

FROM OUT OF 'THE ASHES' RISES

# >>>> ZXir QLive Alive! <<<<

## The Timex/Sinclair NorthAmerican User Groups Newsletter

Timex/Sinclair NorthAmerican User Groups

Auburn, Indiana

Volume 2, Number 3

Fall 1992

ROUTINES	MEMORY MAP	ADDRESS
-----		-----
T/SNUG Chairmen .....		1
T/SNUG Information .....		2
ZXir QLive Alive! Article Contributions .....		2
Contributors to this Issue .....		2
From the Chairman's Disk .....		2
TREASURY NOTES .....		4
From the Editor's Desk .....		4
INPUT/OUTPUT .....		5
NEWS ITEMS .....		10
ITEMS AVAILABLE FROM T/SNUG .....		13
SPECIAL DEALS AND BUYS .....		13
LIBRARY .....		13
Articles:		
The BYTE-BACK MD-68 MODEM .....		13
MINERAL OIL and the PRINTER RIBBON .....		14
MINERAL OIL and the EDGE CONNECTOR .....		14
RESETTING TRACK 0 and other TWEAKING .....		15
WRITING MORE EFFICIENTLY .....		18
Ads .....		19
And now a word from our Venders .....		21
ZX-91 TEN YEARS LATER #5 .....		23

### T/SNUG CHAIRMEN

Here is the list of 1992 T/SNUG Chairmen and how to contact them. We wish to support the following SIGS: ZX80/ZX81, Z88, SPECTRUM/TS2068/TC2068 and QL. If you have questions about any of these fine machines contact the Chairman.

POSITION	NAME	PHONE	PRIMARY FUNCTION
-----	-----	-----	-----
Chairman	Don Lambert	219-925-1372	Chief Motivator
Vice-Chairman	Dave Bennett	717-774-7531	CATS/Z88
Vice-Chairman	D.G. Smith	814-535-6998	TAPE & JLO Library
Vice-Chairman	Ed Snow	407-380-5124	ZX81 TAPE Library
Vice-Chairman	Rod Gowen	503-655-7484	CCATS
Vice-Chairman	Rod Humphreys	604-931-5509	VSUG/TS2068
Vice-Chairman	Bob Swoger	708-837-7957	Newsletter/BBS Sysop
Treasurer	Abed Kahale	708-885-4337	CATUG/Cash Tracker
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ZXir QLive Alive!

Volume 2, Number 3

1

Fall 1992

## T/SNUG Information

**ZXir QLive Alive!** is the newsletter of T/SNUG, the TIMEX/Sinclair NorthAmerican User Groups, providing news and software support to the T/S community in at least four newsletters per year.

It is our goal to build a Public Domain software library and develop a list of available software for all T/S machines showing the source.

Vendors have free space in this newsletter which they receive free of charge so they may see we are still out here. If you feel T/SNUG should perform other tasks, let us know your feelings.

T/SNUG wishes to have one chairman from every T/S user group who will take charge of sending us their groups newsletter and other correspondence.

We encourage your group to copy this newsletter and distribute it at regular meetings to all of your members. If you can't copy this newsletter, perhaps we can provide a disk with the articles on it for use in your newsletter.

Articles appearing in this newsletter can be obtained by downloading this newsletter from our BBS.

You can keep T/SNUG alive for an annual contribution of \$10.00 made payable to Abed Kahale. Send check to:

**ABED KAHALE**  
ZXir QLive Alive! Newsletter  
335 W NEWPORT RD  
HOFFMAN ESTATES IL 60195

Tele: H708-885-4337

## ZXir QLive Alive! Article Contributions

If you would like to contribute an article to the newsletter, upload a file to our BBS called

TSNUG.ART . If you have an AD for the newsletter UPLOAD a file called TSNUG.ADS. If you have NEWS to POST about your group, UPLOAD a file called TSNUG.NWS .

If you need help contact the SYSOP by E-MAIL on the T/SNUG BBS, mail or by phone:

**BOB SWOGER**  
613 PARKSIDE CIRCLE  
STREAMWOOD IL 60107-1647

It is preferred you call:  
H708/837-7957 or W708/576-8068

If you can only contribute hard copy, tape or disk format, send your inputs to:

**DON LAMBERT**  
ZXir QLive Alive! Newsletter  
1301 KIBLINGER PL  
AUBURN IN 46706

Please call 219-925-1372 before sending articles.

## CONTRIBUTORS TO THIS ISSUE

Alvin Ronald Albrecht  
Dave Bennett  
Mort Binstock  
James Caldwell  
Bill Harmer  
Abed Kahale  
Ken Krack  
Don Lambert  
Bob Madaris  
Gill Parrish  
Hugh Polley  
Joseph Rampolla  
Bob Swoger, K9WVY

## FROM THE CHAIRMANS DISK

HARDWARE, SOFTWARE, JELLYWARE &  
DOCUMENTATION/INSTRUCTIONS OR  
SINK OR SWIM

These thoughts were developed out of attempts to download files from Bob Swoger by modem to me which often resulted in defaults. I believe that a lot of the difficulty is that I do not have the necessary information to do the task properly. I also know that in the past I have had a time or two during voice communications that I have had some strange clicks and noises which could

have resulted in defaults in downloading by modem.

By information I am referring to documentation (which could be in the software in the form of HELP! files) which usually gets into the technical aspects of the hardware/software but which does not help the first time user of the particular hardware/software. Also by information I am also referring to the particular key punches and what results from the key punches as instructions. Some documentation does include instructions but usually in a very shorthand version. So now we have two sets of information, 1. documentation (which usually gets into the theory of the hardware/software) and 2. instructions (which describes in very specific terms how to use the hardware/software).

I have had problems in the past that included the screen going blank and I sit there wondering if the program had quit or should I wait or should I reload the program. It is nice when the instructions state "after pressing ENTER the screen will go blank for about 20 seconds and then the MENU will appear and then you can make your choice of --" It is very helpful if the instructions do tell you what the screen shows. If you are supposed to get a minus sign in the top left corner of the screen say so.

Telephone instructions are helpful but not as good as something on paper. I have never conquered the ability of holding the telephone and writing and besides what is said often is misunderstood. On paper with all key punches and the results of the key punches make for very good instructions.

I can remember my first attempts to use a word processor. I had ended up with copious notes of how to do each of the many things that one could do. And I eventually got

to the place where the notes are no longer needed. The same applies to any new hardware/software I get involved with. I don't know what others do to get started with something new but I am cautious and like to progress slowly. I have some software that defaults and I don't know if it is my fault or the software.

An example of the differences between documentation and instructions is the LarKen Disk Drive manual. I had a disk that was AUTOSTART on an 80 track disk. My 80 track disk was drive #1. But pressing ENTER when powering up would only access drive 0. I batted around the problem for quite a while and one night while my wife was in Japan I woke up in the early morning hours (3 AM) and I had the answer in my mind. It seemed stupid but I put on a robe and went to the computer and fired up and entered "RAND USR 100: GOTO 1" "ENTER" and then "RAND USR 100: New" and then "ENTER" and lo and behold the 80 track drive kicked in and the disk AUTOSTARTed. Nowhere in the documentation does it actually state that is the way to do it; but it is buried in the GOTO command explanation and the NEW command explanation. I know, I know that it reads that way but for someone reading the documentation looking for it will find it hard to find the way it is stated. Just a case of not understanding what is in the documentation. And after I did successfully get the problem solved it was months before I finally read the documentation and understood what it meant.

Ideally there should be documentation for those that want the information and also specific instructions for those that do not grasp the full importance and how to out of the documentation. And the two forms of information should be separate. When I am using the software I don't care that it is taking the data at address

XXXXXXX and transferring it in reverse order at address CCCCCC and then adding it to the square of address QQQQQQ. But I do care that to get the material to SAVE to disk I need to press the "Q" key and then enter the file name not to exceed three characters and to expect a 15 second SAVE after I press "ENTER".

Donald S. Lambert, Chairman  
TIMEX/Sinclair NorthAmerican  
User Groups

## TREASURY NOTES

As of December 1, 1992, we have a balance of \$607.87 from 7 groups and 36 individuals.

Abed Kahale, Treasurer  
TIMEX/Sinclair NorthAmerican  
User Groups

## FROM THE EDITORS DESK

Though what Chairman Don has to say in his column about manuals has a great deal of validity, I just love it when he gives me a chance to editorialize and make us all think a little. So put on your thick hide, Don, because here it comes!

Al Feng says "A manual can't make you read it". Don seems to be one of those people who reads a manual but doesn't absorb/comprehend it. On page 9 of the LKDOS manual Larry Kenny states: "If you plan on distributing some software that is on LKDOS disks, using disks formatted as single sided will be compatible on more systems than double sided disks. (48 TPI is most common.)" And for this reason on page 10 of the same manual Larry states: "All software on disk from LarKen Electronics will be supplied on single sided 40 track disks unless requested otherwise."

Don KNOWS I use only single sided double density (SSDD) disk drives and that to read any other format I must borrow a drive from a friend somewhere and go thru the hassle of

converting the disks to SSDD format. Anyone with DSDD drives can easily send out SSDD disks! Yet Don, a LogiCall owner, keeps sending me DSDD formatted disks that DO NOT have LogiCall on them!

In paragraph 6 of his column he states a problem he had trying to BOOT a disk in drive one. Page 3 of the LogiCall manual says: "Press 'N' <ENTER> to activate AUTOSTART ...." Don, LogiCall on the LarKen system is not optional! It should be on all LarKen disks! The LogiCall way to boot an AUTOSTART in drive #1 is to hold the ENTER key down on system boot-up and then hit '1' and then 'N' and ENTER. Just hit ? or H at the "DRIVE?" or 'Program?' prompt to see why!

