Triangle sinclair TIMEX users' GROUP

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Triangle Sinclair Users' Group Officers

Doug Dewey, 206 James St., Carrboro, NC 27510, 919-929-3079 (Pres)
Hiawatha Demby, Jr., 211 Nature Trail, Chapel Hill, NC 27514, 919-933-9362 (Vice)
Dick Scoville, 2313 W. Club Blvd., Durham, NC 27705, 919-286-4959 (Sec)
Mike Boyce, 3313 East Oak Dr., Durham, NC 27712, 919-383-2000 (Treas)

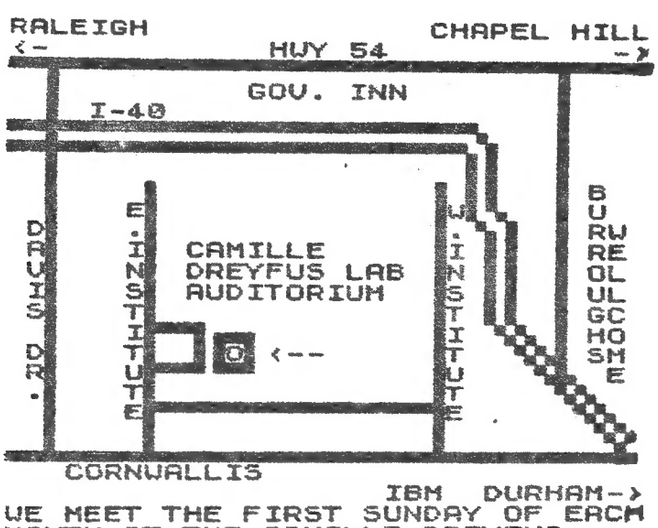
Send mail and inquiries to Doug Dewey if you are not yet a member.

The Triangle Sinclair Users' Group meets once a month on the first Sunday at 2pm in the Dreyfus Auditorium of the Research Triangle Park facility just off of Cornwallis Rd.(see the map below). The public is welcome, in fact the public is invited. Membership in our users' group is $10.00 a year and now is the time to send in your contribution. We have a large public that we serve, and we need sustaining contributions in the form of money, articles for the newsletter, or ocasional letters telling us you are still interested in receiving our publication. The donation of goods and monies by members and business friends alike, is a welcome occurence and is also tax-deductible.

February's meeting is set for Sunday the 5th and the March meeting will be March the 4th. The February meeting will be a time to share your own programs--bring your tape recorder, some blank tapes and some of your programs. There will be material for both the TSZX and the 2068, ideas and help for the novice user, and problem-solving in the areas of hardware and software. See you at 2pm.

James Hicks reports buying the BMC color monitor TV from Games and Gadgets in Crabtree Valley Mall and being very satisfied with it. He says that it includes a filter circuit that gives a picture as good as that of the Commodore 64 using the Commodore monitor! He also reported that the price was right at Crabtree. Dick Scoville found that the rabbit-ears of his color TV affected the quality of screen he got from his 2068. His best reception is achieved with the rabbit-ears fully extended vertically and both ears brought together and fastened with something like a rubber band or an old stocking.

Bill Kegelmeyer has bought and used both Thomas Woods' PRO/FILE and Timex's ORGANIZER. He likes both programs but thinks that PRO/FILE is far and away the superior program for its incredible speed and documentation. In addition to all this, the first issue of Woods' newsletter PRO/FILE Updates is out and contains such information as ways to modify the program to use Byte-Back's modem and printer driver program, a "NOT" search, reducing capacity and upgrading to a larger memory without losing data, stringy floppy notes, and at least one small correction that has to do with enlarging the D$ array to make use of a lager memory pack (you must RUN 4000 before going to line 17). And a program listing to expand it all to 42002 bytes--saving time of +20



time of +20 minutes--but 42K nonetheless, of storage! think of the possibilities.... The program is available for $16.95 from Thomas B. Woods, P.O. Box 64, Jefferson, NH 03583, 603-586-7734 (VISA and MASTERCARD welcome). Order through TSUG and you get a $2.00 discount. Doug Dewey has one ZX PRO/FILE (for $14.95), which he purchased at the Boston Computer Show and will be happy to sell it. After that one is gone, orders will be collected through the users' group and sent on to Thomas Woods in New Hampshire (if you want the $2.00 discount).

If you are interested in the two edge connectors in the 2068 you should contact TSUG with your questions; schematics of the 2068 will not be available from Timex until mid-year, probably. Carl Moreschi, 702 Madison Ave., Cary, NC 27511, 919-467-8146 and Doug Dewey have both wired up their Sinclair ZX Printers to work on the 2068 by supplying 9 volts to the printer at the appropriate pins. Carl mentioned that disabling line D1 makes the printer line up correctly and everything looks better; I tried this fix and the printer sure enough works even better (plus it gives much better reproduction in newsletters and such).

Just for You in Cary Village Mall and DJ's in Crabtree Valley Mall both are carrying the ZX COMPUTING magazine from England. It is worth the drive to get this magazine. Just for You will save you a copy.

This is the second issue that has included T-S HORIZONS magazine as part of our monthly offering; we may be able it get it one more time for free distribution. It is available at a special discount to our membership and the public we serve. For 100 subscriptions we could be talking about $7.00 each; 10 subscriptions for $11.00 each (there are intermediate prices for intermediate numbers of subscribers. Let me know or mention TSUG when you write to these good folks. We would like to thank Rick Duncan and all the people at T-S HORIZONS for their help in fleshing out our newsletter.

You will notice that we include a nice ad from Interface Design. This is a very useful interface if you were wise enough to pick up several TS1000's when they hit the $19.95 price. If you weren't so wise, garage sales and our pages in future months may reveal some sources of inexpensive TS1000 computers. See John Oliger's impressive offering to convert your TSZX into a TI 99/4A (well, not quite) computer. If you would like to advertise in our newsletter (we are now mailing out to well over 300 addresses nationwide), the least expensive way is to send us your ad already printed up as did Interface Design. Our rate for such insert ads is $15.00 per issue for a full legal size sheet of paper. We should warn you, however, that we do not think our pages produce a large number of buyers of any given product until that product is thoroughly reviewed in various different sources or unless it offers something so valuable or so unique as to be irresistible! A low price for amazing value is probably the most attractive asset a product can have for the TSZX or 2068 owner.

Carl Moreschi has been keying in FIRSTLOADER, a specially designed program for the 2068 that lets you take your already recorded programs for the TSZX and load them into the 2068 (! who says it could not be done!). After doing this. the 2068 can produce a listing of the program, making appropriate changes--up to a point--and then you, the user, take over and do a bit more changing. Finally, voila, a change to a 2068 program. Carl says it works, but painfully so; it may take up to an hour of playing around with volume settings to get things going correctly. But he will have it at the next meeting--another reason for getting to this February meet. Carl also reports being very satisfied with his BMC monitor. The FIRSTLOADER program comes from SYNTAX Newsletter, $29.00 for 12 issues, from The Harvard Group, RD2 Box 457, Harvard, MA 01451. This program/article alone almost justifies the subscription price for all twelve issues. I will predict (and I don,t predict unless I have a visionary perception about these sorts of things) that as the market improves for TIMEX and SINCLAIR products, a subscription to SYNTAX will justify its higher price, and this will be so in every monthly issue. Telephone orders call 617-456-3661.

Another good newsletter that looks at a wide variety of hardware and software and yet does not take advertising is TS USER from YAGSEE, P.O. Box 155, Vicksburg, MI, 49097. Subscriptions are $16.95 for 12 issues; for $10.95 you can get all issues of Volume 2 (1983). In TS

USER's effort to be unbiased, they are rather brash at times--I call it the English Edge; but they trade newsletters with us and have a very wide coverage.Though they also have a penchant for being trenchant, they are well worth a subscription.

The Charlotte Hamfest and Computerfair will be held at the Charlotte, NC, Civic Center, March 16-17, 1984. For more info call Clyde Weddle at 704-596-2168. There will be another big one in Raleigh a little later on, but not as big as the one in Charlotte, I am told.

April 26-28, 1984, the Great Southern Computer and Electronics Show will be held in in the Carolina Coliseum, Columbia, SC. For more info, call 904-384-6440. Last year I got some remarkable buys at the hamfest in Raleigh and met a lot of nice people.

Our next issue of this newsletter will describe the working of FIRSTLOADER, review RAMPAGER (I've been promising this for several issues), review WAR IN THE EAST by Sharp's, present a program called catalog that lets you find out what you recorded on all those old TSZX tapes, review 2 programs by 2-BIT SOFTWARE, tell how to fairly easily install various larger memory chips inside your TSZX, review the remarkable HOT Z II, present a conversational game called SILENT CONVERSATION by Dunbar Aitkins, and more. Join TSUG today or tomorrow morning.

VIDEO BOARD UPGRADE FOR YOUR TSZX
by John Oliger

Here is an involved description of some rather sophisticated hardware projects for the person who would like to modify a TSZX computer. John Oliger's articles were published in SQ, a quarterly published by the Harvard Group. But they were prematurely terminated when SQ ceased publication after only 3 issues. I am hoping that John will write us and send us one of the still unreleased articles and that we might have the resources to publish it and do some really fine printing. Believe it or not, we have the technical resources and might afford to do it on a small scale.

