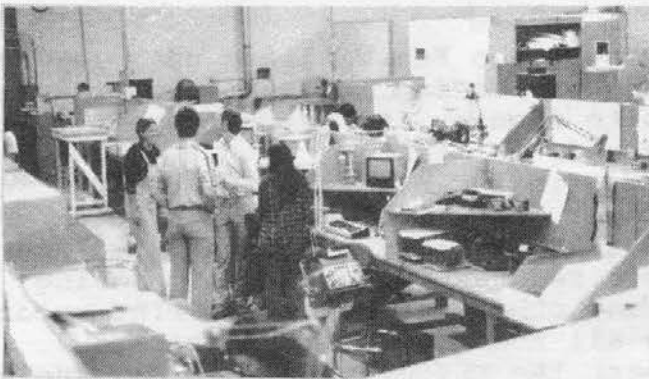
One of the "busy" options uses a line of the RS-232 interface called Second Channel Enable. This line can be used to indicate a "busy" condition and provide the proper handshaking for Poly's printer interface. This requires rewiring the cable, so that pin 11 from the TI goes to pin 4 of the Poly connector. Pin 4 from the TI is not used.

After this modification, the TI 820 worked very well. It is capable of 150 characters per second, bi-directional printing, and accepts tab and form feed commands, making it a very high speed dot-matrix printer. My only criticism is that ALL the commands are entered on a tiny keyboard, including common things like setting the top of form. This command requires the rather lengthy key sequence of ESCAPE, 5, C/R.

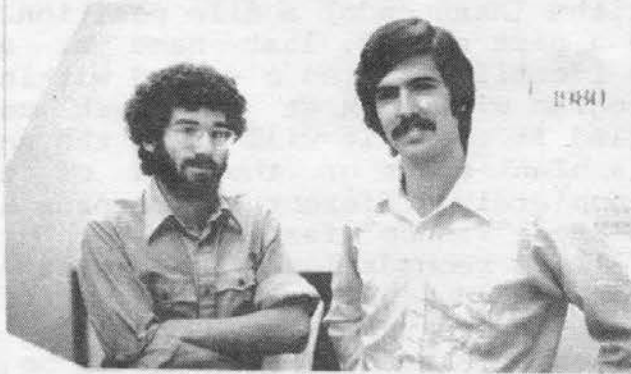
Bob Bybee

SSSD disk, or add \$5 for 8" DSDD.

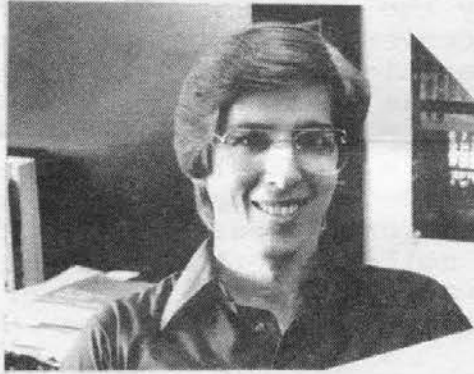
If you want to use your Poly as an intelligent video terminal, we still offer the MK-1 Modem Kit at \$100.



