

SOLUS NEWS

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SOL Users' Society

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DUES REMINDER

We still have many names on our mailing list who haven't sent in the current year's dues. We are about to purge these names from the list. If you are one of these folks, read this issue. If you still feel we are doing something relevant to your needs and deserving of your support, send in your dues. Remember it's \$10 in the US. (See above for foreign and special memberships.) If we don't hear from you, this is your

L A S T I S S U E !

We also want to remind new members that memberships run on a calendar year (Jan thru Dec) basis. Members who join mid-year should receive the current year's issues back to January. If you don't, let us know. Allow about a month for processing...we're all doing this in our spare time.

One last thing: Those who sent us \$4 dues in response to the erroneous note in Kilobaud, please send in the balance of your dues. That note was sent to the magazine in 1977 when the dues were \$4, but wasn't published until it was outdated.

NEW FORMAT

Take a peek inside and you'll see we are trying a new format for SOLOS NEWS. We are trying to pack more into the same number of pages. At the same time we are hoping to be able to give more rapid turn around on letters we receive. To do this, we are reducing the letters and articles we receive to half size. They are the actual letters themselves, not retyped, and only slightly edited with a pair of scissors. Authors should be sure to use a dark ribbon so their letters reproduce well. Letters that require retyping will get into print much slower than camera-ready ones. In the future we may be able to take letters on cassettes and let a word processor do the work, but we don't yet have the software for this. Anyone interested in working on that should contact the editor.

2nd WEST COAST COMPUTER FAIRE

As we reported in the last issue, SOLOS had a commercial sized booth at the Faire held in San Jose on March 3 thru March 5. Processor Technology donated it to us. It was a good way for us

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to recruit new members, and it made a great hang-out for members of the local chapter. We recommend this sort of activity for all of our other local chapters. If a club booth is not available at your area's computer show, contact us and we'll see if P.T. is interested in sponsoring a commercial booth there.

We also had a general meeting at the Faire, which was attended by over 100 people. Members of the SOLUS steering committee reported on our general activities and got lots of good feedback from members. Some suggested that we put on a program at each of the local chapters, directed at the novice who can't even understand the basics of operating the SOL. One person suggested we develop a self-tutorial cassette tape (audio recording) that leads the user thru the steps of getting his SOL (assembled) to talk back to him on the screen. Processor Tech's Ralph Palsson told your editor that P.T. realizes the manual is not good for the 100% novice to computers, and they are considering printing a beginner's guide.) Some people came up to volunteer for various projects.

Another activity SOLUS engaged in at the Faire was rounding up new products for our Hardware and Software Reviewers. We'll report on these in the coming months.

NEW CHAPTERS

Rochester, NY: Warren Harkness, 32 Larchwood Dr, Pittsford, NY 14534.

Gardens, CA: George Pond, 14919 S. Normandie Av, Apt 28, Gardena, CA 90247.

Metropolitan Washington, DC: Jim Logan, 6817 Melfose Dr, McLean VA 22101. (703) 356-1068.

Tallahassee, FL: Mitch McCann, Rt. 7, Box M.L.C., Tallahassee, FL 32301

New York, NY: Stanley Veit, Computer Mart of N.Y., 118 Madison Avenue, New York, NY 100th.

To join a local chapter, contact the coordinator directly. Each chapter is free to organize as its members desire. Chapters are provided so SOLUS members are able to meet face-to-face, trade software, tinker with hardware, visit local manufacturers, hear lectures from invited speakers, etc. If you would like to start a chapter in your area, send SOLUS your chapter area name, and the name and address of the coordinator to publish here. We'll print the whole list twice a year, and updates in each issue. Local chapters are encouraged to write to us so we can hear what you are doing.

DOCUMENTATION NOTES

Here's a potentially dangerous error in the SOL systems manual reported by Warren Harkness. On page AVII-3 (appendix) the description of S-100 pin 2 function is correct, but the SYMBOL and NAME should be +16v not -16v. Warren wrote "Please publish that so no one else assumes pins 2 (+16v) and 52 (-16v) which are across from each other, are the same voltage. I tried to measure voltage there one time, shorted 2 and 52, and blew my power supply." Pin 52 is correctly designated -16v. on Page AVII-4.

At the February meeting of the S.F. Peninsula chapter, David Fylstra reported on a PC board which has impressed him with its unique features. It is a backplane board similar to the one which Processor Technology makes to plug into the SOL S-100 connector providing the 5 slots on the SOL-20 card rack. However, this "daughter board" provides 10 slots in about the same height, five on the front, and five on the back. It won't fit a SOL-20 case, but Dave is home-brewing his own SOL system from the SOL-PC, so he doesn't care. The board also has a regulator circuit to provide the regulated voltages needed by the SOL-PC itself. The board is made by Forrest Duston, 885 Aster Avenue, Palatine, IL 60067. The same fellow also makes a sheet metal card cage to support the boards, and an 8K RAM board. Contact him for more info. See the illustration in this issue for a sketch of the "daughter board." (Page 4)

Ron Parsons wrote, "I would be interested in being contacted by anyone who has successfully attached an expansion backplane with five or more slots to a SOL-20." We have heard at the 2nd West Coast Computer Faire that an S-100 manufacturer who makes a terminated-bus computer has a working prototype for adding his box and motherboard to the SOL as an expansion accessory. The problem is not easily solved--you can't just run a couple of ribbon cables out to a motherboard because of such things as noise, transmission delay, and bus loading. What works for some boards plugged in out there, may not work for others. Processor Tech is looking for such an expansion method too. If anyone has done it successfully, please let us know how so Ron and the rest of us can give our SOL's some growing room.

Bill Fuller, of Grand Praire TX, wrote that most Z-80 cpu's do not support the S-100 interrupt enable INTE output. If converting the SOL to Z-80 (such as with the Dutronics adapter) be sure to check for that signal being generated, otherwise the P.T. Co. music board won't work. It uses that signal to make the music. We hope anyone considering the Dutronics adapter for the SOL reads the hardware review in this and previous issues before making the purchase.

Anne Weiss, of Somerset NJ, asked if we know of any device to eliminate interference from SOL to a TV in the same house, especially on channels 2 and 4. Ham radio operators have had similar interference problems. Some of the radio frequency interference comes out of the gaps in the SOL case and a lot comes out along the AC power cord, or so we've been told. Good grounding of both sheet metal covers of SOL to the chassis and installation of a CORCOM RFI power line filter #3EF1 will help. The filter costs about \$10 and is almost a direct replacement for the normal SOL power cord receptacle on the back wall of the power supply. More details are in the Vol 0, No 1 issue of SOLUS NEWS. Another solution is a one-piece metal cover for SOL sold by CURTIS ELECTRODEVICES, Box 4090, Mountain View, CA 94040. They make this case and RFI filter for use in their amateur radio system. It costs about \$100.

In the last issue, I asked if anyone knew how to protect against the temporary insanity my SOL goes into when my washing machine is running at the same time. Simple voltage spike protectors don't help much. The Letters section of this issue has a couple of replies.

By Ron Parsons
Austin, Texas

One disadvantage of Processor Tech's PTDOS and Helios II is the unique format of PTDOS diskettes. This was discussed in the articles by Stan Sokolow and myself in the Jan./Feb. 1978 SOLUS NEWS. There is a large amount of CP/M software available on standard format soft-sectored diskettes. Because I already had the most expensive part of a CP/M disk system (the PerSci drive in my Helios), I wondered how could I use it with CP/M and PTDOS concurrently?

I had several objectives to satisfy: a) No modification should be needed to any of the Helios hardware or software, b) Switching between PTDOS and CP/M should be under software control, and c) There must be a way to transfer files from one OS to the other.

My solution was to use a Tarbell Floppy Disk Interface Board to act as a controller for CP/M. The Tarbell controller uses a 1771 LSI disk controller chip for controlling and formatting soft sectored diskettes. The board puts the processor in a wait state while waiting for the disk request to complete. DMA is not used as in the Helios for controller-memory data transfer. Thus there is very little time spent in the wait state except during seeks. This board has four spare 16 pin IC slots and space for two 50 pin headers for ribbon cable. With four additional ICs (hex tri-state buffers) and a few unused gates scattered around the board, I installed a multiplexer for the signal lines from the controller (now controllers) to the PerSci drive. The multiplexer state is set by a software command (an OUT instruction). The signals from the drive to the controllers are not multiplexed. The 50 wire cable from the drive connects to the header J1 on the Tarbell board and a short six inch Jumper cable connects the Helios controller to header J2 on the Tarbell board. I burned both the PTDOS and CP/M bootstraps into my 2708 version of SOLOS in place of TERM and cassette byte routines.

The CP/M boot requires zero wait states. This was done by lifting pin U71-11 on the main Sol board. I also added a one second one-shot timer to the head load circuit so the head remains loaded for one second after the 1771 "releases" it. This eliminates the wear and noise associated repetitive loading and unloading of the head.

The only problem I encountered with the Tarbell interface was due to an unterminated S-100 bus line (54 - external clear). Noise, probably from XRDY, occasionally cleared a latch. This caused the Persci drive to switch randomly from disk 1 to 0. Tying this line high with a 2.2k resistor cured the problem.

Creating and debugging the CBIOS (the hardware dependent part of CP/M) was very easy since it could be assembled and tested under control of PTDOS. The STEP output from the 1771 chip was not used.

Instead, stepping pulses under software control were used to take advantage of the fast seek capability of the PerSci drive.

Since the PTDOS bootstrap uses the first 340H of memory, I've established 400H as the origin of all programs and files to be shared between PTDOS and CP/M. I also had to write conversion routines for source files as the PTDOS format is (text)(CR) while the CP/M format is (text)(CR)(LF). Now the world of CP/M programs is available to me. However, because PTDOS is so much more powerful than CP/M, I often find that I transfer files from CP/M to PTDOS for processing.

by

A. T. Atey

In this month's column we shall discuss the Dutronics DZ80-80R Z80 adapter board, the Extensys RM64 dynamic memory board, and also the Tarbell 1011A floppy disk controller board. The Dutronics board was supplied to SOLUS courtesy of Mr. Dave Dutra of Dutronics. The Extensys board was loaned to SOLUS for evaluation by Mr. Dan Pichulo of Extensys. The Tarbell board was purchased as a bare board and built up for use mainly in his Altair 8800.

Evaluations have been performed by the author and two of his colleagues, Messers. I. Hartley Wurkz and Seymour Bugs. It should be noted that all three of us are using SOLs which were built from boards, and each is uniquely packaged and expanded.

Dutronics DZ80-80R

The Dutronics DZ80-80R Z80 adapter board is a small (2.75 x 5.5 inch) circuit board which includes a 280 CPU chip and twelve additional support chips. It is designed to plug into the forty pin socket in place of an 8080 chip and thus provide the power of the Z80 instruction set in a system originally designed for the 8080. It is especially attractive for SOL owners because the SOL does not have an S100 bus CPU card which can be replaced by one of the S100 bus Z80 CPU cards now available from several sources. Unfortunately, it proves to be quite difficult to fool the SOL into thinking that the DZ80-80R is an 8080!

Several months ago SOLUS received a prototype DZ80-80R board for evaluation in SOL applications. After some use, several problems became apparent, specifically pertaining to proper response to the onboard SOL-generated wait states, and writing to the parallel output port. Dutronics was notified, and Mr. Dutra personally visited the author's home, bringing along his own test equipment to observe the symptoms. Just before Thanksgiving, 1977, Dutronics supplied a new board, with several modifications installed, which supposedly fixed all known problems with the DZ80-80R when used in a SOL. The author made the same modifications to the older prototype board which he still had, and gave the new board to Mr. I. Hartley Wurkz for testing in his SOL.

