EDITOR'S COLUMN
by Stanley M. Sokolow, B.A., D.D.S.

With this issue we begin our 4th full year of operation as the Processor Technology Users Society. The old timers will recall that the group began in August, 1977, while Processor Technology Corporation was still a rising star in the microcomputer heavens. In 1979, when PTC plunged so suddenly from the sky into the abyss, Sol owners were caught by surprise and began to mildly panic. I personally felt that continuation of the users organization was essential and have worked to the best of my ability in precious spare time to keep it going.

It isn't easy, let me tell you. In addition to the praise and help of members, we get our share of aside remarks. People want gold for the price of garbage, and at times it gets me down. (This is one of those moments.) So I want to clarify what Proteus is and is not.

Proteus is not a tax-exempt, non-profit corporation. I personally don't want to spend the time or money on the red tape necessary to do this, and I don't want the hassles of complying with the regulations. Proteus would best be called a benevolent proprietorship. We employ a half-time person, Jane Delno, who is our secretary, production staff, office manager, bookkeeper, etc., etc., all rolled into one. I am the self-proclaimed Executive Director, resident technical expert, historian, editor, publisher, financier, marketing director, director of new product development, etc. And that's it as far as official staff goes. We have many contributing helpers, such as Chuck Athey who has done a lot of work cleaning up the Processor Tech Source code we are distributing, Lewis Moseley who runs the cassette library, and so on. But the bulk of the work falls on Jane and myself.

As you can see from the degrees after my name above, I am a dentist (specifically an orthodontist) by profession. The B.A. is in math, obtained at a time when computer science degrees were non-existent. I was heavily involved with computers at UCLA as an undergraduate, ran the UCLA computer club for a while, and was accepted into the Stanford Computer Science Ph.D. program, but changed my career plans to go to Stanford. Nevertheless, I have kept up with computers.

Proteus, for me is somewhat of a personal commitment. The little time I have that is not involved in the demands of my orthodontic practice and the needs of my family, I spend on Proteus. But my practice needs have grown since I started the newsletter, and they have been exceptionally heavy for many months now.

I have chosen to do things slowly but properly, rather than fast and sloppily. Those who are waiting anxiously for things from Proteus should understand this. But realize that if I didn't keep pushing for such things as access to the source code, and so on, it wouldn't have happened at all. I regret that everything takes so long, but I am cautious about what I farm out to people who offer help and to whom it goes. It is difficult to control an organization run by mail. I welcome help from anyone in the San Francisco Bay area, and would really like to find someone in a 25 mile radius of my office who is willing, interested, and capable of becoming a co-worker. If you fit the description, please contact me.

Regarding the PTC source code, we are beginning to ship copies of the Helios disks. The CP/M disks will be ready soon. The cassette will take somewhat longer because of the number of people they must go through. I promise they are coming as fast as I can push the software through the steps. If everyone were willing to pay several times as much as we are charging, it would be easy to hire someone to do all of the work and get them out fast. But I have chosen this compromise between speed and cost.

Half of the delay since we first announced agreement to be licensed to distribute the code was due to PTC's negotiations with a major creditor. We were kept in the dark by PTC on legal advice. What we finally got needed some work to verify its validity and repair some problems discovered. Even as late as a week ago, I obtained a newly discovered list of more recent versions of certain programs. The delay is resulting in improvement, so hang in there.

Well, I could go on, but it's probably too much already, so bye for now. See you at the 6th West Coast Computer Faire, where we can discuss some of these things.

Sincerely,

Stanley M. Sokolow

See Us at the Computer Faire
April 3-5

PROTEUS GOES TO COMPUTER FAIRE

Once again Proteus will be represented at the West Coast Computer Faire, April 3-5, Friday thru Sunday. The Faire management has kindly donated Booth 1448, near the food concession.

We also have a meeting room Sunday morning 10 am to 12 noon, before the Sunday exhibit hall hours. If you have not yet made plans to attend the Faire, you should reconsider. It is going to be the largest ever, and it should be fun to see what new products are coming up.

The Faire will be in Brooks Hall and the Civic Auditorium, San Francisco, California. It will be heavily advertised on a nation-wide scale. Even IBM will be there again. Tickets are $10 for the entire show. Contact Computer Faire, 333 Swett Road, Woodside, CA 94062, telephone (415) 851-7075.
NEW PRODUCT NOTES

While it is not a brand new item, you should give consideration to the Epson MX line of printers if you want a quality printer at an excellent price. We've used the MX-40 for over 6 months now and have only high regard for this printer. It is relatively quiet, 80 characters-per-second, bidirectional, parallel I/O port board designed to simplify interfacing with intelligent hard disk or tape controllers such as the BASF, Burroughs, Century Data, CDC, Corvus, IMI, Kennedy, Memory, MicroPac, Prima, Sales Associates, etc. Includes EPROM for driver routines, RAM buffers. Single-port version $325 quantity 1, dual-port $350. Teletek, 9767 Business Park Drive, Sacramento, CA 95827, telephone (916) 361-1777.

It only requires the usual simple jumper modification of the Sol BASIC, the best part is the low price, $95 including the assembled module, two programmed PROMs, and documentation. Add $3 handling and California residents add 6% sales tax. We have received a module for evaluation, so we know it is a real product, not just a pre-development advertising campaign to test the demand.

There's lots of life left in the ol' Sol yet.

Teletek announces the I2 Intelligent Interface, a bidirectional serial I/O port board designed to simplify interfacing with intelligent hard disk or tape controllers such as the BASF, Burroughs, Century Data, CDC, Corvus, IMI, Kennedy, Memorex, MicroPac, Prima, Sales Associates, etc. Includes EPROM for driver routines, RAM buffers. Single-port version $325 quantity 1, dual-port $350. Teletek, 9767 Business Park Drive, Sacramento, CA 95827, telephone (916) 361-1777.

SoftTech Microsystems announces release of UCSD p-System version 1.0 and release of a compatible BASIC compiler. The new version offers consolidation of features found in the UCSD Pascal system off-shoots (Apple, WD MicroEngine, 4110). Upward compatibility is maintained. Allows compilation of larger programs, automatic swapping of operating system segments, user control of segment residency optional, multi-tasking primitives, unlimited number of units, and segments, code sharing, command I/O redirection, etc. Also available are additional cross-assemblers, for 6809 & 286. The BASIC compiler includes long variable support, a special variable data type, and various special purpose procedures. Includes files, virtual arrays, compatibility with UCSD Pascal & Fortran-77.

Proteus now has listings of the PROMs on the Processor Technology nKRA RAM board (64KRA). Buyers of the Advanced Computer Products special who need to burn their own PROM's can get a photocopy of the listing from Proteus for $2. It's not elegant, but readable.

McGraw-Hill, publisher of Byte magazine and "onComputing," announced plans to change "onComputing" to a monthly called "Popular Computing" and make a major push into the "expoding" field of microcomputing. It will aim at the Technician and non-technical readers who are expected to be the mass's buying the emerging low-cost microcomputers. "onComputing" circulates 70,000, Popular Computing will be direct-mail advertised to 1,500,000 prospective subscribers. Getting BIG.

I wonder how long it will be before every house comes with an RS-232 interface?

SOL SYSTEMS AVAILABLE

Don Cooper of FD Systems, Inc., has SOL systems available for purchase, these include: Helios III systems and SOLs with North Star drives. Contact: Don Cooper P.O. Drawer P Stafford, Texas 77477.
Repairing your Sol

by Joe Maguire

Even if you have never held a soldering iron or screwdriver in your hands before, you can learn something from this article. I'll give you some tips for trouble shooting a sick Sol that require no use of test equipment. Most failures can be found with nothing other than a Volt/Ohm meter. There may even be a few tips for the experienced technician.

When I first heard of FTC was announced in these pages some time ago, the groans of concerned owners could be heard around the world. The most concern centered around required repairs. Where to go for getting those inevitable breakdowns fixed? It may be that you need no farther than the nearest table top.

I have been building and repairing Solos since FTC first started promoting them. I think I can say that I have seen just about every problem that can happen under that pretty blue cover. With just two exceptions, every sick Sol I have encountered could be fixed in the average hobbiest's workshop. (Of those two, one had been hit by lightning and the other was my first experience with a malfunctioning 16KRA memory board - ugh! More about that later)

First Step: Preventative Maintenance

You know the old saying about an ounce of prevention. Well, change that to: for a few minutes time may be worth many, many dollars! The big bugaboo of the Sol is heat. More failures can be traced to this than any other cause. The cooling fan in the Sol is just marginal at best so regular cleaning is required.

CLEANING

One of the best cleaning tools is a paint brush. Get one about one inch wide. Get a second brush with stiffer bristles for tough spots. The best choice is a brush used for waxing. Any kind of wax melted on the keyboard, the transistors or the wood sides but the rest is fair game. Let the parts thoroughly air dry after the wash. Do not use the heat dry cycle as this can warp the circuit board. If the metal chassis parts are badly tarnished I use some Ajax or Comet cleaner with a kitchen scouring pad. To keep these parts from tarnishing again, I wipe on some floor wax after I assemble everything. Don't wax until everything is assembled otherwise some poor electrical contacts might result.

TIGHTENING

Heat causes strange things to happen in the Sol. I have found, over the years, that the ICs can just pop out of the socket due to flexing of the circuit board caused by temperature cycles. Each time the Sol is turned on, used for awhile and turned off, it undergoes one temperature cycle. If you use your Sol often as I do mine, it doesn't take long for an IC to come loose. About once a month I take off the covers and push all the ICs back in their sockets. I do this for all the boards installed in the backplane too as well as the seating of the boards in their 8-100 connectors. It's amazing how many lills this simple procedure has cured. I'd call it the number one trouble shooting technique. Don't forget to check connectors and cables while you're at it. Bad cable connections are notorious particularly ones subject to movement such as the video or printer cables.

Second Step. Isolate

OK, in spite of all the preventative maintenance, once in awhile the Sol just quits. What do we do then? Let's take care of the obvious things first. Has the AC power cord become unplugged? Is it a broken cord? These are the problems that the spotted by the eyes. A fan isn't running or that there's no raster on the TV monitor. Fuses usually don't blow without reason and if you discover this you most likely have a power supply problem. But my experience has shown that about 99% of the troubles are due to IC failures. The job is to find them.

Certain types of memory failures, particularly static, can result in the memory board seizing the address or data bus and rendering the computer completely dead. Removing the offending board from its socket (while power is applied) restores normal operation. The next step in isolation is to remove all boards except the personality module. (power off, of course) Now what do you have? Can you get the SOL08 package on the SOL03 command panel? If yes, the trouble may be with a board you took out and not the Sol itself. I'll get to boards later but let's try the worst has happened and our trusty Sol is still working.

The isolation process should proceed in a systematic manner. The most logical place to start is with the power supply. A volt meter is required for this step and things will be much easier if you have the proper schematic diagrams. Measure the voltages at the main power connector (J18) on the Sol PC board. Are they within 1% of normal? If so, move on. If not, you most likely have found the problem, the power supply. One check of the power supply remains, however. It is possible for a short circuit on the main PC to cause the power supply to appear dead. To isolate this turn off the computer and disconnect the power connector from the PC board at J18. Now turn the power back on and check the voltages at the connector. If the required voltage is not there, you have isolated the problem. If the voltages are now back to normal, we go on to the next step.

In the next issue: Tackling the Sol PC board.
A Wild Card option for the Memory Search command of North Star's Monitor 5.2
Contributed by Joe Maguire

As promised, here is the wild card search routine for patching into North Star's Monitor program. This routine will work with any release after 5.0 but is shown assembled for the standard origin of release 5.2. As I indicated in my previous article on adding a Hex Math routine, this one will fit into some of the extra file space reserved on the disk for EMNMON. The listing is self-explanatory but perhaps a few examples will help.

SM C888-C7FF C3,*,*,C9 Finds C3 and C9 separated by 3 bytes.
SM 2D08,FF FF "t","h",","s" Finds "this", "thus", "those" etc.
SM 188-49151 C2,*,*,175T Searches for CD,2A,AP only.
SM 8-FFFF *,*,* Will print out 65536 addresses.

; Wild Card option for Memory Search
; routine of North Star Monitor 5.2

; Syntax: SM addr Byte,*,Byte,Byte,*,...,etc.
; The asterisk character will match
; any byte value.
; Example: To find all JMPs to the E88H addr
; area, type: SM addr C3,*,8E
; Note: *, and *,*, are not equivalent.
; The first is the wild card. The
; second will substitute the hex value
; 2A in the byte list.

E88H
ENTRY: ORG E88H ; For Monitor at E88H as supplied
; on factory master disk. You can
; change this as required.

1694 1834 ORG ENTRY+23AH ; Change entry in command
1695 8016 DW ZBUF ; Table to jump to this
; routine

11BC =
SMEM: EQU ENTRY+3BCH ; Original SM address

11CE =
PACH2: ORG ENTRY+3CEH ; Jump out to check for
11CE 8F16 MATCH: ; wild card.

11DE =
NMACH: EQU ENTRY+3D6H ; Return here if no match
11DE 8F4H YMACH: EQU ENTRY+3D8H ; Return here if a match

138F =
PACH3: ORG ENTRY+58FH ; Jump out to store wild
138F 95BF PUTWC : card in buffer.

1393 =
BFILL: EQU ENTRY+593H ; Original buffer fill
1393 F 50F QUOTE: EQU ENTRY+5A1H ; Check for quote mark

1608 =
ZBUF: ORG ENTRY+888H ; Start of Wild Card routine

1680 21AF16 LXI B,MCBUF ; zero the Wild Card buffer
1681 618F MVII B,16 ; Buffer length
1685 360B MVI M,8 ; Move in the zero
1687 245B INX H ; Bump pointer
1689 95F DCR B ; Decrement counter
1689 C2BF1 JNZ ZBL ; Keep looping if not done
168C C3DC11 JMP SMEM ; Return to SM routine

169B D5 MATCH: PUSH D ; Save original pointer
169B 14 INR D ; Bump it up 256 bytes
169A 1A DLAX D ; Look in WC buffer
1692 FE2A CPI *" ; See if it's a WC
1694 D9 POP D ; Get back pointer
1695 2D0811 JNZ NMACH ; No WC, return to routine
1696 C3DB11 JMP YMACH ; Yes, Bypass routine

169B FE2A PUTWC: CPI *" ; See if WC in byte list
169D C2A13 JNZ QUOTE ; No WC, return to CPI *"
16A8 E5 PUSH H ; This is part of
16A8 D5 PUSH H ; original code
16A2 E5 PUSH H ; Save original pointer
16A3 24 INR H ; Bump it up 256 bytes
16A4 362A MVI M,"*" ; Move in WC flag
16A6 E1 JMP H ; Get back pointer
16A7 C39313 JMP BFILL ; Continue orig routine

; Note: The Wild Card buffer lies 256 bytes above
; the regular byte list buffer in order
; that a simple IHR can be used to adjust
; the required pointers.

; Moving SOLOS to F800 Hex
; by Joe Maguire

Having turned to CP/M out of desperation to find a macro assembler, the next problem I ran into was not enough memory in the S0L. Not that I didn't have it available, I did. But the SOLOS operating system, at C888 hex, was smack in the middle of it (so it seemed) rendering the top 16K unusable. CP/M, unlike PETOS, requires a contiguous memory block. I decided something had to give. I am not about to be bested by a box full of TEs (even if it is my beloved SOl) so with apologies to Lee Pelsenstein, (I considered his modification kit too expensive) I dug into the circuit diagrams to see how I could rewire SOLOS, its RAM and SOLOS, its RAM to a higher address. The total memory required for SOLOS and the VDM is 4K. That made the highest permissible address F800 hex.

The hardware modification turned out to be absurdly simple - one jumper! The software relocation may be a stumbling block for some but it is not out of reach of the well equipped hobblist or as a computer club project. What is needed are a pair of 2788 EPROMs (or single 2716s) with SOLOS reassembled to address F800 hex and burned into them. Then they must be installed in the personality module in place of the original 9216 masked ROM. As luck would have it, there are a few unused contacts on the personality module connector so, with just one additional jumper, the switch from SOLOS at C888 to F800 and back again can be accomplished entirely by just exchanging modules. Spare module boards (for 2788s) have been advertised from time to time in various publications including the Proteus Newsletter and Kilobaud/Microcomputing.

I should emphasize that the relocation moves everything up to F800. The 4K block from C888 to CPFF is free for other use. This can add up to 12K additional memory for use by CP/M. (C888-EPF) Some readers do not doubt wondering about software compatibility but with the quick change capability, this is not really a problem.
The source code for SOLOS is available from the CBM or Proteus libraries. You can also copy it from the Sol manual if you don’t mind all that typing but the original source code contains several absolute address references which can cause problems unless they are changed. See below for corrections.

**Modified code**

```
C6DF FE DB CPI 0DBH
C8E1 DA DB C0 JC ERA91
VDMEM EQU 0C00H
```

**Original source code**

```
C6DF FE DB CPI 0DBH
C8E1 DA DB C0 JC ERA91
VDMEM EQU 0C00H
```

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**Diagram:**

1. For permanent change of SOLOS to F800H, jumper pin 9 to pin 12 U22.

2. For change by plug in of PM; on solder side of Sol PC, run jumpers as shown from pins 9 and 12 of U22 to pins B3 and B4 on PM socket.

3. For F800H PM; on component side of PM cut trace as shown next to R3.

4. For C800H PM; on component side of PM cut trace as shown next to R3 and on solder side of PM cut connection between B3 and B4.

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**UNCLASSIFIED ADS**

WANTED: 4 drive Helios system and SOL printer.
Allan Olson, 11321 Ridge Rd., Nevada City, CA 95959
916-265-6675 - evenings, 916-444-3780 - days.

WANTED: 16K or 64K board and Helios II dual disk drive.
W.W.K. Zung, M.D., Duke University Medical Center, Veterans Hospital, Durham, North Carolina, 27705. 919-286-0411

WANTED: A WordWizard compatible printer driver for the SOL 2 metal metal printer that does true proportional spacing.
Michael A. McKelvey, 330 So. State St., Ann Arbor, MI 48108

WANTED: A driver for Centronics 603 printer to interface with Helios and AccPac/WordWizard software.

FOR SALE: IBM Selectric II (Micro Computer Devices, Selecctem, System 9710) interfaced for the SOL. I need a faster printer. This selectric has all the options, tractor or friction feed, self-correction, dual pitch and software for a North Star drive. Asking $1,400.00.
Joe Lancaster, 1931 Cedar Ridge Dr., #8, Stockton, CA 95207

WANTED: SOL/HELIOS - Complete backup system
Todd B. Marshall, 1543 Green Oak Place, Suite 102, Kingwood, TX 77339 (713/358-1800).

WANTED: Anyone with extra issues of Access (except Vol 4, #s 1 & 2) and issues of SOLIV News from 1977 & 1978, please send specified issues to:
O. Jason Riddle,
32 Berkeley Corn.,
Simcoe, Ontario, CAN.
M3T 2H4

FOR SALE OR TRADE New North Star double density disk controller board, factory assembled $300.00. New RAM-16, factory assembled $350.00. These were bought for a friend in Japan who reneged on the deal. I also have a used single density controller for $100.00. What do you have to trade? I need a set of Helios controller boards, a bipolar ROM programmer and an inexpensive printer. Joe Maguire, P.O. Box 3742 DT, Anchorage, AK 99510.

HELP WANTED! Want programs for running Houston Instrument R1-Plot Plotter. Will buy or exchange programs. Write or call collect:
Bill Graham, 1937 Rickover Court, New Port Richey, FL 33752 / (813) 849 7636 evenings.

FREE: PTC Extended cassette basic, PTC 8080 Chase and PTC TRAX-80 - with purchase of a working SOL-20 that has 48K memory, complete with video and manual - asking $1250.

Gene McLaughlin
P O Box 647
Halls, Texas 79357
Phone - Home (806) 253-2557
 - Business 253-2511
Armstrong Corporation
125-F Melody Lane (P.O. Box 533), Costa Mesa, CA 92627 - (714) 752-8650

January 29, 1980

Stanley M. Sokolow
PROTEUS NEWS
1690 Woodside Road Suite 219
Redwood City, California 94061

Dear Stan,

SOL owners with North Star disk systems might enjoy the following game program. It is from Armstrong Corporation's SOL-STAR game disk #2, and may be reproduced in PROTEUS with their permission. (Game Disk #2 is available for $35 from Armstrong Corp., P.O. Box 10533, Costa Mesa, Calif. 92627.) With only minor modifications, the program will also run using Processor Technology's cassette and disk BASIC.

The program, called STARWARS, is accompanied by another program called STR-RULES, which provides complete documentation for the game. The game simulates the cockpit of a spaceship in which you will pilot on intergalactic missions involving face-to-face combat situations with a very aggressive enemy. The pilot who can prevail is accorded honors in a special commendation ceremony. There are nine skill levels in the game. Start with level 7 or 8 to get the feel of things, then try to work yourself up to level 1 -- though you will not think so at first, it is possible to master the highest level!

A final note: Armstrong Corporation's SOL-STAR library contains nearly 100 programs of business and recreational application. I am promised that many can be released for publication in PROTEUS. Therefore, I hope to be a regular contributor in the future. If there are any applications areas that are of special interest to PROTEUS subscribers, please let me know.

Sincerely,

Wm. David Armstrong

P.S. Mailing address for PROTEUS subscription:
125-F Melody Lane
Costa Mesa, California 92627
610 GOSUB 1000
620 X=CALL(51456.D)
630 D=D+1
640 GOTO 320
650 PRINT TAB(11),"---"|||---"|||---"
660 PRINT TAB(11),"---"|||---"
670 PRINT TAB(11),"---"|||---"|
680 PRINT TAB(11),"---"|||---"|
690 PRINT TAB(11),"---"|||---"|
700 PRINT TAB(11),"---"|||---"|
710 PRINT ""Level"":W"'
720 PRINT TAB(11),"---"|||---"|||---"|||---"|||---"|||---"|||---"|
730 PRINT TAB(11),"---"|||---"|
740 PRINT TAB(11),"---"|||---"|
750 PRINT TAB(11),"---"|||---"|
760 PRINT TAB(11),"---"|||---"|
770 PRINT TAB(11),"---"|||---"|
780 PRINT TAB(11),"---"|||---"|
790 PRINT TAB(11),"---"|||---"
799 PRINT 53120,32
800 RETURN
810 DATA 235,1,39,201,22,5,213,205,26,201
820 DATA 209,21,200,35,3,62,55,133,111,210
830 DATA 6,201,36,195,6,201,30,9,86,10
840 DATA 130,119,29,200,35,3,195,28,201
850 DATA 0,0,128,0,0,0,128,0,0,128,0,0,128,0,0,128,0,0,128,0
860 DATA 128,0,128,0,128,128,128,128,128,0,128,0,128,0,128,0
870 DATA 0,0,128,0,0,0,128,0,0,128,0,0,128,0,0,128,0,0,128,0
880 =N53114\N4=53247
890 FOR N1=1 TO 9
900 H2=EXAM(N1)\H3=EXAM(H4)
910 PRINT H1,H2+128\PRINT H5,H3+128
920 H3=60\H4=H4-H3
930 NEXT H1
940 IF H6>0 THEN 970
950 H6=1
960 GOTO 880
970 H6=0
980 RETURN
990 J1=INT(9#MBD(0)+1)
1000 IF J1=1 THEN 1020
1010 J=62\RETURN
1020 IF J=1 THEN 1040
1030 J=64\RETURN
1040 IF J=1 THEN 1060
1050 J=66\RETURN
1060 IF J=1 THEN 1080
1070 J=2\RETURN
1080 IF J=1 THEN 1100
1090 J=0\RETURN
1100 IF J=1 THEN 1120
1110 J=2\RETURN
1120 IF J=1 THEN 1140
1130 J=66\RETURN
1140 IF J=1 THEN 1160
1150 J=64\RETURN
1160 J=62\RETURN
1170 REM SCORE FOR HIT
1180 MI=52702\H2=0
1190 H=EXAM(MI+M2)
1200 IF H=128 THEN 1230
1210 GOSUB 370
1220 GOTO 610
1230 M2=M2+1
1240 IF MI THEN 1190
1250 PRINT TAB(12),"DIRECT HIT--ENEMY DESTROYED"
1260 D=D+5
1270 X=CALL(51456.D)
1280 H=H+1
1290 PRINT TAB(2),"Sensors detect","x",more enemy ships..Press ",
1300 PRINT ":D" to continue!",
1310 IF H>25 THEN 1310
1320 PRINT CHR$(11)
1330 PRINT H:1 THEN 1610
1340 GOTO 270
1350 GOTO 21
1360 FOR L=1 TO 28
1370 FOR L=1 TO 28
1380 PRINT L2=L1,L(L)
1390 NEXT L
1400 PRINT "Level":W"
1410 FOR I=1 TO 9
1420 F(I)=0
1430 NEXT I
1440 FOR Q=1 TO 9
1450 FOR Q=1 TO 9
1460 J1=Q1
1470 GOSUB 1000
1480 F(Q1)-F(Q)+J
1490 PRINT Q1,127
1500 NEXT Q1
1510 NEXT Q
1520 PRINT CHR$(11)
1530 FOR I=1 TO 6\PRINT ":NEXT I"
1540 PRINT TAB(15),"YOU HAVE BEEN DESTROYED BY THE ENEMY!"
1550 FOR I=1 TO 4\PRINT ":NEXT I"
1560 PRINT TAB(19),"Do you wish to try again? ",
1570 N=INF(255)
1580 IF N=69 THEN 30
1590 IF N>78 THEN 1570
1600 GOTO 1770
1610 IF I=1 TO 63\PRINT "$",\NEXT I\PRINT
1620 PRINT TAB(13),"COMMENDATION FOR MERITORIOUS SERVICE"
1630 PRINT FOR I=1 TO 63\PRINT "$",\NEXT I\PRINT
1640 PRINT "IN RECOGNITION of exceptional heroism and"
1650 PRINT "performance of"
1660 PRINT "duty in the face of overwhelming odds, the ALLIANCE"
1670 PRINT "hero"
1680 PRINT "awards his highest honor - the GALAXY CROSS - and all"
1690 PRINT "rights and privileges appended, inter alia:"
1700 PRINT "Level":W","pilots"
1710 PRINT FOR I=1 TO 63\PRINT "$",\NEXT I\PRINT
1720 PRINT "The Alliance requires your services for yet another"
1730 PRINT "mission. Will you go? ",
1740 N=INF(255)
1750 IF N=69 THEN 30
1760 IF N>78 THEN 1740
1770 PRINT CHR$(11)
1780 PRINT "Farewell."
1790 PRINT 51455,15
1800 END

LOW-COST OPTION GIVES SIX COLORS TO HOUSTON INSTRUMENT PLOTTERS

Now here's a smart idea. Houston Instrument, a division of Bausch & Lomb, has made a name for itself in the microcomputer field by producing a family of low-cost digital plotters at a reasonable price. At the West Coast Computer Faire, they will show a simple retrofittable option that lets the plotter pick up pens of different colors from a parking area at the edge of the plotting bed. Apparently the software can direct the pen carrier to jog on over to the edge of the plotting field, deposit its pen in that pen's home, back away, and go over to another pen's parking stall. The family of plotters comes with various amounts of intelligence, starting at $1085 for the one-color and $395 more for the 6-color version. Updating of existing units requires $395 plus $100 service charge, plus shipping and all that.

See them at Booth 1226 of the Faire. (Proteus will be in Booth 1448.)
January 25, 1981

Dear Stan,

The routine for Solos is fairly easy to implement. Just type in the code at C900 as shown and enter the custom command as per the instructions in the Solos manual. Decimal arguments cannot be used with this version since there are no decimal conversion routines within Solos.

The version for the North Star Monitor 5.2 requires more extensive patching. The Monitor program occupies the full 8 blocks in which it is stored on the disk so a new file of 16 blocks will be copied to the original file. A block of 2000 bytes (double density requires the even number of blocks must be created to hold the Monitor and the Unix Math routine. Proceed as follows:

- Create the new file of block size 2000 block.
- Load the Monitor with an offset of 2000.
- Execute another copy of the Monitor.

Using the DS command of the Monitor, patch in the code given in the listing at the address of the monitor in the North Star Software manual. After the patching has been completed, then save the new monitor.

SP NEWMON 160000
   Load the patched copy in the new.
   GO NEWMON
   Execute the patched copy.
   HM value
   Try the new command.

All the rules applicable to arguments used with other Monitor commands apply to the new new command including decimal values (followed by a $) and advancing commands. The advantage of using subroutines already within the program (if you can find them)
rather than writing your own. If you do not have the version 5.8
or later software from North Star, (5.2 is the latest) you can try
searching for the required subroutines in older versions which should
be somewhere near the addresses used in releases 5.8 and above. The
complete release of 5.2 software from North Star can be ordered from
the North Star Users Association for $25.00 which includes a one year
subscription to their newsletter. The address is:

INSUA
P.O. Box 1318,
Antioch, CA 94509

Sincerely,

Joe Maguire

P.S. The extra space left over in those two blocks added to NEMMON
will not go to waste. I have an improved memory search routine
which is almost ready. The improvement will be a wild card
option which will allow ambiguous blocks of code to be found.
For example, to find all calls to the C4 address area of Solos,
you will be able to type: SM CD,9,C4 and the "*" will match
any byte value. This feature is already available in my program
MEDIT on library disk B6. How do you think I found the required
subroutines in Monitor 5.2?

* Hex Math routine for Solos monitor
* Syntax: HM value value2
* Values can be anything from 0 to FFFFF
* Only legal Hex permitted. Overflow or
* underflow is ignored. Both values must
* be present.
* Subroutine addresses within Solos monitor
* C819 SOUT EQU #C819H Output a character from B
* C33A SCMOV EQU #C33AH Get a 16 bit value to HL
* C368 ADOOUT EQU #C368H Output a 16 bit value from HL
* C56A NLOOP EQU #C56AH Output a string pointed to by HL
* C83C CUBAT ORG #C83CH Custom command table entry
* C83C 48 4D DB 'HM' Command syntax
* C838 #0 C9 DB HMATH
* C046 #0 DB 0 End of table mark
* C900 HMATH ORG #C900H Hex Math routine address
* CALL SCMOV Get value, abort if missing
* C90E #3 CALL SCMOV Get value, abort if missing
* C90E #5 CALL SCMOV Get value, abort if missing
* C904 21 2B 99 CALL SCMOV Get value, abort if missing
* C900 16 86 CALL SCMOV Get value, abort if missing
* C90D 0A CALL SCMOV Get value, abort if missing
* C911 4D CALL SCMOV Get value, abort if missing
* C912 E8 CALL SCMOV Get value, abort if missing
* C918 7A MOV A,D Now get two's complement
* C919 26 MOV D,A of DE to find difference
* C91A 57 MOV A,E
* C91B 7B MOV A,E
* C91C 2F CMA
* C91D 5F MOV E,A
* C91E 13 INX D
* C91F 19 DAD D Add it to HL
* C920 06 2D MVI B,-1 Send out minus sign
* C922 CD 19 C8 CALL SCOUT
* C925 C3 E8 C3 JMP ADBUT Send out minus result
* C928 2B 2B 3D 2B MSG: ASC ' = ' 4
* 20 2B
* END
* Hex Math routine for Northstar Monitor 5.2
* Syntax: HM value value2
* Values can be anything from 0 to FFFFF
* or 0 to 65535 (decimal). Overflow or
* underflow is ignored. Both values must
* be present.
* 0800 ENTRY: ORG 0800H For Monitor at 0800H as supplied
* on factory master disk. You can
* change this as required.
* 105E ENMCOM: ORG ENTRY+25EH Command table entry
* 105E 4B4D DB 'HM', Command syntax
* 1068 0016 DW HMATH
* 1062 00 DB 0 End of table mark
* Subroutine addresses within Monitor 5.2
* 1181 = VOUT: EQU ENTRY+381H Output a 16 bit value from HL
* 1207 = COUT: EQU ENTRY+407H Output a character from A
* 1227 = SOUT: EQU ENTRY+427H Output a string pointed to by HL
* 1241 = CRLF: EQU ENTRY+441H Output a CR and LF
* 147D = GEYR: EQU ENTRY+67DH Get a 16 bit value to HL
* 1600 HMAITH: ORG ENTRY+800H Hex Math routine address
* CALL GETV Get value
* 1603 0E CALL PUSH H Save it
* 1604 CD7G CALL GETV Get value2
* 1605 E5 CALL PUSH H Save it
* 1606 212916 CALL SOUT Send it out
* 160B CD7E12 CALL SOUT Send it out
* 160E D1 CALL POP D Get value2 to DE
* 160F E1 CALL POP H Get value to HL
* 1610 E2 CALL PUSH H Save it again
* 1611 19 CALL DAD D Add DE to HL
* 1612 CD8111 CALL VOUT Send out the result
* 1615 E1 CALL POP H Get value back to HL
* 1616 7A MOV A,D Now get two's complement
* 1617 26 MOV D,A of DE to find difference
* 1618 57 MOV A,E
* 1619 7B MOV A,E
* 161A 2F MOV E,A
* 161B 5F MOV E,A
* 161C 13 INX D
* 161D 19 DAD D Add it to HL
* 161E 3E2D MOV A,'-' Send out minus sign
* 1628 CD7G CALL SOUT Send out minus result
* 1627 CD8111 CALL VOUT Give a CR and LF & return
* 1626 C31L JMP CRLF
* 1629 28203D MSG: DB ' = ' 4
* 162C 28202B DB ' + ' 4
* 162F 00 DB 8 End of message mark
* 1630 END

Joe Maguire
P.O. Box 3742 DT
Anchorage, AK 99510
C. Inverse Video Routine

1. Function!— Each character in the input string is inverted (changed to black on white) and sent to the VDU driver.

2. Syntax!— <string variable> = FA<letter> <input string>
   i.e. Z$ = FA(8 INVERSE) or 18F = FA(18)

3. Entry point!— CMS

4. Error trapping!— The string variable will be assigned SYNTAX ERROR I if the input argument is not a string.

5. Uses!— Very handy for highlighting prompt or error messages. Also serves as an equal display.

D. Terminal Mode Routine

1. Function!— Each character entered on the keyboard is echoed to the screen unchanged. Striking the ESCAPE key returns control to the BASIC program.

2. Syntax!— <string variable> = FA<letter>
   i.e. Z$ = FA(9) or 18$ = FA(18)

3. Entry point!— CMS

4. Error trapping!— The string variable will be assigned SYNTAX ERROR T if there is any argument of any type.

5. Uses!— As a poor man’s text editor on one screen’s worth of data. SOL cursor control keys will move cursor anywhere needed to make correction or addition. Use Text Line Return Routine (E, below) to send back to BASIC any line or part of line desired.

E. Text Line Return Routine

1. Function!— A string variable is returned which has the data currently on the screen on the line specified starting with the column specified and continuing to the end of that line. Leading and imbedded blanks are included but trailing blanks are not.

2. Syntax!— <string variable> = FA<letter> (argument1)(argument2)
   where: argument1 = line number (0 to 15) bottom
         argument2 = column number (0 to 64) right edge
   i.e. Z$ = FA(629) or 8$ = FA(2012)

3. Entry point!— CMS

4. Error trapping!— The string variable will be assigned SYNTAX ERROR L if there are not TWO arguments, or if either or both arguments are not numbers.

5. Uses!— A multi-line mailing label, invoice, etc., can be displayed on the screen at one time using the Control Character Routine and PRINT statement. Terminal Mode Routine can then be used to enter or edit the data. Then repeated use of this routine will recover the correct data for use by the BASIC program.

COMMENTS

1. The Control Character Routine is limited in its ability to place the cursor. The largest control character is 1F hex or 31 decimal which when used in SOLOS escape sequence 1B 01 11 (see page 10 of SOLOS manual) means the cursor is set to the middle of the line. Any positions in the right half of the line can be produced by terminal mode routine. Simply set the two arguments to the desired row and column and after the routine just ignore the string expression that is returned.

2. If the cursor is ever placed where inverse video is displayed and then moved, it will leave an un-inverted character behind.

3. Be sure to use the same third letter in each call for a particular function as you used in the DEF statement which defined its entry point.
4. Line number references used in the Control Character Routine (escape sequence 1B 01 00) are to absolute line numbers (i.e., 0 is always the top line on the screen and 15 is always the bottom line). If scrolling takes place between references, then the line number referred to must be adjusted to the new physical location on the screen of the data you want. The same applies to line references used in the Text Line Return Routine.

PROGRAM LISTING

0000  *   
0000  *   
0000  *   
0000  * SPECIAL UTILITIES FOR USE BY   
0000  * MICROPOLIS BASIC PROGRAMS.   
0000  *   
0000  * BY MELVIN M. DALTON   
0000  * NON-EXCLUSIVE RIGHTS DONATED TO   
0000  * PROTEUS CASSETTE LIBRARY   
0000  * DATED 1/30/81   
0000  *   
0000  C01F  TAB 10+1=28   
0000  C019  SOUT EQU C0019H   
0000  00A0  RESULT EQU 1A0H   
0000  04BC  ARG1 EQU 48CH   
0000  04BE  ARG2 EQU ARG1+2   
0000  04C4  NARGS EQU ARG1+8   
0000  04C5  RSIZE EQU ARG1+9   
0000  04BC  ORG C0900H   
0000  C980  * TERMINAL MODE****   
0000  C980  * KEYBOARD GOES DIRECTLY TO SCREEN   
0000  C980  * EXIT=ESC KEY   
0000  C980  * TERMINAL MVU A'/' ERROR CODE   
0000  C980  CALL SYNRK ISET UP RET MSG   
0000  C985  IN CASE OF ERROR   
0000  C985  C3A C4 14   
0000  C988  A4  ISET FLAGS   
0000  C989  C0  ERROR IF NOT 0   
0000  C99A  CB 1F 00  TERM1 CALL SINP IGET CHARACTER   
0000  C99B  BA 09  JZ TERM1   
0000  C990  FE 1B  CPI 1BH IF ESC KEYS   
0000  C992  CA 9C 9C  JZ BASKET YES RETURN TO BASIC   
0000  C995  A7  MOV B+  
0000  C996  CD 19 00  CALL SOUT IPUT ON SCREEN   
0000  C999  CB 9A 09  JMP TERM1 IREPEAT   
0000  C99C  AF  CALL XRA A IGET XOR   
0000  C99D  32 A2 01  STA RESULT+2 IMAKE RET MSG   
0000  C9A0  09  FE 1B  IEQUAL ZERO LENGTH   
0000  C9A0  09  RET IBACK TO BASIC   
0000  C9A1  * CONTROL MODE****   
0000  C9A1  * CONVERT ARGUMENT STRING TO CTRL   
0000  C9A1  * CHARACTERS AND SEND RESULTS TO SCREEN   
0000  C9A1  *   
0000  C9A1  3E 43  CONTROL MVU A'/' ERROR CODE   
0000  C9A3  CB 09  CALL SYNRK ISET UP ERR RESULT   
0000  C9A6  3A C4 04  LDA NARGS # OF ARGUMENTS   
0000  C9A9  FE 01  CPI 1 IIF NOT 1   
0000  C9B0  CB 3A 04  MOV B+   
0000  C9B4  FE 03  CPI 3 ISTRING?   
0000  C9B8  09  RSIZE IERROR  
0000  C9BA  2B C0  CALL SOUT IOUT TO SCREEN   
0000  C9BF  3C 9C 9C  JMP BASKET IBACK TO BASIC   
0000  C9C5  * DELAY WHILE FETCH MODE****   
0000  C9C5  DELAY MVU A'/' IERROR CODE   
0000  C9C7  BB CA CALL SYNRK   
0000  C9CA  3A C4 04  LDA NARGS   
0000  C9CD  0E 01  CPI 1   
0000  C9D0  2A BC 04  LMD ARG1   
0000  C9D3  7E  MOV A+B IARGUMENT TYPE   
0000  C9D4  FE 01  CPI 1 IREAL?   
0000  C9D6  CO  RNZ   
0000  C9D7  CD B3 CA  CALL BCDHEXR ICONVERT TWO LSB TO HEX   
0000  C9DA  7E  MOV A+B ICOUNT TIMES 256   
0000  C9DD  0F  MVI C0FFH   
0000  C9DE  CD 1F 00  DLYI CALL SINP ICHECK KB   
0000  C9E0  32 A3 01  STA RESULT+3 IDATA BYTE   
0000  C9E3  CD FE 09  JNZ BYTBS IRET BYTE TO BASIC   
0000  C9E6  0B  DCX B ICOUNT   
0000  C9E7  7E  MOV A+B IRET TO BASIC IF   
0000  C9EB  01  ORA C IDELAY EXPIRED   
0000  C9E9  CD DD 09  JNZ DLYI IREPEAT   
0000  C9EC  CD C9 09  JMP BASKET IZERO LENGTH RET   
0000  C9EF  3E 01  BYTBS MVU A+1 ISTRING LENGTH   
0000  C9F0  32 A2 01  STA RESULT+2 IIN BUFFER   
0000  C9F1  09  RET IRETURN   
0000  C9F5  ** INVERSE VIDEO MODE****   
0000  C9F5  ARGUMENT STRING IS OUTPUT   
0000  C9F5  AS INVERTED VIDEO   
0000  C9F5  ** INVERSE VIDEO MODE****   
0000  C9F5  3E 49  INVIDEO MVU A'/' ERROR CODE   
0000  C9F7  CD BB CA  CALL SYNRK ISET UP ERROR RET   
0000  C9F9  3A C4 04  LDA NARGS # OF ARGUMENTS   
0000  C9FD  0E 01  CPI 1 ISET FLAGS   
0000  C9FF  CO  RNZ IITO BASIC IF WRONG   
0000  C9F0  2A BC 04  LMD ARG1 IPOINT TO INPUT   
0000  CA00  7E  MOV A+B IGET TYPE BYTE   
0000  CA04  FE 03  CPI 3 IMUST BE STRING   
0000  CA04  CO  RNZ IERROR RET   
0000  CA07  2E  INX H ILENGTH COUNT   
0000  CA08  23  INX H IIN C   
0000  CA09  4E  MOV C+  
0000  CA0A  23  INX H IPOINT FIRST BYTE   
0000  CA0B  3E 07  Invloop MVU A+7 IESC CODE   
0000  CA0D  CD 1F 0A  CALL ESCOUT IOUTPUT ESC. SEG.   
0000  CA11  FA 80  ORG BOH IINVERT IT   
0000  CA13  7E  MOV A+B IGET BYTE TO INVERT   
0000  CA14  CD 19 CO  CALL SOUT IOUT TO SCREEN   
0000  CA17  2E  INX H IPOINT NEXT BYTE   
0000  CA18  00  DCR C ICOUNT DOWN   
0000  CA19  2B CA  JNZ INVL0OP IREPEAT
SAMPLE PROGRAM

10 LOAD 'ULTO1' REM LOAD OBJECT CODE OF UTILITIES ROUTINES
20 DEF FAC=16RC9C11 REM ENTRY POINT FOR CTRL CHAR. MODE
30 DEF FAT=16RC9C901 REM ENTRY POINT FOR TERMINAL MODE
40 DEF FAD=16RC9C9C1 REM ENTRY POINT FOR DELAY & FETCH MODE
50 DEF FAI=16RC9CA2A1 REM ENTRY POINT FOR TEXT LINE RETURN MODE
60 DEF FAP=16RC9CP51 REM ENTRY POINT FOR INVERSE VIDEO MODE
70 REM DIMENSION IS & ZS FOR LENGTH OF 64 (DEFAULT=40)
80 DIM I%$(5,64), Z%$(64)
90 REM NOW CLEAR SCREEN
100 Z$='*'(Z$) THEN PRINT Z$; STOP
110 REM IF-THEN TEST ABOVE WILL PRINT SYNTAX ERROR IF IT OCCURS
120 REM NOW PUT CURSOR ON LINE 5
130 Z$='*'(Z$) THEN PRINT Z$; STOP
140 REM LOAD LIST IS # WITH PROMPT LIST
150 FOR I=0 TO 5: READ I%(1): NEXT I
160 DATA 'NAME'
170 DATA 'STREET'
180 DATA 'CITY'
190 DATA 'STATE'
200 DATA 'ZIP'
210 DATA 'PHONE'
220 REM PRINT THE PROMPT LIST
230 FOR I=0 TO 5 PRINT TAB(10);I%(1): NEXT I
240 Z$='*'(Z$) REM DOWN ONE LINE & OVER FIVE COLUMNS
250 REM USE INVERSE VIDEO TO REQUEST DATA IN TERMINAL MODE
260 Z$='*'(ENTER DATA REQUESTED '*)Z$='*'*THENPRINTZ$;STOP
270 REM PUT CURSOR WHERE INPUT DATA SHOULD START
280 Z$='*'(Z$) IF LEFT$(Z$+1)="SYNTAX" THEN PRINT Z$; STOP
290 REM GO TO TERMINAL MODE
300 Z$='*'(Z$) IF LEN(Z$) THEN PRINT Z$; STOP
310 REM NOW GET TEXT FROM SCREEN & PUT IN LIST IS
320 FOR I=0 TO 5
330 Z$='*'(Z$) IF LEFT$(Z$+1)="SYNTAX" THEN PRINT Z$; STOP
340 REM NULL STRING IF SCREEN HAS ONLY BLANKS FOR A LINE
350 IF Z$ THEN 370
360 I%=1:Z$="
370 REM NOW SKIP LINE ERASE NEXT LINE & REPLACE PROMPT
380 Z$='*'(Z$) IF Z$ THEN PRINT Z$; STOP
390 REM END OF SPECIAL FORM OF ERROR TEST SINCE FAI MAY RETURN
400 REM NULL STRING IF SCREEN HAS ONLY BLANKS FOR A LINE
410 IF Z$ THEN 370
420 REM NOW THE RESULTS WOULD GO TO DISK OR MORE COMPUTING
430 Z$='*'(Z$) THEN PRINT Z$; STOP
440 PRINT I%(0,0);,'*I%(1)
450 PRINT I%(2,2);,'*I%(3,3);,'*I%(4,4);,'*I%(5,5)
460 END

BUG SQUAD

Along with the New Year’s resolutions came the New Year’s bugs! A user of the AL88 simulator instruction decoder [Proteus News Vol. 3 #1] wrote to say the the RST instructions do not decode properly. Sure enough, all the RSTe's are RST 20. To fix this one, insert the line: CALL XTRAC between lines 999 and 1988 in the listing as shown on page 12. Somehow it got left out.

Joe Maguire

Jan. 25, 1981
815 Inlet Rd.
Green Lake, WI
54941

Dear Stan,

A number of things that I thought interesting have happened to me in the last few months so I report to the members as follows.

METHRON COMPUTERWARE INC., 552 W. 114th St., WI, NY 10025 are selling the SOLO personality module which relocates SOLOS to 80288. They have run ads in the last two issues of BYTE and by now most members have probably seen the ad. The changes to the SOLO are very simple and after they are made you can have either a ROM Sol 16K Sol just by interchanging the memory and the Personality Modules. I am limited to a 56K system as I use NORTH STAR DOS which has a PROM located at E680H. I ordinarily use a P.T. 48K BASIC board in my machine and I add a P.T. 16K board when I use the SOL module. By accident I discovered that the extra 16K board can stay in the machine even when I use SOLOS at its normal address of CO00H. Unfortunately no hope is in sight for the use of 80286 with this module. The METHRON people have told me that the re-write job that would be required to FTGDOS is just not feasible.

The SOL that I use at home still has both HELOIS and NORTH STAR drives installed. Because of the reliability factor I have changed virtually all of my programs and files over to NORTH STAR and CP/M. In my opinion the PERSO devised that put just had to be a cause of their demise. I use an ALMA-MICRO as well which started out life with PERSO drives and later was lucky enough to get a hard disk. The members of the ALMA-MICRO users group were talking about a class action suit against PERSO! The CP/M user group has recently put out their library disks on MHD. I have received all of the volumes which have software that is related to SOL and I am now in the process of going through each volume and sorting out the stuff that PERSO members would be interested in. Each volume contains a mixed bag of programs many of which are for specific machines or for 2-80 machines. I think that this job done I will make available on just two or three MHD disks the software which I think others may want copies of.

I have also had to give up my usual BIANLO printer and find a smaller printer. For my one extra plug on the back of the SOL I settled on the new XL-80 printer which is very cheap and does a surprisingly good job. The only thing below the pin to pin connection that are needed is to wire up the XL-80 to the SOL parallel port. The driver in SOLOS runs the XL-80 with no problems.

SOL DB-25 Parallel port pins

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
7 11 15 19 23

MX-80 Amphenol 57-30360 connector

I recently acquired a Measurement System DB 6400 memory board for a SOL. This is their bank select board and has a few features that the plain 6400 board does not have. It works perfectly in a SOL as a 48K board because the 16K part is that you can cause a smaller amount of memory to be turned off by tripping the board to think that it's getting a reset/phantom signal by making a ground connection. This allows the use of this board at 55K or 60K to get with the SOL module discussed above. At 48K it works perfectly with HELOIS.

Regards,

Gib Zeratsky
February 12, 1981

Dear Sirs:

I have recently added a Vista V-200 single drive disk system. Other than the CP/M manual, it has one of the worst documented items I have seen. Otherwise I am delighted. I use the single drive Filecopy routine by K. Barbier in September Kilabaud and along with the sector by sector COPP routine from Vista, this is a very reasonable single drive system for the SOL. The list price with all the CP/M 1.4 software is $695.00. I spent $619.00 plus shipping.

Some one should have said that the TAD Enterprises ECB-CP/M conversion permits the transfer of programs between ECB cassette files, ECB disk files, and CP/M ED files. That may be one of the best features of that package. I much prefer the ECB editor, and I can also do a lot of debugging with the interpreter before compiling with CRABASIC.

I have a copy of AIR TRAFFIC CONTROLLER from Creative Computing. As a private pilot I think it is a realistic and super game, or more correctly, simulation! It works!! No bugs! Fine value at $8.00.

G2 Microsoft basic would be a super interpreter for the SOL if it could write basic files in ECB T format, and if it could write string股民 files without integer translation. Also, it is almost useless without these. Perhaps a USR subroutine with the ECB source for T files?

Has anyone tried to use the SOL parallel port as the linter port? I have not been able to write a printer that does not hang the system on a control-F.

Yours truly,

J. D. Barber

---

Stan Sokolow
Editor
PROFUS NEWS
1690 Woodside Rd., Suite 219
Redwood City, CA
U.S.A. 94061

Dear Stan,

I am finally getting around to writing. It was your request for information on floppy discs compatible with the SOL in the Nov./Dec. 1980 issue that finally got me off. I have a SOL-Z with 16 K RAM consisting of 2 - Processor Tech 16 K dynamic RAM boards and a 8 K Processor Tech static RAM board. They function without problems. I bought a used Micropolis Mod II “quad density” floppy disk drive for dual drives about six months ago. It fits your description of a system that just plugs in without modifications. The controller board plugs into the backplane board, you PX P400, the boot loader loads the program, you do a Keyboard reset, EH 51 HI at a given location, EX another address and the system is configured. You then merely use the disc operating system to save the refigured DOS and you are off to the races. There was an excellent article on MODS, the operating system in Kilobaud about a year ago and there is another fine article (written hungrily by me) that will be in an upcoming edition of Elementary electronics that deals more with the hardware and the Micropolis BASIC. I find the system superb from both a hardware and software point of view. My only early misgivings was that the add-on of the controller board is at P400 which conflicts with AIS-8 but the Micropolis system comes with a disc based assembler that is only a little less useful than the AIS-8. I also have CP/M 1.4 for the system which configured the same way.

As a result of an article that I wrote in the June 1980 Kilobaud, I was swamped with SOL owners who were running all sorts of systems. I steered them all to PROFUS and I hope they will write. North Star runs with SOL with not much help, Vista now configures a controller board ROM for SOL. I am aware of only one person using it but he seems quite happy. Another person has used thinker Toys Disco II with the eight inch drives and seems happy. I wish these people would either write to you or even to one of the “regular” magazines such as Kilobaud. There must be hundreds of people hiding out there doing the most amazing things with their SOL’s but keeping it to themselves.

A fellow in British Columbia just wrote to me that he has used the National Semiconductor WN58167 chip and a BSR X-10 with his SOL to control his house! I have been trying to do this using material from BYTE for about two years where has this guy been hiding. I will encourage him to publish this information, even if I have to ghost write it for him.