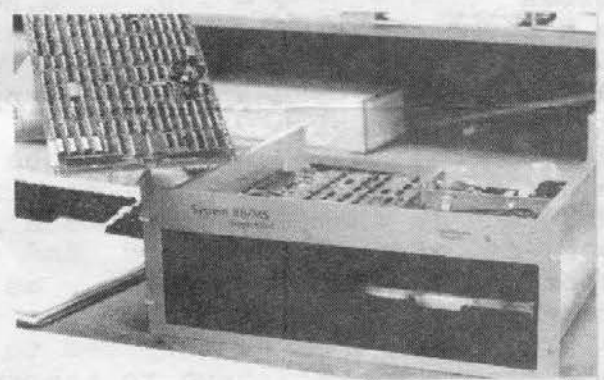
As advertised in BusinessWeek



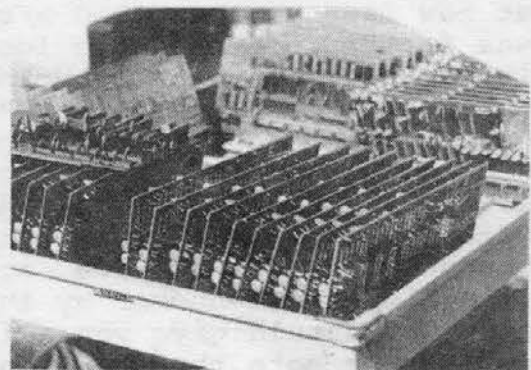
1984



As advertised in BusinessWeek



Photos by Mark Sutherland
Taken at PolyMorphic Systems



**** HASH CODING ****

During a Poly meeting a couple of months ago Ken Williams gave a talk about a file management process called Hash Coding. I had heard the term before, but until then I never could quite figure it out. Hopefully, I will pass along something of what I learned.

Hash Coding is a method of storing, finding and deleting records in a disk file. The process has the advantage that records may be found very quickly without having to keep an index or pointers. The best feature of hash coding is that you can add or delete records without ever having to reorganize or sort the file. Unlike many other methods of storing records on a disk, Hash Coding does not require all the records to be packed.

The secret to the system is to convert the KEY element into a "unique value", then using a mathematical algorithm (hash code) a file position is derived from that value. The key can be a part number, last name or any part of a record that can be used to identify or find a record within a file. To find a record in a file the program will look at the hash code derived position first. If it doesn't find it there it will go to the next record and so forth until it finds it, a blank space or the end of the file. Because the "unique value" is completely different the records are scattered throughout the file in a simulated "random" fashion.

For example: Let's assume we have a file 12 records long. We want to PLACE a record in the file using the part number "123" as the key. First, let's find a "unique value" for that number. There are many ways to do that. One might be to add the numbers together, another method would be to add their ASCII values. In this example let's try the latter. The ASCII values of 49+50+51 = 150. The next step is to convert that "unique value" to a number that will be the "starting search" position of that record in the file. It will have to be greater than zero, but less than the size of our file. Ken uses a the MOD function to convert our "unique value" into the "start search" position. His formula is $P = \text{MOD}(X, N)$. P = "start search" Position, $X = 150$ (unique value), $N = 12$ (max in file). So $P = \text{MOD}(150, 12) = 6$. We will now try to place our record in position #6. If the space in that location has a record in it (a collision) then we will look at the next record and so forth until we find an empty record or a record that has been identified as a deleted record. The record can be put there.

You use the same system to find or delete a record, but remember the same algorithm will have to be incorporated throughout the system. One point to remember, when you delete a record be sure to somehow mark it as deleted so when searching for a match the program will not mistake a delete for an "empty".

In summary, the Hash Coding system tells you where to start looking for a record. The algorithm points you in the right direction and then you scan down the file until the record is found. In messing around with the system I was surprised at how fast you can find a record. On the average the hash code system was faster and took less looks than the usual binary search. To work effectively the file needs to be bigger than needed, the bigger the better (a possible disadvantage). The trick to a really good hash coding system is to devise a method of creating a very unique "unique value", that is, the more unusual and different the value of your key is, the faster the program will find the records. Sometimes part numbers (key field) end up looking (and adding up to) about the same number, therefore causing them to become bunched up in the same area of the file. Try something crazy like dividing the first number by the last times 15 plus the ASCII value of the third. That should give you a fairly unique number.