Don tries to remember what he hears on the phone instead of taking notes, we are all guilty of it from time to time. This is why I found it impossible to upload a program to him over the phone, (Paragraph 1). He couldn't handle his side of the data transfer although there were just a few instructions I gave him to follow.

Some manuals are too verbose and poorly organized, what Don really needs along with his manual is a quickie card.

In Don's defense, on the software side, we programmers often write programs with no help files and when the program leaves a blank screen for a long period of time, we forget that maybe putting a flashing "WORKING" on the screen to give the user a feeling of security! Just because we write programs doesn't mean we can write manuals, so thanks for the input, Don. I will be sending you a new LogiCall manual to try.

Now in the last issue of ZXir QLive Alive!, we started a MODEM series and I wish to keep it going. This time I wish to take the BYTE-BACK modem because there are still some to be had for the TS2068. I don't



feel this is the only modem and software you should have but you should have one for your collection. Read the article.

Bob Swoger, Editor  
TIMEX/Sinclair NorthAmerican  
User Groups

## INPUT/OUTPUT

Ken Krack writes: Dear Mr Lambert, I Have just seen the T/SNUG Newsletter for the first time. ( please see copy of letter to Abed Kahale) and I appreciate its broader coverage than any 'local' T/S group. It should do a good job in maintaining interest in what I consider to be these masterly friendly computers, I even got the local county college to let me do the assignment work on a course in 'BASIC' language on a TS2040 printer and left everybody else behind struggling with C "Syntax Error". I would like to make a suggestion for what I find to be a long felt need and which can embrace the whole membership of all grow s through the T/SNUG Newsletter, namely a section in the Newsletter for "PROJECT INTERLINK" by which members/groups interested in developing a particular project can liaise together by exchange particularly of T/S technical knowledge. Worthwhile projects, apart from being useful in themselves, will certainly help to keep the T/S interest flowing and growing particularly if project progress (and stumbling blocks) is reported regularly in the newsletter. We might also be able to produce a "T/S Computers Specialists Directory" of those willing to help others, for example I could be entered as specializing in 'plant data logging and alarming by TS2068' The following could be taken as example (and on which I am just on starting):-

PROJECT INTERLINK

A member of the SW A Sinclair user group wishes to develop a FAX interface for the TS2068. Technical help is particularly needed in out putting pixels (i.e. screen dump ) and signal compression, preferences to relevant articles/publications would also be appreciated. The developed design would be put into 'public domain' through the T/SNUG newsletter. Please contact:

Ken Krack c/o Virginia Pavlik  
RD1, Dick Station  
Irwin, PA 15642  
Tel 412 446-5221  
FAX c/o 412 832-9733

Alvin Ronald Albrecht writes: Dear Don, Has T/SNUG folded? I'm crossing my fingers that it hasn't but I haven't received a newsletter since Fall 1991. If I owe another year's dues, please let me know. If it has folded and if there is still some interest I'd be glad to help restart it with some articles or whatever is needed. Hoping to hear from you soon. Alvin

*Be assured, Alvin, T/SNUG is still healthy, perhaps the mail system got very slow or else some other event happened but I am forwarding the letter to Abed and I have written to you.*

Dave Bennett writes: It is nice to hear from you again. I didn't really have any Z88 articles for ZXir QLive Alive! I have been writing about the Z88 for five years and I am running out of ideas. However I did write a short article describing a method of transferring files between the Z88 and the TS2068 without the use of a Null Modem.

I would bet your inquiry came from Jay Shepard. He has called me several times asking questions including one about transferring files to the TS2068. I had advised Jay to use two modems. Jay did mention he had to connect to the phone jack in order to get this to work with his modems. I did not

have to do this with my two Hayes modems.

I have a Macintosh Classic as well as a Z88 and a QL. Bob Swoger uses Macintosh SE at work. Even though it would be easier to send the file directly to Bob on a Macintosh disk I decided to send the article on a PC disk again. Then you can add your comments if any. I was not too sure of the particulars on the TS2068 side in this procedure.

Hugh Polley writes: I would like to receive your TIMEX newsletter. Find enclosed a \$12.00 US POSTAL money order, cashable at any post office. The extra postage money is to cover any expense in sending your newsletter to Canada.

I would like to improve my QL by adding EPROMs and a disk drive system and by making it IBM compatible if possible. Any information you can send me is such an effort would be much appreciated!

Hugh A. Polley  
#1-645 Meredith Rd. NE  
Calgary, Alta.  
CANADA T2E 5A9

Mort Binstock writes: Thanks for your 3/26 letter concerning your adventures with the ZX81 & AERCO Drives. I enjoyed your letter thoroughly. I have two ZX81/AERCO setups, both quite sophisticated.

One is single sided double density, 10 pages on one side. By adding a notch plus punching two holes in the disk's jacket, (called FLIPPIES) I can use both sides of the disk by manually flipping the disk to get 20 pages per disk. I have used this scheme successfully since the early to mid '80s. At that time double density was a big deal, double sided rare and not affordable.

My second unit is a little newer & is DSDD. It will read & write to single sided disks formatted on my first unit, an advantage to a page oriented

filing system. Both systems will SAVE/LOAD BASIC, machine code and data files. Both are also equipped with Bill Bell's BBDOS.

The ZX81s are used primarily to calculate model rocket programs/flight profiles, manage the club's data base, word processing (I'm on a plane now, therefore a handwritten letter), income taxes, balancing the checkbook etc.

Unit two has a remote keyboard. The rest of the computer is in an overhead cabinet. It is equipped with twin drives, 80 column printer, Hunter board, 64K RAM & CAI 40 column printer & stringy floppy (predecessor to disk drives). It is also equipped with "remote" switches for reset, to switch the stringy floppy/disk drives in and out, switch printers, etc. I have also made internal modifications to accommodate the remote keyboard, better machine code handling, improved power supply etc.

Unit 1 is similar however uses a home made 8K RAM Board, 40 column TS2040 printer, 80 column thermal printer & Byte Back modem. The modem used to access electronic mail with my work. This unit also has remote switches & internal modifications.

I almost purchased a LarKen board, but didn't. How does it compare to the AERCO? Are they still available? Where?

I also use a rather sophisticated & well equipped QL, another story in itself.

I recently purchased for \$5 an as is ZX81 that works. I plan to build 8K battery backed RAM & Input/Output "relays". I plan to use it to control & monitor lighting in my house, using Radio Shack 'wireless' light switches etc. The light switches send "tones" through the power lines.

As you can see, my ZX's are both well equipped & well used.

Its advantages over the QL are its simplicity. I can repair or modify it plus it's easy to program.

The QL on the other hand is much faster (very noticeable with complex number crunching), superb graphics. A more sophisticated word processor plus the ability to run IBM programs.

My mainstay & favorite is still the ZX81.

I have written to a man in Holland who has a program that will allow the QL or IBM to run ZX81 programs. I am exploring this as it is a way to keep the ZX81 alive, i. e. transfer its "soul" to newer hardware. It will also allow me to "use" my ZX at work, on the P. C. I have successfully transferred ZX files -> QL -> IBM. I look forward to doing the same w/ programs.

Thanks for all your news.

Mort Binstock writes again: I finally have some time to myself, unfortunately another Plane trip. Everythings OK, I've also formatted the wrong disk myself. Memorial day I make you another copy. (Refers to a disk he sent me and I wiped out when I FORMATTed it by mistake for the ZX81 and lost the AERCO ZX81 single sided 40 track BOOT program-Don).

I primarily use Memotext on BBDOS. I like it as it is fast & has word wrap. My second is (or was) WORD SYNC. Its more powerful plus can do many FONTS. Now a days, when I need more horsepower, I use the QL.

Don't worry about sending money, I'm OK & prefer to keep our new relationship informal. I suspect trades etc. will eventually even out in the wash --- & if not, that's OK too.

I'm an engineer currently doing marketing. The product is a real high tech computer, reminiscent of the CRT controls

used in the bridges of StarTrek & StarWar movies. Work, unfortunately, is a sweat shop, one deadline after another. I am reaching the age, with luck, that I could retire in a few years. I'll cross that bridge when it comes.

How do you like retirement? Your work at Collins sounds interesting. I enjoyed your tales of inspecting parts now in orbit. Also, meeting astronauts must have been exciting.

Original 5 1/4 disk drives were single density, i.e., only 90K on one side, 180K if it was double sided. Later, and at premium prices, they upgraded to Double Density, 180K on one side, 360K on two. I don't have any single density. Formatting an AERCO single density will result in 1/2 the disk memory and, I suspect, 1/2 the number of AERCO "PAGES" per disk.

I appreciate your typing up my 4/22 letter and look forward to seeing it in print. The only update, which I did write you about, is I now have the ZX81 EMULATOR. It's awesome to see the ZX81 & some of its programs on my QL or my work IBM. I plan to transfer some of my ZX over to allow more flexibility, i.e., using my ZX at work.

Don, the AERCO can add a new dimension to the ZX81. The ZX81 normally saves to tape both the program and its data. The AERCO Disk will also do so, However you can also, like a more sophisticated computer, save just the data. The information & printouts I sent with my first disk transmittal provides that information.

If you have patience & send me MasterScribe, I may be able to get it to work for you from the AERCO, provided its load and save commands (for the cassette) are in BASIC. I may also get it to save data separately.

I do not plan to upgrade the single sided system to double



sided as the drives work well & by flipping the disks, I still get double sided.

The AERCO & CAI stringy floppy coexist via a manual switch in & out. Crude, but quite effective. The CAI stringy is better than the cassette, however, the floppy is much better (faster & reliable) than either.

The CAI stringy saves programs & data separately ONLY. It also files in serial "pages" 1, 2, & 3 etc. You can add one like 4, but not reuse an earlier one without messing it up. Sort of like saving multiply files on a cassette.