The TMS9918A Video Project/Upgrade consists of two new circuit boards for your expansion board, (called video boards "A" and "B") a small modification/addition to the main ZX-81/TS1000 computer board, (doide ORing the Z80 NMI NOT line) or ZX-80 board (adding ROM CS NOT to edge trace 23B on its' edge connector) and a new +5,+12, and -5VDC power supply if you don't already have one.

Video Board "A" contains the TMS9918A VDP itself, 16K of 4116 dynamic video ram, and one other support chip. The VDP and its' ram are I/O mapped at port locations 7F and 3Fh, tying up no memory address space. (Actually, in the Sinclair fashion, I/O address 7 going low selects the VDP) This board utilizes the VDPs' INT NOT output to drive the Z80 NMI NOT line, so its' servicing is done user transparently. The new video output is on this board also, and is 75 Ohm composite video. Thus the use of a composite monitor is a must with the new video system.

Video Board "B" contains two 2764 eproms and four other support chips, making it the "firmware" board. The first 2764, Ea, is mapped 0-8K and contains TMS9918A Video Enhanced Sinclair 8K Basic. This eprom must be programmed by the user and is an exact copy of the normal Sinclair 8K rom, but with the annotated changes included with the project. (Consequently, to build this video project, you MUST have or have access to, a 2764 eprom programmer) There is an optional cassette tape available that will program the eprom for you if you have my programmer mapped 0-16K. Lacking this, a program such as HOT Z must be used to transfer the rom to spare ram, the changes keyed in, and then the eprom programmed from this modified data. So, to avoid errors, this cassette is recommended.

The logic on this "B" board also bank switches in and out the normal Sinclair rom from 1E00-1FFFh. This part of the Sinclair rom is gotten by the VDPs' initialization routine on power up, and sent to the VDPs' video ram. The Ea eprom contains other mc in this area, along with the dot patterns for a complete lower case character set. The other 2764 eprom (Eb) is mapped 8-16K and is simply an optional eprom socket for user routines, etc. It has its' own enable/disable switch, so other memory/devices can be used in that range by turning it off.

The advantages of the new video system verses the normal video system are detailed on a seporate sheet....there are many!!!

This project is 99% software compatible with all software written for the ZX81/TS1000 computers. So far, only two programs have been reported that would not run on the new system. They are ZX FORTH and MEMOTEXT.

HOWEVER...

Because the project involves so large an investment in time and money (greater than $100.00 by the time you're through) and because the new TS2068 computer already has everything this project has and more, except ZX81/TS1000 software compatability, I recommend the following:

If you do NOT have much money already invested in your present 8K ZX80, ZX81, or TS1000 system via hardware and software, (especially software) instead of this video project buy the new TS2068 color computer instead. The TS2068 already has everything the video project will add, and all its' colors, etc. are fully supported by its' "Spectrum Basic". I consider the 2068s' LIST price of $199.95 VERY reasonable for this computer.

If you already have a lot of money invested in software/hardware for your present system, and don't mind investing another $100.00+ in your system for the new benefits (which will certainly enhance, speed-wise, any Basic "SLOW" program you run on it) and/or simply like to build new circuits/projects for your computer, then build this video project by all means! You may also consider both building the video project AND purchasing the new 2068 computer, as I have done.

The choice is up to you. I simply wish to make it clear that this video project WILL NOT make your ZX80,ZX81, or TS1000 into a TS2068 computer, but WILL substantially improve your present computer.

The basic prices of everything needed for the video project are detailed below, so that you may have some idea of what money will be invested in what.

VIDEO BOARDS "A" + "B", along with both boards' parts kits.....$48.95pp
TMS9918A VDP FOR ABOVE (Not avail from myself-vendor list included in video doc) $32.95-$39.95
10.7386 MHZ CRYSTAL FOR ABOVE (Not avail from myself-vendor list included in vid doc)$3.95
2764 EPROM (Not available from myself).....$6.00
+5,+12, and -5VDC POWER SUPPLY BOARD WITH BOARD MOUNTING PARTS.....$17.95pp
TRANSFORMER FOR ABOVE (Not avail from myself..24-26VCT @1-2AMPS).....$7.00-$15.00
TMS9918A VDP BASIC PROGRAMMING CASSETTE.....$6.95pp

AND YOU MAY POSSIBLY NEED:

2764 PROGRAMMER W/PARTS.....$22.95pp
Vpp POWER SUPPLY FOR PROGRAMMER W/BOARD MOUNTING PARTS.....$9.95pp
4-SLOT EXPANSION BOARD W/CONNECTORS AND SOCKETS.....$32.95pp

OR

6-SLOT EXPANSION BOARD W/CONNECTORS AND SOCKETS.....$43.95pp

TMS9918A VDP VIDEO INTERFACE/UPGRADE BENEFITS

The new features/enhancements to the Timex/Sinclair system are detailed below:

1) No more screen flicker in either the FAST or SLOW modes.

2) SLOW mode runs almost as fast as FAST mode. BASIC programs that were slow and boring are now fast and exciting!

3) The Z80 IX register is now open for use in Z80 MC. (The AF' register is still used in SLOW mode, in a similar way to the way it was previously used by Timex/Sinclair)

4) ALL limitations as to where in a 64K memory DFILE is positioned are removed with the system. Your computer can no longer crash because of DFILEs' position in memory. This allows BASIC program listings to exceed 16K in length without any problems whatsoever.

5) If you also own my 64K memory board, a simple modification to both it and your computer will allow MC programs to be run ANYWHERE in the memory map--including the very top of memory.

6) The video display will now normally default to the more easily read white characters on a black background. A built in, software controlled video inverter!

7) The entire character/background colors can be easily changed from BASIC to any of 16 colors by a simply poke of the desired colors to 16424, then a RAND USR 7881.

8) The display is now capeable of displaying on the video screen the entire LOWER CASE character set, along with a number of other characters that could not be displayed before. A RAND USR 7804 enables the lower case set, (normally printed as inverse) and a RAND USR 7868 returns the system to its' normal defaut set of inverse characters. All of these characters have thier dot patterns stored permanently in the EPa eprom for instant access--there is no need to POKE dot pattern codes anywhere or tie up any RAM whatsoever.

9) If you own a Timex/Sinclair 2040 printer, and are in the lower case mode, the printer will print all of the new characters that are on the screen, too. No additional hardware or software is required for this and its' operation is totally user transparent.

10) If you own my own parallel printer port interface, the printer patch for the printer driver routine can be made in the EPa eprom, and the ASCI conversion table and printer driver routines can be put on another 2764 eprom and installed in the EPb eprom socket, eliminating any extra hardware for the interface that would normally be required. The complete interface could be made with only this projects' hardware and the port board.

11) The video output from video board "A" is buffered 75 OHM composite video, suitable for use with any standard composite video monitor. This project is not reccomended to be used with a modulator/RF viewing set up, as the degrading to the picture is considered objectionable with this set-up.

12) NO ADDIONAL MEMORY SPACE is used by this system, whatsoever. The VDP and its' own 16K of ram are I/O mapped at port locations 7F and 3Fh. The bank select logic on the "B" board is I/O mapped at port FDh, the same port already used by Sinclair for thier NMI generator.

13) The system can instantly be returned to the normal Timex/Sinclair video system by simply unplugging both video project boards and reconnecting the video monitor to the normal output.

14) The video enhancement project is 99.9% software compatible with all existing ZX/TS software available, with no changes to the software requirec whatsoever. This was one of the primary goals desirec is designing this system.
(You may, however, find that some MC arcade games, such as "Frogger" and "Packrabbit" run TOO fast, however. If this happens, simply remove the boards and use the old video system for those particular programs.)

15) Because DFILE is treated so differently by this project, as opposed to the old video routines, you can no longer crash the system by POKing the wrong (forbidden) codes there.

16) All the advanced features of the TMS9918A VDP chip are available to the MC enthusiast to experiment with, such as programable characters, sprites, and 40 column per line displays, etc. Before experimenting with MC for this purpose, I suggest the user thoroughly read the "TMS9918A VDP DATA MANUAL", available from Texas Instruments.

17) Because the Z80 "R" register is no longer used by the system, any dynamic memory packs that use the Z80 refresh register for thier refresh counters will now run totally "in spec".

18) If an 8K rom ZX80 is used with this system, the ZX80 will now respond to the SLOW and FAST commands. The particular ZX80 must have an 8K rom, no other "video upgrade" installed, and ROM CS NOT must be brought out to its' edge trace 23B track. (Explained in the text)

The John Oliger Co.
11601 Whidbey Dr.
Cumberland, IN 46229

PRODUCT LIST. All prices include First Class postage/packing-USA and Canada only.
Indiana residents add 5% sales tax. Canadian orders must include money order payeable in US $$.

All projects are designed for the ZX computer electronics experimenter/hobbiest with at least some experience at electronics kit building. All pc boards except the power supplies are double sided with edge connector "fingers", and are meant to be used in either expansion board below. All boards are hand made in-house, are G-10 or FR-4 epoxy material + have solder plated traces. All are completely cut and drilled, but none feature plated through holes-feedthrough wires must be installed by the user. There is a 10 day money back satisfaction guarantee on all my products if the product is returned AS RECIEVED in that amount of time. Exchanges will also be honored in the 10 days, too, if sufficient funds for the return postage of the exchanged product are sent with the return. No returns or exchanges will be accepted after 10 days of your orders reciept.