Ken's program follows, please note that he identifies blank records as "_____". If you have any more questions feel free to call or write. By the way, this month's DISK-OF-THE-MONTH will contain a working sample of this program. Good Luck --- Mark Sutherland

```

REM          H A S H      C O D I N G
REM          Routine designed by Ken Williams
REM
REM          Before running this program, the data file TEST must
REM          be built. That can be accomplished by running the
REM          program BUILD-FILE.BS .
REM
60 DIM N1$(1:50),N2$(1:50),N3$(1:50),A$(1:15),O$(1:15),Q$(1:1)
70 FILE:6,OPEN," 2 TEST",INOUT
REM
REM          error messages
REM
80 N1$="That number has already been used"
90 N2$="Sorry, there is no more room in the file."
100 N3$="was not found in file."
REM
REM          N=Number of records in file
REM
REM          N should be larger than the actual number of records
REM          in the file
REM
170 N=50\ REM -- sample length of file
180 PRINTCHR$(12)\PRINT\PRINT
190 PRINT" 1.....Enter a new number."
200 PRINT" 2.....Find old number."
210 PRINT" 3.....Delete file."\PRINT\PRINT
220 INPUT" Type a selection..",Q$
230 IF Q$ "3" OR Q$ "1" THEN 180 ELSE Q=VAL(Q$)
240 ON Q GOTO 1000,290,1170
REM
REM -----
REM          S U B R O U T I N E   T O   F I N D   A N   I T E M
REM          get the part number
REM
290 INPUT"Enter the part number, <M>enu...",O$
300 IFO$="M" THEN 180
REM
REM          initialize error indicator (E3) and accumulator (T1)
REM          T1 = accumulator
REM          E3 error flag
350 T1,E3=0
REM
REM          compute the sum of the ASCII values
REM
390 GOSUB 3120
REM
REM          open the file and read the part number at the
REM          T2 position.
REM
440 FILE:6,POS,T2 \ READ:6,A,A$
REM
REM          In this case the "___" was used to indicate
REM          a vacant record. Any group of characters will
REM          work. If you encountered an unused record
REM          before finding your part number then it does not
REM          exist in the file and you print the appropriate error
REM          message, set error flag, and return.
REM
530 IF LEFT$(A$,4)="___" THEN PRINT O$," ",N3$ GOTO 290
REM
REM          in this case A$=O$ so you have found your part number.
REM          The position to read is T2. Return.

```

```

REM
580 IF A$=O$ THEN PRINT"Found ",A$," Amount ",A GOTO290
REM      If you have gotten this far then you have encountered
REM      a collision. That is, another part number was in the
REM      spot you expected to find A$ in. Now you increment T2
REM      by 1. However, if T2 is now greater than the number
REM      of records in your file then set T2=1 and start at the
REM      first record.
REM
660 T2=T2+1 \ IF T2=N THEN T2=1
REM
REM      If T2=T3 then you have come back to the beginning
REM      so print the error message, close the file and return.
REM
710 IF T2=T3 THEN PRINT O$," ",N3$ \ GOTO 820
REM
REM      Go back and look at the next record.
REM
750 GOTO 440
REM
REM      Set error flag, close file, wait for user to
REM      see your error message and return.
REM      Error flag (E1) tells the calling routine that
REM      the item was not found, etc.
REM
820 E3=1 \ PRINT \ WAIT \ GOTO 290
REM
REM      A D D I N G   A N   I T E M
REM
REM      When you use the routine to add a number to the file
REM      there are some differences.
REM
REM      1. If you find a match then the item is already in the
REM      file. Error message N1$
REM      2. If you find an unused record then write your record in
REM      that location.
REM      3. If you find a record that has been flagged as being
REM      deleted then write your new record in that location.
REM      It is important that when you delete a record that
REM      you do not write it back as an unused record because
REM      this could prevent your searches from going far enough.
REM      In this case we mark a deleted record as "0000".
REM      An unused record is marked "_____"
REM      If T2=T3 then there is no more room in your file.
REM      -----
REM      Ken wrote the above portion of this program. I added
REM      the bottom to help demonstrate the process of adding
REM      or deleting records --- Mark Sutherland
REM      -----
REM      ----- ADD A RECORD -----
1000 INPUT"Enter Part number, <M>enu      : ",O$
1010 IF O$="M" THEN 180
1020 INPUT"Enter Amount : ",A \ REM --- A = sample data
1030 COSUB 3120 \ REM ---calculate hash code
1040 FILE:6,POS,T2\INPUT:6,X,A$
1050 IF A$=O$ THEN PRINT N1$\GOTO1000 \ REM - Already in file
1060 IF A$="_____" OR A$="0000" THEN PRINT:6,A," ",O$\GOTO1110
1070 T2=T2+1
1080 IF T2=T3 THEN PRINT N2$ \ GOTO1000
1090 IF T2=N THEN T2=1
1100 GOTO 1040
1110 PRINT"Recorded...."\GOTO 1000