I have not terminated my ZX81 bus, but am aware of it. I did "terminate" my keyboard bus to allow for reliable operation of the remote keyboard.

I appreciate all of your information, LOOK FORWARD to further correspondence and to reading your articles. Hopefully, my personal time will increase & I'll get more time soon to use my computers, pursue my writings, & to just enjoy life.

Mort Binstock  
1150 Windermere DR  
PGH PA 15218-1144

James H. Caldwell writes: I had been given your address from a friend who had sold me one of his TIMEX 1000 computers and he told me you have a Newsletter for the TIMEX as well as a possible source of software and other materials for the Timex COMPUTERS. If you could get back to me with some information about your newsletter as soon as possible I would be grateful, I am very anxious to get any information about my new addition to my computer collection.

JAMES H. CALDWELL JR.  
125 BARR STREET  
APARTMENT # 3-B-1 3  
HILLSDALE, MI 49242-1138

BOB MADARIS writes: In the last newsletter (Vol 1 No. 4) INPUT/OUTPUT had an article about User Groups inviting people in their area to join. Prior to this, while discussing a software purchase with Mr. Peter Hale, he mentioned that I should find a local users group to join. When I told him I had not found one in the southeastern area with a newsletter, he invited me to join the NEW ENGLAND SINCLAIR QL USERS GROUP (NESQLUG).

I joined the group and received some back issues of the newsletter and the groups 2 disks library. Having just joined, I am already very pleased with what is on the disks. One of them is full (1440 sectors).

The point I am trying to convey is: If you are out there alone, as I was, find a user group. You don't need to wait until they find you. Pick out one you see mentioned in T/SNUG or UPDATE and join. It really will not matter how far they are. The newsletter and their libraries are enough. As the saying goes "USE IT OR LOSE IT!"

The Directory to Printer program for the QL in that issue is a good one. An alternative for those with TK2 is to use DIR/PRT. This will send the directory of the default device to ser1. Note the back slash character (\) is used. For several TK2 commands, it will open and close channels or files. WDIR, WSTAT, and STAT work in the same manner. Set the default device with DATA\_USE Flp2\_, and set the printer buffer up with PRT\_USE. These should be included in your boot up Boot. If you wish to send the device directory to a file, you only have to use DIR\devicename filename (ex. DIR\RAM1\_Myfile). No opening or closing to do. It will print the directory to a file in the same way as to the printer (or imported into Quill). This is a good way to get hard copies of your directories (Disk or Mdv).



You guys keep up the good work.

BOB MADARIS  
RT. 1 BOX 1497  
TRAFFORD, AL 35172-9628  
Tele: (205) 681-5751

Gill Parrish writes: Dear Don, I don't think I've written since March (but then again you haven't written since February!), so this is just an "I'm still alive and living in Tulsa" letter.

I told you last time that Bob Swoger had contacted me, and told me he had located a "Zebra" board and equipped it with a Spectrum ROM to work on my TS2068 cassette system. It did not strike me until later how perfect his timing turned out to be. My wife, son and I happened to have a trip scheduled to Scotland within a week or two. Obviously, the United Kingdom is the Spectrum capitol of the world, but I never thought about looking for Spectrum items until I was told my TS2068 was about to become a "Spectrum compatible".

So, I had the opportunity to buy a couple of Spectrum packages; one was a collection of four games which had recently been marketed separately, and the other was a mega - collection of thirty such games including Hacker, Ghostbusters, EnduroRacer, Rampage, etc. (I saw no non-game software for the Spectrum in any shops, except for one vendor having a single copy of Tasword Two.) I also picked up the April copy of Your Sinclair ("YS"), which I gather is the leading Spectrum magazine. It comes with a tape of programs glued right on the front cover, and that collection also seems to include some good stuff. YS contains the ads of several vendors from which Spectrum software can be mail - ordered, if one is willing to incur the extra postage and handling charges (in some cases an additional 2.50 British Pound - about \$4.40 -- per tape to get the stuff to the U. S. ! A

subscription to YS is also available but is similarly expensive for the U. S. folks: the normal 26.40 Pound subscription price (which does at least include the monthly tapes) jumps to 40.80 Pounds for citizens of other ECC countries, and then to 53.05 Pounds (almost \$93.00) for U. S. readers! That's a tad more than I want to incur, especially for a British magazine I frankly find hard to decipher at times (to many "in" jokes and other cultural oddities).

If you might be interested in ordering something from YS and need a copy of the ads, let me know. And are you interested in any of this tape - based Spectrum software? [YES! Ed.]

I picked up a Kempston compatible joystick interface too, fortunately. I think you had warned me previously about needing such an adapter to work with Spectrum stuff (without a disk interface); Bob's package contained a similar warning, but it didn't arrive until after I left. Anyway, I passed up a Kempston adapter in one store, but something in my memory kept nagging at me, and I later picked up one in another town.

For what it was worth, I ended up writing an article for the Toronto group's newsletter about the Spectrum scene in Great Britain. I had never written one for Toronto (while I had already written one for your newsletter), so I thought I needed to provide one as a good Club Member.

I thought originally when I got home and opened Bob's package that I had a problem. I very much liked the design of the Zebra board, since it disappeared into my unused game port and did not detract from the looks of the unit. However, Bob had indicated the command to go into Spectrum mode was "OUT 244,2" but all that yielded was an "Integer out of range" error. I tried removing

and re-inserting the board, cleaning the contacts, etc. but the error message remained constant. I wondered if my unit had a defective game port; I've never used that port for anything (only recently did I see a Timex Command Cartridge, which was the first proof I had Timex really made any), and I had no way of testing it. Then I wondered if Bob transposed a digit in the command or something. Playing with the "244" number produced no meaningful result, so I tried changing the ",2" to a ",1". That also produced nothing usable so on a whim I tried ",3" -- and that did the trick. The command "OUT 244,3" put the computer into Spectrum mode (complete with Spectrum copyright screen). I was then able to try some Spectrum software and the board seemed to work fine. *[I can't believe I did that! Sorry! Ed.]*

Separately, I bought a printer interface cable from Byte - Back; I gather that company is liquidating remaining inventory, so I only paid half price for it. They sent the software to get the cable to work with my TS2068 (and it does indeed work fine). But I wonder if there is separate software that would get it to work with my TS1000s?

I'm glad the organization is doing so well. T/S users are going to need a strong central organization in the next few years, so I'm glad the foundation is being built now!

Gilliam Y. Parrish  
Route 1, Box 705  
Beggs, OK 74421

Joseph Rampolla writes: Many thanks for sending the copies of the newsletter with my article on the BYTE-BACK modem. It is great to see that you and others involved in the group are still serving the needs of us TIMEX/Sinclair diehards! Keep up the good work! I wish you and all our T/S friends a Happy Thanksgiving and a Merry Christmas! ! !

Joseph Rampolla  
2638 E MONUMENT ST  
BALTIMORE MD 21205

## NEWS ITEMS

-----  
Dayton ComputerFest 1992  
by Donald S. Lambert

Friday 08 28 1992 at 11:27 AM (Indiana time) I backed out of the driveway and left for the Dayton ComputerFest. There is a different route I could have taken and missed all traffic in Ft. Wayne but with my tendency to get lost I did not take it so at the end of the first hour I had traveled only 40 miles. The route I took was to go south on I-69 to Highway 30 East and to take that to I-75 south. After entering I-75 I found a posted 12 mile stretch of the interstate that had one lane of traffic but what traffic there was traveled fairly briskly until there were two cars ahead of me that kept varying from 45 to 60 miles an hour. But luckily they exited before the end of the construction and then traffic was moving along briskly. It was 169 miles to the Red Roof from my house.

Finding the Red Roof Inn was very easy since it is the first exit south of I-70 or exit 60. Besides you can see the motel. I arrived at 2:50 PM Indiana time or 3:50 Dayton time and checked in and returned to the office to find out if any others had arrived but no luck. I walked around a little and returned past the motel office and there was rapping on the glass and there was Paul Holmgren. From that moment on I was T/Sing until I left the Hara Arena on Sunday.

Frank Davis had not arrived so Paul and I visited and Bill Angel had came following Paul in his pickup. When Frank and Carol Davis arrived they discussed going over and setting up and we went out to dinner. We went to Bob Evan's and those that ate in our group

were Paul Holmgren, Carol and Frank Davis, Bill Angel, and myself. Of course there was a lot of talk and it was decided to get together for breakfast and meet at Frank and Carol's room at 7:30 Dayton time. (I did not change my watch from Indiana time).

After they went to Hara Arena I went back to the office and the clerk did read off all the names of those that had reservations but had not arrived.

But that information was after the desk girl took care of a college age girl that came in looking for a wedding party that she was trying to find so she could go to the rehearsal supper. She was starting to get suspicious and said "if it isn't this weekend I will shoot myself. I drove for 4 hours from West Virginia!" The desk clerk helped find the right date, yes two weeks later, and the girl left. I asked her if she was going to keep it a secret. "No way am I going to tell anyone!" she said.

Later I recognized the van that John Pederson used to drive his brother, Bill, around. I visited with them until Frank, Carol, Paul and Bill returned from setting up. Then we all visited.

At breakfast Saturday morning, we had quite a gang at Bob Evans and those that I got names of were: Paul Holmgren, Carol and Frank Davis, Bill Angel, John and Bill Pederson, Neil Schultes, Bill Heberlein, and myself. Much talk and lots of eating.

We made up a convoy going to the fest and Paul Holmgren led the way followed by Bill Angel, then the Pedersons, then myself and then Frank and Carol Davis. I was almost bared from entering early to set up the CATUG and T/SNUG table since my ticket was the wrong color but fast talk and confusion got me in.