64K DYNAMIC RAM — Bare pc board:$19.95 — Board w/parts ex. ram:$34.95
This project, featured in SQ#3, (Xerox copy avail. @$2.50pp) is a full feature 64K ram. Special features of this memory not found on other 64K memories include: 8-12K on/off switch, 12-16K on/off switch, two banks of 8K ram avail. mapped 8-16K (Bank A/B switch), 48-64K on/off switch. Circuit uses "pin 1 refresh" type 4164 chips for reliable refresh.

PARALLEL PRINTER PORT — Bare pc board:$10.00 — Board w/parts:$20.95
This project was detailed completly in SQ#s 1&2, and the reading of this two part article is a must for the project builder. (Xerox copy of this article avail. @ $5.00pp) The actual port is memory mapped at location FFFFh, and is a bi-directional port. (Both sending to the printer and reading the printer status supported) This board includes only its' schematic, a theory of operation sheet, and a mc listing w/comments of a copy screen routine, for use with the Okidata printers. The circuit and software can be adapted to most other "Centronic" type printers. To achieve full use of the Basic printer commands, part of the Sinclair rom must be patched by putting it on eprom. (Detailed in the article) Thus access to an eprom programmer and reader is a must to make the port user transparent. (Requires rom + ram decode via use of 64K mem, etc)

2716 EPROM PROGRAMMER — Bare pc board:$10.00 — Board w/parts (ex. eprom):$22.95
This programmer was also described in SQ#s 1&2, so this article is recommended reading on this one, too. The programmer is memory mapped at 2000-27FFh and programs easily from Basic by simply POKing the desired data to one of the eproms' locations. The programmer has its own latches on-board and does NOT use the Z80 WAIT NOT input, thus ram refresh problems are completely avoided. In the interests of simplicity, this programmer does not include verify circuitry. A source of 25VDC is required for the 2716s programming voltage. (Vpp supply, below, recommended) This board includes only its' schematic and a Basic programming example sheet. This board may also be used directly on the TS2068 computer without any modification. (Rom decode required for TS1000/ZX-81)

2764 EPROM PROGRAMMER — Bare pc board:$10.00 — Board w/parts (ex eprom):$22.95
This programmer is identical to the 2716 programmer above, except for the following: The circuit has been changed to accept 28 pin 2764 eproms : The eprom is mapped 2000-3FFFh : 21VDC is now required for the programming voltage. (Avail. from Vpp supply, below) This board comes with its' schematic, assy instructions, and a theory of operation sheet. If this board is ordered along with a 2764 * 2 read board (below), a copy of an unpublished article on using these boards as "cartridge" boards is included with the order at N.C. This programmer can be used on the TS2068

Vpp POWER SUPPLY — Bare pc board:$4.49 — Board w/pc mounting parts:$9.95
This small single sided board provides 4.4, 21, and 25VDC for use with either programmer above. This circuit is designed to put as little stress on the eprom as possible during programming and is recommended for use with the above programmers. Board is supplied with schematic, assembly instructions, and use instructions. Parts kit does NOT include transformer or power cords.

2716 * 4 EPROM READER — Bare pc board:$10.00 — Board w/parts (ex eprom):$14.95
This board, also described in SQ#s 1&2, can hold up to four 2716 eproms mapped 8-16K. The board can be modified (details included) to accept 6116 type static ram chips along with eprom, if desired. Its' purchase includes its' schematic and the mod sheet for 6116 use. (Req. rom decode)

2764 * 2 EPROM READER — Bare board:$10.00 or 3@$25.95 — Board w/parts:$14.95 or 3@$38.95
While small in size and complexity, this board is versatile in that it is capeable of mapping either of its' 2764 eproms anywhere in the 64K map in 8K blocks. (Within reason) This board is intended to be used as a "cartridge", if desired, for storing Sinclair programs on eprom and its' purchase includes a copy of this article if the 2764 programmer is also ordered. This one comes with its' schematic, assy instructions, and a theory of operation sheet. Rom decoding and ram decoding is required. This circuit can itself decode the rom if one jumper is installed.

MEMORY ACCESS MONITOR — Bare pc board:$5.00
This very small board is a very simple circuit that simply indicates via the use of eight LEDs where in the 64K memory map the Z80 cpu is READind or WRITing. The circuit uses only one ic, and is extremely easy to assemble. Although this circuit does not actually do anything, it can be very useful in debugging hardware projects and mc programs that cause the computer to crash, by indicating where the cpu is after the crash. Only a schematic is included with this one because it is simple enough to require only this for construction. This circuit works also on the TS2068

TMS9918A VIDEO PROJECT/UPGRADE — Bare board "A":$14.95 — Board "A" w/parts:$37.90
Bare board "B":11.95 — Board "B" w/parts:$17.90
Complete package of both boards "A" and "B", along with parts kits for both:$48.95 (Save $6.85!) (Parts kits do NOT incude the TMS9918A VDP, its' 10.7386mhz crystal, or the required 2764 eprom) (These are avail, NOT from myself, at about a total cost of $41.95 to $51.95. Vendor list inc) This project is a very involved upgrade for your TS1000/ZX-81 computer, that allows your ZX to have many features it has never had before. A few quick examples are a SLOW mode almost as fast as fast mode, a BLINK FREE FAST mode, lower case characters option instead of inverse, etc. This project requires a composite type video monitor, the 2764 eprom programmer, and the +5,+12,-5VDC power supply, below. (If you do not already have one) For more details on this one, please write. This project includes COMPLETE documentation, and source listing of the new software/firmware.

TMS9918A VDP ENHANCED BASIC PROGRAMMING CASSETTE for use with the video project:$6.95

+5,+12, and -5VDC POWER SUPPLY — Bare pc board:$6.95 — Board w/pc mounting parts:$17.95
This single sided pc board supplies all the required voltages for the video project, above, and is capeable of powering not only these circuits but also the ZX computer and all other extra circuits in your system. The use of this supply with the video system eliminates having to use the Sinclair power pack completly. (Parts kit does not include 24-26VCT @ 1 to 2 A. transformer or the nec power cords and fuse. Comes with schematic and assembly instructions.

4-SLOT EXPANSION BOARD — Bare pc board:$10.00 — Board w/all conn/sockets:$32.95

6-SLOT EXPANSION BOARD — Bare pc board:$14.95 — Board w/all conn/sockets:$43.95

Either of these two expansion boards are required to "plug" the other boards above into your system. The 4-slot board features four 25 pin double read out "slots", along with three 28 pin experimental ic socket pads areas. The 6-slot board is almost identical to the 4-slot board, but has six slots and six 28 pin ic socket areas. The complete kits contain all edge connectors and ic sockets that mount on the board, along with one more 23 pin double readout connector for connection to the computer. All edge connectors are pre-cut to size, and have the required slot guide installed. All ecge connectors supplied with these boards are prime Texas Instr connectors

Prices subject to change without notice

1 DEC. 1983
P. O. BOX 7668
LITTLE ROCK, AR 72217

DICK SCOVILLE
2313 WEST CLUB BLVD.
DURHAM, NC 27705

DEAR DICK,

THANK YOU FOR YOUR NOTE AND PREVIEW OF YOUR FORTHCOMMING PIECE ON XFORTH. NATURALLY, I WOULD PREFER NOTHING BUT GLOWING PRAISE FOR THIS OR ANY OFFERING FROM HAWG WILD SOFTWARE, BUT WELL MEANT CRITICISM HAS ITS PLACE AS WELL. XFORTH HAS HAD REVIEWS THAT WERE VERY COMPLIMENTARY, AND THOSE THAT WERE NOT SO FLATTERING.

IN ALL CASES I HAVE HELD TO SET RULES OF CONDUCT FOR HAWG WILD SOFTWARE. IN ALL CASES WE (I) THANK THE REVIEWER FOR TAKING THE TIME AND EFFORT TO EVALUATE OUR PRODUCT. I WANT TO DO THAT NOW. I HAVE DONE SEVERAL REVIEWS MYSELF, AND REALIZE IT IS A MOST SERIOUS TASK. I APPRECIATE YOU FOR EXPENDING THAT TIME AND EFFORT IN OUR BEHALF.

SECONDLY, WE NEVER ATTEMPT TO INFLUENCE THE REVIEW IN ANY WAY. I AM WELL AWARE THAT MANY VENDORS DO APPLY PRESSURE TO ASSURE THEMSELVES OF A POSITIVE IMAGE. I AM CONVINCED NO ONE IS SERVED BY SUCH MANEUVERING. BESIDES, ONE OPINION, NEGATIVE OR POSITIVE, WILL NOT MAKE OR BREAK A PRODUCT.

