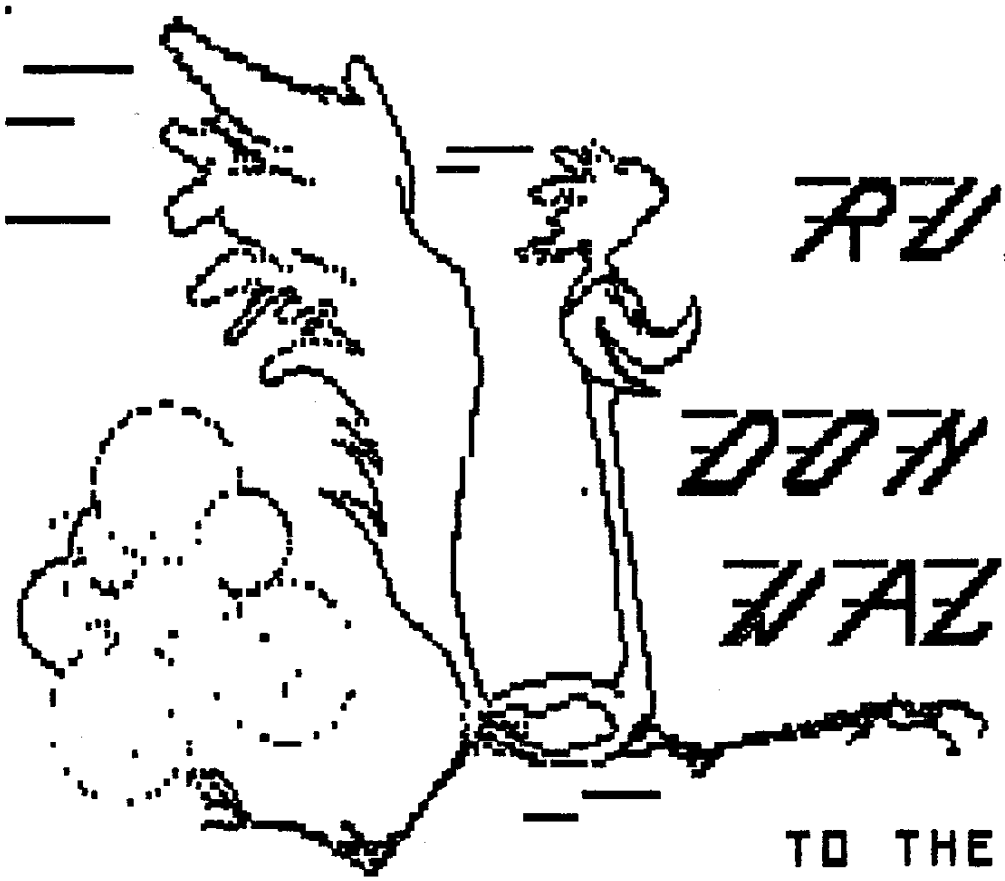
TI-D-BITS

MARCH

1988



TO THE

PACS COMPUTER FESTIVAL

19 MARCH: 11:00 AM - 4:00 PM

THE PHILADELPHIA AREA TI-99/4A USERS' GROUP (MAR. '88)

The Philadelphia Area TI-99/4A Users' Group meets twice a month. On the first Saturday of any given month, we meet at the Bucks County Youth Development Center, (YDC, which is next to Neshaminy Mall), Administration Building, beginning at 10:00 am. On the third Saturday of each month, we meet at LaSalle University, 20th Olney, in room H-329 located in the Science Building. Membership to The Philadelphia Area TI-99/4A Users' Group is available to all. We invite anyone that is interested in the TI-99/4A to visit us. Stop in and see what is available to you for your TI and how membership can benefit you!

Current executive board consists of:

PRESIDENT.....	Don Arsenault.....	215-368-0446
VICE PRESIDENT.....	Allan Silversteen.	215-885-7910
SECRETARY.....	Mark Wannop.....	609-365-1776
TREASURER.....	Tom D'Annunzio....	215-947-7353

Committees consists of:

TI-d-BITS	Ralph Field.....	215-362-2534
	Don Arsenault.....	215-368-0446
	Bill Hughes	
	Rice Hall	
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	Bob Lundin	
ASSISTANT TREASURER.	Frank Passini	
EDUCATION	Barry Traver	
	Bud Shapiro	
	Carlo Angelico	
EQUIPMENT	Rice Hall	

REMEMBER to be considerate when calling any of the above people. Limit your calls to the early evening hours. (6pm to 9pm)

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Classified ads are printed in blocks. A block consists of 3 lines, 55 characters wide, or any increment of 3 lines. Classified advertising is accepted from members at NO CHARGE for a one block ad, per issue. Additional ads from members may be placed at cost of $1.00 per block. Non-members may place classified ads at a cost of $2.00 per block. All advertisements MUST be paid for in advance.