In volume 3 #4, John Nickel wrote in about his “basket case” SOL. His first problem with the screen file flopily disc with dual drives and garbage when he signs on was mentioned in an earlier issue of PROFUS. Th. earlier article suggested a number of chips that could be wrong. As I don’t have a defector, I just replaced them and it ran like a charm — for two weeks. What I have found is that if I give the machine about five minutes to warm up, it clears which suggests an intermittent short circuit. I am too lazy to follow this up and deal with the problem merely by turning the SOL on five minutes earlier and fixing a cup of coffee. His third problem suggests a similar program on his IMSAI memory board, by the time, he has loaded TRK-80 and tried it and then loaded Diagnostic II, the machine has warmed up and the problem disappears. I would use the same solution.

Another problem that SOL users have is with overheating. There have been a number of suggestions made in earlier editions but I think my solution works quite well. I have preregulated the power supply on the backplane board, again my lazy nature got the better of me and I just regulated the “+7V” almost anything line which is the main culprit since it has to be terminally regulated on the board and is in much demand on static memory boards. I have written all the details in the January/February 1981 edition of Elementary electronics.

I am presently trying to get one of the new Vista printers (as I can see from your typing, I need it) and once I get it running I will drop you a note.

Yours truly,

Bruce Robert Evans, M.D.
The following modification to the SOL Keyboard may be of help to other readers of Proteus. I had noticed that from time to time I would get double character entry which I thought was switch bounce. When I changed over to a 2-80 cpu board, (1MHz), the problem of double entry occurred approximately 25% of the time. I checked out the strobe pulse from the SOL Keyboard and found it to last 115 usec. I changed R7 from a 1k ohm resistor to 680 ohms. This shortened the strobe pulse to 8 usec, which corrected the above problem. This change may help some of our members.

John E. Gould
720 Haddock Rd.
Brunswick, Ohio 44212

429 HOLLYDALE CT., N.W.
ATLANTA, GA 30342

JANUARY 25, 1981

PHOTUS NEWS
ATTN: STAN SOKOLOW
1690 WOODSIDE ROAD, SUITE 219
REDWOOD CITY, CALIFORNIA 94061

DEAR STAN:

AFTER QUIETLY FOLLOWING PHOTUS NEWS AND THE ADVICE OF FH, MCCAHEE FOR A LONG TIME I AM WRITING ABOUT A FEW ITEMS THAT I HAVE FOUND PARTICULARLY HELPFUL.

FIRST, ABOUT A YEAR AGO, I BOUGHT A VISTA V-280-2 DUAL DISK DRIVE SYSTEM BASED ON FH, MCCAHEE'S RECOMMENDATION IN AN EARLIER ARTICLE (KILBRAID SEPT. '79), AS OTHERS HAVE ALREADY COMMENTED IN PROTEUS/NEWS MY EXPERIENCE WITH VISTA HAS ALSO BEEN VERY GOOD. THE SYSTEM HAS EASY TO INSTALL (NO MODIFICATIONS NEEDED) AND IT CAME WITH A VERSION OF CP/M TAILORED FOR THE SOL. NOW THAT OUR LIBRARY HAS CPM/DISK AVAILABLE ON CASSETTES I SEE NO REASON TO HESITATE IN RECOMMENDING THE VISTA DISK SYSTEM. ADD MY THANKS TO WHEELAN MAKING HIS TAPE DISK AND DISK TAPE PHOBNANS AVAILABLE FOR PURCHASE. THE PEOPLE AT VISTA HAVE PRODUCED A QUALITY SYSTEM WITH THOROUGH DOCUMENTATION AT A REASONABLE PRICE.

ONE ADVANTAGE OF THE CP/M EDITOR THAT I HAD NOT FORESEEN IS THE ABILITY TO DISPLAY LETTERS CENTERED ON THE 64 CHARACTER LINE OF THE VIDEO DISPLAY AND ADD 9 BLANKS (SPACES) TO THE BEGINNING OF EVERY LINE WITH A SINGLE MACRO COMMAND IN ED BEFORE COPYING THE LETTER ON MY 82 CHARACTER WIDE PRINTER. THE LETTERS COME OUT CENTERED ON THE PRINTED PAGE AND I HAVEN'T HAD TO MODIFY MY SOL.

FH, MCCAHUE HAD RECOMMENDED A MANUAL DESCRIBING BASIC-E LAST YEAR I OBTAINED A COPY FOR $25.25 + 1.50 POSTAGE FROM THE JEM COMPANY, SUITE 201, 2555 LEAVENWORTH ST., SAN FRANCISCO, CA 94103. I FOUND THIS MANUAL TO BE VERY HELPFUL IN USING BASIC-E. ALSO, THERE IS AN ARTICLE IN THE JANUARY 1979 ISSUE OF BYTE THAT DESCRIBES THE USE OF DATA FILES IN BASIC-E. THE ARTICLE STARTS ON PAGE 86 AND IS TITLED "A COMPUTERIZED MAILING LIST." IT IS AN EXCELLENT SUPPLEMENT TO THE USER'S GUIDE FOR BASIC-E FROM THE JEM COMPANY.

Sincerely,

AL MCSweeney

AUTOMATIC REPEATING MODIFICATION FOR SOL KEYBOARD

by Jack Kinney

This is a one-IC piggyback for the SOL keyboard that makes any key repeat automatically if held down beyond a certain delay. R1 may be varied to select the desired delay. Suggested values are shown below.

NOTES:

1. BOARD MAY BE GLUED TO BOTTOM OF PC BOARD DIRECTLY ABOVE U16.

2. ON LATER KEYBOARDS WITHOUT SOCKETS, U16 MUST BE REMOVED AND A SOCKET INSTALLED.

3. PIN 13 OF U16 IS SENT TO DISCONNECT IT FROM EXISTING TRACES. THE WIRE FROM PIN 4 OF THE 74123 IS SOLDERED DIRECTLY TO PIN 13. THIS AVOIDS STAGE CUTTING.

4. R1 MAY BE VARIED FOR NEEDED DELAY.

AN AUTOMATIC KEY REPEAT FOR SOL

Jack Kinney
UCLA Computer Science Dept.
2413 Boelter Hall
Los Angeles CA 90024
DR. STANLEY M. SOKOLOW

PROTEUS

1690 WOODSIDE ROAD, SUITE 219

REDWOOD CITY, CA 94061

DEAR STAN

I DO HAVE A QUESTION FOR THE 'ANSWER MAN'. I HAVE USED PT PILOT SINCE IT CAME OUT AND RECENTLY PATCHED IT IN WITH MY NEW SINGLE DENSITY DISK SYSTEM. (THE PROGRAM CAME FROM LEW MOSELEY.) THE PROGRAM WORKS VERY WELL, RECENTLY, I HAD MY FIRST OCCASION TO USE THE CALL STATEMENT. IT WOULD NOT WORK. I ALSO TRIED THE ORIGINAL PT PILOT TAPE. IT ALSO DID NOT WORK. DOES ANYONE KNOW OF A FIX FOR THIS BUG?

THANKS AGAIN FOR THE HELP OVER THE YEARS. AND I LOOK FORWARD TO THE 1981 ISSUES. I WOULD ALSO LIKE TO OFFER MY ENCOURAGEMENT ON RELOCATION OF SOLOS TO F800. ANYONE KNOW HOW TO GET A 24X80 SCREEN OUT OF A SOL?

SINCERELY

JOE CUNNING

PROTEUS

1690 Woodside Road

Suite 219

Redwood City, CA 94061

Dear Mr. Sokolow:

Lately I have been working on a project of adapting the Osborne/Microcopy II and a TRIO printer. Unfortunately, I have run into some problems with the programs called SUBSI.BAS and CURSOR.BAS when I implemented their suggested substitutes in the program for the addressable cursor routines. I am inclined to stay with the Osborne program unless I can locate something better that will operate on my system. If I do not find something else, it may be necessary for me to purchase another terminal such as the Hazelton 1500. Possibly you or someone you know could save me the added expense of another terminal by suggesting some business package software that works well with the NRM-1. I would also like to know how to connect the Hazelton 1500 to my SOL along with the printer to make it work under the Osborne software. This would also allow me to take advantage of much of the software supplied by Lifeboat under CP/M. I certainly don't think it is necessary for me to sell my SOL to do it.

Thank you for putting together such a fine newsletter for all SOL users. I hope you will continue the fine service. You have my full support.

Yours truly,

Robert E. Thompson

581 ANDOVER ROAD

WILMINGTON, DE. 19803

FEBRUARY 7, 1981

NATHANIEL PULSIFER & ASSOCIATES

Investment Management & Financial Planning

PROTEUS

1690 Woodside Road

Suite 219

Redwood City, CA 94061

Gentlemen:

We would like to contact anyone who has written (or can write) software for SOL System IV with Helios disc drives, that will permit us to:

I. Use the System IV as a "dumb" and an "intelligent" terminal with a 300 baud modem. Output must write to the disk file, the screen, or the SOL Printer 2E, or some combination, on command.

II. Interface a Centronics Model 703 printer with our Basic Computer Group (Vancouver, B.C.) software packages - ACCPAC, Mailmaster, Word Wizard. We need a PT DOS driver routine.

NP/mft

CHARLES HANSING COMPANY

Managers' Representative

4741 HIBISCUS AVENUE SOUTH • MINNEAPOLIS, MINNESOTA 55435 • (612) 926-2244

6 January 1981

Stan Sokolow

1690 Woodside Road

Suite 219

Redwood City, California 94061

Dear Stan:

I use a SOL with 48k, MicroMatrix disk, CP/M (Lifeboat), Electric Pencil II, NAD and QSOFT for my business which I operate from my home. I am an engineer, NE, but when I purchased my SOL I had absolutely no computer knowledge.

My primary interest is that I would like to be able to have an 80x24 display for the Structured Systems programs and other business applications and would also like to change my CP/M so that the DEL key would back up rather than echo the erased character. I would also like to be able to plug in a second keyboard/monitor or terminal to operate my system from another room perhaps 25 feet away. I have an old solid state TV with a defective tuner that I could use per the SOL manual if I could also tie in another key board.

Would you please advise of any sources of products I could use to accomplish the above. For instance I tried to contact Lee Felsenstein regarding a new video board but from his response I don't have much hope. I noticed that two boards were listed in Interface Age, Feb. '81, p.104 & 109. Would these or any other 5-100 bus board work? What about a separate terminal?

Enclosed is a SASE in the event you can comment on the above.

Wishing you a happy 1981,

Chuck Hansing
December 14, 1980

Dear Stan:

It has now been one year since I have been a member of your organization so I don't know what has been happening or if you still exit. I have recently put a mod in my SOL that other users may be interested in so I am writing this letter. Since I have been using disk based assemblers I have been constantly bothered about the wasted space in high core. Since CP/M requires contiguous memory we all have been limited to 48K systems. However:

Install a temporary jumper between U24-2 and U22-5,9. This will re-address the personality module, the video RAM and the scratchpad RAM into the F block. Reassemble SOLOS to start at F000 and the RAM to start at F800. Then make the following patches based on the new addresses:

F000  7F  MAKE LIKE CUTER
F037  7F  MAKE LIKE CUTER
F0E0  00  ADDRESS ABOVE VIDEO RAM
F0E1  C2  USE JNZ HERE

And re-define VDMEM to F000.

The source code is available on disk from the CP/M users group for $8.00 so you don't have to type in the entire source code if you are running CP/M.

With these changes software designed for CUTER which does not use the memory mapping capability of the SOL will work directly. Software written of SOLOS which does not require memory mapping video will have to be patched to the new jump table in the F block. Unfortunately considerable patching is required for all of PTC's delightful video games. I installed my jumper with a switch and have two personality modules so that when I want to play games I can head back down to the C block.

GOOD LUCK

BRUCE BARRON
227 E. Marconi Ave.
Phoenix, AZ 85022

(Editor's note: See the article in this issue on the relocation of the SOL's address space to F000.)

February 2, 1981

Dear Stan:

Enclosed is the print driver that I wrote for my ASL2 Multewriter II. The heart of this printer is the Diablo Hyptype I. When I obtained this printer, it was being run at 300 baud on the serial port. The following driver allows virtually any baud rate to 9600 baud and certainly has improved the efficiency of the throughput since implemented. At any rate, here it is for anyone who may have this printer. If someone has a better idea, I'm open to suggestion:

Note: The printer has a 64 character FIFO buffer.

The routine is written as CP/M List routine, data being sent out is moved in register C, not B as in SOLOS.

LIST
CALL SEOUT ;SEND A CHARACTER OUT
LDW A ;GET CHARACTER COUNT
INR A ;BUMP THE COUNT
STA CHRCNT ;STORE NEW COUNT
CPI 6F ;SEN 66 CHARACTERS?
JZ 55 ;IF 60, SEND BUFFER MARKER
CPI 55 ;IF NOT, 60?
JNZ 55 ;SEND OUT BUFFER MARKER
CALL SEOUT ;TO HYTYPE I
BACK POP H

PUSH H

BACK TO MAINLINE FOR MORE STUFF

;GET STATUS
ANI 48 ;MASK FOR ALT $F8H READY
JZ WAND ;LOOP AROUND IF NOT READY
IN $F8H ;GET DATA
ANI $7F ;FLIP OFF THE HIGH ORDER BIT
CPI $7F ;IS IT HYTYPE I ANS-PACK?
JNZ $F8H ;IS NOT
RA ;ANP-H, CHECK AGAIN
JMP CHRCNT ;ZERO THE COUNTER
SEOUT IN $F8H ;GET STATUS
RAL ;PUT HIGH BIT IN CARRY
JNC SEOUT ;GO ROUND AGAIN
MOV A,C ;GET CHARACTER READY
OUT $F8H ;SEND IT OUT

;HYTYPE I

CHRCNT DB $0H

Keep up the good work.

Wayne Wilson
PROPRIETARY SOFTWARE

Proteus item P1:
On Helios disk with manual $300.00
Manual only $35.00

Proteus item P2:
Mail Master list management system for Sol with Helios disk, by BSG. Latest version is 3.0.2 system. See description in Proteus News, Vol 2, Number 6.
On Helios disk with manual $400.00
Manual only $35.00

Proteus item P3:
MailSort supplement to MailMaster, by BSG. Latest version is 1.0.1 system. See description in Proteus News, Vol 2, Number 6.
On Helios disk $150.00
Manual only $25.00

Proteus item P4:
AccPac General Ledger and Financial Reporting system for Sol with Helios disk, by BSG. Latest version is 1.3.4 G/L system, 1.1.2 F/R system disk. See description in Proteus News, Vol 2, No 6.
On Helios disk $600.00
Manual only $35.00

Proteus item P5:
On Helios disk $600.00
Manual only $35.00

Proteus item P6:
AccPac Accounts/Payable system for Sol with Helios disk, by BSG. Latest version is 1.0.2 Daily, 1.0.3 Monthly. See description in Proteus News, Vol 2, No 6.
On Helios disk $600.00
Manual only $35.00

Proteus item P7:
AccPac Programmer's Package for creating custom AccPac programs, by BSG. Latest version is 1.1.0 system disk. Requires PTC Disk Fortran system. See description in Proteus News, Vol 2, No 6.
On Helios disk $150.00
Manual only $25.00

Proteus item P8:
(Discontinued)

Proteus item P9:
(Discontinued)

PROCESSOR TECHNOLOGY SOFTWARE
SOURCE AND OBJECT CODE

Note: These items are made available under license from Processor Technology Corporation. The terms of Proteus's license require that we have users of the SOURCE CODE sign a specific agreement. A license fee is required for two reasons: to defray the cost of acquiring the source code and to generate revenue for Proteus operations, including compensation of people who do significant work on repairing, maintaining, and enhancing the software.

The personal use license allows the licensee to use the code, regardless of how it is obtained (by purchase from Proteus, copied from another licensee's disk, etc.). So two or more Proteus members may join together and share one set of media. But each user must be licensed.

A commercial use license is available at addition cost. It allows distribution of object code derived from the source, with no royalties to Proteus or Processor Tech. Request price quotation.

Proteus item P10:
Source code for cassette-to-memory assembler Software $1, cassette-to-cassette assembler ASIM, PACK and UNPACK tape reformatting routines. Object code for FOCAL interpreter (source is not available).

License for personal use (required to purchase software on media below) $50.00
On Helios disk $15.00
On Sol/CUTS cassette in CTAPE format (C-90) $15.00
Assembly listings (approximately 267 pages) $40.00
ASIM manual $3.00
FOCAL manual (25 pages) $3.75
SOFTWARE $1 manual $3.00
PACK/UNPACK instruction sheets $0.50

Proteus item P11:
Source code not available. Object code for GAMEPAC 1, GAMEPAC 2, and TREK-80.

On Helios disk, runs on Sol/Helios $15.00
On Sol/CUTS cassette, runs with SOLOS/CUTER $10.00
GAMEPAC 1 manual $3.75
GAMEPAC 2 manual $3.00
TREK-80 manual $3.00

Proteus item P12:
Source code for Optional Precision Disk BASIC 1.1 mod 0, Disk BASIC/5, and Extended Cassette BASIC without MAT (matrix equation) statement. (WE HOPE TO PUT MAT STATEMENT BACK INTO E.C.BASIC AND RELEASE THE UPDATE AS SOON AS WE CAN.)

License for personal use (required to purchase software on media below) $100.00
On Helios disks (2) $30.00
On standard CP/M disks (2) $30.00
On cassette $55.00
Extended Cassette BASIC manual $20.00
Opt Precision BASIC addendum for E. D. BASIC manual $1.00
Disk BASIC/5 manual $5.00

"RPO" means "request price quotation."

Proteus item P13:
Source code for Extended Cassette BASIC only, without MATrix statement.

License for personal use (required to purchase software on media below) $50.00
On (1) Helios disk $15.00
On (1) C-90 Sol/CUTS cassette in CTAPE format $15.00
Assembly listing (127 pages) $20.00

Proteus Item P14.
Source code and object code for ALS-8 program development system consisting of a memory-to-memory assembler, video editor, and 8080 simulator.

License for personal use (required to purchase software on media below)
- On (1) Helios disk or standard CP/M disk $15.00
- On (1) C-90 cassette in CTape format $15.00
- On (1) C-90 cassette in Greenlaw's format for CP/M $15.00
- Source listing (about 130 pages) $20.00
- ALS-8 manual $7.50

Proteus Item P15.
Source code for PTOS, the Processor Tech disk operating system, including most command files in source code.

License for personal use (required to purchase software on media below)
- On (3) Helios disks or (4) standard CP/M disks $45.00
- On (10) Sol/CUTS C-60 cassettes in Archive format $100.00
- On Sol/CUTS C-60 cassettes in Greenlaw's format $90.00
- A sembly listing of RESIDENT file (200 pages) $35.00
- Assembly listing of GET command which reads Archive format cassettes and CTape tape driver routine.
   (These are necessary if you want to write a program to read Archive tapes into a non-PTOS system.) $9.00

Proteus Item P16.
Containing SIMUCizer, ParaSol driver, DISKT Helios diagnostic test, DCHECK file checker for PTOS, and memory tests.

License for personal use (required to purchase software on media below)
- On Helios disk $25.00
- On C-90 cassette $15.00
- Documentation of these programs will appear in the Proteus "Encyclopedia Processor Technica" to be published in 1981.

Proteus Item P17.
EDIT, cassette-to-cassette editor that allows editing of the source files that are in CTape format. It also edits files in SOLOS/CUTER byte-mode (256 byte block) or Extended Cassette BASIC text (T) format. Will edit files that are too large to fit into memory, as many of the major source files are. Also includes Pack and Unpack routines that change block-mode files to byte-mode files. (Useful for changing SOLOS/Cuter Shved files into 256-byte block files, and vice versa. For example, ALS-8 and BASIC source files.)
- On Sol/CUTS cassette in executable form, with manual $30.00

Proteus Item P18.
ASSM cassette-to-cassette assembler that will assemble source files too large to fit into memory in one load. Works well in conjunction with EDIT above.
- On Sol/CUTS cassette in executable form, with manual $10.00

OTHER PROPRIETARY SOFTWARE

Proteus Item P19.
Nevada COBOL compiler, a subset of ANSI-74 COBOL. Two versions available: for the PTOS disk operating system (frozen at version 1.0), or for CP/M disk operating system. By Ellis Computing.
- On Helios disk for PTDS $99.95
- On Helios disk for Lifeboat CP/M $99.95
- On CP/M E standard diskette $99.95
- On NorthStar single density for CP/M $99.95

Proteus Item P20.
Disk PILOT, an extended version of PILOT computer dialog language. Designed for computer aided instruction, including control of video cassette recorder connected to Sol parallel printer. Present versions require a Sol/Helios or Sol/Northstar. Other versions under development by John Storkweather.
- On Helios disk for PTOS $99.95
- On Helios disk for Lifeboat CP/M $99.95
- On NorthStar disk for CP/M (specify density: SD/DD) $99.95

SALES TAX REMINDER

When ordering items from Proteus, members in California should remember to add sales tax. Peripherals are not subject to sales tax, but computer hardware, software, books, and pamphlets are taxable if sold to a California address. Our update service, where we upgrade a program on your disk to a more recent revision level, is considered a non-taxable labor item. Subscriptions are not taxable.

SOL AND HELIOS SERVICE
IN LOS ANGELES AREA

Jack Kinney and Steve Sakamoto have had extensive experience in servicing the Helios disk and Sol computers owned by UCLA Computer Science Department. They are offering their services to any Sol owners in their area.

Jack has written that UCLA had about 45 Solus in many departments since 1976, so they have really learned all about Sol service. When PTC was in business, Jack obtained all of their available technical aids developed for factory and dealer use.

Jack also designs custom interfaces, primarily for the experimental Psychology department at UCLA, and he is available on a limited basis for outside work on his own time.

If you need someone who knows what he's doing and has the equipment, contact Jack Kinney, Bionotic Designs, 5660 Topanga Drive, Tarzana, CA 91356, (213) 345-9775 (evenings and weekends).

Also, see the modification Jack has contributed to this issue of the newsletter. It provides an automatic repeat function that repeats any key after it is held down continuously for a certain period of time, much like the automatic repeating keys on a typewriter.

(Editors note: Jack actually wrote to us long ago, but his letter got delayed in the shuffle between editors last year. Sorry, Jack, but we're back on track now.)
TABLE OF CONTENTS

EDITOR'S COLUMN ........................................... 1
SEE US AT THE COMPUTER FAIRE .................. 1
NEW PRODUCT NOTES ...................................... 2
SOL SYSTEMS LIST ..................................... 2
REPAIRING YOUR SOL/Joe Maguire ......... 3
WILD CARD OPTION FOR THE MEMORY SEARCH COMMAND OF NORTH STAR'S MONITOR 5.1 / Joe Maguire ....... 4
UNCLASSIFIED ADS ......................................... 5
STARMAN GAME PROGRAM .................................... 6
LOW-COST OPTION GIVES 6 COLORS TO HOUSTON INSTRUMENT PLOTTERS .......................... 6
STAR SULS GAME PROGRAM .................. 7
HEX MATH ROUTINES /Joe Maguire ......... 8
FOR SOLOS MONITOR ...................................... 9
USEFUL ROUTINES FOR INTERFACING THE SOLOS VDM DRIVER AND MICRONEOS DISK BASIC / Melvin M. Dalton ....... 10
BUG SQUAD / Joe Maguire ............................ 10
LETTERS .................................................. 13
.. ON PERSONALITY MODULES, MX-80 PRINTER, MEMORY BOARD /Gib Zeratesky ....... 13
.. ON VISTA DISK, TAD ENTERPRISES, ETC / J.K. Barber .................. 14
.. ON NO-MASSLE DISKS, BASKET CASES, ETC / Bruce Robert Evans, M.D. .... 14
.. ON SOL KEYBOARD MODIFICATION / J.R. Gould .................. 15
.. AUTOMATIC REPEATING MODIFICATION FOR SOL KEYBOARD / Jack Kinney ......... 15
LETTERS .................................................. 16
.. ANSWER MAN: BUG IN PILOT .................. 16
.. ON SOL AND OASIS BOOKKEEPING / R.E. Thompson .................. 16
.. WANTED: "INTELLIGENT" TERMINAL PROGRAM / Nathaniel Pulisfer ............................ 16
.. NEEDS AN 80 X 24 DISPLAY / Chuck Hanson ...... 16
.. ONCE AGAIN, ON RELOCATING SOL TO F0O0 / Bruce Barron .................. 17
.. ON PRINT DRIVER FOR ASL2 / Wayne Wilson .......................... 17
PROTEUS CATALOG: PROPRIETARY SOFTWARE ...... 18
SOL AND HELIOS SERVICE IN LOS ANGELES AREA ....... 19
BUSINESS BASIC AVAILABILITY ............ 20

FLASHI BUSINESS BASIC FOUND

When we distributed the source code license and order form recently, we omitted Business Basic because it wasn't among the disks we received. But through a stroke of luck, we have obtained a disk with Basic 1.2 mod 1, "Level I Business Basic" source code just recently. Members who have purchased the license to use PTC Disk Basic source code (Item P12 license) may add this Business Basic disk to their order for the software on Helios or CP/M disk, at $15 per disk. This BASIC was never released by PTC except in a preliminary demo version, so it may need tender loving care. For that reason, it is not a substitute for the Optional Precision BASIC. We also have a write-up on Business Basic Demo version for $2.

This BASIC provides the features of Optional Precision Basic 1.1 plus CHAINING (similar to XEQ but preserves variables in COMMON area), COMMON statement to declare variables in common area that is unchanged when chaining to another basic program module, "exact" input option on INPUT statement, SYSTEM statement that provides various options such as disable MODE SELECT key interruption of running programs, etc., the USER function which allows testing of system parameters. It also allows error routines to return to the normal flow after handing the error, and it corrects a bug in user defined functions.
Through the courtesy of the Computer Faire management, Proteus had a meeting room and exhibit booth in the 6th West Coast Computer Faire, April 3-6, in San Francisco, California. This year I had a much more pleasant experience at the Faire than in the past, because I didn't try to do too much. Many members came by to say hello and ask questions. Numerous newcomers also came by, some who recently bought a Sol and others who just never knew we existed.

The Faire was larger than ever. Over 30,000 registrations were sold—more than they expected. The Faire ran out of programs on Saturday and had to find a printer open on weekends to do a rush job to accommodate the expected Sunday crowd. Pre-Faire radio coverage was excellent. One of the large retailers in the San Francisco area gave many plugs to the Faire in the two weeks before. I guess it paid off for them, because I saw two young men trucking in dozens of Apple computers and overhear that they sold 30 Apples on Saturday alone.

There were a few new computers on exhibit this year, but definitely less excitement was shown than in the early days of personal computing. The biggest interest was around the new Osborne portable system. This is a 2-80, 64K, system with two minifloppies, keyboard, and 6" video monitor, all in a rugged aluminum case that closes up to be carried like luggage. They plan to have a battery pack for it, which will last onto the side and allow it to operate 5 hours on one charging. The idea is that business people will be able to carry the computer on-board with them on airline flights, and use the system in the air. (PCF and CAB approval is being sought by Osborne.) The size meets CAB regulations for under-the-seat carry-on luggage. Another interesting point is that the system sells for less than $1900, quite a bit including CP/M and application software tools (a wordprocessor, Microsoft BASIC, a VisiCalc-like program for financial worksheets, etc.).

Another interesting machine was the Micro-Expander, which we've mentioned before in Proteus/News. This is a Sol-like configuration (without the walnut sides though) containing a 1-80, a standard 80-pin slot, (1) card slots, serial & parallel ports, TRS-80 format cassette interface, 24x80 color video interface, integral keyboard, and an internal expansion bus allowing memory and peripheral expansion without losing the 8-100 bus slots. Including a 64K S-100 memory board, they were selling this computer for $1875 at the Faire (reg. $2200) including Microsoft BASIC.

It is a high price for a bare-bones computer, but when you put a disk and monitor on it, you have a cost-effective system that has more features than any other on the market near that price. They are talking about adding RGB color output, which allows vivid color display available only on high-priced graphics equipment. The signals are already available on the computer; all they need is to add a connector.

The surprising thing about both of these new computers is that they are both products of the same man who designed the Sol! The same theme can be seen running through all 3 computers: the all-in-one package concept of terminal integrated into a quality computer system. Lee Felsenstein has been prolific, and we hope that he finally reaps some financial rewards commensurate with the quality of his work. The Apple boys (Wozniak and Jobs) made a clever little machine, but their Apple II can't compare to the computers done by Lee. Maybe this time Lee will strike the silicon gold mine. (Wozniak and Jobs began Apple while in their late teens and early twenties. A few years later they were multi-millionaires when Apple became a publicly-owned corporation.)

For more information on these new computers, contact Micro-Expander, Inc., 6835 W. Higgins Ave., Chicago, IL 60656, (312) 792-1136, and Osborne Computers Corporation, 26500 Corporate Ave., Hayward, CA 94545.

Another booth at the Faire caught my attention, and I can recommend these people since I have subsequently used their service. I have an Epson MX-80 printer and a Diablo daisy-wheel printer. The cost of keeping these printers fed with ribbons has been significant. The Epson ribbon cartridge lists for about $18 and Diablo-compatible ribbons go for $6 to $8. Finally, a company that sold these ribbons had fresh ribbon, and they would handle small quantities. I had an MX-80 ribbon reloaded for only $4.50 and a Type II ribbon reloaded for only $4.50, depending upon the type of ribbon. (The brown carbon-film "multi-strike" ribbon looks great on my ivory letterhead. It is only $3.12.) The company that did this is American Ink Products Company, 527 Howard Street, San Francisco, California 94105, (415) 982-0161. The prices I quoted may be slightly higher now, because there was a 10% discount at the Fair. If you ask for it, maybe they'll give you the discount on your first order. They have a complete price list showing all of the ribbons they process. Even if your printer isn't on the list, they may be able to quote a price. My order was filled promptly and the cartridges were all returned in sealed plastic bags to preserve freshness. I recommend them highly.
Another eye-catching booth was the Japanese computer exhibit. Strikingly bold color displays (RGB no doubt), well made consumer electronics-type cases, and some do colors like "Sharp." They aren't ready to push into the American market, but they're already pushed American companies like Commodore out of the Japanese market for personal computers. When they are ready to jump in here, look out. Already they are strong competition in the printer market (Epson, C.toh). I hear Centronics is in trouble due to Japanese competition, and I don't doubt it. Epson is air-shipping literally tons of little printers into the US at a price that Centronics can't match.

**INDUSTRY RUMORS**

Datamation magazine (April 1981) reports that IBM has denied the rumors that it is working on a small computer venture. And I don't doubt it. But the Datamation reporter claims IBM will introduce a desk-top computer this summer. It is aimed directly at the Apple, RadioShack, and Commodore computers. Rumored to have a price tag under $5000, it supposedly will be an Intel 8088 processor.

What is Dr. Ken (UCSD Pascal) Bowles up to lately? Datamation says he's started a company called TeleSoftware Inc. to develop the first commercial "Ada" compiler by early 1982. "Ada" is the language adopted by the Department of Defense for all new government projects. The DoD has invested $50 million in developing Ada and will require it to be the computer language used by all Defense contractors on government contracts. It is bound to be the industry standard in the coming years. Datamation says Bowles moved to Ada due to the difficulties in using Pascal in distributed processing. Pascal was strongly influential in the design of Ada language.

Datamation (same issue) also has an article on DBMS (data-base management systems) for microcomputers, which gives a brief but favorable description of the Micro Data Base Systems, Inc., package called "MDBS," which we've announced in prior issues of this newsletter. However, Computer Decisions magazine (pages 48-52, April 1981) reports on a study by Andrew Sharp of Tab Products, Inc., benchmarking MDBS on an inventory application he wrote for in-house use at Tab.

Using a 8088-based CP/M system with Microsoft BASIC, it took 9 seconds for the system to locate a record in a 1,000 item file, 23 seconds to insert a single record into the file, and 63 minutes to insert a file of 260 records into the 1,000 item file. Using MDBS's estimates, an analogous insert into a 10,000 item file would take 100 hours, Sharp estimated. And this is using a fast hard-disk drive, not a floppy!

For comparison, we use MailMaster to maintain our Proteus/News subscriber list. In the worst case, it takes about 2 seconds for our Sol to locate a record in a 1,000 item file, and I believe the time would not be much different for a 5000 item file. And this is using a floppy disk system.

With all of its versatility, the MDBS system plus the Microsoft BASIC just must have too much processing overhead for the task. Sharp and the article's author Naselison believe that the 8-bit word is the culprit, because the IBM 370/148 is no more than 20 times faster than the 8085 but doesn't suffer this slowdown. Before you suck $1000-$2000 into MDBS and its options, be sure your application needs that much versatility. It may make the system go slow that it is unusable.

**PRODUCT ANNOUNCEMENT**

**SOL/NORTHSTAR USER'S GUIDE**

Remember how difficult it was to know where to begin when you were first studying your user's manual? Sol owners with NorthStar disk drives are faced with the NorthStar operating system manual, the NorthStar BASIC manual, the NorthStar DOS manual, and so on. It can be difficult to know how to begin, because you need to know what you are doing before you can figure it out.

The Lindsay Group, back in 1978, tried to guide the novice through the learning process with a 43 page booklet called "Sol 20 Meets the North Star Disk Drive." This covers the basics of how to turn on the machine, how to talk with the disk drive, how to use the NorthStar BASIC, how to use the NorthStar DOS, etc. There is a table of commands telling you the command name, which layer of the system uses the command (Solos, DOS, BASIC) and where in the guide you can find a description of what it does. Other information is summarized in the guide, so you don't have to hop through the manuals to find a frequently used item.

But the guide really clears up the technicalities for the novice, but it may be worth the price for you. Frank de Coster, a Proteus member, has a bunch of these booklets which he will sell just to recover printing costs at $7.50 each including mailing. (They originally retailed for $19.95.) If you have a NorthStar/Sol combination, it may even be worth the price to buy one now as a selling point for some future time when you may want to sell the system.

If you want one, send $7.50 to Frank de Coster, 315 Wayne Place, Oakland, CA 94606.

**INDUSTRY STANDARD TAPE DRIVES**

If you want to obtain data from universities, government agencies, DOD, or mainframe software libraries, and the like, ANSI-standard IBM-compatible 9-track tape drives should be used. The cost is $1500-

The PHS-100 HRZI Formatter/Controller costs $995 in single quantity, and will enable you to use a 5-100 bus 8031 CPU or E-200 CPU to read and write 9-track magnetic tapes using a Pertec standard tape transport. Apparently, Pertec transportation was so successful, several other manufacturers used an identical interface specification for their drives. With the latter transports, tapes can be daisy-chained onto one controller. The interface is actually two boards; one for the 5-100 bus and one for the tape transport, etc. Both are 1.25 ips tape drive, and a 4 Mhz can go to 25 ips (inches per second). Other drives speeds up to 37.5 ips can be obtained by software modifications. Timing is in software, so Sol may require a slightly different delay routine, due to its clock frequency being 2.045 MHz with the 8080A microprocessor. You may be able to adjust for this slight difference when setting the tape speed on the transport.

(Pacific Office Supply has a Sol, so specify Sol-compatibility when you order, and they should be able to check it out in their shop.)

Software routines supplied with the controller allow the computer to rewind, forward space record, back space record, forward space file, etc., Status of the drive, can be read by CPU, including off-line/on-line, invalid command, density.
Way back in the early days of interactive computer
systems on big computers, researchers began working on
computer-aided-instruction (CAI) projects. It soon became
evident that the computer programming languages were not well
suited to writing the interactive programs needed by teachers
for programming a dialog with their on-line students.

One of the pioneers in CAI, John Starkweather, Ph.D.,
developed a simple programming language for his
instructoral author just enough computing power and a simple
language for making concise programs. The language was not
intended as a general-purpose computing language, just as it was
weak in calculation but strong in string-processing
features. Starkweather named the language "PILOT," for
Programmed Inquiries, Learning or Teaching, and it has become the
most widely used language for CAI.

While Processor Technology was a rising star in the
microcomputer field, Dr. Starkweather developed an 8080
implementation of the PILOT language and customized it for the
Sol computer. (Dr. Starkweather is one of our members.)
Processor Technology Corporation actually distributed the
cassettes version of PILOT, and the disk version was under
development when PTC went out of business.

But Starkweather didn't stop development, and he now has
released the language on several different disk formats, taking
advantage of the extra features possible with a disk. These
versions can be purchased through Proteus, as our item number
P10, for $99.95 on PTDOS/Helios disk, or on Lifeboat/CP/M
compatible Helios disk, or on CP/M-compatible NorthStar disk.
The Sol/CUTS cassette version (SCGOS/CUTER compatible) is still
available with original manual, as Proteus item P11 for $49.95,
but it lacks some of the new features.

A company in Washington state called Micropi "micro
program to instruction", I think) offers a version of PILOT
called "Common PILOT" for CP/M, NorthStar DOS, TRS-80, Helios
II, and TKRAK disks at various prices from $275 to $295.

Considering that Starkweather's PILOT comes from the inventor,
his price seems very reasonable in comparison.

Since few readers may know of the power of PILOT, here is
a brief introduction.

The task that PILOT is really designed to do is this. An
instructional program needs to let the author present some text
or pictures, ask a question, accept a response from the
student, analyze the response, and respond accordingly. If the
students reply is equivalent to the correct answer expected or
to some expected incorrect answers, the program should present
instructional text (such as the correct answer, tutorial
material, etc.) and branch off to an appropriate part of the
instructional program.

What PILOT does for the author/programmer is that it
eliminates the programming jargon and allows the author to
concentrate on the sequence and content. PILOT also has some
powerful string capabilities that let the
computer decide if the student's response really is equivalent to
one of the expected right or wrong answers. The program must
be able to accept many variations of grammar, such as singular
and plural, and recognize them as the right answer.

For example, if the answer you expect is "running", you
may need to accept as equivalent the answers "run", "runs", and
even some synonyms such as "jogging", or misspellings such as
"jogging". You also need to eliminate extraneous words and just
look for the key word in the student's response, because you
may get various forms of sentence fragments, such as "he isun", "he ran", "running, I think", "he would run", and so
on.

To program all of these string manipulations in BASIC
would take quite a few instructions and would really obscure the
actual flow of the program, which is to detect the right answer
"running". In PILOT the "match" instruction does it all with
this much work:

M run, ran, jog

This instruction tells PILOT to examine the student's response
(stored in memory) for any word beginning with "run", or the
word "ran" not embedded in a longer word, or any word beginning
with "jog". The entire response is scanned until the first
match (yes or no) is set in an internal register for testing by
subsequent instructions.

Based on the results of comparisons like these, the
program can branch to other sections called subroutines, tally
scores, record a log of the answers on tape or disk,
present other data on the terminal, and so on. A limited
amount of integer arithmetic can be done.

PILOT has had various dialects develop, just as BASIC has.
A common core of instructions was standardized for PILOT. The
core includes "I" for type, "N" for accept, "M" for match pattern,
and "J" for jump. "I" for use (subroutine call), "C" for end, "I" for compute, "R" for
"//", "U" for remark. All of the instructions can be made conditional by
appending the letter "Y" or "N" which tests the result of the last
recorded match done. For example, "Y" means type if the
"I" instruction, "N" means type if the
match was successful. Simple strings in PILOT don't require quotes around them, since
they are used so often. Instead, variables are identified with
a leading character (such as S for string variables and I for
numeric ones) that distinguishes them from text in the string.

For example,

*START
T: Please tell me your name.
A: NAME
T: hi, NAME?
A: 12
T: is it fun to be 12 years old?

You can see that this is really a dialog programming
language, and it can be used for any sort of dialog not just
programmed instruction. The current avid of verbal games like
"Adventure" could be programmed with some sophistication using
PILOT and the conciseness of the language would allow larger
programs to fit into limited memory space. Even applications
such as medical history-taking could be done this way.
HARD DISK FOR HELIOS

At the Computer Fair, I ran into two former employees of Processor Technology Corporation who mentioned that they are in the process of forming a company to service and upgrade Helios disk units. They plan to put an 8 Winchester hard disk drive into the empty side tray of the Helios II two-disk cabinet, and Morrow Designs hard disk controller. Modification would be made to PDOS to accommodate the new disk.

I mentioned that Proteus has the source code to PDOS, and they were interested in working together with us. I know that many users are interested in adding the extra capacity of a hard disk, and this seems to be the ideal way. I have a Helios. Those who do not have Helios would be able to use the regular 8" Morrow hard disk, which is available in 10 megabytes and soon in 20 megabytes.

When the company is ready, you will hear about it in this newsletter. One of PTC's best Helios technicians is involved in the company, so we know the work will be of expert quality.

24x80 VIDEO MODIFICATION FOR SOL

We have been told by a southern California manufacturer that a piggy-back board is being designed for modifying the SOL's video display to a standard 24x80 format. This is a modification, not a new display board which would require another slot in the bus. When it is available, ProQuest will test it on our system and review the product in the newsletter. The biggest handicap the SOL suffers right now is the small screen, since most pre-programmed application software assumes an 80 column screen. This modification board will bring SOL up to date. We're looking forward to it.

FORER PTC ENGINEERS FORM SERVICE CENTER

A group of former Processor Technology technicians and engineers have formed a company for repairing, servicing, and customizing all of PTC's product line and most 8-100 bus products. They have experience in PTC hardware, including the SOL, Helios disk, SOL memory boards, printer interfaces, etc. They also have factory experience in Morrow and other products, plus extensive experience in NorthStar, Godbolt, Shugart, PerSei, Remex, Micropolis, etc.

They will service hardware, help with interfacing peripherals to computers, customize CP/M for specific hardware configurations, perform preventive maintenance, and so on. Helios alignment has a flat rate of $55 plus shipping; Helios repair flat rate $90 plus parts & shipping (unless the faulty part is not a field-replaceable item). Other service $40 per hour. They will give estimate before performing work, if requested.

Contact ACE Computers, Inc., 3308 Moraga Blvd, Lafayette, California 94549. (415) 283-6630.

(Editor's note: I know that when PTC had a tough one to repair, one of these fellows was the man whom they called upon. One of PTC's former corporate officers gave me nothing but the highest personal recommendation for his capability. So I think we are fortunate that this group has gone into the service business. All of these men have worked for some of the biggest names in 8-100 microcomputing. -- Stan.)
PROTEUS CASSETTE SOFTWARE LIBRARY SERVICES

At the present time, the Proteus Cassette Software Library is offering services to Proteus members in 4 different areas:

First, we have the original Proteus Library cassettes. We now have available cassettes C1 - C10 (except C9, which has been delayed). These remain priced at $10 without a contribution, and $8 with an acceptable program contribution. These have been described in past issues of PROTEUS NEWS, or you may send me a SASE for a catalog sheet.

Next, we have on tape the full CPM Users Group library. At the present time, CPMUG Disks 1 - 47 are available, with several more expected soon. A master catalog of these CPMUG volumes is available, either as hard copy or on tape, for $6.00. Unless you specify tape, you will be sent the hard copy. The CPMUG volumes are priced at $10.00 each (with or without a contribution).

In addition, there are another 7 disks from a new CP/M-oriented users group known as SIG/M. This includes the famous ADVENTURE game, a $502 simulator, and a number of CP/M utilities. The SIG/M disk catalog is included on the CPMUG Catalog tape, and the SIG/M volumes are also priced at $10.00 each.

I expect soon to have additional volumes from the C Users' Group and one of the Pascal Users' Groups. If you are interested in these, you may write me.

The CPMUG and SIG/M software catalogs are provided on standard CUTS-formatted cassette tapes, and can be loaded onto your CP/M disk system via a tape-to-disk loader program. To load the tapes, you need a SOL (or a compatible machine with a CUTS board and CUTER), some sort of disk system with CP/M v1.4 or v2.2, and your cassette recorder. You should have the motor control cable, too. Hard copy documentation is issued with the programs to tell you how to get started.

Finally, we offer a CP/M file transfer service. If you have a program on a standard 8" single density CP/M disk, but have a Helios/CP/M or a 5" disk system, we can transfer the programs from your disk to a tape format which you can then load into your disk system. The price for this service is $10.00 per 8" disk, regardless of how much or how little is on the disk. The price includes the cassette and postage, and the special tape-to-disk loader program. If you want your 8" disk returned, pack it in a reusable shipping box and enclose extra return postage (say, $1.00 for each 2 disks).

Send orders, inquiries and program contributions to:
PROTEUS Cassette Software Library
C/O Lewis Moseley, Jr., Librarian
2576 Glendale Court, NE.
Conyers, GA 30018

If you want a personal reply, please enclose a self-addressed stamped envelope. Enjoy!!

PROTEUS LIBRARY CASSETTE C8: MORE EC BASIC PROGRAMS

This tape contains a number of interesting video graphics demonstration programs, and also several serious programs. Each is recorded twice on side 1 in EC BASIC INTERNAL COMPILLED FORMAT, and once on side 2 in TEXT (PROTEUS STANDARD BYTE ACCESS) FORMAT.

<table>
<thead>
<tr>
<th>#</th>
<th>NAME</th>
<th>TYPE</th>
<th>SIZE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TCOPY</td>
<td>U</td>
<td>1K</td>
<td>OBJECT CODE FOR THE CUTS TAPE COPY/VERIFY PROGRAM BY LEMIS MOSELEY, JR. BRIEF INSTRUCTIONS FOR USE ARE INCLUDED. SOURCE IS ON CASSETTE C9 AND C10.</td>
</tr>
<tr>
<td>2</td>
<td>RNCHI</td>
<td>C</td>
<td>1K</td>
<td>RANDOM CHARACTERS ON THE SCREEN</td>
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<tr>
<td>3</td>
<td>RNDBW</td>
<td>C</td>
<td>1K</td>
<td>RANDOM BLACK AND WHITE ON SCREEN</td>
</tr>
<tr>
<td>4</td>
<td>SETTP</td>
<td>C</td>
<td>2K</td>
<td>OBSERVE EFFECTS OF 'SET DE:'</td>
</tr>
<tr>
<td>5</td>
<td>DICE</td>
<td>C</td>
<td>3K</td>
<td>A NICE VIDEO IMPLEMENTATION OF THE ROLL THE DICE GAME. ON-SCREEN TIMER. RULES NOT PROVIDED.</td>
</tr>
<tr>
<td>6</td>
<td>BOGGI</td>
<td>C</td>
<td>2K</td>
<td>A NICE VIDEO IMPLEMENTATION OF THE BOARD GAME. ON-SCREEN TIMER. RULES NOT PROVIDED.</td>
</tr>
<tr>
<td>7</td>
<td>BINGO</td>
<td>C</td>
<td>2K</td>
<td>CALLS THE NUMBERS FOR A BINGO GAME AND RECORDS THEM ON THE SCREEN FOR CHECKING WINS.</td>
</tr>
<tr>
<td>8</td>
<td>DODDL</td>
<td>C</td>
<td>2K</td>
<td>DOODLE ON THE SCREEN. SELECT A CHARACTER AND LEAVE A TRAIL OF THEM ON THE SCREEN.</td>
</tr>
<tr>
<td>9</td>
<td>DATA</td>
<td>C</td>
<td>4K</td>
<td>A SOPHISTICATED REAL-TIME DATA GATHERING PROGRAM, CURRENTLY SET UP FOR MEDICAL MONITORING, BUT A GOOD EXAMPLE OF THE TECHNIQUE.</td>
</tr>
<tr>
<td>10</td>
<td>TTYPE</td>
<td>C</td>
<td>5K</td>
<td>TOUCH TYPING PRACTICE (WE ALL NEED IT!), WITH DIFFERENT LEVELS OF DIFFICULTY. FULL KEYBOARD SHOWN ON SCREEN.</td>
</tr>
<tr>
<td>11</td>
<td>CIRC</td>
<td>C</td>
<td>1K</td>
<td>THE NEXT GROUP OF PROGRAMS, THROUGH L1579, ARE VIDEO GRAPHICS, AND SHOW THE PLOTTING OF A NUMBER OF TRIG FUNCTIONS. OBVIOUSLY, THE L1579 FUNCTION.</td>
</tr>
<tr>
<td>12</td>
<td>SPIRL</td>
<td>C</td>
<td>1K</td>
<td>L1579 ARE VIDEO GRAPHICS, AND SHOW THE PLOTTING OF A NUMBER OF TRIG FUNCTIONS. OBVIOUSLY, THE L1579 FUNCTION.</td>
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<td>13</td>
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<td>1K</td>
<td>FUNCTIONS. THE BEATING HEART.</td>
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<td>14</td>
<td>L1572</td>
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<td>1K</td>
<td>PROGRAMS PLOT VARIOUS LISSAJOU FUNCTIONS.</td>
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<td>15</td>
<td>L1573</td>
<td>C</td>
<td>1K</td>
<td></td>
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<td>C</td>
<td>1K</td>
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<td>C</td>
<td>1K</td>
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<td>C</td>
<td>1K</td>
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<tr>
<td>20</td>
<td>L1578</td>
<td>C</td>
<td>1K</td>
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<td>21</td>
<td>L1579</td>
<td>C</td>
<td>1K</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>SHEAR</td>
<td>C</td>
<td>4K</td>
<td>GUNNERY PRACTICE AT SEA. CHOOSE THE RIGHT ELEVATION TO SINK THE ENEMY IN FLAMES.</td>
</tr>
<tr>
<td>23</td>
<td>FROG</td>
<td>C</td>
<td>3K</td>
<td>GRAPHICS FROG RACE, WITH BETTING, FOR MULTIPLE PLAYERS.</td>
</tr>
<tr>
<td>24</td>
<td>END</td>
<td>X</td>
<td>0K</td>
<td>TERMINATOR FOR TCOPY PROGRAM</td>
</tr>
</tbody>
</table>

USE THE TCOPY PROGRAM TO BACK UP YOUR CASSETTE.
# NAME | TYPE | SIZE | DESCRIPTION
1. **BYTE** .ASM 5K  | THIS ROUTINE, BY LEWIS MOSELEY, ALLOWS CP/M’S PIP.COM TO READ A PROTEUS STANDARD BYTE ACCESS TAPE FILE ONTO THE CP/M DISK, OR VICE VERSA. YOU CAN USE ALL OF THOSE PROGRAMS YOU WROTE FOR ECABIZAC. ALSO, LOAD SOURCE FILES PROCESSED BY ‘UNPACK’, AND TRANSFER TO/FROM OTHER SYSTEMS.
2. **BYTE** .DOC 4K  | THIS ROUTINE, BY LEWIS MOSELEY, ALLOWS CP/M’S PIP.COM TO READ A PROTEUS STANDARD BYTE ACCESS TAPE FILE ONTO THE CP/M DISK, OR VICE VERSA. YOU CAN USE ALL OF THOSE PROGRAMS YOU WROTE FOR ECABIZAC. ALSO, LOAD SOURCE FILES PROCESSED BY ‘UNPACK’, AND TRANSFER TO/FROM OTHER SYSTEMS.
3. **COMLINK** .COM 6K  | THIS PROGRAM INTERPRETATES CP/M WITH A D.C. HAYES 80-103A OR MICROMODEM 106 MODEM BOARD. IT ALLOWS SOFTWARE SELECTION OF LINE CHARACTERISTICS, SUPPORTS AUTO DIAL AND AUTO ANSWER, AND ALLOWS A TEXT FILE TO BE SENT TO OR CAPTURED FROM THE MODEM. FULL SOURCE CODE IS ON TAPE C10.
4. **COMLINK** .DOC 10K  | THIS GROUP OF PROGRAMS, BY GREENLAW, ALLOWS THE TRANSFER OF ANY KIND OF CP/M DISK FILE BETWEEN DIFFERENT SYSTEMS. THE CP/M FILE IS BROKEN INTO BLOCKS AND RECORDED TO THE CASSETTE. VERY LARGE FILES CAN BE TRANSFERRED, EVEN WITH A MINIMUM 16K SYSTEM. FULL INTERNAL ERROR CHECKING. ALSO, A CHEAP, IF SLOW, BACKUP FOR DISKS.
5. **DISKTAPE** .ASM 5K  | THIS GROUP OF PROGRAMS, BY GREENLAW, ALLOWS THE TRANSFER OF ANY KIND OF CP/M DISK FILE BETWEEN DIFFERENT SYSTEMS. THE CP/M FILE IS BROKEN INTO BLOCKS AND RECORDED TO THE CASSETTE. VERY LARGE FILES CAN BE TRANSFERRED, EVEN WITH A MINIMUM 16K SYSTEM. FULL INTERNAL ERROR CHECKING. ALSO, A CHEAP, IF SLOW, BACKUP FOR DISKS.
6. **DISKTAPE** .DOC 1K  | THIS GROUP OF PROGRAMS, BY GREENLAW, ALLOWS THE TRANSFER OF ANY KIND OF CP/M DISK FILE BETWEEN DIFFERENT SYSTEMS. THE CP/M FILE IS BROKEN INTO BLOCKS AND RECORDED TO THE CASSETTE. VERY LARGE FILES CAN BE TRANSFERRED, EVEN WITH A MINIMUM 16K SYSTEM. FULL INTERNAL ERROR CHECKING. ALSO, A CHEAP, IF SLOW, BACKUP FOR DISKS.
7. **QUIKTEST** .COM 1K  | A MEMORY TEST PROGRAM WHICH TESTS ALL MEMORY FROM THE START OF THE TPA UP TO THE BASE OF THE CIGS. RESIZE AND REBOOT TO STOP THE TEST.
8. **TCOPY** .COM 1K  | CUTS TAPE COPY/VERIFY UTILITY BY LEWIS MOSELEY, JR., MODIFIED TO LOAD FROM CP/M. ALLOWS UNATTENDED COPYING AND VERIFYING OF CASSETTE TAPE. USE TO BACK UP CASSETTES. OBJECT WILL BE INCLUDED ON MOST FUTURE LIBRARY CASSETTES, DOCUMENTED IN THE .ASM FILE.
9. **WD** .COM 2K  | A PRETTY-PRINTER WHICH GIVES NICE FORMATTED AND PAGINATED HARD COPY FROM A DISK TEXT FILE. THE .DOC FILE TELLS HOW TO CUSTOMIZE THE FORMAT TO YOUR NEEDS.
10. **XD** .DOC 2K  | TWO NICE EXTENDED DIRECTORY ROUTINES TO SUPPLEMENT THE BUILT IN DIR FUNCTION. XDIR GIVES A 4 ACROSS ALPHA-SORTED DIRECTORY. XDIF GIVES A COLUMNAR FORMAT, WITH FILE SIZES, WHICH IS BEST FOR HARD COPY. FROM CEMUG.
11. **PACK** .COM 2K  | DONATED BY PROCESSOR TECHNOLOGY CORP., AND MODIFIED TO LOAD FROM

**PROTEUS LIBRARY CASSETTE C10: CP/M PROGRAMS FOR SOL**

THIS IS OUR FIRST TAPE OF CP/M PROGRAMS, IN RECOGNITION OF THE FACT THAT MANY OF OUR PROGRAMS HAVE GONE TO DISK. THERE ARE 5 MAJOR PROGRAM SYSTEMS, ANY ONE OF WHICH IS WORTH THE PRICE OF THE CASSETTE, AND SEVERAL UTILITIES. THE FIRST FILE ON THE TAPE IS THE 'TAPEDISK.COM' FILE, WHICH IS MANUALLY LOADED, AND WHICH THEN LOADS THE REST OF THE FILES TO THE DISK. ALL OF THE FILES HAVE THE SAME NAME - CP/M - BUT DON'T WORRY; TAPEDISK KNOWS THEIR TRUE NAME. REFER TO THE HARD COPY DOCUMENTATION FOR LOADING INSTRUCTIONS.