Mr. Wurkz reports that the Dutronics board worked in his SOL with static memory boards using 21L02 type memory chips. It did not work reliably when using the Extensys memory board, however. (Programs tended to "blow up" when using the Dutronics board and Extensys board at the same time. The Extensys board worked reliably with an Intel 8080A.) The parallel port worked OK with the fixes made by Dutronics. (Mr. Wurkz uses the parallel port for interfacing his SOL as a terminal to his IMSAI.)

Mr. Wurkz also reports that before he could read tapes with his SOL while using the Dutronics board, he found it necessary to replace the tape interface UART. (He replaced a GI AY5-1013, which worked fine with the 8080A, with a TI TMS-6011, which then allowed him to read and write tapes properly.) Mr. Wurkz was unable to get the Dutronics board to work in his IMSAI 8080.

Mr. Wurkz then gave the Dutronics board to Mr. Bugs for further testing. Mr. Bugs found that the Dutronics board doesn't act quite right when writing tapes. For some reason the screen display is altered during the writing process, although Mr. Bugs says that the tapes are written correctly and can be read in correctly. He also found that the parallel output port did not work properly in his SOL.

Mr. Bugs agrees that the Extensys board does not work reliably when using the Dutronics board.

The author has found that the Dutronics board (the old one, updated with the same changes as the new one) works somewhat in his SOL. It now works with the parallel output port, which he uses for controlling his I/O Selectric typewriter. He was able to read tapes which had been previously written with an 8080, but found that the SOL display did strange things when trying to write tapes using the Dutronics board. Furthermore, the tapes just written could not be read in without error.

The author has succeeded in getting the Tarbell floppy disk controller to operate in his SOL (using an 8080), but must admit to having had no success in getting it to operate in the SOL with the Dutronics board. This is quite perplexing inasmuch as the Dutronics board has worked quite well in the author's Altair using the Tarbell controller.

CONCLUSIONS:

While you might be able to get the Dutronics DZ80-80R board to operate properly in your particular SOL (hopefully using static memory), we cannot at this time give an unqualified recommendation. If you feel that you want to add the 280 to your SOL, and that the Dutronics board is the way to do it, be sure to get a guarantee that all parts of your system will work together properly. Based on our experience, it seems likely that just when you think everything is great, you will get a new board, or try something new, which reveals a hitherto unknown bug.

Extensys RM64

The Extensys RM64 memory board is a dynamic memory board designed around Intel 2108 8K dynamic RAM chips. The board gives us the impression of being carefully designed. We noted that the TO-3 style 5-volt regulator did not have a heat sink, and ran rather hot.

An Extensys RM64 dynamic memory board with 48K of installed memory was originally provided to SOLOS by Mr. Dan Pichulo of Extensys at the

October SOLUS meeting. The author promptly plugged it into his Altair, found it wouldn't work there, plugged it into his SOL found it didn't work right there either, and called Mr. Pichulo to find out more. (This particular board had inadvertently been left at the SOLUS meeting, and therefore came with no documentation.) Mr. Pichulo arranged to replace that original board with one which had the necessary modifications, and that board, with documentation, arrived in early December. The evaluation results pertain to the replacement board, serial number 10863-H.

The author immediately found that the new board wouldn't work in his Altair, either. This is probably caused by the fact that Extensys uses pin 3 of the S-100 bus to request wait states. The Altair, as modified per MITS' authorization (as published in Computer Notes), uses pin 3 for the front panel, and is always tied to an active tri-state driver. The transistor on the Extensys board probably can't pull down against the 8T97 on the Altair front panel. Unfortunately, there is no provision on the board for selecting between pins 3 and 72. The 20-page Extensys User's Manual for the RM64, which lists a price of \$10 on the cover, doesn't include a schematic diagram, so it was not possible to try to understand the problem in detail.

The author found that the Extensys board did not operate reliably in his SOL. It appeared to work for short periods, but would inevitably "blow up" sooner or later. For example, if a tape of 12K basic were loaded, and a program then loaded, it would blow (suddenly end up back in SOLOS) when the program was run. It was not possible to run CP/M for any length of time before unpredictable events occurred.

Mr. I. Hartley Wurkz found that the Extensys board worked fine in his SOL as long as he stuck to the 8080. As previously mentioned, however, it did not work with the Dutronics board.

Mr. Wurkz also reports that he tried the Extensys board in his IMSAI and found that it would work from the front panel, but could not be used with his IMSAI floppy disk controller (which uses DMA). Mr. Wurkz then tried the Extensys board with his Ithaca Audio Z80 board in his IMSAI and found that the memory didn't work at all. The Ithaca Audio board works fine with static memory and the floppy controller's DMA.

Mr. Seymour Bugs found that the Extensys memory would work OK in his SOL with an 8080, but not when using the Dutronics board.

CONCLUSIONS:

The Extensys RM64 dynamic memory board appears to work well in most standard SOLs. The author does not understand why it fails to operate reliably in his particular SOL, when he has been able to run for hours on end with static memory without problem. The Extensys board is a very nice looking board, the first 3-layer S-100 bus board we have seen. It is about 5/16 inch higher than the standard S-100 board, and is extremely densely populated, leaving very little space around the sides. If the high density and low power consumption of this board appeal to you, we suggest again that you only buy it with a

guarantee that it will work properly in your unique system.

Notes on Using the Tarbell floppy Disk Interface in a SOL

The Tarbell Floppy Disk Interface is a highly versatile board which includes a Western Digital FD1771-01 controller chip along with the necessary interfaces to the S-100 bus and any of several popular floppy disk drives. It also includes a bootstrap circuit and ROM which allows easy loading of an operating system, like CP/M in an Altair or IMSAI environment. Before rushing out and buying one, however, SOL owners should be aware that there are certain aspects of the SOL which make using this interface a little less straightforward than when using it in other S-100 bus computers.

The standard port addressing on the Tarbell board is F8 through FC. That group of addresses is already used by the onboard SOL I/O circuits. This precludes using the standard bootstrap PROM which is supplied with the complete kits. (The author did not implement the onboard bootstrap function on his board.) The board does, however, allow easy selection of the port addresses, so it is very easy to write another bootstrap program which works. The author has not tested the onboard bootstrap, either in his Altair, or his SOL.

There is one input port circuit, which Tarbell calls WAIT, in which the tri-state gating logic does not include PDBIN. Because of the bi-directional data bus in the SOL, this WAIT port may not operate properly. It is very straightforward, using spare gate circuits already on the Tarbell board, to correct this omission.

One more thing that may prove to be a problem is that the SOL always inserts one wait state for every onboard memory read or write, and always inserts a wait state for every input and every output instruction, onboard or not. The author, who is using a 2708 personality module, has defeated all memory wait states, and has modified the I/O wait state circuit so that only onboard input and output addresses insert wait states. Proper operation of the wait state circuits is critical for proper operation of the Tarbell interface circuit. Also, all programs which read or write to disk must run in no wait-state memory.

The key element of the Tarbell interface is the Western Digital FD1771-01 chip, and most of the important capabilities and limitations of this interface are those of the 1771 itself. This chip allows use of a variety of soft-sectored formats, allows writing of those formats, and most importantly at the present time, supports the IBM 3740 soft-sectored format. This allows the use of CP/M or other operating systems using IBM format compatible disks. The controller does not support hard sectoring, and is not compatible with controllers such as used in the Helios system.

Figure 1 shows the changes which the author has made to his SOL to defeat memory and offboard I/O wait states. If you are using a 5204 or 6834 personality module, you probably cannot run without the wait state. These changes do not require that any lands be cut or that any new IC's be added.

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Figure 2 shows the changes made to the Tarbell board to include PDBIN in the tri-state gating logic for the WAIT input port. Here, one land must be cut, but no new IC's are required.

The author has been running the Tarbell board for almost two months in his Altair with very satisfying results. It worked there fine with the Dutronics Z80 board. He is using 32K of static memory (all 21L02 type). He was unable to try it with the Extensys memory there, because the Extensys memory board didn't work at all in the Altair.

A few days ago, he got around to modifying SOLOS, by replacing the Terminal mode command with a disk bootstrap command. He then proceeded to try various combinations of things in the SOL. What he ended up with as working well is the following set of conditions:

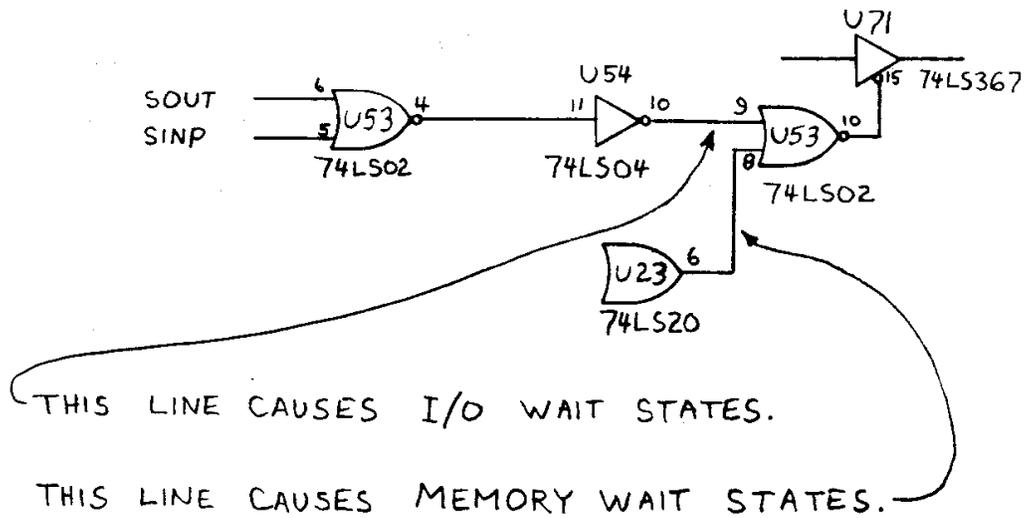
1. 24K of static memory
2. wait states defeated on all memory and offboard I/O
3. 8080 CPU

Under these conditions the system works reliably for hours at a time. The Dutronics board would not work with the Tarbell board in the SOL. It seemed to read in one byte from the disk and then either hang up or get lost. The lack of a front panel on the SOL makes it very hard to know exactly what is happening.

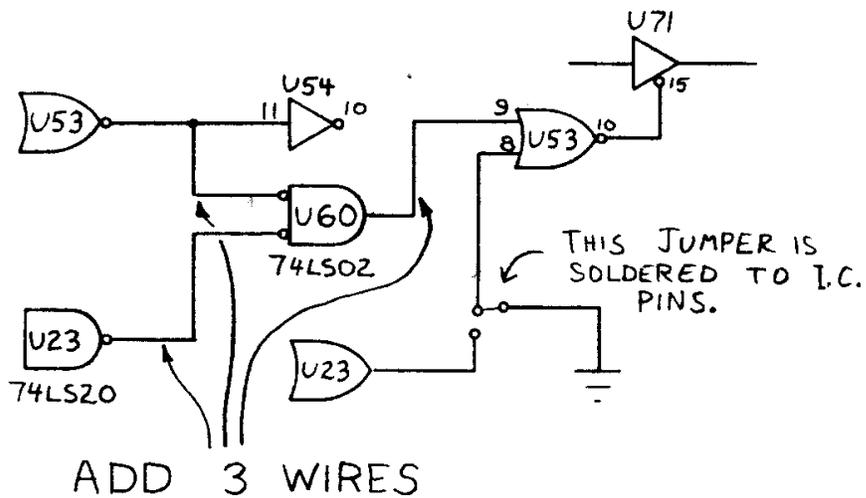
Since the author could not get the Extensys board to operate reliably in either of his computers, he cannot conclude whether or not the Tarbell board would work with the Extensys board.