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The Philadelphia Area TI-99/4A Users' Group's program library is available to all active members at NO CHARGE. A catalog of the library's contents is given to all new members upon request and updates will appear in this publication from time to time. To obtain material from the library, contact the librarian for the best procedure to obtain your requests.

SECRETARY'S NOTES

By P. Mark Mannop

This is sort of an ersatz column this month, due to the fact that I missed the last meeting due to work... I spoke to Ralph Field, and he said that he and Rice Hall had taken some notes and could possibly get a report together on the February meeting. I did patch a report together from talking to Don Arsenault that was uploaded to the Data Bus; some of what follows was also in that column, and is repeated here for folks that didn't see the Bus. For those that did, jump down to "Notes from here and there"...

POSTER DESIGNS NEEDED!

With Spring right around the corner, and folks getting more active, we are looking to increase our membership. There are lots of folks "out there" who have TI's and have no idea that there are local users groups dedicated to the TI right in this area! (We've had several new faces in the past year; so has the TI group in Deptford.) Working at various computer shows throughout the area, I've talked to several people who have TIs; some have gotten Clones, but wish they could "do more with the good ol' TI", while others are looking for ANYTHING TI related. The sad truth is, after the panic when TI dropped production of the machine, the user who was not part of a group was out in the cold - no news of new products, no idea of where to get help, no Funnelweb or other fine programs... The average Computer show is of little help to these folks, as they are 98% Clone oriented.

There are folks who could benefit from membership in our organization, and we could always use new members; that is why we are having a poster design drive. We would like members to design an eye-catching poster that advertises our club to all TI'ers and 9640 owners; it should be visually appealing, with meeting time, date, and place - don't forget room number - clearly indicated. Don said we should use his number on it for "further information" (that would be Don Arsenault 215-368-0446). If you'd like to add a South Jersey number, use mine (609-365-1776) in addition. The selected poster(s) will be photocopied and handed out to be posted in supermarkets, convenience stores, schools, laundromats - anywhere you can find a public-message corkboard!!! We need your help - get your designs in to us!

By the way - if you have a good idea for a design but no experience with a graphics program - make a sketch of your idea! Good ideas are usable in any form!

BBS NOTES

Activity is picking up on the TI section of the PACS MULTI-SIG BBS. I've been told that a new GIF picture for the 9640 is being posted every day in the downloads section. The PACS BBS is open to any PACS member (you have to register with the PACS office at LaSalle to get verified), and the numbers are (215) 842-9600,9601,9602,9603.

TI-O-BITS BBS keeps on rollin' along with a truely awesome upload/download section for the 99/4A and 9640. This BBS gets programs posted on it within days of release - always up-to-date! (215) 672-4051, 300-1200-2400 baud, no parity.

Pilgrims Pride of Hatboro, a local outlet of TI equipment and material, is running an after-store-hours BBS on their normal business line, (215) 441-4262.

If anyone knows of other TI BBS numbers in the area, let me know!

T.I.C.O.F.F IS COMING!

The third annual **T.I.C.O.F.F.** will be held on March 26th at the Roselle High School in North Jersey. Maps were available at the February meeting, and hopefully will be on hand at the PACS Computer Fest (see below). I said above that most computer shows are 98% Clone - this is the exception. In the past, this was 100% TI; this year it seems to be 50-50 TI and Clones. Regardless, it is still an important TI oriented event in our area! Info: (201) 241-9802 or (201) 241-4550.

PACS COMPUTER FESTIVAL, MARCH 19th

In place of the normal March LaSalle meeting, we are participating in the PACS Computer Festival, held in the ballroom (upstairs from the cafeteria). We will have several systems, including a 9640, to show off our stuff!

Also, we will have the group Public Domain/Fairware library on hand to make copies for our members! (If you bring your own disks, copies are free; if we supply the disk, it costs $2.00. Non-members are charged $5.00. As the credit card people say, "membership has its privileges".)

Remember, WE know how good our machines are; this is our opportunity to show the rest of 'em! Bring your favorite software along to run at the Fest!!!

A "MODEST PROPOSAL" REVISITED

I'd like to borrow a column inch or to to comment on

Robert Toscani's latest "modest proposal" in the COCO column of the last Data Bus. Bob suggested 1) combining the PACS Ham N' Chips event with the Computer Festival, and 2) holding it at a local shopping mall rather than at LaSalle. I think this idea has merit from a number of standpoints.