**PROTEUS LIBRARY CASSETTE C11: MORE CP/M PROGRAMS FOR SOL**

THIS TAPE IS PRIMARILY FOR PERSONS WHO WANT THE FULL SOURCE LISTING FOR COMLINK. THE SOURCE, ITSELF ALMOST 60K, WOULD NOT FIT ON C10. ALSO INCLUDED ARE THE TAPEDISK/DISKTAPE PROGRAMS TO LOAD THE TAPE TO CP/M DISK, AND A MEMORY TEST.

**PROTEUS LIBRARY CASSETTE C10: CP/M PROGRAMS FOR SOL**

IN ALL, ABOUT 125K OF MATERIAL. ALL PROGRAMS ARE KNOWN TO WORK ON AN 8" SINGLE DENSITY SOFT SECTOR CP/M SYSTEM (TARBE), ALL WITH THE EXCEPTION OF XD.COM, ARE BELIEVED TO WORK ON ALL CP/M SYSTEMS. XD WILL PROBABLY GIVE SPURIOUS SIZE INFORMATION ON SYSTEMS OTHER THAN 8" SINGLE DENSITY SOFT SECTOR.
CONTENTS OF HELIOS LIBRARY H5

This diskette contains the source and/or object code for a few device drivers. Those with type IW are WordWizard-compatible printer drivers. The source code for these begins with the lowercase "w", as in "wSol3". To use the object code, GET the driver onto your system disk, RETYPE it type "D" for driver, and then use it.

The SolPrinter drivers (nSol3, wSol3, mSol2, etc.) were written by the Basic Computer Group Ltd., in Vancouver, B.C., for use in WordWizard, MailMaster, etc. They may be used with any software, but be careful where they load to be sure they don't overlap other programs. The source code may be re-DOS'ed to other locations. The programs beginning with "m" meet the specifications of MailMaster and the AccPac programs. The drivers beginning with "w" are for WordWizard and support bidirectional, logic-seeking printing in a foreground/background mode. This is described in PTC updates specifying requirements for WordWizard drivers. They may be used by PTDOS in general, but will only give the special features for WordWizard if set in word-processing mode by a control/status call.

The Sol2 is a Diablo Hytype II printer metal printwheel printer, interfaced to revision E Sol parallel port using the PTC interface for the printer. If you have this printer but a revision D Sol, you will need to make an adapter cable that reverses one set of data lines as described in the Sol manual. This driver assumes you have the revised Hytype II interface which was named the SolPrinter interface. The original hytype II interface did not support some of the status conditions, such as paper-out, so the status test in the driver will need to be modified.

The Sol2E is the same as Sol2, but using the plastic printwheel Diablo.

Hytype driver is a Sol2E driver modified to support the original Hytype interface designed by PTC, not the later SolPrinter one.

Sol3 is a driver for a serial printer attached to the Sol serial port. It was designed for the SolPrinter3 which was a Diablo 2100 matrix printer, but it has also been used successfully with other printers, including the Epson MX-80.

DEC is a DecWriter driver for the Digital Equipment Corporation Decwriter. It can easily be modified for most common printers on the serial or parallel port.

Xerox or 1610 or WPXER are drivers for the Diablo/Xerox 1610 or 1620 delay-wheel terminals. They support ETX/ACK protocol and bidirectional printing.

CDC is driver for Control Data 9317 matrix printer.

SPIN is for NEC Spinwriter.

TI810 is for Texas Instruments 810 printer.

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02/17/81 FILES ON: H5

If you modify these programs and reassemble then, please remember that PTDOs requires all drivers to be loadable as one logical block. The assembler doesn't usually create image files in this format. To convert the object file into a single-block image file, use the command:

```
EXTRACT file,B
```
which will *scrunch* the file into one block if possible. The *scrunched* file can be RETYPE'd into type "D" for driver. The physical blocksize doesn't matter, but you should choose a block-size for efficiency. See the PTDOs manual for more info on this matter.
The following were donated by Frank J. Sanders. These programs handle personal finances.

ACCOUNTS - SAMPLE LIST OF ACCOUNTS
BANKERS - PROGRAM TO ENTER DEPOSITS AND WITHDRAWALS, AND OBTAIN READOUT OF TOTAL AND PERCENTAGES
CREATFILENAME - CREATE RANDOM FILE OF ACCOUNTS
EXPENSES - SAMPLE LIST OF EXPENDITURES
PERSONAL - PROGRAM TO ENTER DAILY OR WEEKLY EXPENDITURES, AND OBTAIN READOUT OF TOTALS AND PERCENTAGES
SERIAL - PROGRAM TO CREATE SERIAL FILE OF NAMES OR TITLES WHICH MAY THEN BE CONVERTED TO A RANDOM FILE IF DESIRED USING SER.RNDM PROGRAM
SER.RNDM - PROGRAM TO CONVERT SERIAL FILES TO RANDOM ACCESS FILES

Here is a group of programs from Preston Briggs of Interactive Computing.

PATCH1.5 is a program to allow the redistribution of attribute protected files on PTDOSS1.5 (not 1.4). I don’t have the source code unfortunately but it is pretty simple. Type PATCH1.5 and it will execute and return to PTDOSS. Then RETR file(s). For safety, you should re-boot afterwards as PTDOSS will continue to ignore the attribute protected

MESSAGE, IMESSAGE, BUILD, MES.S, and MESS TEM are a group of
useless programs I did for fun. Studying the source is a good way (maybe) to understand how to use the overlay handler and how to interface to PTDOSS in general.

MESSAGE will type a random (almost) message on the screen whenever run. I use it in my START.UP file to avoid the same old boot-ups over and over.

IMESSAGE is a utility file that contains the 32 messages that MESSAGE may choose from. IMESSAGE should be on the default diskette.

MES.S is the source code for MESSAGE.

BUILD is a DD file that I use to create or replace messages in the utility file IMESSAGE. It expects to run on the default diskette and requires IMESSAGE and MESS TEM.

FIND+ was originally inspired by the IEEE micro-mouse contest. This was the best program I came up with, and it naturally uses a recursive function. Note that it will require lots of memory to run! SET your Buffer to 9000h.

FIND another mouse program but with a unique idea that causes interesting behaviour sometimes. Consider an array where the walls are valued at 999 and the corridors are set at 0 and the “cookie” is set at -1. Have the mouse increment any location hats at by 1 and then go to the lowest adjacent number. It works but looks funny sometimes. Also takes much less memory than FIND+. Watch its behaviour in the top right corner.
PERMTEST generates the all the permutations of a given array in order. Makes a good problem. This algorithm from Dijkstra.

The following program was donated by Larry McDavid of LMC Engineering, Anaheim, Ca.

LOADM - PT DOS image-file load to memory. This program reads PT DOS image-type files into system memory starting at a user-selected address. The image-file block headers are used to control the loading of each file block so that the final loaded format is identical to that resulting from entering the filename as a command. The source is LOADM.C, and the documentation file is LOADM.D.

------------------------------------------------------------------------

The following program was donated by Ben C. Stepleton Jr. of Office Supply Inc., Portsmouth, Ohio

PHONUMS EDBASIC program converts Phone Numbers to Words.
Each Phone Number generates 2187 different words.

------------------------------------------------------------------------

The following programs were donated by Jay Parsons of Somerset Data Systems, Inc. Bernardsville, NJ.

ROBOTS is an old game involving hiding from killer robots.

TENSORTS compares ten sorting algorithms in EDBASIC, including three versions of the Shell-Metzner, quicksort, heapsort, plain and Woodrum merges, delayed-replacement, selection and bubble.

------------------------------------------------------------------------

The following program to help convert between CP/M and PT DOS format files was donated by Gib Zeratsky, GreenLake, WI.

CPM-TXT Documentation in file CPM-TXT.D

------------------------------------------------------------------------

The following programs were donated by Earl J. Dunham of La Habra, Ca.

Weekly Reporting programs: ADD.WK, ANIMO, NUMSTR, WK.DOC

CONVERT: a comprehensive english<>metric conversion program.

STR-SORT: an unusual way of sorting strings, using the Shel-Metzer sort algorithm.

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SOFTWARE DEBUGGING FOR MICROCOMPUTERS
Robert C. Bruce $17.95
ISBN 0-8359-7821-3 or 0-8359-7829-3 pbk

I was wandering around near the University of Arizona in Tucson when I stopped to look in the window of this bookstore and there it was. I went in to see if it pertained to BIDADEAS microcomputers, and found that it was for debugging programs written in BASIC. But wait...what is this?? Processor Technology Extended Cassette Basic? Yes! For that reason alone, I bought the book. Was it worth it? Read on...

First let me say that the book is not intended to be a tutorial on BASIC, but any newly presented, or unique statements are briefly described before being used. On the other hand, one could probably learn the function of many of the statements by seeing them used in the programs if nothing else. I found the approach of the book to be very much in line with human nature. The author "writes" a program, and then when it doesn’t work, he starts to debug it, often resorting to the user’s manual when all else fails. How many of us haven’t done that at one time or another?

The book doesn’t present any earth-shaking plan for writing error-free code, but stresses the use of flowcharts, modular programming, PRINT statements, and playing computer with paper and pencil. He does recommend using simple numbers like 0 and 1 where possible to simplify catching math errors, which makes good sense to me. He encourages the use of REM statements and indenting FOR-NEXT loops, but there are places in the programs where REM statements are few and far between, and the only place his loops are indentated is when he shows how nice it makes tracing program flow. This was unusual because somehow E.C. BASIC’s "print pretty" feature had been defeated.

About half the book is devoted to developing a data base management system, and these chapters deal rather well with the subjects of string manipulation, and use of cassette files. More of the programs presented are anything that you’d want to run to your computer to type in, but most could be adapted for personal use with a little thought. As a matter of fact, changing the programs from one use to another is one of the subjects covered, along with some of the pitfalls that can be encountered.

I won’t guarantee that you’ll learn anything new from this book, but it does make you think about your programming practices and it may point out a trick or two for you to use. One thing is fairly certain: this is the first and last book to be devoted to E.C. BASIC.

COMPUTER COURSES FOR THE DEAF
Rochester Institute of Technology (RIT) will offer two computer courses for deaf adults this summer through the National Technical Institute for the Deaf (NTID).

Introduction to Data Processing - August 3 - 7
Advanced Data Processing - August 10 - 14
For more information, contact Donald Bell, NTID Data Processing Dept., Rochester Institute of Technology, One Lomb Memorial Dr., Rochester, NY 14623 or (716)443-4773.
Repairing your Sol (Part 2)

by Joe Maguire

In the previous installment of this series, we concentrated on isolating the problem area. We left off just as we were going to tackle the SOL PC board.

The operation of the SOL can be divided into a number of functional blocks. From the point of view of the operator they are:

1. The video display
2. The CPU
3. The cassette tape I/O
4. The serial port
5. The parallel port
6. The power ROM
7. The C600-C6FF memory
8. The Keyboard

Beg, borrow, or steal a copy of the SOL PC block diagram from the SOL manual. (X-24) This diagram has each of the ICs associated with the above blocks listed in tabular form. It's possible to proceed without this, but it's going to be tougher.

Now is the time to ask the PC, "Where does it hurt?" In other words, what isn't working properly. Probably the most serious fault is no video. Without the diagnostic aids assist in the task of locating the problem. The first thing to check here is the monitor. The best way to check it is to try it on another computer. This is where friends and computer clubs really become valuable! When taking your monitor to your friend, be sure to take your video connector cable along too. I've never found a bad monitor but I've found many shorted cables. Assuming the monitor is OK, we now start the real search for the problem area.

A completely dead SOL (one with no CPU activity) will not generate any video. So how can we tell whether to start with the video circuits or the CPU logic? Try some commands from SOLOS which will produce a response outside the computer. For example: Can you boot up on your SOL? Can you save something on the tape? I'm sure you can do something on the serial port. Or do you have the power ROM? It seems like these activities are working but the screen remains blank, it's most likely the video. If nothing happens, you've got a dead one. And if the good one doesn't work, it's probably the memory since the proper voltages are arriving from the power supply, the most likely cause of death would be no clock signal. The SOL is a digital computer, which means, all circuits within its interplay with the "drumming (crystal oscillator) gets tired, everybody else takes a break too. About the only way to check if the crystal and clock circuits are working is with a logic probe or an oscilloscope. Your monitor can be handy by holding a small transistor radio near the PC board. If there is any clock activity, the radio will produce all sorts of whines and buzzes.

Third Step, Repair

I'm going to let you in on a secret. I'm going to tell you how the "experts" find the bad ICs. Now I know you are visualizing racks of test equipment; oscilloscopes, digital analyzers, logic emulators and the like. But that's not the secret. Oh, those things are nice for quickly getting to the bad functional area but, when it gets down to picking out the bad IC, do you know how the "experts" do it? I'll tell you. They get another SOL that's working and start swapping ICs until the trouble disappears! The great thing about this method is that you don't need any test equipment. The absolutely worst case would be that you had to swap every IC on the PC board. If you can narrow down the problem area even a little you can have your SOL up and running in no time. Now you know the measure of a real friend. He's the one who will lend you his SOL for testing.

As I said, the worst problem is no video. There are 29 ICs associated with the video circuit and here is where that page X-24 from the manual can really save you some time. It lists all of them in a neat group. Start swapping until the video returns to normal. I recommend swapping one at a time, of course turning the power off between. Be sure to change conditions so that if the video displays so if all 29 ICs have been swapped and the problem isn't cured, it could be one of them.

The VDM in the SOL is known as a "memory mapped" display circuit. It is the means that the characters on the screen are actually stored in a section of the computer's memory. In the SOL, this video memory resides between addresses C000 and C7FF. Eight memory ICs make up this video block, (U34-U41). If one of these goes bad, the characters cannot be formed properly and you get a crazy looking display. A memory test of this VD block should turn up the bad chip. Have you ever tested the video memory? It gives a wild display! The other thing which can cause funny characters to appear on the VDM is a bad keyboard. There are two ICs on the keyboard which are very sensitive to static charges. (U35, U36). If a number of these bad and when they go, all the wrong characters are sent out. Try exchanging keyboards from the test SOL to see if this is the problem.

The CPU can be checked by giving any of the SOLOS commands. If even one works OK then the CPU is probably not at fault. Look suspiciously at the SOLOS ROM instead. If you are trying a new command or the TAMP command then the problem might be with the tape I/O circuit or the serial UART. A program that runs amuck frequently may indicate a bad memory IC in the SOLOS RAM area. This memory block (C600-C6FF) is often used for the program stack and only one bad bit can send the CPU off into never never land. If you can't get any SOLOS command to work or even get the prompt to appear, this is a good place to suspect trouble as all SOLOS commands use this memory for stack purposes. CPU support ICs can cause problems such as failure to jump to SOLOS on RESET, bad address or data signals and some real weird symptoms. This is another area to check if nothing will work.

The cassette tape circuit as well as the serial and parallel ports will be checked by connecting to the respective connectors and running some test programs. Things to look for if you suspect too much voltage got on the printer cable would be the line driver ICs for the serial port, (U33, U35) or the six ICs associated with parallel I/O. The cassette tape motor relays are known to get stuck occasionally and when the problem arises it may be in the relay. Barring a catastrophic accident, (like being hit by lightning) changing ICs should find most of the problems. Shorted circuit traces, bad IC sockets and the like of those ICs generally will not be found in a computer which has been operating successfully for some time. Those are the bane of kit builders.

In the next issue: The memory boards.

...DEAD KEYS ON MY SOL

I would appreciate it if someone would explain what to do about dead keys on the SOL keyboard.

Emile Roth, 1001 Evelyn Terrace East, #104, Sunnyvale, CA 94086

[Editor's note: The dead keys are usually due to a bad foam pad inside the key plunger. The keytops pull straight off. Beneath, will see the mechanism which is screwed down to the keyboard. Remove the mechanism and inside you'll find a cylindrical piece of foam plastic with a self-adhering layer of metal foil on it. The foil is pressed down against the printed-circuit pads to make the key work. If the circuit pads fail to make good proximity, Keytronics, the manufacturer of the keyboard, will only sell the pads in large quantity (unless you happen to get to a salesperson with a soft heart that day). If anyone has EXTRA FOAM KEYPADS, PLEASE CONTACT EMILE.

--Stan]
North Star Pascal Input/Output Routine

This I/O routine is for use with North Star Pascal Ver. 1.0 and a Solar computer.

Written by: Stephen Maguire  July, 1980
P.O. Box 3742 DT
Anchorage, AK 99510

It provides the following support:

- a) It correctly interprets and performs the GOTO procedure that comes with the system so that RINDER need never be used. This allows instant cursor positioning without the need to write the "necessary" GOTOXY procedure described in the manual.
- b) It supports PRINTER so that output can be printed out. The routine is for an NEC Spinwriter 516, but will work for any serial printer if wired according to protocol shown below.

Spinwtr pin Sol Serial pin
TX DATA 2 3 RX DATA
RX DATA 3 2 TX DATA
GND 7 7 GND
CTS 51
DTR 16 20 DTR | denotes common connection
CD 8
DTR 20 18 CD
RDY CH 19 5 RTS See Note below:

Note: In this driver, the Reverse Channel pin of the Spinwtr is used in the "LOW" mode by setting $5 of SWL to "ON" (up) on the control panel circuit board. (GBDH)

This results in a "high" to the Sol when characters can be accepted. If the printer is unplugged or turned off, the Sol will remain high because of its own internal circuitry and will continue sending characters. This prevents a program hang (and possibly a crash) if the printer is not available.

c) If input is asked of the printer, input from the keyboard is checked for instead.

d) If a control-p is sent to CONSOLE, output to CONSOLE is sent to PRINTER instead. This continues until another control-p is encountered. (The control-p may be typed at the keyboard or output in a program.)

e) On initialization, the memory is sized and then waits for either a carriage return or a hex value to set the memory limit.

f) The underline character can be printed in order to facilitate compatibility with other systems.

0870  g) Control-L erases to end of line.
0871  h) The bell character is sent to PRINTER.
0873  i) Code 48H - SYSTEM.NSTAR2 (memory at 28000H)
0876  j) Code 48H - SYSTEM.NSTAR0 (memory at 28000H)
0879  k) ORG 4800H
0400  l) TRUE EQU 0FFH
0400  m) FALSE EQU 0
0402  n)
0407  o) CHRE EQU 07H The bell
040A  p) CRLF EQU 0AH Linefeed
040D  q) CCLR EQU 0BH CLEAR screen character
040E  r) CPPD EQU 0CH Formfeed
040E  s) CRH EQU 0DH Carriage return
040E  t) CHRM EQU 0EH HOME cursor character
0410  u) CSHEL EQU 10H Control-p
0410  v) CHSC EQU 10H ESCAPE character
0415  w) CHND EQU 5FH underline character
041F  x) CHSE EQU 7FH The DEL character
043C  y) ASCCI EQU 7FH largest ASCII
0455  z) Equates determined by STANDARD SOLOS

047E  aa) SOLOUT EQU BC019H Solos output routine
0490  bb) OCRM EQU BC01BH print an underline
04A0  cc) CLI EQU BC04AH erase to end of line
04C0  dd) VDADD EQU BC011H calculate screen address
04E0  ee) SHEX EQU BC34BH convert ASCII to binary
04F0  ff) RECUT EQU BC40BH print register A in ASCCI
0500  gg) NCHAR EQU BC80BH X coordinate of cursor
0509  hh) LINE EQU BC80BH Y coordinate of cursor
0515  ii) D70T EQU BC80AH Text offset
051C  jj) CONSOLE: device (keyboard)
0309  kk) CSTAT EQU 0FAH Keyboard status port
0310  kk) CDATA EQU 0FCF Keyboard data port
0311  kk) CDRY EQU 01H
0312  kk) CDRYOUT EQU 2 (Not used)
031A  kk) BUT EQU 2 (Not used)
031B  kk) BOUT EQU 2 (Not used)
031C  kk) REMOTE: device (not supported)
031D  kk)
0320  kk) RXST EQU 6 (For optional extra device.
0320  kk) RXDAT EQU 0 Values are from the sample I/O
0326  kk) RXOUT EQU 2 routine given in the manual.
0327  kk) RXOUT EQU 1 OK for tape 1/0 if the
032C  kk) RXSTROBE EQU 08H required code is written.)
0329  kk) RXPRINTF EQU 20H
0330  kk) RXPRINTF EQU 9 Not-ready value
0333  kk) DCTRL EQU 0BH High byte of standard PROM
0334  kk) DCTRL EQU 0 High byte of standard PROM
0335  kk) DCTRL EQU 0 Double density
0336  kk) DCTRL EQU 0 Single density
0339  kk) DCTRL EQU 0 For single sided drives
033F  kk) DCTRL EQU 40H Quad capacity drives
034B  kk) DCTRL EQU 5 Blocks/track in single-dens
0347  kk) DCTRL EQU 10 Blocks/track in double-dens
04CD  C2 02 04 0200  JNZ  CON4
04DD  3E 01 0201  MVI  A,1
04DE  2E 06 0202 *  
04D2  FE 5F 0203  CON4  CPI  CHUND  allow underline
04D4  C2  E7 04 0204  JNZ  CON5
04D7  E5 0205  PUSH  H  Save these registers
04D8  C5 0206  PUSH  B
04DA  47 0207  PUSH  B,M  Put the character in B
04DB  CD 98  C8 0208  CALL  OCHR  Output the character
04DE  CD 1C  C1 0209  CALL  VDADD  Now, put on the cursor
04E0  7E 020A  MOV  A,M  Do it now
04E1  F6 80 020B  ORI  R0H
04E3  77 020C  MOV  M,A
04E4  C3  ED 04 020D  JMP  CON6  Exit gracefully
020E *  
04E7  E5 020F  CALL  CON5  PUSH  H  Save all registers,
04EB  C5 0210  PUSH  B
04E9  47 0211  MOV  B,A  Put the character in B
04ED  CD  18  C9 0212  CALL  SOLOUT  Now, put to screen
0213 *  
04EF  C1 0214  POP  B  Restore the registers
04EE  E1 0215  POP  H
04F2  AF 0216  XRA  A
04FB  C9 0217  RET  
0218 *  
04F3  CONSOLE: input status
0219 *  
04F1  DB  FA 021A Const in CSTAT
04F3  2F 021B  CMA
04F4  E6  01 021C  ANI  CRDYINP
04F5  8E 021D  VJ  A,FALSE
04F6  C8 021E  RZ
04F9  3E FF 021F  MVI  A,TRUE
0220 *  
0315  *  
04BD  REMAIN  EQU  $ 0221  REMAIN RET  
0318 *  
0319  PRINT: output (via control-p toggle)
0226  PRINT MOV  A,C  Get the character
0222  CPI  CHCR
0223  JZ  PRINT
0224  CPI  CHLF
0225  JX  PRINT
0226  CPI  CHOME  Home?, print C,R,LF
0227  JZ  PRINT
0228  CPI  CHCLR  Clear also
0229  JZ  PRINT
022A  JNE  PRINT
022B  *  
0311  BD  DD 022C  PRINTMV  MC,CHCR  Print it
0313  CALL  PRINT
0316  BE 8A 022D  MVI  C,CHLF
0318  C3 FC 022E  JMP  PRINT
0230  *  
0315  *  
031D  FE 20 0231  PRINTMT  CPI  2OH
031D  DA 2E 0232  JC  ONLINE  Control char?, ignore it
0233  *  
0318  *  
0339  *  
0339  *  
0348  *  
0350  DB  F6 0348  PRINTMV IN  PSSTAT
0342  CPI  PRODYOUT
0343  CPI  PRODYOUT
0344  JNZ  PRINT2  Loop until ready
0345  MOV  A,C
0346  ANI  ASCII
0347  OUT  EPDATA
0348  *  
035E  AF 0348  ONLINE XRA  A
035F  C9 0359  RET
035A  OFFLNI  MVI  A,NOTRDY
0352  C9 0353  RET
0354  NSMVNI  LNLH  MEMORY  Get memory size
0355  03  E9 0356  XTHL  
0357  04CH  Return now
0358  *  
0359  *  
035A  *  
035B  CD  B3 05 0361  MACINT  LXI  H,MES 1  Print start message
035C  CD  A8  05 0362  CALL  PRASCI
035D  *  
035E  CD  FD 05 0364  LXI  H,ENMARK  Start sizing at end
035F  CD  AA  05 0365  MVI  A,8AH  Test byte
0360  46  0366  MOV  B,M  Save this memory location
0361  36  AA 0367  MVI  M,8AH  Put in test byte
0362  8E 0368  CMP  M  OK? If not, ROM or no memory
0363  77  0369  MOV  M,B  Put the old value back
0364  28  0370  INX  H  Move to the next location
0365  C4  03 0371  JZ  SIZE
0366  *  
0367  4C  B 0372  DCK  H  Point to last good location
0368  4D  B 0373  DCK  H
0369  7D 0374  MOV  A,L  Make HL an even number
036A  B6 0375  MOV  A,L  Make HL an even number
036B  6F FE 0376  ANI  0FEB
036C  51 0377  MOV  L,A
036D  BB 0378  XCHG  DE  has last memory location
036E  *  
036F  CD  DC  05 0373  CALL  PRASCI
0370  *  
0371  CD  AB  05 0380  CALL  PRASCI
0372  CD  AA  05 0381  CALL  PRASCI
0373  CD  A3  05 0382  CALL  PRASCI
0374  CA  03 0383  CALL  PRASCI
0375  CD  3D  04 0384  CALL  CONOUT
0376  *  
0377  CD  1C C1 0385  CALL  VDADD  Get the cursor address
0378  64  B 0386  PUSH  H  Save this
0379  66 00 0387  MVI  B,0  So far, no characters
037A  CD  2D  04 0388  MOV  A,0  If no characters typed,
037B  AA  05 0389  DIFSIZE  CALL  CONIN  Check for input
037C  7E 0F 0390  JZ  DIFSIZE  None yet
037D  BD  00 0391  CPI  CHCR  Carriage return?
037E  CA  87  05 0392  JZ  DIF4  Terminate input
037F  7E 0F 0393  CPI  CHDIR  Delete
0380  C4 80 0394  JNZ  DIF3  No, much be a hex number
0381  77  0395  MOV  A,B
0382  BB 0396  JZ  DIF2  DIFSIZE Then don't back up
0383  B7 0397  JZ  DIF2  DIFSIZE Then don't back up
0384  85  0398  DCR  B  Else adjust character count
0385  BD  04 0399  DCR  B
0386  7E 3E 5F 0400  MOV  A,CHDIR-20H  Output back-up
0387  04 0401  DIF3  INR  B
0388  04 0402  CALL  CON5  allow delete
0389  C3 67  05 0403  JMP  DIFSIZE  Go get more input
038A  36 28 0404  CALL  VDADD  Get cursor location
038B  C1 C1 0407  DIF4  CPI  VDADD  Get cursor location
038C  B1 0408  CPI  CHCR  Erase the cursor
038D  8D 0409  DIF5  CPI  PRODYOUT
038E  87 0410  DIF5  CPI  PRODYOUT
038F  CA  9B  05 0411  JZ  DIF5  Any numbers been entered?
0390  82  0412  JZ  DIF5  JZ  DIF5
0391  E2 0413  JZ  DIF5  JZ  DIF5
0392  CD  4B  C3 0414  CALL  XCHG  Otherwise
0393  9D 0415  MOV  A,L  Make sure the value is even
0394  5B 0416  MOV  A,L  Make sure the value is even
0395  8F 0417  MOV  L,A
0396  8F 0418  XCHG
0397  DB  F6 0419  *  
0398  8F 0419  XCHG  Put the value in DE
I obtained the original version of Software #1 some time ago, before I decided to make my homebrew system into a pseudo-SOL. Because it fit into 4K of RAM, could be adapted for ROM, and was well documented I made much use of the package, modified it extensively, and learned how it worked internally. Many of my modifications would be hard to apply to the more well-known cassette version, but I have rewritten a few of them to apply to this version. I would like to make a few of these available to PROTEUS members.

The following program renumbers a Software #1 source file. The first line is number 0010 and succeeding lines are spaced 10 numbers apart. This is a big step toward making Software #1 easy to use for serious program development.

The listing that follows has an odd origin because it resides in my system immediately below a 6502 cross-assembler that sits in the 19000 to 1FFFF region and this cross-assembler is a parasite on Software #1 which uses every possible subroutine in the PTO package. I didn't want to tamper with Software #1 itself, so I let it continue to use the area from 07600 up for the assembler symbol table. This is why my extensions are crowded into the top of the first 8K of memory. Since Software #1 is a memory-to-memory assembler it is unlikely that any programs to be assembled will be so large they will require more than 1K for the symbol table.

FILE
NUMB 2000 2AA0

AGM 1754 3000

1754 0010 :NUMB
1754 0020 :TO RENUMBER SOURCE FILE
1754 0030 : "A.S. WOODBULL"
1754 0040 :
1754 0050 : edited 25 Jan 81
1754 0060 :
1754 0070 :TEST FOR CURRENT FILE
1754 0080 NUMB CALL CPTST
1754 0090 :
1754 0100 :ST CHECK FOR LESS THAN 999 LINES
1754 0110 NUMB LXI D,0
1754 0120 LIHLD EOPF
1754 0130 :
1754 0140 ;GET COUNT, TEST FOR EOF
1754 0150 CNT MOV A,H
1754 0160 CFI 1
1754 0170 CJ 79 17
1754 0180 :
1754 0190 ;POINT TO NEXT COUNT
1754 0200 :
1754 0210 ADD L
1754 0220 MOV L,A
1754 0230 MOV A,H
1754 0240 MOV H,A
1754 0250 ;COUNT THAT LINE
1754 0260 INX D
1754 0270 ;LESS THAN 999 LINES?
1754 0280 MOV A,D
1754 0290 CFI 1
1754 0300 JC CNT
1754 0310 MOV A,E
1754 0320 CPI D8H
1754 0330 JC CNT
1754 0340 ;QUIT IF TOO MANY LINES
1754 0350 JMP ADBRT
1754 0360 :
1754 0370 ;INITIALIZE LINE NO, GET SET

EXTENSIONS FOR SOFTWARE #1: FILE RENUMBERING

Software #1 is a complete Editor-Assembler-Monitor package which was distributed by Processor Technology. It was produced in two versions. In the version that I know of, a complete computer system. A later version was distributed as a CASA tape (object only). This one took advantage of many features of the CASA/UGLOUS monitor, including the tape interface. I suspect that ASL-K may be basically an enhancement of Software #1— in any case they both use the same kind of file structure, in which lines are numbered and each line is preceded by a byte count.
**WRITE AND IMAGE**

Write the data to the cassette file.

When a file is written using IMAGE, the first two bytes written into the file are the length of the segment, the next two bytes are the load address of the segment, and then the data within the segment is written. If a start address is not included, it is written last. This is the information printed on the console when the "EXTRACT Filename" command is used.

A program cannot be written on a disk and later executed by just renaming its file name if it was not put on disk using WRITE, because there would be no segment length, load address, or execution address included in the file for FTOC use. I am not referring to a program that was read off a disk using REAO, but instead to a new file.

Also, an existing image file cannot be put into memory using REAO and then written to disk using WRITE to transfer the file name, or if the file is loaded by turning its file name.

Note the example of the IMAGE command at the bottom of page 2-25 of the FTOC manual. It shows a file that will have several areas of memory contained within that file, all of which will be loaded with their respective data or code when the file is read. This can be done because the load length and load address of each segment is recorded in the file along with the data for the segments when IMREGD.

Allen T. Fincher  
Suffolk, VA
LETTERS TO THE EDITOR:

BELLs ON MY SOL

I have always envied terminals with an audible BELL which responds to control-G. Now my SOL has the makings of that feature.

Radio Shack's solid state buzzer 275-060 sells for $2.99 and will operate directly from the SOL parallel port!

The loudness is about right too. Just connect the black lead to pin 1 or 2 of an appropriate connector and connect the red lead to a data output bit (pins 18-25). The buzzer can be turned on but

MUI R.0FFH turns on all 8 bits

OUT EPOM and can be turned off by:

MUI R.0 turns off all 8 bits

OUT EPOM.

Of course you'll need more sophisticated code if you are using other parallel output bits for other things.

Now when remote users of my system want to get my attention they can run a CP/M program called BEEP. I still haven't figured out a useful way to use control-G because CP/M converts it to two letters (TG) before it echoes it to my CP/M console output routine.

Also, here are my dues for 1981. Keep up the good work.

Sincerely,

Dick Greenlaw

PRODUCT REVIEW

18 March 1981

Since I find product review one of the most useful features in News/Notes here are three brief ones that reflect my experience over the past two years.

1. Paper Tiger Printer. I replaced my old TTY with an I/O 4400 and after eighteen months of moderately heavy use it continues to perform flawlessly. It is connected to the parallel port so all prints at maximum speed but can be used with the serial port if preferred. The chief reason I selected an I/O unit was to get the graphics option since I do lots of plotting. The technique is quite clever the seven dots of the print head are arranged in a vertical column and the binary bit configuration of ones and zeros controls which pin head needles are fired. Programming graphics is like using machine language so it's tedious but the results are accurate and reproducible.

Incidentally, I donated the ASR-33 to a deaf group they have a great need for TTY's in working condition.

2. Central Data Dynamic RAM. Another good product, install and forget. I wanted to add the low 32K to my system to accommodate ALSB. The excellent CD manual uses as an example a complete with diagnostic the SOL with SOLDS occupying the CO00 block to demonstrate their deselected feature using mini-jumps so even a duffer like me couldn't get it wrong.

3. Exatron Stringu Floonz. This time a real floozie. Their literature looked good. I was especially pleased to find that they used PritnTech. 8K with modified I/O. I won't go into the setup details but delivery promises were broken time after time and when the unit was finally shipped it didn't work. Extraordinary suggestion was that I replace all 64K of dynamic memory with static memory. That didn't sound very cost-effective and I declined. Not recommended.

LEN KALISH
580 S. San Vicente Blvd. 43
Los Angeles, CA 90048

QUESTIONS ON SOL MIGS, PRODUCT REVIEW

I have several questions for you or other Proteus members. First, has anyone upgraded their SOLS to the 4 MHz 8080 CPU and if so, how was that done? Second, I see on my SOL PC board a video expansion interface. What is that for? The only reference to the interface is in the parts list and in the X drawings. Third and last of the questions, how could I make the SOL jump on reset to $E000 rather than to $C000? It would be much more convenient for me to have my North Star boot up on reset.

I recently completed the NOISEMAKER II programmable sound generator kit from Ackerman Digital Systems. The two AO-3-8910 programmable sound generators each have 5 12-bit amplitude control for each of the 3 tone sources, 15-bit noise generator, and 16-bit envelope generator. Also, each AO-3-8910 has 2 I/O ports for user applications plus, the tone generators may be used as D/A converters rather than for sound production. Overall, the kit was fairly simple to make, and to my surprise, it worked the first time. The variety of sounds that might be produced with the 6 tone generators is fantastic as is the quality of tone. The board is a standard S-100 and it has a breadboard area where addition of on-board memory could be accomplished. Except for the vague instructions on how to address the individual PSG (programmable sound generator) and the minimal number of examples of sound generation, I would have to give this project an EXCELLENT rating. For more information pertaining to the PSG, I found the data manual for the chip to be very informative. Also, the data manual gives many examples for sound generation and the more complex musical compositions. The tunes may be produced between the low of 30.5 Hz to the high of 125 kHz with a 2 mHz input clock. My computer now plays music!

Sincerely,

ANDREW R. BOND
Box 213
Graison, CA 95444
(707) 821-922

ON HELIOS IN A 2-80 SYSTEM

A while ago, Joe Maguire was asking about running a Helios on a 4 MHz 2-80 system. I have been doing this for a while and I'll be glad to correspond with anyone having problems with such a combination.

Tom Quinn, Route 2, Box 234K, Eatonville, WA 98328.

HELP NEEDED ON MICROFLOPS DISK 1053 11

Is there anyone out there or do you know how to put P.T.'s Game programs and Basic on my Microlab Disk 1053 11 to operate under C/M? I'm a complete novice but do really enjoy playing with computer, so if someone can help please make it with simple stupid instructions. Thank you.

Beverly C. Biles
18651 E. Gallamore Drive
Covina, CA 91722
(213) 940-9710
ON USING BOTH SIDES OF A FLIPPY DISKETTE

2-1-81

I am now using both sides (one at a time) of many of my diskettes even though I have single-sided drives. It certainly saves a lot of money and space.

No. I didn’t fork over $12 for a punch. I was encouraged by reports it is easier than that, and it is. The following procedure is for 5¼ diskettes: but should be about the same for 8 diskettes.

To convert regular diskettes to flip-over dual-sided diskettes (for use on single sided drives) I use an ordinary paper punch which makes a hole about the size of the sector hole window already present. I got a punch at an Ace hardware for less than a dollar with a plastic cap catcher. It’s the Miltex type used with a mild curve to the handle so I don’t have to bend the diskette too much to set in through the center hole.

I protect the diskette surface by using a clean work surface and inserting half an index card into the center hole so it is always between the punch and the magnetic media.

Procedure: make a template using carbon paper if necessary. You want a sturdy but thin square outline of a diskette envelope with the sector holes, guide marks and write protect notch carefully marked. The center hole is not needed. Punch and cut out the two holes. The guide marks are just to help distinguish the two sides.

Allian the template on the back side of a diskette with the write protect notch on the marked (read hole) edge of the diskette. Mark the new sector hole and the write protect notch. A red ball point pen will work. Turn the diskette over and put the template on top with the same orientation. Mark the new sector hole on this side.

Put the protective paper or card into the center hole on either side, centered on the new sector hole location. Bend the diskette carefully to allow the punch to get to the new sector hole location on this side via the center hole. There is a stretchy plastic liner as well as the cardboard. They are not fused together, so be sure to set both in the punch jaws. The plastic prefers to stretch, so punch several times in the same place and turn the punch while it is closed to get good cutting action without losing alignment.

Then do the same on the other side and punch the write protect hole on the edge. A semi-circle worked ok with my Micropolis drives. The punch is slightly wider than Memorex’s square holes. That is OK, because my drive sometimes misreads the Memorex hole with disastrous results if I don’t notice the i.e.d.

Format while you are doing the next diskette.

I see only one disadvantage: you could want files from both sides at the same time! Because of that I am using this technique mostly for archival storage and inactive diskettes.

Dick Greenlaw
231 Colene Ct.
Columbus, Ohio 43230

EVERYTHING YOU EVER WANTED TO KNOW ABOUT THE USE OF THE H-L REGISTER FAIR IN THE SOLOS-CUTER EXECUTION OPERATION BUT DIDN’T KNOW YOU WANTED TO KNOW

In Michael McKeever’s article in Vol. 3, #4 about transferring CUPS cassette files to PTOS image files brought up a question I’ve seen raised in past issues but about which little has been explained. The reason the H-L register pair setting is important is that when the EXEC command is given in SOLOS/CUTER, the H-L register pair is loaded with the starting address of SOLOS or CUTER, whichever is being used. So in SOLOS, H-L will contain 0000H when leaving SOLOS after performing the EXEC command.

The reason for this is mainly for running programs using CUTER. Because CUTER can run just about anywhere in the computer’s non-memory, programs written would not know where the CUTER I/O vectors were unless that program’s I/O calls were changed. So what is done in SOLOS/CUTER compatible programs is that when first entered, the H-L register pair is saved in memory. Then when an I/O operation is to be performed, the following routine would find the proper SOLOS/CUTER vector location. Let’s say that a keyboard read from SINP is to be performed. Then a CALL to the following will find where to go:

GETCH

LDJX STARTUP
ADD 0040H
STX 0040H
ADD 0004H
ADD 0001H

LDFD STARTUP
ADD 0014H
STX 0014H
ADD 0006H
ADD 0003H

LDH GETH+1

ADD 0000H

I hope this helps clear the confusion over the H-L register problem.

Allen T. Finch
Suffolk, VA

. . TARBELL ON SOL . . .

...If anyone in the area is interested, I’m adding modified Tarbell single density controller boards to SOLS. After they are added, the SOL will run PTOS or CP/M merely by pressing the right key on boot. It makes the SOL more versatile. Also I will have a SOL 2E parallel printer driver running under CP/M soon.

My home phone is now (213) 345-1642.

Regards,
Jack Kinney
Do YOU have any SOL/HELIOS programs which the other members of Proteus could benefit from? Help others from having to re-invent the wheel! Send your disks to Chuck Athey, Helios Disk Librarian
5571 Shorehaven Circle
Lakeway, Ca 95550
To those who donated programs for the latest H-7 library disk my thanks. If I inadvertently messed your programs up please let me know, keep them coming!
Chuck Athey (415) 449-8337

1 Diablo 1620 KSR for sale, very good condition, $1400 or best offer. Call Chuck Athey # 415-449-8337 or 5571 Shorehaven Circle, Lakeway, Ca 95550

For sale: PMT and MACHO as described in 'Software Tools', both with major enhancements, i.e. Table of Contents generation in PMT... Either will compile using the small C compiler by Ron Cain or BSS-C. 8080 Assembly version also available. Either for $30.00 on Helios disk or $25.00 on Cuts Tape. CP/M IBM formatted disk also available. $10.00 discount for both. Contact Chuck Athey
Sunrise Computer, (415) 449-8337, 5571 Shorehaven Circle, Lakeway, Ca 95550.

FOR SALE: SOL 20 Rev. E. Excellent condition with North Star Dick Controller and Two SA-400 drives and assorted games and software (including CP/M and WHATSIT). $1800. or best offer.
Mike Erickson, Alphaletics Engineering Consulting
P.O. Box 597
Forestville, CA 95436 (707) 887-7237

FOR SALE: SOL 20 Less keyboard - no extra memory, but otherwise complete. $300.00
Dennis Polito
2411 Lincoln Ave.
Belmont, CA 94002 (415) 592-5319 or 595-3949 (answer machine)

FOR SALE: Helios II controller and formatter boards, $300.00 or best offer. (Drive not included - use as backup boards). PTC 16K RAM memory board $100.00 32K static Bytek memory board (See Solus News June 1978) $300.00.
Ron Parsons
7001 Laurel Grove Dr.
Austin, TX 78758 (512) 836-2514

COMPLETE SOL WITH NORTHSTAR FOR SALE: Sol, 32K Northstar mini-floppy, Integral Data Systems printer, $1200 or best offer.
Bob Byler
2329 Thompson Pl.
Santa Clara, CA 95050 (408) 244-4457

Stan Sokolow
1690 Woodside Road, Suite 217
Redwood City, CA 94061

Feb. 9, 1981

Dear Stan,

Attached is an article for PROTEUS. This one deals with a set of assembly language subroutines for use with MICROPOLIS BASIC. Some were designed when I converted several ECRASIC programs from the Proteus Cassette Library. The current set was done after a request from Paul Benavides of Bionerd for a way to provide cursor controls which would facilitate his transfer of a business program from ECRASIC to MICROPOLIS BASIC. My thanks to him for the inspiration and the rush. Of course a copy will go to Lewis for inclusion in the Cassette Library.

Most recently my efforts have been bent towards moving (and enhancing) SOLOS to higher memory. I choose to add six new commands:

1. Fill addr1 to addr2 with hex value.
2. Move from addr1 through addr2 to addrd and up.
3. Compare and display mismatches from addrd through addr2 with data at addr and up.
4. CS is cold start (MICROPOLIS cold boot at F400H).
5. CW is CP/M warm start at OH.
6. MD in MICROPOLIS warm start at 47H.

I also put in a routine to initialize my CUSTOM TU-ART on SOL power up (not strictly needed, but good practice). The expanded SOLOS is now loaded at E000H in a half of 2708's. The overflow (about 150 bytes) is in another 2708 at F400H and is located on a SOLID STATE MUSIC SYSTEMS F8-1. I choose to use E000H for the new SOLOS instead of the more common F400H since it saved moving the MICROPOLIS controller from F400H. The only change to the SOL-20 was to bend U22-9 out so it did not enter the socket and solder a jumper from U22-9 to U22-12.

The addition of a GRID_UNIT RAM-XX 24K static memory to go with my 32K DYNAPLEX gives me 64K of RAM plus SOL RAM & room for about 2.5k of EPROM (as yet unassigned). Now my Digital Research PL/I-00 has room to compile and link at least 30K source files.

I had just finished these changes when my copy of PROTEUS Vol. 3 No.5/6 arrived with Bob Steck's letter in it. I found the same problem with ERASE (although in my case I could fix it by changing the CPI 0500 to CPI 0500H). However, Bob didn't mention one other problem, namely a two in the EPROM source file. The error is in the UDT1 routine and prevents correct boot-mode cassette operation. The second MV MA should be a MV A/N.

Note that four bytes of code from C027 to C030 are marked as part of the start-up routine. For the life of me, I can't find a need for it in SOLOS. Maybe it is needed for CUTER compatibility. I have left it out of my extended version of SOLOS with no ill effects yet!!

Yours truly,

19
TABLE OF CONTENTS

NEWS FROM THE COMPUTER FAIRE/Stan Sokolow ........................................... 1
INDUSTRY RUMORS ......................................................................................... 2
SOL/NORTHSTAR USER'S GUIDE ................................................................. 2
INDUSTRY STANDARD TRACKS .................................................................. 2
DISK PILOT LANGUAGE/John Starkweather as reviewed by S. Sokolow ...... 3
MUMPS LANGUAGE FOR CP/M ..................................................................... 4
HARD DISK FOR HIGHLIGHT. ....................................................................... 4
24 X 80 VIDEO MODIFICATION FOR SOL .............................................. 4
FORMER FTC ENGINEERS FORM SERVICE CENTER ............................... 4
PROTEUS CASSETTE SOFTWARE LIBRARY SERVICES .................................. 5
CASSETTE C8 ................................................................................................. 5
CASSETTE C10............................................................................................... 6
CASSETTE C11 ............................................................................................... 6
CONTENTS OF HELIOS LIBRARY H5 ............................................................. 6
CONTENTS OF HELIOS LIBRARY H7 ............................................................. 7
CONTENTS OF HELIOS LIBRARY H8 ............................................................. 8
BOOK REVIEW / by Jeff Tom ........................................................................ 10
SOFTWARE DEBUGGING FOR MICROCOMPUTERS / Robert C. Bruce .... 10
COMPUTER COURSES FOR THE DKAF / Donald Bell ......................... 10
REPAIRING YOUR SOL (PART 2) / Joe Maguire ....................................... 11
DEAD KEYS ON MY SOL / Emile Roth ..................................................... 11
NORTH STAR PASCAL INPUT/OUTPUT ROUTINE / Stephen Maguire ...... 12
EXTENSIONS FOR SOFTWARE II: FILE RENUMBERING / A.S. Woodward .... 15
WRITE AND IMAGE / Allen T. Fincher ...................................................... 16
LETTERS TO THE EDITOR: .......................................................................... 17
..BELLS ON MY SOL / Dick Greenlaw .................................................... 17
..PRODUCT REVIEW / Len Kallas .............................................................. 17
..QUESTIONS ON SOL MODS, PRODUCT REVIEW / Andrew R. Bond .... 17
..ON HELIOS IN A 2-80 SYSTEM / Tom Quinn ....................................... 17
..HELP NEEDED ON MICROPOLIS DISK 1051 / Bruce G. Diller .............. 17
..ON USING BOTH SIDES OF A FLOPPY DISKETTE / Dick Greenlaw ..... 18
..EVERYTHING YOU EVER WANTED TO KNOW ABOUT I/L REGISTER / A.T. Fincher 18
..TARBE L ON SOL / Jack Kinney ............................................................... 18
..UNCLASSIFIED ADS .................................................................................. 19
..ENHANCING SOLOS / Kelvin M. Dallar .................................................. 19
..TABLE OF CONTENTS .............................................................................. 20
..PHONE NUMBER FOR PROTEUS ................................................................ 20

NEW PHONE NUMBER FOR PROTEUS

Write it down. (415) 368-2300. That's your direct line to Proteus. We were using my dental office phone before, but the volume of calls was too much to bear. So please don't use any other number for calling us, but (415) 368-2300. Jane, our executive secretary, will answer the phone every weekday. If there is no answer, we are out. This way we won't have to pay for a long distance call, only to get my answering service. The best time to call to speak to me is Wednesday afternoon Pacific time.

--Stan.

Joe Maguire
PO Box 3742 DT
Anchorage, AK
99510
IT WAS JUST SITTING THERE,Idle, with the power on and
diskettes spinning, when a wisper of smoke emerged from the
slots of my Helios. Rapidly the smoking increased as I fumbled
for the power key and shut it off. Smoke continued to escape
for 5 or 10 more seconds and the room filled with the pungent
odor of burnt plastic. Something in the back of my mind flashed
onto a conversation about the mandatory field-service notice
that Processor Tech issued just before going out of business.
Could it be that I was victim of that capacitor problem?

Before the smoke had faded away, I ran and grabbed a
scissors, removed the screw holding the Helios lid,
and examined the guts inside. Disk drive...looks normal. The power supply...looks normal. No
wait, the small aluminum can capacitor has a white wisps of
smoke under it. Carefully scanning the bottom of the can where
the terminals are and smelling around the cabinet convinced me.
The capacitor had cooked itself. I just hoped it was not
smoldering inside...

This is not just drama. It really happened a few days
ago. When I had the time, I disassembled the Helios back panel
and removed the regulator PC board from the base. The
underside showed a definite burning between the terminals of
the capacitor I suspected. Removing the screw terminals, I
lifted the capacitor and discovered the PC board was burnt to
a charred crisp in a half-inch diameter circle between the two
terminals, and the end of the capacitor was covered with a
black goo (for all I know may be carcinogenic PCB's).

I dramatized this story, because I suspect that most
Helios users have the same problem lurking in their units.
The cause of the problem is that the thinner of the two
aluminum can capacitors in the Helios is a 20 working volt
electrolytic, but 50 volt is required for reliable operation.
Processor Technology discovered this soon before they shut down
and they wrote an engineering change order and update memo,
which I discovered in the junk discarded. I published it on

But I didn't bother to make the change myself. I was just
too lazy. My Helios worked okay, and the retrofit notice
didn't explain the consequences of leaving the status quo. It
did imply, however, that PTC was scared about the capacitor's
safety. Rightly so. If I hadn't been there at the moment of
the failure and acted so quickly, the damage could have been
extensive, and conceivably a fire could have started in the
Helios cabinet. The Helios could have been a total loss in a
matter of minutes.