The table line up in the T/S area was from left to right: the CATUG and T/SNUG table which I presided over then a narrow passage way to use to get behind the tables and then Frank and Carol. Then it was Paul Holmgren and then Bill Angel and then the last table which was the SMUG table manned by Bill Heberlein and Neil Schultes. The passage way made a good spot for Bill Pederson to sit.

I got set up and after I got the DLAN greeting bulletin Steve Cooper and Bob Swoger made up going on my monitor Paul brought over his color monitor, mine was a green screen, and the DLAN program ran in colour with a nice repeating display. One IBM type wanted a copy of the program until he found out it was for the TS2068. We had a few new comers to the T/S computers and a few that were possibly interested in getting back into it again.

When things got slow I flea marketed. First the T/S tables and then the regular flea market. I found a few bargains, I bought a Laser PC3, which is a dictionary with memory and a total of ten features from the main menu. There is 32K of memory available for all the features. It has a serial port for uploading and the software for an IBM to capture the files. Frank Davis has a Compumate which is the same machine but under a different name and he has used it to upload to a TS2068. Also the PC3 has a cassette port but it will only work if you use a stereo plug with a mono jack to plug in the mono cable to the tape recorder. Currently it is powered by four AA batteries but plan to go to a 110 volt adapter. I also bought a 3.5 drive and got the two connectors to enable me to use 5.25 power supply and ribbon cable. I tested it and it seems to work, at least it will FORMAT 80 tracks and the total cost was \$13.00 including the adapter connectors.



Since Paul lead us by a different route and I did not have a map with me we again convoyed back to the motel. Distance is around six miles. Frank had made prior arrangements for all T/Sers to meet for dinner.

Bill Pederson showed off his first step to get his TS2068 system going and that is using an IBM case to house the disk drives and power supply and mother board. Frank Davis is working on a board for the interface.

We met and this time we went to Ponderosa for dinner. The gang that went Saturday evening was Gene Wilson, Dave Bennett, Keith Watson, Mark Steuber, Steve Spaulding, John Impellizzar, Dennis Donahue, Don Waltermann, John Kaczor, Carol and Frank Davis, Bill Angel, Paul Holmgren, Bill and John Pederson, Mel LaVerne, Tim Swenson, Manny Quentarro, Gary Ganger and wife, Paul Schwab, Ted Knyszek and myself. Much talk and confusion, the waitresses got lost on who got what but we all ate.

We moved here and there after supper in our discussions, Carol tracked me down to tell me I had a phone call. It was Jay Shepard in Iowa wanting to know how the fest was and asking about a piece of hardware (b & w video camera) I hadn't seen. Sunday we went to breakfast at the Cracker Barrel and in attendance was Ted Knyszek, Gene Wilson, Toby Radcliff (he was in a movie), Bill Engel, Neil Elans, Jon Kazora, Carol and Frank Davis and myself.

The following signed the register at the CATUG and T/SNUG table: Carl Molle, Mel LaVerne, Jon Kaczor, Tim Swenson, M. A. Quintero, Doug Gillespie, Rene Bruneau, Harold S. Crum, Kipo Reynolds, Jeff Taylor & son Alex Taylor, Randy E. Randall, Toby Radloff, Jack Fetter, Buford Schaber, Conard, Miller, Dave Bennett, Les Brown, Don Waltermann, John J.

Impellizzeri, Dennis Donahue, Edward Gase, Dean King, Frank and Carol Davis, Keith Watson.

On the T/SNUG side, I got two T/SNUG members and their address changes and will supply the names to those that are working on the membership list.

While the quantity of members coming through was less than last year they seemed to be more dedicated. Several expressed interest in the SPECTRUM and ZX81 capabilities for the QL and IBM computers. Many said that the best feature of the T/S computers was the user friendly programming abilities.

There was not the hardware and software or even the hard copy that was available at prior fests. But there is still all of that available but not in the quantity of the earlier years, nor has all new stuff dried up. There are a few hardy souls still programming new stuff and improving the earlier stuff. And there are a few of us that will hang onto our Classic T/S computers until the last moment. A lot of hard copy is available from the various users groups.

Was the trip worth it? A definite yes! I learned more, made some new contacts and renewed old ones. If there is a T/S computerfest next year I plan to attend. I will start to lay back some money for expenses. Let's face it, the T/Sers are fewer but they are more dedicated than the other users groups. And most important to me, they seem to be far more friendly and helpful than the other computer type users groups.

In closing - I may have missed a name and even as bad if not worse misspelled a name. And more happened that I was not involved in; I did try to recount the high spots of what happened. 0/0

## ITEMS AVAILABLE FROM T/SNUG

It has come to our attention that some LarKen Users are using something less than Version 3 firmware. T/SNUG will supply updated EPROMs, SYSTEM DISKS, and MANUALS.

If you have a mismatch between you LarKen DOS EPROM and your Western Digital Controller chip, we will send you the correct one for free on behalf of our friends Rod Gowen of RMG and Larry Kenny of LarKen. You should be using L3 EPROMs with WD1770 controller chips or L3F EPROMs with WD1772 controller chips. Check it out! Call in requests to Bob Swoger at W708-576-8068 H708-837-7957

## SPECIAL DEALS AND BUYS

NAP Ware (Nazir A. Pashtoon's new endeavor) announces the availability of all Timex or QL PAL (Programmable Array Logic) chips. If interested, call him evenings at 708-439-1679.

LogiCall Integrated Software Ensemble easy operating system for LKDOS in both TS2068 and Spectrum modes includes LogiCall 5.0 TASWORD TWO V2.7, VU-CALC V1.3, VU-FILE V1.2 and MTERM2 Drivers modified for LogiCall, DISKS.B1 TAPES.B1 steprt.B1 HEADER.BT (tape header reader by Nazir Pashtoon) FORMAT.B MOVE.BL and more all on 2 SSDD disks for \$5. You must specify your LK-DOS EPROM version. If you already have a copy you are encouraged to distribute copies to other LarKen LK-DOS users for as you see by the price we are not in the business of making money on it, just making LarKen's LK-DOS even better!

If you are a LarKen LK-DOS owner and would like a SPECTRUM V2 kit for your system, we will supply an EPROM, socket and 74HCT32 for \$12 which includes shipping and handling. The install instructions are in your LarKen manual. We shall not be responsible for your install job. AERCO owners need

only the SPECTRUM EPROM for \$10 \$10 is forwarded to LarKen.

So you like to fly? The 747 Flight Simulator for Spectrum by Derek Ashton of DACC sold over 40K copies in EUROPE. Requires Spectrum Emulator. At this time supplied on LarKen SSDD disk only for \$10 which goes to Derek Ashton, now working at MOTOROLA with Bob Swoger. Call in requests to Bob at W708-576-8068 H708-837-7957

## LIBRARY

\*\*\*\*\*  
TIMEX/SINCLAIR  
PUBLIC DOMAIN LIBRARY  
AVAILABLE AS OF 01 JUNE 1991  
Contact Bob Swoger  
708-837-7957  
for details.

\*\*\*\*\*

## ARTICLES

The BYTE-BACK MD-68 MODEM  
by Bob Swoger

The BYTE-BACK MD-68 Modem beat Anchor's WESTRIDGE 2050 to the market place and therefore was the first modem used on my TS2068. It has some interesting features not found on the TS2050. The ability to receive BASIC programs from non-TS2068 computers in such a way as to allow the editing of these programs into working TS2068 tokenized programs is the most outstanding feature of this modem package.

This unique ability is provided by Spectrasoft's SpectraTERM V1.3 software. When the receive buffer is open, the REM transfer mode is in effect, and a line number between 1 and 255 along with a REM token is placed in front of each downloaded line. One need only edit each line starting at the bottom and the program can be turned into TS2068 BASIC. This one feature alone made it an important device to have on hand in my computer room.

A built-in RS232 port for the printer or even another (read faster) modem, is another feature of the BYTE-BACK modem. One day in the future I might try to use the serial port to run a Terminal Node Controller for Amateur Radio Packet communications. The software for printer operation from that port is not provided.

The ad for this modem can be found elsewhere in this newsletter. Make Dave an offer if you don't have one of these fine modem packages.

Below is a LarKen driver for SpectraTERM.

#### SPCTRA.B1

```

10 CLEAR VAL "61183": LET h=C
ODE "d": PRINT "SpectraTERM 1.3
0"
20 PRINT "© 1984, Spectrasoft
Inc."
40 PRINT "Licensed to Byte-Ba
ck Co."
60 PRINT ,,"Program loading.
."
80 RANDOMIZE USR h: LOAD "spc
tra.C1"CODE
110 CLS : PRINT "%%%%%%%%%%
%%%%%%%%%%""0) EXIT"
""1) ENTER SpectraTERM""2) R
ETURN TO SpectraTERM""3) CLEA
R BUFFER & RETURN ""4) SAVE S
pectraTERM""5) STOP AND ENTER
BASIC""%%%%%%%%%%
%%%%%%%%%%"" RANDOMIZE USR 61
184";TAB 43;" CLEAR BUFFER & RE
TURN "" RANDOMIZE USR 61187";
TAB 43;"RETURN TO SpectraTERM"
120 INPUT "Enter selection >";
A
130 IF A>5 THEN GO TO VAL"110"
140 GO TO VAL "200+(10*A)"
200 GO TO 9998
220 RANDOMIZE USR VAL "61187"
222 GO TO 110
230 RANDOMIZE USR VAL "61184"
232 GO TO 110
240 GO TO 9990
250 STOP : GO TO 110
9992 RANDOMIZE USR h: SAVE "SPC
TRA.B1" LINE PI
9993 RANDOMIZE USR h: SAVE
"spctra.C1"CODE VAL "61184",VAL
"3241"
9994 GO TO 110
9998 RANDOMIZE USR h: LOAD "L.B
1"

```

#### MINERAL OIL and the PRINTER RIBBON by Abed Kahale

It seems that every time I am ready to use my printer, the printing looks faded; time for new ribbon; NOT SO. The printer is sitting idle and the ink is drying out especially in the winter months.