CONCLUSIONS:

The Tarbell Floppy Disk Interface may be a low cost way for you to get a floppy disk system running on your SOL. It takes a little more effort to use it in the SOL than in other S-100 bus systems, but it is relatively straightforward. Again, there may be incompatibility problems when trying to get this board to work with other equipment.



a) Original Circuit

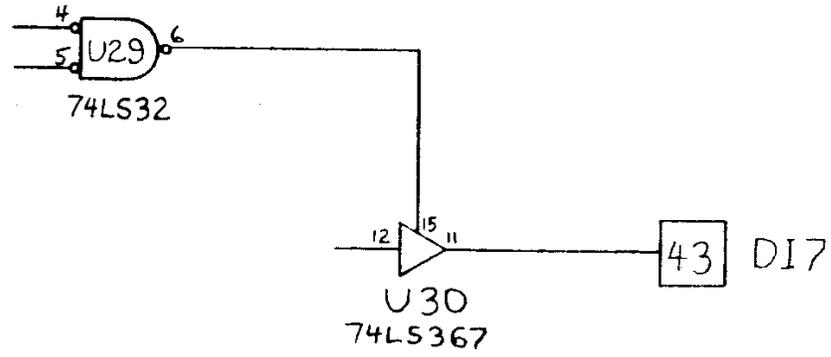


REMOVE U54, BEND PIN 10 OUT, REINSERT IN SOCKET
 REMOVE U53, BEND PIN 8 OUT, SOLDER JUMPER FROM PIN
 8 TO 7, REINSERT.

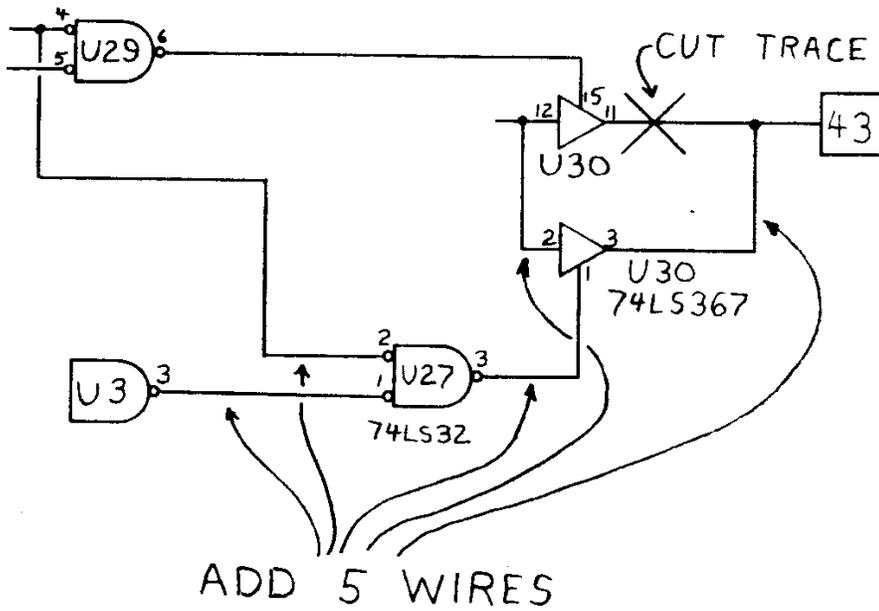
b) Circuit as Modified

Figure 1.

Changes to SOL



a) Original Circuit



b) Circuit as Modified

Figure 2.

Tarbell Board Modifications

A MINI-REVIEW: THE DOS MOVER

by Bill Burns

Since a large number of Sol owners also own the North Star Micro-Disk System, SOLUS has been trying to improve the integration of these two units. As part of this goal, we worked with and encouraged Bruce Kendall in his efforts to make his DOS relocation programs available. The standard North Star DOS is located at 2000H which conflicts with long Basic-5 programs or long Music System programs, Extended Cassette basic, and many other programs which have their origin at 0. Starting with the DOS at 2000H, the DOS Mover allows a user to create as many additional versions of DOS as desired and locate them anywhere. I have tested it and it worked perfectly. It even moved the I/O drivers along with the DOS. The documentation is extremely well done. I recommend this package highly and I will do a full review in the next issue. If you don't want to wait you can get the programs on a diskette for \$18.78, plus \$1.22 tax if you live in California, plus \$1.00 for shipping to: Digital Deli Computer Store, 80 West El Camino Real, Mountain View, CA 94041.

PRODUCT REVIEWS: TWO "INEXPENSIVE"16K STATIC MEMORY BOARDS

by Bill Burns

(using the technical knowledge of
Ben Milander and Ron Findlay)

Since the five empty slots on the Sol-20 are filling up on most of our systems, "slot conservation" is becoming more important. One 16K memory board IS better than two 8K boards.

Our top technical people have convinced us that unless there is a large price difference, static memories are preferable to dynamic memories. The reasons are: 1) greater simplicity, and 2) less chance of present or future incompatibility with other boards.

When we heard of the Vandenberg Data Products Board (\$330 kit, \$365 assembled) and the Seattle Computer Products Board (\$325 for 450 nsec. chips and \$375 for 250 nsec. chips assembled, but \$375 and \$425 after May 15) we asked for and received an evaluation board from both companies.

Both boards were used for several weeks in a Sol-20 with a North Star Microdisk System. There were no problems except that each initially had a single bad chip. (There evidently is no fully effective memory test. Both of the bad chips passed most of the memory tests that I have accumulated.)

Both boards require "hard-wire" memory addressing instead of using DIP switches. They both use wire-wrap pins on the component side and therefore you must solder or wire wrap each 4K memory block to its starting address. This disadvantage can become an advantage by using a "parallel addressing" scheme. We suggested this possibility to both manufacturers and they both independently came up with the same design. Rod Brock, of Seattle Computer Products, responded with a complete article which is printed elsewhere in this issue. I am testing this now and so far--no problems. It even ran well in a short test using Helios DMA. The Vandenberg mod is identical except that the resistors are 2.2K ohms ($\frac{1}{4}$ watt) and the diodes are either 1N4148 or 1N914. In both cases the companies said they would consider the modification as authorized for warranty purposes.

These are both "good" boards--the choice between them depends on how you view the tradeoff between "fully static" and low power.

Seattle. This board, which uses the TMS 4044 chip (either the 450 nsc. or 250 nsec version) is fully static. The board is well designed, is properly gated for the Sol bidirectional bus, and allows a lot of options for atypical systems. For the Sol the SINP, SOUT, and MWRITE signals should be implemented. The designers have done several things

to minimize noise--they have used "bus bars" and separate regulators for each 4K. Also the regulators are on the right which shortens the ground path which minimizes the possibility of ground loops. The board can be disabled using the phantom line, but they did not put a pad next to line E7, so the jumper must be soldered to the top of the socket finger. Also the data input lines are "conditioned" but are not buffered. So far this has not caused any real problems.

The board we tested had the 250 nsec. chips and it ran with everything that we tried it with. (interrupts, and Ithaca Audio Z-80 Board, Imsai Disk System, North Star Disk, Imsai, Helios 11, and a Sol.

The major concern is power dissipation. The board uses 1.7 amps nominal and the specs give 9.0 volts as max for the 8 volt supply. Many Sols exceed 9 volts (mine is 9.7 V.). A note on the spec page states, "The input regulators will handle higher voltages than +9, however, special cooling for the regulator heat sinks is required at these higher input voltages." The heat sinks are indeed small and ventilation in the memory board area of the Sol is not good. The warranty defines "unreasonable use" as including input voltages exceeding the spec and temperatures exceeding the spec caused by inadequate cooling. Therefore many Sol owners would need to make some sort of modification to safely use the Seattle board. I have already added a fan on the back of my Sol which blows in over my boards. With this extra fan turned on, the board runs at about the same temperature as it does with an 8 volt supply in an open cabinet, which is about the same as, or even perhaps cooler than most other static memory boards.

Vandenberg. This is a very cool running board even without the fan, since it has very low power consumption (650 ma at +5V-, 90 ma at +12V. and 16 ma at -5V.). This is due to the fact that it is not a "fully static" board. The board uses the NEC uPD410 which is an "edge triggered" memory chip.

Data storage is completely static and does not require refresh. The static storage cell is, however, combined with dynamic peripheral circuits (such as decoders). An activation edge must be provided by the system in order for the chip to generate clocks internally. (An article in the Sept., 1977 Electronic Products Magazine goes into more detail.) The chip has the low power virtues of dynamic memory. Unfortunately it also seems to have at least some of the incompatibility vices. It worked with Imsai DMA and one Helios, but not with another Helios. It did not work with a homebrew interrupt system or an Ithaca Audio Z-80 Board (Vandenberg said it worked fine with theirs). It worked flawlessly during an extended test in a Sol with a North Star Disk.

The inputs are buffered, the read data is properly gated with DBIN for a bi-directional bus, and the regulators are on the right to shorten the ground path. Also, the people at Vandenberg have been very pleasant and helpful, but they lose two points for advertising their board as "static" without any qualification.

Conclusion. The tradeoff between the low power consumption of dynamic chip circuitry and the greater simplicity of fully static chips is one on which reasonable and knowledgeable people will differ. My personal bias is toward trying to stay with fully static memory to minimize the chances of problems with other boards in the future.

Would you like to buy 8K more RAM for a couple of bucks? Sounds too good to be true. It is. But, in some cases, a couple bucks is all it takes to make your system think it has an extra 8K of RAM.

The problem which many programmers run into is that not all software has its origin at the same address. As an example, North Star begins its software a 2000H. Processor Tech Basic begins at 0000H. Do you "waste" the lower 8K of RAM while running North Star?

There are several solutions. One, you can buy 64K of RAM and forget the problem. Two, you can "relocate" your RAM whenever you switch software. Or three, you can use something called "parallel addressing".

Parallel addressing allows you to have the origin of your RAM at one address for one type of software and at another address for another type.

The example we tried with our board in the lab was suggested by Bill Burns of the Sol User's Society. He is the one who brought the idea to our attention and, as far as we can find out, originated it.

Figure 1 shows the memory map of our example in which 32K of RAM is made to look like 40K to the computer. Two 4K blocks are addressed in parallel by both 0000H to 1FFFH and 8000H to 9FFFH. For software originating at 2000H you have 32K running from 2000H to 9FFFH. For software originating at 0000H you have 32K running from 000H to 7FFFH. You can switch from one origin to the other "on the fly" without any change to the boards. The two 4K blocks which are "parallel addressed" are shown by the cross hatching on the figure. Other parallel addressing schemes should also work.

Figure 2 shows the circuit of our board after the parallel addressing modification has been made. For the configuration in our example, four 1N34 diodes are required and at least two 10K 1/4 W resistors (Figure 2 shows four resistors to allow for other addressing schemes).

Referring to figure 2, an address input of either 0XXXH or 8XXXH will pull down the number 1 chip select line. The 4K block of RAM connected to the CS1 line will be activated by either address. Similarly, 1XXXH and 9XXXH will both activate the 4K block of RAM connected to CS2. In our example, the RAM connected to CS3 and CS4 will not respond to parallel addressing.

To modify the Seattle Computer Products 16K RAM for parallel addressing, replace the address selection jumpers with 1N34 diodes for the 4K RAM blocks you want to respond to multiple addressing. Make sure the cathode end of the diodes is toward the 74LS138s.

We suggest you put in all four 10K resistors. They mount in the test pads located just to the right of U7. Mount them vertically with their upper ends tied together and then to +5 volts. (The right side of R7 is +5).

Parallel addressing seemed to work fine on our board at room temperature. The scheme does cut down on the noise margins of the circuit a bit and may not work under all temperature and noise environment conditions. We assume the same type of scheme will work with board from other manufacturers if they have a chip select circuit similar to ours.

We consider the modification "authorized" which means it will not affect the one-year warranty on our board. We do not, however, warrant that the modification will work under all conditions--we simply have not tested it enough.

A word of cautions soldering in the modification will void the ten-day return privilege on our board. So, if your decision to keep one of our boards is dependent upon making parallel addressing work, you had better try it first with clip leads.