At the time of this writing, I am waiting for an order of
50 volt 7700 mfd capacitors so I can get the Helios back into
operation and see if the rest of the electronics is okay. I

DON'T MOVE SOL TO F000
MAKE SOL VANISH!
by Stan Sokolow

Credit for this goes to Jim Spann for the idea and to
Chuck Athey for modifying the idea and sending it to Proteus.
Under the control of software, your program can disable
the Sol's address decoder that identifies the addresses in the
Sol's C000 through CFFF space. The Sol will then not respond to
these addresses until the decoder is re-enabled by your
program. When the Sol is "enabled" and does recognize an
address in that space, it automatically disables the other
memory boards in the system by pulling down the Phantom line on
the 5-100 bus.

Thus, the Sol can exist as another "bank" of memory,
overlapping your memory boards, and not conflicting with the
other memory. When your program wants to write onto the video
display, or use Solos, or use the Sol's built-in RAM, your
program first re-enables the Sol's decoder, accesses the Sol
space, and again disables the Sol decoder. In a CP/M system,
this would naturally be done by the routines in the CB105s that
do console I/O.

This is essentially a bank-selected memory scheme for Sol,
and it doesn't conflict with other bank-select schemes that are
used in some memory boards.

Here's how it's done. One extra IC is needed, a 74LS74
integrated circuit. This is a flip-flop that can be set/reset.
The connections are shown in the diagram below.

\[
\begin{align*}
U80-2 (CP) & \\
U35-11 \text{ or } U35-13 & \text{ (Out PC)} \quad \text{ (Out PC)}
\end{align*}
\]

The flip-flop is operated in software by putting a byte in the
accumulator (register A) of the processor, with the lower order
bit (bit 0) set to 1 to make Sol go away, and a 0 to make Sol
come back as normal. Then this byte is output to port PC, which
is unused but decoded in the Sol. (It was reserved by PFC for
an "alarm" feature.) The Power On Clear signal resets the
just hope the smoke didn't do any damage to the optical scales used by the drive to tell where it is and to generate timing signals.

I have several Helios units and am using their avoidance as much as possible until I replace the capacitor in all of them. This was not easy to find, even here in Silicon Valley, so I have ordered a few extra ones to resell to any Proteus members who need to replace theirs. I will order more if the demand is sufficient.

To make it easy for you, I will put together a kit containing the components and illustrated, step-by-step instructions, so that anyone can make the change. No soldering is required, and the only tools you need are screwdrivers you can find in any hardware store. Also included will be fuses of a smaller value, to provide better protection as recommended by the retrofit notice.

The instructions will also repeat Helios Change Notice #3 which brings the regulator board from revision B to revision C. It should be done, too, and since the board will be out of the box anyway, now is the time. It involves a possible short circuit of the main power regulator.

The way to tell if your Helios needs the capacitor changed is to look inside the cabinet at the upper aluminum can on the right rear as seen from the front. Look for "40 W" on the can. If you find it, you need the retrofit kit. If you find "30 W" someone already made the change. Your fuse holder should also have been relabeled with smaller values.

Price of the Helios Safety Retrofit Kit is $35, plus $3 shipping & handling. (Please, no purchase orders. We fund only.) California residents add appropriate sales tax. Please add $3 at any delivery, since the capacitors are hard to get if we run out of the stock on hand.

DON'T MOVE SOL TO 9000 - MAKE SOL VANISH

flip-flop for normal Sol operation, so that the automatic jump to Solos on power on or system reset is not affected.

Not shown on the diagram are the ground pin connections, which could be obtained by "piggy-backing" the 7415 IC and soldering pin 7 to pin 9 (ground) and pin 14 to IC's 14 pin IC and soldering pin 7 to pin 7 (ground) and pin 14 to 14 (+5V) with the other pins bent out. The Sol manual appendix V show the pinouts of the IC's used in the Sol, including the 7415 IC.

The beauty of this modification is that Solos can stay it is and be used by your existing programs. New programs can take advantage of the extra memory space and return to the old configuration when needed. The content of the RAM that overlies Sol is not affected and will return to normal when the RAM is disabled, provided that the Sol is not modified or used in any way.

The output port and bit position can be any other one that Solos or Solos Plus which is not used for another purpose. In another article in Proteus News, we will make a table of all of the 7/0 ports and their assigned functions, so that as modifications are thought up, we can keep some standardization to the new Sol features. Actually, I feel that the FC port should be reserved for some use that needs a full 8 bits.

My inclination is to modify Chuck's circuit to use bit 0 of output port PA, which is also unused and the other bits of the port already have control functions. To do this, connect pin 3 of Chuck's flip-flop to pin 13 of U3 instead of pin 11 of U3.

ENCyclopedia PROCESSor TECHnica

A COMPLETE REFERENCE

I've mentioned it before, and it's finally coming together. We are putting finishing touches on the first few volumes of Proteus's complete guide to the entire PCT product line. Herewith is an idea of what we will cover.

Volume 1 will be a technical manual on the Sol computer. It will incorporate material from the big black loose-leaf notebook that came with early Sol's, plus material taken from the PCT Sol Service Manual, from Access (PCT's newsletter to users from previous, and from other sources. We will cover topics such as: theory of operation, schematics, assembly drawings, parts lists, troubleshooting, testing, updating (rev D to rev B1), constructing and using the Sol, input/output connections, timing diagrams, testpoint voltages, hardware interfacing, etc.

Volume 2 will cover introduction and basic operation of the Sol, including the semi-technical Users Manual that came with later Sol's. Topics include: functions of the Sol's buttons and switches, hookups to common printers, cassette operations, use as a dumb terminal, minor troubleshooting.

Also included will be a chapter on the history of Processor Technology Corporation and the Sol computer. This is an area which I feel the microcomputer revolution is overlooking. We will include reprints of magazine articles which describe the way the Sol came to be, copies of old advertising, dealer lists, historical accounts from insiders, etc. Someday that walnut-sided box will look as strange to us as a Ford Model T or an old "Woodie" station wagon. I'd like us all to have a book on the shelf that re-counts how the West was won, so to speak.

Volume 3 will be on programming the Sol. We'll cover: Solos, the Sol's BASIC languages, the 8080 machine architecture from the programmer's view, the 8080 instruction set, assembly language programming, communications interface programs, the Sol's system architecture (I/O ports, memory map, etc).

Volume 4 will be devoted to ALS-8. Included will be the user's manual, the users' group newsletters describing the internal routines, the source listing, etc.

Volume 5 will be on PCT memory boards, covering the entire product line, from the old ZR0 ROM board to the $495/1 RAM board. We'll include schematics and assembly drawings, theory of operation, switch settings, engineering changes, upgrades, troubleshooting, etc.

Volume 6 will cover PCT input/output interfaces, such as the 3P/S, the CUTS board, the VDM, and Htype and SolPrinter interfaces.

Volume 7 will be on the Helios disk system, including revisions, testing, troubleshooting, theory of operation, etc.

Volume 8 will cover programming with the Helios disk system, including PTDDO, Disk BASIC, etc.

Volume 9 will be on using the Sol with other manufacturers' equipment, such interfacing to other disks, modifying memory boards to work properly in Sol, customizations for the Sol with CVY, NorthStar, Micropolis, etc.

As you can see, this will be a comprehensive reference. That's why the name sounds like the "Encyclopedia Britannica." It will be time going out of print when we have new updates, etc. This will be a living resource.

We will announce the volumes and prices in more detail when they are ready for sale.
Repairing Your Sol
By Joe Maguire

The Memory Boards

I had intended to begin this final segment with some general suggestions on trouble shooting accessory boards plugged into the SOL backplane. I have received so many requests for help on the PTC 16KRA memory boards that I'll get right to them.

First, I will be talking about the original 16KRA memory (and it's cousin the 25KRA) not the "W" RRA (designated the 16KRA-W) which was designed later.

Compared to all the excellent products which PTC produced, the 16KRA was one of the worst. It was designed in 1976 and, as far as I have been able to determine, it was the first dynamic memory on the S-100 bus which used multiplexed addressing for the chips. The design of supporting hardware is formidable, even today, and even so, the PTC was leading the state of technology it's no wonder they had problems.

The requirements for the design were to be able to use it on a variety of machines and to support the DMA used by PTC's Helios disk system. It almost made it. The major problem was timing. PTC found, after virtually every board they sent out returned, that aging of the chips was enough to upset the critical timing. In desperation, PTC bought two German made 100 MHz 'scopes just for trouble shooting. During a visit I made to the factory in 1978, with a number of duds in hand) I was told not to attempt to replace any chips myself, that PTC individually selected every IC that went into every socket.

Well, faced with that kind of situation, what can you do? Unfortunately, not much. I'll give you some tips I've picked up here and there but if your 16KRA is working OK contact yourself lucky.

As an interesting sidelight, when I was attempting to repair the 16KRA problems, no former PTC person I contacted would admit to any knowledge of them. Only after considerable pleading did one former sales Rep tell me that he would give me the name of a person to contact but that "if you ever tell him that it was me that gave you his name, I'll never help you again". Faced with that kind of warning I decided discretion was the better part of valor. Someone has a thousand fathers but failure is an orphan.

PTC did devise several fixes which seemed to help. Some of them were:

1. Install extra grounds on the solder side of the board by running #20 wire jumpers between ground traces.
2. Connect pin 53 of the SOL backplane to ground (pins 50 & 109) as per the new IEEE S-100 standard.
3. Solder the ground trace on the 16KRA to pin 53 on the board.
4. Remove the header plug at P2 and solder jumpers directly into the holes on the board.
5. Solve the delay line, U11, directly to the board.
6. Replace the TI S-100 connectors on the backplane with AMD type.
7. Replace the TI connectors (Texas Instruments) connectors to the I/O slots with the IC slots and to the connector for poor contact.
8. In the last run of Solas before PTC went under, the TIs were replaced with AMDs. You should not attempt to replace yours unless you have access to vacuum desoldering equipment otherwise you could ruin the backplane board.

A common problem with the 16KRA is the delay line. Due to the high current passing through it, eventually fails. A failure can be recognized by loss of refresh or that the computer just hangs up when the CPU requests a memory access to the offending board. I have not been able to find any replacement for the delay line. It was a custom part manufactured for PTC and all specifications have been lost. The one used in the in W" RRA series will not work.

Some of the idiosyncrasies of the 16KRA are almost too weird to believe. Some users who own several Solas tell me that some boards work on one machine but not the other. I've seen your aluminum foil disk to your floor column. Take the whole thing and glue it into position where the faulty one was, works great saves money, time and nerves.

Bruce G. Diller
18651 East Gallardo Dr.
Covina, CA 91722

1 REM. "Inputs and formats date Subroutine. Use APPEND 2 REM. 3 REM. 4 REM. 5 REM. 6 REM. 7 REM. 8 REM. 9 REM. 10 REM. 11 REM. 12 REM. 13 REM. 14 REM. 15 REM. 16 REM. 17 REM. 18 REM. 19 REM. 20 REM. 10000 REM. "DateIn" Subroutine. Use APPEND 10001 REM. 10002 REM. 10003 REM. 10004 REM. 10005 REM. 10006 REM. 10007 REM. 10008 REM. 10009 REM. 10010 REM. 10011 REM. 10012 REM. 10013 REM. 10014 REM. **Dead Keys? on your SOL? Shoot it, but!! Before you do, think--Hum--why bother Keytronics. Get a one millimeter punch, then some aluminum foil and an appropriate piece of foam. Punch out an aluminum foil disk, then punch out a column of foam---got that then take some compatible software and type in the new disk to your column. Dynamic memories are now cheap and reliable. I have used a number of NorthStar dynamic memory boards for years without a single failure. The poor heat dissipation of the SOL makes the use of static memories tricky unless increased ventilation is provided.

A few hints for accessor boards in general: Be sure to reseat them in the backplane slots from time to time. Don't use rubbing alcohol to clean the connector strip. It contains lanolin which will remain behind to cause poor contacts. A good grade of vodka would be better but I can think of a better use for that while trying to fix a cantankerous 16KRA. An ordinary pencil eraser does a good job of cleaning contacts. Do add the ground to pin 53 on all boards. That pin (sense switch disable) is vacant in the SOL and connecting it to ground can dramatically reduce noise.

Your SOL is a well designed piece of equipment. It can hold its own against any of those new "consumer toys." Remember, there are more 8080 microprocessors in use than all other types combined. The government alone must be using millions of them. The 8080 and its vast thicket of software will be around for the next twenty years. With just a little care now and then, your SOL will be too.

Joe Maguire

3
6/23/81

813 Inlet Road
Green Lake, WI 54941

Subj: CP/MUG Vol. 1, On North Star DD

Dear Bob,

As I reported to you some time ago I have purchased the CP/M Users Group disks that I thought other members would be interested in. I got rid of all the programs that required a 160 CPU and consolidated things down to five (50) North Star DD diskettes as follows:

CP/MUG Vol. 1
CP/MUG Vol. 11
CP/MUG Vol. 14 & 15
CP/MUG Vol. 29 & 42
CP/MUG Vol. 36

I admit that my judgement as to what should be left off these disks may be questioned but none-the-less I did it. Any member who would like copies of any or all of these disks can order same from me for $5.00 per disk.

I am attaching a directory listing of these disks.

Regards,

Gib Zeratsky

THIS DISK IS AN EDITED VERSION OF CP/MUG Vol. 1
 ITEMS FROM THE ORIGINAL VOLUME NOT HAVING USE ON SOL
 OR ON A 8080 MACHINE HAVE BEEN DELETED. THE ORIGINAL
 IS ON TWO NORTH STAR DD DISKETTES.

GIB ZERATSKY

PRINT - IS A PRINT UTILITY SOMETHING LIKE TYPE BUT
 WITH MAGNIFICATION AND HEADERS. IT SHOULD RUN ON
 ANY CONFIGURATION OF CP/M WITH AN I/O DEVICE
 THAT RECOGNIZES A FORM FEED CHARACTER (HEX DC)
 AS A TOP-OF PAGE COMMAND. THE SYNTAX FOR USING
 PRINT IS:

 PRINT FILENAME.EXT

 PRINT ALSO MAY BE USEFUL TO THOSE WHO NEED AN
 EXAMPLE OF CP/M DISK I/O ACCESS.

PRINT - IS A PITCHED VERSION BY ARG TO COPE WITH HARDWARE
 THAT DOES NOT RECOGNISE OCR

EXAM - IS A DISK SECTOR EXAMINATION UTILITY FOR A
 SYSTEM EQUIPPED WITH A FM0. ONCE RUNNING
 EXAM WILL ALLOW VISUAL EXAMINATION OF ANY SECTOR ON
 THE DISK (DRIVE 0 ONLY IN THIS VERSION).
 THE CURRENT VERSION WILL ONLY OPERATE IN A 16K
 SYSTEM HUT THAT ES EASILY FIXED. THE COMMANDS
 TO EXAM ARE:

  * = READ NEXT SECTOR
  _ = READ PREVIOUS SECTOR
  I = STEP HEAD IN (TOWARD TRACK 76) AND READ
  0 = STEP HEAD OUT (TOWARD TRACK 0) AND READ

 DUE TO A MINOR BUG WHICH I HAVEN'T HAD THE TIME TO
 FIX, THE FIRST COMMAND TO EXAM SHOULD BE A +.

MKSTST - IS A MEMORY TEST FROM THE INTEL
 USERS LIBRARY. IT HAS INTERNAL I/O ROUTINES
 AND MUST BE MODIFIED TO SUIT THE USERS SYSTEM.
 IT IS A VERY GOOD TEST OF MEMORY WHICH WE
 HAVE BEEN USING EXTENSIVELY IN THE LONG ISLAND CLUB.
 THE PROGRAM WILL DISPLAY MKSTST 1.0 AT WHICH
 POINT THE USER SHOULD ENTER STARTING AND
 ENDING ADDRESS ADDRESSES SEPERATED BY A COMMA.
 THE PROGRAM WILL THEN TYPE ADDR: REF: ACT:
 AND BEGIN TESTING. ANY ERRORS WILL CAUSE
 AN ADDRESS REFERENCE DATA, AND ACTUAL DATA
 TO BE PRINTED.

MAZE - IS A MAZE PROGRAM FROM THE INTEL USERS LIBRARY.
 IT SHOULD RUN ON ANY SYSTEM.

TRAIN - IS THE VON TRAIN PROGRAM FROM THE PROCESSOR
 TECHNOLOGY NEWSLETTER, JUST TYPE
 PROCESSOR TECHNOLOGY BASIC/5 (SOFTWARE #2) PATCHED
 FOR CP/M DISK SAVE AND LOAD AND FOR LPRINT AND LLIST

**This package is being made available, free of
 restrictions and cost ... to the individual hobbyist,
 clubs, schools, colleges and universities for their
 own computer systems.

Any commercial use ...... is strictly forbidden
 without.....permission of Processor Technology Corporation.**

#NOTICE INCLUDED IN SOURCE LISTING BOOKLET. ALSO AVAILABLE
 FROM PROCESSOR TECHNOLOGY IS "5X BASIC MANUA" AS PRIMER TO
 BASIC IN GENERAL AND BASIC/5 SYNTAX IN PARTICULAR. SEE THESE
 TWO BOOKLETS FOR THE BASIC/5.00C FOR FULL UNDERSTANDING.
 (NOT ANYMORE YOU DON'T SEE THESE BOOKLETS - DORAM ONE)
 STARTREK.TLB PREVIOUSLY
 SEEN AS FILES IN VOLUME 2. NOTE THAT
 THE STARTREK LISTING APPARENTLY ENDS IN MID-SUBROUTINE.
 THE PROGRAM APPEARS TO RUN, ALTHOUGH A REAL TREK WILL
 PROBABLY EXERCISE THE PHASED PORTION AND WARN HIMSELF OUT
 OF THE EPA. (I GET KLINGSONS SPEAK IN ZILLOG MICONIC)

TYPE B: CATALOG. 14
VOLUME 14 & 15 ARE COMBINED ON THIS DISK. ITEMS FROM
VOLUME 14 & 15 ARE LISTED SEPARATELY UNDER CATALOG, 15

VARIUS CP/M UTILITIES

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>SIZE</th>
<th>NAME</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.2</td>
<td>6K</td>
<td>BCD.DRV</td>
<td>DRIVER TO CONVERT ASCII TO THAT FUNNY</td>
</tr>
<tr>
<td>14.6</td>
<td>3K</td>
<td>DUMP.COM</td>
<td>REVERSE BCD USED BY IBM 2740 TERMINALS</td>
</tr>
<tr>
<td>14.7</td>
<td>23K</td>
<td>DUMP.MAC</td>
<td>RUNNING VERSION OF DUMP BELOW, SUPPLIED AS DUMP.ASM COPIED FOR TIL ASSEMBLER (2800 OK)</td>
</tr>
<tr>
<td>14.9</td>
<td>2K</td>
<td>MOVE.ASM</td>
<td>FANTASTIC DISK VIEWER PROGRAM, CAN ADDRESS FILES, CP/M GROUPS OR SECTORS DIRECTLY, USES STANDARD CONSOL OUTPUT, AND DISPLAYS IN DTD DUMP FORM WITH HEX AND ASCII SIMULTANEOUSLY</td>
</tr>
<tr>
<td>14.10</td>
<td>3K</td>
<td>PUT.ASM</td>
<td>A PIP TO TRANSFER FILES WITHOUT THE PROBLEM OF GETTING 2715 IN FILES WITH NON-COM TYPE Names, SUCH AS BASIC-2/3 BASIC INT FILES - SEE DUMP.doc</td>
</tr>
<tr>
<td>14.18</td>
<td>7K</td>
<td>SED.SAM</td>
<td>USED TO LOAD A FILE AT ANY MEMORY ADDRESS, AND Optionally START TO RUN IT, USEFUL FOR POKING IBM DRIVERS AND MONITORS INTO MEMORY FOR THOSE WITH NO FRONT PANEL</td>
</tr>
<tr>
<td>14.19</td>
<td>2K</td>
<td>SED.COM</td>
<td>COMPILE, AS 14.18 WRITTEN FOR TIL ASSEMBLER (2800 OK)</td>
</tr>
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</table>

DISK PEAKING PROGRAM.
A FEW OF THE ITEMS FROM VOL. 42

VOL42 IS ANOTHER TWO DISK VOLUME. THE BULK OF IT DOES NOT
CONCERN SOL, I GOT IT FOR THE FILES THAT CONVERT ALS-8.

<table>
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<th>NUMBER</th>
<th>SIZE</th>
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<th>COMMENTS</th>
</tr>
</thead>
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<tr>
<td>42.9</td>
<td>17K</td>
<td>LIFES.COM</td>
<td>Fast, comprehensive life...</td>
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<tr>
<td>42.11</td>
<td>2K</td>
<td>LIFE8.DOC</td>
<td>Doc on above</td>
</tr>
<tr>
<td>42.14</td>
<td>4K</td>
<td>PTRSCNV7.ASM</td>
<td>Proc. Tech. Rev. 1 or ALS-8</td>
</tr>
<tr>
<td>42.18</td>
<td>2K</td>
<td>PTRSCNV7A.DOC</td>
<td>...program</td>
</tr>
<tr>
<td>42.17</td>
<td>1K</td>
<td>QUOTES.PRM</td>
<td>Words of wit and wisdom re-related to...</td>
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</table>

A FEW OF THE ITEMS FROM VOL. 43

VOL43 IS ANOTHER TWO DISK VOLUME. SOME FORTRAN STUFF AND
FLOATING POINT PACKAGE FOR BASIC/E ARE DELETED.

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<th>COMMENTS</th>
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<td>36.1</td>
<td>7K</td>
<td>COMBINE.ASM</td>
<td>Combine multiple .asm files...</td>
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<td>36.2</td>
<td>1K</td>
<td>COMBINE.COM</td>
<td>...and delete comments</td>
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<td>36.3</td>
<td>2K</td>
<td>COM-PEN.ASM</td>
<td>Convert CP/M to PDS...</td>
</tr>
<tr>
<td>36.4</td>
<td>1K</td>
<td>COM-PEN.COM</td>
<td>...pencil files</td>
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<td>36.11</td>
<td>6K</td>
<td>LINKASM.COM</td>
<td>ASM.COM with feature to link...</td>
</tr>
<tr>
<td>36.12</td>
<td>5K</td>
<td>LINKASM.DOC</td>
<td>...files together at assembly</td>
</tr>
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<td>36.13</td>
<td>1K</td>
<td>LIST.COM</td>
<td>List files with starting...</td>
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<tr>
<td>36.14</td>
<td>1K</td>
<td>LIST.DOC</td>
<td>...line number</td>
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<td>36.20</td>
<td>3K</td>
<td>MPACCESS.LIB</td>
<td>Subroutine to setup for...</td>
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<td></td>
<td></td>
<td>...multiple files (ex: *.ASM)</td>
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<td>3K</td>
<td>PEN-CMP.ASM</td>
<td>Electric Pencil to CP/M file...</td>
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<td>36.26</td>
<td>2K</td>
<td>PEN-CMP.COM</td>
<td>...conversion program</td>
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<td>36.25</td>
<td>2K</td>
<td>PEN-CMP.DOC</td>
<td>...</td>
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<td>36.29</td>
<td>2K</td>
<td>POW.ASM</td>
<td>Source for test processor</td>
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<td>36.26</td>
<td>5K</td>
<td>PWMD.DOC</td>
<td>PWMD documentation</td>
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<tr>
<td>36.28</td>
<td>2K</td>
<td>PWTEXT.DOC</td>
<td>More PWMD doc.</td>
</tr>
<tr>
<td>36.29</td>
<td>5K</td>
<td>SCRAMEL.ASM</td>
<td>File encode/decode</td>
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<td>2K</td>
<td>SCRAMEL.DOC</td>
<td>Doc on above</td>
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<td>36.31</td>
<td>10K</td>
<td>TOP.ASM</td>
<td>TCL Text output processor...</td>
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<td>36.32</td>
<td>5K</td>
<td>TOP.PRM</td>
<td>...patches</td>
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<td>36.35</td>
<td>3K</td>
<td>TOP.TOP</td>
<td></td>
</tr>
<tr>
<td>36.36</td>
<td>2K</td>
<td>XREF.ASM</td>
<td>Cross references .ASM files</td>
</tr>
</tbody>
</table>

Assembler, editors, text processor related programs, memory bank boot and manager, misc. utilities,
ML30 Language and TED (A Line Oriented Text Editor)
HAVE BEEN DELETED FROM A TWO DISK VOLUME.
MODIFICATION OF CP/M CRIOS FOR AJ841 PRINTER
BY Desler R. Patten

Bennetts Photo Service

March 19, 1981

Mr. Stan Sokolow
Proteus
1890 Woodside Road, Suite 219
Redwood City, CA 94061

Dear Stan:

I have included a source listing of a list driver for CPW using the AJ841 printer. The article by Lewis Moseley in the Proteus News was an autopage driver which has been modified for CPW.

This routine keeps track of the number of carriage returns sent to the printer and when a form feed character is sent, it will output the required number of carriage returns to get to the bottom of the page. Following are some implementation notes:

1. If no form feed characters are sent it will not page eject. Otherwise it conflicts with software that inserts its own form feeds.

2. When using PIP, the computer loops back through warm boot at the end of every command. This is useful for resetting the "LINES" counter for the next printing operation. Note the two lines, "MWI A,9" and "STA LINES," in the warm boot subroutine.

3. The AJ841 doesn't recognize LF's after CR's, so line feeds are not counted. The only problem that could occur is if line feeds are sent without CR's. I haven't had that problem yet. However, a simple trap could be used to look for LF's without a preceding CR.

4. The printer is set to print at the tear line before each printing operation. The driver will then either advance to the top margin, or in some software with an initial page eject, will advance one page and then advance to the top line margin.

; CPM ENTERS HERE WITH CHARACTER IN REG C
; AJ841 TERMINAL IGNORES ANY LF AFTER A CR, BUT AUTOMATICALLY
; GIVES A CRLF FOR EVERY CR RECEIVED.

LIST:

; PUSH B
; MOV B,C ;SAVE ORIGINAL CHAR.
; MOV A,C ;MOVE CHAR. TO B FOR OUTPUT
; MOV ANI 7FH ;STRIP PARITY BIT
; CPI FF ;CHECK FOR FORM FEED
; JZ FEED ; CR
; CPI CR ;CHECK FOR CARRIAGE RETURN
; CPI CRFEED
; RET

; FOR EVERY CR RECEIVED THIS ROUTINE INCREMENTS "LINES" TO
; KEEP TRACK OF LOCATION ON THE PAGE.

; CRFEED:
; LDA LINES ;GET # OF LINES SOFAR
; INR A ;ADD ANOTHER LINE TO COUNT
; STA LINES ;STORE NEW COUNT
; RET

; THIS ROUTINE PUTS OUT ENOUGH CR'S TO FILL THE REST OF THE
; PAGE. IT THEN OUTPUTS SOME MORE TO GET TO THE FIRST LINE
; ON THE NEXT PAGE.

; FFEE:
; LDA LINES ;GET # OF LINES SOFAR
; MOV C,A
; MWI A,PAGE ;# OF LINES ON A PAGE
; SUB C ;# LINES LEFT ON THIS PAGE
; JMP FEED3 ; MUST BE NON STANDARD PAGE
; MOV C,A ;C=COUNTER FOR LINES LEFT
; CPI B ;CHECK IF PAGE IS FULL
; CPI FFEE ;OUTPUT CR'S UNTIL NO MORE LINES

; FEED3:
; MWI A,TMARG
; STA LINES
; MWI A,TMARG ;LINES NEEDED FOR TOP OF NEW PAGE
; CALL FEED1 ;OUTPUT CR'S FOR NEW PAGE
; POP B ;GET BACK ORG CHAR
; MOV A,C
; RET

; THIS ROUTINE OUTPUTS CR'S UNTIL COUNTER IS EMPTY (REG C)

; FEED1:
; MWI B,CR
; CALL A,2 ;SELECT PARALLEL PORT
; POP B ;OUTPUT CR SOLOS
; DCR C ;SUBTRACT ONE LINE
; JMP FEED2 ;LOOP UNTIL COUNTER IS ZERO

; LINES:
; DS 1 ;STORAGE LOCATION FOR LINE COUNT

END
CON'T FROM PAGE 5: MOD. OF CP/M CBIOS FOR AJ841 PRINTER

BOOT:

; GETS CONTROL AFTER COLD OR WARM BOOT

MVI A,0
STA LINES

: REMAINDER OF YOUR USUAL BOOTLOAD ROUTINE

SOLOS MODIFICATION FOR CP/M

By Deslar K. Patten

Bennetts Photo Service

Mr. Stan Sokolow
Proteus
1690 Woodside Road, Suite 219
Redwood City, CA 94061

Dear Stan:

Several issues back, Thomas McGee wrote an excellent article on output routines for the SOL. I was very surprised not to see any information about the carriage return problem and ways to solve it. This basically is an open letter to Thomas McGee with some additional information on output routines.

Processor Technology has included a "clear to end of line" function in the SOLAS module. (I don't know why and hopefully somebody who does can answer that question.) The "clear to end of line" function works with programs written for the SOL, but causes problems on some programs not written for it.

CPM as an example, sometimes will output a carriage return only, and then after some processing will output another carriage return and line feed. The second carriage return will "clear to end of line" and erase the previously entered line. This is particularly frustrating when an error has been made in entering a command, and CPM comes back with an "Invalid Command," but has erased the line in the meantime. I have worked with a number of terminals and so far have found the SOL to be unique with this problem.

There are three methods being used to correct the problem in CPM. If anyone knows of another, please let me know.

1. SWITCHING CR & LF - A routine that outputs a CR for an LF, and an LF for a CR. This works unless the software being used has definite ideas about which should be which. An example would be a screen oriented editor like Wordstar.

2. CHARACTER TRAP FOR 2nd CR - This routine stores the last character output and then compares the newly received character to it. If two CR's are sent, one after the other, the second CR is discarded or "trapped." I don't know how well this works.

3. CHARACTER TRAP & SWITCH - This routine combines both of the above. First, two sequential CR's are detected as in #2. Then the second CR is replaced with an LF. This generates extra line feed not expected by some software such as Wordstar.

It was at this point that I came to the conclusion that the "clear to end of line" had to be eliminated. The only conflict that could exist is with Processor Technology software that may use that function. After making the change indicated below, I have run BASIC, EXTENDED BASIC, and TREK-80 and haven't had any problems.

Software adapted for use on the SOL may use the CR as an "erase to end of line." In that case, the software would have to be changed. As an example, Wordstar, after installation, assumes a carriage return will "EOL." By referring to the manual, the "EOL" function can be eliminated easily by changing the specified location to zero. The built-in software then performs the function.

After receiving the SOLOS.ASM file from the CPMUG library, I have found that someone has already made this change. The approach was to AHA A to zero before calling PCUR instead of MVI A,$4 as I have done. Both seem to work fine.

The CPMUG, SOLOS.ASM, however, didn't maintain the original address locations for subroutines. This can be corrected simply by adding NOP's to fill the address locations no longer used. For the carriage return modification, after AHA A, two NOP's should be inserted.

The other location where a problem occurs in the CPMUG version is in the PCLONG routine. The original Personality Module (2708) and the original SOLOS listing have two MOV A,M by mistake. The second MOV A,M was removed in the CPMUG version. All that is required is to insert an NOP after the MOV A,M.

This will change the CPMUG version to have the same addresses as the original for any programs making direct calls into SOLOS subroutines.

Two other changes have been made which work well for us and haven't created any problems. One was to make the SOL boot up in CPM upon reset or power on, and the second was to make "Mode Select" go to "Command" mode at any time. Since the "TERMINAL" mode was never used, the space was used for the modifications. Note, however, that the proper number of unused memory locations are filled with NOP's to maintain the same address locations as mentioned above.

Sincerely,

BENNETTS PHOTO SERVICE, INC.

Deslar K. Patten
R&D Project Engineer

Enclosure

DEP: sb
CON'T FROM PAGE 7: SOLOS MODIFICATION FOR CP/M

12200; KEYBOARD INPUT DRIVER
12300;
12310; THIS ROUTINE HAS BEEN MODIFIED TO JMP TO "CPMCDM",
12314; WHICH THEN CHECKS FOR A "MODE SELECT", IF RECEIVED, THEN IT
12316; GOES TO SOLOS "COMMAND MODE", OTHERWISE IT WILL RETURN AS IN
12318; THE ORIGINAL VERSION. THIS ALLOWS ENTERING THE COMMAND MODE
12320; FROM CP/M.
12322;
12400;
12500; KSTAT: IN STAPT ;GET STATUS WORK
12504; CMA ;INVERE IT FOR PROPER RETURN
12700; ANI KDR ;TEST KEYBOARD BIT
12800; RZ ;ZERO IS NO CHARACTER RECEIVED
12900; JMP CPMCDM ;GO CHECK FOR MODE SELECT
13200;
13300;
13400; THIS JUMP IS PART OF THE AUTO START UP CODE
13500;
13600; DB 0 ;VERIFY ADDR=0037
13700; JMP INIT ;THIS SHOULD BE C038

29250;
29260; THIS LOOKS FOR END OF SCREEN BY COMPARING THE NEXT
29270; ADDRESS AFTER THE LAST SCREEN ADDRESS. THIS WORKS FINE IF
29280; SOLOS ISN'T AT 0F000H. THEN THE CODE SHOULD BE CHANGED
29290;
29292;
29294; CPI 0
29296; JNZ ERAS1
29298;
29299; THE CPU OF 0H IS FOR SOLOS AT 0E000H.
30300;
30400; PERSE: LXI H,VDMEM ;POINT TO SCREEN
30500; MVX M,80H++ ;THIS IS THE CURSOR
29500;
29600;
29700; INX H ;BUMP 1ST
29800; ERAS1: MVX M,++ ;LOOPS HERE TO ERASE SCREEN
30900; BLNK IT OUT
30000; INX H ;NEXT
30100; MOV A,H ;SEE IF END OF SCREEN YET
30200; CPI 0FH ;COMPARE WITH FIRST ADD. AFTER END
30300; JC ERAS1 ;NO--KEEP BLANKING
30400; STC ;CARRY WILL SAY COMPLETE ERASE
30500;

38700;
38800; ROUTINE TO PROCESS A CARRIAGE RETURN
38900;
39000; PCRC: XRA A ;REWIND TO BEGINNING OF LINE
39100; NOP
39200; NOP
39300;
39400; ORIGINAL HAD 'CALL CLINE' INSTEAD OF 'XRA A' AS SHOWN
39500;
39600; ABOVE. THIS CAUSED DISK COMMANDS TO DISAPPEAR FROM THE
39700; SCREEN AS CP/M MUST OUTPUT TWO 'CB' CHARACTERS.
39800;
39900; THE TWO NOP'S HAVE BEEN ADDED TO KEEP THE ADDRESSES OF THE
40000; FOLLOWING SUBROUTINES THE SAME AS IN THE ORIGINAL VERSION.
40100; JMP PCUR ;AND STORE THE NEW VALUE
40200;
40300;
40400; CLEAR SCREEN AND THE FIRST 256 BYTES OF GLOBAL RAM
40500; THEN JUMP TO "INCPH". IT WILL THEN FINISH THE INITIALIZATION
40600; AND JUMP TO CP/M's Coldboot. Moved to maintain addresses.
CON'T FROM PAGE 2: SOLOS MODIFICATION FOR CP/M

42800 ; PUT THE CURRENT BLOCK ON THE TAPE
42900 ; (EVEN IF ONLY ONE BYTE)
43000 ; THEN WRITE AN END OF FILE TO THE TAPE
43100 ;
43200 ;
43300 ;
43400 ;
43500 ;
43600 ;
43700 ;
43800 ;
43900 ;
44000 ;
44100 ;
44200 ;
44300 ;

NOTE THE ORIGINAL MISTAKE THAT HAS BEEN PUT
BACK IN. A NOP ALSO BE COULD ALSO PE USED BUT WHAT THE HEMP.

INX H
INX H
MOV A,M
; GET CURSOR POSITION
MOV A,M
; TO BE ORIGINAL
CALL LOAD ; RC GET HEADER ADDRESS, DE BUFFER ADDRESS
PUSH B ; HEADER TO STACK
LI H,BLRF
; OFFSET TO BLOCK SIZE
XOR DAD B
; TEST COUNT
JZ EOIFW
; NO BYTES...JUST WRITE EOF

CROSS REFERENCE FOR BASIC VARIABLES
BY Tom Cardoso

In your December newsletter you advised that a crossreference program for EBasic would be forthcoming, but I haven't seen it yet so I thought I would send you mine to publish if you wish. I wrote it a couple of years ago and although it's very functional, I'm not particularly proud of its speed. The program will check for all EBasic variables and list them alphabetically with all their line number references. To give you an idea of time, the program will process itself in about 8 mins. and Smartmouth Blackjack (a 16k program) in about 30 mins. not great, but when its all you have it's OK. If anyone cares to offer suggestions on improving the speed, short of a complete rewrite, the comments would be most welcome. The program is set to use 0FH as a printer output pseudoport. If other ports are implemented, change line 860 appropriately.

I continue to relish the newsletter and offer my services to you if there is some way you feel I can help.

Tom Cardoso
1469 Farington Dr.
Naperville, Ill. 60540
312-428-0166

10 REM XREF
20 REM VERSION 5.2...7/81
30 REM
40 REM CROSS REFERENCE PROGRAM FOR BASIC VARIABLES
50 REM WRITTEN FOR SOIL. EXTENDED CASSETTE BASIC
60 REM WRITTEN BY TOM CARDOSO...312-428-0166...6/79
70 REM
80 REM This program requires that the BASIC program
90 REM statements be saved on tape or disc in TEXT mode
100 REM using a filename other than "XREF". This program
110 REM will read that text file; extract the variables
120 REM and list them alphabetically together with
130 REM all their line references.
140 REM
150 REM This program works on EXTENDED CASSETTE BASIC
160 REM programs only with variables from 'A' TO 'Z99'.
170 REM It will not extract double-letter variables.
180 REM
190 REM Program will print an asterisk '*' for each line
200 REM read and processed so you can follow progress.
210 REM
220 REM The DIM value of V# below can be lowered to suit
230 REM smaller memories.
240 REM
250 DIM V$(20000):A$(100):SET QP=6
260 PRINT "Let CURSOR S/F AT PRINT TAB(15)"**VARIABLE CROSS REFERENCE TABULATOR**
270 CURSOR 6;0:INPUT (1:0)"Do you want this to do TO PRINT? Y or N "...**Z99
280 IF Z99="Y" THEN LET Z99="Y"
290 IF Z99="Y" THEN LET Z99="Y"
300 PRINT :INPUT (7:0)"Enter Filename to Read from..."**V#1
310 LET M#=**V#1**1
320 PRINT :PRINT "Reading file and processing...patience please..."**V#2
330 FILE V#1**V#1**1
340 READ V#1**V#1**1 CLOSE #1: GOTO 860
350 PRINT "**V#3
360 LET V#1=**V#1**1:LET A#$=**V#1**1:LET A#=$**V#1**0:LET V#1=**V#1**1
370 IF A#1="REM" THEN 340
380 IF A#1="DATA" THEN 340
390 FOR V#1 TO X
400 LET B#X=**V#1**1
410 IF ASC(B#X)<34 THEN 450
420 FOR V#1=V#1 TO X
430 LET B#X=**V#1**1:LET ASC(B#X)<34 THEN LET V#1=X:LET V#1=V#1+1
440 NEXT
450 IF V#1=V#1 THEN LET C#1=**V#1**1 ELSE LET C#1="**V#1**1
460 IF V#1 THEN LET M#X=**V#1**1:LET A#X=**V#1**1:LET ASC(A#X)<65 THEN LET M#X=**V#1**1
470 IF V#1 THEN LET M#X=**V#1**1
480 IF B#X="**V#1**1 THEN LET B#X="**V#1**1
500 IF V#1 THEN LET C#1="**V#1**1 ELSE LET C#1="**V#1**1
510 IF C#1="**V#1**1 THEN LET D#="**V#1**1 THEN LET D#="**V#1**1
520 IF ASC(D#X)<65 THEN LET D#X="**V#1**1:LET D#X="**V#1**1
530 IF C#1="**V#1**1 THEN LET D#="**V#1**1 THEN LET D#="**V#1**1
540 IF C#1="**V#1**1 THEN LET D#="**V#1**1:LET D#="**V#1**1
550 IF ASC(D#X)<65 THEN LET D#X="**V#1**1:LET D#X="**V#1**1
560 IF ASC(D#X)<65 THEN LET D#X="**V#1**1:LET D#X="**V#1**1
570 IF ASC(D#X)<65 THEN LET D#X="**V#1**1:LET D#X="**V#1**1
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630 IF ASC(D#X)<65 THEN LET D#X="**V#1**1:LET D#X="**V#1**1
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680 LET D#X="**V#1**1:LET D#X="**V#1**1
690 LET D#X="**V#1**1:LET D#X="**V#1**1
700 LET D#X="**V#1**1:LET D#X="**V#1**1
710 LET D#X="**V#1**1:LET D#X="**V#1**1
720 LET D#X="**V#1**1:LET D#X="**V#1**1
730 LET D#X="**V#1**1:LET D#X="**V#1**1
740 IF D#X="**V#1**1 THEN LET D#X="**V#1**1:LET M#X="**V#1**1
750 IF D#X="**V#1**1 THEN LET D#X="**V#1**1:LET M#X="**V#1**1
760 IF D#X="**V#1**1 THEN LET D#X="**V#1**1:LET M#X="**V#1**1
770 IF D#X="**V#1**1 THEN LET D#X="**V#1**1:LET M#X="**V#1**1
780 IF D#X="**V#1**1 THEN LET D#X="**V#1**1:LET M#X="**V#1**1
790 IF D#X="**V#1**1 THEN LET D#X="**V#1**1:LET M#X="**V#1**1
800 LET D#X="**V#1**1:LET D#X="**V#1**1
810 LET D#X="**V#1**1:LET D#X="**V#1**1
820 LET D#X="**V#1**1:LET D#X="**V#1**1
830 LET D#X="**V#1**1:LET D#X="**V#1**1
The most practical approach is to put a grounding surface under your chair or under your feet. That is, a fairly good conductor connected to ground should be in contact with you. I say "fairly good," because it is not safe to be directly connected to ground with an excellent conductor (such as a wire), just in case you come into contact with a power source through a short circuit in your equipment.

Static control mats that meet these requirements are made by 3M company under the brand name Velostat. They come in various sizes, for stand-up work stations, carpet-under-desk and under-chair situations, and for larger area (4' x 8') protection. They are made of a plastic that contains enough of a conductive material to carry off the charges through a grounding wire before they can become harmful to electronics. The grounding cord has a 1 megohm resistor in it to protect against dangerous electrocution in the event of electrical fault. The mats are reversible, so that if they tend to become warped through repeated use, the mat can be flipped over.

The mats are not cheap, but the loss of valuable data or destruction of static sensitive IC's could be more expensive. A desk-size, comparable to the plastic mats commonly used to protect carpets under secretarial chairs, costs about $60. They are available from business machine stores and computer supply dealers.

Another static control item is a spray that can be applied to carpets. This works, but it wears off and must be reapplied periodically. The solvent in the spray is some sort of hydrocarbon, and I'm sure repeated inhalation of this is not good for your body. It isn't cheap either, in the long run, because it must be done again and again. It's best used to provide relief from the annoying zap you get when shuffling across a carpet and touching a metal object. A material that has been used is called LAB NO-Shock made by Lab Automated Chemicals, a division of American Chenmiate Corporation, Howard Street, Baltimore, Maryland, 21210. Building maintenance supplies have this material.

A third solution, which I haven't tried, would be to attach a wire to a metal bracelet, and put a 1 megohm resistor in the circuit to a nearby grounding point (not the computer, of course). This would be annoying, but it should do the job.

Velostat Electrically Conductive Floor Mats drain static charge from personnel harmlessly to ground. Static charge is removed as personnel step on Velostat Mats during the performance of their everyday office functions. The Mats prevent static caused loss of data and alteration of memory in computers and electronic office equipment. Because Velostat Mats are grounded, they can never be overloaded with static charge and do not rely on room humidity to work.

Velostat 1950 Series Floor Mats are made of a tough, durable, high impact conductive material. The Mats are hard and rigid so castered chairs easily roll over — even if the Mat is on a desk — and do not weigh down on room humidity to provide protection. All Mats come complete with ground cords.

Dimensions:

Type 1953
(1'x10')

Type 1954
(2'x15')

Simply place the Mat where the operator must step on it to reach the keyboard. The Mat will provide protection in such areas as:

- Minicomputers
- Mainframes
- Word Processing Equipment
- Data Entry Equipment
- Computer Printers
- Disc and Tape Drives
PROGRAM TO RUN PTC CASSETTE PROGRAMS UNDER CP/M
BY Jim Bailey and Deslar K. Patten

00100 PTOCPM.DOC TRANSFERS PROC. TECH OBJECT CODE
00200 FILES TO CP/M FILES WITH RELOCATOR.
00300
00400 PTOCPM.ASM M680 (MICROSOFT) ASSEMBLY FILE
00500
00600 PTOCPM.COM OBJECT PROGRAM FOR CP/M
00700
00800 PTOCPM.PRN LISTING FILE WITH XREF
00900
01000 FUNCTION:
01100 TO CONVERT MACHINE CODE FILES FROM
01200 PROC TECH TAPES TO CP/M FILES WITH A RELOCATOR
01300 PACKAGE ATTACHED SO THEY CAN BE RUN UNDER CP/M
01400 AT THEIR ORIGINAL LOCATION.
01500
01600 HARDWARE DEPENDENCIES:
01700 PROD TECH SOL COMPUTER WITH SOLOS MODULE
01800 AND MICROCOMPUTER DOUBLER. 2tb DISK DRIVE AND TAPE
01900 RECORDER ALSO NEEDED.
02000
02100 SOFTWARE DEPENDENCIES:
02200 THIS WORKS WITH SOLOS AT ITS ORIGINAL
02300 LOCATION, THE ASSEMBLY LISTING HAS BEEN CHANGED SO
02400 IT CAN BE USED WITH SOLOS AT A DIFFERENT ADDRESS
02500 BY CHANGING "SOLOS EQU" AND REASSEMBLING.
02600
02700 IF YOUR CP/M COLD BOOT ADDRESS ISN'T AT F800,
02800 THEN CHANGE THE "CPMCBT EQU" TO THE ADDRESS USED
02900 IN YOUR SYSTEM AND REASSEMBLE.
03000
03100 THIS PROGRAM WAS WRITTEN BY JIM BAILEY,
03200 AND MODIFIED BY DES PATTEN ON 2-22-81.
03300 THE SOURCE LISTING CALLED PGPCPYC9.ASM WAS IN VOLUME 3 #2 OF
03400 THE PROTEUS NEWS.
03500
03600 STEP BY STEP PROCEEDURE
03700
03800
03900 1.BOOT UP IN CP/M.
04000
04100 2.TYPE "PTOCPM" AND CARRIAGE RETURN.
04200 THIS WILL RELOCATE THE PROGRAM AT C900H.
04300 CALL THE INITIALIZATION ROUTINE AT C900H, AND
04400 THEN JMP TO THE SOLOS COMMAND MODE.
04500
04600 3.AFTER GETTING THE COMMAND PROMPT, TYPE IN:
04700
04800 GET <FILENAME> AND A CARRIAGE RETURN
04900
05000 AS YOU WOULD NORMALLY DO TO GET A TAPE FILE
05100 INTO MEMORY.
05200
05300 4.WHEN THE TAPE STOPS THE CONSOLE WILL PRINT
05400 OUT THE FOLLOWING:
05500
05600 WHERE XXXX= STARTING ADDRESS
05700 YYYY= LENGTH OF FILE
05800
05900
06000 5.TYPE IN THE FOLLOWING:
06100
06200 CD AND A CARRIAGE RETURN
06300
06400
06500 6.THE NUMBER OF PAGES REQUIRED FOR 'SAVE'
06600 BE PRINTED OUT, AND THEN THE CP/M PROMPT
06700 WILL APPEAR.