```

```

REM ----- DELETE A RECORD -----
1170 INPUT"Enter number to delete, <M>enu..",O$
1180 IF O$="M" THEN 180
1190 GOSUB 3120 \ REM --- Figure hash code
1200 GOSUB 1240 \ REM --- Find record
1210 IF E3=1 THEN PRINT:6,0," ","0000"\GOTO1230
1220 PRINT O$," ",N3$\GOTO1170
1230 PRINTA$," is deleted"\GOTO 1170
REM
REM ---- GOSUB to find record and tell status
REM ---- E3=1 record found
REM ---- E3=2 record not found
REM ---- E3=3 record not found, file full
REM
1240 E3=0 \ IF T2>N THEN T2=1
1250 FILE:6,POS,T2 \ INPUT:6,A,A$
1260 IF A$=O$ THEN E3=1 \ RETURN
1270 IF A$=" " THEN E3=2 \ RETURN
1280 T2=T2+1
1290 IF T2=T3 THEN E3=3 \ RETURN
1300 GOTO 1240
REM
REM ---- Gosub to caculate hash code -----
REM
3120 T1=0
3130 FOR I=1 TO LEN(O$) \ T1=T1+ASC(O$,I) \ NEXT
3140 T2=MOD(T1,N)+1 \ REM -- Algorithm
3150 T3=T2 \ REM -- Remember where we started
3160 RETURN
REM
REM
REM
REM
REM ----- BUILD-FILE program -----
REM   this program will build the data file necessary
REM   to run the HASH-CODING demonstration program.
REM   On the DISC-OF-THE-BI-MONTH this data file has
REM   already been created.
REM
5000 DIM A$(1:10)
5010 FILE:6,OPEN," 2 TEST",OUT
5020 FOR X=1 TO 50
5030 PRINT:6,0," " NEXT
5040 FILE:6,CLOSE
5050 OUT0,"SCR"+CHR$(13)+"LOAD <?>HASH-CODING"+CHR$(13)

```

*** NEW POLY OPERATING SYSTEM ***

That's right, the new operating system is now available. It's called Exec/90 and it includes the new EDITOR and BASIC. We tested the new BASIC and on programs with a lot of GOTO's and GOSUB's it ran TWICE as fast as the BASIC COLL (on Exec/83). All your Exec/83 programs will run as-is except the ones that were SAVEFed (they will need to be RUNed and SAVEed first to get them back in ASCII format). The price: A mere \$75.00 from PolyLetter.

Dear Mark,

FANTASTIC! Sign me up.
 As you might guess, I'm a bit starved for communication with people who have the same systems.
 Is there a BASIC compiler available for the Poly? How about Pascal, FORTRAN, RPG, or COBOL? I was thinking of getting another type of system, due to the lack of CP/M compatibility, but after reading your newsletters I may hold off a while and see what develops.

Gary Petrowski
 Escondido, CA

SOFTWARE SHOP

DISASSEMBLER

Single density, requires 32K. Outputs to a file. Produces re-assemblable formatted output with SYSTEM labels. Special PolyLetter Price: \$12.50. Includes documentation and support programs. (An unprogrammers dream.)

DIRECTORY REBUILD

Allows rebuilding a crashed directory or adding directory files to recover data past the indexed area. CAUTION: this program is almost as risky as SuperZap! Documentation includes description of recovery process using Rebuild and Szap together. Price \$15.00

D.C.HAYES MICROMODEM 100 TERMINAL OPERATING SYSTEM

Available for Exec/78 and for Exec/83 (specify which). Includes file send and receive capability and ability to log incoming text on the printer. Single Density, minimum memory (Overlay and driver in system memory). Price: \$85.00. Includes documentation and installation instructions.

COPYSELF DATADISKS

Disks have a tailored operating system of only 3 sectors! Will copy itself to another drive. Single density, two or more drives, minimum memory. Ideal for use with non-system packages or data backup files. Price: \$15.00 (Buy one... it reproduces itself.)

SELECT DATA FILE RECORDS

This program is a general file utility program which searches an input data file of fixed length records for a specified character string. Use it to pick out all names beginning with a given letter, or to pick out everyone in a data list with a particular code. (Pick out overdue accounts, Pick out records with blanks (incomplete data) in a particular field, Pick out inventory items out of stock, Pick out individuals with particular qualifications.)

The output is versatile... you can select a copy of the data record containing the match, or just its position in the file. You may also choose to have the output sent to the Screen, the printer or to an output data file. The output files are compatible with BASIC. It's FAST! (No more waiting 20 minutes for BASIC.) This does 340 (200 character) records in under 30 seconds.