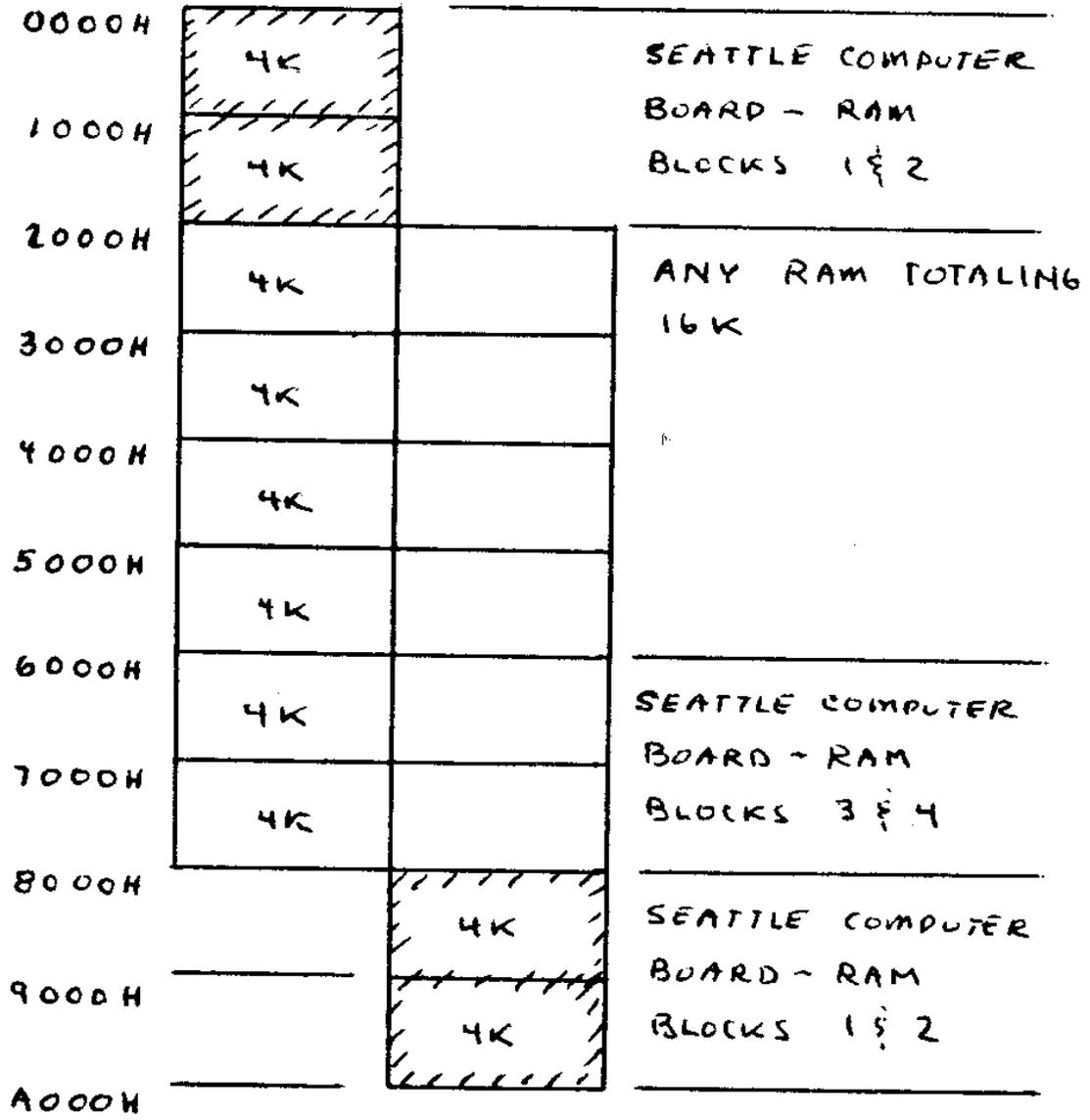


FIGURE 1 — MEMORY MAP SHOWING EFFECT OF PARALLEL ADDRESSING.

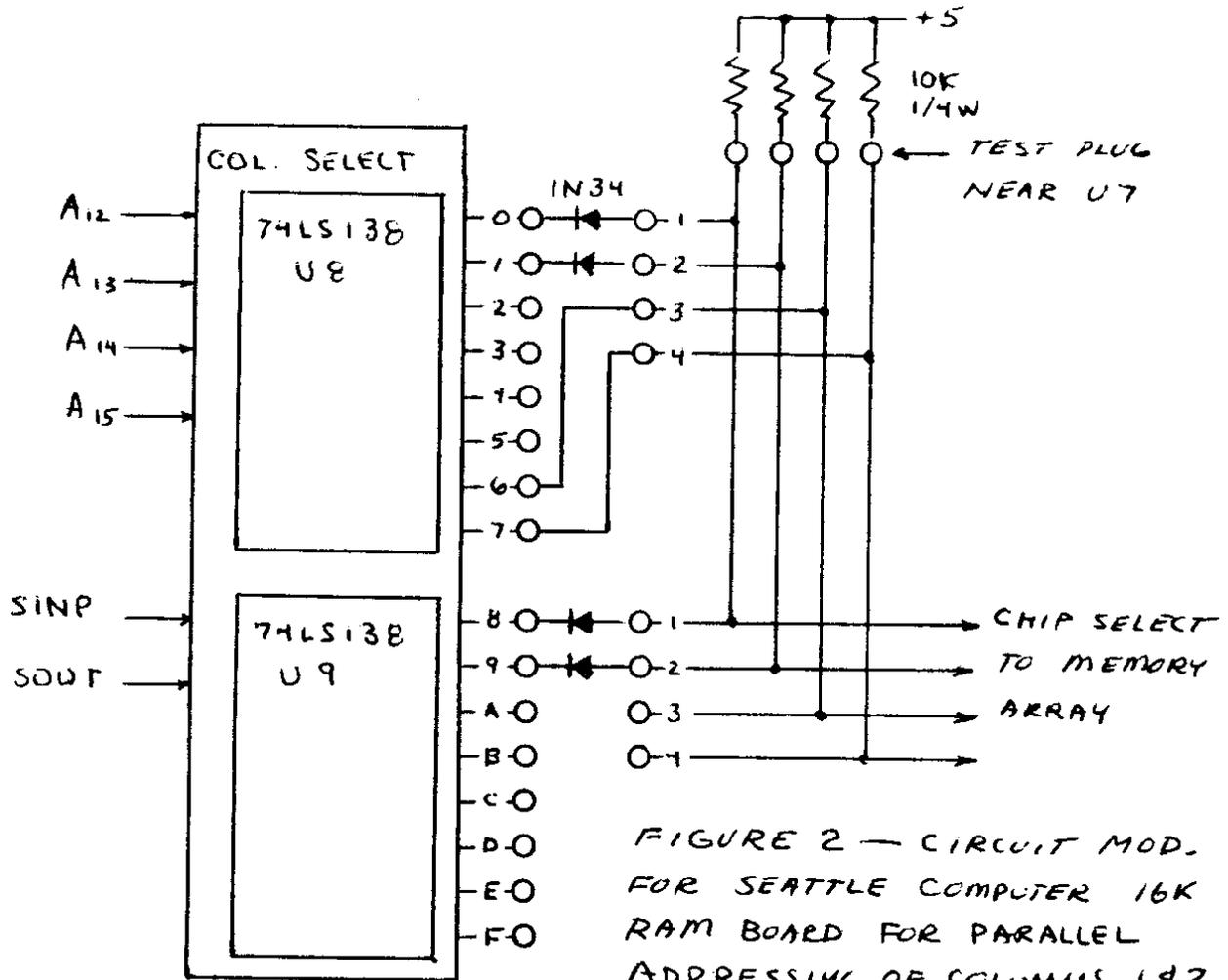


FIGURE 2 — CIRCUIT MOD.
FOR SEATTLE COMPUTER 16K
RAM BOARD FOR PARALLEL
ADDRESSING OF COLUMNS 1 & 2.

On page 3 of the Dec issue, El Lord complained about the lack of provisions in the Micropolis disk operating system for peripherals. Jerry Lenz wrote that he has his printer working under the Micropolis, but not the cassette. The two of them are going to get together to figure out how to drive their peripherals. Anyone with more info is requested to let us know. Has anyone asked Micropolis about this? It is incredible that they would not provide for anything other than the disk and the terminal.

Robert Frase (Germantown, TN) asked if we know any little secret that might help him get his MITS 8K 4.0 BASIC to run on his SOL. Well, we do. It's called Dr. Dobb's Journal, Box E, Menlo Park, CA 94205. In issue number 1 of this publication, a letter from Jack L. Calaway gives the listing of all of the needed patches. We've reproduced the article here for those who don't yet subscribe to this great journal. You really should. It takes no advertizing, so it is free to criticize any manufacturer without fear of being cut off of advertizing revenue. It's on our side. There's a subscription form reproduced here for your convenience.

PTC MAY PRODUCE SOL-HARDWARE DEBUGGER

Processor Technology is contemplating the production of a device that would let one SOL diagnose hardware problems in another SOL. The device, which they proudly call the ParaSol (because it takes a pair of Sol's to make it work), would sell for about \$150 retail, including hardware and software.

Parasol would consist of a board that plugs into the "sick" Sol and a ribbon cable to connect to the parallel port of the "doctor" Sol. Software in the "doctor" would let the user perform tests that would pinpoint malfunctions in the "patient." They originally intended the product for their dealers only, but if there is enough demand they will make it generally available. SOLUS chapters, computer centers, and other clusters of Sol's may want to share one of these. If you would like one, let PTC know you are interested. Mention you read about it in SOLUS NEWS.

RUMORS

Processor Tech is putting the finishing touches on their FORTRAN. The disk version will be released first, but the cassette version will not be far behind....PT has provided a stipend and a computer with Helios to a UCSD grad student in the portable Pascal project. In exchange they will receive a Helios version of the UC San Diego Pascal system that was discussed at the 2nd West Coast Computer Faire. When? They don't know. Cost? They don't know....PT has a 32KRA dynamic RAM board that has been delivered to dealers only. They haven't advertized it yet because their suppliers can't ship them enough chips yet....PT is still working on their high-density graphics board for the SOL's graphics expansion plug. Rumors say that it will display 208x256 points, using a bit-mapped technique with memory included on the same board. It will have B&W and color, and it will allow graphics intermixed with regular SOL characters... Apparently PTC is holding tight to their new policy of not advertizing until the product is on the shelf.

PATCHING MICROSOFT'S 4.0 BASIC
ON P.T.'s SOL

Dear Dr. Dobbs:

77 Sept 5

Just a quick note to pass along a couple of things. First, the kudos and brickbats. The good guys; *Dr. Dobbs*, your publication is the most interesting of all the "home computing" publications. Xybek, and their PROM programming board, a good product with excellent documentation, and people with a genuine desire to help their customers, Micro-Chess, a super chess playing program, with good documentation and priced fairly. The bad guys; the multitude of manufacturers who have promised so much, and have delivered so little, (IMSAI, where's the 12K BASIC, Processor Tech, where's the 8K BASIC so long overdue?).

Attached are the patches I made for a friend so he could use his Altair BASIC on his new Sol. I know you would prefer an assembler listing, but I did these patches by hand. The program should first be loaded, the patches made, and a copy of the modified program be dumped before running the first time. The first column is the old data, the second column is the change. I understand that there may be more than one version of the extended 4.0, so take care that your version is the same as this one.

Thanks for the neat publication. I enjoy it from cover to cover.