06900 7.WHEN THE CP/M PROMPT APPEARS, TYPE IN THE
07000 FOLLOWING;
07100
07200 SAVE <PAGES> <FILENAME.TYPE>
07300
07400 8. DONE!
07500
07600 WHEN THE SAVED PROGRAM IS CALLED BY CP/M,
07700 IT WILL BE LOADED INTO THE 100H FILE AREA, THEN
07800 THE JUMP INSTRUCTION AT THE BEGINNING OF THE FILE
07900 WILL EXECUTE THE RELOCATOR PACKAGE AT THE END OF
08000 FILE. THIS WILL MOVE THE PROGRAM TO IT'S ORIGINAL
08100 LOCATION AND RUNS IT.
08200
08300 GOOD LUCK!
CON'T FROM PAGE 11 - PTC CASSETTE UNDER CP/M

05100 ; -------------------------------
05200 ;
05300 ; THIS IS THE PROGRAM TO BE LOADED INTO C000 THAT
05400 ; DOES ALL THE WORK. IT IS MOVED BY THE RELOCATOR
05500 ; PACKAGE AT THE END OF THE PROGRAM. IT IS THE PGMCPY
05600 ; PROGRAM WRITTEN BY JIM BAILEY.
05700 ;
05800 ; THE MODIFICATION TO THIS PROGRAM HAS BEEN TO ADD
05900 ; THE JUMP TO CPM COLD BOOT INSTEAD OF RETURN TO
06000 ; SOLOS COMMAND. 2-22-81
06100 ;
06200 ; THE ADDRESSES ARE NOW OBTAINED FROM THE FILE HEADER
06300 ; STORED IN RAM. ALSO THE NUMBER OF PAGES TO BE SAVED
06400 ; ARE OUTPUT IN DECIMAL SO NO CONVERSION IS REQUIRED.
06500 ;
06600 ;
06700 ; -------------------------------------
06800 ;
06900 ; .PHASE 0C900H
07000 ;
07100 ; THIS PUTS CUSTOM COMMAND IN TABLE
07200 ;
07300 ; LXI H,'DC'
07400 ; SHLD CUTAB
07500 ; LXI H,DISKET
07600 ; SHLD CUTAB+2
07700 ; RET
07800 ;
07900 ; THIS OBTAINS THE START ADDR. AND FILE LENGTH FROM THE
08000 ; RAM FILE HEADER AND CALCULATES THE OLD AND NEW END.
08100 ;
08200 ; DISKIT:
08300 ; LHLD LOADR ; GET FILE START
08400 ; LHLD BLOCK ; GET FILE LENGTH
08500 ; XCHG ; GET LENGTH IN DE
08600 ; POP H ; GET FILE START BACK
08700 ; PUSH H ; SAVE OLD START FOR LATER
08800 ; DAD D ; OLD BEGIN + LENGTH = OLD END
08900 ; PUSH H ; SAVE OLD END FOR NOW
09000 ; LXI H,FILER ; GET NEW BEGINNING
09100 ; DAD D ; NEW BEGIN+LENGTH=NEW END
09200 ; POP D ; GET OLD END BACK INTO DE
09300 ; PUSH H ; SAVE NEW END FOR LATER
09400 ;
09500 ; NOW H,L HAVE NEW END AND D,E HAVE OLD END
09600 ; STACK NOW HAS NEW END ON TOP AND OLD START JUST BELOW.
09700 ; THESE ARE USED BY 'RESET' AFTER 'MOVUM'.
09800 ;
09900 ; THIS MOVES THE PROGRAM TO 100H
10000 ;
10100 ; MOVUM:
10200 ; LDAX D
10300 ; MOV M,A
10400 ; DCX D
10500 ; MOV A,C
10600 ; CMP E
10700 ; JNZ MOVUM
10800 ; MOV A,B
10900 ; CMP D
11000 ; JNZ MOVUM
11100 ; LDAX D
11200 ; MOV M,A
11300 ;
11400 ; THIS PUTS THE CORRECT JUMP ADDRESSES INTO THE RELOCATOR
11500 ; PACKAGE
11600 ;
11700 ; RESET:
11800 ; SHLD 101H
11900 ;
12000 ; MVI A,0CH
12100 ; STA 100H
12200 ; SHLD TRIPP+1
12300 ; LXI D,0AH
12400 ; DAD D
12500 ; SHLD FIRST+1
12600 ; SHLD SECOND+1
12700 ; POP H
12800 ; SHLD TRIPP+4
12900 ; LHLD 101H
13000 ;
13100 ; THIS INSTALLS LOCATOR PACKAGE AND OUTPUTS # OF PAGES.
13200 ;
13300 ; LXI D,TRIPP
13400 ; MVI C,1DH
13500 ; MOV M,A
13600 ; INX H
13700 ; DCR C
13800 ; INC DCR
13900 ; JNZ MORE
14000 ; CALL CRLF
14100 ; MOV A,H
14200 ; CALL OUTDEC
14300 ; CALL CRLF
14400 ; JMP CMPB ; GO TO CPM COLD START.
14500 ;
14600 ;
14700 ; THIS IS THE RELOCATOR PACKAGE
14800 ; THAT IS ATTACHED BY THE PROGRAM
14900 ; MOVED TO C900.
15000 ;
15100 ; TRIPP:
15200 ; LXI B,START
15300 ; LXI H,FILER
15400 ; PUSH D
15500 ; MOV: MOV A,M
15600 ; STA X
15700 ; INX D
15800 ; INX H
15900 ; MOV A,L
16000 ; CMP C
16100 ; FIRST: JNZ MOVIT
16200 ; MOV A,H
16300 ; CMP B
16400 ; SECOND: JNZ MOVIT
16500 ; LXI H,SOLOS
16600 ; RET
16700 ;
16800 ;
16900 ; THIS ROUTINE OUTPUTS BINARY OR HEX AS A DECIMAL.
17000 ; ENTER DATA IN A REG.
17100 ; USAGE A,B,C,D, AND E REGS.
17200 ;
17300 ; OUTDEC: LXI D,0000H
17400 ; OTDEC: MOV M,A
17500 ; OTDEC: MOV A,E
17600 ; OTDEC: MOV A,E
17700 ; OTDEC: MOV M,A
17800 ; OTDEC: MOV M,A
17900 ; OTDEC: MOV M,A
18000 ; OTDEC: MOV M,A
18100 ; OTDEC: MOV M,A
18200 ; OTDEC: MOV M,A
18300 ; OTDEC: MOV M,A
18400 ; OTDEC: MOV M,A
18500 ; OTDEC: MOV M,A
CON'T FROM PAGE 12: PTC CASSETTE UNDER CP/M

18600  OTEC4:  SU1  AOH
18700  JC  OTEC4
18800  INR  E
18900  JP  OTEC3
19000  ADI  GAN
19100  PUSH  PSW
19200  MOV  A,E
19300  GRA  D
19400  JNZ  OTEC5
19500  MVI  A,OFH
19600  JP  OTEC4
19700  OTEC5:  MOV  A,E
19800  OTEC6:  ADI  30H
19900  MOV  B,A
20000  CALL  SOUT
20100  POP  PSW
20200  ADI  30H
20300  MOV  B,A
20400  CALL  SOUT
20500  RET
20600  
20700  BUFPR:  DS  2
20800  
20900  .DEPHASE
21000  
21100  ;*******************
21200  ;THIS IS THE RELOCATOR PACKAGE USED BY PTOCPM
21300  ;TO MOVE THE ABOVE PROGRAM TO CS00. WHEN PTOCPM
21400  ;IS CALLED BY CP/M THE FOLLOWING TAKES PLACE;
21500  
21600  ; 1.PTOCPM IS FIRST LOADED INTO CPM AT
21700  ; 100H.
21800  ; 2.THE JMP AT 100H GOES TO THE RELOCATOR
21900  ; 3.PROGRAM FOLLOWING WHICH MOVES THE CS00
22000  ; PROGRAM ABOVE, TO CS00.
22100  ; 3.THE RETURN CALLS THE FIRST ROUTINE AT CS00
22200  ; TO SET UP THE CUSTOM COMMAND TABLE.
22300  ; 4.IT THEN JUMPS TO THE COMMAND MODE OF
22400  ; CS00.
22500  
22600  
22700  RELOC:  LX1  B,RELOC ;BEGINNING OF RELOCATOR
22800  LX1  D,PGMCPY;THIS IS THE ADD. WHERE
22900  IT MOVES TO.
23000  
23100  LX1  H,FILER;THIS IS WHERE IT IS NOW.
23200  NOP
23300  MLOOP:  MOV  A,M
23400  STAX  D
23500  INX  D
23600  INX  H
23700  MOV  A,L
23800  CMP  C
23900  JNZ  MLOOP
24000  MOV  A,H
24100  CMP  B
24200  JNZ  MLOOP
24300  CALL  OC900H ;SETUP CUS COM TBL
24400  JMP  COMM ;GO TO COMMAND MODE
24500  NOP
24600  
24700  ;THE DIFFERENCE BETWEEN THIS RELOCATOR AND
24800  ;THE RELOCATOR NORMALLY ADDED TO A CONVERTED
24900  ;PROGRAM, IS THE FOLLOWING;
25000  
25100  ;1.THE PUSH D WAS CHANGED TO A NOP.
25200  ;2.THE LX1 H,C000 WAS REPLACED WITH A
25300  ;CALL CS00.
25400  ;3.THE RET WAS REPLACED BY A JMP COMM1.

THIS PREVENTS THE PROGRAM FROM STARTING
25500  ;AT CS00 AND THEN RETURNING TO CP/M AT CS00, WHICH
25600  ;CAUSES THE MOST SPECTACULAR FIREWORKS I HAVE EVER
25700  ;SEEN.
25800  ;
25900  ;GOOD LUCK
26100  ENDO

RANDOMIZE FOR PT BASIC
BY Richard Bjorndal

I WAS UNAWARE OF ANY NEED TO IMPLEMENT A RANDOMIZE FUNCTION FOR
PT BASIC. I AM UNABLE TO FIND ANY REPEITION IN THE RND
FUNCTION PROVIDING ONLY THE RND(0) IS USED. ONCE 'RND' IS
GIVEN A NUMERICAL ARGUMENT OTHER THAN '0', ANYWHERE IN THE
PROGRAM, A SEED CHAIN IS ESTABLISHED AND EVEN RND(0) BECOMES
PREDICTABLE THEREAFTER. RICHARD'S MINI-PROGRAM WILL NOT FIX
IT. RE-RUNNING THE PROGRAM WILL NOT FIX IT. SCRATCHING AND
RE-LOADING THE PROGRAM WILL NOT FIX IT. REMOVING ANY STATEMENT
IN THE PROGRAM THAT GIVES A NUMERICAL ARGUMENT OTHER THAN '0'
TO RND WILL FIX IT.

EXAMPLE: TRY THIS.....

10 FOR i=1 TO 6:PRINT RND(0);:NEXT i
(RUN THAT PROGRAM I SEVERAL TIMES, OBSERVING RANDOMNESS)
...NOW ADD THIS LINE...
20 PRINT RND(4)
(RUN AGAIN I, SEVERAL TIMES ..)
ON THE SECOND RUN, AFTER RND(4) HAS BEEN 'SEEN', THE
RND(0) FUNCTION BECOMES REPETITIVE. REMOVE 20 AND RUN AGAIN
AND ALL IS RANDOM. ..OR AM I MISSING A POINT?

HOWEVER, APPLESOFT AND THE BASICS ON 'SOFTCARD' CAN MAKE GOOD
USE OF RICHARD'S PROGRAM. THEY REQUIRE SEEDING.

MURRAY MACKENZIE,
38 INNISWOOD DR.
SCARBOROUGH, M ON.,
CANADA. MIR 1ES.

EDITOR'S NOTE:
The problem with use of RND(W) is that the next time you load
BASIC and run your program it will behave exactly the same as
it did the last session, since the number generator will start
again at the beginning.
Seeding allows you to get a different series of random numbers
in each unrelated session. But not all numbers are good seeds.
Depending upon the pseudo-random number generator
algorithm, certain seeds will produce a relatively short series
of unique numbers before beginning to repeat. Perhaps someone
who has the BASIC source code (Proteus item P12 or P13) and who
knows more about random number generators could make some
recommendations for getting good seeds.
PATCHES FOR PT DISK BASIC (HIGH VERSION)
BY Ben C. Stapleton, Jr.

Some of the patches I've made to PT Disk Basic (High Version) might be of interest to other users.

This version gives BASIC files a protection attribute when saved to disk which makes them difficult to list with the FILES command of PTDBS.

With some clues on where and what to look for, provided by Eric Fincher of Computer Port, Arlington, Texas (Nice People), a batch to remove that feature has been found.

My Sol/Helios is used for business as well as pleasure and one small irritation for me has been the inability to define the Mode Select key. No matter how carefully programs are error-trimmed, the operator can exit Basic by accidentally hitting the Mode Select key. A patch to change Mode Select to Control C (or any other code you choose) is shown.

The bug with the REM statement mentioned by Bob Werner in the Jan/Feb 1980 issue of Proteus is also present in DBASIC. His fix works quite well with only the addresses being changed.

One small hitch occurs when using the CAT command. The normal command to CALLs from Program Unit 1 is: CAT /1. After this patch is in place, a syntax error will result unless the space is omitted, ie CAT/1.

I select the Internal Screen Driver when initializing DBASIC.

To output to my printer, the statement: SET OF="PRNTR" is used, and SILENTR returns output to the screen. It also clears the screen, which is not always desirable. This can be defeated.

Lastly, there are 510 bytes of memory unused by BASIC after FDEO. I put the Screen Copy routine from Bob's Journal in this space and now can output an exact copy of the screen to my printer at any time from within a BASIC program.

<<< PATCHES FOR PT DISK BASIC (HIGH VERSION) >>>

Allow creation of BASIC files without Attributes:
Change ED8E from 30 to 00 (affects C type files, 05)
Change ED81 from 00 to 00 (affects T type files, 06)

Change from Mode Select to Control C:
Change 057C from 00 to 03
Enter @ 05A5: C3 E0 FD
Enter @ FDE01: FE 03 CA 80 05 C3 AB 05
Enter @ 043D: C3 FD 00
Enter @ FE01: FE 03 CA 80 05 C3 40 06

Allow blanks after REM statement:
Enter @ D161: 13 1A B7 FA C1 D1 47 CD 5A D3 23 B8
CA 61 D1 00

To prevent SET OF=00 from clearing the screen:

Use: POKE 2077,140
SET OF=00
POKE 2077,130

The listing for the Screen Copy routine is attached.

Now, I've got a question for some of the real software Pros out there. Has anyone thought about writing a device driver that would allow PTDBS to access a Hard Disk as though it was simply

Thanks for listening.

Ben C. Stapleton, Jr.
2430 Summit Street
Portsmouth, Ohio 45662

a super-large floppy? I'm interested in storage capacity, not speed. Also, the drive should be a cartridge type so it can be backed-up. I'd appreciate any thoughts at all on this.

Thanks for listening.

Ben C. Stapleton, Jr.
2430 Summit Street
Portsmouth, Ohio 45662

SCREEN IMAGE HARD COPY FOR THE SOL-20
FROM THE APRIL 1977 ISSUE OF:
DR. DOBB'S JOURNAL OF COMPUTER CALISTHENICS & ORTHODONTIC
BOX E: MENLO PARK, CALIFORNIA 94025

ORIGINALLY WRITTEN FOR THE VDM-1 BY DAN S. PARKER
PATCHED FOR THE SOL-20 BY BEN STAPLETON, JR.

*SCRENCOPY* CAN BE CALLED FROM BASIC ANYTIME YOU NEED A PRINTOUT, BY THE STATEMENT: X-CALL(605040)

*SCRENCOPY*
LOAN CALCULATION PROGRAM

By David Armstrong

As promised, here is another program from the Armstrong Corporation SOLSTAR library. SOL owners with North Star disk drives can run it directly; IT BASIC users will have to modify it slightly with respect to the print formatting statements and the ICHARS function, etc.

The program has proven very useful for loan and mortgage calculations. Using it, I was able to catch an error the bank made on my last car loan! The program is easy to use, and is self-documenting. The user is prompted to supply five loan parameters -- principle, interest rate, payments per year, term in years, and regular payment. Any of these values can be calculated by simply leaving out that value (making a null entry) when prompted for it, and filling in the others.

Coping up for the next issue of PROTEUS is a Print Spooler I/O package for the North Star DOS, and a simple assembly language routine to send the SOL's display contents to the printer each time the LOAD key is pressed. If there are any special program application areas that PROTEUS readers would like to see for the SOL/North Star system, let us know.