I WOULD LIKE TO THANK YOU FOR INDICATING THAT I AM (AND BY INFERENCE-HAWG WILD IS) HELPFUL. CUSTOMER SUPPORT AND RESPONSE TO INQUIRIES IS A SUBJECT OF PRIDE, AND ONE WE STRIVE TO MAINTAIN. THAT IS THE REASON FOR 'XFORTH XCHANGE' OUR FORTH USERS' NEWSLETTER. IT SIMPLY SERVES TO PROVIDE CONTINUING SUPPORT TO THE PURCHASER OF A FORTH PRODUCT FROM HAWG WILD. I MIGHT ADD THE LETTER IS DISTRIBUTED TO PURCHASERS OF ALL FORTH ITEMS FROM US. THIS INCLUDES KERNELS FROM OTHER VENDORS FOR VARIOUS MICROS OTHER THAN ZX/TS, AND OF COURSE THE JUPITER ACE 4000 FORTH BASED MICRO AS WELL AS XFORTH ITSELF.

IF DOUG INCLUDES A RESPONSE YOU MAY USE THIS LETTER. (BY THE WAY, I WILL COPY HIM ON THIS RESPONSE-HOPE YOU DON'T OBJECT) READING OVER IT, I REALIZE IT STATES PRETTY MUCH WHAT I WOULD ANYWAY.

I WOULD POINT OUT THAT FORTH MAY BE TESTED AS WORDS ARE DEVELOPED, AND IF CORRECTIONS/EXTENSIONS ARE REQUIRED THEY MAY BE IMPLEMENTED AT THAT TIME. THIS MAKES THE NEED FOR AN EDITOR MUCH LESS SEVERE. WE STRIVED TO PRODUCE A FORTH-79 STANDARD KERNEL WHILE PRESERVING AS MUCH MEMORY AS POSSIBLE FOR USER APPLICATIONS. WE FEEL WE ACHIEVED OUR OBJECTIVE. THAT ISN'T A DEFENSIVE RESPONSE - JUST STATING THE 'CASE FOR'.

OF OTHER INTEREST TO ZX/TS FORTH INTERESTED PERSONS MIGHT BE THE FOLLOWING. WE ARE CURRENTLY EVALUATING THE POSSIBILITY OF PRODUCING SOME OTHER FORTH KERNELS. MORE ABOUT THE KERNELS, AND THE MACHINES THEY WILL DRIVE WILL BE REPORTED IN 'XFORTH XCHANGE'. WE THINK IT IS ALL QUITE EXCITING.

OF A MORE IMMEDIATE NATURE - WE NOW HAVE OUR REVISED MANUALS OUT FOR XFORTH 1.3. THEY ARE MORE ACCURATE AND MORE DETAILED- BUT SORRY DICK, NO MEMORY MAP.

FINALLY, I HAVE FORWARDED YOUR REMARKS TO MY ASSOCIATES IN ENGLAND. WE CONSIDER ALL INPUT. IF WE DO NOT, WE WILL NOT SURVIVE. TAKE A LOOK AT THE COMPANIES THAT FELL BY THE WAY BECAUSE THEY THOUGHT THEY KNEW BETTER THAN THEIR CUSTOMERS WHAT WAS GOOD FOR THE CUSTOMER.

AGAIN, MY SINCERE THANKS.

SINCERELY,
GARY SMITH

Here is a good letter from Gary Smith of Hawg Wild Software. In a recent issue of our newsletter we published a review of XFORTH, and here is a good reply. Several points need underlining: Hawg Wild's XFORTH has a new and more complete manual, but I understand that a beginner really needs to buy their own book. A new book out that I bought and am thus far pleased with is published by John Wiley: The Complete Forth by Alan Winfield. Now that I have read some of Winfield's book I have to find a little time to sit down with XFORTH and see what I can do. Everyone tells me that a language as different as FORTH may need some understanding before jumping onto the keyboard. So, any book that can convey that understanding may be vital to how well it goes. Alan Winfield's book seems to be my type of book--one for the beginner who has some understanding of BASIC but little else. So we'll see how it goes.

Now on a different note: our review mentioned the need for an editor section or editor program to be used with XFORTH. Though an editor might be a necessary part of a FORTH system, one of XFORTH's strong points is that it features one pass loading without extra complicated editor loads (some versions require up to four extra editor loads). XFORTH is really threaded (not arrayed) FORTH, and it is FORTH-79 standard, listed by the FORTH Interest Group for the TSZX with two exceptions: the tables are Sinclair and not ASCII, and graphics aids such as PLOT, AT, RND were added. Finally, Gary Smith and Hawg Wild support their version with the "XFORTHXCHANGE" newsletter. The price is very competitive (but still may be high if the program is complicated to use and often crashes because of its very nature and the inexperience of the novice learner (more on this later after I have had a try). It costs $25.00 and it also has a floating point extension or enhancement available for an extra $15.00; in both cases add a dollar for S&H for each cassette ordered. Hawg Wild also has available a new series of programs for radio amateurs: write for details. See Hawg Wild's address on Gary's letter.

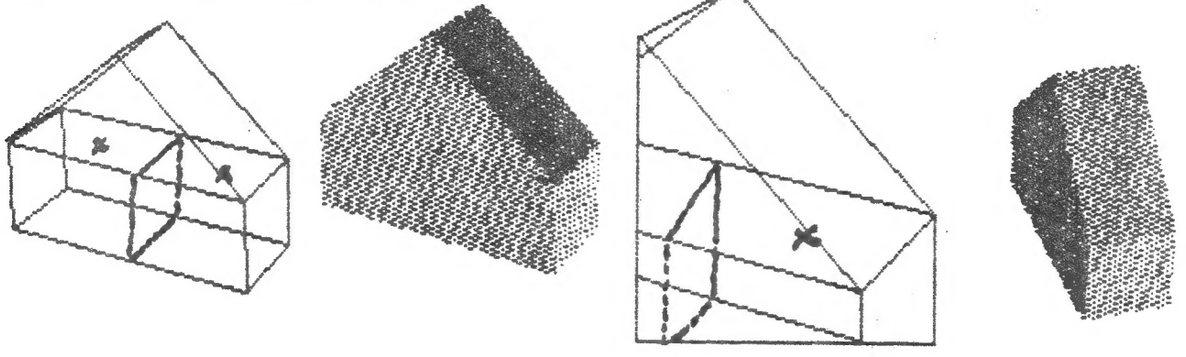
NEWSLETTERS GALORE
Available For Your Information

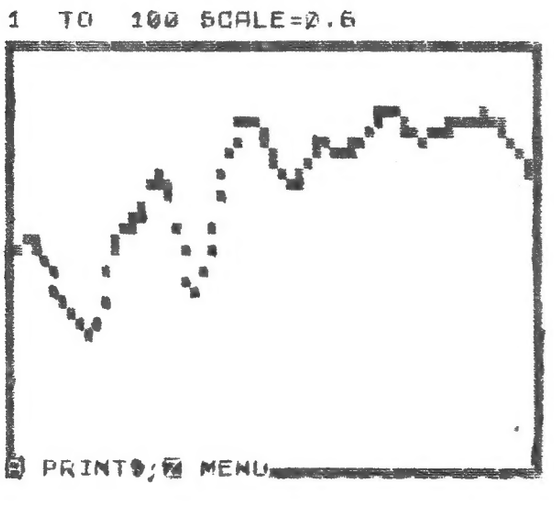
We exchange newsletters with 3 groups in Florida, 1 in Michigan, 1 in Pennsylvania, 2 in Massachusetts, 2 in California, 1 in Georgia, 1 in Maryland, 2 in Canada, 1 in England and 1 in New Hampshire for a total of 15.

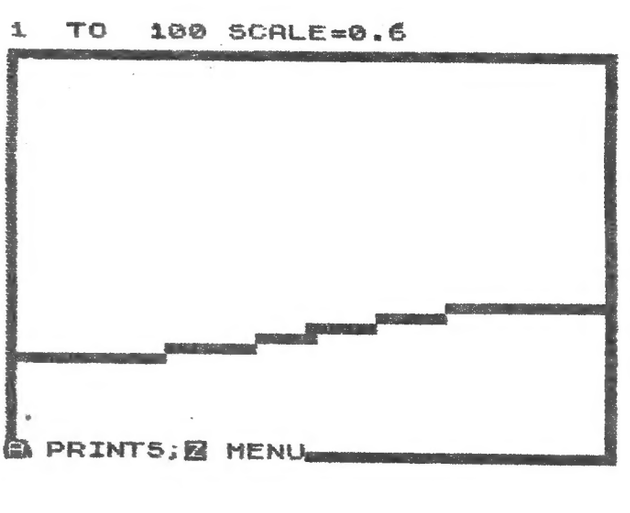
USING TWO TS1000 COMPUTERS AND TWO VOTEMS AND JOHN SNAKENBURG'S DATA PROGRAM FOR A JR. HIGH SCIENCE PROJECT