Jack L. Calaway
165 E Sierra Madre Blvd
Sierra Madre, CA 91024

P.S. This has been typed using Michael Shroyer's "Electric Pencil Word Processor".

```
;PATCHES TO ALTAIR CASSETTE VERSION OF LEVEL 4.0 BASIC
;FOR USE ON A PROCESSOR TECHNOLOGY SOL WITH SOLO
;LOAD THE ORIGINAL PROGRAM, MAKE THE CHANGES AND SAVE
;A COPY BEFORE RUNNING IT.
```

ADDRESS	ORIGINAL	CHANGE
---------	----------	--------

```
;8K V-4.0
```

```
;DISABLE TERMINAL INITIALIZATION. SET UP CUTTER
```

193A	DB	3E
1938	FF	00
193C	E6	D3
193D	F0	FA
193E	0F	C9

```
;SEND NULL CHARACTER ON CSAVE, SO CLOAD WORKS OK
```

0030	00	F5
0031	00	AF
0032	00	D3
0033	00	FB
0034	00	F1
0035	00	06
0036	00	01
0037	00	C9

```
;OUTPUT TO THE SOLO, RESET THE FLAGS
```

0547	DB	F1
0548	00	C5
0549	E6	47
054A	80	CD
0548	C2	19
054C	47	CO
054D	05	78
054E	F1	C1
154E	D3	B7
154F	D3	B7
1550	01	C9

Address	Original	Change
---------	----------	--------

```
;PARITY STRIPPER FOR CNTL-C TEST
```

0551	F5	E6
0552	08	7F
0553	00	C3
0554	F1	70
0555	C9	06

```
;MAIN CHARACTER INPUT ROUTINE
```

0556	DB	CD
0557	00	1F
0558	E6	CO
0559	01	CA
055A	C2	56
0558	56	05
055C	05	00
055D	DB	00
055E	01	00

```
;INPUT TEST
```

060C	DB	CD	
060D	00	1F	
060E	E6	CO	
060F	01	00	
0610	CC	C4	PATCH
0611	6D	51	
0612	06	05	

```
;INPUT TEST
```

0669	DB	CD
0669	00	1F
066A	E6	CO
866B	01	C8
066C	CO	00

```
;CASSETTE INPUT (NOT CONSECUTIVE)
```

1141	06	FA
1143	01	50
1144	C2	CA
1148	07	FB

```
;CASSETTE OUTPUT (NOT CONSECUTIVE)
```

114E	06	FA
1152	C2	CA
1157	07	FB

```
;CASSETTE INITIALIZATION
```

1159	06	F7	RST 6
115A	01	00	

```
;Extended Mods
```

```
;DISABLE CONSOLE SWAPPING FUNCTION
```

3A43	FE	00
3A44	43 (C)	00

```
;PREVENT TERMINAL SETUP, AND INITIALIZE CUTTER
```

38EB	DB	3E
38EC	FF	00
38ED	E6	D3
38EE	F0	FA
38EF	0F	C9

```
;SHORTEN ILLEGAL FUNCTION CALL, AND OUTPUT CALL TO CASSETTE
```

0349	4C	20
034A	45	46
034B	47	55

```

Address      Original      Change
034C         41           4E
034D         4C           20
034E         20           43
034E         46           41
0350         55           4C
0351         4E           4C
0352         43           00 (EOM)
;
0353         54           F5 NULL PATCH
0354         49           AF
0355         4F           D3
0356         4E           FB
0357         20           F1
0358         43           06
0359         41           01
035A         4C           FE
0358         4C           F4
035C         00           C9

;OUTPUT
0E01         DB           F1
01002        00           C5
0E03         E6           47
0E04         80           CD
01005        C2           19
0E06         01           C0
0E07         OE           78
0E08         F1           C1
0E09         D3           B7
0E0A         01           C9

;PATCH FOR CNTL-C TEST
0E0B F5       E6           PATCH
0E0C 00       7F
0E0D 00       C3
0E0E F1       C6
0E0F C9       OF

;MAIN INPUT ROUTINE
0E10         DB           CD
0E11         00           1F
0E12         E6           CO
0E13         01           CA
0E14         C2           10
0E15         10           OE
0E16         OE           00
0E17         DB           00
0E18         01           00

;INPUT TEST
0EAD         DO           CD
0EAE         00           1F
0EAF         E6           CO
0EB0         01           00
0EB1         CC           C4
0EB2         C3           0B
0EB3         OF           0E

;INPUT TEST
0FBE         DB           CD
0FBF         00           1F
0FC0         E6           CO
0FC1         01           C8
0FC2         C0           00

;CASSETTE INPUT (NOT CONSECUTIVE)
22F7         06           FA
22F8         01           50
22F9         C2           CA
22FD         07           FB

```

```

;CASSETTE OUTPUT (NOT CONSECUTIVE)
2304         06           FA
2307         C2           CA
230C         07           FB

;CALL NULL ADDING ROUTINE
230E         06           CD
230E         01           53
2310         FE           03
2311         F4           00

```

Amateur Computing 78-July 22-23

Sheraton National Motor Hotel Arlington, Virginia

CALL FOR PAPERS - This is to invite you to present a paper, participate in a panel discussion, display an amateur computer system or sponsor a tutorial at Amateur Computing 78. This will be a weekend microcomputer festival with attendance of several thousand people interested in personal computing from viewpoints of users and avid hobbyists.

Those interested in making a presentation should submit a letter of intent along with a one-page abstract or outline by April 15 to John Wall Miller, Program Chairman, 6921 Pacific Lane, Annandale, VA 22003, telephone (703) 256-5702. Authors presenting papers will be provided with instructions for preparation of camera-ready papers which are due by June 1. Areas of interest are: personal computing applications of microcomputers; home educational uses of computers; speech, music and graphics; standards for hardware, software and interfacing to the real world; and, subjects of interest to beginners.

Commercial exhibitors will include retail computer stores, computer systems manufacturers, computer services, computer magazines and others. An exhibitor prospectus will be available from Amateur Computing, P.O. Box 682, McLean, VA 22101.

Amateur Computing 78 will be held in the modern, attractive and completely equipped convention facilities of the Sheraton National Motor Hotel which is near the Pentagon and overlooks the monuments of Washington, DC. Out-of-town attendees will want to reserve one of the 336 luxuriously appointed rooms at the hotel. All requests for rooms should be directed to the hotel at (703) 521-1900 (not the toll-free 800 number) mentioning Amateur Computing. Or, write to the hotel at Columbia Pike & Washington Blvd., Arlington, VA 22204.

This event is being sponsored by AMRAD who held the highly successful AMRAD Computerfest in October 1976 in Vienna, Virginia. The 1976 test in one day attracted over 1500 people. Amateur Computing 78 will be a two-day show in a fine, new hotel.

Homebrew Computer Club.
P.O. Box 626, Mountain View, CA 94042

This letter was inspired by the March 78 issue of SOLOS NEWS. First, I ordered the Vandenberg 16K static RAM board by telephone on 4 January and had it on the 7th. It has been in my SOL and working perfectly ever since.

My computer is built around the SOL PC board. The power supply is home brew, the keyboard surplus, the other memory boards are the ECONORAM II and ECONORAM III. I have the Software Technology "Music System", Percom CI-812 Interface board, Peripheral Vision Floppy, Dutronics Z-80 conversion kit, Teletype Model 43, and the Carterfone (Selectric) Data Terminal.

So far the PV floppy will not work with my SOL. I can read their disk but can't write one. I'm going to send it back to them to see if it is the floppy or my machine. The Dutronics Z-80 kit is also giving me trouble. It works most of the time but gives me CS errors when running BASIC5 for no reason and it will not even read some ROMs but will read others.

The Selectric hasn't been interfaced yet. It is EBCD and RS-232 and I have a program but just haven't gotten around to it yet. This letter was written by SOL on the Model 43 using the "Electric Pencil" by Michael Shroyer. This is a fantastic text editor and it comes on a CUTS cassette with a very good manual. No changes were required to run it. The Model 43 has a TTL interface and the TTL to RS-232 interface converter for \$7.00 from Electronic Systems is all I needed to get it up and flying.

I also had washing machine problems and I installed a surge filter and RF filter but it didn't help. I mounted the PC board and power supply in a metal cabinet and grounded everything and I haven't had any more problems. My computer and my washing machine are on the same 30 Amp breaker. I plan a separate circuit soon.

That's it for now, Stan. I'm still selling articles all over the place. Seventeen since January 1977. Lastly, I think that the Teletype Model 43 is the best printer buy on the market. For \$1050 from the DATA MART in Arlington Heights, Illinois it includes a very nice solid state keyboard. The paper also much cheaper than the type used on the Axion 800 written up in SOLUS NEWS.

Sincerely,

Rod Hallen

P.S. My processor Technology Extended Cassette BASIC just arrived. A very long wait but it looks like it was worth it. I haven't done much more than load it and play but it has an awful lot of features that I have been waiting for, and some that I didn't expect like program renumbering. I'll pass along my thoughts on it after I work with it a while. I wish that all my BASIC5 tapes could be used with it but no go. I'll have to enter all of my programs again by hand. Oh well, I can rewrite and improve them at the same time. Now let's see, what did I get for my \$45.00.

Be advised that I am plugged into the Pascal News, and have even ordered Z_80/8080 Pascal for my company, HPR, from the University of California at San Diego. I'll in report when I met it working (it costs \$200/copy).

Sincerely,

Rod Montgomery

THE ENCLOSED CIRCUIT MAY BE WHAT YOU ARE LOOKING FOR IN ORDER TO REMOVE POWER LINE "HASH" IN YOUR SOL.

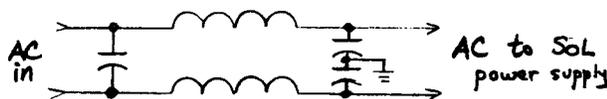
I TOO, HAD TROUBLE WITH POWER LINE GARBAGE (ESPECIALLY WITH MY VIDEO MONITOR, SINCE THAT WAS VISIBLE). THE CIRCUIT SHOWN IS NOT CRITICAL AT ALL, BUT THE VOLTAGE RATINGS OF THE CAPACITORS MUST BE OBSERVED. THE INDUCTORS WERE HOMEMADE, USING 16 GA. WIRE (INSULATED) AND WOUND ON A HALF INCH ROD. THE NICE THING ABOUT THIS CIRCUIT IS THAT IT IS CHEAP. ALSO, NOTE THAT IT'S NOT DESIGNED TO PROTECT AGAINST A NEARBY LIGHTNING STRIKE (AS ARE THE UNITS EQUIPPED WITH G.E. MOV UNITS). RATHER, IT FILTERS THE "HASH" ONLY.

TRY ONE. YOU MAY DO AS I DID AND PUT ONE IN EVERYTHING AROUND---(SOL, VIDEO MONITOR, PRINTER, AND DISK).

SINCERELY,

BILL JONES

MARION, OHIO AA



Caps = .02 @ 600v (ceramic)
 coils = 3 feet of #16 ga. wound closely
 on a 1/2" form.

I HAVE NOTED A SPORATIC PROBLEM IN MY SON'S SOL-20 (AND HAVE HEARD OF THE POSSIBILITY OF SIMILAR PROBLEMS IN OTHER SOLS, IN A DISCUSSION WITH A COMPUTER TECHNICIAN, PHIL, WORKING AT THE SAN RAFAEL BYTE SHOP).

THE SOL-20 BCB (5 SLOT BACK-PLATE-BOARD) IS INSERTED INTO J11, THE S-100 BUS OF THE SOL PC MOTHERBOARD. WHEN ATTACHING AND TIGHTENING THE GUSSET AND ANGLE BRACKETS (SEE CABINET-CHASSIS ASSEMBLY INSTRUCTIONS IN THE SOL SYSTEMS MANUAL),

SOME BCB PINS MAY LOSE CONTACT WITH THE S-100 BUS

THIS PROBLEM SHOWED ITSELF AS A MERE INABILITY TO USE TWO DIFFERENT MEMORY BOARDS SIMULTANEOUSLY, AND WAS CORRECTED BY ENSURING THAT THE BCB WAS PUSHED FIRMLY INTO THE S-100 BUS.

THANKS FOR THE GOOD WORK ON SOLUS NEWS.

P.S. ENCOLOSED IS A FIRST DRAFT OF SONOMA COUNTY COMPUTER CLUB NEWSLETTER.