Price: \$65.00

BASIC EDITOR

With this machine language program you can now edit your BASIC program IN BASIC. Stays in top of memory, to edit a line type LIST (line number) then control-delete. Your arrow keys will allow you to browse through the line, adding, changing or deleting characters. You can even change the line number!!

Price: \$45.00

IBM PRINTER DRIVER

A printer driver for the Trendata/IBM printers using correspondence code. This program interfaces properly with Exec/83 and the new Exec/90, using the Setup and CUSTOM commands. The new WordMaster will operate thru it. Only 2 sectors long.

Price: \$40.00

PRINTER SPOOLER

Tired of waiting for your printer to print, before using your Poly for something else? This program will allow your printer to run while the computer returns to you! It reserves a portion of memory (user defineable) as a large buffer for the printer. Using 8K as a buffer, and a 300 baud

printer, you can start using your Poly 5 minutes before the printer is finished! Works on Exec/83 and Printer/36, and at any baud rate.

Price: \$54.68

MODEM KIT

This is one of our most popular programs. It connects the Poly printer-port to a standard modem, and allows you to communicate with other Polys or time-sharing systems. You can transmit and receive machine language programs or text files. The kit includes two programs (one for machine code transmissions and one for text), complete instructions, and the special modem cable which connects the Poly printer-port to a modem WITHOUT hardware changes inside the Poly cabinet.

Price: \$100

MACHINE LANGUAGE SORT/MERGE PACKAGE

This is one of the sort packages that was written about in the June issue of PolyLetter. Written by Advanced Business Systems, it originally sold for \$500. Through a special agreement with the authors, PolyLetter is now offering the package for only \$250 (available to end users only at that price). A package of 5 machine language programs and overlays.

1. ssrt.OV Will sort an array in BASIC. Unbelievably fast. Simplify programming, call it Z=CALL("ssrt",0,0,0,MEM(D\$)) ssrt will also sort a file in place or create a new file and then automatically reload a BASIC program.
2. Mrge.OV Merge two files into one file. Very, very fast!
3. SORT.GO This one is extremely powerful. You can read in the whole file or parts of a file and then do a tag sort defining any part of the file as the key field. The output is put into a new file with the last 4 bytes of each record containing the position number of that record in the original file. The new file can be binary searched in BASIC. In a test, we read a file with 1000 records, sorted a 30 byte key field and created a new file with 1000, 34 byte sorted records (our key plus the position number) in 1 min 45 seconds. In BASIC the same test took 17 minutes.

Price for the complete package \$250
Documentation \$10

EASF diskettes - 5" SSSD, Box of 10 \$36.00

To order programs or disks, fill out the form below. Unfortunately, we do not have any 5" DSDD disks or programs. For 8" disks please add \$4.00.

You must complete the following information:

Operating system (Exec ?) _____

Circle type of disk. 5" SSSD, 8" SSDD or 8" DSDD

Amount of memory? _____

Type of system? _____

Program	Price	Name	Address	City, St.	Zip
1. _____	_____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____	_____
Total	_____	Phone	_____	Wk	_____

All programs carry a money-back guarantee. All programs are copyrighted and are not to be redistributed. Programs are internally coded with your account number.

Send check to:
PolyLetter
3123 Oakcliff Ind. St.
Atlanta, GA. 30340

*** SORT-TIP ***

For those of you who do a lot of sorting, printing, and manipulation of data files, maybe you share a problem that a fellow reader had. He was reading in the key-fields in a non-sorted disc file then sorting them along with the position number of each record in that file. Once he had the key-fields and position numbers sorted, he would then read and print the records in order. He was using two different arrays, one to hold the position number and the other the key-field. In the sort, when a switch on the key was made, he would also switch the position number, thus keeping the position number together with the key field. The problem was that with all that switching the sort programs were slow and took a lot of memory. One

solution is to add the position number to the end of the string to be sorted. That way only one array is needed. The technique is called Tag-sorting. It's much faster and should use less memory. Here it is:

```
10 FOR I=1 TO 10
20 FILE:4,POS,I
30 INPUT:4,Y$,X,X,X,X,X
40 A$(I)=Y$+STR$(I,%#4I)
50 NEXT
55 GOSUB ???? REM -- SORT A$
REM
REM - PRINT IT IN ORDER
60 FOR I=1 TO 10
70 Y$=RIGHT$(A$(I),4)
80 FILE:4,POS,VAL(Y$)
85 INPUT:4,Y$,A,B,C,D,E,F
90 PRINT Y$,A,B,C,D,E,F
95 NEXT
```