by John and Doug Dewey

In my Physical Science class we were given the assignement to do a science fair project. I chose to do a project to see whether north or south facing rooms differed in temperature from one another. We discused all of the problems with using a real house to take measurements and decided that we would have to use a miniature house, like one made out of cardboard. I talked this over with my father and showed him the thermometers that my science teacher sent home with me. We did a little talking and decided that the possibilities for more problems using a cardboard box were still awfully great, and that there would probably be too much chance for bias in my measurements. My dad was talking with a computer friend about using our VOTEM and a program to measure the temperature when the friend suggested making the little house out of styrofoam insulating sheets and bathtub caulk. So Dad and I worked together on this project. He typed in John Snakenburg's program called DATA and made some small changes on it and we borrowed another VOTEM so that we could have two computers working together at the same time, each taking readings simultaneously. And we used two printers, too. Our experimental house has what my Dad calls "translucent" white plexiglass windows on each end and is divided down the middle and all sealed up so that no air can enter or leave while it sits outside and so that the rooms are separated, too. It measures about 25" x 9" x 7" and you can see how we built it in the diagrams. We took readings every minute so that from 12:00pm to 1:45 pm we took 100 points of data. We tried to start a litte earlier but one computer set-up kept crashing. I liked using the DATA program because I could see exactly what had happened after my experiment. My Dad showed me how to use the different graphs so we could compare the two rooms. My teacher was impressed, too. The resulting data showed that the southern room was significantly higher in temperature than the northern room in the middle of the day. It was really surprising how hot it got inside the southern room but the northern room stayed pretty cold. At the time the computers were working, I took temperatures of the outside air and then we made sure that the VOTEMS were accurate with the thermometer. The outside air never got much above 10 degrees Celsius and the day was partly cloudy and the sun kept coming and going. The southern room got up to 34.397 degrees Celsius. You can see this in the graphs of the southern room because the data keeps going up and down while the northern room just gradually got a litte hotter as the day went by. Now here's my Dad to tell you about the DATA program.







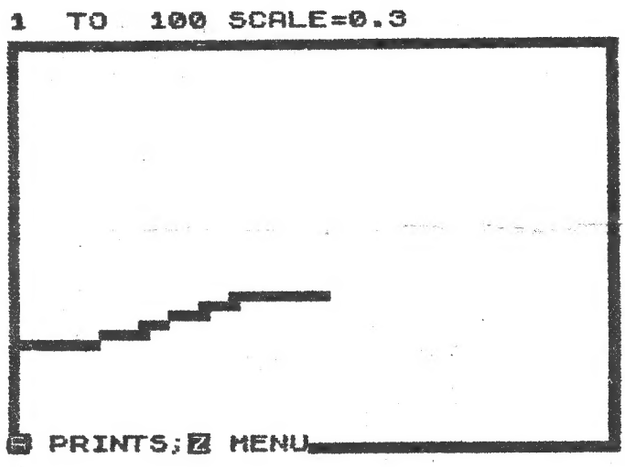
```
   1 REM 5■RND"   )   .?■COS <= RE
TURN ■K RUN "■.?■COS <= RETURN ■5
 RUN DIM
   2 REM  DATA
   5 LET VC=0.0000471
   7 LET P=1.26
  10 FAST
  12 DIM A(10,10)
  15 CLS
  17 PRINT AT 5,0;"PRESS ■ TO TA
KE DATA"
  18 PRINT AT 9,0;"PRESS ■ TO ST
ART VDTA AND INCRE-MENT DATA"
  20 SLOW
  25 IF INKEY$="A" THEN GOTO 35
  26 IF INKEY$="B" THEN GOTO 555
  30 GOTO 25
  35 FAST
  40 FOR X=1 TO 10
  45 FOR Y=1 TO 10
  50 GOSUB 310
  55 LET A(X,Y)=V
  60 NEXT Y
  65 NEXT X
  70 LET PEAK=A(1,1)
  75 FOR X=1 TO 10
  80 FOR Y=1 TO 10
  85 IF PEAK>A(X,Y) THEN GOTO 95
  90 LET PEAK=A(X,Y)
  95 NEXT Y
 100 NEXT X
 105 FAST
 107 GOSUB 325
 110 GOSUB 370
 115 PRINT AT 0,0;"PEAK=";PEAK
 120 PRINT AT 21,0;"■ CONTINUES"
 123 SLOW
 125 IF INKEY$="Z" THEN GOTO 135
 130 GOTO 125
 135 FAST
 140 CLS
 145 PRINT "DO YOU WISH TO...?"
 150 PRINT
 155 PRINT
 160 PRINT "■";TAB 4;"SEND RAW D
ATA TO PRINTER"
 165 PRINT "■";TAB 4;"SEND SCREE
N TO PRINTER"
 170 PRINT "■";TAB 4;"BOTH ■ AND
 ■"
 175 PRINT "■";TAB 4;"RETURN TO
SCREEN"
 177 PRINT "■";TAB 4;"EXPAND SCR
EEN"
 178 PRINT "■";TAB 4;"RESTART"
 180 SLOW
 185 IF INKEY$="A" THEN GOTO 210
 190 IF INKEY$="B" THEN GOTO 265
 195 IF INKEY$="C" THEN GOTO 290
 200 IF INKEY$="D" THEN GOTO 105
 203 IF INKEY$="E" THEN GOTO 430
 204 IF INKEY$="F" THEN GOTO 10
 205 GOTO 185
 210 FAST
 212 CLS
 215 LET C=1
 220 LET D=1
 225 FOR X=1 TO 10
 230 FOR Y=1 TO 10
 235 PRINT C;" ";A(X,Y),
 240 IF D=40 THEN COPY
 241 IF D=80 THEN COPY
 243 IF C=100 THEN COPY
 244 IF D=40 OR D=80 THEN CLS
 245 IF D=40 OR D=80 THEN LET D=
0
 250 LET C=C+1
 255 LET D=D+1
 256 NEXT Y
 257 NEXT X
 260 GOTO 135
 265 FAST
 270 GOSUB 370
 280 COPY
 285 GOTO 135
 290 FAST
 295 GOSUB 370
 300 COPY
 305 GOTO 210
 310 LET U=16514
 315 LET V=((-0.0215*USR U+319.1
)*10)/10
 320 RETURN
 325 CLS
 330 PRINT AT 5,0;"ENTER X AXIS
SCALE FACTOR"
 335 PRINT AT 6,0;"I.E., .1 COMP
RESSES SCALE"
 340 PRINT AT 7,0;"AND 1 EXPANDS
"
 345 SLOW
 350 INPUT F
 355 FAST
 360 CLS
 365 RETURN
 370 CLS
 373 GOSUB 685
 375 LET N=1
 380 FOR X=1 TO 10
 385 FOR Y=1 TO 10
 390 LET A=A(X,Y)
 395 PLOT N,A
 400 LET N=N+F
 405 IF N>=60 THEN LET N=0
 410 NEXT Y
 415 NEXT X
 417 PRINT AT 0,0;"PEAK=";PEAK;"
SCALE=";F
 420 RETURN
 430 FAST
 435 CLS
 440 PRINT "INPUT SCALE FACTOR"
 443 PRINT
 445 INPUT F
 450 PRINT "INPUT STARTING POINT
"
 453 PRINT
 455 INPUT S
 460 PRINT "INPUT END POINT"
 465 INPUT E
 470 CLS
 473 GOSUB 685
 475 LET N=1
 480 LET W=1
 485 FOR X=1 TO 10
 490 FOR Y=1 TO 10
 495 LET A=A(X,Y)
 500 IF W<S OR W>E THEN GOTO 520
 505 PLOT N,A
 510 LET N=N+F
 515 IF N>=60 THEN LET N=0
 520 LET W=W+1
 525 NEXT Y
 530 NEXT X
 533 PRINT AT 0,0;S;"  TO  ";E;"
SCALE=";F
 535 PRINT AT 21,0;"■ PRINTS;■ M
ENU"
 540 SLOW
 545 IF INKEY$="A" THEN GOTO 555
 547 IF INKEY$="Z" THEN GOTO 135
 550 GOTO 545
 555 COPY
 560 GOTO 135
 565 CLS
 566 GOSUB 685
 567 SLOW
 568 LET F=1
 570 LET N=1
 575 LET D=1
 580 PRINT AT 21,0;"N=1"
 585 FOR X=1 TO 10
 590 FOR Y=1 TO 10
 595 IF INKEY$="B" THEN GOTO 603
 600 GOTO 595
 603 FAST
 605 GOSUB 310
 607 SLOW
 610 LET A(X,Y)=V
 615 LET A=A(X,Y)
 620 PLOT N,A
 625 LET N=N+1
 630 LET D=D+1
 635 PRINT AT 21,0;"N=";D
 640 IF N>=60 THEN LET N=0
 645 NEXT Y
 650 NEXT X
 655 PRINT AT 21,0;"■ CONTINUES"
 660 IF INKEY$="L" THEN GOTO 667
 665 GOTO 660
 667 FAST
 668 GOTO 70
 685 FAST
 687 FOR Y=0 TO 40 STEP 40
 690 FOR X=1 TO 60
 695 PLOT X,Y
 700 NEXT X
 705 NEXT Y
 710 FOR X=0 TO 60 STEP 60
 715 FOR Y=0 TO 40
 720 PLOT X,Y
 725 NEXT Y
 730 NEXT X
 735 RETURN
```