EARL HERR

17 SPRING HILL DRIVE
 CAZADERO, CA 95421

Re: Sol & VDM GraphicAdd

Your readers may be interested in a Canadian addition to the support available for Sol and VDM. The attached sheet describes a graphics package that is available from Micro-Ware Ltd. in Toronto (27 Firstbrooke Rd., Toronto, Ont. M4E 2L2).

I purchased the GraphicAdd kit and I am extremely happy with it. the piggyback PC board was easy to assemble and install. Everything worked immediately. The documntation is good, and the graphics driver supplied on CUTS tape is easy to use.

All in all I regard GraphicAdd as a satisfying addition to my system acquired at a very reasonable price.

Yours sincerely,

Arthur L. Close
VANCOUVER B.C.
CANADA

(Editor: We'll have a review of GraphicAdd and another graphics add-on for Sol in a future issue.)

Congratulations on a fine job with SOLUS NEWS up to now; keep up the good work! To help you keep it up, I am enclosing my \$10 membership dues for 1975, as indicated in the October/November issue. Also enclosed with this letter is a brief description of my adventures with relocating cassette ALS8 to a more convenient location in my SOL system, if this information might be useful to other members, please include it in a future issue. Also, any additional information or corrections would be appreciated. (By the way, do all ALS8 tapes contain the same version? Users who attempt the relocation should check my information against their actual code before changing anything.)

I am happy to see new SOLUS chapters forming, including two in the Chicago area. (Though Lombard, IL is almost as far from Chicago as I am from Homewood!) What is involved in being a local chapter coordinator? I might be interested in coordinating south suburban Chicago members, if there are any, if I knew what that might involve. Does anyone in SOLUS have a SWTPC PR-40 printer attached to a SOL? If so, are there any difficulties in interfacing? I've been looking at the PR-40 as a possible addition, but need to know what I'm getting into. Also, does anyone have practical information about RCA's Alpha-1 digital tape system used with a SOL? I just got my Extended Cassette BASIC this week; while it's a little larger than I expected, it seems to be quite good. I hope PT gets on the ball and gets that promised software done and shipped soon (as well as their ACCESS.) Thank you for taking the time to listen to us far-distant members.

Yours truly,

John Osudar
Homewood, IL

Another SOLUS member asked in a recent (Vol. 0, No. 3) issue of SOLUS NEWS if anyone had modified PT's ALS-8 to be more compatible with SOL. (The person asking was Mr. Bruce Barron).

Well, YES!

The following patches were made to the ALS-8 Cassette tape that I received from P.T. Inclusion of these patches will allow for straight-forward SOL use of ALS-8, without regard to P.T.'s change notice #1B or the "DF80 garbage" referred to by Mr. Barron.

<u>LOCATION</u>	<u>BEFORE:</u>	<u>CHANGE TO:</u>
E1E0	A9	77
E1E1	D0	FE
E1E9	01	FC
E1EF	00	FA
E1F0	E6	2F
E1F1	40	E6
E1F2	C9	01
E1F3	CD	C9

May I make a suggestion? How about including the address of those that write to SOLUS NEWS? This would allow those persons desiring information quicker response from other readers.

Keep up the good work, Stan!

Bill Jones
MARION, OH

(Editor: Thanks for the info and the suggestion, Bill. I will gladly print anyone's address if they explicitly say it's okay to print it. In general my policy is not to print addresses because of two reasons. First, I want to encourage open letters among members rather than a lot of side correspondence so we ail can benefit from the information. Second, the Southern California Computer Society has had a bad experience because members' addresses got into the hands of thieves.)

HOW DO YOU LIKE THE NEW FORMAT?

We realize the new format needs a bit more polishing up and would like to know reader reactions to it. Is it too hard to read? Is the print too small? Did you prefer the old format? Is the nuisance a reasonable price to pay for getting twice the information? Let us hear from you. Write to the editor please.

Micro-Shev Ltd.

Alon Shvut, Gush Etzion, Israel

Jan. 12, 1978

Sol User's Group

Bill Buras
4190 Maybell Way
Palo Alto, CA 94306

Dear Sir:

As the SOL dealer, assembler and technical support in Israel, we have assembled about a dozen SOL's, and have a few hints for others.

- 1) If resetting is a problem, replace U76 = 74LS175 with a 54LS175 (military version). Similar replacements have also been found to help with stubborn CRT driver problems.
- 2) The RS-232 pullup resistor, R29, should be disconnected from the 5v supply and reconnected to 12v (e.g. Q1 emitter).
- 3) The ALS-8 can be modified to work directly with the SOL:

ALS driver

```
E1E0 A9 D0 CD A4 D0 CA 98 D0 DB 01 E6 7F 47 09 DB 00
E1F0 E6 40 C9 CD A4 D0 CA B8 D0
```

revised ALS driver (changes underlined)

```
E1E0 A9 D0 CD A4 D0 C2 98 D0 DB FC E6 7F 47 09 DB FA
E1F0 E6 C1 C9 F5 CD 54 C0 F1 C9
```

Sincerely,

Dr. Yehuda Cern, Ch. Eng'r

By now, you have probably heard that PT inadvertently omitted a means of sending nulls to a printer from Extended Basic. I was told that they had planned to let Solos do it, but as it turns out, EB does not send the proper message to Solos. For Diablo owners, it means that we have to operate at 300 baud each time we want to use EB; for me that is a pain since 90% of my work is with the Electric Pencil at 1200 baud. It is possible to include a PAUSE in every other statement line, but that does not help if you need to list a program. Has anyone in the club written a software "fix" for this problem?

If you are overwhelmed with SOLUS NEWS, I might be able to help out with some of it.

Regards,

Gerald Harwood

I have an insurance agency, and am using the Sol to type letters, rate policy quotes etc. I felt that if I was going to use a computer to address my customers, I didn't want them to know it. This meant I had to have a solid character printer, but I couldn't get myself sold on a selectric conversion because they are slow and the mechanics remind me of a corn thrashing machine. I wound up with a used GE TermiNet, a 30 cps terminal which after 5 months is completely reliable, quite and compact. Both the Sol and TermiNet seem to think that they are talking to another computer through the serial interface, so the Transmitted Data (BA) and Received Data (BB) signals must be reversed. Also you must change the Request to Send (CA) and Clear to Send (CB) lines.

There has been lots of discussion on tapes. Late one night I needed a tape and was out of the expensive ones. I slipped in a "cheapie", and it worked fine. now I buy Radio Shack Concertape, three C-30's for \$2.05. My recorder is a Panasonic RQ-309S, with automatic record volume setting, and it makes a really hot tape. I saved enough to buy a Helios.

Finally, can you recommend a text, or has anybody written software to index disk data files. If and when the Helios and BASIC get together, I will have about 1500 customer files to access with non sequential customers. How can I get to the last file without reading every one in between?

Happy diodes!

Martin Hill, Jr.

Aurora, Colo.

Stan: The best assembly language programming book that I've seen is 8080/8085 assembly language programming by Leventhal - Osborne & Associates.

ROD HALLEN

Tombstone, AZ

SOFTWARE

```

0010 *SOLOS CUSTOM OUTPUT DRIVER TO CREATE
0020 *MULTI-BLOCK TAPE FILES (BYTE ACCESS)
0030 *FROM NUMBERED OUTPUT (AND INPUT) LINES
0040 *WHILE DISPLAYING NON-NUMBERED LINES.
0050 *SUCH AS COMMANDS LIKE "LIST".
0060 *CR ENDS LINE AND REVERTS TO DISPLAY.
0070 *LF, NULL, RUBOUT AND LEADING BLANKS
0080 *MAY PRECEDE LINE NUMBER.
0090 *
0100 *THIS ALLOWS ANY BASIC OR EDITOR USING
0110 *SOLOS SOUT OUTPUT ROUTINE TO MAKE
0120 *NON-COMPILED ASCII FILES WHICH CAN BE
0130 *LOADED BY P.T. EXTENDED BASIC. CORRECT
0140 *SYNTAX AFTER LOADING.
0150 *
0160 *   BY: RICHARD GREENLAW
0170 *       251 COLONY CURT
0180 *       GAHANNA, OHIO 43230
0190 *
0200 *EXAMPLE: CONVERT A SOL BASIC5 PROGRAM
0210 *TO P.T.'S EXTENDED BASIC:
0220 *IN SOLOS. BASIC5 AND YOUR PROGRAM LOADED.
0230 * >SET CO CAC0 (ADDRESS OF THIS DRIVER)
0240 * >SET O=3     (SELECT THIS DRIVER)
0250 * >EX 0        (RUN BASIC5)
0260 * READY       (FROM BASIC5)
0270 *HAVE THE TAPE READY TO WRITE THEN TYPE:
0280 * LIST        (COULD SPECIFY RANGE)
0290 *WAIT FOR THE TAPE TO STOP THEN TYPE:
0300 * !           (DOESN'T ECHO)
0310 *THE ! AS THE 1ST CHARACTER IN A LINE
0320 *CLOSES FILE AND DOES A SET O=0.
0330 *THIS WRITES THE LAST BUFFER ON TAPE.
0340 *
0350 *WHEN EXTENDED BASIC IS LOADED AND RUNNING
0360 *YOU CAN LOAD YOUR PROGRAM INTO IT BY:
0370 * GET BSC5T,T OR APPEND BSC5T,T
0380 *BE SURE TO POSITION THE TAPE BEFORE THE
0390 *FIRST TAPE BLOCK OF THE FILE.
0400 *
0410 * B=CHAR TO OUTPUT
0420 *PRESERVES ALL REGISTERS BUT A,PSW.
0430 *ERRORS EXIT TO SOLOS COMMAND LEVEL
0440 *AFTER CLOSING THE FILE AND REVERTING
0450 *TO THE DISPLAY DRIVER.
0460 *
CAC0 0470 UNIT EQU 1 TAPE UNIT (1 OR 2)
CAC0 0480 CR EQU 0DH CARRIAGE RETURN
CAC0 0490 EXCLM EQU 21H EXCLAMATION MARK
CAC0 0500 RUBOT EQU 7FH RUBOUT
CAC0 0510 AOUT EQU 0C01CH SOLOS OUTPUT SUBR.
CAC0 0520 FOPEN EQU 0C007H SOLOS OPEN SUBR.
CAC0 0530 WRBYT EQU 0C010H SOLOS WRITE BYTE SUBR.
CAC0 0540 FCLOS EQU 0C00AH SOLOS FILE CLOSE SIR.
CAC0 0550 SOLOS EQU 0C004H SOLOS COMMAND LEVEL
CAC0 0560 FLSTS EQU 0C855H+7*UNIT-7 FILE STATUS
CAC0 0570 OPORT EQU 0C807H CURRENT OUT PSEUDO-PORT
CAC0 0580 *
CAC0 E5 0590 TOUT PUSH H
CAC1 D5 0600 PUSH D
CAC2 C5 0610 PUSH B
CAC3 78 0620 MOV A,B CHAR OUTPUT
CAC4 E6 7F 0630 ANI 7FH MUSTN'T PUT PARITY INTO BASIC
CAC6 47 0640 MOV B,A
CAC7 3A 44 CB 0650 LDA NWLNF NEWLINE FLAG