ASCII CHART

	00	NUL	128)	80	32)	20	SP	64)	40	@	96)	60	
Start of Heading	01	SOH	129)	81	33)	21	!	65)	41	A	97)	61	
Start of Text	02	STX	130)	82	34)	22	"	66)	42	B	98)	62	
End of Text	03	ETX	131)	83	35)	23	#	67)	43	C	99)	63	
End of Transmission	04	EOT	132)	84	36)	24	\$	68)	44	D	100)	64	
Enquiry	05	ENQ	133)	85	37)	25	%	69)	45	E	101)	65	
Acknowledge	06	ACK	134)	86	38)	26	&	70)	46	F	102)	66	
Bell	07	BEL	135)	87	39)	27	'	71)	47	G	103)	67	
Back Space	08	BS	136)	88	40)	28	(72)	48	H	104)	68	
Horizontal tab	09	HT	137)	89	41)	29)	73)	49	I	105)	69	
Line feed	10)	0A	138)	8A	42)	2A	*	74)	4A	J	106)	6A	
Vertical tab	11)	0B	139)	8B	43)	2B	+	75)	4B	K	107)	6B	
Form feed	12)	0C	140)	8C	44)	2C	,	76)	4C	L	108)	6C	
Carriage return	13)	0D	141)	8D	45)	2D	-	77)	4D	M	109)	6D	
Shift out	14)	0E	142)	8E	46)	2E	.	78)	4E	N	110)	6E	
Shift in	15)	0F	143)	8F	47)	2F	/	79)	4F	O	111)	6F	
Data link escape	16)	10	DLE	144)	90	48)	30	0	80)	50	P	112)	70
Up arrow key	17)	11	DC1	145)	91	49)	31	1	81)	51	Q	113)	71
Down arrow key	18)	12	DC2	146)	92	50)	32	2	82)	52	R	114)	72
Right arrow key	19)	13	DC3	147)	93	51)	33	3	83)	53	S	115)	73
Left arrow key	20)	14	DC4	148)	94	52)	34	4	84)	54	T	116)	74
Neg. acknowledge	21)	15	NAK	149)	95	53)	35	5	85)	55	U	117)	75
Synchronous idle	22)	16	SYN	150)	96	54)	36	6	86)	56	V	118)	76
End trans. block	23)	17	ETB	160)	97	55)	37	7	87)	57	W	119)	77
Cancel	24)	18	CAN	161)	98	56)	38	8	88)	58	X	120)	78
End of medium	25)	19	EM	162)	99	57)	39	9	89)	59	Y	121)	79
Substitute	26)	1A	SUB	163)	9A	58)	3A	:	90)	5A	Z	122)	7A
Escape	27)	1B	ESC	164)	9B	59)	3B	;	91)	5B		123)	7B
File separator	28)	1C	FS	165)	9C	60)	3C	,	92)	5C		124)	7C
Group separator	29)	1D	GS	166)	9D	61)	3D	=	93)	5D		125)	7D
Record separator	30)	1E	RS	167)	9E	62)	3E	.	94)	5E		126)	7E
Unit separator	31)	1F	US	168)	9F	63)	3F	?	95)	5F		127)	7F

table prepared by Mike Stanford

*** DISK OF THE BI MONTH ***

We have a big disk this month. All of the programs listed in various articles in this issue of PolyLetter are on this month's disk.

A-SORT.BS A working demo of a quick-sort (page 10).

HASH-CODE-DEMO.BS The hash-coding program listed on pages 10 and 11. A few changes and you have a working data base.

TEST.DT The data file needed to run the HASH-CODE-DEMO.BS above.

SUPER-FAST-SORT.BS The sort program on page 8. Written by Terry Castel.

BIORHYTHM.BS We got this one from Dr. Sparti. Run your biorhythm for 30, 60, or 90 days. Plots your emotional, physical, mental, and average cycles on a printer. Tells you when to stay home. A lot of fun for friends or parties.