The program we used was written by John Snakenburg and does a fine job on this project. 1 REM is just machine code for the VOTEM and line 7 (variable P) was not needed in this experiment but could be changed to other values and used in the formulas in lines 390, 495, 615 where the computer is ploting stuff on the screen; it might be needed so that out of range numbers do not occur. A peak value is computed and displayed and you can see each data point taken or let the computer take all 100 points before seeing anything. The program "wraps" the data around on the screen in the first screen presentation (which we have not presented here). The extremely important part of this program is the ability of the computer to generate lots of different ways of looking at the data, expanding it, viewing just part of the data, and printing all out on the printer. With a bit of ingenuity you can use

DATA by hand and not worry about the VOTEM (change the formula in line 315 and have an INPUT statement just before 315 so that you will put a value into V and then into the A(10,10) array. The computer graphics were created by using VU 3D on the 2068--an excellent addition to your library of educational enhancements for your 2068. Let me just add that I have heard that the 2068 served as the prototype for the IBM PCJr.; no wonder that the 2068 is so much more computer for your money than the mish-mash of IBM's latest venture into the deep water of low priced consumer electronics. I've even heard that the software for both IBM and TIMEX machines is made in Samarkanda and that is why the packaging is so similar--sleek silver grey for the top-of-the-line at the low end of the spectrum.

```
49  12.4632        50  12.5044
51  12.525         52  12.5662
53  12.5868        54  12.6486
55  12.731         56  12.834
57  12.9988        58  13.1636
59  13.3078        60  13.4108
61  13.5344        62  13.6168
63  13.6766        64  13.7816
65  13.864         66  13.967
67  14.0494        68  14.1318
69  14.276         70  14.379
71  14.4614        72  14.5644
73  14.6262        74  14.6468
75  14.6468        76  14.6468
77  14.6056        78  14.6262
79  14.688         80  14.7086

81  14.7498        82  14.8116
83  14.8734        84  14.9352
85  14.894         86  14.9352
87  14.9146        88  14.9146
89  14.9146        90  15.0176
91  15.0588        92  15.1
93  15.0794        94  15.0794
95  15.1           96  15.1618
97  15.2236        98  15.2442
99  15.203         100 15.1412
```



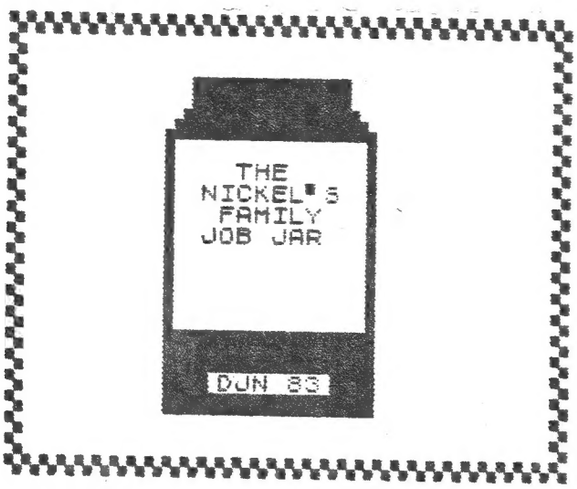
Here are some notes from Fred Nachbaur, who publishes one of the best little math and science-oriented newsletters for the TSZX/2068 in the country. Fred's company, SyncWare Co., P.O. Box 5177, El Monte, CA 91734, also puts out some really clever games. Fred wrote us in November and we'll include his comments a little later on. I hope you will be motivated to buy one of his fine games or other programs: Storm Lander 3, Miner's Revenge, NFLX Football, and Super Slide are all $9.95 each and he pays postage. SyncWareNews is $15.00 a year. CE Amp is a program about common-emitter transistor amplifier circuits with emitter feedback. It is written in BASIC and Fred says that the printed listing is almost 10 feet long. He says, "The program allows you to experiment with the CE circuit without ever having to build one up on the bench; you can make various changes and see what effects they have right on your TV screen....In addition to its problem-solving capacity in this area, CE Amp can be a powerful learning aid to help you understand transistor circuits and the concepts of biasing, gain, stability, and equivalent circuits." Before Xmas CE Amp was avalable for $15.00, but I'm sure it is higher now.

Well here is a good bit from Fred's letter:
"I should have perhaps mentioned when I sent "Miner's Revenge" that it was written primarily for mature players--and yes, it helps to have a couple drinks before an MR session. It is a genuinely difficult game, more often than not it's insoluble even for the advanced players. Part of the game is figuring out all the subtleties of the game, which is why we went out of our way to make the instructions rather cryptic. To

answer a couple points brought up, though, and perhaps to help in understanding the game, here are some tips: 1) Try to make "staircases" so you won't need spikes to get back up, 2)Don't be afraid to use the BREAK key and start over. After a while it is quite obvious if you blew it, you might even start over if you can't use your lantern due to a fall, 3)Try to keep ore ($) accessible but don't pick it up until you've picked as many bonuses (X) as possible and are ready to pick up the 9th marker; it's worth more as you go along, and bonuses MULTIPLY the value! Present record--$75000, 4)Walking mode is provided so you can "feel" your way around in the dark without digging anything out. Also recommended for general walking so a false move won't dig out a (perhaps vitally needed) support.

"I very much appreciated Mr. Scoville's commens on FOURIER. I am currently planning an update (hoping to have it ready around March 84) and his comments will be invaluable in designing the rewrite. Until then, I'm reducing the price of the current version to $12 including tape. The new version will go for about $20, with a discount to owners of the present version. As it was originally written to be useable on ZX80 also, the present version doesn't take advantage of the ZX81's improvemens--new version will be specifically for TS1000/1500.

"Current NFLX tapes include a number of minor improvements (mainly graphics cleanups)....Like Miner's Revenge it is not easy to get this game (Storm Lander 3)"wired," especialy at level 4. (This is the main improvement from the last version--level 4 was guaranteed suicide before, now it's still very difficlt but not impossible.) Keep your sense of humor when you play it--the graphics should help. Also put aside your "scientific" mind--this one's just for fun. HINTS:Keep your eye on the altitude figure and on speed+flaps (200 is level flight.) Level changes occur as altitude crosses the "hundreds" mark (e.g., levels change at 100, 200, 300, etc. feet.) Don't go above 1500 feet; you stall (crash into the sky) at this level. Other surprises I won't give away."



THE FOLLOWING ARE THE JOB-JAR ASSIGNMENTS FOR THE WEEK OF

12 DEC 83

DAD WATER PLANTS TWICE ▒ ▒
****

MOM SWEEP BACKPORCH/STAIRS
****

JOEL SWEEP BSMT STAIRS-INSIDE
****

GABE CUT THE GRASS/YARDWORK
****

DAD WASH CAR WINDOWS
****

MOM SET/CLEAR TABLE (5:30)
****

JOEL WASH DISHES-INCL TABLE
****

GABE VACUUM LVG/DNG ROOMS
****

DAD STRAIGHTEN LINEN CLOSET
****

MOM FEED/WATER SCOUT DAILY
****

JOEL CLEAN THE BATHROOM
****

GABE SHAKE RUGS WASH/RETURN
****

DAD CLEAN BATHROOM SINK ▒ ▒
****

MOM GARBAGE-OUT 7X/GATHER 1X
****

JOEL PICK UP LITTER-FRONT/BACK
****

GABE SWEEP BSMT STAIRS-OUTSIDE
****

DAD STRAIGHTEN THE PANTRY
****

MOM SWEEP FRONT STRS/WALK/GWY
****

JOEL SWEEP KITCHEN FLOOR ▒ ▒
****

GABE DUST LVG/DNG ROOMS
****

THE NICKELS' FAMILY JOB JAR
A PROGRAM PROMOTING HARMONY AT HOME

by Dennis J. & Michale M.Nickels
and Joel and Gabe

Our family had initiated a "job-jar" of weekly chores to spread out the housekeeping duties. My wife, who works, had strongly suggested that we all pitch in for the good of the family. Our two sons (aged 7 and 10) agreed and we selected a list of 20 jobs to be completed weekly. These jobs ranged from "feed the dog" to "take out the garbage," and changed weekly through a random drawing. We wrote the "jobs" on slips of paper and drew these slips in turn from a cigar box. The only rule we had was that if you pulled a job that you had the week before, you were able to put it back and re-draw; or if you wanted, you could keep it for another week. This rule was important because sometimes it was better to keep an easier job such as "water the plants--twice" than risk pulling "clean the bathroom.

After all the "jobs" were drawn we would make a list that could be posted for all to see. I decided that this was a situation that I could possibly program on my TS1000 and set about writing my first real program. Here is the result of that attempt.

Here are some line notes to make clear what is happening:
10-360 Draws the border
370 8, 8 inverse spaces, 5
380 Q, 8 inverse spaces, W
390 Q, 10 inverse spaces, W
400-510 Draws the sides of the jar
520-570 Fills in Bottom of Jar
580-590 Pause
593-674 Flashing Label
672-674 Prints graphic display on printer and clears screen
680-990 Welcoming instructions
1000-1040 Allows entry of 4 names (4 characters maximum). This line may be modified to suit your family by changing the dimensioning line, P$ (# of persons, # of characters per name). Also change lines 1020, 1150, 1170. You will also have to change line 1040 if you allow more than 4 characters per name.
1050-1090 Allows entry of 20 jobs, 25 characters max DIM J$ 20,25. You may also modify this section of the program as long as you also change lines 1070, 1110, 1120, 1150, 1160, and 1550.
1100-1200 Randomly selects a job [J$(N)] marks it so it will not be repeated, assigns it to person P$(N) and prints display of person's name and job.
1210-1320 Asks if job is acceptable and allows yes or no response. If response is "no" a new job is selected and the previous job is "unmarked" and returned to the "jar." If the response is "yes" it will be printed on the list on the printer and the next person's name and job displayed. This continues till all the jobs are assigned.(NOTE: Last job must be taken.)
1330-1540 Program ends, printed list is complete and is ready to be posted.
1550-1590 Subroutine that selects random number and marks it if it is used. Also checks for "marker" and if found selects another random number.