```

CACA	B7		0660	ORA	A	
CACB	C2	F9 CA	0670	JNZ	FIRST	IF 1ST CHAR, BARRING SOME
CACE	78		0680	MOV	A,B	
CACF	FE	0D	0690	CPI	CR	
CAD1	CA	F1 CA	0700	JZ	GOTCR	IF CARRIAGE RETURN
CAD4	3A	45 CB	0710	OUT LDA	TAPEF	
CAD7	B7		0720	ORA	A	
CAD8	CA	16 CB	0730	JZ	DISPL	IF NO TAPE FLAG, DISPLAY.
CADB	32	45 CB	0740	TAPE STA	TAPEF	ENSURE TAPE FLAG SET
CADE	3A	55 C8	0750	LDA	FLSTS	FILE STATUS
CAE1	B7		0760	ORA	A	
CAE2	CC	20 CB	0770	CZ	OPEN	IF CLOSED
CAE5	3E	01	0780	MVI	A,UNIT	
CAE7	CD	10 C0	0790	CALL	WRBYT	WRITE B TO UNIT A
CAEA	DA	33 CB	0800	JC	EXIT	
CAED	C1		0810	RTN POP	B	
CAEE	D1		0820	POP	D	
CAEF	E1		0830	POP	H	
CAF0	C9		0840	RET		
CAF1			0850	*		
CAF1	3E	01	0860	GOTCR MVI	A,1	
CAF3	32	44 CB	0870	STA	NWLNF	SET NEW LINE FLAG
CAF6	C3	D4 CA	0880	JMP	OUT	SEND WHEREVER LINE WENT
CAF9			0890	*		
CAF9	78		0900	FIRST MOV	A,B	
CAFA			0910	*DON'T JUDGE	LINE BY CERTAIN CHARS.	
CAFA	FE	21	0920	CPI	EXCLM	
CAFC	CA	2E CB	0930	JZ	CLOSE	IF EXCLAMATION MARK
CAFF	FA	16 CB	0940	JM	DISPL	IF BLANK, LF, CR, NULL, ETC.
CB02	FE	7F	0950	CPI	RUBOT	
CB04	CA	16 CB	0960	JZ	DISPL	IF RUBOUT
CB07			0970	*CLASSIFY AS	TAPE IN DISPLAY	
CB07	21	44 CB	0980	LXI	H,NWLNF	
CB0A	36	00	0990	MVI	M,0	CLEAR NEW LINE FLAG
CB0C	FE	30	1000	CPI	'0'	
CB0E	FA	16 CB	1010	JM	DISPL	IF < ASCII ZERO
CB11	FE	3A	1020	CPI	'9'+1	
CB13	FA	DB CA	1030	JM	TAPE	IF NUMERAL (NEEDS A=UNZERO)
CB16	AF		1040	DISPL XRA	A	A=0
CB17	32	45 CB	1050	STA	TAPEF	ENSURE TAPE FLAG CLEARED
CB1A	CD	1C C0	1060	CALL	AOUT	B TO DRIVER 0 (DISPLAY)
CB1D	C3	ED CA	1070	JMP	RTN	
CB20			1080	*		
CB20	C5		1090	OPEN PUSH	B	
CB21	3E	01	1100	MVI	A,UNIT	
CB23	21	46 CB	1110	LXI	H,HEADR	
CB26	CD	07 C0	1120	CALL	FOPEN	OPEN FILE.
CB29	DA	33 CB	1130	JC	EXIT	
CB2C	C1		1140	POP	B	
CB2D	C9		1150	RET	.	ALSO OUTPUT IT
CB2E			1160	*		
CB2E	3E	01	1170	CLOSE MVI	A,UNIT	
CB30	CD	0A C0	1180	CALL	FCLOS	CLOSE FILE
CB33	3E	00	1190	EXIT MVI	A,0	
CB35	32	07 C8	1200	STA	OPORT	RESET OUTPUT TO DISPLAY
CB38	32	45 CB	1210	STA	TAPEF	CLEAR TAPE FLAG
CB3B	32	44 CB	1220	STA	NWLNF	CLEAR NEW LINE FLAG
CB3E	DA	04 C0	1230	JC	SOLOS	IF ERROR
CB41	C3	ED CA	1240	JMP	RTN	
CB44			1250	*		
CB44	00		1260	NWLNF DB	0	NEW LINE FLAG
CB45	00		1270	TAPEF DB	0	TAPE FLAG
CB46	42	53 43 35	1280	HEADR ASC	/BSC5T/	

```

CB4B 00          1290      DB      0
CB4C D4          1300      DB      'T'+80H  FILE TYPE
CB4D             1310 *REMAINDER OF HEADER IS BUILT ELSEWHERE

```

```

AOUT  C01C 1060
CLOSE CB2F 0930
CR     000D 0690
DISPL CB16 0730 0940 0960 1010
EXCLM 0021 0920
EXIT  CB33 0800 1130
FCLOS C00A 1180
FIRST CAF9 0670
FLSTS CB55 0750
FOPEN C007 1120
GOTCR CAF1 0700
HEADR CB46 1110
NWLNF CB44 0650 0870 0990 1220
OPEN  CB20 0770
OPORT C807 1200
OUT   CAD4 0880
RTN   CAFD 1070 1240
RUBOT 007F 0950
SOLOS C004 1230
TAPE  CADB 1030
TAPEF CB45 0710 0740 1050 1210
TOUT  CAC0
UNIT  0001 0790 1100 1170
WRBYT C010 0790

```

AS--DUMP CAC0 CBAC

```

CAC0: E5 D5 C5 78 E6 7F 47 3A 44 CB B7 C2 F9 CA 78 FE
CAD0: 0D CA F1 CA 3A 45 CB B7 CA 16 CB 32 45 CB 3A 55
CAE0: C8 B7 CC 20 CB 3E 01 CD 10 C0 DA 33 CB C1 D1 E1
CAF0: C9 3E 01 32 44 CB C3 D4 CA 78 FE 21 CA 2E CB FA
CB00: 16 CB FE 7F CA 16 CB 21 44 CB 36 00 FE 30 FA 16
CB10: CB FE 3A FA DB CA AF 32 45 CB CD 1C C0 C3 ED CA
CB20: C5 3E 01 21 46 CB CD 07 C0 DA 33 CB C1 C9 3E 01
CB30: CD 0A C0 3E 00 32 07 C8 32 45 CB 32 44 CB DA 04
CB40: C0 C3 ED CA 00 00 42 53 43 35 54 00 D4

```

```

* Mods to SOLOS to permit display of underline (5FH)
* Backspace is DEL only (7FH)
* Shift-DEL is underline (_)
* Warning: This change may affect other software
* Programmer: Ronald G. Parsons
*

```

```

C1FE          ORG      0C1FEH
C1FE 7F      DB      7FH      BACKS is now 7F only
*
C28B          ORG      0C28BH
C28B 7F      DB      7FH      backspace
*

```

A PATCH TO EXTENDED CASSETTE BASIC TO
PROVIDE NULLS AFTER EACH OUTPUT LINE
By Processor Tech

31

```
10 REM.
20 REM.  CHANGE CRLF ROUTINE IN BASIC TO JUMP
30 REM.  TO THE CRLF ROUTINE IN SOLOS/CUTER
40 REM.  WHICH WILL OUTPUT A NUMBER OF NULLS
50 REM.  EQUAL TO THE NUMBER SET IN SOLOS/CUTER
60 REM.
70 REM.  FOR SOLOS AND FOR CUTER LOCATED AT 0C000H
80 REM.  THE ADDRESS OF THE MEMORY LOCATION THAT
90 REM.  CONTAINS THE NUMBER OF NULLS TO OUTPUT IS
100 REM.  51216 DECIMAL.  THE NUMBER OF NULLS OUT-
110 REM.  PUT CAN BE CHANGED BY THE COMMAND:
120 REM.
130 REM.  POKE 51216,N
140 REM.
150 REM.  WHERE N IS THE NUMBER OF NULLS NEEDED
160 REM.
170 FOR N=0 TO 4
180   READ D: POKE 9840+N,D
190 NEXT N
200 REM.
210 REM.  FIND OUT WHERE SOLOS/CUTER IS LOCATED
220 REM.
230 LET A=PEEK(9852)*256
240 REM.
250 REM.  CALCULATE ADDRESS OF CRLF IN SOLOS/CUTER
260 REM.
270 IF PEEK(A)=0 THEN LET A=49913 ELSE LET A=A+834
280 REM.
290 REM.  POKE LOW BYTE OF ADDRESS OF CRLF IN SOLOS/CUTER
300 REM.  THEN POKE HIGH BYTE OF ADDRESS
310 REM.
320 POKE 9845,(A/256-INT(A/256))*256
330 POKE 9846,INT(A/256)
340 END
350 REM.
360 REM.  THE DATA BELOW IS EQUIVALENT TO:
370 REM.
380 REM.      XRA A
390 REM.      STA 286FH
400 REM.      JMP
410 REM.
420 DATA 175,50,111,40,195
430 REM.
```

The program above was sent to us by the Processor Technology software support people. It corrects the problem mentioned by Gerald Harwood on page 27. Apparently BASIC expected SOLOS/CUTER to supply the null characters necessary to kill time while hard-copy terminals return the carriage to column 1. But BASIC didn't do it right. This patch program will modify BASIC in memory. Save the corrected version of BASIC for future use.

The Atlanta chapter of SOLOS is alive and active. Our first meeting was Friday, January 13 (an auspicious meeting time) with about 10 people present. In the three meetings we've had since then our number has just about doubled (19). We normally meet on the first Monday and the third Thursday of each month, though this is subject to change, and our meeting place varies from time to time, so you'd better announce in SOLOS NEWS for any interested members to contact me first for current information (at (404) 436-0718).

Our first club project will be the establishment of communication capabilities through the use of modems. We are currently testing the modem kit put out by Electronic Systems of Burlingame, CA. If you'd is interested I'm sure we can provide you with a critique of this piece of equipment.

I personally would be interested in corresponding with anyone who has built and successfully implemented the 5204 PROM programmer that was written up in the September issue of Kilobaud.

Is there anything that I can do from afar to help with the software library? I am very interested in this activity and would be happy to help any way that I can. Have you thought about regional distribution of the software?

Keep up the good work. You'll be hearing from me on a fairly regular basis.

Sincerely,

George F. Reeves

METROPOLITAN WASHINGTON SOL USERS GROUP FORMS

Several SOL Users from the Metropolitan Washington DC area have been meeting monthly since the Fall of 1977. The first few meetings were "get acquainted" meetings with members of the group explaining certain features of the SOL system (e.g., VDM), demonstrating the EXPANDOR printer with a SOL, and presenting home brew software. In addition to these monthly meetings, the group is also sponsoring a weekly workshop in assembly language programming techniques; the goals of this workshop include the development of a text processor to be used in preparing letters, reports, etc. We expect to get our second projects started in a few weeks; this project will probably use Extended BASIC and develop a family financial accounting system. Anyone in the area interested in participating in any of these activities may contact:

Jim Logan
6817 Melrose Dr.
McLean, VA 22101
703-356-1968

THE SONOMA COUNTY COMPUTER CLUB WELCOMES ANYONE INTERESTED IN PERSONAL COMPUTERS. THE CLUB WILL HOLD ITS NEXT MONTHLY MEETING ON MONDAY, MARCH 27, 1978, AT THE CODDINGTOWN COMMUNITY MEETING ROOM (SECOND FLOOR, NEAR KPLS RADIO). THE MEETING WILL BEGIN AT 7:30 P.M., AND THE GUEST SPEAKER WILL BE WE WESLEY A. STONE, CPA. MR. STONE IS A SANTA ROSA CPA WHO WILL DISCUSS THE MEANING OF ORDINARY AND NECESSARY EXPENSES INCURRED IN A TRADER BUSINESS. HE WILL ALSO DISCUSS HOBBY LOSSES AND EDUCATION EXPENSE.

THE MARCH 27 MEETING WILL ALSO INCLUDE THE DEMONSTRATION OF A PERSONAL COMPUTER SYSTEM BY CLUB MEMBER EARL HERR, USING THE PROCESSOR TECHNOLOGY "SOL-20" COMPUTER AND "HELIOS II" FLOPPY DISC, WITH A PRACTICAL AUTOMATION IMPACT LINE PRINTER.