A few years ago George Chambers in the Sink-Link N/L wrote a note on inking the ribbon; a couple of drops of printer ribbon ink on the ribbon and re-wind the ribbon manually or by moving the print head from one end to the other while the printer is OFF. (I got my ink from RMG Enterprises but it is also available from office supply houses). That worked fine and the printing was darker than a "new" ribbon.

But that also dries out in a while; the next step was to go to the Encyclopaedia Britannica and find out what printing houses use for an ink recipe: for quality printing such as magazines with photos they add either mineral oil or glycerine. My medicine cabinet included both. I used a couple of drops of mineral oil because it is a more stable chemical and also is a lubricant for the print head pins for longevity.

If you are a tinkerer like me, pop the ribbon cartridge open and put the oil and/or ink on the foam rubber wheel inside. Now I can print all day and once a month and I get the darkest printing I ever had.

#### MINERAL OIL and the EDGE CONNECTOR by Bob Swoger

Before Abed joined the CATUG, we ran an article on how the Motorola Sinclair Users group kept their ZX80 and ZX81 machines going with no crashes while others in the U.S. were experiencing crashes. We tried



to tell the others through newsletters but couldn't get into print. We took advantage of the situation by buying up the machines of disgruntled owners and applied high viscosity mineral oil to the connectors between the ZX machine and its RAM pack, the very same thing we at Motorola used on the connectors of our television and communication equipment. The result was no more crashes!

When using high viscosity mineral oil on your equipment, make sure you get it only on the P.C. board and connector, not anywhere near the rubber bubble pad of your keyboard as it will ruin it, causing any rubber to swell and become distorted!

Where do you obtain high viscosity mineral oil? From your Drug store, it can be found with the other laxatives!

#### **RESETTING TRACK 0 AND OTHER TWEAKING.** by Don Lambert

I wrote this originally a couple years ago and a recent conversation with Bob Swoger discussing resetting track 0 on a drive brought this to mind. While we both have successfully reset a Tandon TM 100-2A drive to track 0 again we both used different methods. While I haven't tried Bob's method I have heard/read of the set screw that locks the head assembly to the track stepping mechanism loosening which leads me to believe that his method might be best to use since you are moving the head back where it had been originally.

If a drive will FORMAT a disk and SAVE a file to it and can LOAD the files but no other drive will LOAD the files and this drive cannot load other drives' files than either track 0 is off or else speed is off. (In early days of computing some computer manufacturers deliberately set either track 0 or speed off so that you had to

use their repair services and had to buy disk drives from them.) All drive resetting methods require the disk drive power supply, a few tools and a working computer and disk drive interface.

**\*\*\* One word of CAUTION \*\*\***  
IF THERE IS NO TERMINATOR RESISTOR IN THE SOCKET LOCATED BETWEEN THE TWO I.C.s IN LINE LEFT TO RIGHT WITH TP13 NOT ONLY WILL IT BE IMPOSSIBLE TO SET SPEED BUT ALSO IMPOSSIBLE TO SET THE TRACKING.

I had a drive that just seemed to want to vary the speed and also would not take a track adjustment until I realized that the resistor was missing.

**\* Another word of CAUTION \***  
It might be safer to wrap masking tape on the screw driver shaft to insulate it. Also it is best to have a disk in the drive all the time that the spindle motor is running to put a load on it like when it is in use.

The first thing I did was check and reset the speed of the drive motor. For that you will need a fluorescent light and a small blade screwdriver to turn the adjustment screw in the potentiometer on the board on the end of the drive and you will need a jumper, a piece of insulated wire with a flea clip on each end to go between the square pins on the top board. With the disk drive on the table top side up and the drive door facing you, you will find a square pin located just to the right of the left hand board mounting screw by 5/16 of an inch and about a 1/16 of an inch closer to you than the screw and labeled TP10 (TP = test point) with the letters upside down. Fasten one end of the flea wire with the flea clip to the square pin. Up at the other end of the board is a row of connectors and the one labeled 11 will be directly in line with the square pin TP13 which is 5/8 inch this side of the connector. Fasten the other end of the wire using the flea

clip to TP13 square pin. The purpose of the wire is to cause the disk drive motor to turn on when you turn on the power.

Speed is best set with a disk in the drive. I set the speed before I connected the interface cable to the drive. Now with the drive power cord plugged into the disk drive turn the disk drive on its side to expose the flywheel of the disk spindle with the paper and the bars printed on it exposed to the fluorescent light and watch the outer ring (60 cycle) and if the bars are seen to go either clockwise or counterclockwise then turn the screw in the end of the potentiometer on the back board (the motor drive board). The bars may waver but unless there is a definite movement in either direction the drive speed is correct, any movement should be seen in fifteen or twenty seconds. When the speed checks right remove the jumper between TP10 and TP13.

To reset the track stepping mechanism if the drive will not read track 0 (the directory of files) you will need a larger screw driver (insulate the shaft of the screw driver with tape) and an allen wrench size .109 or 7/64 of an inch. Turn the drive over and you will see down near the disk flywheel a pair of allen screws which are sealed on the side with green sealing material. Loosen the two screws and turn the drive back right side up and on the back of the drive above the disk motor board is a metal projection that has a slotted screw head in an oblong opening and with the drive door facing you the slotted screw will be on the right side of the metal projection. To the left and slightly towards you is another allen headed screw also with the green goop on the side of the head. You might make a mark on the plate next to the screw the location of the screwdriver slot for reference. Loosen that allen screw and test with the screw driver to see if the turning the screw moves the

metal a trifle. The screw only has about a 180 degree adjustment (some drives will have 360 degree adjustment). I had the best luck adjusting by turning the screw to the most counterclockwise position.

The reason to insulate the screwdriver is to prevent touching the bare pins that stick out above the adjusting screw.

Now with the interface cable plugged in and the drive power supply plugged in select a disk SAVEd on a good drive (be sure to use a copy in case something happens to the disk) and first try to CAT the disk (I was using a TS2068 and a LarKen interface) when you get an error watch the metal slide and just turn the screw enough clockwise so that you see it barely more. Then once more re-try the CAT and repeat until suddenly the entire directory is listed as it should. I usually made one or two very slight more adjustments and then tried to LOAD a file on the first of the directory and then one on the last of the directory. If both had LOADED on a good drive and they LOAD on this one then power down and tighten the three allen screws and then re-try the CAT and the first program and the last program. If they LOAD you have it reset. With the LarKen and the TS2068 on failure to CAT you will get a CRC error and then garbage for the directory. Then as you get close to the track with the adjustments you might see one or two of the first files named then garbage, then suddenly all files appear. While the drives are rather mysterious (to me) in how they work it was rather more mechanical to make the adjustments. Of course other defects are handled differently.

I had one drive in which the track 0 switch was off. What it did was give a series of thunking sounds as it tried to read track 0. With the back of the drive facing you is the

projection that holds the track 0 adjusting mechanism and to the right of that and slightly above it is a slotted screw with green goop on it. I adjusted that and the drive stopped clunking and loaded the directory. However, on another drive that did not help. I removed the spindle motor and then I could adjust the micro switch located where the track stepping mechanism could actuate it. Whether that adjustment was a fluke or not the drive could be reset on track 0 and it worked. While all the Tandon TM 100-2A drives look alike at a distance, close examination does reveal differences. I have one Tandon with a soldered in gang DIP switch in place of the DIP socket normally used for the jumpers for drive selection. Also, I have a drive labeled as a Texas Peripheral Co. but they used a Tandon frame including the TANDON name in the casting. But the other parts are not similar to the Tandon.

I now turn you over to Bob:

\*\*\*\*\*  
Don mentioned that I fixed a drive with the stepping motor set screw only but I wish to tell you that it took hours to accomplish. These drives probably fail in the first place because the screw that holds the stepping mechanism to the shaft of the stepping motor was too loose. It should be tightened first.

Don mentioned in his last paragraph that he heard the drive make a 'series of thunking sounds'. This sound can be heard if the head tries to advance past track 83 or if it fails to activate the end of travel microswitch while seeking track 0. There are programs written with a bug that tries to send the heads to track 249. Since the drive can only travel to track 83, the head mechanism bangs until you turn off the system. If the head carriage, trying to travel past track 0, doesn't activate the end of travel microswitch to let the system know that it

has arrived, the head carriage will bang until you turn off the system. These two circumstances will cause the stepping motor shaft to slip inside the band spool if the set screw is the least bit loose.

The purpose of the screw Don mentions in his last paragraph is to push the head off the microswitch and back onto track 0. This screw is set to be just short of resting against the head carriage when it is over track 0.

Before loosening the three screws that hold the stepping mechanism in place, remove the top PC board and tighten the set screw on the stepping motor shaft. Then proceed as Don describes.

If you have a oscilloscope or capacitively coupled AC voltmeter handy, you may wish to make a final adjustment of the track setting screw in the following manner. Prepare a disk using George Chambers' utilities that has been formatted and saved on a known good drive. Save a program on track 20 (middle track of a 40 track drive) that is about 5000 bytes long and LOADs itself continuously.

Place either a capacitively coupled AC voltmeter or oscilloscope between TP3 and ground. Load in the program and turn the track setting screw for maximum output on the AC voltmeter or both maximum amplitude and best symmetry on the oscilloscope. You will note that the signal level goes up and down, Use the lower level signal to set the screw for maximum as it is the signal from track 20. Tighten the three set screw down and check that the setting didn't move.