Sincerely,

Wm. David Armstrong

P.S. The following function can be substituted for the ICHARS function specified in the program listing supplied:

```basic
600 PRINT FMA(17,13)"... ... ... ... ... ..." END
230 IF A(3)<0 AND A(4)<0 THEN 240 \ X=09 \ GOTO 210
240 A(3)=12 THEN PRINT FMA(17,10,A(3)) \ A(4)=0 \ GOTO 100
250 PRINT FMA(0,7) \ FOR I=1 TO 27 \ PRINT FMA(0,7) RETURN
260 PRINT "Principal amount: " \ PRINT "Annual interest: ";
270 PRINT "Wx: payments/yr. " \ PRINT "Term in years ";
280 PRINT "Regular payment \"FMA(18,8) \ RETURN
290 X=ICHR\(0) \ X=ASC\(X\) \ IF X=13 THEN 330
310 IF X=05 THEN 320 \ X=CHR\(\(\) \ IF X=1 THEN PRINT CHR\+(95),
310 IF X=1 THEN A=A(1,1)=1 \ GOTO 290
320 IF X=45 OR X=57 OR X=47 THEN 290 \ A=A+2 \ GOTO 310
330 IF LEN\(A\)=1 THEN X=1 \ ELSE X=CHR\+(10) \ A=A+1 \ RETURN
340 ON X GOTO 305,360,450,370,350
350 N=\((1+I/100)^M/(1-(1/(1+I/100))\) \ (N+1) \ RETURN
350 N=\((1+I/100)^M/(1-(1/(1+I/100))\) \ (N+1) \ RETURN
370 Y=\((I/(1+I/100)^M)/(1/(1+I/100))\) \ (N+1) \ RETURN
380 Y=\((I/(1+I/100)^M)/(1/(1+I/100))\) \ (N+1) \ RETURN
390 I=I+1 \ GOTO 30 \ PRINT FMA\(18,9) \ "WORTHING ... Stand by",FMA\(0,16),
400 R1=\((P/\(1/(1+I/100)^M\))/(1/(1+I/100)^M)) \ RETURN
410 R1=\((P/\(1/(1+I/100)^M\))/(1/(1+I/100)^M)) \ RETURN
420 IF R1>R THEN 440 \ IF R1R THEN 430 ELSE I=I+1 \ GOTO 400
440 I=\((\(1+(1/100)^M\))/(1/(1+I/100)^M)) \ (N+1) \ RETURN
450 PRINT FMA\(18,10) \ "This function not supported",FMA\(0,16),
460 X= \ RETURN
470 DEF FMA\(X,Y)
480 IF Y=16 THEN 300 \ X=CHRS\(27)\CHR\(1)\CHR\(5) \ X=CHRS\(Y)
490 PRINT X \ \="" \ GOSUB 290 \ X=Y \ "" \ GOSUB 510
500 X=CHR\(27)\CHR\(1)\CHR\(5) \ X=CHR\(Y) \ RETURN X \ PRINT \"

SUPERPACK

By Bob Henderson

Recently I read a nice program by Rinaldo Prisco in Microcomputing (January 1981). Mr. Prisco's program compresses a North Star basic program by removing all the spaces (20H). While I have several programs that do the something, the fascinating thing about such a program is that;

(1) It was in machine language so it was fast, and
(2) Having the source code allows you to modify it to your own special needs.

I have recently begun to learn machine language programming so this program was a motivation to begin expanding and adding features. What I found was that you can develop fairly complex programs by adding desired features once at a time and testing them as separate sub-programs.

First I wanted the program to remove superfluous REM statements. However, as I found out the hard way, removing all REM's can be a disaster. I know, a good programmer never references a GOTO or GOSUB to a REM statement, but somehow I always find myself doing it. So the only REM statements this program can remove are ones not referenced. Naturally we eliminate the actual remarks and only leave the REM itself, (i.e. 95 H)

---

The other thing I have to have this program do was to concatenate statements. Not only does this allow a considerable reduction in the size of many programs but it also allows a somewhat faster operation. There is a program out in Basic that does this but it can take up to 30 minutes on a big program. An assembly language program would be much faster.

The program simply goes through the original listing and every line number that is referenced is stored consecutively in the Table. An attempt is made to eliminate duplicates nor to order the table.
CON'T FROM PAGE 15 - SUPERPACK

This table is used by the routines which check for referenced REM
statements, and for allowable concatenations. In spite of the
theoretical inefficiency of building an over-large table and of
requiring too many comparisons, the speed of the program is such
that the effect is inconsequential.

Please remember if you concatenate statements larger than the
allowable line length in your version of Basic, you will not be able
to list or edit it. The length in the accompanying program is 96 but
this may be changed.

The program is highly (probably excessively) documented, but this is
essential for a novice like myself. Also I do not claim any awards
for elegance. Fortunately machine language programs are so fast
that even inefficient coding is very adequate.

To run the program:
(1) load your program
(2) Type BYE to enter DOS
(3) Type GO SUPERPAK

The program is self prompting and will offer you two choices. First
you will be asked if "you want to remove REM's." If you answer no,
the program will remove spaces but not bother the REM's. If you
answer Yes, you will then be asked if you wish "To concatenate
statements." If you do, SUPERPAK will concatenate all statements to
a maximum line length of 96 characters, except that referenced lines
will not be moved.

When the program is complete, SUPERPAK will return to BASIC so you
can run or save your program. I find that a 60 block, heavily
remarked program, will compile to 37 blocks in 2 seconds.

One word of warning. The program you are compacting must be
complete. If you have an incomplete statement in your program:
(e.g. 100 GOTO
200 PRINT "END"
300 END)

Superpak will have unpredictable results.

I was greatly aided in this new project by two very superior aids.
The first was John Willard's Dynamic Debugging System (Computer
Marts of New Jersey 501 Route 27, Iselin, NJ 08830). This is the
finest system for debugging machine language programs I have seen.
It allows you to review the program a step at a time while seeing
all registers and flags. Great!

I hope the program will be useful to you.

Sincerely,

Bob Henderson

108 * SUPERPAK
118 * Public Domain Program by Bob Henderson 1981
128 *
138 *
148 * Written for SOL-28 with NORTH STAR DOS
158 *
168 * A program to use a line reference table to allow
170 * us to delete all REM statements, EXCEPT those that
188 * are referenced by a GOTO, THEN, GOSUB, etc.
198 * and to optionally concatenate statements into
208 * multiple statement lines.

1180 218 *
1190 228 *
1200 238 **** EQUATE TABLE ****
1210 248 *
1220 258 TIMES EQU .ORCH TOP OF SCREEN
1230 268 BASIC EQU .ORCH.W basic re-entry to BASIC
1240 278 HOME LOGIC EQU 96 MAX LENGTH OF CONCAT. LINE
1250 288 SCREEN EQU .ORCH.TWO LINES DOWN FROM TOP
1260 298 CLCN EQU .ORCH.SEGMENT CLEAR SCREEN
1270 308 KEYBOARD EQU .ORCH.SEGMENT KEYBOARD INPUT
1280 318 STATUS EQU .ORCH.SEGMENT KEYBOARD STATUS
1290 328 STARTRACsına EQU .ORCH.START OF BASIC FOR 5.25
1300 338 *
1310 348 *
1320 358 TABLETOP EQU .ORCH.TOP of table area where we
1330 368 *
1340 378 *
1350 388 *
1360 398 *
1370 408 *
1380 418 *
1390 428 *
1400 438 CLEAR CALL CLCN
1410 448 LXI H,HOME
1420 458 MOV H, **
1430 468 BEGIN LXI H,SCREEN * PUT UP SIGN ON MESSAGES & CHOICES
1440 478 LXI H,MESS1
1450 488 CALL MSD
1460 498 LXI H,SCREEN+48
1470 508 LXI H,MESS12
1480 518 CALL MSD
1490 528 LXI H,SCREEN+128
1500 538 LXI H,MESS2
1510 548 CALL MSD
1520 558 LXI H,SCREEN+192
1530 568 LXI H,MESS3
1540 578 CALL MSD
1550 588 LXI H,SCREEN+256
1560 598 LXI H,MESS4
1570 608 CALL MSD
1580 618 LXI H,SCREEN+328
1590 628 LXI H,MESS5
1600 638 CALL MSD
1610 648 LXI H,SCREEN+384
1620 658 LXI H,MESS6
1630 668 CALL MSD
1640 678 LXI H,SCREEN+512
1650 688 LXI H,MESS7
1660 698 CALL MSD
1700 708 CALL DATABAISING NEW INPUT?

718 KERD IN KEYBOARD GET USER INPUT ABOUT REMOVAL OF REM
728 CPI * Y
738 CPI * N
748 CPE * Y
758 CPE * N
768 JKP KERD
778 LEA HL, DO WE WANT TO REMOVE REM?
788 CPI * Y
798 CPI * N
808 JNI START, NO THEN START PROGRAM
818 LXI H,SCREEN+476 YEAH, AKA ABOUT
828 LXI H,MESS14 CONCETATION
838 CALL MSD
848 CALL DATABAISING NEW INPUT?
858 KERD IN KEYBOARD
868 CPI * Y
878 000 868 CPI * N
888 JKP KERD
898 000 868 JKP KERD BE SURE Y OR N
908 000 888 JKP KERD
918 000 878 JKP KERD

**8137 C 84 2A** 2260 JMP BASIC RE-ENTER BASIC
**8176** 2270 **EQU** 8176 **TABLE OF REFERENCED LINES**
**8176** 2290 **EQU** 8176 **LXI D, TABLETOP USE DC TO POSITION IN TABLE**
**8176 2295 00 86** 2300 **LXI H, STARTMAGIC** **HE WILL SCAN PROGRAM**
**817C TE** 2320 **BKM1** **MOV A,M** **FIRST BYTE OF PRM**
**817D FE 81** 2350 **CPI 1** **END OF FILE?**
**817F CPI C 81 #1** 2380 **J2** FINISHED YES, RETURN TO BASIC
**8180 00 86** 2390 **J2** SKIPOVER **INX H SINCE WE ARE AT START OF LINE**
**8184 23** 2395 **INX H** **WE WILL SWIPE OVER LINE #**
**8186 23** 2397 **CHECK INX H NOW SEEN IF BYTE**
**8185 7E** 2400 **MOV A,M** **IS GOING TO REF APOTHER LINE#**
**8186 7E** 2400 **CPI 4** **IS NEXT BYTE LINES#?**
**8186 CA 3A #1** 2460 **J2** FOUND OK LET'S STORE IT.
**8188 FE 8D** 2480 **CPI M8H END OF LINE?**
**818B 9A AD #1** 2490 **J2** **NEWLINE LINES# AGAIN**
**818E FE 22** 2520 **CPI 22H A QUESTION?**
**818F CA 8E 01** 2540 **J2** QUESTION
**818F C1 E4 81** 2550 **JMP CHECK**
**8190 23** 2560 **INX H**
**8190 7E** 2560 **MOV A,M**
**8191 FE 22** 2570 **CPI 22H KEEP GOING UNTIL NEW QUESTION**
**8191 C2 8E 01** 2590 **JNZ QUESTION**
**8191 CA 84 #1** 25A0 **J2 CHECK**
**81A0 23** 25A2 **FOUND** **INX H POINT TO LSB#**
**81A3 7E** 25B0 **MOV A,M** **PUT LSB IN A**
**81A4 12** 25C0 **STAX D STORE LSB IN TABLE**
**81A5 23** 25D0 **INX H**
**81A6 13** 25E0 **INX D**
**81A7 7E** 25F0 **MOV A,M** **MOST SIGNIFICANT BIT**
**81A8 12** 2600 **STAX D STORE IT**
**81A9 13** 2610 **INX D GET READY FOR NEXT TIME**
**81AA C3 84 #1** 2620 **JMP CHECK NEXT**
**81AD 23** 2630 **NEWLINE INX H GET READY FOR NEW LINE**
**81AE 3E 01** 2633 **JMP NEWI**
**81B0 3E** 2640 **FINISHED MOV A, BFFH MARK END OF TABLE WITH FFFH**
**81B1 12** 2650 **STAX D**
**81B4 13** 2660 **INX D**
**81B5 12** 2670 **STAX D** **JMP START NOW START PACK SECTION OF PROGRAM**
**81B9 28** 2670 **READABLE EQU S FIND IF LINES# IS IN TABLE**
**81B9 28** 2690 **DCX H THIS IS THE REM**
**81BA 28** 2698 **STAX H**
**81BB 80** 2700 **MOV A,M**
**81BD 3E 02** 2710 **STA M8B M8B OF CURRENT LINE#**
**81BF 28** 2720 **DCX H**
**81C0 7E** 2730 **STA LSB**
**81C4 28** 2740 **DCX H**
**81C5 28** 2750 **DCX H POINTS TO LAST RUN**
**81CE 75** 2760 **PUSH B**
**81CF 76** 2770 **PUSH H** **SAVE REM**
**81CB 28** 2780 **LXI H, TABLETOP ADDRESS OF START OF TABLE**
**81CB 28** 2787 **CHECKLSB LDA LSB GET CURRENT LINE# LSB**
**81CE BE** 2790 **CPI M** **SAME AS IN TABLE?**
**81CF CA 0D #1** 2797 **J2** **CHECKLSB** **MATCH NOW SEE M8B**
**81D2 3F 0F** 2798 **MOV A, M8B** **CHECK FOR END OF TABLE**
**81D4 BE** 2800 **CPI M**
**81D5 CA 89 #1** 2808 **J2** ENDPOINT?
**81DA 23** 2810 **INX H**
**81DA 23** 2820 **INX H** **OTHERWISE GOTO NEXT ENTRY**
**81DB C3 C1 01** 2830 **JMP CHECKLSB**
**81DD 3A FF 02** 2850 **CHECKLSB LDA M8B GET M8B**
**81EE 23** 2860 **INX H**
DEAR COMPUTER DEALER:

DISKETTE CONVERSION SERVICE

Here is an opportunity for your company to provide a valuable service to your customers, earn their goodwill and get paid well for the time spent. Note that this is also an excellent solution to CP/M software developers looking to open up new markets.

We'll convert standard 8" CP/M format (the so-called IBM 3740 single density format) to a 5" North Star CP/M format (both single and double density) and vice versa. This conversion service retains $20.00 for the first converted diskette and $15.00 each additional. As a computer dealer, however, you pay only $11.00 for the first converted diskette and $9.00 each additional converted diskette in the same order. You supply the media or we will you for it at cost. Our turnaround time is typically 24 hours. In quality for the dealer discount, write your order on your letterhead. Dealer order must be $27.00 minimum or 3 converted diskettes per order. Of course, you are at liberty to set your own retail markup. The original diskettes will be shipped together with the converted diskettes and confidentiality is assured. Volume discounts are available for replicates—please write or call for details.

July 24, 1981

Stan Sokolow
1690 Woodside Rd., Suite 219
Redwood City, Ca. 94061

Dear Stan,

Ever since I joined PROTEUS the beginning of this year, I have been pleased with the information in the PROTEUS NEWS. However I would like some help with the following problems. Does someone have a transfer routine for transferring programs from a P-T cassette tape to a North Star mini-floppy diskette and vice versa? I would like to have my 32K block of memory stay continuously at OH or 2000H whichever is better. Also is there a disk utility pack and some word-processing programs available without expanding my system to CP/M? Finally what would be involved for a future addition of an 8080/8085 assembler to my SOL/Northstar equipment? Any information would be greatly appreciated.

Sincerely yours,

Dale Funke
10102 Crescent Moon
Houston, Tx. 77054
Patches for trek-80, quibic, 8080-chess
by Tom Cardoso

Having recently converted solos to operate at F000 hex, I became frustrated that some of the great P.T. software would no longer operate, since most of it uses direct screen memory calls. An effort was made to convert some of the good stuff, and the following are patches to allow quibic, 8080-chess and TREK-80 run with screen memory addressed starting at f000 hex. As time permits, I will also try to get target running and if successful, will forward the patches to PROTEUS for publication.

The patches for quibic, 8080-chess and TREK-80 allow the programs to run with relocated solos, but extensive testing of the modified programs has not been done. If any bugs are evident as a result of the move, please forward them to me.

To modify, load program into memory starting at 0 hex, make patches, then save the modified version. If run under CP/M, load at 100 hex, add 100 hex to the addresses given, change the bytes indicated and save 8 pages for quibic, 24 pages for CHESS, and 33 pages for TREK-80.

### Patches for Trek-80

<table>
<thead>
<tr>
<th>Address was</th>
<th>Should be</th>
<th>Address was</th>
<th>Should be</th>
</tr>
</thead>
<tbody>
<tr>
<td>002</td>
<td>CD</td>
<td>087</td>
<td>CE</td>
</tr>
<tr>
<td>005E</td>
<td>CE</td>
<td>099</td>
<td>CC</td>
</tr>
<tr>
<td>007</td>
<td>CC</td>
<td>099C</td>
<td>CC</td>
</tr>
<tr>
<td>006E</td>
<td>D0</td>
<td>099C2</td>
<td>CC</td>
</tr>
<tr>
<td>0156</td>
<td>FF</td>
<td>099D</td>
<td>CD</td>
</tr>
<tr>
<td>0161</td>
<td>CD</td>
<td>09C8</td>
<td>CC</td>
</tr>
<tr>
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<td>CD</td>
<td>090E</td>
<td>CD</td>
</tr>
<tr>
<td>017B</td>
<td>CD</td>
<td>09FF</td>
<td>CC</td>
</tr>
<tr>
<td>0184</td>
<td>CC</td>
<td>0A0D</td>
<td>CC</td>
</tr>
<tr>
<td>018A</td>
<td>CF</td>
<td>0A1A</td>
<td>CC</td>
</tr>
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<td>CF</td>
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<td>CC</td>
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</tr>
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<td>CD</td>
</tr>
<tr>
<td>03FF</td>
<td>CD</td>
<td>0E11</td>
<td>CE</td>
</tr>
<tr>
<td>0379</td>
<td>CD</td>
<td>0E2B</td>
<td>CE</td>
</tr>
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<td>CC</td>
</tr>
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<td>CC</td>
<td>0E77</td>
<td>CC</td>
</tr>
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<td>CC</td>
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<td>CC</td>
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<td>CC</td>
</tr>
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<td>CC</td>
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<td>CB</td>
<td>0FA9</td>
<td>CC</td>
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<td>CC</td>
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<td>0F1A</td>
<td>CF</td>
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<td>0F23</td>
<td>CC</td>
</tr>
<tr>
<td>0737</td>
<td>CC</td>
<td>0F5C</td>
<td>CC</td>
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<tr>
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<td>CF</td>
<td>0F5F</td>
<td>CD</td>
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<tr>
<td>0818</td>
<td>CC</td>
<td>0FF4</td>
<td>CD</td>
</tr>
<tr>
<td>081E</td>
<td>CC</td>
<td>1F8F</td>
<td>CD</td>
</tr>
</tbody>
</table>

**NOTE:** For some reason, the "L" command to leave TREK-80 is non-functional after the patches are installed. That doesn't pose much of a problem, but if anyone has ideas on fixing that, let me know.

### Patches for Quibic

<table>
<thead>
<tr>
<th>Address was</th>
<th>Should be</th>
<th>Address was</th>
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<td>021F</td>
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<tr>
<td>0225</td>
<td>DO</td>
<td>05DC</td>
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<tr>
<td>0245</td>
<td>CF</td>
<td>0615</td>
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<td>CF</td>
</tr>
<tr>
<td>034D</td>
<td>CF</td>
<td>0634</td>
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<tr>
<td>058B</td>
<td>CC</td>
<td>0637</td>
<td>CD</td>
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### Patches for 8080-Chess V.1.0 (Mod 0)

<table>
<thead>
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<td>068C</td>
<td>CC</td>
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<tr>
<td>0669</td>
<td>CF</td>
<td>0695</td>
<td>CC</td>
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<td>069C</td>
<td>CF</td>
<td>06C0</td>
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<td>0161</td>
<td>CF</td>
<td>06E0</td>
<td>CF</td>
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<td>0146</td>
<td>CF</td>
<td>100A</td>
<td>CC</td>
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<td>012E</td>
<td>CF</td>
<td>1112</td>
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<td>029E</td>
<td>CF</td>
<td>116D</td>
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<td>049F</td>
<td>CF</td>
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<td>04BF</td>
<td>CC</td>
<td>125C</td>
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</tr>
<tr>
<td>0560</td>
<td>CF</td>
<td>126E</td>
<td>CC</td>
</tr>
</tbody>
</table>

Additionally, add the following hex code 012F which overwrites the checksum error message:

16CF: 0B 50 6C 65 61 73 65 20 68 69 74 20 60 52 45 54 55 52 4E 27

**III G O O D L U C K III**

Tom Cardoso
1469 Farrington Dr.
Naperville, Ill. 60540

---

INFO WANTED ON NEW SOL BOARD:

I WOULD LIKE TO REQUEST SOME ASSISTANCE CONCERNING THE FOLLOWING ITEM. I HOPE THAT ANOTHER MEMBER MIGHT BE ABLE TO COME TO MY AID (PROVIDE SUCCOR) WITH SOME OR ALL OF THESE:

- #1 Sol Computer Board (C) 1978, Revision B Assembly #110200: PC #110201, Revision B. What are the values of the following components???
- C 75 (near U113)?
- C 79 (near U 25)?
- R 91 (between U 75 and U 76)?
- R160 (near U 39)?
- U117 (next to double row of dip switches)?

Those items are preventing me from completing my computer!!!

VICTOR D. BENNIGHT
Computer Sciences Corporation
1101 San Antonio Road
Mountain View, CA 94043

ED NOTE: THIS IS THE PC BOARD FOR THE REDESIGNED SOL WHICH WAS NOT ON THE MARKET WHEN PTC WENT OUT OF BUSINESS, WE HAVE NO DOCUMENTATION. PERHAPS SOMEONE ELSE HAS FIGURED IT OUT.
CUSTOM I/O PRINTER DRIVER

BY Wayne Wilson

Enclosed is an enhanced version of my print driver that appeared in the January/February Protex. The driver is for an ASL2 Multewriter which has a Diablo Hytype-1 printer assembly. This version of the driver still provides handshaking as before, but now collects "white space" and moves the print head directly to the position of the next character to be printed in one big "tab" rather than by printing individual spaces across the page. This driver is implemented as part of my CP/M BIOS and by using the losbyte function, switching from 10 CPI to 12 CPI is done via a STAT command from the keyboard.

***************

* Custom I/O printer driver for Multewriter printer with Hytype-1 assembly. Handshake for 1200 baud and collected spaces.

***************
call XHA A TAB STA SEROUT FIBB H, H.WILL BE USED
LHLD RIGHT ;GET THE CURRENT COUNT
MOV A,C ;ASC
CPI 20H ;CHECK FOR SPACE
JE 2MK10 ;LOAD CARRIAGE, COLLECT SPACES
LIA SPACES ;CHECK TO SEE IF
LAST PRINTABLE CHARACTER
JNZ SOUT ;IF NOT SEND SPACE OUT
CPI 01 ;WAITS A SPACE
JNZ SOUT ;AFTER COLLECTING SPACES
;SEND OUT ONE E7 TAB.
MOV A,C
STA TIMM ;SAVE THE LAST PRINTABLE
;CHARACTER IN AFTER SPACE
CALL BFLAG ;SEND OUT THE BUFFER FLAG
CALL WAIT ;LOOK FOR ANSWER-BAK, THEN MOVE
MOV C,D ;LEAD IN CODE FOR A MOVE COMMAND
CALL SOUT
MOV C,H ;NOW SEND OUT DIRECTION
CALL SOUT ;OP'N MOTION
MOV C,L ;AND HOW FAR TO MOVE THE
CALL SOUT ;CARRIAGE
XRA A ;TIME TO REST
STA RIGHT ;THE TAB REGISTER
STA RIBF1 ;RIGHT POS.
STA SPACES ;AND LOWER THE FLAG
LIA TIMM ;GET CHARACTER BEING STORED
MOV C,A ;PUT IT IN C REG.
SOUT colbf ;SEND A CHARACTER OUT
LIA CHRC ;GET CHARACTER COUNT
JNZ A ;JUMP THE COUNT
STA CHRC ;STORE NEW COUNT
CPI 60 ;SEND 60 CHARACTERS
JE 2SPS ;STOP IF 60 STUDY-AY
CPI 55 ;IF 60, 10 15 55?
JNG BACK ;IF NOT, GET MORE
BFLAG MVI C, 05H ;IP=55, SEND OUT BUFFER MARKER
CALL colbf ;TO DIABLO
BACK LDA SPACES ;GET FLAG
CPI 1 ;CHECK FOR SPACES
JS 2RTN ;GET MORE MOTION DATA
POPS POP H
RTN ;BACK FOR MORE
WAIT IN OPHR ;GET STATUS
AND OYIA ;MAKE FOR SOL SER. DATA READY
JZ 2WAIT ;LOOP ROUND TILL READY
IN OPHR ;GET DATA

********************

;SPACES COLLECTED HERE BASED ON 60 INCREMENTS PER
;INCH (5 increments per char. for 12 cpi)
;6 increments per char. for 10 cpi

2MK10 MVI A, L ;RAISE THE 'SPACE' FLAG
STA SPACES
LDA TAB ;FIND OUT IF WE ARE
CPI 1 ;PRINTING 12 cpi
JE 2MK10 ;IF YES, SWITCH TO 12
MOV A,L ;INCREMENT MOVE COUNT BY 6
ADI 6 ;1/60TH INCREMENT FOR 10 CPI
MOV L, A
LDA RFLAG ;CHECK THE HIGH ORDER BIT
2MK12 MOV A, L ;INCREMENT MOVE COUNT BY 5
ADI 5 ;1/60TH INCREMENT FOR 12 CPI
MOV L, A
MVI A, 80H ;MARK FOR HIGH ORDER BIT
CPI 80H ;WHEN COUNT OVER 127
JE 2MARK ;GO INCREMENT "H" REG.
SLED RIGHT ;IF NOT, STORE THE COUNT
JMP POPS ;GO BACK FOR MORE STUFF
MARK MOV A, L ;IF COUNT OVER 127
SUI 12B ;BY HOW MUCH
MOV L, A ;PUT REMAINDER BACK IN L
SLED RIGHT
JMP POPS ;THEN GO BACK FOR MORE

********************

;SET FLAG FOR PRINTING AT 12 cpi on ASL2 Multewriter.

********************
call 12 MVI A, L ;Set up flag for
STA TAB ;printing 12 cpi.
JMP SEROUT ;To main print routine

********************

I am currently working on implementing vertical motion in a similar fashion as the horizontal printing. Ultimately, I plan to burn the whole driver into an EPROM and have it on board as firmware in my system. I will forward the complete driver as it develops, in the event it may be of interest to others. As I said last time, if anyone out there is familiar with this printer and has a better way of doing this, I think it all ears!

The money order enclosed is to cover the cost of Helios Diskette 8-4, as listed in the November/December 1980 Protex News at $150.00.

In passing, I have used the IBM V85 memory-mapped 80x24 video board in my SOL, as well as the SD Sales V85-800 1/0 video board and the Insan V10 80x24 memory mapped board. All of these boards worked well and without any particular problem. The V85 board with its on-board 10-50 mincing at 4MHz presents a very fast display. For word processing applications, an I/O mapped board such as the V85-800 seems preferable, as it does not occupy system RAM. My biggest objection to the Insan V10 board is that the on-board ROM resides at F000 and is in
USING SOL AS A TERMINAL

Robert Heerdink wrote to Proteus asking this question: "Can anyone recommend the easiest, cheapest way for me to use my 32K Sol-20, no-disk system to access the Source or other network using a modem? Since I have Solos, can I just wire the serial port to the phone line and use the TE command?"

The Sol was designed to be used as a dumb terminal as well as a smart computer. To successfully link your keyboard and video screen to the host computer at the other end of the telephone line, you must do three things.

First, you need a device called a "modem," which stands for modulator/demodulator. This changes the computer's digital (on/off) signals into tones that can be transmitted over ordinary telephone circuits. The Sol's serial communications port is designed to act like the serial port on a terminal with the RS-232 communications standard.

The modem will have a socket that will take a cable from the Sol's serial connector. The connectors needed on the cable are known as "DB-25" connectors. Not all 25 pins on the connectors need to be wired with the cable. Only the following pins are essential for simple operation as a terminal: 2, 3, 7, 8, 20. Note that pin 20 on the Sol is supposed to signal that the terminal is "ready," but you may use it to establish a link before you set things up. But you must get Sol ready before you engage the computer.

Radio Shack sells an inexpensive modem that accepts a cable from the Sol and will plug directly into a modular phone jack. Some modems connect to the phone line indirectly (acoustically), using a small speaker and microphone in rubber cups that the telephone handset fits into. The direct-connect modems are preferred.

Second, you must set the switches on the modem and inside the Sol to make it behave the same way that all computer systems work. Some computer systems will not work if they are not set the same way. You may need to use some switches to set parameters on the computer. The variables parameters are:

- Baud (transmission rate, that is, the number of bits per second sent over the line, normally no more than 300 baud);
- Parity--an error detection bit, may be Even, Odd, or omitted altogether;
- Number of stop bits--bits sent at the end of each character, usually one or two.
- Number of data bits--usually 7 or 8.
- Duplex mode--signifies whether the characters received by the host computer are to be echoed back to the terminal for display on the screen (full duplex), or not (half duplex).

Third, you must put the Sol into terminal mode using the TE command and call-up the computer. When the computer answers the phone, you will hear a carrier tone. Then you should switch the modem from voice to data transmission, and you should begin in business. Consult the modem manual for specifics of establishing the link. Be sure that they Sol is not in Local mode (the local key on the keyboard should be off) or no data will be sent to the serial port; instead it is simply echoed on the screen.

Some computers expect you to send a certain character, such as carriage return, as the first thing you send. This allows their equipment to analyze your transmission parameters and adapt. When a successful link is established, you should receive a sign-on message from the host.

Some keys on the Sol may not behave as you expect. The gray keys should be okay, except that the DEL key doesn't send the ASCII backspace code. Sol doesn't have a key that sends backspace. You have to press the BACKSPACE key while holding down the control key. The Control-H character is the standard backspace, but Solos's Terminal command doesn't process it as a backspace. Instead, it puts a curved arrow on the screen. This may be confusing, but after a while you will get used to it.

To improve the TE command, you can write an assembly language program of your own that does what you want. After all, the Terminal mode of the Sol is a simple program.

The new Proteus manual on the Sol (see this issue's story on Encyclopedia Processor Technica) contains a chapter detailing the use of serial communications in the Sol. Watch for our announcement of the manual in the next issue.

LETTERS TO THE EDITOR:

...ON RUNNING PTC SOFTWARE UNDER CP/M,

DEAR STAN,

ENCLOSED IS AN ASSEMBLED LISTING OF A QUICK-AND-DIRTY METHOD I USE TO SPEW FROM THE DISK TO STORE AND RUN PT GAME SOFTWARE ON MY VISTA V-200 CP/M SYSTEM--THIS SHOULD BE OF USE TO BRUCE DILLER OR ANYONE ELSE WHO WANTS TO KNOW HOW TO RUN PT GAMES FROM DISK.

THE 47 BYTE ROUTINE IS LOADED INTO MEMORY FROM 100H TO 12FH UNDER CP/M. THE PT SOFTWARE THEN "TRACKED ON" TO THE ROUTINE BY LOADING IT AT 130H UNDER SOLOS. CP/M REBOOTS, AND THE PROGRAM FROM 100H TO THE END OF THE PT SOFTWARE SAVED AS A COM FILE. AFTER THIS IS DONE, THE PT SOFTWARE CAN BE RUN FROM DISK BY TYPING THE NAME OF THE PROGRAM. THAT THIS IS NOT A CONVERSION TO RUN UNDER CP/M PER SE--WHEN YOU EXIT A PT PROGRAM IN THIS MANNER, YOU RETURN TO SOLOS JUST AS IF YOU HAD LOADED FROM CASSETTE. RETURN TO CP/M

I USED THIS METHOD TO LOAD EC BASIC FROM DISK--STILL HAD TO STORE AND LOAD BASIC PROGRAMS FROM CASSETTE. BUT THE SECOND LOAD TIME FOR BASIC MADE ME FEEL BETTER THEN I GOT THE TAP

23
MODIFICATION TO EC BASIC... IF ANYONE HASN'T SEEN THE WRITE-UPS... IN PREVIOUS PROFESSION ISSUES, I CAN HIGHLY RECOMMEND THE TWO ENTERPRISES CONVERSION TO EC BASIC WHICH IS VERY EFFECTIVE AND WRITE DATA TO CP/M DISKS.

SHORT HARDWARE REVIEW: THE SSN PB-1 PROM BURNER WORKS GREAT! YOU CAN BURN 2/60'S AND 2/16'S, AND IT HAS 4K OF EXTRA FROM SOCKETS ON IT THAT CAN BE ADDED WHEREVER YOU LIKE. SOFTWARE IS INCLUDED WITH THE PB-1.

ON THE SUBJECT OF EPROMS, AN ERASER IS NECESSARY. BYTE MAGAZINE PUBLISHED AN ARTICLE A FEW MONTHS BACK DETAILING THE CONSTRUCTION OF AN EPROM ERASER USING A SYLVANIA FTC/BLU ULTRAVIOLET BULB. I BUILT SAME, AND IT WOULD NOT ERASE MY TEXAS INSTRUMENTS 2516 PROM BASICALLY THE REASON TURNED OUT TO BE THAT THE BLB-85M-WHISPUT OUT THE WRONG FLAVOR TRAVEL VARIOUS THEIR OUTPUT IS CENTERED AROUND 360 NM WHEREAS THE SPECS ON THE TI PROM CALLED FOR 259 NM. THE ONE IN BYTE MAGAZINE MAY HAVE WORKED WELLY INSERT TO GET THE LITE AMOUNT OF EPROMmination BUT IT DIDN'T CAUSE THE TI EPROM TO DROP A BIT. THE SOLUTION WAS TO TREAT THE BLB IN A SYLVANIA GERMANIC BULB, THE 122 WHITB GERMANIC BULB, STARTER, BALLAST, AND ASSORTED SOCKETS, SWITCH AND FUSE ALL FIT NICELY INTO THE BOTTOM OF A K-MART 8-TRACK STEREO TAPE CASE (PLastic, $2), AND WITH THE EPROM 1 INCH FROM THE TUBE, THEY ARE COMPLETELY ERASED IN 25 MINUTES. THE WHOLE DEVICE WAS BUILT FOR $26, WHICH IS ABOUT $50 LESS THAN THE COMMERCIAL ERASERS I'VE SEEN ADVERTISED.

NOTE TO JOE MAQUIRE: IN YOUR EXCELLENT SERIES ABOUT REPAIRING SOL'S, YOU MENTIONED THAT REPLACING IC'S WILL CURE MOST ILLS. EXCEPTION PERHAPS DUE TO LIGHTNING - WE'VE HAD MY SOL GET HIT BY LIGHTNING IN FLORIDA WHILE HOODED UP TO A HAM RADIO DURING A BAD STORM (CUMB) - AND I WANTED TO REPORT THAT YOU CAN FIX THAT BY CHANGING INTO IC'S YOU JUST HAVE TO CHANGE ALL OF THEM. EVERYTHING FROM THE PARALLEL PORT TO THE CPU - INCLUDING THE CP/M.

BEST REGARDS,
J. LEIGH TORGASON 22410 BARACOON DRIVE SUGAR CREEK, PA 17559

*** BLOCK MOVE AND SET-UP TO RUN PT SOFTWARE UNDER CP/M ***

This is a simple routine to enable the use of PT software
- With CP/M disk systems. All it does is enable you to store
- PT software on disk and run the software like a .COM file

NOTE:
- I DON'T WANT TO MISLEAD ANYONE - THIS DOES NOT INTERFACED
- PT SOFTWARE TO CP/M IN ANY WAY - IT JUST LETS YOU LOAD
- THINGS LIKE TREDAC, ECBASIC, 8000 CHESS ETC FROM DISK
- OTHER THAN FROM TAPE AFTER THHOUS. CP/M HAS BEEN OVERWRITTEN AND YOU MUST PERFORM A COLD-START FROM SOLOS TO GET BACK INTO OPERATING WITH CP/M.
- TO SAVE PT SOFTWARE AND RUN FROM CP/M, TWO BASIC REQUIREMENTS
- MUST BE MET:

- 1. SINCE CP/M LOADS THINGS FROM THE DISK INTO MEMORY STARTING AT 8000, PT SOFTWARE READ IN FROM DISK MUST BE MOVED TO 8000 BEFORE IT CAN BE RUN.
- 2. PT SOFTWARE EXPECTS THE STACK POINTER TO BE SET UP AS WELL AS SOME SOLOS ENTRY POINTS IN THE STACK AND THE HL REGISTERS.

- NOTICE THAT ONCE IT'S BEEN PERFORMED, THE CP/M SOFTWARE HAS BIT THE DUST. SINCE IT USES 0 TO 100 FOR VARIOUS BOOKKEEPING.

- THIS PROGRAM WILL TAKE CARE OF THE ABOVE ITEMS: FIRST, IT RETROCESS ITSELF TO AN AREA IN SOLOS UNDER THE PT SOFTWARE. (WATCH OUT IF YOU HAVE DRIVERS OR ANYTHING THERE.) THEN IT MOVES THE 2K BLOCK FROM 8120H UP TO ZERO. AND FINALLY SETS UP THE STACK POINTERS, STACK, AND HL REGISTER LIKE SOLOS WOULD HAVE IF YOU HAD PERFORMED AN IEO PROGRAM.

- TO USE THIS ROUTINE, LOAD IT INTO MEMORY STARTING AT 100H USING D06. NEXT, DO AN UPPER CASE-REFERT RESET BACK INTO SOLOS. LOAD YOUR PT PROGRAM FROM TAPE USING A LOAD ADDRESS OF 8120H (I.E., GET PROG 130). ONCE THE PROGRAM IS LOADED, CALCULATE HOW MANY 256 BYTES PAGES TO SAVE.
- BUMP CP/M AND TYPE IN SAVE XX PROG COM. AFTER THIS IS DONE, YOU MAY EXECUTE THE PT PROGRAM BY TYPING IT'S NAME, LIKE ANY COM FILE.

- 0100 ORG 0100H
- 0100 111200 RELC LDI D, 00H
- 0102 2150C9 LDI H, 0C990H 0108 1A MOV D, 00H 0104 11130D MOV H, 00H
- 0106 77 MOV A, 0H 0108 92 MOV B, 0H 010A 12 MOV A, 0H 010C 7B MOV B, 0H 010E 8E JNZ 8130H 8120 C60081 JMP MOV A, 0H 8122 C59C9 8124 BIR EDU 00C990H-0112H
- 0110 113200 MOV LDI L, 00H 0112 218000 0114 00 LDI H, 00H
- 0116 21000 NEXT LDM D, 00H 0118 00 LDM A, 0H 011A 77 LDM H, 00H 011C 22 LDI A, 00H 011E 13 LDI H, 00H 0120 7D LDI D, 00H 0122 F9 CMP 00H 0124 C50C9 JNZ 0124B 0126 31FFC0 LDI L, 00H 0128 2104C0 LDI H, 00C40H 012A 2B ESPL 00H 012C 21000C LDI H, 00C00H 012E C3000H 0130 00 LDI D, 00H

- * NOW PUT 85B OF ADDRESS OF DATA BEING MOVED INTO A-REG.
- * COMPARE TO CHECK ADDRESS - AS IMPLEMENTED HERE.
- * BLOCK FROM PROG TO 4FFFH WILL BE MOVED UP TO ZERO.
- * (ABOUT 20K BYTES - LONGER THAN ANY PT SOFTWARE I HAVE.)

- 0134 7A MOV A, B 0136 FE90 CMP H, 03FH 0138 C50C9 JNZ 0138B 813A 31FFC0 LDI L, 00H 813C 21000C LDI H, 00C00H 813E 2B ESPL BUMP NO OUTPUT. 8140 21000C LDI H, 00C00H 8142 2B ESPL 8144 C3000H 8146 00 LDI D, 00H

- * NOW THAT THE PT PROGRAM HAS BEEN MOVED TO 0000H.
- * SET UP SP, FIRST ENTRY ON STACK, AND HL TO MAKE
- * PT PROGRAMS HAPPY.

- 0148 7A MOV A, B 0150 FE90 CMP H, 03FH 0152 C50C9 JNZ 0152B 8156 31FFC0 LDI L, 00H 8158 21000C LDI H, 00C00H 815A 2B ESPL BUMP NO OUTPUT. 815C 21000C LDI H, 00C00H 815E 2B ESPL 8160 C3000H 8162 00 LDI D, 00H

- * NOW THAT THE PT PROGRAM HAS BEEN MOVED TO 0000H.
- * SET UP SP, FIRST ENTRY ON STACK, AND HL TO MAKE
- * PT PROGRAMS HAPPY.

- 0164 7A MOV A, B 0166 FE90 CMP H, 03FH 0168 C50C9 JNZ 0168B 8166 31FFC0 LDI L, 00H 8168 21000C LDI H, 00C00H 816A 2B ESPL BUMP NO OUTPUT. 816C 21000C LDI H, 00C00H 816E 2B ESPL 8170 C3000H 8172 00 LDI D, 00H

- * NOW THAT THE PT PROGRAM HAS BEEN MOVED TO 0000H.
- * SET UP SP, FIRST ENTRY ON STACK, AND HL TO MAKE
- * PT PROGRAMS HAPPY.

- 0174 7A MOV A, B 0176 FE90 CMP H, 03FH 0178 C50C9 JNZ 0178B 8176 31FFC0 LDI L, 00H 8178 21000C LDI H, 00C00H 817A 2B ESPL BUMP NO OUTPUT. 817C 21000C LDI H, 00C00H
...ON THE HAZARDS OF REPAIRS

ALERT

ARE THE REPAIRMEN TRAP

In hopes that others may avoid the sort of financial money-trap that recently fell into, I would like to tell how I managed to do so. Just being aware that it can happen and taking a few precautions may save someone a rude surprise.

We have had our two Helios in operation since March of 1978. Except for two occasions, both involving head positioning lamp failures, no repairs were necessary during that time. We had even considered that the machine was very reliable. But when the ejection mechanism began acting up, the positioning system on the other hand began malfunctioning, it seems, as we contacted the service shop that had replaced one of the burned-out lamps. We were satisfied that the repair was qualified; he worked for Percol before he went into business for himself, and the earlier work he had done for us was satisfactory. For that reason, we charged the Percol a complete checkout, clean the heads, replace the pressure pads, and "made them as good as new." Those were his words.

I picked up the Helios three days later; the bill read:

(1) Percol 277 S.N.

Full alignment

Attach Positioner Servo Grounds

Parts replaced: 4

(2) pressure pads

Labor:

4 hours $11.00 each

$44.00

Total: $458.00

Notice that the figures do not add up to $458.00; I didn't understand the bill. Later I called it to their attention and they gave me a check for $14.00. But that inaccuracy is not the least of my contention.

I was shocked at the amount; most people would be I think. At the same time, there is little one can do but complain. He has your many thousands of dollars worth of Helios while you have an sick feeling in the pit of your stomach and a lot less money.

Fortunately the worse is yet to be told. Within a week after the Helios were back in operation, the very same conditions for which they were taken for repairs was reoccurring. The ejection mechanism now takes half an hour to run, and the Positioner Servo on the other occasioned goes strange things, the same strange things as before.

When I paid the bill the first time, he assured me that his work was guaranteed for thirty days, and when I called him to report that the repairs had failed he did not hesitate to remind me of that. I returned the Helios with the positioner

problem and repairs were completed within two days. I will return the other soon and I'm sure this time it too will be properly repaired.

So what am I crying about? First the size of the bill. Fifty dollars an hour is unreasonable and I simply do not believe it took eight hours for the job. I suspect that some of that time involved the machine simply running. But probably the charges are made according to some schedule; so many hours for this and so many for that. I think that unfair. I'm upset not only because the machine was not properly repaired, but because I was at a disadvantage. I probably know too much about Helios because when I inspected the service shop I inquired about the service shop. They said they did not like to write them on Helios. He said the necessity of taking the Percol out of the Helios cabinet for repairs often causes more problems.

How can one avoid such experiences? Two things: for sure, don't insist on repaired repairs unless it is absolutely necessary. It puts one in debt to the recalcitrant for something special, and one must bear part of the blame for bad repairs caused by rushing. Most important, ask for a written estimate. If they are reluctant to give one, ask why. An experienced technician will have an idea of what the repairs will entail. Finally, don't assume that rates are the same as last year (or last week). Inflation has hit the cost of repairs very hard.

I am not going to mention the name of the shop involved in this case. It obviously was not his fault that I failed to take the steps I recommended. And some may not agree that my experience was so bad and that the charges were unreasonable. I cannot help feeling that I have been had.

Better luck to all;

Earl J. Dunham
944 N. Russell
La Habra, CA 90631

Ed note: I'm sure you'll find Ace Computer Inc. service's rates for SOL or HELIOS repair more reasonable.

Ray and Bob can repair your S-100 equipment and peripherals with special expertise in Processor Tech, NorthStar and Morrow products.

Call Ace computer Inc. (415) 281-6630 M T W / 24 Hr. answering machine, TH S (916-5130) personal answering service.

Computer programs stolen

BELMONT - Thieves avoidied an alarm system and escaped with $1,500 in computer programs by breaking through a wall into a store last Friday or early Saturday, police reported today.

Belmont Police Lt. James Scales said the thieves broke into a small shop next door to CompuLand, 4525 El Camino Real.

The burglars then drove through a sheetrock wall with a crowbar and entered CompuLand through an eight-foot-square hole, Scales said.

The thieves left with about $1,500 worth of computer business programming, Scales said.

JUNE 29, 1981

REPRINTED FROM PENINSULA TIMES TRIBUNE NEWSPAPER (SAN FRANCISCO PENINSULA AREA)

EDITOR'S REMARK: I'VE HEARD OF SOFTWARE THEFT BEFORE, BUT THIS IS THE HARD WAY, I'D SAY.
I THINK I HAVE COME UPON SOMETHING IMPORTANT FOR ALL PROTEUS MEMBERS TO BE AWARE OF. LAST SUNDAY I WENT TO THE ADVANCED COMPUTER PRODUCTS MANUAL SHOW-MEET. THERE I MET ROB HOGG, FORMERLY OF ORANGE COUNTY COMPUTER CENTER IN COSTA MESA WHICH NOW THE DIGITAL PROCESSOR TECHNOLOGY DEALER IN THAT STATE. HE HAD SET UP A LITTLE STAND AND WAS SELLING COPIES OF HIS OWN DESIGN AND MANUFACTURE FOR SOL-HELIOS AND SOL-NORTH STAR AND SOL-HELIOS-NORTH STAR SYSTEMS.

THIS GUY REALLY KNEW WHAT HE WAS DOING. STAN, THE SOL PERSONALITY MODULES THAT ARE SENSATIONAL. I BOUGHT THE HELIOS VERSION AND IT WORKS PERFECTLY. WHAT HE HAS DONE IS PUT TWO SWITCH SELECTABLE PINS ON THE MODULE. ONE PUTS SOLOS AT 230V AND THE OTHER PUTS SOLOS AT 90V. YOU NEED TO USE THEM TO GET THE RIGHT VOLTAGE ON THE HELIOS AND Flick THE SWITCH TO THE OTHER. YOU DON'T HAVE TO GET UP TO YOUR CHAIR TO DO IT. BUT HE HAS DONE MUCH MORE THAN THAT. HE HAD MADE IMPROVEMENTS ON SOLOS. HE HAS ADDED 20 COMMANDS WHICH I WAS SKEPTICAL ABOUT AT FIRST BUT WHAT I FOUND ARE REALLY IMPROVEMENTS. I AM INCLUDING COPIES OF SOME OF THE MANUALS THAT COMES WITH THE MODULE SO YOU CAN SEE FOR YOURSELF AND THE PRICES ARE RIGHT. ONLY 995.00

THE INCREASED MEMORY CAPABILITY MAKES IT POSSIBLE TO RUN SOME OF THE CP/M APPLICATION SOFTWARE FORMERLY UNAVAILABLE FOR US BECAUSE OF OUR BEING LIMITED TO 64K. FOR THE SOL-NORTH STAR OWNER THE GAINS USING HIS DPM (DUAL PERSONALITY MODULE) MAY BE EVEN MORE IMPRESSIVE. YOU CAN READ ABOUT THAT IN THE ENCLOSED COPY OF THE MANUAL AND IF ANYONE IS THINKING OF MOVING NORTH STAR TO THEIR SYSTEM. HIS CONTROLLER IS NORTH LOOKING INTO. IMAGINE 819.000 BYTES PER DISK. THE COMBINATION OF HELIOS AND NORTH STAR WITH BOTH IN YOUR MEMORY AT THE SAME TIME IS HARD TO DOGGISH.

BUT THERE IS MORE. I AM STRONGLY ENCOURAGING YOU AND THE REST OF US TO HOPING TO MAKE PTOOS WHAT IT SHOULD BE. I LAID OFF A C.C. HE WAS WORKING QUITE CLOSELY WITH PROTOOS IN THEIR DEVELOPMENTAL WORK. BEFORE THE COLLAPSE HE HAS A NUMBER OF THE PROTOTYPE MINI-DISKS THEY WERE NOT ABLE TO BRING TO THEIR APPEALING. STAN, HE SAYS THAT PTOOS COULD BE THE BEST DISK EVER MADE FOR SMALL COMPUTERS. BUT THE DEATH OF THE DEVELOPMENTAL ENGINEER BEFORE ITS COMPLETION. AND BECAUSE THE COMPANY FINISHED IT DIDN'T UNDERSTAND WHAT ITS FUNCTION WAS. IT IS NOT AS IT NOW EXISTS. ANYWHERE NEAR WHAT IT COULD BE. HE TOLD ME HE IS CERTAIN THAT THE POTENTIAL FOR GREAT INCREASES IN SPEED AND POWER EXISTS WITHIN PTOOS. HE IS VIEWING IT AS A SOURCE CODE. READ HIS COMPANY TILL THE COPIES I HAD ENCLOSED. I THINK THE ONES WHO WILL BE WORKING ON THE SOURCE CODE FOR PTOOS. WHEN YOU FINALLY GET IT, WOULD DO WELL TO TALK TO HIS GUY.

I AM NOT TRYING TO SELL THE HOGGS MERCHANDISE. BUT I HAVE BEEN DEALING WITH SOL FOR NEARLY FOUR YEARS NOW AND I KNOW WHEN SOMEONE STARTS A PERSONALITY MODULE AND THEN THE RUINS I AM INTERESTED TO KNOW IF YOU ARE. SEEING SOL EXPLOITED TO ITS FULLEST AND SINCE THE MORE PEOPLE YOU CAN GET INVOLVED WITH SOL THE MORE CHANCE THERE IS TO GET THE BEST OUT OF IT._socket B_<socket A_ WHICH ROB HOGG WILL INVEST TIME AND DOLLAR TIME IN DEVELOPING WHAT WE NEED. I HOPED YOU WILL PUT THIS IN PROTOOS SO THAT EVERYONE WILL HAVE THE OPPORTUNITY TO TAKE ADVANTAGE OF THIS DEVELOPMENT FOR SOL. HE HAS WORKED ON A 2406 DISPLAY AND ON THE HARD DISK AND OTHER IDEAS HE HAS FOR SOL ARE EXCITING AND I HOPE YOU WILL ENCOURAGE HIM TO CONTINUE.

I HOPE THAT YOU WILL TALK TO ROB HOGG ABOUT THE WORK ON PTOOS. THE FULL DEVELOPMENT OF HELIOS WILL PUT BACK IN THE BIG LEAGUES IN SMALL COMPUTERS.

SINCERELY,

EARL J. DUNHAM
341 N. RUSSELL
LA HABRA, CA 90631
PH. (213) 697-7230

MICROCOMPLEX
25651 MINOS STREET
MISSION VIEJO, CA 92691
(714) 770-2168
15 February 1981

MicroComplex DUAL PERSONALITY MODULE for SOL Computers

A new product from MicroComplex can greatly enhance the application and versatility of the Processor Technology, Corp. SOL Computer. A single switch on the DPM (Dual Personality Module) provides switching between either of two on-board PROM monitor programs. Operation in the SOL is entirely self-contained. For an example, switching to the 0P000H mode the screen display is moved to 0P000H, the jump start moves to 0P000H , SOL system memory moves to 0P000H, and if your use is using a 64K memory board, you automatically get the memory back at 0C000H where your old SOLOS was addressed. This means that now you can run 60K of user memory space instead of 48K as in the originally configured SOL. This is very significant since many of the new application programs now available on the market require at least 56K of user memory space.

The DPM is fully compatible with North Star Computers, Inc disk controller at 08000H and will support the Digital Research, Inc. CP/M system up to a size of 58K. Using the MicroComplex Disk Controller with addressed selection option, you can move the controller up to 0E000H and run a 59K system with no modification of the Lifeboat Associates' 2.21A version of CP/M.

This example is probably the most desirable application of the DPM to most users. However, there are many more applications available to the system programmer and those desiring to have more control, accessibility, and insight into SOL system level of software interface of the SOL computer. To service this requirement, the DPM provides the primary function of selecting a 2716 PROM in socket 'B' and in either 0P000 or SOL standard SOLOS PROM. Jump options are provided to support which ever of the three you choose for socket "B". In addition, options are provided to have the address of both PROMS to be either 0P000H or 0P0000, or socket "A" at 0C000H and socket "B" switches to address 0P000H. These options provide considerable versatility in your selection of mode of operation depending upon your desired application.

The standard configuration for the DPM as shipped, includes two installed 2716 PROMS. These are programmed to provide a function for both new and old system. These are included in Appendix A. These new commands occur in the SOL and are new to SOLOS. The new functions are defined with the user in mind and are based on a special order basis. Minor modifications cost about $25.00, more extensive modifications are available. The 2406 can be ordered with the required modifications, then the customization will cost between $25.00 and $50.00 for the initial PROM and $15.00 for each additional copy (Includes the cost of 2716 PROM).

The standard configuration of the DPM is shipped with an auto-load jump to address 08000H which is initiated by
pressing the "LOAD" key on the SOL. This will auto-load North Star Computer, Inc. compatible disk controllers. At the same price, you may request the DPM version which will auto-boot the Processor Technology, Corp. HELIOS II with either the standard "BO" command or by pressing the "LOAD" key on the SOL. If you are running both a North Star Computer, Inc. type disk controller and a Helios II disk system in your computer, then you might like to have the third version of the DPM which boosts the Helios via the "BO" command and boots the North Star by pressing the "LOAD" key.

Instructions for the simple modification required to add two jumpers to the top of your SOL's circuit board are provided by Appendix B.

Instructions for a two cut modification of your existing SOLOS PM board to allow it to function normally after you add the two jumpers (as per Appendix B) are provided in Appendix C. This will allow you to use your old PM card to read cassette tapes, in the event that you might encounter that requirement.

It should be noted that it is necessary to modify your software programs, which interface with SOLOS, to reference the corresponding functional vectors in the 0F000H support ROM software. The normal entry points relative to the Monitor origin address have been maintained in order to make the required modifications as easy as possible, i.e., a jump to the new driver would have to be modified to jump to 0F054H instead of 0C054H as in the normal SOLOS ROM. These vectors are only maintained for the relative low address entries. If your programs require a more exact correspondence to SOLOS, then I refer you to the article on page 1 of the November/December issue of the "PROTEUS" newsletter as published by PROTEUS, 1690 Woodside Road, Suite 215, Redwood City, CA. 94063, USA.

Modifications of programs to run with the Monitor at 0F000H will normally be rather minor. However, some programs such as modifying the Helios PTDOS to be fully compatible at 0F000H will require significant work. I would be interested in participating in a project to achieve this goal. It would be worth the effort to have the extended contiguous memory for the various large programs under PTDOS, i.e., FORTRAN, WORD WIZARD, etc., to be 8K assemblies.

It might make the operation of a lot of your software more flexible if you put your customised Input/Output device code into the ROMs on the DPM. Then you could move the software to new SOL addresses without having to make additional ROM I/O modifications. This would be very convenient when building different sized CP/M systems for special applications in your machine. Also, use of the new North Star Computer's System Disk Release 5.2 would be enhanced, in that, you could use the Mover program to reconfigure your system and not have to make modifications to the USER I/O area for each configuration.

**Ed Note:** See our article on making SOL's address space toggle in and out, page 1 "DON'T MOVE SOL TO 0F00, MAKE SOL VANISH"

**TERM PROGRAM REPLACES SOLOS TERM COMMAND**

**TERM program is meant to replace the SOLOS TERM command. It allows the user to direct stuff to the printer, assuming the printer is on the parallel port.**

The program gets its options from the keyboard. The options include:

1) **LOAD:** this allows toggling the video echo of keyboard input on and off. It comes up OFF initially.
2) **CURSOR-RIGHT:** this enables the printer.
3) **CURSOR-LEFT:** this disables the printer.
4) **CURSOR-UP:** this will allow the printer to print both what is received via the modem AND what is sent via the keyboard (assuming the printer is enabled).
5) **CURSOR-DOWN:** this will allow the printer to print only what is received via the modem. Characters from keyboard will only be printed if the modem system is echoing them.

The initial state is the same as if the LOAD key was toggled OFF, and the CURSOR-UP and CURSOR-RIGHT keys were active.

The reason for supplying all these options is to allow the user to see what HE wants on the screen, and to direct what HE wants to the printer.

A note to software freaks: I now have my latest version of the MODIFIER ready for shipment. The MODIFIER J will run on ANY 8080/8085/8086 computer. It will accommodate ANY screen format, including 16×64 and 24×40. It requires memory-mapped video, but the user may specify the address. The standard version comes ready to run on a SOL-2B. It is self-relocatable, and comes with source code so it can be modified by the user if desired. Specify whether you want it on SOLOS/CUTER and tape for running on a SOL or on SOLOS/CUTER TAPE in TAPEDISK format for loading to a CP/M system (tape loader program included on tape), or on disk for CP/M single density. Sorry, but I cannot provide Northstar, Micropolis, Helios etc., but please note that the TAPEDISK program allows ANY CP/M disk system of ANY density to load in the tape. All versions cost the same amount: $30. I also still have my special Northstar printer drivers available at $10 each. (See ad in Volume 3 #4). Please include a description of your system when ordering any software, including what port you are connected to. That way I can give you a program that will run on YOUR machine!

Also, as many PROTEUS persons have discovered, I am usually available for custom software and hardware work. My rates are reasonable, and I generally get things done fast. Give me a call if you need help. I charge nothing for help over the phone... you just pay for the call. Oh yes, if you write requesting some information, PLEASE include a self addressed and stamped envelope. Glad to be of help!

**Sincerely yours,**

Fr. Thomas McGahee
2011 S.B. 595-880
(1-817) 445-1177

**PS** I am also including some notes recorded the relocation of SOLOS ROM/EAR to PROTEUS for publication in PROTEUS.
CON'T FROM PAGE 27 - TERMINAL COMMAND

; ******   ******
;  THIS ROUTINE GETS CHARACTERS FROM THE SYSTEM KEYBOARD
; AND SENDS THEM TO THE SELECTED OUTPUT PORT. IT IS
; INTENDED TO CONFIGURE THE SOL AS A STANDARD VIDEO
; TERMINAL. COMMAND KEYS ARE NOT OUTPUT TO THE OUTPUT
; PORT BUT ARE INTERPRETED AS DIRECT SOL COMMANDS.
; THE MODE COMMAND, RECEIVED BY THE KEYBOARD, PUTS THE SOL
; IN THE COMMAND MODE.
; A
; ***** ENHANCEMENTS ADDED BY FR. THOMAS McGAAHEE *****
; ENHANCEMENTS INCLUDE:
; CURSOR-RIGHT ENABLES CENTRICITY PRINTER.
; CURSOR-LEFT DISABLES CENTRICITY PRINTER.
; CURSOR-UP ALLows ECHO OF BOTH KEYBOARD AND SERIAL PORT.
; CURSOR-DOWN ALLows ECHO OF SERIAL PORT ONLY.
; LOAD KEY TOOGLES VIDEO ECHO OF KEYBOARD.
; ***** FR. THOMAS McGAAHEE *****
; ***** DON BOSCO TECH *****
; ***** R22 UNION AVE. *****
; ***** PETERSON, NJ 07750 *****
; **** J ULY 23, 1981 ****

C009 = SOLOS EQU @C009H ;BASE OF SOLOS ROM.
C01F = SIND EQU SOLOS+1FH
C019 = SOU8 EQU SOLOS+19H
C01A = MKST EQU SOLOS+20H
C01B = PRST EQU SOLOS+21H
C01C = ORST EQU SOLOS+22H
C01D = ORST+1EQU SOLOS+23H
C1B8 = ORST+1F EQU SOLOS+41CH
C545 = CMODE EQU SOLOS+54H
C266 = CENTRICITY EQU SOLOS+266H
C5BC = ESCFL EQU SOLOS+26CH
C012 = KEEFAL EQU SOLOS+612H
C013 = CENTFL EQU SOLOS+613H
C014 = BOTHFL EQU SOLOS+614H
C015 = TOOGGLE EQU SOLOS+615H
0088 = MODE EQU 89H ;MODE-TERMINATE
008C = LOAD EQU 8CH ;LOAD-TOGGLE VIDEO ECHO
0097 = CURSUP EQU 97H ;CURSOR-UP-VIDEO-TO-CENTRICITY
009A = CURSDOWN EQU 9AH ;CURSOR-DOWN-VIDEO ONLY
00B1 = CURSL EQU 61H ;CURSOR-LEFT-CENTRICITY OFF
00B3 = CURSE EQU 93H ;CURSOR-RIGHT-CENTRICITY ON
00B8 = ESC EQU 1BH
00C0 = CR EQU 0AH
00A0 = LF EQU 0AH
0000 = ORG 000H ;RUNS AT ZERO.

;  TERM:
0000 3E81 MOV A,1 ;SERIAL PORT IS I/O CHANNEL
0002 32BCB STA IPORT
0003 3207C STA OPORT
0009 3214B STA BOTHFL ;START WITH BOTH ENABLED
000B 321C8 STA CENTFL ;START WITH CENTRICITY ON.
0010 3E80 MOV A,0
0010 3215C STA TOOGGLE ;START WITH VIDEO ECHO DISABLED.
0013 CD50C ;TERM1: CALL KSTAT ;CHECK KEYBOARD.
0016 C177M JZ TIN ;IF NOTHING, CHECK SERIAL PORT.
0019 47 MOV B,A ;SAVE IT IN B

001A 3E81 MOV A,1 ;KREEFAL ;SAY IT'S FROM KEYBOARD.
001C 3212CB STA KREEFAL
001F 7B MOV B,A
0028 FERB CPI MODE ;IS IT MODE?
0022 92C0C1 JPZ COMM1 ;YES...RESET AND QUIT TERM
0025 DA1800 STA JCTR ;NON-CURSOR-KEY...SEND TO TERM PORT
002A C31700 LDA CJ ;IS IT LOAD KEY?
002D 3A15C8 STA TOOGGLE ;GET VIDEO TOGGLE
002F 3C INC A ;TOGGLE IT.
0030 3C INC A
0031 3215C STA TOOGGLE TIN1
0034 321380 JMP TIN1
0037 FE81 CURL: CPI CURSL ;IS IT CURSOR-LEFT?
0039 C244B0 STA CJR
003C 3E96 MOV A,0
003E 3213C8 STA CENTFL ;FLAG CENTRICITY OFF.
0041 C31380 JMP TIN1
0044 FE93 CPI CURSL ;IS IT CURSOR-RIGHT?
0046 C25150 STA CJR
0049 3E96 MOV A,1
004A 3213C8 STA CENTFL ;FLAG CENTRICITY ON.
004E C31380 JMP TIN1
0051 FE97 CURP: CPI CURSP ;IS IT CURSOR-UP?
0053 C25500 STA CJR
0056 3E96 MOV A,1
0058 3214C8 STA BOTHFL ;FLAG BOTH
005B C31380 JMP TIN1
005E FERA CJRM: CPI CURRM ;IS IT DOWN-CURSOR?
0068 C263B0 LDA RCU
0069 3E96 MOV A,0
006B 321380 STA BOTHFL ;FLAG ONLY SERIAL
006E C31380 JMP TIN1
0070 CF44C0 CALL VDMOT ;PROCESS IT
0071 C019C0 ;TEXT: CALL SOUT ;OUTPUT IT TO THE SERIAL PORT
0074 CC00 ;CALL V0 ;OUTPUT IT TO V0?
0077 C1F0C0 ;CALL SIND ;GET INPUT STATUS
007A 3213H JS TIN1 ;IF NOTHING, THEN CHECK KBD.
007D 60F7 ANI 7FH
007F CA30H JS TIN1 ;A NULL IS IGNORED
0082 47 MOV B,A ;IT'S OUTPUT FROM 'R'
0083 3E80 MOV A,0
0085 3212CB STA KREEFAL ;SAY IT'S NOT FROM KBD.
0088 7B MOV A,0
0089 FE1B CPI 18H ;IS IT A CONTROL CHAR TO BE IGNORED?
008E 32A00 JNC TERM2 ;NO...TO VDM AS THEN
0090 3E96 MOV A,1
0092 32A00 CPI CJ ;IF CJ OR LF ARE SPECIAL CASES THEN
0094 32A00 JS TIN5 ;AND MUST BE PASSED STD MODE TO VDM
0095 FE95 CPI LF
0098 CJRM JZ TERM2
0099 3A0CCH LDA ESCFL ;A CTRL CHAR...ARR WE IN ESC SEQUENCE?
009B 87 ORA A ;IF YES, THEN OUTPUT CTRL CHAR DIRECTLY TO
009C C2A00 JNZ TERM2 ;WE MERE ARE, LET VDM HANDLE IT
009F 85 PUSH B ;SAVE THE CHARACTER
00A0 861B MOV B,ESC ;CTRL CHAR TO VDM VIA ESC SEQUENCE
00A2 CD5400 CALL VDMOT
00A5 8687 MOV A,7 ;SAY TO PUT OUT NEXT CHAR AS IS
00A7 CD5400 CALL VDMOT
00AA 32A00 JNZ TERM2 ;ALL READY TO OUTPUT THE CHAR
00AB CD5400 CALL VDMOT ;PUT IT ON THE SCREEN
00AD CD5400 CALL VDMOT
00A1 C31380 JMP TIN1
00A4 3A13C8 LDA CENTFL
00A7 FE95 CPI 0 ;IF NO-PRINT, DON'T PRINT.
00A9 3A14C8
resistor leads off so that they do not extend beyond the broad part of the shoulder. I then tinned the shoulders (with IC upside-down to prevent solder flow onto the pins themselves), tinned the resistor leads, then soldered the resistor to the shoulders of pins 1 & 14. I then reinstalled U2.

PERSONALITY MODULE CHANGES

If you have a personality module that is currently using 2708s, then simply install the new 2719s in their place. The 2719s are labelled U1 and U2. U1 is the IC closest to the side of the case.

If you have a 27P6 module that has a single 9216 or 8316 ROM, then you will have to make one minor modification to the module to allow it to be used with a 2716 EPROM.

On the edge of the personality module nearest U1 you will find a series of feed-through holes. Locate the ones labelled "19" and "12". There is a run connecting these two on the bottom of the board. CUT THIS RUN. This disconnects the +12 volts from pin 19 of U1. Now solder a jumper between the feedthroughs labelled "19" and "12". This connects the proper chip select signal to pin 19 of U1.

Remove the original 2708s or 9216, and replace with the new 2719s or 2716 EPROM. This completes all necessary changes. I trust the personality board back into its connector and power up your SOL. If you have performed all the changes properly, your system should come up with the "*" prompt symbol.

HINTS

Once the system is relocated to FPMH, software written for use at CP/M will not run properly. For much of this software a simple solution is to place into memory a JUMP TABLE at CP/M that is identical to that of FPMH. This can be easily done by typing "SAVE JMP FROM FPMH TO CP/M". The tape copy includes the jump table and the first part of the code for A2MP. When this tape is loaded by typing "GET JMP", it will cause all calls to the table at CP/MH to access the routines at FPMH.

For example, let's say you have a CP/M operating system currently configured for 46K that expects to find SOLOS at CP/M, and you have just relocated SOLOS to FPMH. Load the tape copy of the FPMH jump table down to CP/MH by typing "GET JMP". Now you can boot up your disk with no problems. Once you have the disk system running, you can edit your BIOS so that all references to addresses in the range CP/MH-CP/M are now reference the FPMH-FPMH system ROM/RAM areas. At the same time you can change the system size to a larger value, such as 64K. Assemble the new BIOS and integrate it into a new operating system (follow the instructions in the CP/M guide line). Once you have done this and placed a copy of the new system on disk using SYSGEN, then you can boot up the new system anytime you want.

A few words of caution. Some disk systems use an extended BIOS, in which case the actual memory size needed EXCEEDS
A BAD REPORT
BY E.I. Clapp, Jr.

"Stan- The attached represents a frustrating experience - not
to mention about $10.00 in long distance calls and postage.
Perhaps others should be cautious in purchasing this item.
P.S. - this was an assembled and tested board.
Elwood I. Clapp, Jr.

Beaver Hill Road, Sa.
Birchrunville, PA 19412
June 22, 1981

METRONICS RESEARCH & DEVELOPMENT, LTD.
ROUTE 282
New Milford, CT 06776

Gentlemen:

Again, I am returning your MWS, 32K RAM board which arrived via
UPS today for the second time.

I spent the evening trying to get it to work on my SQL system, but
no go. My diagnostic test shows it's OK from 1791-7FFF but it
won't accept my 48K CP/M disks while my PT dynamic RAM's do
(addressed 0000-7FFF). Also, when addressed 2000-9FFF, your board
causes an error all the way from 8000-9FFF. I am using a total of
48K of RAM, of course.

After the second time around, I must return this board for a
refund. I have spent too much time on it already. Incidentally,
except to see that the chips were well seated, I have done nothing
to the board at all. I suggest that before you sell this to
someone else, you should check the addressing EPROM switch starting
at 80; that also seems to be part of the problem.

I shall enclose this letter and my previous letter dated May 30
with my NISA bill.

It is too bad that your board is just too "flakey" to take a
chance on when I need day-to-day reliability.

Again disappointed,

[Signature]

cc:VISA

Elwood I. Clapp, Jr.
COMPUTRUST

HELP NEEDED ON UCSD PASCAL ON S-100
BY Kerry Montgomery

5-23-81

"Hello -

As a 2 year subscriber to Proteus, I have a request for help.
I'm trying to bring up UCSD PASCAL on an S-100 system that has
Processor Technology's Subsystem-B boards. The problem is in
interfacing USCD PASCAL's setup and X-Y cursor addressing
schemes with the VDM-I. All seems well except the UCSD editor
is not usable. Can you or any members of Proteus offer any
help?

Thanks,
Kerry Montgomery
13420 S.W. Castlewood
Beaverton, OR 97005"
MORE LETTERS TO THE EDITOR:

Word Works
6 Bow Street, Cambridge, MA 02138, 617/491-3999

April 23, 1981

Stan Sokolow
Proteus
1690 Woodside Road, Suite 219
Bedford City, CA 94061

Dear Mr. Sokolow:

I have a SOL-20 with a 16KRA board that has a bad delay line on the memory board itself. The legend printed on the delay line is "Data Delay DDU-4-7672." I have been unable to locate this part, and I would appreciate it if you could recommend a possible source to me. A scribbled note on this letter returned in the enclosed return envelope would certainly be sufficient. Thanks muchly.

Sincerely,

Edwin R. Meyer

Dear Stan,

I have been looking for a graphics board for my SOL, but it is very difficult to tell exactly how they are from magazine ads. If some SOL users have graphics I would appreciate some help in choosing the right graphics for my system.

Thank you,

Mac Watts
710 Norman Cir.
Opelika, AL 36801

6-MAY-81

Dear Stan:

I’m one of the isolationists with my SOLOS at F000H and my software sitting in object code looking vainly for C000H. To anyone with the ELECTRIC PENCIL ver.88 changing CP/M from GC to FC makes it feel right at home in my 68K CP/M system. Now if someone can find a way to make it pass control characters to my EPS0N M5-80 printer the "PENCIL" will live on! Thanks for a great (and needed) publication.

Bob Johnson
505 Mohawk Dr., A-5
Boulder, Colo. 80302

Stan Sokolow
Proteus
1690 Woodside Rd., Suite 219
Bedford City, CA 94061

Mar 7, 1981

Dear Stan:

It has been while since I wrote to PROTEUS but now it’s so much easier – I took the big printer plunge. I just recently purchased from MICROPERIPHERALS, INC. their MODEL 860. It is a slick little dot-matrix printer. This letter was printed by it, in its correspondance font (like matrix). It has lots of neat features – many of which are software controllable. I also learned, with the help of previous letters in PROTEUS, about printer drivers. At first I had it interfaced through my serial port on my SOL but I use a modem and did not want to give up that aspect of computing. My parallel port was free and SOLOS supports the "HANDSHAKING" that the BBQ needed to operate properly, so I used the parallel port and it works great. Other members just might be ready to purchase an excellent-quality printer without going bankrupt. The MODEL 860 lists for $79.00 but substantial discounts are available from many of the mail order houses listed in many of the magazines. In the war, the 860 has very good, dot-addressable graphics for those who might need it. It’s bidirectional too.

On another note – I currently use a cassette version of the ELECTRIC PENCIL I for letters such as this one, and various other memos. The cassette SAVE and LOAD routines are extremely slow. Has anyone out there in SOL / NORTHSTAR land been successful in matching the cassette routines in the ELECTRIC PENCIL to the N8 disk routines. I don’t think Michael Shreiner is marketing the N8 version anymore, does anyone know?

I also have been using the ABS NOISEMAKER board for about six months now – I have written a program in RT’S ECD86 that will allow changes to all of the resistors dynamically to. When I get it in publishable form I will send it in. It works very effectively.

Enough of my ramblings – keep up the excellent work that you keep faithfully and diligently put forth to keep this the BEST newsletter in our industry. Many thanks also to all who contribute letters on a regular basis. I look forward every other month with much anticipation to receive PROTEUS News.

Thanks Again.

Rey

Rick Downe
P.O. BOX 440357
AURORA, CO 80044
1303 750-1838

31
Here is the information you requested. Thank you for your interest in our disk drives. All drives are brand new and warranted for 90 days from your date of shipment. Please feel free to call and ask any questions about interface or other technical info.

You may also be pleased to know that we may have hard disk systems available ready to run in your S-100 systems.

Remember that our 5 1/4" drives are the "Flippy" models. Most other stores charge $20 to $35 more for this option that is standard on our 5 1/4" drives!

| FDD-100-862 (8" single sided, single or double density) | $360.00 |
| FDD-100-564 (5 1/4" single sided "FLIPPY" DD or SD) | $250.00 |
| Maintenance manuals 8" or 5 1/4" | $13.00 |
| Power connector set (1-AC, 1-DC 8" drives) | $3.50 |
| Power connector 5 1/4" | $1.00 |
| Edge card connectors 50 or 34 pin | $10.00 |
| Cables made to your specific | CALL |

** 8" drive package with cables $995.00
** 8" drive package (1 drive in dual cabinet) with cables $565.00
1-51/4" Flippy case, power supply tested $295.00
2-51/4" Flippies dual case, power supply tested $595.00

* Shipping NOT INCLUDED ** 8" packages require assembly

All prices and specs subject to change without notice
NJ residents add 5% sales tax

PAYMENT POLICY

We accept Mastercard, Visa, personal checks, MO, COD with PRIOR PERMISSION ONLY. (CASH will be required). We reserve the right to delay shipment for personal checks to clear your bank before we ship. Shipping charges MUST be included or your order will be delayed. All charges are standard UPS rates plus insurance.

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**Contact:**
Mr. John Morris
Sales Manager

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Micro Data Base Systems, Inc. (Box 248, Lafayette, IN 47902) now provides a free decision pamphlet upon request. This pamphlet identifies and describes the important features to consider when deciding upon a software tool to use for application development. The features discussed include the richness of logical data structuring supported (are all kinds of data relationships easily represented, can the semantics of these relationships be clearly indicated, etc.), control over data redundancy and data inconsistency, availability of a high level query language, availability of programming language interfaces, mechanisms for data base recovery and restructuring, and portability of the software tool across machines and operating systems (allowing a standardized approach to application development).

Application development tools range from flat file systems to genuine data base management systems. There are several varieties of data base management systems, including hierarchical, CODASYL networks, and the recent innovation of extended networks as provided by MOSS. Regardless of which flat file or data base management systems an application developer is considering, they should be examined in terms of the features described in the decision pamphlet. A convenient feature check list is provided in the pamphlet.

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**Contact:**
Mr. John Morris
Sales Manager
MICRO DYNAMICS has used floppies available again. These discs have been used as files for diagnostic studies in medical institutions. Most have had only limited use and have been handled carefully. The discs are 8" single density with a mix of single sided and reversible configurations.

Discs are priced at $0.95 each and must be ordered in cases of 50 discs. UPS shipping charges must be added to the order and California residents must add sales tax.

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Sincerely,

Les Inanchy
General Manager

CONSUMER COMPLAINTS
SD Sales Expandoram I
Micro Complex Dual Personality Module

"I have an Expandoram I from SD Sales and I'm here to tell you that it's probably the worst investment I ever made. It has 64K of memory and can't even remember who it is, much less anything else. I think, in view of the fact that so many people have had the same experience, SD owes us all a lot of explaining."  

Bruce G. Diller, 18651 E. Galliano Dr., Covina, CA 91722.

Editor's Note: Micro Complex has replaced several Solos commands with other commands they felt were more useful in a disk system. This custom version of Solos can be ordered in several configurations, so I believe that Micro Complex will program the EPROM with standard Solos for you as a special order. See article in this issue on "Vanishing" Solos for another solution to the problem.

Owners of SD Sales Expandoram I with complaints are requested to write an explanation of the problem to Proteus. We have had items in the past on a slight modification needed to make Expandoram compatible with Sol.

Stretching Microcomputer Power With ANS MUMPS

This 90-page special issue of the MUMPS Users' Group quarterly publication describes in detail the more than fifteen MUMPS implementations available for microcomputers, including 8088, 8085, and 280-based micros, the TRS-80 Model II, the Motorola 6809, DEC's LSI-11/2, 11/3, and 11/23, the Data General Micronova, and the IBM Series 1. It includes introductory information about the MUMPS programming language and about microcomputers. Detailed technical descriptions are given of MUMPS implementation techniques and special characteristics of microcomputer MUMPS implementations. MUMPS microcomputer applications currently in use are reviewed.

This single special issue sells for $7.25. Membership in the MUMPS Users' Group for 1982-83 costs $35 and includes four issues of the MUG Quarterly: The Micros Are Coming, Stretching Microcomputer Power with ANS MUMPS, the special Vendor Issue, and the Business Applications Issue. Members are also entitled to discounts on other MUG publications.

Partial CONTENTS

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Contents of Proteus Cassette 4 -- Extended Cassette BASIC

PROTEUS CASSETTE 4

Starting the program:

- Press 1 or 2 to start the program.

- The program will display the following options:
  1. Assembly language source and object
  2. Assembly language source and object

- Press 1 to exit the program.

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- Press 1 to exit the program.

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My SOL is down and I need a main power transformer and any available information.
Paul Kettle (714) 824-4585-days, (714) 796-1300-evenings.

FOR SALE:
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Bill Jenkins: 245 E. Adele, Villa Park, IL 60181

WILL DUMP LISTINGS:
You may notify your members that I have access to a standard 132 column impact printer and can dump listings from any PT product, ALS-8, 5k BASIC, EXT BASIC, FOCUS, PILOT, MICROSOFT BASIC, etc. Simply send cassette media (copy please, not original) along with sufficient return postage and $1.00 handling fee (for envelope etc.), Expect a 10 day turnaround after I receive it.
Jim Williams
58 Trumbull St., New Haven, Conn. 06510

FOR SALE--Helios II System plus Okidata 110 printer (RS232 and tractor) and a Sanyo monitor. All low mileage. Includes SOL Rev. D new with 4K memory, PTDOS 1.5 (mod 2), serial port driver for printer and some games. All offers will be considered.
$2500, without printer, make offer on printer.
Bob Lee, 12 West Creek Court, Lafayette CA 94549, (415) 835-9566

SOL FOR SALE:
Clean SOL Rev. D, 16 K, with all documentation, programs and manuals, $900.
Millard Edgerton, (415) 948-3818 day or evening, (days) or (415) 284-7278 (home).

WANTED: Used Helios Disk system or perhaps other disk system that will interface with my SOL w/ 7208 Personality Module (4806). Also a low cost printer.
Clarice Turner, 874 Sunset Dr., Livermore, CA 94550

FOR SALE, SOL/20 latest rev. R. complete with Solos and 64K Expandador $ 750.00.
B. Diller 213-966-6020

FOR SALE - SOL-10 Computer with 50L55 in PROM. Includes SOL-20 backplane board for upgrade to SOL-20, if desired, $550. Call Kevin Counselman at (206) 883-4291 after 5 CST or write to 11504 Hillwood Drive, Huntsville, AL 35803

FOR SALE: 8" HARD-SECTOR DISKETTES (Suitable for use in BELKIN Systems). New, house-brand (ie. no-name), sold in lots of 10 only. In hard plastic library case, $30.00/box of 10. Without box, $26.00/10. Prepaid orders shipped free within the continental United States (elsewhere, add extra for shipping as appropriate). Will ship COD in U.S. with $5.00 deposit plus you pay COD fees and actual shipping.
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35

Updates are available for the following PTDOS programs:

WordWizard 4.0.2 System Disk.
WordWizard Document Disk, Rev. D.
ACCPAC Accounts Receivable Daily Processing System Disk 1.0.1.
ACCPAC Accounts Receivable Monthly Processing System Disk 1.0.1
ACCPAC Programmers Package 1.1.0 System Disk.
ACCPAC General Ledger 1.3.4 System Disk.
ACCPAC Universal Co. General Ledger Data Disk, Rev. A.
ACCPAC Universal Co. General Ledger Report Documents, Rev. A.
ACCPAC Accounts Payable Daily Processing System Disk 1.0.2.
ACCPAC Accounts Payable Monthly Processing System Disk 1.0.3.
MailMaster System Disk, 1.0.2.
MailList Disk, 1.0.2.
MailSort System Disk, 1.0.1

Send your original Processor Tech disk to PROTEUS, 1690 Woodside Rd, Redwood City, CA 94061, Attn: Jane, with a check for $10.00 for each disk to be updated. Please allow a week turnaround time.
TABLE OF CONTENTS

SAFETY HAZARD ALERT/Stan Sokolow................................. 1
DON'T MOVE SOL TO FOOD-MAKE SOL VANISH/Stan Sokolow........ 1
ENCYCLOPEDIA PROCESSOR TECHNICA-A COMPLETE REFERENCE...... 2
REPAIRING YOUR SOL/ TR MEMORY BOARDS/ Joe Maguire.......... 3
"DATEIN" SUBROUTINE/ David L. Dava.................................. 3
DEAD KEYS? ON YOUR SOL/ Bruce G. Diller............................ 3
CPU INGUE ON NORTH STAR DD/ Lib Zeratski......................... 3
MODIFICATION OF CP/M BIOS FOR A841 PRINTER/ Des Patton...... 6
SOLOS MODIFICATION FOR CP/M/ Des Patton.......................... 6
CROSS REFERENCE FOR BASIC VARIABLES/ Tom Cardoso............ 9
STATIC ELECTRICITY CONTROL/ Editor...............................10
RUN POC CASSette UNDER CP/M/ Jim Bailey and Des Patton......11
RANDOMIZE FOR PT BASIC/ Richard Bjornsdal ......................13
PATCHES FOR PT DISK BASIC (HIGH VERSION)/ B.C. Stapleton, Jr.. 14
LOAN CALCULATION PROGRAM/ David Armstrong......................15
SUPERPACK/ Bob Henderson...........................................15
INFO WANTED/ R.T. Hofman...........................................20
DISKETTE CONVERSION SERVICE/ Communication Services.........20
HELP WANTED ON A NORTHSTAR/ Dale Funke.........................20
PATCHES FOR TREK-80, QUBIC, 8080-CHESS/ Tom Cardoso.........21
INFO WANTED ON NEW SOL BOARD/ V.D. Bennaig ...........................................21
CUSTOM I/O PRINTER DRIVER/ Wayne Wilson.........................22
USING SOL AS A TERMINAL/ Editor..................................23
LETTERS TO THE EDITOR..............................................23
RUNNING PTC SOFTWARE UNDER CP/M/ J.L. Torgerson .............23
THE HAZARDS OF REPAIRS/ Karl J. Dunham.........................25
ON MICRO-COMPLEX'S DUAL PERSONALITY MODULE/ Dunham........25
TERM PROGRAM REPLACES SOLOS TERM COMMAND/ Fr.T. McGahaee...27
RELOCATION OF SOLOS TO FOOD/ Fr. Thomas McGahaee ............28
A BAD BOARD/ E.I. Clapp, Jr .....................................30
HELP NEEDED ON UCSD PASCAL ON S-100/ K. Montgomery ..........30
MORE LETTERS TO THE EDITOR................................... 31
PRODUCT INFORMATION/ Floppy Disk Services, Inc................32
NEW LITERATURE/ Micro Data Base Systems Inc..................32
SUNBELT COMPUTER EXPO....................................... 32
USED FLOPPIES/ Micro Dynamics...................................33
CONSUMER COMPLAINTS/ Bruce G. Diller...........................................33
MUMPS USERS' GROUP QUARTERLY.................................33
PROTEUS CASSETTE SOFTWARE LIBRARY CATALOG/ Lewis Moseley Jr. 34
UNCLASSIFIED ADS.............................................35
PTDS UPDATE SERVICE.......................................35
TABLE OF CONTENTS...........................................36
STOLEN EQUIPMENT ALERT/ COMPUTER PORT.........................36

STOLEN EQUIPMENT ALERT:

The Computer Port (Arlington, Texas) has issued an alert to be aware of Sol computers, Helios disk drives, and PerSol floppy disk drives that were stolen in a burglary there. These items were malfunctioning units in the shop for repair, so service centers should be aware of the serial numbers as the thieves may try to have them fixed. Buyers of second hand equipment should also be on the lookout. If a stolen unit is identified, please call your local police immediately and also call the Computer Port collect for instructions. Telephone (817) 469-1502. Here's the full list of stolen Processor Tech products:

PER SCI DISK DRIVE, SERIAL #S 3431, 2382, 4526, 4332, 2695, 4488.
SOL-20 COMPUTER, SERIAL #S 400742, 401139.
HELIOS II DRIVE, SERIAL # 501763.

PROTEUS NEWS

A news journal for owners and users of Processor Technology Corporation computer equipment. Published by Proteus, 1690 Woodside Road, Suite 219, Redwood City, California 94061-1383, USA, telephone (415) 368-2300.

Submit items for publication to Proteus News, Attn: Stan Sokolow, 1690 Woodside Road, Suite 219, Redwood City, California 94061-1383, USA. Please make submissions as camera-ready as possible by using a fresh, black ribbon and typing single-spaced.

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James D. McElroy
2826 Crest Ave. North
Allentown, PA
18104
PROTEUS NEWS

AN INDEPENDENT NEWSLETTER FOR OWNERS AND USERS OF PROCESSOR TECHNOLOGY CORPORATION COMPUTERS

FORMERLY SOLUS NEWS

September/October 1981

PUBLISHED BY PROTEUS, 1690 WOODSIDE ROAD, SUITE 219, REDWOOD CITY, CA 94061, USA

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UPGRADE SOL TO 24X80 SCREEN

In previous issues, we have reported that Micro Complex in Southern California was working on a series of upgrades for the Sol to make it more compatible with new microcomputers. One such upgrade was the Dual Personality Module that allowed the Sol's dedicated address space to be switched from 0000 to F000 to give 60K contiguous memory below it. Now we have another series of improvements, and more are to come.

The new product is called the Micro Complex 80/64 module. This upgrade consists of a circuit board that is fully assembled and tested, but requires some work to install it on your Sol's main board. You need to remove 10 IC's from the front-left corner of the Sol (under the keyboard area), solder a few wires to various points on the Sol, disengage a few pins from other IC's on the Sol, and plug the modification board, piggy-back-style, into some of the vacated IC sockets.

FEATURES

The new modification does a few things. It modifies the video display to the industry standard 24x80 size, it improves the quality of the screen image by eliminated jitter and snow, it allows the dedicated RAM and ROM in the Sol to vanish from the memory space so 64K RAM can be put into the S-100 bus, it generates a tone when the ASCII bell character is recognized, and it speeds up the on-board RAM circuitry so that the Sol can be run with a faster clock for the 2-80 modification that Micro Complex is also developing.

The video display can be switched between a 16 line by 64 column format (the present Sol display) or a 24 line by 80 column format. In the 80 column format, a portion of the Sol's extra system RAM is used as the additional video RAM. The mapping of memory to screen location is line by line, as you would expect.

To select the format desired, you use the switch on the Micro Complex Dual Personality Module. That is, when the personality module is in the standard mode (0000 origin), the screen is standard 16x64 size. When you switch to the extended mode (F000 origin) you automatically switch the screen size, too. The Sol's personality module has been modified to operate the larger screen.

Although not explained in the documentation, it seems possible to use the 80/64 without using the Dual Personality module, but modification of the program in the Solos ROM is required, as well as some minor hardware changes to the personality module. This would necessitate using one module for the 80 column mode and another when you go back to the present Sol system mode. This change has been described in previous issues of Proteus News in connection with the "move Sol from C000 to F000" modification.

The 80/64 module contains a connection to an audio tone generator. When the ASCII bell character (07H) is recognized, the tone is generated. This is useful for some software which uses the bell character to alert the operator to an unusual condition, such as overflows on input beyond the expected field size. If you have software using the bell character this way, what you see on a standard Sol is a "little nap" (actually a little bell symbol) instead of hearing the bell. For example, PTDOS gives this when you backspace at the beginning of a command line or enter more than 80 characters on a command line. With the 80/64, this should give a tone.

The Solos monitor and the Sol RAM (video & scratchpad) can be made to disappear from the address space, so that 64K RAM can be plugged into the S-100 bus and fully utilized. The disabling is done under software control, by outputting 1's to the two high order bits of port FC. When your operating system wants to use the screen or Solos, it should output 0's to these port bits.

Two extra port bits are available as software controlled flip-flops that may be used by your custom circuitry. One application suggested in the manual is connecting one flip-flop to the disable line of a memory-mapped disk controller (such as NorthStar) to get it out of the address space when it is not being accessed.

The 80/64 module also has changed the manner in which the video RAM is accessed by the hardware signals. It used to respond to the S-100 bus, but it is now located on the internal bus. This is why memory in the S-100 bus can overlap the video RAM without conflict. This is also said to eliminate the horizontal jitter which occurs in a normal Sol.

Not only is jitter eliminated, so is the streaking which occurs when the screen is repeatedly accessed by the program. In the standard Sol, when a program (either Solos or a user's program) reads or writes the video RAM, the video beam is momentarily turned off while the RAM is in use. This results in a short blank streak on the screen. To see this streak on your present Sol, hold down the repeat key and a character key and carefully watch the screen for short horizontal streaks that randomly flash on the screen. In some video games, where the screen is rapidly updated, the streaking is very obvious. With the 80/64 modification installed, the screen does not streak.

Hardware scrolling is still preserved, but the "windowshade" feature had to be eliminated to allow the extra lines on the display to be scrolled. No one used windowshade anyway, so this is no loss.

The Sol's built-in RAM, which is used for video display and Solos scratchpad, has been replaced by higher speed RAM on the 80/64 board. A Hitachi 6116 F-3 static 2K RAM chip is
CON'T FROM PAGE 1-UPGRADE SOL TO 24 X 80 SCREEN

used. This is the new generation of RAM used on those ultra-low power RAM boards that allow RAM or 2716 ROM IC's to be plugged in interchangeably. The 150 ns access time of this chip will allow the Sol to operate with a 3.57 MHz clock when used with the MicroComplex 2-80 modification that is under development. The on-board wait state generated by Sol can be eliminated so that the Tarbell disk controller and other disk controllers can be bootloaded directly from the personality module.

IMPROVED PERSONALITY MODULE

MicroComplex can provide personality ROM's customized so that your disk controller will boot on a built-in command or single keystroke when in Solos. The Dual Personality Module can be ordered with NorthStar boot, Tarbell boot, or Helios boot as standard. It can also be ordered to support a Tarbell/Helios multiplexer setup. Custom versions can be arranged on special order.

The Solos in the personality module that Micro Complex supplies has been modified by elimination of the cassette routines. Since most systems are using floppy disks now, the cassette routines are seldom used and can be loaded from disk when necessary. (You'll have to program them onto disk from listing of the original Solos. CP/M users group library has a Solos source file available on one of the library disks.) Or you can switch back to the old personality module when you need to manipulate cassette files, such as when using DSKTAPE and TAPEDISK. This is developed by Greenlaw.

In place of the cassette routines, you have numerous new commands that are useful for probing around in machine language, such as ASCII dump, hex dump, enter ASCII, enter hex, fill memory with a hex byte, hex to decimal conversion, move memory block, compare memory blocks, address reference locator, find (ASCII, byte, word), and memory test.

Since MicroComplex also sells a work-alike NorthStartype disk controller of their own design, the personality module supports features especially useful for Northstar disk drives. Commands are provided to jump to various entry points in Northstar BASIC and DOS, as well as for warm-starting CP/M. The personality module is available without the 80/64 module.

HOW HARD IS IT TO INSTALL?

The recommended procedure for installing the 80/64 piggy-back board involves removing the Sol's main board from the Sol cabinet. This means that the keyboard is removed, the S-100 bus backplane is removed, the internal cables are unplugged, and the Sol PC board is dismantled by removing the screws that secure the board to the Sol base. It is possible to keep the Sol board with the Sol PC still in place, but it is more difficult and not the best way.

With the Sol PC on the bench, the designated IC's are lifted out of their sockets. Other IC's are removed to allow certain pins to be bent outward partially, and then they are reintegrated into their sockets with the bent pins out of the socket. A few wires from a ribbon cable socket and the 80/64 board are soldered to designated points on the Sol.

The edge connector which holds the personality module needs to have two of its pin connectors unsoldered and lifted out of the Sol PC holes for soldering to the ribbon cable. By cutting away several traces on your old personality module, you still use it after the alterations are made, although you will usually be using the new Dual Personality Module.

One or two jumpers are soldered to the underside of the Sol PC or to IC pins. All of the changes to the Sol PC are easily removed, so if you ever want to go back to the way your Sol used to be, it can be done. I don't think you'll ever want to, though.

After the Sol PC is prepared, the 80/64 board is carefully aligned so that precisely aligned, long, angled pins will fit in position down from it into some of the empty IC sockets on the Sol PC. The board is pressed into place, the pins need to be sure they all went into place. If the ribbon cable is plugged into the 80/64 connector, another ribbon cable is plugged into a Sol PC socket, and so on. The installation is not hard, but requires attention to detail. MicroComplex has made it as neat and professional as possible.

After the connections are all completed, the Dual Personality module is plugged into the Sol PC instead of your old module. The internal cables are re-connected and the Sol is powered-up to test it. After successful check-out, the screws and S-100 backplane are re-installed, the system is re-checked, and you're done. It can be accomplished in one afternoon.

HOW WELL DOES IT WORK?

MicroComplex has sent out a number of modules for field testing. Proteus is in the process of using one, but there are some bugs yet to be eliminated before I can give a full report on the features. This article is being written on my Sol/Helios computer with the 80/64 module installed and I am assured that the module does exist and does work in the 64 column mode. I have some problems with Solos commands and some occasional bugs with the video display, so I am going to send my Sol PC with the 80/64 to MicroComplex for checkout and debugging. In the next issue, I'll report the outcome.

I have switched the system to the 80 column mode, but I can't say that I have any bugs of bugs because of bugs in the Sol system crashes erratically when using Solos, but I am able to use bootloop command built into the Helios version of Solos. I have no crashes when running programs out of the S-100 bus RAM, DMA into and out of the S-100 bus works fine. The problems happen when I use the Solos ROM and built-in RAM. The Sol I have is an old Rev D version, so I suspect that there is some problem with the old Sol that the new Sol doesn't have, there is a critical timing or noise problem in the modification, or I have a poor connection somewhere.

I can say, though, that the 80 column screen image is beautiful. Using the BMC video monitor model K-12C, which is one recommended and sold by MicroComplex, the characters are sharp from corner to corner of the screen. There is no trouble reading the characters at the edges and the image fits nicely on the screen. There is no snow or jitter at all, in either 64 or 80 mode. It is a very professional looking screen.

In the 80 column mode, there is some barely noticeable flicker, but this can be reduced by a jumper that is explained in the 80/64 instructions. This jumper eliminates the blank second line that can be seen in the 80 column mode. I used the blank second line as a means of refreshing the screen, as I usually do on the Sol, but the jumper eliminates the character (e.g., the bottom hook of a lower case "y") and the top of the character below it. This mod reduces the time required to refresh the screen, and thus, the jitter on the screen. I have hooked up this jumper through the unused switch #2 on the DIP switch at the front of the Sol, so I can cut the modification in or out. This BMC monitor has a green phosphor with an extended persistence, so the flicker is just barely noticeable, and it will bother few users. With the modification switched in the flicker almost is undetectable to my eyes. In the 64 column mode, there is no flicker at all.
I get a spurious character on the video screen at rare times when I am using my wordprocessor (WordWizard for Helios). That is, once in a while, when I press the REPEAT and DEL keys to delete a bunch of characters, or when I move the cursor, I get a parenthesis appearing on the line. I know it is not a keyboard problem, and suspect that there is some subtle timing or control problem when a program writes to the screen RAM in my system. I'll let you know what Micro Complex discovers.

PRICE AND AVAILABILITY

Micro Complex has set the price of the 80/64 modification at approximately $250. You also need the Dual Personality Module at approximately $95. Shipping extra. Be sure to specify which disk controller you use, so the correct version of Solos can be supplied.

A higher resolution video monitor is needed for 80 columns than you may be using now for 64 columns. The recommended BMC monitor sells for about $225. It needs a custom video cable to mate with Sol's video connector, which you could make yourself with parts from Radio Shack, or you can order one from Micro Complex for $10.

Considering the fact that any S-100 video display board you can get will probably cost more than $250 and will not have any of the custom Sol features of the 80/64 board, this is really a reasonable price.

Micro Complex will install and test the 80/64 modification for you in their shop for $50 plus shipping. They can also repair non-functional Sol's. Ask them for proper shipping instructions.

FURTHER INFORMATION

Contact Robert Hogg at Micro Complex, 25651 Minos Street, Mission Viejo, CA 92691, telephone (714) 770-2168.

PUBLIC DOMAIN GENERAL LEDGER FOR N*
by Franz J. Hinze

Having received a lot of useful information from Proteus over the last two years, I thought I should sit down and contribute something that other members may find useful.

Enclosed please find a draft of an article describing GENERAL LEDGER which I wish to offer for their possible use by other members.

I have been using the GENERAL LEDGER System as presented for two years to keep books for two small business applications as well as my personal finances. While there are more complete packages available which integrate Payroll, Accounts Receivables, etc. from several vendors, I have not seen a flexible system that can be implemented by the novice user as easily as GENERAL LEDGER and still provide the useful reports necessary to control small business operations.

Due to the length of the programs many members may not want to take the time to type each program. I would provide disk copies of the programs as presented here in NorthStar Dual Density format plus a copy of the description of the system for $25.00.

Sincerely,

Franz J. Hinze

631 Maternen Drive
Foster City, California 94404
November 27, 1981

GENERAL LEDGER

The General Ledger package is written in NorthStar Basic. GENERAL LEDGER should operate under both NorthStar Single Density and Double Density Disk Systems. With user modification GENERAL LEDGER should be able to run under most versions of Basic.

General Ledger is a simple Ledger Package compared to many systems on the market but should be adequate for a wide variety of small business and personal applications. GENERAL LEDGER does contain useful features not found on some systems such as monthly budget comparisons, year to date budget comparisons, etc.

GENERAL LEDGER, as presented here, has been implemented on a Sol-20 Computer with 8K memory, dual NorthStar Double Density Disk System. The programs are written in NorthStar Basic. The only program code unique to the system is the use of Control-(I) to clear the screen as required for the Processor Technology Sol-20 Computer System. The user will have to change to the appropriate code to match the requirements of his terminal. All other code is standard NorthStar Basic and should run on any computer equipped with NorthStar Disk Drives and NorthStar Basic without modification.

The GENERAL LEDGER System programs can be classified into two types of programs: 1.) those that are necessary to initialize the data disk and create the proper ledger files and 2.) those that are used to enter transactions, update files, and produce the various reports. A Single Density NorthStar System will require that those programs necessary to set up the files be kept on a separate disk due to space limitations. Users with Dual Density Systems may also want to do the same for data security reasons.

SAMPLE OUTPUT FOLLOWS:

PASA ROBLES APARTMENTS

TRIAL BALANCE - 12/31/1981 as of 12/31/1981

Page 1

ACCT. NO. ACCOUNT DESCRIPTION DEBIT CREDIT

100 Rental Income 430.590.75
101 Wages Expense 500.91
102 Late Charges 30.00
103 Other Income 721.57
104 Unearned .00
105 Unearned .00
200 Property Taxes 1256.37
201 Insurance 1300.00
202 Gas & Electric 1320.85
203 Wages 863.00
204 Heat, Light & Gas 90.00
205 Water, Sewer & Garbage 1545.80
206 Pool Service 1638.36
207 Advertising 46.74
208 Maintenance and Repair 3829.74
209 Paintings and Decal 83
210 ABC Managment 1
211 Resident 4
CON'T FROM PAGE 3 - PUBLIC DOMAIN GENERAL LEDGER FOR N*  

<table>
<thead>
<tr>
<th>PROPERTY APARTMENTS</th>
<th>BUDGET STATEMENT</th>
<th>PERIOD ENDING 12/31/1981</th>
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<td>CURRENT PERIOD</td>
<td>BUDGET ACTUAL</td>
<td>VARIANCE</td>
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<td>2475.00</td>
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<td></td>
<td>200.00</td>
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<tr>
<td></td>
<td>3348.48</td>
<td>4579.63</td>
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| EXPENSES              |                  |           |              |               |           |   |
|                      | 1797.76          | 1256.37   | 456 200 Property Taxes | 2047.36 | 1256.37 | 791.99 | 39  |
|                      | 101.41           | 101.41    | 100 201 Insurance | 1286.32 | 1286.32 | 0.00   | 0 1 |
|                      | 100.00           | 100.00    | 100 202 Gas & Electric | 1033.64 | 1200.05 | 166.41 | 164  |
|                      | 100.00           | 100.00    | 100 203 Gardening | 1050.00 | 1050.00 | 0.00   | 0  |
|                      | 100.00           | 100.00    | 100 204 Pest Control | 90.00   | 90.00   | 0.00   | 0  |
|                      | 100.00           | 100.00    | 100 205 Water Sewer & Gas | 1633.38 | 1542.00 | 91.38 | 6  |
|                      | 100.00           | 100.00    | 100 206 Pool Service | 1257.12 | 1257.12 | 0.00   | 0  |
|                      | 100.00           | 100.00    | 100 207 Advertising | 277.00   | 277.00   | 0.00   | 0  |
|                      | 100.00           | 100.00    | 100 208 Maintenance & Repairs | 612.28 | 829.34 | 217.06 | 35  |
|                      | 100.00           | 100.00    | 100 209 Paintings & Decorations | 583.56 | 639.13 | 55.57 | 9  |
|                      | 100.00           | 100.00    | 100 210 ABC Assessment | 1755.00 | 1711.00 | 44.00 | 3  |
|                      | 100.00           | 100.00    | 100 211 Resident Amnesty | 1900.00 | 1915.00 | 15.00 | 1  |
|                      | 100.00           | 100.00    | 100 212 Claims Expense | 100.00 | 100.00 | 0.00   | 0  |
|                      | 100.00           | 100.00    | 100 213 Legal Fees | 0.00 | 0.00 | 0.00 | 0  |
|                      | 38.75            | 100.00    | 100 214 Misc | 0.00 | 0.00 | 0.00 | 0  |

GENERAL LEDGER JOURNAL - 12/31/1981  
JOURNAL NO. 13  
TRANSACTION: INCOME - RECEIPTS 178 TO 188  
1 100 Rental Income | 12/31/1981 | 2475.00 | 2475.00 |
3 300 Cash & Checking Accounts | 12/31/1981 | 2475.00 | 2475.00 |

TRANSACTION: VENDING - AAA VENDING  
2 101 Vending Income | 12/31/1981 | 54.63 | 54.63 |
3 300 Cash & Checking Accounts | 12/31/1981 | 54.63 | 54.63 |

TRANSACTION: SACTO COUNTY - 1981 PROPERTY TAXES  
3 200 Property Taxes | 12/31/1981 | 1254.37 | 1254.37 |
6 300 Cash & Checking Accounts | 12/31/1981 | 1254.37 | 1254.37 |

TRANSACTION: EXPENSE - CHECKS 187 TO 195  
4 202 Gas & Electric | 12/31/1981 | 92.50 | 92.50 |
203 Gardening | 12/31/1981 | 45.00 | 45.00 |
204 Pest Control | 12/31/1981 | 7.50 | 7.50 |
205 Water, Sewer & Gas | 12/31/1981 | 127.38 | 127.38 |
206 Pool Service | 12/31/1981 | 125.00 | 125.00 |
208 Maintenance & Repairs | 12/31/1981 | 372.40 | 372.40 |
209 Paintings & Decorations | 12/31/1981 | 25.00 | 25.00 |
210 ABC Assessment | 12/31/1981 | 125.00 | 125.00 |
211 Resident Amnesty | 12/31/1981 | 100.00 | 100.00 |
300 Cash & Checking Accounts | 12/31/1981 | 1039.98 | 1039.98 |

TRANSACTION: MORTGAGE PAYMENT - FIRST SAVINGS & LOAN  
5 300 Cash & Checking Accounts | 12/31/1981 | 1152.00 | 1152.00 |
6 300 Mortgage Payable | 12/31/1981 | 37.23 | 37.23 |
215 Interest Expense | 12/31/1981 | 1124.77 | 1124.77 |

FINANCIAL STATEMENT - PERIOD ENDING 12/31/1981  
JOURNAL TOTAL | 7238.09 | 7238.09 |

CURRENT ASSETS  
Cash & Checking Accounts | $3,843.57 | $3,843.57 |

FIXED ASSETS  
Land | $20,406.04 | $20,406.04 |
Buildings | 147,048.99 | 147,048.99 |
Furniture | 3,461.14 | 3,461.14 |
Less Accr. Dep. - Furniture | -3,345.35 | -3,345.35 |
Excess Market/Book Value | 98,009.75 | 98,009.75 |
TOTAL ASSETS | $234,196.23 | $234,196.23 |

CURRENT LIABILITIES  
Cleanings Deposits | $270.00 | $270.00 |

LONG TERM LIABILITIES  
Mortgage Payable | $135,246.63 | $135,246.63 |
TOTAL LIABILITIES | $135,246.63 | $135,246.63 |

CAPITAL  
Equity PROFIT OR LOSS | ($107,009.00) | ($107,009.00) |
TOTAL CAPITAL AND LIABILITIES | ($104,523.17) | ($104,523.17) |

$240,039.80 |
### Public Domain General Ledger for N* Apartments

#### Prepared 12/31/1981 as of 12/31/1981

<table>
<thead>
<tr>
<th>ACT</th>
<th>J/K Entry</th>
<th>DATE</th>
<th>NET DEBIT</th>
<th>NET CREDIT</th>
<th>OPENING</th>
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<td>100</td>
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<td>12/31/81</td>
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<td>29,169.52CR</td>
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<td>Vending Income</td>
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<td>54.65</td>
<td>54.65</td>
<td>535.26CR</td>
<td>535.26CR</td>
<td>580.10CR</td>
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#### Prepared 12/31/1981 as of 12/31/1981

<table>
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<th>DATE</th>
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<th>NET CREDIT</th>
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<th>NET CHANGE</th>
<th>CLOSING</th>
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<tr>
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<td>125.00</td>
<td>125.00</td>
<td>1,506.07</td>
<td>125.00</td>
<td>1,711.07</td>
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<tr>
<td>211</td>
<td>Resident Manager</td>
<td>12/31/81</td>
<td>100.00</td>
<td>100.00</td>
<td>715.00</td>
<td>100.00</td>
<td>815.00</td>
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<tr>
<td>215</td>
<td>Interest Expense</td>
<td>12/31/81</td>
<td>1,126.77</td>
<td>1,126.77</td>
<td>11,004.04</td>
<td>1,126.77</td>
<td>13,026.83</td>
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#### Cash & Checking Accounts

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<th>NET CREDIT</th>
<th>OPENING</th>
<th>NET CHANGE</th>
<th>CLOSING</th>
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<tr>
<td>13</td>
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<td>12/31/81</td>
<td>30.20</td>
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<td>1,126.77</td>
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<tr>
<td>13</td>
<td>7</td>
<td>12/31/81</td>
<td>1,256.37</td>
<td>1,256.37</td>
<td>1,126.77</td>
<td>1,126.77</td>
<td>1,126.77</td>
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</table>

### Income Statement

**For Period Ending 12/31/1981**

<table>
<thead>
<tr>
<th>INCOME</th>
<th>NET DEBIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rental Income</td>
<td>$30,539.52</td>
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<tr>
<td>Vending Income</td>
<td>589.91</td>
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<td>Late Charges</td>
<td>30.00</td>
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<tr>
<td>Other Income</td>
<td>721.57</td>
</tr>
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</table>

**TOTAL INCOME**: $31,881.00

### Expenses

- **Property Taxes**: $1,256.37
- **Insurance**: $1,300.00
- **Gas & Electric**: $1,320.85
- **Gardening**: $865.00
- **Pest Control**: $90.00
- **Water: Sewer & Garbage**: $1,542.80
- **Pool Service**: $1,630.36
- **Advertising**: $68.74
- **Maintenance and Repairs**: $3,829.34
- **Painting and Decorations**: $839.13
- **ABC Management**: $1,711.07
- **Resident Manager**: $815.00
- **Cleaning Expense**: $60.00
- **Legal Expense**: $243.00
- **Misc./Other Expense**: $302.50
- **Interest Expense**: $13,000.83
- **Depreciation - Buildings**: $5,205.39
- **Depreciation - Furniture**: $244.53

**TOTAL EXPENSES**: $34,366.91

**LOSS**: $2,285.91

Franz J. Hiner  
631 Matsonia Drive  
Foster City, CA 94404

---

Ace Computers, Inc. has told Proteus that they have a prototype of a board that allows the Sol with Helios disk to use either Helios format diskettes, or standard 8" soft sectored diskettes. A Morrow floppy disk controller must be plugged into the Sol bus, as well as the Helios board set. Both ribbon cables are plugged into the back of the Helios cabinet. Inside the Helios, the Ace board plugs between the PerSci drive and the ribbon cables.

When a floppy disk is inserted, the Ace board detects whether it is a hard-sectored or soft-sectored diskette, and switches to the appropriate controller, more or less. This allows Helios users to continue to use existing PTDOS software and also to use standard CP/M soft sectored diskettes with CP/M (CP/M 2.2 for the Morrow board is included with purchase of Morrow's controller.) They say it preserves the fast-seek feature of the PerSci drives, something which many floppy disk controllers won't do.

The Ace people were going to demonstrate this board to me, but illness and car breakdowns have so far interfered with scheduling this. When I see it in action, I'll tell you the results.

Ace, you may recall, is the service company formed by two former PTC engineers. They do hardware repairs of PTC products, including top-notch Helios maintenance, and repairs on other S-100 microcomputer products such as NorthStar and Morrow.
USER REACTS TO 24 X 80 CONVERSION
by Earl Dunham

Stan:
I think this news is important and I hope you can get this report in the very next PROTEUS. You probably have the conversion yourself so you know what I am talking about.

I was at Bob Hoag's house the night he called you about the mod. He had sent you. If you have not met Bob, make it a point to do so; he is everything I said he was in my previous report and more so. He will be the bane of SOL unless you have his contributions redacted by his efforts. I appreciate them and I think he does too. If you two combine your efforts, each in your special way, we shall truly retell the story of Phoenix.

Working with Bob is an experience to cherish. His skill and knowledge is overwhelming. I would not part with any of my SOLs; in fact I may buy every one I can find at the current bargain prices they are going for. Those who abandon SOL will regret it someday.

I will send the report in a few weeks when I have more detailed information about the conversion. I am really anxious to get the 280 mod running. I'll let you know.

Earl Dunham

RUN!! DON'T WALK!!
The SOLUTION is here!

Dear Stan:

I'm sure by now you are aware of the exciting new miracle from the work shop of Bob Hoag, the great technician who gave us the Dual Personality Module that I reported in the last Proteus. Now, as promised, he gives us the 20x24 screen with his Dual 80/64 modification. I had the modification done last week and I want to tell everyone what I think about it.

Sensational. Terrific. Unbelievable!! I could go on and on with the superlatives, but I'm sure you get the idea that I am absolutely delighted. No more than that. Great deal worse; I am ecstatic. I was not really aware of the severe limitations imposed by the 16x44 screen. Even on something as simple as a code listing, the 24 lines makes debussing much easier. It is as though we have been looking through a very small port-hole and have suddenly been allowed on deck for the first time. The view is incredible. I will only spend a little time on the technical aspects of the conversion. Bob has this report in his hands and I'm sure everyone can be aware of what the SOLUTION involves. Make no mistake. SOL is in a serious way just must have this improvement.

Earl Dunham

The conversion involves removing about two dozen I.C.s mostly on the board in between U1 and U2; soldering in several junctures, and the installation of a plug-in backboard in the area on the left, just below the keyboard. The board is unique. It looks like a miniature, inverted bed of nails. It has a vertical forest of inch or so long pins poking out the bottom. These pins are spaced so that when board is positioned correctly they snap into appropriate holes vacated by the removal mentioned above; there were a single 2K static ram and about a half dozen other chips on the board and a couple of edge connectors.

The Dual 80/64 modification is offered as a kit or Bob will do the installation for a modest fee. It is my impression, although Bob can do it in an hour or so if there are no problems, that the weekend bit fiddler will require much longer. But remember, Bob designed the thing and has already made several installations. I do not mean to imply that it is terribly difficult; it just ain't a walk in the park.

The installation can be made without removing the motherboard from SOL but it shouldn't. It is too difficult to see and the positioning of the pin over the holes must be just right when the plug-in backboard is pressed home. Because considerable pressure is required, the wrong pins in the wrong holes would be a disaster, bent pins would cause a lot of headaches. Most of us have dissassembled SOL enough times that it ain't no big deal anyway. Besides, it gives us a chance to clean out all the debris that has sifted in.

Finally, you must have the Dual Personality module and a monitor of sufficient bandwidth to handle nearly twice as many characters on the screen as before. F尾巴 sells a P31 Green Phosphor 12 inch Monochrome module with an 18 MHz bandwidth made by BMC (model KG-12C). It costs a little over $200 and is superior to any I have seen. Filled corner to corner, the resolution is terrific. The screen remains jet-black and the contrast makes the characters just jump out at you. It comes with an anti-alias screen that really works. Consider it even if you don't make the conversion. But I cannot imagine anyone not going whatever is necessary to get it. Bob adds a little that gives a pleasant little beep on power-up and responds to BPM. A little nice touch. Use it as the final reason why you cannot live without the wide screen.

Now SOL with its built-in quility and great design is back in the ball game. In a few weeks Bob Hoag will have the 2004 conversion ready and then look out. Apple's and Pots and Trash-80s will be Mitchell House compared to SOL running at 3.57 MHz with an 80x24 screen. Hard-disks are under development for SOL in several places also. The future looks bright for me who have suffered the slings and arrows etc. for so long.

You ask what will it cost? Buying everything required from Bob and letting him do the installation will create a bill of something over $500 (plus shipping of course). I would rather not try to be specific; a phone call to Bob will get you the straight dope. It will be the best $500 you have spent since you got your computer.

Bob Hoag is:

Micro Complex
23651 Minos St.
Mission Viejo, CA

Earn Dunham

Ph: (714) 773-2169

Happy Days!
A RESPONSE TO DESLR K. PATTEN'S OPEN LETTER
By Allen T. Pincher

This article is in response to Deslar Patten's letter in vol. 4, no. 3/4 issue concerning the SOLOS "clear-to-end-of-line" feature.

First a little background. Most video terminals around also have a "clear-to-end-of-line" feature built in to them. Since the normal line termination sequence is a carriage-return followed by a line feed, the terminal processes the CR as expected, by returning the cursor to the left margin of the screen. But, the LF character actually causes two operations to occur. First, the cursor is moved down to the next line (or a scroll is performed), and then the new line is cleared from the current cursor position to the right margin.

In SOLOS though, the internal termination sequence is LF/CR (locations C2F9 thru C302). Therefore, the VDM driver software performs a clear-to-end-of-line on CR, not LF giving the effect commented on by Deslar. The only reason I can determine that this was done is based on the command-line termination options in SOLOS. Namely, a CR terminates the command erasing all characters to the right of the cursor, and a LF just terminates the command. This would allow the operator to use the cursor-left key to place the cursor over an incorrect letter in a command, correct it, and then press LF to process it instead of using DEL and retyping the rest of the command over. This can be done because SOLOS actually uses the current line on the VDM screen as the command-line buffer. So that after either CR or LF is pressed, the current screen line is searched and read by the individual command processing routines with a space being the command terminator (a cleared line is actually 64 spaces).

The following routine can be used by a Sol owner who does not have the ability to reassemble SOLOS. It can reside anywhere there is free memory. The origin shown is in the User area at 0C418H in the SOLOS System Global Area ram. This routine performs the second type of operation that Deslar gave in his letter. That is, any carriage return that immediately follows a carriage return, is not sent to the VDM display driver.

After assembling the routine, load the object code into ram (it should load at the ORG'ded addresses). If the last ORG and DB O3H is omitted, perform a "O=3" command to enable your new preprocessor. Note that this routine is not used when you are in SOLOS, but only from external programs.

Please note that all addresses given in this article are for SOLOS Version 1.3, Release 77-03-27 as printed in vol. 1, no. 3 June 1977 of ACCESS (Processor Technology's newsletter), and may not be the same as your monitor's version. By the way, this version of SOLOS has an error in it. The instruction at address C5E4 should be C2 FB C5 (JNZ TEREZ) instead of C2 FA C5 (JNZ TEREZ). The mistake will prevent the cassette versions of BASIC from displaying an error message if an attempt is made to open a file after it has already been opened. For those with source listings, this is in the BOPEN routine.

I must make a disclaimer here. Since I don't have a Sol and my present monitor, though incorporating CUTER, has had the carriage return and line feed VDM driver routines changed to cause a clear-to-end-of-line operation to occur on a LF, I cannot guarantee that the following routine will work with all external software but because a carriage return that follows another carriage return doesn't actually accomplish anything, so I really don't foresee any problems.

Allen T. Pincher
Suffolk, Va.
Sept. 8, 1981
STILL MORE ON THE CPM USER AREA

I'VE BEEN ENJOYING USING DR. JIM BYRAM'S SOLUSER9 SET OF CPM USER AREA ROUTINES WITH MY SOL-NX SYSTEM. I USE LIFEBOAT'S NX VERSION OF CPM AND I'VE HAD NO DIFFICULTY WITH SOLUSER9. WHEN I WAS A PROGRAM USING THE EDITOR (ED) THE DELETE CHARACTER ROUTINE Didn'T DESTROY THE CHARACTER AS DESIRED. DOES THIS SOUND FAMILIAR TO ANYONE OUT THERE?

FOR REASONS NOT KNOWN TO ME IN THE INSTANCE MENTIONED ABOVE, DURING THE DELETION OF A CHARACTER AN ADDITIONAL PASS OCCURS THROUGH THE OUTPUT AREA OF SOLUSER9. NOW IF ONE DOES NOT CALL ON THE DELETION ROUTINE, THE TWO CASES (SINGLE PASS OR DOUBLE PASS) RESULT IN OUTPUTTING TO THE SCREEN IN THE SAME MANNER THAT IS, A SINGLE ECHO APPEARS WHEN THE DELETE BUTTON IS PRESSED. HOWEVER, WHEN THE DELETE ROUTINE IN SOLUSER9 DEACTIVATES THE ECHO REMAINS UNDELETED, THE PATCH THAT I HAVE DEVELOPED HANDLES THE TWO CASES. I'VE INCLUDED THIS PATCH TO SOLUSER9 FOR THOSE INTERESTED.

HOPEFULLY THE PATCH WILL NOT ADVERSELY AFFECT THE REST OF SOLUSER9—I HAVEN'T NOTICED DEGRADATION TO SOLUSER9 BUT I DIDN'T USE SOLUSER9 MUCH BEFORE I INCORPORATED THE DELETE PATCH.

IT SHOULD BE NOTED THAT THE DELETE PATCH DESTROYS ONLY THE SECOND CHARACTER OF TWO-PRT CHARACTERS AS CREATED ON THE SCREEN BY CONTROL CHARACTERS. THE BACKSLASH DELETE WAS NOT INCLUDED FOR THE SIMPLE REASON THAT I HAD NO PRESENT NEED FOR IT.

SINCERELY YOURS

DICK MOLLER

Velt is High on Sol and Proteus

Stan Velt, who used to sell Sol computers in his Computer Mart store (now out of business), writes an interesting column in the Computer Shopper. In the December 15 issue, he mentions Proteus and his "beloved Sol." He says, "After my column on my beloved Sol computer, I received a letter from Stan Sokolow, informing me that PROTEUS, the Processor Technology Users Group was still very active. Naturally, I joined and am now receiving the Proteus/New, which is one of the best user group newsletters I have ever seen." He goes on to explain more about Proteus.

Thanks for the good words, Stan. Let me reciprocate by saying that Stan's column in the Computer Shopper is always interesting for me to read because he specifically talks about the computers we ol' timers remember, like the SWTPC 6800, the Altair, the IMSAI, the Digital Group, and so on. These names appear in the many ads in the Computer Shopper, but lots of newcomers don't have the foggiest idea of what they are. Stan is trying to give them a basis for understanding the used computer ads.

If any of you are bargain hunters, I can highly recommend the Computer Shopper. This not only has classified ads, it also has display ads from many small companies that often are selling good products at bargain prices. For example, the December issue shows a new 64K static RAM board similar to the Godbout RAM 17, for only $499 in kit ($50 more AAT). This uses the 6116 or 6126 type RAMs that are ultra-low power (0.5 amp per 64K).

Subscription is only $10 per year. Computer Shopper, P.O. Box F, Titusville, FL 32780.
WHO SAYS "CASSETTE TAPE IS DEAD?"

By Lewis Moseley  September 15, 1981

As soon as they get their disk systems, many hobbyists begin to look on their cassette machines as a sort of electronic red-head stepchild. The C-10 operating system is so much faster, the CP/M disk system so much more versatile; who needs the sleepy tape?

Well, tapes can still be put to very good use, and there are several programs in the Proteus Cassette Software Library to help you with this.

The DISKTAPE/TAPEDIスク system was developed by Richard Greenlaw, a long-time regular contributor to PROTEUS. The system allows the writing of CP/M disk files onto cassette tapes and the re-reading of these tape files back into CP/M disk files.

The system has several advantages. First, you can have a cheap back-up method for your diskettes. A standard audio-grade C-90 cassette, which can be bought in quantity for about $1 each, will hold the contents of 2 8" single-density diskettes, or about 500K.

Second, an interesting feature of the system is that all disk I/O is done through CP/M BDOS calls, and thus is device-independent. For those of you who don't speak fluent CP/M, this means you can write a file from your 5" Northstar CP/M system onto a tape and give it to your buddy across town (or across the world; I have sent tapes as far as Africa) and he can load it onto his 8" CP/M system, and vice versa. This system has been tested with all of the following kinds of disk drives: single and double density (several man-facturers), Micropolis 5", Northstar 5", Vista 5", Heilos 8" hard-sector. It is expected to work properly with all of these, as, in fact, any CP/M system. The system requires a 20K or so CP/M system and a SOL or a compatible system with a CUTS board and CUTER.

The second program I want to discuss is called BYTE ASM, and was written by me. It is designed to allow CP/M to read and write Proteus Standard Byte Access cassette files. Say that you have used EBCONIC for a couple of years and amassed a considerable quantity of software for it. Now you get your disk system. Do you have to throw away all of that software and start over? Nope, you just use EBCONIC to write the program out as a text file in byte access format (the "$T" option), and then use BYTE to read it into a CP/M file. Similarly, you might want to take a program you developed on your disk system and give it to a disk-less friend. Again, this is easy to do with BYTE. BYTE isn't a wonder program, though. It doesn't translate the program, it just transfers it. So, you might still have a little syntactical synchronization to do (did I say that?).

I have mailed to PROTEUS a listing of the BYTE program, and it should be published with this letter. In addition, both BYTE and DISKTAPE/TAPEDIスク are available on Proteus Library diskette C-10 in CP/M format. As a matter of fact, C-10 is distributed in the Greenlaw DISKTAPE format, and I have sent out dozens without any problems of compatibility. I'm sold on the principles of compatibility. I'm sold on the principles of compatibility. I'm sold on the principles of compatibility. I'm sold on the principles of compatibility. I'm sold on the principles of compatibility. I'm sold on the principles of compatibility.

The library has the full CP/M Users Group disk library available on the tape in the Greenlaw format. These cassette are $10 each, with a catalog available for $6.

Please help me to help you by supporting the library with your contributions.

---

**This software available through:**

**PROTEUS CASSETTE SOFTWARE LIBRARY**

**C/O LEWIS MOSELEY, JR., LIBRARIAN**

**2576 GLENDALE CT. NE**

**CONYERS, GEORGIA 30098**

LIBRARIAN'S NOTE: This program is specifically intended for transfer between CP/M-equipped systems, the DISKTAPE/TAPEDIスク programs, also available through Proteus Cassette Software Library, would be much faster.

**BYTE**

PUBLIC DOMAIN SOFTWARE COURTESY OF:

LEWIS MOSELEY, JR.

12578 GLENDALE CT. N.E.

CONYERS, GEORGIA 30098

Version 2.0 of 11/22/79

This program is a patch to allow CP/M's PIP.COM to read SOL/CUTS byte access tape files into CP/M disk files, and to write a CP/M ascii text file into a SOL/CUTS byte access tape file. The routine uses the custom routine area within PIP, located from 100H-1FFH.

The program can be used to convert an application program to SOL/CUTS byte access format, including with the help of Corp Tech's, does not accept tabs, and so be sure to use tab expansion when writing a file for them.

The tape format written, and expected on reads, is the Proteus Standard Byte Access format, which ends text lines with a <CR> only. Since CP/M ends lines with a <CR><LF>, this tape driver supplies <LF>'s on reads, and suppresses them on writes.

To write a tape, use the command:

A>PIP OUT:<DFN.PT>,EOF:<CR>

where the name given is a valid CP/M unambiguous file name. The 'EOF:' should also be included, as CP/M does not always end-file properly without it, and this would cause part of the tape data to be lost.

Similarly, to read in a tape, use the command:

A>PIP <DFN.PT>=INF:<CR>

other standard PIP functions are also possible, such as:

A>PIP PNF:=INF:<CR>

which would read a tape and print it, etc.

At the first attempt to access the tape, you are prompted for the tape file name on the console, and told to mount the tape. PIP checks for errors in disk access, and this program checks for tape related errors. Only brief messages are given, as there is only a limited space for this routine in PIP.

To install the routine, load it to disk and assemble it as written. Notice that it just barely fits the space
CON'T FROM PAGE 9-WHO SAYS CASSETTE TAPE IS DEAD?

; Available. Use STAT.COM to determine the size of PIP.COM,
; as this size varies according to the version of CP/M in use.
; Then, use DDT.COM to load it into the low part of PIP.COM,
; as follows:
;
; A: DDT PIP.COM
; -BYTE.HEX
; R