THE SONOMA COUNTY COMPUTER CLUB WAS STARTED OVER TWO YEARS AGO BY LIZA LOOP AND MARK ROBINSON, MEETING AT THE LO*OP CENTER IN COTATI. WHEN THE LO*OP CENTER CLOSED, THERE WAS A HALF YEAR LAPSE, UNTIL MEETINGS RESUMED AT THE CODDINGTOWN MEETING ROOM IN JANUARY, 1978. AT THE FEBRUARY 27 MEETING, MARK ROBINSON WAS ELECTED CLUB CHAIRPERSON, AND DAVE & ANNIE FOX PRESENTED AN EXCELLENT EXAMPLE OF COMMUNITY COMPUTER ACCESSIBILITY IN THEIR MARIN COMPUTER CENTER (A BEAUTIFUL AND PRACTICAL CENTER AT 76 SKYVIEW TERRACE, ROOM 301, SAN RAFAEL, 94903; SEE MARIN COMPUTER CLUB ANNOUNCEMENT BELOW).

THE SONOMA COUNTY COMPUTER CLUB WILL HOLD REGULAR MEETINGS AT 7:30 P.M. ON THE LAST MONDAY EVENING OF EACH MONTH, EXCEPT: THURSDAY, APRIL 27, AND DECEMBER DATE NOT YET SET.

OTHER BAY AREA MEETINGS:

- MARIN COUNTY COMPUTER CLUB, 1ST WEDNESDAY OF MONTH AT 7:00 PM. AT MARIN COMPUTER CENTER (ABOVE; DIRECTIONS 415-472-2650). NEXT MEETING APRIL 5.
 - HOMEBREW COMPUTER CLUB, 2ND WEDNESDAY OF MONTH AT 7:00 PM. AT STANFORD LINEAR ACCELERATOR CENTER, 2575 SAND HILL ROAD, MENLO PARK. CONTACT HOMEBREW COMPUTUER CLUB, POB 626, MOUNTAIN VIEW, CA 94042. NEXT MEETING APRIL 12.
-

SONOMA COUNTY COMPUTER CLUB NEWSLETTER INFORMATION, Oki CALL EARL HERR AT 707-632-5425.

Extensys was not able to demonstrate their SOL-compatible products at the March meeting of the S.F. Peninsula chapter. They plan to do it at the April 16 meeting. Consult the last issue for the time and place.

AXIOM PRINTER DRIVER FOR BASIC

By Bruce Barron

Processor Technology's long awaited Extended Basic has finally made it out. This is an excellent Basic and has built in functions to use the SOLOS pseudo-ports.

I have an Exiom EX-800 printer which requires a short output driver to handle timing and to provide CRT output in parallel with the printer. It seemed like a waste of time to hand load this driver each time I loaded the Basic so I modified the Basic as shown.

This program can easily be modified to also preload an input driver and custom programs. To use, load the original Basic but do NOT execute it. Now load the given program modified with your own driver. Then store the entire program on tape and use this tape for all further work. Once the program is initiated the Basic is identical to PTC's original.

Warning: Resetting via UpperCase/DEL also resets C0,C1,C0

```
0000          0010 * LOADER FOR PTC EXTENDED BASIC BY B BARRON
0000          0015 * THIS PROGRAM MODIFIES EXTENDED BSIC TO LOAD
0000          0020 * AN OUTPUT DRIVER INTO MEMORY STARTING AT
0000          0025 * LOCATION CB00H, 1FH BYTES LONG. THE DRIVER
0000          0030 * ORIGINALLY RESIDES AT 3FB0H.
0000          0035          ORG          0
0000 C3 86 3F 0040          JMP          3F86H
0003          0045          ORG          3F86H
3F86 E5          0050          PUSH        H
3F87 11 02 08 0055          LXI          D,0802H
3F8A 19          0060          DAD          D
3F8B          0065 * THIS IS THE SAME AS "SET CO"
3F8B 36 00 0070          MVI          M,ADDL
3F8D 23          0075          INX          H
3F8E 36 CB 0080          MVI          M,ADDH
3F90          0085 * * * * * * * * * * * *
```

```

3F93 01 B0 3F 0095 LXI B,ORIG
3F96 16 1F 0100 MVI D,LEN
3F98 0105 * MOVE DRIVER
3F98 0A 0110 NEXT LDAX B
3F99 77 0115 MOV M,A
3F9A 23 0120 INX H
3F9B 03 0125 INX B
3F9C 15 0130 DCR D
3F9D C2 98 3F 0135 JNZ NEXT
3FA0 0140 * THIS REPLACES ORIGINAL VALUES IN
3FA0 0145 * LOCATIONS 0001 AND 0002. THIS IS
3FA0 0150 * NECESSARY SINCE THE INITIALIZATION
3FA0 0155 * RUNS A CHECKSUM ON EVERYTHING.
3FA0 21 01 00 0160 LXI H,0001
3FA3 36 20 0165 MVI M,20H
3FA5 23 0170 INX H
3FA6 36 3C 0175 MVI M,3CH
3FA8 0180 * * * * *
3FA8 E1 0185 POP H
3FA9 01 00 00 0190 LXI B,0000
3FAC C5 0195 PUSH B
3FAD C9 0200 RET
3FAE 0205 ADDL EQU 00 LOW BYTE FOR "CO"
3FAE 0210 ADDH EQU 0CBH HIGH BYTE FOR "CO"
3FAE 0215 NEW EQU 0CB00H FINAL LOCATION FOR DRIVER
3FAE 0220 ORIG EQU 3FB0H LOCATION OF DRIVER IN THIS PROGRAM
3FAE 0225 LEN EQU 1FH LENGTH OF DRIVER
3FAE 0230 * 3FB0 START OF 1F BYTE LONG DRIVER

```

```

ADDH 00CB 0080
ADDL 0000 0070
LEN 001F 0100
NEW CB00 0090
NEXT 3F98 0135
ORIG 3F80 0095

```

CONVERTING TO PTC E-BASIC

By Bruce Barron

Processor Technology's extended Basic is finally here. During the 13 months since I ordered it I have written numerous programs in various other Basics I have had in my Sol-20 including MSA 8k, PTC Basic5, and very heavily modified MITS 8k and MITS Extended.

Since PTC's has several very useful additions I wanted to make this my primary Basic and convert all programs into it. [For example using the APPEND function I can make existing programs subroutines of other programs without retyping the whole thing.

I have a bit of memory: 20k starting at 0 and another 12k starting at D000. What I did was to enter the old Basic, modify the output driver and then list the program with the ASCII listing writing into high memory. The 12k is enough for almost any program (Both Star Trek and Blackjack each use about 10k). Then I enter the new Basic with a modified input driver to read from memory. If you don't have enough memory a similar method can be used incorporating the WRITE BYTE and READ BYTE tape modes.

The following programs assume that SOLOS is located at C000 and that ram CA00-CA1F and CB00-CB01 are available.

Write procedure:

1. Load old BASIC
2. Load Write program
3. Exec old Basic
4. GET (CLOAD) first program to be transcribed
5. Return to SOLOS (via Upper Case/DEL if necessary)
6. SET CO CA00, SET O=3
7. EXEC 0,LIST,Return to SOLOS
8. An ASCII listing of the program is now in high memory
9. Dump CB00-CB01. This is the top end of the program
10. Save D000-[CB01 CB00]
11. Entr CB00: 00 DB /
12. Repeat from step 3. entire all program are on tape

Read Procedure:

1. Load Extended Basic
2. Load Read program
3. GE first program from tape be sure to note end address
4. ENTR CB00: 10 D0 / This skips the word LIST
5. ENTR End Add: 42 2E 0D 80 0D / This will return to SOLOS at the end of the listing.
6. EXEC 0
7. SET IP=3 Program will now list itself then return to SOLOS
8. EXEC 0
9. Modify the program as necessary and SAVE
10. Repeat from 3, as necessary

This whole process is not as bad as it sounds and sure beats retyping and debugging 500 line programs.

Some of the areas that require modification are:

1. PTC does not support 2 letter variables
2. Formatting is different
3. PTC does not have a 0 element in an array
4. String manipulation is different and string arrays are not permitted.
5. PTC will not take a negative number to an integral power or SQR (0)
6. RND will usually require a 0 argument while MITS wants a positive not zero number
7. INPUT statements require a comma after a string not a ;
8. In print statements commas or semicolons must be used before and after strings.

It may sound like a hassle but I have found that it is worth the trouble.

```

WRITE PROGRAM
CA00: F5 E5 D5 C5 2A 00 CB 70 23 22 00 CB 3E 00
      CD 1C C0 C1 D1 E1 F1 C9 /
CB00: 00 D0 /

```

```

READ PROGRAM
CA00: E5 2A 00 CB 23 7E E6 7F B7 CA 04 CA FE 0A
      CA 04 CA 22 00 CB E1 C9 /
CB00: 10 D0 /

```

As for the question raised by Larry Leranthe about TREK-80 I offer the following:

LOCATION (hex)	WAS	IS
0076	A0	20
0D38	80	00
0D46	80	00

For reference the subroutine in question starts at 0D2D.

This was worked out in about 15 minutes using:

DEBUG 8080 by Bay Area Timeshare, Inc

This is a real time Debug aid, assembler and disassemble which I very highly recommend to everyone but especially software hackers.

Computers and the Stock Market

This letter is to computer hobbyists who are interested in (or have experience) speculating in the Stock or Commodities Markets. If you are interested in the markets and computers, it's only natural to combine the two hobbies in an attempt to maximize profits, or more important, to minimize losses. It also seems that an information exchange program among a small group of dedicated people seeking speculative profits would offer several financial advantages to the members of the group.

What I propose is a nationwide club with a monthly or bi-monthly newsletter that allows members to benefit from the combined talents, techniques and experiences of the group.

The newsletter would be generated by the inputs of the members. I foresee, as a minimum, the following types of services or technical articles that would be included in the letter:

TECHNICAL ARTICLES: the use of moving averages; The application of successful systems with home computers; Basic articles on the markets (How to get started in commodities with \$2,000; The Dow Jones Industrial Averages; Trading in Warrants; Options and other forms of speculation).

PROGRAMMING: How to program: HIGH-LOW-CLOSE data and retrieval; Moving Averages; Momentum indexes; Advance/Decline lines or any other technical indicators.

ADVERTISING: Offerings of books, programs, systems or equipment for sale, loan or swap.

If making more money in the markets with computers interests you, write to me and let me know how you feel about a club as I have described.

Richard T. Vannoy, LT, USN.
 COMSUBRON SIXTEEN
 c/o FLEET POST OFFICE
 New York, New York 09501

Commodities – Interested contacting computer oriented individuals who are working on commodity trading systems. I've developed 3 - contact Jack Adison, 60 East 42nd Street, Suite 739, New York, NY 10017, (212) 434-7843.

```

10 PRINT TAB(20);"SIMULTANEOUS EQUATIONS"
20 PRINT "WRITTEN BY BRUCE BARRON   FEB.14,1978"
30 PRINT "This program solves N independent linear simultaneous"
40 PRINT "equations in N unknowns.  The equations should be of"
50 PRINT "the form:"
60 PRINT "      A(1,1)*X(1)+A(1,2)*X(2)+.....+A(1,N)*X(N)=B(1) "
70 PRINT "      A(2,1)*X(1)+A(2,2)*X(2)+.....+A(2,N)*X(N)=B(2) "
80 PRINT "      ..... "
90 PRINT "      ..... "
100 PRINT "      A(N,1)*X(1)+A(N,2)*X(2)+.....+A(N,N)*X(N)=B(N) "
110 INPUT "NUMBER OF EQUATIONS ",N
120 DIM A(N,N),X(N,1),B(N,1),A1(N,N)
130 FOR I=1 TO N
140   FOR J=1 TO N
150     PRINT "INPUT A(";I;",";J;")"
160     INPUT A(I,J)
170   NEXT
180   PRINT "INPUT B(";I;")"
190   INPUT B(I,1)
200 NEXT
210 MAT A1=INV(A)
220 MAT X=A1*B
230 FOR I=1 TO N
240   PRINT "X(";I;")",X(I,1)
250 NEXT

```

This program shows the power of PTC's Extended BASIC matrix statements. Bruce plans to send us an electronic circuit frequency response analysis based on it.

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