To use the program it needs to have variables P$ and J$ initialized as follows: after loading, type in GOTO 1000 and after receiving the inverse L cursor enter 4 family members' names (4 characters max). Then enter the 20 job titles (25 characters max). After the 20th title is entered the program will start running. BREAK and ENTER "GOTO 1" After you SAVE to tape, the persons' names and the job tiles will remain in memory. You may change a job title at any time by BREAKing the program and entering in the immediate mode: LET J$(N)=new job title (25 characters max) where N is the sub number of the job title to be changed.

Important: always start the program with GOTO 1--if you RUN you will clear all variables and wipe out all family names and job titles.

```
  5 REM GRAPHIC ROUTINE
  7 SLOW
 10 LET X=0
 20 FOR N=1 TO 32
 30 LET Y=1
 40 PLOT X,Y
 50 LET X=X+1
 60 LET Y=Y-1
 70 PLOT X,Y
 80 LET X=X+1
 90 NEXT N
100 LET Y=2
110 FOR N=1 TO 21
120 LET X=63
130 PLOT X,Y
140 LET X=X-1
150 LET Y=Y+1
160 PLOT X,Y
170 LET Y=Y+1
180 NEXT N
190 LET X=61
200 FOR N=1 TO 32
210 LET Y=42
220 PLOT X,Y
230 LET X=X-1
240 LET Y=Y+1
250 PLOT X,Y
260 LET X=X-1
270 NEXT N
280 LET Y=41
290 FOR N=1 TO 20
300 LET X=0
310 PLOT X,Y
320 LET X=X+1
330 LET Y=Y-1
340 PLOT X,Y
350 LET Y=Y-1
360 NEXT N
370 PRINT AT 3,10;"[redacted]"
380 PRINT AT 4,10;"[redacted]"
390 PRINT AT 5,9;"[redacted]"
400 LET Y=31
410 FOR N=1 TO 18
420 LET X=18
430 PLOT X,Y
440 LET Y=Y-1
450 NEXT N
460 LET Y=31
470 FOR N=1 TO 18
480 LET X=41
490 PLOT X,Y
500 LET Y=Y-1
510 NEXT N
520 LET B$="[redacted]"
530 PRINT AT 15,9;B$
540 PRINT TAB 9;B$
550 PRINT TAB 9;B$
560 PRINT TAB 9;B$
570 PRINT AT 17,11;"[redacted]"
580 FOR N=1 TO 20
590 NEXT N
593 FOR N=1 TO 9
595 PRINT AT 7,13;"THE"
600 PRINT TAB 11;"NICKEL'S"
605 PRINT TAB 12;"FAMILY"
610 PRINT TAB 11;"JOB JAR"
620 PRINT AT 7,13;"THE"
630 PRINT TAB 11;"NICKEL'S"
640 PRINT TAB 12;"FAMILY"
650 PRINT TAB 11;"JOB JAR"
670 NEXT N
672 COPY
674 CLS
680 REM WELCOMING/INSTRUCTIONS
690 PRINT AT 3,0;"WELCOME TO TH
E JOB-JAR"
700 PRINT AT 5,0;"PLEASE ENTER
THE DATE"
710 PRINT "THIS JOB LIST WILL B
E"
720 PRINT "EFFECTIVE. DAY/MONTH
/YEAR"
730 PRINT AT 9,0;"EXAMPLE: 4 SE
PT 1983"
740 PRINT AT 12,0;"REMEMBER TO
PRESS ENTER"
750 PRINT "AFTER YOU TYPE IN TH
E DATE"
760 INPUT T$
770 CLS
780 LPRINT
790 LPRINT
800 LPRINT "THE FOLLOWING ARE T
HE JOB-JAR"
810 LPRINT "ASSIGNMENTS FOR THE
 WEEK OF"
820 LPRINT
830 LPRINT
840 LPRINT "          ";T$
850 LPRINT
860 LPRINT
870 CLS
880 PRINT AT 3,0;"USE OF THIS P
ROGRAM IS EASY"
890 PRINT "AS YOUR NAME APPEARS
, A JOB WILL"
900 PRINT "APPEAR BELOW IT. IF
THIS JOB"
910 PRINT "IS OKAY JUST PRESS (
Y). IF THE"
920 PRINT "JOB IS ONE THAT YOU
HAD LAST"
930 PRINT "WEEK,AND YOU DON'T W
ANT TO DO"
940 PRINT "IT AGAIN, PRESS (N)
AND A NEW"
950 PRINT "JOB WILL BE SELECTED
."
960 PRINT AT 12,0;"TO START PRE
SS ANY KEY"
970 PAUSE 40000
980 CLS
990 GOTO 1100
1000 REM TO INPUT FAMILY NAMES
1010 DIM P$(4,4)
1020 FOR N=1 TO 4
1030 INPUT P$(N)
1040 NEXT N
1050 REM TO PUT JOBS IN MEMORY
1060 DIM J$(20,25)
1070 FOR N=1 TO 20
1080 INPUT J$(N)
1090 NEXT N
1100 REM RANDOM SELECT OF JOBS
1105 RAND
1110 DIM C(20)
1120 FOR I=1 TO 20
1130 LET C(I)=0
1140 NEXT I
1150 DIM A(4,5)
1160 FOR J=1 TO 5
1170 FOR P=1 TO 4
1180 PRINT AT 3,0;P$(P)
1190 GOSUB 1550
1195 PRINT
1200 PRINT J$(N)
1210 PRINT AT 7,0;"IS THIS JOB O
K?--ENTER (Y)OR(N)"
1220 LET Y$=INKEY$
1230 IF Y$="" THEN GOTO 1220
1240 IF Y$<>"N" THEN LPRINT P$(P
);"   ";J$(N);" ****************
***************"
1250 IF Y$<>"N" THEN LPRINT
1260 CLS
1270 IF Y$<>"N" THEN GOTO 1300
1280 LET C(N)=0
1290 GOTO 1180
1300 LET A(P,J)=N
1310 NEXT P
1320 NEXT J
1330 PRINT AT 3,0;"THIS CONCLUDE
S THE JOB LIST"
1340 PRINT "FOR THE WEEK STARTIN
G: "
1350 PRINT
1360 PRINT
1370 PRINT "          ";T$
1380 FOR I=1 TO 40
1390 NEXT I
1400 LPRINT
1410 LPRINT
1420 LPRINT
1430 PRINT AT 12,0;"REMOVE THE L
IST FROM THE"
1440 PRINT "PRINTER AND POST ON
THE"
1450 PRINT "KITCHEN DOOR. I WAS
GLAD TO"
1460 PRINT "HELP YOU. SEE YOU NE
XT TIME."
1470 FOR I=1 TO 20
1480 NEXT I
1490 FOR I=1 TO 50
1500 PRINT AT 18,12;"GOOD BYE"
1510 PRINT AT 18,12;"GOOD BYE"
1520 NEXT I
1530 CLS
1540 STOP
1550 LET N=INT (1+20*RND)
1570 IF C(N)=1 THEN GOTO 1550
1580 LET C(N)=1
1590 RETURN
```

2068 NOTES by DICK SCOVILLE

Here is a program that will give you the correct time whenever you enter "GOTO tm". The first time you "GOTO tm", you should input the exact time in hours (1-12), minutes (0-59) and seconds (0-59). The clock starts as soon as the seconds are entered. Later, after using the computer to do other things and assuming you haven't used RUN, CLEAR or NEW, if you "GOTO tm", you will get the correct time.

```
8400 REM time
8402 PRINT "input": PRINT
8403 PRINT "hr  min sec"
8404 INPUT u: INPUT v: INPUT w
8405 FOR i=23672 TO 23674
8406 POKE i,0
8407 NEXT i
8408 LET tm=8420
8410 LET o1s=60*60*(u-1)+60*v+w
8420 LET u=PEEK 23672/256+PEEK 2
3673+256*PEEK 23674: LET u=u*4.2
585
8425 LET u=u+o1s+.5
8427 LET v=INT (u/3600)
8428 LET w=INT (u/60)-60*v
8429 LET u=INT (u-60*60*v)-60*w
8430 LET v=v+1: IF v>12 THEN LET
 v=v-12
8431 CLS : PRINT "hr  min sec"
8435 PRINT v;TAB 4;w;TAB 8;u
8436 STOP
```

If your clock runs a few seconds too fast or too slow, change the constant in line 8420 by a corresponding amount. For instance, if your clock has lost 7 seconds in 2 hours, first change 2 hours to seconds (2 hours=7200 seconds); then multiply the constant (4.2585) by 1+(7/7200). After making the change, there will be no need to reset. A "GOTO tm" will give you the right time.