; <CTRL-C>
; A: SAVE 28 NNEWPIP.COM SAVE AS NNEW COMMAND FILE
;
; The 28 is the number of blocks to save for PIP.COM V1.4.
; Use the value you determined as directed above.
; This program expects the normal CP/M entry point at 0000H,
; and also SLOGE or CUTER at 0000H. These assumptions can be
; changed by changing equates in the text file.
;
; ORG 103H ; IN PIP CUSTOM AREA
;
; THESE ARE THE ENTRY POINTS FOR PIP'S INP: AND OUT:
; JMP READ ; READ FROM TAPE
; JMP WRITE ; WRITE TO TAPE
;
; ON ENTRY TO READ, DATA CONTAINS THE LAST BYTE
; READ IN FROM TAPE. ON EXIT, IT CONTAINS THE
; CURRENT BYTE READ OR <CTRL-Z> ON ERROR OR EOF.
; DATA DB 0 ; DEFAULT VALUE
;
; READ:
; LDA FCBAS ; GET FILE ACCESS BYTE
; CPI 0FFH ; FILE OPEN FOR READ?
; CNI OPEN ; IF NOT, REOPEN
; HERE MEANS FILE IS OPEN FOR READ, DO IT.
; LDA DATA ; WAS LAST CHAR <CR>?
; CPI CR
; JNZ READ1 ; JUMP IF NOT
; STA DATA ; IS WAS, SO SUPPLY <LF>
;
; READ1:
; MVI A,1 ; TAPE FILE 1
; CALL RDYT ; GET NEXT BYTE
; JC TERR ; JUMP IF READ ERROR
; CPI CTRLZ
; JZ TERR1 ; JUMP IF EOF CHARACTER
;
; THE PROTEUS STANDARD TAPE FILE DOES NOT
; CONTAIN <LF>'S, BUT JUST IN CASE...
; CPI LF
; JZ READ1 ; IGNORE <LF>'S
; STA DATA ; ELSE NORMAL RETURN
;
; HERE ON EOF OR TAPE READ ERROR
; TERR:
; LXI D,REERR ; ASSUME READ ERROR
; MVI C,REBUF ; IN FLAG SET IP IF O-F)
; CPI ENTRY ; TELL USER IF READ ERROR
; TERR1:
; CALL CLOSE ; CLOSE FILE REGARDLESS
; MVI A,CTRLZ
; JZ TELL PIP NO MORE DATA
;
; DATA RET
;
; WRITE:
; MOV A,C ; CHECK FOR E-O-F CHAR
; CPI CTRLZ
; JZ CLOSE ; JUMP IF TRUE
; JCLOSE WHEN PIP SIGNALS EOF BY SENDING <CTRL-Z>,
; BUT NOT NECESSARY TO WRITE IT TO TAPE.
; ELSE MAKE SURE FILE IS PROPERLY OPEN
;
; PUSH B ; SAVE CHARACTER
; LDA FCBAS ; GET FILE ACCESS BYTE
; CPI OPEN ; FILE OPEN FOR WRITES?
; CNI OPEN
; JF NOT, REOPEN
; HERE MEANS FILE IS OPEN AND READY FOR WRITE.
; FIRST, CHECK FOR SPECIAL CHARACTERS.
; MVI B,C ; ENTER FILE NAME MSG
; CALL REP ; WRITE MESSAGE & GET REPLY
; CALL MFN ; MOVE FILE NAME TO DREAD
; LXI D,RMSG ; "READY TAPE..." MSG
; CALL REP ; WAIT FOR <CR>
; XRA A ; FORCE FILE CLOSED
; STA FCBAS
; LXI H,DREAD ; OPEN CUPS TAPE FILE
; MVI A,1
; JMP OPEN ; AND RETURN FROM THERE
;
; WRITE BUFFER FROM (DE), THEN GET REPLY
; REPLY:
; MVI C,PRBUF ; WRITE BUFFER CODE
; CALL ENTRY
; LXI D,BUFF ; INPUT BUFFER
; MVI D,RBUF
; MVI A,20H ; PLENTY OF SPACE
; STA X ; FLAG BUFFER SIZE
; CALL ENTRY ; GET RESPONSE
; LXI D,CRLF
; MVI C,PRBUF
; JMP ENTRY ; AND RETURN FROM THERE
;
; CLOSE THE OPEN TAPE FILE
; CLOSE1:
; MVI A,1 ; CLOSE TAPE FILE
; JMP FCLOS
;
; MOVE FILE NAME TO DREAD
; MFN: LXI B,BUFF+1 ; GET BUFFER LENGTH
; MVI A,M
; ADD L
; MOV L,A
; (HL) = LAST CHAR IN BUFFER
; INX H ; JUST PAST LAST CHAR
; MVI A,20H
; LXI B,BUFF+2 ; SKIP END OF BUFFER
; LXI D,DREAD ; SKIP LENGTH BYTES
; LXI D,H
; MNP1: MOV A,M ; GET A CHAR
; CPI 23H ; JUMP OUT ON FIRST SPACE...
; JZ TERR ; OR CONTROL CHAR
; STA D ; ELSE STORE IT
; INX D
; INX H
; JNZ DCH ; DONE 5 YET?
; XRA A ; JUMP IF NOT
; STA D ; ELSE MARK END AND ABORT
;
; MNP2: XRA A ; NAME MUST BE ZERO-FILLED
CON'T FROM PAGE 10-WHO SAYS CASSETTE TAPE IS DEAD?

STAX D
INX D
DCR B
JNZ RFH
INC D
STAX D
RET

;***MESSAGES***
 RDWR: DB CR
 DB LF
 DB 'READ ERROR'; FALL THRU
 CRLF: DB CR
 DB LF
 DB '$'

 NAME: DB 'tape name:'
 RNG: DB 'Start tape, hit <CR>:'
 SPACE EQU $ ; THE ADDRESS HERE MUST BE <= 200H

 ;***EQUIVATES***
 ENTRY EQU 5 ; CR/M BIDOS CALL
 FRBUP EQU 9 ; FUNCTION CODES
 RDBUP EQU 10
 SOLOS EQU 0000H ; SOLOS OR CUTER ROM ADDRESS

 FOPEN EQU SOLOS+07H ; SOLOS ROM ENTRY POINT ADDRESSES
 PCLS EQU SOLOS+0AH ; BYTE ACC. FILE OPEN
 DBLS EQU SOLOS+10H ; BYTE ACC. FILE CLOSE
 WRDST EQU SOLOS+10H ; READ A BYTE
 WRDST EQU SOLOS+10H ; WRITE A BYTE

 DREAD EQU SOLOS+82CH ; DUMMY TAPE HEADER
 PCBS EQU SOLOS+855H ; TAPE FILE CONTROL CHAR
 BUFX EQU SOLOS+963H ; PUT IN TAPE BUFFER #2

 TAB EQU 09H
 LF EQU 0AH
 CR EQU 0DH
 CTRLZ EQU 1AH

SOL Vanishing Trick
It Almost Works

In the last issue, I reported an easy modification to make the Sol into a 64K machine by making the Sol's dedicated address space go away. This trick that disables the Sol's address decoder apparently has some side effects that may or may not interfere with the way you want to use it. One reader reports that with the mod installed, Sol not only responds to the 0000H addresses it normally does, but also to the D's and E's blocks. If you don't refer to these addresses except when the Sol is "vanished" out, this may not be a problem, but it certainly plays havoc with the system if you have the Sol operating in supposedly normal mode.

Another problem that I suspect, but haven't investigated personally, is that with the Sol in "normal" mode, writing into the screen RAM will also write into the overlapping S-100 bus RAM. With the Sol vanished, writing into the bus RAM should have no effect on the screen, though.

The Micro Complex 80/64 modification board, described in the cover story of this issue, is a more sophisticated way of getting Sol's address space out of the way, as well as making many other improvements to the Sol. Look into it.

SOLUTION TO THE FILE DRIVER FOR NEC SPINWRITER
M.K. Gauthier

Dear Stan,

I found a solution to the file driver problem for my NEC Spinwriter. After talking with you about two weeks ago about the problem, I went to work trying to make the NEC file driver on the H-5 disk work with "Mail Master" and "Mail Sort". I guess I am not smart enough to get it to work. So I went back to the SOIL (high speed) file driver on "Mail Master" and "Mail Sort". By placing switch S on the B switch DIP switch inside the NEC to the "down" position, the printer works fine, except it only prints left to right. For "WordWizard" and my custom software I place the switch to the "up" position and use the H-5 file driver and the printer prints bi-directionally. To get to the switch easily, I made a simple tool by unbending a paper clip and placing a small hook on the end. It just slides down the front of the printer making easy contact with the DIP switches.

I have not tried this yet with the "General Ledger" program but I would expect the same results as with the "Mail Master" and "Mail Sort" programs.

I hope this information is helpful to others in the users group.

Question: Is anyone working on an Electronic Dictionary to be used with "WordWizard"? I would be interested in purchasing it.

Keep up the good work Stan,

Gauthier Industries
Dr. Michael N. Gauthier, P.E.
President

9550 Gallatin Road
Downey, California 90240
213-923-0131

CORRECTION ON EPSON MX-80:

Wordcraft

Please note the error in the pin connection chart for the Epson MX-80 (Process News, Jan.-Feb. '81; IV:3). The correct chart is the following:

SOL Parallel Port

| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |
| 9 |

MX-80 Parallel Port

| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |
| 9 |

534-2212
Function to set VIDEO DISPLAY SPEED.
10 REM EXAMPLE:
  20 X=THE(10) \ PRINT "HELLO" \ X=THE(0)
30 END
9000 DEF FNS(X)
9005 IF X=0 OR X=255 THEN X=0
9100 PRINT CHRS(27)+CHRS(8)+CHRS(4)+CHR$(X),
915 RETURN 0 \ FRND

Function to print LITERAL VALUE OF CONTROL CHARACTERS.
10 REM EXAMPLE:
  20 PRINT FNL(13)
30 END
9000 DEF FNL(X)+CHR$(27)+CHR$(4)+CHRS(6)+CHR$(X)

Function to effect DIRECT CURSOR ADDRESSING.
If Y (line) value exceeds 15, then remain on current line.
10 REM EXAMPLE:
  20 PRINT FNAM(15,6),"HELLO"
30 END
9000 DEF FNAM(X,Y)
9005 IF X=15 THEN 9015 \ X=CHR$(27)+CHR$(4)+CHR$(X)
9100 PRINT X, \ Y=CALL(49462) \ X=x"'" \ GOTO 9020
915 X=CHR$(27)+CHR$(4)+CHR$(X)+CHR$(2)+CHR$(7)+CHR$(Y)
9200 RETURN X \ FRND

NOTE: The cell statement at line 9010 uses SOLO routines to
remove the cursor at the same time the cursor position is moved
to the beginning of the line. This is useful in some programs,
and unnecessary in others. The CALL statement can be deleted if
not needed.

NOTE: This function may not work properly if the scroll
counter has changed since the last Clear Screen operation. [Clear Screen:
PRINT CHR$(11)] Additional statements in the direct cursor
addressing function could take into account the value of the
scroll offset (BO: UCRD). As a final note, many individuals have asked for my advice as
to what Assembly is best to use with the SOL-20. As far as I'm
concerned, you can do no better than ALS-8 by Processor
Technology. Micro Complex 256.256 Main St., Mission Viejo, CA
92691] can supply you with a version relocated to run at 90H,
using SOL cassette or North Star DOS (any version). I have heard
many users compare the VDM file editor in ALS-8 with the popular
and powerful Electric Pencil word processor editor.

Sincerely,

Wm. David Armstrong

excl.

2000 \ North Star release 4 Disk Operation System
2001 \ # 1/0 routines with SPEAKER for print eject
2002 \ 0185
2003 \ 0185 \ (C) 1976 ARMSTRONG CORPORATION
2004 \ 0190 \ P.O. Box 1030
2005 \ Costa Mesa, CA 92627
2006 \ 0195 \ (c) 1978 U.S. PATENT
2007 \ 0190 \ U.S. 3,718,215
2008 \ 0200 \ and foreign applications.
2009 \ 0205 \ The following routines do not
2010 \ 0210 \ support the addition of a new
2011 \ 0215 \ and useful system command which permits the renaming of
2012 \ 0220 \ disk files. To activate the use of these routines, the
2013 \ 0225 \ following routines still have to be added
2014 \ 0230 \ 0235
2015 \ 0240 \ 1. Change the "SET" line in the DOS command table at
2016 \ 0245 \ 210H from 210F to the address of the DEL (2190H).
2017 \ 0250 \ 2. Increase the value at 2107H to reflect the new
2018 \ 0255 \ number of command table entries (from 09H to 0FH).
CON'T FROM PAGE 13-PRINT SPOOLING FOR N*

2950 0255 END OF PROGRAM *
SOL KEYBOARD TONE CIRCUIT / WITH 4 TONE LEVELS
by H. Leon Winter

Dear Stan,

Nov 22, '81

I've been enjoying Protees / News for a long time. Being a fellow SOL owner, I'm most thankful that this group exists! Except in matters of dues and membership, I've not written in before as I live in the Philippines and am sort of out of the loop that is going on. As it happened though, I was discussing a couple of points in the latest issue (March/April '81) that came to me recently with my wife and she encouraged me to put them in a letter to you so here it is.

First a little about my particular system. It's a SOL-20 with 32K of RAM in a Heinzl verity of boards. I use four cassettes (Supercables) as my mass storage and a ledex video 100 for display. Printed output comes through a simple interface connected to Sol's parallel port and to a 20 year old TTYL (Selectric). The old printer accounts for the random unreadable printing you are looking at; not the SOL. I hope to pick up a used Phoenix in about a year which will connect nicely to a dual parallel port 5-100 board that I have.

I was most encouraged by the mention of the coming 24x80 video modification for Sol mentioned in the Mar/Apr issue. I say "Hurray" for the Calif mfr who is investing in this. I believe he will immediately be sold out!

I have a simple fix for the dead key problem the Emile Roth asked about. In the 3 years that I've had my SOL, I've had about 5 different keys do this. What I've done is to remove the metal keyboard support frame (about 16 little screws) from the board, then out a small disk from household aluminum foil the right size and glue to the aluminum already on the key bottom. I use regular household glue with no repeat of the problem in the same place. Be sure the shiny side of the new pad it toward the circuit board. Also while you have the keys separate from the board, this is a good time to do cleaning of the whole keyboard get dusty you know!

Adding tones to Sol's keyboard is not a new trick. I've seen many articles on it, but included is a schematic for one. My dad had one of interest to some as it gives different tone levels as well as main keyboard outputs. These are unsifted, shifted (shift clock), alpha shift (upper case) and control. These were simply put on a small board and attached to the right underside of the keyboard along with a very small speaker. There is plenty of sound so the speaker does not need to be put outside. I soldered directly to points on the underside of the board. This has been working trouble free now for over 2 years.

In looking at "Sells on my SOL" (Mar/Apr), I think the idea of a bell is good. What bothers me is tying up the parallel port for it. Have you considered using one of the 2 unused outputs from the output port decoder shown on X-15? This is U4a (74HCT123) pins 7 and 11. In fact, on my drawing, pin 11 says in parentheses (alarm). I've not checked it out, but I think that pin 7 would decode to part out FF and pin 11 would be part out FC. This would be a neat way to get a bell, etc, and not give up the parallel port! Something for nothing? I'd like to hear from someone who may have done this.

My thanks to Albert Woodmill for the fine program to renumber lines in software 6.1. Now if we had just one more fix, SUTT would be really convenient to use. This would be for the editor to auto tab to the next field as source is being typed in.

Thank you, Stan, for continuing to publish a fine source of information, reviews and how to's. It helps make owning a SOL special.

H Leon Winter
Summer Institute of Linguistics
Masulki, Malaybalay
Bukidnon, Philippines, 8201

LATE POST-SCRIPT TO 24X80 REVIEW
Continued from page 1

I just spent two days working with the 24x80 module after getting it back from Micro Complex. The bug I had did turn out to be a subtle timing problem that was fixed in later SOLs but not on my old one, according to Bob Nog. He will report the improvement in Protees. I have made a quick patch to let PDP-60 talk with the 24x80 screen, and have no problems. Programs like EDIT with their own video driver won't work until they are changed, but the character-oriented console I/O works like a charm. It even beeps instead of giving you the little bell symbol on the screen. More in the future issues.
Enclosed is a check for another year's subscription to
Proteus.

I noted with interest the article by Mr. Zezatsky in the
Nov./Dec. 1980 Proteus dealing with converting PTDS disk files
to CP/M files. I encountered the same problem several months
ago when I first started playing with CP/M. However, I took
a somewhat different approach. Enclosed is the listing of a
program (DOWNLOAD) I wrote to ease the burden somewhat.

The program resides on a CP/M disk configured for 38K
memory. By restricting CP/M to low memory it is possible
to have both CP/M and PTDS active at the same time.

To use the program I first boot on a PTDS disk, remove
the disk, UPPER CASE-REPEAT and BOOT on the 38K CP/M disk.
I then insert the PTDS disk in drive l and type
DOWNLOAD CP/MFILE PTDSFIL. The rest is automatic. The program
is being downloaded (note the implied relationship between PTDS and
CP/M) and the program removes excess spaces from the file,
replacing them with tabs and appends the necessary line-feeds
up on encountering carriage-returns.

In another vein, I have found SOLOS very useful in
transporting CP/M files from one SOLO system to another,
especially when there is a disk incompatibility between the two
systems. To write a file onto a SOLOS tape, I use DDT to load
the file into memory, then type

\[ \text{DCB} \] (get to SOLOS, set file type to C)
\[ \text{SAVE} \]
\[ \text{EX} \]

Going from SOLOS to CP/M might look as follows:

\[ \text{AUPPER-CASE REPEAT} \]
\[ \text{GET EDIT} \]
\[ \text{SAVE 19 EDIT.COM} \]

And that's all there is to it. CP/M Text files as well
as executable files can be transported in this manner.

Now for a commercial message. After having been exposed
to PP's fine editor, EDIT, I found it very frustrating trying
to use CP/M's EDIT. Therefore, one of my first CP/M
acts was to write an EDIT-like editor for CP/M. It has most
of the regular EDIT features such as full cursor control with
forward and backward scrolling, etc. In addition, it maintains
tabs internally as tabs while expanding them on the screen.
This can significantly reduce the amount of disk space required
for a text file. Additional features include "block" defined
blocks, block moves, block deletes, block listing to a printer,
writing a block to a side disk file, inserting a side disk file,
string searching forward and backwards plus several other
goodies.

The editor is presently configured for use with CP/M
on the SOL. I also have a version for a non-SOL (hiss) system
using a TELEVIDEO terminal. Upon request I can probably
configure its for other terminals which have an addressable
cursor. If anyone is interested, I am selling the editor for
$14.95 on a HELIOS compatible disk. The editor can also be
obtained in an 8-inch single or double density, diskette from
Micro-Products and Systems, 2387 Center St, Chippensport, N.Y. 37660. Or if they are willing to accept a
25% delay I can furnish the editor on N" disks. If I can
send it on a SOLOS-CUTS tape as outlined above. I will also
include seven other utilities with the editor.

Another program which may interest someone is a disk
recuperation program I wrote for CP/M. I have already used
several times to undelete files and to recover text files from a
crashed disk. At the present time, it is still in the development stage. I.e. I'm
still adding goodies to it. As soon as it is "complete" the program
(named LAZARUS) I will offer it for sale. In the mean time, if
anyone needs a disk recovered or some un-ERASing done, they
should send the disk to me, describe the nature of the problem
and I'll see what I can do. Note, once the crash or erase has
occurred don't write anything else to the disk before it has been
recovered. All files on the disk will be kept in strict
confidence. Not only that, but I won't charge much, if
anything.

Hang in there and keep up the good work.
CON'T FROM PAGE 16-PTDOS TO CP/M FILE TRANSFER

MOV C,A ;SAVE NUMBER OF CHAR'S IN C-REG
LXI H,82H ;POINT TO FIRST CHARACTER
GETNA: MOV A,N
INX H ;LOOK FOR SPACE SEPARATING FILE NAMES
CPI 9 ;IF FOUND DO IT
JNZ ERR1 ;IF MUST HAVE TWO FILES GIVEN
JMP GETNA
GOTNA: MOV A,C ;C-REG CONTAINS REMAINING COUNT
CPI 9 ;SEE HOW LONG PTDOS FILE NAME IS
JNC ERR2 ;IF NOT LONGER THAN 9 CHARACTERS
LXI D,P/NAM ;POINT TO STORAGE FOR PTDOS FILE NAME
GOTN1: MOV A,N
STAX D ;MOVE THE NAME
INX H
INX D
DCR C ;TILL ALL THE CHARACTERS ARE USED UP
JNZ GOTN1
XCHG ;PUT ADDRESS IN H,L
MVI M,'/' ;APPEND A '/1 (CR) ' TO
INX H
MVI M,1'h ;PTDOS FILE NAME
INX H
MVI M,CR ;WILL BE LOCATED ON DRIVE 1
;ENABLE ERROR LEVELS 1,2 RETURNS FROM PTDOS
;DON'T ENABLE LEVEL 8 ERRORS-BAD STUFF
LMLD SYSGLO ;GET ADDRESS OF SYSTEM GLOBAL AREA
LXI D,9 ;POINT TO START OF ERROR TRAP
DAD D ;ADDRESSES
MVI A,80H ;ENABLE LEVEL 2 TRAP RETURN
MOV A,M ;SET UNIT 1=DEFAULT UNIT FOR PTDOS
INX H
MOV M,A ;SPECIFY UNIT 1
CALL SYS
DB 12 ;SET UNIT AS DEFAULT
JMP PERR ;IF AN ERROR IS DETECTED
;OPEN PTDOS FILE
;NOTE: THE FOLLOWING DOES NOT CHECK FOR FILE TYPE
LXI H,8 ;STATIC BUFFERING
LXI D,P/NAM ;POINT TO FILE NAME
CALL SYS
DB 1 ;OPEN THE FILE
JMP PTER1 ;ERROR IF NOT PRESENT
STA FNUN ;SAVE THE FILE NUMBER
LXI H,8 ;ZERO NUMBER OF CHARACTERS
SMLD PTENT ;RECEIVED FROM PTDOS FILE
;CPM FILE NAME PARSED INTO FCB AT 05CH BY CPY
;NO NEED TO FOWL WITH IT OTHER THAN TO REQUIRE IT LIVE
;ON DRIVE A AND TO INITIALIZE A FEW OF THE PARAMETERS
MVI A,1
STA FCB ;SET FCB ADDRESS=DRIVE A
SRA A ;SET REST OF FCB PARAMETERS
STA FCB+12 ;TO ZERO
STA FCB+14 ;SET S2=0
STA FCB+15 ;SET CURRENT EXTENT=0
STA EOF ;CLEAR END-OF-FILE FLAG
;TRY TO OPEN CPM FILE. IF IT ALREADY EXISTS THEN
;ASK USER IF OK TO DELETE IT. IF OK TO DELETE THEN
;DELETE OLD FILE AND CREATE A NEW FILE
;ELSE CREATE THE FILE AND THEN OPEN IT
LXI D,FCB ;POINTER TO FILE NAME IN D,E
MVI C,OPEN ;OPEN COMMAND IN C-REG.
CALL BDIS ;ORA A ;IF COMES BACK #FFH THEN NOT THERE
JMP CREATE ;IF NOT THERE CREATE AND OPEN
LXI D,NP/2 ;PRINT MESSAGE STATING THAT CPM
MVI C,PSTRIN ;FILE ALREADY EXISTS
CALL BDIS ;ASK IF WANT TO DELETE
CALL ASK0K ;GET RESPONSE
JNZ QUIT ;POINT TO FILE CONTROL BLOCK
LXI D,FCC ;TELL CP/M TO DELETE IT
CALL BDIS ;AND DO IT
CREATE: MVI C,CREATE ;FILE IS NOT THERE SO CREATE IT
LXI D,FCB ;POINTER TO FILE NAME
CALL BDIS ;ORA A
JM ERR3 ;IF MINUS THEN CAN'T CREATE
LXI D,FCC ;-INDICATE DISK OR DIRECTORY FULL
MVI C,OPEN ;TELL CP/M TO CREATE A NEW
CALL BDIS ;FILE
ORA A ;IF A-REG CONTAINS A #FFH ON RETURN
JM ERR3 ;HAVE PROBLEMS OPENING FILE
;NOW BEGIN THE ACTUAL FILE TRANSFER
;PTDOS TEXT WILL BE READ INTO A BUFFER AT PTBUF
;CPM TEXT WILL BE STORED AT THE DEFAULT DMA ADDRESS 80H
;FIRST READ IN A BLOCK OF TEXT FROM PTDOS
CALL RDPT ;READ IN A BLOCK
LXI H,PTBUF ;SET PT POINTER TO START OF BLOCK
SMLD PTADD ;AND SAVE IT
LXI H,88H ;POINT CP/M'S POINTER TO 88H
SMLD CPMA ;AND SAVE IT
PROCES: CALL GETCH ;GET A CHARACTER
CPI ' ' ;IS IT A SPACE
JZ SPACE ;IS IT IN SPACE
CPI ' ' ;IS IT A SPACE
JZ SPACE ;IS IT IN SPACE
CPI CR ;IS IT A CARRIAGE RETURN
JZ EOL ;IS IT A CARRIAGE RETURN
CPI ' ' ;IS IT A SEMICOLON
JZ EOL ;IS IT A SEMICOLON
CPI 2H ;IS IT A 
JZ EOL ;IS IT A 
CPI 2H ;IS IT A 
JZ EOL ;IS IT A 
CPI LF ;OTHERWISE PUT THE CHARACTER IN CP/M'S
JZ PROCES ;Otherwise put character in CP/M's
CALL PUTC ;BUFFER AND NEXT CHARACTER
JMP PROCES ;PROCESS FOR SPACES
;IF TWO OR MORE CONSECUTIVE SPACES THEN REMOVE AND
;REPLACE WITH A TAB
SPACE: CALL GETCH ;SEE IF NEXT CHARACTER IS A SPACE
CPI ' ' ;IS IT A SPACE
JZ SPCC ;IS IT A SPACE
CPI ' ' ;IS IT A SPACE
JZ SPCC ;IS IT A SPACE
CPI ' ' ;IS IT A SPACE
JZ SPCC ;IS IT A SPACE
CPI ' ' ;IS IT A SPACE
JZ SPCC ;IS IT A SPACE
PUSH PSW ;OTHERWISE SAVE CHARACTER
MVI A,' ' ;REPLACE ORIGINAL SPACE
CALL PUTC ;IN CP/M'S OUTPUT
POP PSW ;AND THEN ADD IN PRESENT CHARACTER
JMP PROCES ;BACK TO NORMAL PROCESSING
;INSERT A TAB AND IGNORE FOLLOWING SPACES
CON'T FROM PAGEx 17-PTDOS TO CP/M FILE TRANSFER

; SPCOU: MVI A,89H ;PUT IN THE TAB CALL PUTC ;PUT IN CP/M'S OUTPUT CPI ;KEEP LOADING TILL NO MORE SPACES JZ SPCO1 ;BACK TO NORMAL PROCESSING

; SPCO1: CALL GETCH ;GET NEXT CHARACTER CPI ;KEEP LOADING TILL NO MORE SPACES JZ SPCO1 ;BACK TO NORMAL PROCESSING

; PROCESSING FOR END OF LINE (CARRIAGE-RETURN)
; NEED TO SEND CR AND ADD A LINE-FEED

; EOL: CALL PUTC ;PUT IN CARRIAGE RETURN MVI A,LF ;AND THEN INSERT A LINE-FEED CALL PUTC ;PUT IN THE CHARACTER MVI A,LF ;JMP PROCES ;BACK TO NORMAL PROCESSING

; THE FOLLOWING: TRANSMITS THE REMAINDER OF THE LINE
; WITH NO MODIFICATIONS, THUS PREVENTING UNWANTED
; COMPRESSION OF SPACES SUCH AS WITHIN A DB '"'
; NOTE THAT SPACES FOLLOWING A MVI A,'x' TYPE CONSTRUCT
; WILL NOT BE COMPRESSED.

; PASSOV:
CALL PUTC ;PUT THE CHARACTER TO CP/M CALL GETCH ;GET THE NEXT FROM PTDOS CPI ;LOOK FOR THE END OF THE LINE JZ EOL ;IF FOUND, ADD A LINE-FEED JMP PASSOV ;OTHERWISE, KEEP ON TRUCKIN

; THE FOLLOWING ROUTINE GETS A CHARACTER FROM PTDOS
; FIRST THE PRESENT CHARACTER COUNT IS TESTED TO
; DETERMINE IF WE STILL HAVE SOMETHING IN THE BUFFER,
; IF NOTHING IN THE BUFFER THEN WE WANT TO READ IN A
; BLOCK OF DATA.

; GETCH: LHLD PTCNT ;GET PT'S CHARACTER COUNT MOV A,L ;ORA H CZ RDPT ;IF ZERO THEN READ IN SOME MORE DCH H ;REDUCE THE COUNT BY ONE SHLD PTCNT ;AND SAVE IT. LHLD PTADD ;GET THE ADDRESS OF THE CHARACTER MOV A,M ;AND GET THE CHARACTER INTO THE A-REG INX H ;BUMP ADDRESS FOR NEXT GETCH SHLD PTADD ;SAVE IT JMP ;AND RETURN WITH CHAR. IN A-REG

; THE FOLLOWING ROUTINE PLACES THE OUTGOING CHARACTER
; INTO CP/M DATA BUFFER. FIRST IT CHECKS IF THE DATA BUFFER
; IS FULL (128) CHARACTERS. (ADDRESS 88H + 128)=ADDRESS 100H
; IF THE BUFFER IS FULL IT IS WRITTEN TO THE CP/M FILE ON
; DRIVE 8.

; PUTC: MOV B,A ;SAVE CHARACTER IN THE B-REG LHLD CPMD ;GET ADDRESS OF CP/M DATA MOV A,H ;SEE IF REACHED ADDRESS 100H YET CPI ;DCH WRCMP ;IF WE HAVE THEN WRITE BLOCK OUT MOV M,B ;PUT CHARACTER IN BUFFER INX H ;BUMP ADDRESS SHLD CPMD ;AND SAVE IT JMP ;KEEP ON TRUCKIN

; THE FOLLOWING ROUTINE WRITES A BLOCK OF DATA TO CPM
; (ASSUMED ON DRIVE 8).
; AFTER THE DATA IS WRITTEN, THE DATA ADDRESS IS RESET

; WRCMP: PUSH B ;SAVE CHARACTER MVI C,WRITE ;ISSUE WRITE COMMAND LXI D,FCB ;POINT TO FILE CONTROL BLOCK CALL BDOS ;DO IT

; POP B ;GET CHARACTER BACK LXI H,88H ;RESET DATA BLOCK ADDRESS RET

; READ A BLOCK OF DATA FROM PTDOS (DRIVE 1)

; RDPT: LDA EOF ;SEE IF END-OF-FILE WAS FOUND ORA A ;LAST TIME JNE ALDON ;IF SO, THEN WE ARE ALL DONE LDA FNAM ;ELSE GET FILE NUMBER LXI B,288H ;READ IN 268 BYTES (WHY NOT?) LXI D,PTBU ;POINT TO WHERE IT GOES CALL SYS ;TELL PTDOS ABOUT IT DB 3 ;MABEOF ;IF HERE, CHECK IF END-OF-FILE

; RDPT1: CALL NEGBC ;IF HERE, NOT END OF FILE LHLD PTCT ;COMPUTE HOW MANY CHARACTER READ IN RWL ;SAVE THE BYTE COUNT MOV A,H ;IF GOT ZERO BYTES THEN DONE ORA L ;JZ ALDON LXI H,PTBU ;RESET PT DATA BUFFER ADDRESS SHLD PTADD ;RETURN WITH COUNT IN H,L RET

; TEST IF END-OF-FILE REACHED ;

; MABEOF: CPI 18H ;IS IT END OF FILE JNZ PTFERR ;NOT AN END-OF-FILE STA EOF ;SET END-OF-FILE FLAG JMP RDPT1 ;CONTINUE AS THOUGH NO END-OF-FILE

; NEGBC:
MOV A,C ;COMPLEMENT C-REG CMA MOV A,C ;COMPLEMENT B-REG CMA MOV B,A ;INCERENCE B,C INCX H RET

; DATA TRANSFER HAS BEEN COMPLETED FROM PTDOS ;NOW NEED TO FILL THE REMAINDER OF CP/M'S TEXT BUFFER
; WITH IA'S (CONTROL-Z). (CPM USES IA's TO SIGNIFY END OF
; TEXT).

; ALDON:
LHLD CPMD ;GET END OF CP/M'S DATA BUFFER ALL1: MOV A,H ;TEST FOR 100H ADDRESS CPI ;JZ ALL2 ;WHEN THERE, ALLLL DONE MVI M,1AH ;FILL IN A 1A INX H ;NEXT LOCATION JMP ALL1

; WRITE LAST CP/M DATA BLOCK TO DISK, CLOSE FILES
; AND GO HOME

; ALL2: MVI C,WRITE ;WRITE BLOCK TO DISK LXI D,FCB CALL BDOS MVI C,CLOSE LXI D,FCB CALL BDOS LDA FNAM CALL SYS DB ? JMP PTFERR
CON'T FROM PAGE 18-PTDOS TO CP/M FILE TRANSFER
QUIT: MVI A, #0C3H ;PUT IN THE JUMP AT 0 WHICH
STA 0 ;PTDOS MESSUS UP
JMP 0 ;AND GO BACK TO CP/M
;
;PRINT ERROR MESSAGE FROM PTDOS WITH ERROR NUMBER
PTERR: PUSH PSW ;ERR NUM IN ACC
LXI D, #ERMS1 ;PRINT MESSAGE PTDOS ERROR 1
MVI C, PSTRIN
CALL BDDS
POP PSW
CALL NWOUT ;PRINT THE ERROR NUMBER
CALL CRLF ;DO A CR-LF
JMP ALLOM ;QUIT
;
PTERR2: LXI D, #ERMS3 ;PRINT MESSAGE STATING PTDOS
MVI C, PSTRIN ;FILE NOT FOUND
CALL BDDS ;JMP QUIT ;QUIT IF PTDOS FILE DOESN'T EXIST
;
PRINT A CARRIAGE RETURN, LINE-FEED ON CONSOLE
CRLF: LXI D, CRLF
MVI C, PSTRIN
JMP BDDS
;
; ROUTINE TO ASK USER FOR AN AFFIRMATIVE RESPONSE
ASKOK: MVI C, #C0FH ;CONSOLE INPUT
CALL BDDS
PUSH PSW ;HOLD CHARACTER WHILE WE
CALL CRLF ;GENERATE A CR-LF
POP PSW ;GET OUR CHARACTER BACK
CPI 'Y'; ;Y IS AN AFFIRMATIVE ANSWER
RZ
CPI 'Y'; ;Y IS ALSO AFFIRMATIVE
RZ
CPI CR ;AS WELL AS A CARRIAGE RETURN
RET
;
PRINT HEX CONTENTS OF THE A-REG
NWOUT: PUSH PSW
RAL
RAL
RAL
CALL NWOUT
POP PSW
;
; ACTUAL MESSAGES
CRLF: DB LF, CR,'S'
ERMS1: DB 'PT ERROR ' $'
ERMS2: DB 'EXPECTING FILE NAME', CR, LF,'S'
ERMS3: DB 'INVALID PTDOS FILE NAME', CR, LF,'S'
ERMS4: DB 'DISK FULL! ', CR, LF,'S'
ERMS5: DB 'PTDOS FILE DOES NOT EXIST', CR, LF,'S'
ERMS6: DB 'OUTPUT FILE EXISTS, DELETE? ' S'
MSG1: DB '--- DOWNLOAD PROGRAM ---', CR, LF
DB 'PLACE CP/M DISK IN DRIVE A(0), CR, LF
DB 'AND PTDOS DISK IN DRIVE B(1), CR, LF
DB 'INIT RETURN TO CONTINUE S'
ERR1: LXI D, ERMS1 ;NO FILE NAME GIVEN
MVI C, PSTRIN
CALL BDDS
JMP QUIT
ERR2: LXI D, ERMS2 ;FILE NAME TOO LONG
MVI C, PSTRIN
CALL BDDS
JMP QUIT
ERR3: LXI D, ERMS3 ;DISK FULL, CAN'T CREATE NEW FILE
MVI C, PSTRIN
CALL BDDS
LDA FNAM
CALL SYS
DB 7
JMP PTERR
JMP QUIT
;
; PTDOS EQUATES
SYS: EQU #8BCCH ;PTDOS SYSTEM ENTRY POINT
SYSSGL: EQU #8BCA5H ;ADDRESS OF POINTER TO SYS GLOBAL
CR: EQU #8DH ;CARRIAGE RETURN
LF: EQU #8AH ;LINE-FEED
;
; CPM EQUATES
BBDS: EQU 5 ;ENTRY POINT FOR BDDS
PCB: EQU 5CH ;ADDRESS OF CP/M DEFAULT FILE CONTROL BLOCK
COMIN: EQU 1 ;CONSOLE INPUT
CONOUT: EQU 2 ;CONSOLED OUTPUT
PSTRIN: EQU 9 ;PRINT $ TERMINATED STRING
OPEN: EQU 15 ;OPEN FILE
CLOSE: EQU 16 ;CLOSE FILE
WRITE: EQU 21 ;WRITE FILE SEQUENTIAL
CREAT: EQU 22 ;CREATE FILE
;
; DATA AREA
EOF: DB 0 ;FLAG FOR END OF FILE
PNUM: DB 0 ;PTDOS FILE NAME
PTADD: DW 0 ;OPERATION OF PTDOS READ BUFFER
CPMAD: DW 0 ;OPERATION OF CP/M WRITE BUFFER
PTCNT: DW 0 ;CHARACTERS REMAINING IN PTDOS BUFFER
PTNAM: DS 18H ;LOCATION OF PTDOS FILE NAME
DS 68H ;SAVE A LOT OF ROOM FOR STACK
STACK: EQU 5 ;SET THE STACK HERE
DS 10 ;ALLOW A LITTLE ROOM
PTBUF: EQU 5 ;LOCATION OF PTDOS INPUT BUFFER
END
GAMEPAC-1 DOESN'T RE-ACT:
"...I am able to run everything (Gamepac-1, Gamepac-2 &
TREK-80) on the tape except those items that make up Gamepac-1.
These programs load and execute except I cannot get any
re-action to input from my terminal.

I have an IMSAI with C/T, an ADM-3 which I use for input and
display. In addition I have a monitor and a VDM-1 P/T 1/0 and
I have historically had problems since many programs do not
use the 1/0 routines of the operating system.

The displays appear as expected on the monitor, input echo on
the monitor, but has no effect. Do you have any ideas or
suggestions?

Thank you for your assistance,

John E. Breden
921 Waterview Circle
Richardson, Texas 75080
SLAC PASCAL PATCHES & BENCHMARKS

I am writing with the solution to a problem I raised in the April/May 1980 issue of Proteus News and also to present some benchmark results based on the program in the August 1981 Interface Age.

Back in that April/May issue of Proteus News, I wrote about the problem of PTODS not normally printing the underline character on the screen. Helios library disk H-1 contains a little program INITPATH which alters some memory values in PTODS and fixes the problem. The trouble is that INITPATH only works with PTODS 1.4. I sent in the source code and asked if anyone knew how to modify it for PTODS 1.5.

I just discovered how yesterday. I tried using the Debugger to examine memory in the area of the changed values. You can use the Debugger without loading a program to a program. I set the Debugger so it would display 1000 instructions for the memory values in the area of PTODS 1.4 that was altered. I saved this information in a disk file and then printed it out on the printer. I did the same thing for PTODS 1.5. Then I looked for patterns of instructions in PTODS 1.5 that were similar to those that were altered in PTODS 1.4. This way I found the equivalent memory locations for PTODS 1.5 and I could substitute them in the program. The revised program follows the letter.

If you are familiar with the use of EDIT but not ASM, type the program in using EDIT and call it INITPATH. Then, after you get the PTODS prompt again type:

*ASM INITPATH,,/INITPATH

Now, use EDIT again and add INITPATH to the START.UP file. This will cause the corrections to be made automatically each time you boot-up PTODS.

This may seem like a trivial thing, but it sure felt good to be able to solve the problem now when I had no idea how to do it when I wrote before.

On to benchmarking. Recently, I've been interested in comparing the speed of the same program in different languages. This started when I ran a BASIC solar energy program from a recent BYTE. What seemed like a simple program took over 4 minutes to run. I had been waiting for a reason to try out Processor Technology FORTRAN and this seemed like a good opportunity. I translated the program into FORTRAN, sure that it would run in about 1/4 the time since the FORTRAN is a compiler.

The FORTRAN was only 10 seconds faster than BASIC! I still have trouble believing it. One of my reasons for getting FORTRAN was that I thought it offered great speed compared to BASIC. Some things about it are nice compared to PTC BASIC like long variable names. They make a program much more understandable.

Now I wanted to make more speed comparisons. The August 1981 Interface Age contains an article giving the results of 70 tests of a BASIC benchmark program on various micros. A Sol with Extended Cassette BASIC came in at 1812 seconds. Not too great, but better than some.

When I tried the program, as published, with Extended Disk Basic it wouldn't run because of the abnormal exiting from the for-next loop. It did run after modification.

Then I translated to program into FORTRAN, FOCAL and Slac Pascal. FORTRAN did a little better this time. FOCAL took almost 3 times as long as Basic and, with my translation, produced some errors. Slac Pascal was the standout at about 1/5 the time of FORTRAN.

The results of my testing are as follows:

BASIC 1863 seconds
FORTRAN 1227 seconds
FOCAL 5166 seconds
Slac Pascal 248 seconds

This made me wish, more than ever, that I could use Slac Pascal with real numbers and that I could get the 64k version working. When I try reassembling the interpreter and the RUN program for 64k, they don't work. I would be nice if someone who has done it could tell me what is the source code, on H-2, has to be changed.

I'll send a copy of INITPATH to the Helios Library along with a revised 6012 printer driver that allows the use of 88 character print wheels, of which there is a much wider character selection. It won't try to print one of the missing characters.

Cordially,

Michael A. McElvee
330 S. State Street
Ann Arbor, MI 48104

INITPATH UNDERLINE PATCH

TITL I/O INITIALIZER FOR NEW SLAC PTODS DSO.1.4.1 6/05/78
* MODIFIED 9/4/81 TO WORK WITH PTODS 1.5 BY M. MCELVEE
COPY MPTEPS
ORG 0100H
XEQ BEGIN
BEGIN MVI A,0 NOP
STA 0B75H ZAP CONIN RS WHICH SNAPS DELETES
MVI A,7FH BACKSPACE CR
STA 0B5PH CONIN BACKSPACE
STA 0B5AH CONIN ECHOES FOR BS
STA 0B5EH VDM USBS FOR BS
CALL SYS
DB RETOP
END

BASIC BENCHMARK PROGRAM

100 REM. INTERFACE AGE's benchmark program to
110 REM. discover the first 1000 prime numbers
120 REM
130 PRINT "Starting:"
140 FOR N=1 TO 1000
150 FOR K=2 TO 500
160 LET N=N/K
170 LET L=INT(M)
180 IF L=0 THEN LET K=500
190 IF M=1 THEN 220
200 IF M=L THEN 220
210 IF M=L THEN LET K=500
220 NEXT K
230 IF M=L THEN PRINT N;
240 NEXT N
250 PRINT CHR(7)
260 PRINT "Finished."
270 END
CON'T FROM PAGE 20-SLAC PASCAL PATCHES & BENCHMARKS

FORTRAN BENCHMARK PROGRAM

INTERFACE AGE's benchmark program to
discover the first 1000 prime numbers

REAL K,L,M,N
TYPE 'Starting'
DO 240 N=1,1000
DO 220 K=2,500
M=M/K
L=INT(M)
IF (L.EQ.0) GO TO 230
IF (L.EQ.1) GO TO 220
IF (M.GT.L) GO TO 220
IF (M.EQ.L) GO TO 240
220 CONTINUE
230 WRITE (1,235) N
235 FORMAT (14,8)
240 CONTINUE
TYPE '07'
TYPE 'Finished.'
STOP
END

PASCAL BENCHMARK PROGRAM

PROGRAM BENCHMARK (OUTPUT);

(*-----------------------------------------------------------------------
 INTERFACE AGE's benchmark program to
 'discover the first 1000 prime numbers

-----------------------------------------------------------------------*)

LABEL 220, 230, 240;
VAR K,L,M,N: INTEGER;
BEGIN
WRITELN ('Starting');
FOR N = 1 TO 1000 DO
BEGIN
FOR K = 2 TO 500 DO
BEGIN
M := N DIV K;
IF N < K THEN GOTO 230;
IF M = 1 THEN GOTO 220;
IF N MOD K = 0 THEN GOTO 240;
220: END;
230: WRITE (N:4);
240: END;
WRITELN ('CHR (103)');
WRITELN ('Finished.');
END.

FORCAL BENCHMARK PROGRAM

2.1 C INTERFACE AGE's benchmark program to
discover the first 1000 prime numbers
2.2 C

3.01 SET N = 0
3.02 IF N = M+1
3.03 IF (1000-N) 6.1
3.04 SET K = 1
3.05 SET K = K+1
3.06 IF (500-K) 3.13
3.07 SET M = N/K
3.08 SET L = FLOOR

3.09 IF (L) 9.9,3.13,3.10
3.10 IF (L-1) 3.13,3.12,3.11
3.11 IF (M-L) 9.9,3.14,3.12
3.12 GOTO 3.05
3.13 TYPE '$4.00,N'
3.14 GOTO 3.02

6.1 TYPE 'Bell',
6.2 TYPE 'Finished.'
6.3 QUIT

REGARDING RICHARD BJORGNSAL'S RANDOMIZE FOR PT BASIC
BY MURRAY MACKENZIE

I was unaware of any need to implement a randomize function for PT. BASICS. I am unable to find any repetition in the RND function providing only the RND(0) is used. Once "RND" is given a numerical argument other than "O", anywhere in the program, a seed chain is established and even RND(0) becomes predictable thereafter. Richard's mini-program will not fix it. Re-running the program will not fix it. Scratching and re-loading the program will not fix it.

Removing any statement in the program that gives a numerical argument other than "O" to RND will fix it.

Example: Try this....

10 FOR I=1 to 6:PRINT RND(0):next I
(Run that program several times, observing randomness)
.....now add this line..
20 PRINT RND(4)
(Run again, several times...)
On the second run, after RND(4) has been "seen", the RND(0) function becomes repetitive. Remove 20 and run again, all is random .... Or am I, missing a point?

However, Applesoft and the BASICS on "Softcard" can make good use of Richard's program. They require seeding.

Murray MacKenzie
38 Inniswood Drive,
Scarborough, Ontario
CANADA MIR 1ES

Editor's Note:
The problem with use of RND(0) is that the next time you load BASIC and run your program it will behave exactly the same as it did the last session, since the number generator will start again at the beginning. Seeding allows you to get a different series of random numbers in each unrelated session. But not all numbers are good seeds. Depending upon the pseudo-random number generator algorithm, certain seeds will produce a relatively short series of unique numbers before beginning to repeat. Perhaps someone who has the BASIC source code (Proteus P12) and who knows more about random number generators could make some recommendations for getting good seeds....
MY DELAY LINE FAILED
Robert A. Ellingsworth

I have been a member of PROTEUS for almost two years and find the newsletter extremely valuable. I wish to pass along a couple of possible 7405A delay line solutions and, of course, some questions of my own.

The delay line is apparently a non-standard part made by Data Delay Devices (355 Lakeview Dr., Clifton, NJ 07013). The item is a 7405A hex inverter that has various inductance/capacitance sections which determines the delay. The required delays are 100, 150, 250, and 350 nanoseconds (see page 5-5 of the Users Manual). The Data Delay Devices product line includes a number of delay lines with ten sections. The DDU-31-100500 has 10 sections with 50ns delay each, while the second section is 7-section long with 25ns delay time. Similar results could be obtained with PM INTLD-500 from Engineered Components Company, 350 Sacramento Drive, San Luis Obispo, CA 93401.

Another way one could obtain a delay line made using a DIP header. (Note that the top bus slot allows extra height.)

I was not familiar with the above mentioned product lines when my delay line failed. Instead mine was fixed using a "brute force" method which utilizes four 7405As and a DIP header. The inverters are connected in series to obtain the required delays and mounted on the header. The delay must be checked with a dual trace scope or digital timer. An even number of inverters must be used for each section so that the signal remains in phase. The packages can be piggybacked with all pins 7 and 14 soldered together and to the header. By using the bottom IC as the last in each leg, connections to the header can be simplified since pins 4, 6, 8, 10, and 12 are not used and corresponding to pins 4, 6, 8, 10, and 12 of the 7405A.

I am having a problem finding a correspondence between the source and the object code. I would appreciate your comments.

I am planning to purchase a disk system next spring and am considering DISCUS, Vista, North Star, and Microdiscus. I would appreciate hearing from anyone who has used or tried to use any of these systems with an SSD (Systems Expandable Disk) (also 7405As). I have no idea what any of the problems with this would be. I am not sure whether I would want to do any of the problems with this, but I would appreciate hearing from anyone else who has used or tried to use one.

I have an opportunity to purchase the HT Extended Disk FORTRAN. Is it possible to convert it to a CP/M system or is it necessary to standardize on 7405As and something else? I have not had any problems with this, and I have heard from other members that there is no problem.

If I understand the letter from Bruce Barron on page 17 of Vol. 11, it is not possible to convert it to a CP/M system or is it necessary to standardize on 7405As and something else? I have not had any problems with this, and I have heard from other members that there is no problem.

The list of developments that I have found is very similar. I have seen a couple of references to the 7405A enterprise, a modification to EBCASCI, and a review in the newsletter would be appreciated.

Sincerely,
Robert A. Ellingsworth

P.S. About a year ago I sent you some comments on my OKIDATA M Line printer. I believe I stated that the printer did not directly interface to the SOL parallel port and required some extra circuitry. Since that time I have discovered that if the BUSY is used instead of the ACK line that I had to use for the PDXR external circuitry is required. I have gotten good service out of the printer but I regret not getting the model 82 with forms control and bidirectional printing.

Robert A. Ellingsworth
1334 N. Stark St.
Haversfort, Illinois
October 19, 1982

WHAT'S NEW?

ECBASIC Source Code Really Isn't

Isn't what, you ask? It isn't the ECBASIC source code! Somewhat after distributing the ECBASIC source code, I discovered that it is not the source code for the program version of BASIC which we were told was. In fact, it was an early in-progress version of BASIC that was being developed by PROC from the BASIC/5 code. It is missing major portions of the files of ECBASIC, such as cassette I/O.

When Tom Digate, one of our members, pointed this out to me, he and I arranged for him to try the enhanced version of Extended Disk BASIC (known as Business BASIC Level I) to work on CP/M. The idea was that most buyers of the ECBASIC source probably would or should eventually get a disk system. Now, you may or may recall, was the author of a modification that let ECBASIC object files tape to be converted to the BASIC under CP-M. So, he was the natural one to ask for help on the project.

Tom has recently contacted me, saying that he has done the major conversion and is almost ready to distribute it. He and I are working out the logistics of licensing the distribution under Protex's license fee microprocessor Technology. Even though the company is out of business, it technically still owns the source code and may say someone may legally pick up that asset. We have to be careful. I'll announce our arrangement for distribution in the next issue of Proteus News. Purchasers of the deficient source code will be given full credit toward the purchase of the highly improved code.

VULCAN Database Manager Gives Birth to dBASE II

Way back there in the past issues of Proteus, I mentioned a database manager that ran under PDOS on the VAX-11/780. At the time, it was not very complete, and I wasn't impressed.

Recently, I bought the manual for dBASE II, the widely advertised "Relational" database management system for IBM's VAX computer system. It sure bore a striking resemblance to VULCAN, I thought, but I was much impressed. And what do you know, it is exactly that. Now, instead of sequential files, dBASE uses either sequential or indexed files, with the indices organized in the B-tree method. Lots of other features have been added, too.

In my opinion, dBASE II is only a pseudo-relational database manager, since the data not only appears to be in tabular form, it is also stored in the same way, redundancy. That is, if two database files are defined with variables in common, the data is stored in both files. In my mind, a true relational database manager will store only the data in one place and will refer to it by pointers. That way, changing it in one file changes the other, too.

Even with the short comings, dBASE II is still quite a handy system, and much more powerful than ordinary mailing-list programs. In fact, it is actually a programming language with high-level file management and report generation commands.
WHERE TO FIND DISKS & RIBBONS
Mike McElvee

September 14, 1981

Stan Sokolow
Proteus
1690 Woodside Road, Suite 219
Redwood City, CA 94061

Dear Stan:

I recently received the latest issue of Proteus News and was excited about the idea of making Sol disappear. That sure sounds more flexible than the other schemes of moving it to P000. It was also interesting to read about your smoked Helios. I too have been ignoring that mandatory update notice.

My main reason for writing is to let you and the other members know about a source of inexpensive floppy disks. I don't mean to harm Lewis Moseley and his attempts to sell no-name disks for $3.00, but I think this is a better deal.

Communications Electronics, here in Ann Arbor, is selling Memorex disks for the Helios for $2.19 each in quantities of 100. Smaller quantities are 104 or more at $2.40. I know the owner of the company, Ken Asher. He's a good guy. He keeps about 200,000 disks in stock and the prices are low because of that volume. He told me they may even be coming down if he can get a better price from Memorex.

The Memorex disks for the Helios are Part no. 3201-3015. Many other kinds are available and the price may vary from those for the Helios. Communications Electronics' toll free phone number is (800) 521-4414.

I was using 3M disks before that I got for $1.00 from AB Computers in Pennsylvania. The differences with the Memorex that I have noticed are that they have a more rigid jacket than the recent 3M disks (maybe good). The Memorex disks also make more noise when spinning around.

As long as I'm on the subject of cheap supplies, you might try Timberline Information Processing Supplies for Diablo ribbons at 4.16 each in a box of 12. Buy 2 dozen and get a free plastic daisy wheel. I also get paper from them. A box of 2800 sheets of heavy weight 9 1/2 x 11 plain white (tears to 8 1/2) is $25.96. I see it for over $40.00 from other sources. They have good prices on mailing labels too.

Timberline's toll free phone number is (800) 547-5743. Call between 7:00 am and 5:00 pm Pacific time. They ship from Portland or Indianapolis, whichever is closer to you.

Thanks for what you do for me and the other members of Proteus.

Cordially,

Mike McElvee

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Timberline Computer Accessories invites you to join the thousands of business firms who regularly purchase computer supplies from TCA. As a new customer, you are entitled to a 15.00% discount when this certificate accompanies your first order.

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$15.00

FIX FOR VISTA BIOS

Although my Vista V-200 disk system has been a reliable performer, it had had an annoying tendency to repeat characters entered from the keyboard when operating under CP/M. Since the effect went away as soon as I loaded Basic, I reasoned that the problem might be with the BIOS that Vista furnishes for the SDL and called the SOLBios by then. I compared the 1/0 routine with one by Fr. McGhee and made the following changes to the CONSOLE INPUT routine:

AS GIVEN

CINF IN STATP

AN1 IREY

JNZ CINF

IN DPORT

AN1 07FH

RET

DS 16

CHANGE TO

CINF IN STATP

CMA

AN1 IREY

JZ CINF

IN DPORT

AN1 07FH

RET

DS 16

Since the two routines seem to be the same logically, perhaps some 8080 novice can explain why the change works. In any case the fix has ended any tendency toward keyboard bounce.

Leonard Kailsh
500 S. San Vicente Blvd. #3
Los Angeles, CA 90048
(213) 603-6087

Is CP/M 2.2 for Helios Out There?

Has anyone adapted CP/M 2.2 for the Helios yet? Lifeboat Associates, as far as I know, has adapted CP/M 1.4 but has no plans for 2.2. Has anyone else done it?
ATOR: A PASCAL CONVERSION ROUTINE
By Daniel S. Hunt

There are many times that a real number cannot be input directly into a real variable, but first must arrive as a string of ASCII characters. Typical situations: the number occurs in an edited input line or the number is an ASCII token scanned from an input string, such as might be found in an interpreter. In either case, the ASCII number must be converted to real machine-oriented representation prior to arithmetic operations.

RASIC accomplishes the conversion with the built-in VAL function, as in:

5 DEFSING X
10 INPUT "NUMBER"; NUMSTRS
20 X = VAL(NUMSTRS)

Pascal has no such routine in its definition. Without one, you must cast your I/O algorithms around the standard Pascal procedures, READ(X) or READLN(X). This can be quite restrictive if your implementation of Pascal provides "unfriendly" editing routines for console or file I/O.

Some Pascals, for instance, do not allow you to delete and replace a bad character as you execute a READLN(X). Make a mistake during response to a READLN and the computer may even hang!

The function ATOR (ASCII to real) may therefore have a place in your Pascal library. You'll find yourself using it quite often, particularly with input parsing and user console routines.

The version I've written here emulates Microsoft RASIC's VAL function fairly closely. VAL ignores preceding blanks in the input string. It converts only up to the first non-numeric character in the string. The sequence "#b-123.4A5S" (the small b's represent blanks) will convert to a real number of -123.4. The sequence "Not a number 100.1" converts to 0.0.

In this example, ATOR uses as its input string a record built from a length integer and an array of characters. While there is no reason that the STRING type present in some versions of Pascal cannot be used, I use the do-it-yourself string to avoid the overhead of manipulating dedicated string types.

ATOR is machine and translator-independent in that it computes the resulting real value, rather than converting to real by use of knowledge about the manner in which real is represented in the computer. It makes no difference whether your Pascal's REAL type is floating point or BCD. If the compiler produces BCD reals, ATOR will show a slight lag due to the slowness of most BCD multiplication routines.

Before conversion begins, ATOR trims any zero length strings and returns 0.0; this section could be eliminated if it is known that no null length strings will be passed to ATOR from the program.

Leading blanks are caught in the following section at the same time the input string is scanned for minus or plus values. In the case of a find, the intrinsic procedure, MOVELEFT, is used to overlay the unaligned part of the string over the first position in the string, and the string length field is reduced by one character. If a minus sign is found, a boolean switch is set to true for later use.

Following a scan for imbedded blanks and alphas, in which further string length reduction may happen, the position of the decimal point, if any, is fixed by variable NPOS. NPOS is then used to count the number of characters to the right and left of the decimal point. Conversion then occurs in a repetitive set of multiplications against each character converted from ASCII to its binary equivalent in PROCEDURE DECODEACHAR.

The supporting PROCEDURE READSTR provides console-edited input of the string to be fed to ATOR. It is the sort of line input routine that can be used by people unfamiliar with computers. Such a user need only be told to type characters, use the delete key if he goofed, and use the return key when everything looks all right. READSTR is customized to the SOL-20/VH11 cursor routines, i.e., the delete key erases the character on the screen by moving the cursor left, writing a blank, and then moving the cursor left again. The simple editing method is preferable to input routines which follow the more complex control-character syntax of CP/M's user interface.

Daniel S. Hunt
822 Green Valley
Newbury Park, CA 91320
program atordemo;
const
strlen = 80;
type
stringtype = record
  len: integer;
  val: array[1..strlen] of char;
end;
var
s: stringtype;
x: real;
procedure readstr(var s:stringtype);
var
i: integer;
ch: char;
begin
  (Blank string)
  s.len := 0;
  s.val[1] := ' ';
  move(s.val[1], s.val[2], strlen - 1);
  (Edit input until end of line)
  repeat
    read(ch);
    case ord(ch) of
      #0: (End of line)
        exit;
      #12: (Delete key)
        begin
          if s.len > 0 then
            begin
              (Blank deleted char in record)
              s.val[s.len] := ' ';
              s.len := s.len - 1;
            end;
          (Cursor left, blank char on screen)
          write(chr(1), ' ', chr(1))
        end;
    else (A new character)
      if (ch = ' ') and (s.len < strlen) then
        begin
          s.len := succ(s.len);
          s.val[s.len] := ch
        end;
  end
  until false; (*Forever loop*)
end; (*readstr*)

function ator(var s:stringtype): real;
const
  minusnun = '-';
  plussign = '+';
  ascitzero = 48;
var
  ch: char;
  ptr, mcl, ncr, dpos: integer;
  realval, mult: real;
  minus: boolean;
begin
  (Count characters both to right and left of decimal point)
  if dpos = 0 then
    begin
      mcl := s.len;
      ncr := 0
    end
  else
    begin
      mcl := dpos - 1;
      ncr := s.len - dpos
    end;
  (Convert characters left of decimal point)
  mult := 1;
  for ptr := mcl downto 1 do
    begin
      decodechar;
      mult := mult * 10
    end;
  (Convert characters right of decimal point)
  mult := 0.1;
  ptr := dpos + 1;
  while ncr > 0 do
    begin
      decodechar;
      mult := mult * 0.1;
      ncr := ncr - 1;
      ptr := ptr + 1;
    end;
  (Set sign of converted number)
  if minus then
    realval := -realval;
  ator := realval;
end; (*ATOR*)

begin (**MAIN**)
  repeat
    write('Enter string: ');
    readstr(s);
    x := ator(s);
    writeln(x)
  until false;
end.

Atordemo
Enter string: 44.5
        .44500000E+02
Enter string: 44.5
        .44500000E+02
Enter string: 44.5
        .44500000E+02
Enter string: -44.5
        -.44500000E+02
Enter string: -44.50E0
        -.44500000E+02
Enter string: 44.50E+00
        .44500000E+00

Above: Demonstration run of "Atordemo", showing conversion of ASCII numbers with leading blanks, signs, and embedded letters into real numbers.

Daniel S. Hunt
R22 Green Valley
Newbury Park, CA 91320
October 5, 1981

Dear Dr. Sokolow:

There was a letter from Victor D. Bennight in the last Proteus Newsletter requesting assistance in assembling the 1978 revision "B" Sol P.C. I too was enticed into buying this unpopulated board by the price. Big old silly me. How did I know that the board was so different?

Fortunately, I have managed to resolve the differences and my 1978 Sol is running beautifully. These are the major areas where the P.C. is different:

1. C-75 - This is a bypass or pulse stretching capacitor. The value is unknown. My P.C. works fine without it and an examination of the circuit shows it to be in a non-critical area. If anyone should find out what this capacitor is, naturally, I would be interested in knowing.

2. C-78 - This is a .047 uf power rail bypass capacitor.

3. R-91 - A 1.5k 5% 1/4 watt pullup resistor for the parallel input and load lines to U-76, the modified phantom IC. (More details to follow.)

4. R-16B - A 47 ohm 5% 1/4 watt - used in the serial input's opto-isolator circuit as described in one of the early "Access" newsletters.

5. U-114 - This is a resistor network which replaces the handful of pullup resistors used on earlier Solos. A Bourns 4168R-882-152 works fine and is available from Active Electronics, 131 Flanders Road, Westboro, Mass. 01581.

6. U-115 - Identical to U-144.


8. U-76 - This was the biggest, headache. It is not a 74LS175 as in earlier Solos. It was changed to a 74LS195 four bit shift register. The chip is used in the phantom circuit and is connected as shown on the modified schematic enclosed.

9. A jumper is required from pin 10 of U-45 to location "BB" next to U-47. Location "BB" is actually connected to pin 5. This connects "DBIN" to the output of one of the inverters in U-45, a 75LS34.

10. A jumper is also connected from pin 11 of U-45 to pin 3 of U-46. This connects "DBIN" to the input of the inverter in the previous item.

These are the only changes required to make the P.C. run, but a couple of additional items may be of interest to readers. The AM0026 specified as U-144 is hard to find and an MM73026 works well. Note that this IC should be soldered in place. Also, don't use RCA CD 4429S for U-11 or U-1. I went through a half a dozen before substituting a Motorola MC-14829. The input protection or some other idiosyncrasy prevents the RCA chip from working in these circuits.

All in all, I now have a marvelously operating Sol for my trouble and a total of about $300.00 invested.

One other item may be of interest. I have designed a bi-directional parallel-to-serial conversion board for the Sol parallel port. This board allows Solos software to be used to select printers, terminals, etc. Any parallel port 1/0 is converted to or from serial form at any of eight switch selectable baud rates. Full handshaking is implemented and the board uses the Sol power supply. It is fully RS232C compatible and is totally software compatible with the Sol.

A CPM driver which selects the serial or parallel ports for "List" or "Console" devices is also available as a ready to run "CPM" file. It supports the Diablo and other printer's handshaking requirements.

I use the board and CPM driver to connect a Soroc 10-120 terminal as the console device while maintaining serial printer access.

The boards are available to Proteus members assembled and tested for $150.00 each. They come complete with instruction manuals. The CPM driver is available for $15.00 on eight inch single density format only. Anyone wishing to purchase either of these products should call me at 205/942-9631.

Thanks for a great newsletter. I hope this information will be helpful.

Sincerely,
LYNN A. McCROSKEY
President

SONICS ASSOCIATES, INC.
731 CHAMBERLIN CIRCLE
BIRMINGHAM, AL 35209
TELEPHONE (205) 942-9631

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16K RAM DATA DELAY

October 15, 1981

To whom it may concern:

The 16K RAM DATA DELAY Line offered to my Joe Massie and Ed Meyer in PROTEUS/NEWS, Vol. 4, No. 3/4, Pm. 3 & 31, is a currently manufactured device. I have purchased two of these Digital Delay Units from the following source with 100% success in 3 different Processor Technology 16K RAMS.

SOURCE:
DATA DELAY DEVICES
385 Lakeview Avenue
Clifton, N.J. 07011
Phone: (201) 722-1190

PRICES:
No. of Units:
1-9 : 10-49 : 50-99 : 100+
Cost per Unit:
$20.00 : 17.00 : 13.00 : 10.00

SPECIFICATIONS:
16 pin DIP package
INPUT
14:----VCC (+5V)
13:----12:----LSB
11:----10:----MSB
15:----100 ns DELAY
16:----250 ns DELAY
17:----81:

Rise-time:
4 ns typical
Delay:
+/-5% or 2 ns (whichever is greater)

PARAMETER:
CURRENT:
VOLTAGE:
FANOUT:

INPUT:
HIGH:
LOW:

OUTPUT:
HIGH:
LOW:

POWER DISSIPATION:
19 mW/Gate

David Reis
1843 Water Avenue
Min. Viewer, CA 94063

HELP NEEDED

A request for help has come from Nat Pulsifer. He wants to contact someone that has ACC PAC ACCOUNTS/PRICEABLE (Proteus Item # P5) and ACC PAC ACCOUNTS/PAYABLE (Proteus Item # P6) up and working.

Please contact:
Nathanial Pulsifer & Associates
Investment Management & Financial Planning
Odd Fellows Professional Bldg.
Ipswich, MA 01938
(617) 356-5310

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printer and some games. All offers will be considered.
Rod Lee, 5 West Creek Court, Lafayette CA 94549, (415)836-9556.

HELP WANTED

As a 2 year subscriber to Proteus, I have a request for help.
I'm trying to bring up UCSD Pascal on an S-100 system that has
Processor Technology's Subsystem - 8 boards. The problem is in
interfacing UCSD Pascal's setup and X-Y cursor addressing
schemes with the VMD-1. All seems well except the UCSD Editor
is not usable. Can any members of Proteus offer any help?

Thanks,
Kerry Montgomery
13420 S.W. Castleton
Beaverton, Oregon 97005

WANTED

I need a copy of the OUTER OBJECT TAPE, please contact me if
you can help.

Thomas Roman, 412 Amsterdam Ave., N.Y., N.Y. 10024 (212)496-0442
TABLE OF CONTENTS

UPGRADE SOL TO 24 X 80 SCREEN/Stan Sokolow......................... 1
PUBLIC DOMAIN GENERAL LEDGER FOR N*/F.J. Birner.................. 3
HELIOS/MORROW DISK MULTIPLEXER ALLOWS HARD/SOFT SECTORING........ 5
USER REACTS TO 24 X 80 CONVERSION/Earl Dunham................... 6
A RESPONSE TO D.PATTEN'S OPEN LETTER/A. T. Finchler.............. 7
STILL MORE ON THE CP/M USER AREA/D. Möller......................... 8
VEIT IS HIGH ON SOL AND PROTEUS.................................. 8
WHO SAYS "CASSETTE TAPE IS DEAD"?/L. Moseley........................ 9
SOL VANISHING TRICK-IT ALMOST WORKS................................. 11
SOLUTION TO THE FILE DRIVER FOR NEC SPINWRITER/A.R. Gauthier...... 11
CORRECTION ON EPSON MX-80........................................ 11
PRINT SPOOLING FOR N*/W. D. Armstrong............................... 12
SOL KEYBOARD TONE CIRCUIT-WITH 4 TONE LEVELS/R. Leon Winter...... 15
PTDOS TO CP/M FILE TRANSFER/D. L. Finley.......................... 16
GAMEPC/D DOESN'T RE-ACT/L.E. Breeden................................ 19
SLAC PASCAL PATCHES & BENCHMARKS/W. McElvey....................... 20
REGARDING R. BJÖRNDAHL'S RANDOMIZE FOR PT BASIC/M. Mackenzie...... 21
MY DELAY LINE FAILED/W.A. Ellingsworth............................. 99
WHAT'S NEW/ECRASIC SOURCE CODE REALLY ISN'T...................... 106
VULCAN DATABASE MANAGER GIVES BIRTH TO DBASE II.................... 22
WHERE TO FIND DISKS & RIBBONS/Mike McKelvey....................... 23
FIX FOR VISTA CB105/L. Kalish.................................... 23
IS CP/M 2.2 FOR RELICS OUT THERE?................................. 23
ATOR:A PASCAL CONVERSION ROUTINE/D.S. Hunt........................ 24
BUILDING THE 1978 REV B (NEW) SOL-PC/L.A. McCroskey................ 26
16 KRA DATA DELAY/D. Reis........................................ 27
UNCLASSIFIED ADS.................................................. 27

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PROTEUS/NEWS will be published as a quarterly in 1982.

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We will make your name and address available to other members unless you check this box.

( ) Please keep my name private.

Joe Maguire
PO Box 3742 DT
Anchorage, AK

99510