If you do a VERIFY while watching the AC voltmeter or the oscilloscope you will notice that the output level goes down considerably as the heads travel to track 83, this is normal. It has to do with



the fact that the data passing the head at track 83 is traveling so much slower than the data passing the head at track 0. An AGC circuit levels the output signal before it leaves the drive.

Thanks to Mark Farrell of the Glenside Color Computer Club of Illinois for the above education. ---Bob Swoger---

#### WRITING MORE EFFICIENTLY BY BILL HARMER

I confess, I am a ZX81/TS1000 user still. A real survivor. Although I have promised myself to program only (or mainly) on the ZX81/TS1000 in machine language, BASIC still is my main language on this computer. The amazing thing is that there are still things to discover in BASIC programming for the ZX81/TS1000.

The writing of a sorting routine for the ZX81 usually means the bubble sort or at least the flagged bubble sort as given in the book by Morse, et al., "THE ESSENTIAL GUIDE TO TIMEX/SINCLAIR HOME COMPUTERS", a ZX81 and TS2068 BASIC programmer's touchstone for comforting solutions. Well, Byte magazine in their April 1991 issue published an improved version of the flagged bubble sort and with a little adaption (from True BASIC to ZX81 BASIC), it was possible to test it and find that it did indeed run faster than the flagged bubble sort. I suspect it is even faster on much bigger arrays than I tested its sorting on.

Another thing that has helped in the saving of RAM in ZX81/TS1000 programs is the use of flags as in the flagged bubble sort, as either 0 or not 0 (that is 1) as the two possibilities, like so:

instead of:

```
100 IF FLG=0 THEN GOTO 1000
110 IF FLG=1 THEN GOTO 2000
```

use:

```
100 IF NOT FLG THEN GOTO 1000
110 IF FLG THEN GOTO 2000
```

These operators can be combined with others in compound conditions as in:

```
120 If PG AND X>10 THEN GOTO 5000.
```

Speaking of conditions after IF, another discovery of a year or so ago was that the ZX81/TS1000 can take:

```
200 IF X=5 THEN IF A=2 OR A=4 THEN GOTO 700
```

This is equivalent to something that the ZX81 BASIC does not seem to like to accept:

```
200 IF X=5 AND (A=2 OR A=4) THEN GOTO 700,
```

One of the problems with the ZX81/TS1000 and most BASIC interpreter other than that of the QL, (SuperBASIC) is that if you put a loop deep in a program, after a lot of other statements, then it executes more slowly. However, a simple POKE and some fiddling with its position in the program listing will allow you to get a GOTO equivalent that is almost as fast as a GOTO when used at the beginning of a ZX81/TS1000 BASIC program.

There is little more to explain than that, but the POKE in effect POKES the 1st byte of the NEXT-LINE ZX81/TS1000 system variable. It is a local GOTO, that can go as far away as about 255 bytes in the program listing only, but since all fast loops can't be put at the start of your BASIC program, this will help speed up the ones that can't be given a high enough priority to be put there. Maybe a sort of search routine might fall into that category, or simply a variable array initialization routine. One variable initialization routine that saves RAM is:

instead of:

```
8800 LET B$="-----"
-----"
8810 LET X$="XXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXX"
```

8820 LET Y\$=" " \_\_\_\_\_

use:

```
8800 LET B$="--"
8810 LET X$="XX"
8820 LET Y$=" "
8830 FOR N=1 TO 4
8840 LET B$=B$+B$
8850 LET X$=X$+X$
8860 LET Y$=Y$+Y$
8870 NEXT N
```

Initializing the graphic strings is done by starting them at a value and then doubling their length. This runs infinitely quicker than the following:

8840 LET B\$=B\$+"-" through a loop 32 times! 0/0.

## ADS

-----  
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\*\*\*\*\*  
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\*\*\*\*\*  
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\*\*\*\*\*  
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(5) TS-2050 Modems (untested, 3 with cables, all uncased)  
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(1) TS2068 Winky Board  
(1) Z-SIO ( TS2068 Serial Intfce)  
(1) JLO TS2068 Expansion Board  
(1) Z-Link ( TS2068 to Spectrum bus converter)  
(1) JLO Printer Interface Card  
(1) QL  
(2) Crazybugs Cartridges  
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(1) Androids Cartridge  
(1) ZX81  
(3) TS-1016 (16K Rampack)  
(2) TS1000 Winky Board  
(1) Larken NVM for TS1000

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 \* TS2068 Software \*  
 \*\*\*\*\*  
 Fighter Pilot  
 MScript  
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 Gary Lessenberry  
 12 Alleghany Road  
 Havelock, NC 28532  
 919-444-3895

FOR SALE: ON 920719  
 %%%  
 1770 DISK DRIVE CONTROLLER  
 I.C.s for \$9.00 each postpaid  
 to U.S. or Canadian addresses.  
 Paul Holmgren  
 52310 Wilton Wood Court  
 Indianapolis IN 46254  
 317-291-6002

FOR SALE: ON 911015  
 %%%  
 QL Complete System ..... \$80  
 Gold Card for the QL ..... \$500  
 Call Frank Davis H317-473-8031

FOR SALE: ON 920522  
 %%%  
 Epson LX-86 needs new head \$25  
 Call Tom Kowalski 708/289-7583

WANTED: ON 920509  
 %%%  
 TRACTOR AND/OR ROLL PAPER  
 UNIT(S) FOR MANNESMANN TALLY  
 MT160 PRINTER. ALSO, ANY  
 INFORMATION ON THE RC ALLEN (BY  
 LITTON WESTREX) PRINTER MODEL  
 NO.88802-112  
 D. G. Smith, R.415 Stone St.,  
 Johnstown, PA 15906

FOR SALE: ON 920309  
 %%%  
 GETTING RID OF EXCESS  
 EQUIPMENT, HARDWARE, SOFTWARE,  
 BOOKS, ETC. FOR BOTH TS1000 AND  
 TS2068. SEND FOR LIST.  
 WILLIAM VOLK  
 6015 CARTER AVE  
 BALTIMORE MD 21214  
 H301-254-8258

FOR SALE: ON 920509  
 %%%  
 LOCAL COMPUTER GROUP GETTING  
 RID OF EXCESS EQUIPMENT,  
 HARDWARE, SOFTWARE, BOOKS, ETC.  
 T/S USER'S GROUP, P.O.BOX 614,  
 Johnstown, PA 15907

FOR SALE: ON 911025  
 %%%  
 I have a Sinclair ZX81 with  
 64K Memotech RAM, enhanced  
 keyboard and 300 baud Byte-Back  
 modem. I also have a TS2068  
 with modem, printer, and  
 Spectrum cartridge, along with  
 a dozen old programs from  
 Quicksilva and the like, for  
 both machines. Both are in  
 working order and excellent  
 condition. Make an offer on the  
 whole kit and kaboodle.  
 Peter Paglia  
 8802 Partridge Run  
 Chapel Hill NC 27516

FOR SALE: ON 910426  
 %%%  
 COLOR COMPUTER 3 - DISK DRIVE  
 CM-8 COLOR MONITOR W/PLATFORM  
 SMITH CORONA TP-1 PRINTER  
 JOYSTICK AND 1 DOZ BLANK DISKS  
 SOFTWARE INCLUDES DESK MATE  
 HOME PUBLISHER \$400 OR BEST  
 312-337-3624



FOR SALE: 921010  
 \*\*\*\*\*  
 ATARI COMPUTER SYSTEM  
 \*\*\*\*\*  
 ATARI 800XL  
 ATARI 1050 Floppy disk drive  
 9 inch HP Monitor  
 Smith Corona TPII Daisy Wheel  
 Printer  
 ICD parallel Printer & serial  
 interface (2 serial ports)  
 Serial cable for modem  
 Joystick  
 \*\*\*\*\* CARTRIDGE SOFTWARE \*\*\*\*\*  
 AtariWriter word processor  
 (with manual)  
 Assembler Editor programming  
 language (with manual)  
 Atari Basic programming language  
 (with manual)  
 AtariGraphics for use with  
 light pen  
 Space Shuttle flight simulator  
 (with Manual)  
 Jumbo Jet Pilot Flight Simltr  
 (without manual)  
 Missile Command computer game  
 (with Manual)  
 Math Mileage BASIC math skills  
 game with manual  
 Atari Lab science software  
 (With manuals)  
 Basic Module  
 Temperature & Light Module  
 \*\*\*\*\* DISK SOFTWARE \*\*\*\*\*  
 The Pond (Thinking skills game)  
 with manual  
 221 Baker Street  
 (Sherlock Holmes mystery game)  
 with manual  
 Master Type (Typing tutor game)  
 with manual  
 Tycoon  
 (Commodity market simulation)  
 with manual  
 Millionaire  
 (Stock market simulation)  
 with manual  
 Movie Maker  
 (Animation construction)  
 Music Construction set  
 Chessmaster 2000  
 PaperClip word processor  
 850 express terminal program  
 Great Blue-C prgmming language  
 \*\*\*\*\* BOOKS \*\*\*\*\*  
 Mapping the Atari  
 Microprocessor Manuals  
 \*\*\*\*\* MISC. \*\*\*\*\*  
 A few discs with a disk case  
 \*\*\*\*\*  
 All above ..... \$150.00  
 Call Doug Eaton  
 H/708-668-2731 W/708-576-2116

## And now, a word from our Vendors

Please remember to support our Vendors. Isn't it time to acquire a disk drive system for your TS2068? Cost can't be the excuse because \$125 will get you LarKen DOS and \$50 more will get you dual drives from fests! Life just isn't long enough to wait for tape saves and loads!