The program uses several variables: u, v, w, i, etc., but there are only two variables o1s and tm which must be preserved while your computer is on. So other programs can use u, v, i, etc. provided they also only make transient use of them.

If you SAVE the program, first CLEAR, then LET tm=8400, then SAVE.

My plan is to try to cram all my utility-type programs into BASIC line numbers 8000 to 8999, so I'll be able to MERGE other kinds of programs with no difficulty.

The 2068 version of my disassembler is available for $3.00 at our TSUG meetings (send $5.00 and your cassette if you order by mail). My address is Richard Scoville, 2313 W. Club, Durham, NC 27705. My disassembler now includes all the system variable labels and provision for entering labels of your own. Relative jumps are computed and output can be either hex or decimal.

EDITOR'S NOTE: Dick's disassembler is a very nice program. I know that he is looking for some second-hand Atari style joysticks which he'd like to buy for $2.00 each so that he can use the switch mechanisms. I also know that he'd like to work with people involved with Z80 assembly language programing; he's a math professor at Duke University, and I consider myself lucky when we sit down to talk about computers. We often wrestle with our desire to be fair to the various products that we review and to adequately guide our members via the newsletter. I know that we both hope that we achieve these desired ends in each review we publish. We would like to see a great deal of TIMEX and third-party software be of a much higher quality because we know that software can sell the computer--can make it irresistible! can make it the best computer no matter how little it costs!! If you are working along these same lines and are a thoughtful mathematician, please do write to Dick Scoville.

PHIL & THE TSZX COMPUTER DEMONSTRATE ALGORITHMIC APPROACHES TO ARTIFICIAL INTELLIGENCE & IMAGE UNDERSTANDING

by Phil Kegelmeyer

In our joint meeting with the TI group in January we heard a presentation by Phil Kegelmeyer, son of Bill K. and watched in fascination as a simple program demonstrated ways that a computer can detect edges, vertical edges and corners. We'll present a report on this program in our March issue. And we'll also present the program so that you can play around with it. We'd like to thank Phil for a job well done: your program worked flawlessly and your documentation and preparation were excellent. You handled yourself in every way expertly before our combined groups. I was particularly impressed by the question-and-answer session.

HOW FAST IS FAST? HOW SLOW IS SLOW?
A BENCHMARK PROGRAM FOR THE TS1000

by Ted Llewellyn

This is a speed benchmark program adapted from BYTE, January 1983 issue, page 283, listing 5. It is a program for generating prime numbers based on the Sieve of Eratosthenes. Since it is designed to run in compiled languages, the program runs ten times, giving humans a chance to time its speed on faster systems. I have a simpler prime number generator based on the sieve, but this one runs faster.

The program is intended to run on systems with a fair amount of memory. Thus, I created a character array in line 10 instead of a numeric array, in order to get it to run on my 16K TS1000.

The subroutine at 230 looks like a strange duplication of the main program. This routine is necessary because Sinclair BASIC arrays start at one, not zero. The program will not work unless the process starts at zero.
The loops at 120 and 270 are my adaptation of the WHILE/WEND loop in the original program.Since I wrote this adaptation in December, I have found this type of loop very useful in other programs.

I have timed the program twice at 4530 seconds, which places the TS1000 smack in the middle (!) of the pack of the ten slowest implementations tested by BYTE. However, the TS did outrun such illustrious machines as the Radio Shack III and the Xerox 820 running interpreters. The timing of the program was calculated from the RUN time entered until the printer started up, signalling completion. The time given should be accurate within the limits of human reflexes and the accuracy of my "Hong Kong Special" digital wristwatch.

Pushing the memory on my system to the limit, the largest array I could create had 14700 elements. This generated 3194 primes, the largest being 29401. One iteration of this variation took about 926 seconds to run, as opposed to 438 seconds of one iteration of the program used in the benchmark test.

The point of this exercise was to make the TS1000 jump through all the same hoops as the machines tested by BYTE and compare the running tmes. But of course the program can be run much faster. As the BYTE article said, the enire loop only has to run 63 times in order to flag all the nonprime numbers from 3 to 16381. But the program can be sped up much more by eliminating the loop that sets all of the flags to "1." See my second listing from January 13, 1984, for a faster version. Interestingly, the construction in the second listing is faster than using an IF/THEN statement to limit the number of loops (as in "IF I>62 THEN GOTO..."). And it is much faster than the statement "IF I<62 and K<=8190 THEN GOTO...". This optimized program runs through one iteration in 312 seconds, and through ten in 3214 seconds, for a 29% increase in speed. [Editor's Note: this second speedier program would put the TS1000 ahead of the TI 99/4 and the Heath H-89 2MHz, and just behind the PET and the HP-85. The BYTE article lists run times from 3084 (HP-85) to 5740 (Xerox 820) seconds for the ten slowest (interpreted language) computers or processor/operating system/language combinations. But all of this may be academic when we compare these computers and languages to the slowest of the FAST computers mentioned in the article, the Univac 1100/82, which took 0.67 of a second or an IBM 3033 at 0.0078 of a second.]

```
  10 DIM F$(8190)
  20 LPRINT "PRIMES: 10 ITERATIO
NS",
  30 FOR M=1 TO 10
  40 LET COUNT=0
  50 FOR I=1 TO 8190
  60 LET F$(I)="1"
  70 NEXT I
  80 GOSUB 230
  90 FOR I=1 TO 8190
  95 IF F$(I)="0" THEN GOTO 140
 100 LET PRIME=I+I+3
 105 REM PRINT PRIME;" ";
 110 LET K=I+PRIME
 120 IF K<=8190 THEN GOTO 200
 130 LET COUNT=COUNT+1
 140 NEXT I
 150 NEXT M
 160 LPRINT COUNT;" PRIMES",,
 170 LPRINT "LARGEST: ";PRIME
 180 LPRINT
 190 STOP
 200 LET F$(K)="0"
 210 LET K=K+PRIME
 220 GOTO 120
 230 LET I=0
 240 LET PRIME=I+I+3
 250 REM PRINT PRIME;" ";
 260 LET K=I+PRIME
 270 IF K<=8190 THEN GOTO 300
 280 LET COUNT=COUNT+1
 290 RETURN
 300 LET F$(K)="0"
 310 LET K=K+PRIME
 320 GOTO 270
```

```
PRIMES: 10 ITERATIONS
1899 PRIMES
LARGEST: 16381

RUN TIME: 4530 SECONDS.

JANUARY 8, 1984
```

13 JAN. 1984

64 CHARACTERS AND A CLEAR SCREEN?

by Doug Dewey

```
   5 LPRINT "PRIMES: 10 ITERATIO
NS";
  10 FOR M=1 TO 10
  20 LET COUNT=0
  30 DIM F$(8190)
  40 LET I=0
  50 LET PRIME=I+I+3
  60 REM LPRINT PRIME;" ";
  70 LET K=I+PRIME
  80 IF K<=8190 THEN GOTO 110
  90 LET COUNT=COUNT+1
 100 GOTO 200
 110 LET F$(K)="1"
 120 LET K=K+PRIME
 130 GOTO 80
 200 FOR I=1 TO 62
 210 IF F$(I)="1" THEN GOTO 270
 220 LET PRIME=I+I+3
 230 REM LPRINT PRIME;" ";
 240 LET K=I+PRIME
 250 IF K<=8190 THEN GOTO 300
 260 LET COUNT=COUNT+1
 270 NEXT I
 280 GOTO 400
 300 LET F$(K)="1"
 310 LET K=K+PRIME
 320 GOTO 250
 400 FOR I=63 TO 8190
 410 IF F$(I)="1" THEN GOTO 450
 420 LET PRIME=I+I+3
 430 REM LPRINT PRIME;" ";
 440 LET COUNT=COUNT+1
 450 NEXT I
 460 NEXT M
 500 LPRINT COUNT;" PRIMES"
 510 LPRINT "LARGEST: ";PRIME
 520 LPRINT
```

```
PRIMES: 10 ITERATIONS
1899 PRIMES
LARGEST: 16381

RUN TIME:3214 SECONDS.
```

This is the way you begin to work with 64 characters on the screen. You need to shuffle everything around inside the computer's RAM memory and that is exactly what this routine does. Follow the prompts in the REM statements and you should not have any troubles. The routine to actually PRINT directly on the screen and see all 64 spaces used, probably involves some fancy block transfer machine code that may be more involved than this simple program. More on this later as we find out more...

```
   1 REM This program allows the
user to reallocate various
different components of RAM
memory and make way for a clear
screen in the 64-character mode.
See page 254 for the different
display file/memory maps and
pages 247 and 248 for the codes
for variable b.
   2 REM Call this routine by PR
INT USR 63000
   5 CLEAR 62999
   7 PRINT "Please input b": INP
UT b
  10 LET a=63000
  20 READ n: POKE a,n
  30 LET a=a+1: GO TO 20
  40 DATA 243,62,1,211,244,219,2
55,203,255,211,255,62,b,245,251,
205,142,14,243,219,255,203,191,2
11,255,175,211,244,241,254,128,3
2,3,50,194,92,251,201
```

THANK YOU

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