BANNER.BS Write a message on your printer either horizontally or vertically in any size (that will fit on your printer). Will print your message in huge letters using characters of your choice or using the characters of the message.

DATE.OV Returns today's date in a string. If it doesn't know today's date it will ask you. Called from a basic program. Real handy if you run several programs throughout the day and they all need to know the date.

To order, send a check for \$15 to:

PolyLetter
3123 Oakcliff Ind. St.
Atlanta, GA 30340

Ask for the November Disk-Of-The-Bi-Month. Available on SSSD 5" or DSDD 8" at \$5.00 extra.

*** A-SORT GOOF UP ***

In the February (was free) DISC-OF-THE-MONTH I included an extra program called A-SORT. It wasn't advertised, but I included it on the disc because I thought some of the recipients of the disc would enjoy seeing how a quick-sort works. The program, originally called Q-SORT but later changed to A-SORT (the "A" was much easier to type than "Q"), was not really meant to run as-is. A few Poly-users wrote me, wondering why it didn't run. Here it is again -- working this time. It will be on this month's DISC-OF-THE-BI-MONTH.

```

10 C1,S1=0
30 INPUT"Number to sort ",N
35 DIM S$(N:14),S9(20,2),T$(1:25)
36 RANDOMIZE
40 FOR X=1 TO N
50 S$(X)=STR$(RND(99),%#3I)
60 NEXT \ PRINT CHR$(12)
65 MAT PRINT S$, \ PRINT \ PRINT
80 REM ----- S$ IS TO BE SORTED
85 PRINT "Sorting..."
90 I1=1 \ J1=N \ REM N=# of items
100 I=I1 \ J=J1 \ S=-1
110 IF S$(I)<=S$(J) THEN 140
120 T$=S$(I) \ S$(I)=S$(J) \ S$(J)=T$
130 S=SGN(-S)
140 IF S=1 THEN I=I+1 ELSE J=J-1
150 IF I<J THEN 110
160 IF I+1=J1 THEN 180
170 P=P+1 \ S9(P,1)=I+1 \ S9(P,2)=J1
180 J1=I-1
190 IF I1<J1 THEN 100
200 IF P=0 THEN 230
210 I1=S9(P,1) \ J1=S9(P,2) \ P=P-1
220 GOTO 100
230 PRINT \ PRINT \ MAT PRINT S$, \ PRINT

```

*** MISSED RALPHS ARTICLE ***

Ralph Kenyon sent us a four page article as a continuation of his ExtraPOLYations series. We didn't have enough space in this issue, but we will run it in the January. It is his second tutorial on assembly programming. Sorry we couldn't get it to you this month. If you would like an advanced copy, send us a SASE and we'll send you a copy.

*** MARK RESIGNS AT POLYLETTER ***

Dear Subscribers:

I am resigning as publisher for PolyLetter. It's simply a matter of time. Started basically as a part-time project, PolyLetter has grown from 6 to 16 pages, and it now takes more time than I have. I need to get back to my bread-winning business - Flash Graphic (custom printed T-shirts). Bob Bybee, our associate editor, will take over as publisher. Bob has been an invaluable asset to PolyLetter. He has written articles and programs, answered letters, and worked night and day. I am positive he will perform excellently as PolyLetter's new publisher.

Your subscriptions will remain in effect. The address will also stay the same, for the time being.

Mark Sutherland



*** POLYPEOPLE CALL IT QUILTS ***

Two PolyLetter subscribers have called it quits. They are fed up with PolyMorphics poor customer service and lack of software. Dr. Dempsey and Paul Hoffman are both selling their equipment and buying new computers. If you would like to buy some more Poly stuff, Dr. Dempsey has a 8813 with 64K and a DSD Mass Storage unit. His address is: 203 Franklin Ave, Scranton PA. 18503, Ph.(342-2680). Paul Hoffman has a 8813 (We're not sure of the configuration). His address: 10401 Old Georgetown, Bethesda MD 20014, Ph.(301) 530-4700. Make them a offer.

Version 1 manuals: Exec 4D/BASIC A01

Version 2 manuals: Exec 73/BASIC B08
Exec 76/BASIC B08C
Exec 78/BASIC C00

Version 3 manuals: Exec 80/BASIC C00
Exec 83/BASIC C01

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