Running your computer without a modem is like having a sports car with no tires. You just sit there with all that horse power and can't go anywhere! Frank Davis says he has a lot of TS2050 modems and if he can't move them he will donate them away, what a loss to the T/S community that would be! Contact him and order yours at:

**MECHANICAL AFFINITY**  
**FRANK DAVIS**  
**513 EAST MAIN**  
**PERU IN 46970**  
**317-473-8031**

**MECHANICAL AFFINITY**  
**PAUL HOLMGREN**  
**5231 WILTON WOOD CT**  
**INDIANAPOLIS IN 46254**

Please support our magazine, it's the only one left and is really very good.

\*\*\*\*\*  
**OUR ONLY MAGAZINE!**  
**PLEASE SUPPORT IT!**  
 \*\*\*\*\*  
**UPDATE! COMPUTER SYSTEMS**  
**PO BOX 1095**  
**PERU IN 46970**  
**317-473-8031**

**AERCO**  
**BOX 18093**  
**AUSTIN TX 78760**  
**512-451-5874**  
**DOS & CPI'S**

**LARKEN ELECTRONICS**  
**LARRY KENNY**  
**DOS & BBS SOFTWARE**  
 These fine products  
 sold by both  
**ED GREY & RMG ENTERPRISES**

ED GREY  
PO BOX #2186  
INGLEWOOD CA 90305  
213-759-7406

RMG ENTERPRISES  
ROD GOWEN  
1419 1/2 7TH ST  
OREGON CITY OR 97045  
503-655-7484

EMSOFT DIVISION  
PETER HALE  
PO BOX 8763  
BOSTON MA 02114-8763  
617-889-0830

BYTE-BACK, INC.  
PO BOX 112  
LEESVILLE SC 29070

SUNSET ELECTRONICS  
2254 TARAVAL ST  
SAN FRANCISCO CA 94116

AERCO and OLIGER DOS is very popular also. LarKen DOS can be added to both for \$65 so that you can enjoy two systems at once. the JLO/LarKen system is called super DOS, look for info in past UPDATE! articles by Bill Jones.

Be sure to call or write our Vendors and ask for information on their current stock of products.

Vendors, T/SNUG will run your ads for free, just send us copy of your ad the way you want to see it here. Our members are paying to see what you have to offer, we at T/SNUG feel that this will help you to stay around longer. Just send your copy to Don Lambert. We shall send you this newsletter for free for as long as you and we are 'still around'.

ZX REPAIR  
DAN ELLIOTT  
RT 1 BOX 117  
CABOOL MO 65689

SHARP'S INC.  
BOX 326  
MECHANICSVILLE VA 23111  
804-730-9697 FAX>804-746-1978

MOUNTAINEER SOFTWARE  
BILL FERREBEE  
749 HILL ST #9  
PARKERSBURG WV 26104  
304-424-7272

RUSSELL ELECTRONICS  
RD1 BOX 539  
CENTER HALL PA 16828

ZUNK CUSTOM ELECTRONICS  
1419 FERRIS  
WAXAHACHIE TX 75165

JOHN MCMICHAEL  
1710 PALMER DR  
LARAMIE WY 82070  
307-742-4530  
COLOR PRINTER SOFTWARE  
FOR TS2068

John Oliger passed this information to us about his new JLO SAFE V2.65 which includes a few new features. I like the new CAT /n feature.

Prices:  
Source Listing w/comments.\$7.95  
EPROM w/o exchange .....\$15.00  
EPROM w/exchange .....\$10.00

JOHN OLIGER CO.  
11601 WHIDBEY DR  
CUMBERLAND IN 46229  
Affordable H/W Expansion  
DOS & CPI'S

```
!!
!!
##
##      ***
##      ####      ! !
##      ####      ! !
###     ####     *#*
###     ####     ###
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```

In Memory of  
PETER A KWITKOWSKI

# ZX81

NO. 5

## 10 YEARS LATER

ALL

THE NEW NEWSLETTER FOR THE  
SINCLAIR ZX81 / TIMEX 1000.

ALL YOU SEE, AND WILL SEE, HAS  
BEEN CREATED WITH, AND ONLY, A  
ZX81, A 16K RAMPACK AND A TIMEX  
2040 PRINTER.

## VACATIONS!

Time to play! Time to play with your ZX!  
In this ZX-91 #5: Big news from Holland,  
more new friends of ZX-91, a new dealer  
found, more changes to ZX-91, a longer  
print-out, a graphic blow to Nintendo and  
Sega, a longer list of SUPPORTERS, an  
invitation to the COMPUTERFEST to be held  
in Dayton, Ohio. ZX-91 spreads it all to  
all Sinclair/Timex users.

IF YOU WISH TO RECEIVE  
A PRINT-OUT, A CASSETTE,  
AN INFORMATION, A REPLY  
OR THE NEXT MONTH ISSUE  
OF THIS NEWSLETTER SEND  
A SELF-ADDRESSED ENVELOPE

TO: ANDRÉ BAUNE  
304 SCOTT  
CHATEAUGUAY, QUÉBEC  
CANADA J6J 4H5

## KNEE-USE-M-M-SIRS

The above title reads: NEWS AND  
ANSWERS.

### BIG NEWS:

Yes! There is an emulator program for  
the IBM PC to run ZX81/Timex 1000  
software! Thanks to Mort Binstock of  
Pittsburg who had sent me the news which  
appeared first in ZX-91 #4. But better  
than that, there is also an emulator for  
the QL to run the ZX81/Timex 1000  
software. There is also an emulator for  
the QL to run the Spectrum software.

These programs are distributed as  
shareware for about 25\$. Your ZX must have  
64K and run under 9ZDOS. Contact your  
listed Sinclair/Timex group for more  
details or write to:

Carlo Delhez,  
Emmastraat 3,  
4651 BV steenberg  
Netherlands

### MORE:

The QZX newsletter of March reports  
the existence of an emulator program for  
the PC to run Spectrum software.

### EVEN MORE:

I heard of an emulator for the Atari ST  
to run ZX81/Timex 1000 software. Hey!  
seems to me that the big guys are looking  
at us for brainware!

### BAD NEWS:

Computer Monthly has moved to big  
computers only, dropping our regular T/S  
NEWS column. If you haven't written to  
them yet, do it now! Tell them: Reading  
our column was the only reason to buy  
their magazine. The more will write, the  
more they will listen! Let's do it!

### THE GAZETTE:

The Montreal #1 English daily newspaper  
has put out two stories about the  
ZX81/Timex 1000. Thanks to Cairn McGregor  
and THE GAZETTE, I have been able to reach  
more users of the ZX81/Timex 1000 in my  
area.

### NEW FRIENDS:

I have received a newsletter from  
C.A.T.S., the Capitol Area Timex/Sinclair  
Users Group. And also the newsletter from  
the Dayton Microcomputer Association Inc.  
See their addresses in the SUPPORTERS'  
list. Remember along with ZX-91 all the  
groups and dealers listed in the  
SUPPORTERS' list are getting known.

### BELIEVE IT OR NOT:

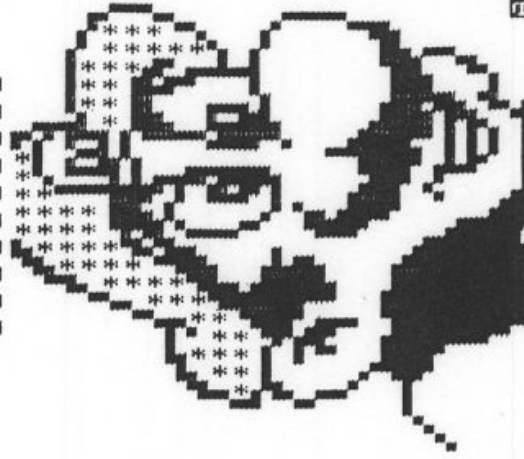
I have found a dealer of hardware and  
software for the ZX81/Timex 1000 (and the  
QL) in Quebec City. See him in the  
SUPPORTERS' list.

### WHO'S WHO?

I am exchanging newsletters with many  
different users groups. With some groups I  
send my newsletter to the editor, some to  
the president, some to the secretary  
etc... My question is WHO should I send it  
to? I do not want to create a jurisdiction  
problem among the different leaders of one  
club. So please advise.

### NEW USER:

The users of the ZX81/Timex 1000 are  
increasing. I even received a letter from  
a beginner who would like to start with a  
ZX in a kit format. That's a beginner! You  
know where to get one? Let me know.





## R E C T I F I C A T I O N:

ZX-91 is (almost) a monthly newsletter. This statement is more realistic. If the numbers of subscribers had leveled off at about 50 as forecasted, I would probably have been able to keep a monthly output. But the mailing alone and the answering to the new users is taking much more time than I have.

## N E W S L E T T E R S E X C H A N G E:

ZX-91 is exchanging newsletters with N.O.C.C.C., the North Orange County Computer Club. It is not a Sinclair-Times group. But if you happen to have an IBM related computer (like me) or a McIntosh, you can contact them at:

N.O.C.C.C.  
BOX 3616  
Orange, CA 92665

It is a very dynamic and serious group.

## T H A N K Y O U:

To Aurele Boivert of Pickering Ontario who sent me the info sought by Ike Walker of Boynton Beach, Florida who wanted to connect his ZX to an Olivetti printer. Aurele mentions also that he has some ZX81 equipped with 64K and 32K and some 16K ram packs to sell. Interested? Contact ZX-91, it works!

## T H A N K Y O U:

To David G. Leech of BYTE-BACK who sent me his latest catalog (get yours!) in which Ike (Walker) could find what he needs to connect his printer. All this info will be sent to Ike.

## T H A N K Y O U:

To New England's Sinclair QL Users Group and to Peter Hale of ENSOFT who sent me a copy of the letter describing the emulators programs from Holland.

ENSOFT advertizes mostly for the QL but still has software and material for the ZX81/Times 1000. Send for his Catalog.

The New England's Sinclair QL Users Group can be reach at this address:

New England's Sinclair QL Users Group  
BOX 8763  
Boston, MA 02114

## DAYTON COMPUTERFEST:

Yes! There will be a ComputerFest at the Hara Arena, 1001 Shiloh Spring Rd., Dayton, Ohio. On the 29th and 30th of August. Many Sinclair-Times users and users' groups will be there. For more info write or phone:

Gary M. Granger,  
812 Hedwick St.  
New Carlisle, OH 45344-2619  
(513)849-1483

## LAST MINUTE INPUT:

I just received a letter from Curt Carlson of the Mile High Times/Sinclair Users Group. See them in the SUPPLIERS' list.

You have a great or a simple news about the ZX81/Times 1000? Send it in! ZX-91 will spread it!

ANDRE\*\*\*



ANDRE\*\*\*

Send me the name of the character(s) depicted in these pages and I will send to you F.R.E.E the program and the data to make them on your own screen or printer. See also bottom of page 1.

## AWARI

I this issue of ZX-91 I am giving you a longer print-out. I have been claiming that I have created many programs and that I am (very) good at it. So here is a good example of a well constructed program for your ZX81/Times 1000. You will notice the rapidity of execution and the fast decision from the computer to make its move.

## RULES OF THE GAME:

The leftest and rightest boxes are the score boxes only. The A to F boxes belong to the computer. The G to L are yours. You (or the ZX) take the points from one of your boxes and distribute them one at a time in the adjacent boxes in a clockwise motion. If the last point is dropped in an empty box (whether it is in yours or your opponent), the points in the opposed (across) box will go to the score box.

The game ends when one of the player gets more than 18 points or when a player has no more points to distribute (as in the sample screen). Then the player with the highest score wins. The ZX plays first. Study his moves. Beware it plays well but it can be beaten.

## TYPING NOTES:

Line 680 = graphic E, graphic 7, graphic 7, graphic R.

Line 710 = graphic 5, 3, space, graphic 8.

Line 740 = graphic U, graphic 6, graphic 6, graphic 9.

```
1 REM AWARI 92/07 ANDRE***
9 REM
```

\*\*\* YOU \*\*\*

```
10 PRINT AT 14,0;"YOUR MOVE, W
HICH BOX?"
```

```
20 LET Z$=INKEY$
```

```
30 IF Z$("&G" OR Z$">" OR Z$"<") THEN GO
TO 20
```

```
40 PRINT AT 14,22;Z$
```

```
50 LET D=CODE Z$-37
```

```
60 IF NOT B(D) THEN GOTO 10
```

```
70 GOTO 250
```

```

99 REM ***ZX-81***
100 LET F=0
110 LET S=F
120 FOR C=1 TO 6
130 IF NOT B(D) THEN GOTO 180
140 LET A=D+B(D)
150 IF A>12 THEN LET A=A-12
160 IF NOT S THEN IF NOT B(13-D)
    THEN LET S=D
170 IF NOT B(A) THEN IF B(13-A)
    THEN IF 13-A<>D THEN LET F=D
180 NEXT D
190 LET C=5
200 IF F THEN LET D=F
210 IF C THEN GOTO 240
220 LET C=INT ((RAND<.7)*3+RAND#.3
    +1)
230 IF NOT B(D) THEN GOTO 220
240 PRINT AT 14,0;"I WILL PLAY
    BOX",CHR$(37+D)
249 REM

```

```

459 REM          ** THE GAME **
460 GOSUB 100
470 IF E THEN GOTO 500
480 GOSUB 10
490 IF NOT E THEN GOTO 460
499 REM          ** THE END **

500 PRINT AT 14,0;"GAME OVER:";Y
510 IF P(1)>P(2) THEN PRINT "YOU WIN,"
520 IF P(2)>P(1) THEN PRINT "I WIN,"
530 IF P(1)=P(2) THEN PRINT "IT IS A DRAW,"
540 PRINT AT 15,0;"YOU HAVE ";P(1);" AND I HAVE ";P(2);"
550 PRINT AT 19,0;"PLAYING AGAIN? (Y/N)"
560 IF INKEY$="Y" THEN RUN 450
570 IF INKEY$<>"N" THEN GOTO 560

580 CLS
590 STOP
599 REM          ** PREP **

600 CLS
610 PRINT TAB 11;"A W A R I"
620 DIM B(12)
630 DIM P(2)
640 DIM E$(32)
650 FOR I=1 TO 12
660 LET B(I)=3

```

```

6700 NEXT I
6800 LET Z$="["
6900 LET E=5
7000 GOSUB 800
7100 LET Z$="]"
7200 LET E=6
7300 GOSUB 800
7400 LET Z$="{"
7500 LET E=7
7600 GOSUB 800
7700 RETURN
7800 REM

      ** SCREEN **

8000 FOR I=1 TO 6
8100 PRINT AT E,I#4;Z$;AT E+4,I#
      Z$
8200 IF E=7 THEN PRINT AT 5,I#4;
      CHR$(
      (I+165);AT 9,I#4;CHR$(178-
      )
8300 NEXT I
8400 PRINT AT E+2,0;Z$;TAB 28;Z$;
8500 IF E=6 THEN PRINT AT 6,29;
      ;AT 8,1;"0";TAB 29;"0";AT 10,
      ;"YOU"
8600 RETURN

```

**THE-ONE-ON-ONE**

Why print-out in ZX-91? Because the ZX81/TimeX 1000 is the #1 computer to learn about computing and typing yourself a program is a sure pleasure and a good way to learn the skill of programming.

The ZX is THE computer for the beginner, the learner and the experimenter because it is a low cost computer and it is easy to learn with. And typing in programs from print-out is an excellent way of learning and improving your own skill. ZX-91 will continue to offer you the best and the newest programs.

## Next Steps

Two famous cats that you could see on your screen. A reprint from The Gazette (Montreal #1 daily newspaper) about our computer. More news about emulator programs. More print-out. Until then support our SUPPORTERS and try to beat your ZX at AWARI.

SCREEN SAMPLE

↑

\*\*\*ARCHIVE\*\*\*

## SINCLAIR/TIMEX SUPPORTERS

## U S E R S G R O U P S

C A T S  
Capital Area Timex Sinclair Users Group  
BOX 11017  
Takoma Park, MD 20913

C A T U G  
Chicago Area Timex Users Group  
c/o Al Feng  
15 Wake Robin Ct.  
Woodridge, IL 60517-1751

C C A T S  
Clackamas Computer Applied Training Society  
1419 1/2 7th St.  
Oregon City, OR 97045

D M A  
Dayton Microcomputer Association Inc.  
BOX 4005  
Dayton, OH 45401-4005

I S T U G  
Indiana Sinclair Timex Users Group  
c/o Frank and Carol Davis  
513 E. Main St.  
Peru, IN 46970

L I S T U G  
Long Island Sinclair Timex Users Group  
c/o Harvey Rait  
5 Peri Ln.  
Valley Stream, NY 11581

M H T S U G  
Mile High Timex/Sinclair Users Group  
c/o Curt Carlson  
601 S. Grant St.  
Denver, CO 80209

S E A T U G  
Seattle Area Timex Users Group  
c/o Malcolm Post  
3323 Frater Ave, S.W.  
Seattle, WA 98116-3112

S L I X  
Sinclair Information exchange  
c/o William W. Miller  
6675 Clifford Dr.  
Cupertino, CA 95014-4530

T / S N U G  
Timex Sinclair North American Users Groups  
c/o Donald S. Lambert  
1301 Kiblinger Pl.  
Auburn, IN 46706

---

T G C U G  
The Greater Cleveland Users Group  
615 School Ave.  
Cuyahoga, OH 44221

T T S U G  
Toronto Timex Sinclair Users Group  
14 Richome Court  
Scarborough, Ontario  
CANADA M1K 2Y1

U I S T A  
Vashon Island Sinclair Timex Association  
BOX 199  
Vashon, WA 98070

ZX Users Group of New York  
BOX 560 Wall St.  
New York, NY 10005

## MAGAZINES AND NEWSLETTERS

Computer Monthly  
BOX 55886  
Birmingham, AL 35255

FDD Newsletter  
1274 49 St. #821  
Brooklyn, NY 11219-3091

Free Software Foundation  
675 Massachusetts Ave.  
Cambridge, MA 02139

Update Magazine  
BOX 1095  
Peru, IN 46970

O Z X  
2025 O'Donnell Dr.  
Las Cruces, NM 88001

## D E A L E R S

Byte-Back Inc.  
BOX 112, 536 Long Terrace  
Leesville, SC 29070

Computer Classics REPAIR  
RT 1, BOX 117  
Cabool, MO 65689

EMSoft  
BOX 8763  
Boston, MA 02114-8763

Yves Gagnon  
4000 Boul. Central  
Duberger, Quebec  
Canada G1P 3P9

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John McMichael  
1710 Palmer Dr.  
Laramie, WY 82070

Mechanical Affinity  
513 E. Main St.  
Peru, IN 46970

Mountainer Software  
749 Hill St. #9  
Parkersburg, WV 26104

The John Oliver Co.  
11801 Whidbey Dr.  
Cumberland, IN 46229

RNG Enterprises (4\$ catalog)  
1419 1/2 7th St.  
Oregon City, OR 97045

Sunset Electronics  
2254 Taraval St.  
San Francisco, CA 94116

To receive information from the people listed above please send them a self-addressed and stamped envelope (SASE). If you want a catalog, add a dollar (1\$) to your letter.

As more clubs, dealers, newsletters and magazines will contact the ZX-91 newsletter, I will include them in this SUPPORTERS' list.

It is a free service to them and a great source of information to the readers.

ANDRE\*\*\*

## --ACHTUNG--

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The word processor used in these pages is 'WORD SINC II.' of P. Hargrave, Nanaimo, B.C. Canada.