Combining both events would probably increase attendance. Also, the event could be scheduled on a date APART from a meeting date (so we don't "lose" a meeting that month). Dealer spots could still be rented, while SIG spots would be provided free. I was working at the last Ham N' Chips for a dealer, and attendance could have been better; the crowd drawn by the Computer Fest would help the dealers.

The shopping mall is an idea that I've often wondered about; it makes some sense, in that it could make the day an all-family outing; those interested in computers could nose about the SIG and dealers tables, those not interested in computers could, as Bob aptly point out, spend money elsewhere.

I see little conflict of interest for the malls either; only a few sell commercial software, and NONE sell memory chips, co-processors, public-domain software, bare drives, cards, or most of the other stuff one finds at a computer fest.

This could benefit ALL SIGs, as well as PACS, by increasing membership.

I feel Bob Toscani's latest "modest proposal" bears looking into...

NOTES FROM HERE AND THERE

NOTES FROM ENGLAND...

The International TI User Group of Oxford, England, is offering a replacement DSR ROM for the TI RS232 card. Features of the new ROM include a true Centronics (parallel) output, and greater selection of baud rates in the RS232 (serial) outputs.

It seems that TI's idea of parallel output doesn't quite match true Centronics protocol, and certain printers and devices (certain buffers, etc.) have had trouble working with the TI card. The new chip's PIO output routine assumes there will be no "acknowledge" for each character sent. Output will halt when the busy line goes high - normally when the receiving buffer is full. This allows "true" Centronics communication.

(This may be why my printer buffer or my Juki daisywheel won't work on the TI, but will on other machines, while the Gemini prints merrily on the TI...)

With this chip, one can set the serial (RS232) outputs to virtually ANY baud rate between 62 baud and 65,000 baud. The accuracy of the set rate is within 2% at 2400, 9600, 19200, and 38400, and ALL rates below 2400. Default is still 300 baud.

For split baud rate, there are two new baud commands: ".RX" and ".TX". These are used in the same way (but NOT in addition to) the ".BA" command and allows the Transmit (.TX) and Receive (.RX) rates to be independantly set. For example, OPEN #1: "RS232.TX=300.RX=1200" will set up transmit at 300 baud and receive at 1200 baud.

This DSR ROM replaces U1 on the TI RS232 card. The cost IN ENGLAND is 10 pounds postpaid. I would advise writing a letter of inquiry before you send off an international money order, as overseas shipping costs more and there may be duty, etc.

At any rate, you'll have to install it yourself, if you're handy with circuits, or find someone to do it for you...

Anyway, you could inquire to: ITUG, c/o Peter G. B. Brooks, 95 Banbury Road, Oxford OX2 6JT. Tell Ol' Baldie that we sent ya...

MY, MY, MY!!!

The same issue of TI-LINES that the above came from also had a report on the 9640, including some in-the-works software packages that were news to me... In addition to MyWord and MyArt updates, there is mention of MyNumber, a Lotus 1-2-3 clone; and MyData, a dBase III clone. Not to mention MyBasic, a compiler for - aw, you guessed it!

I'm looking forward to seeing these packages; if they are as powerful as the packages they are patterned after (and there's no reason why they shouldn't be), the 9640 could become an even greater upgrade machine for the TI user.

Consider that there are already programs that allow the TI or 9640 to read MS-DOS files and even format MS-DOS disks; If MyNumber, for example, has the capability to load in 1-2-3 templates, then guess what machine becomes, for many folks, "IBM compatible". And if MyData will run dBase files...

Frankly, the sound and graphics of the Geneve 9640 easily surpass MS-DOS machines; if the 9640 becomes capable of working on the same FILES as MS-DOS machines, one can bring home work from the office without buying another system.

MyGoo...ss!!!

DEPTFORD DOINGS

As I mentioned last issue, the Deptford TI group has broken away from DVUG; while this caused some rather interesting reactions in Christiana at first, everything remains amicable and everyone remains friendly...

The Deptford group (which doesn't yet have a name... Wish they'd get one; "the Deptford group" sounds like an investment firm...) plans on publishing a newsletter titled the "Ninety-Nine Plus Express", the plus being the 9640...

OL' RAMBLIN' MARK...

Well, TI-Writer tells me that I've managed to do over 190 80 column lines in a column obstensibly written about a meeting that I missed... That's got to be a record of some sort, but I'm not sure what... (And I'm not sure I'd want to know, either...) So it's time to call this thing to a halt.

As the aforementioned Baldie Brooks writes: "Out of space, out of time, and probably out of mind!"

Hang In There!

FEBRUARY MEETING NOTES

By Ralph Field

The meeting began with about 40 members in attendance. Barry Traver started off with a review of some of the programs on his new GENIAL TRAVelER, Vol. 2 No.1. One he discussed was a program called "M-COPIER" written by Mike Dodd which is a utility program designed to copy files from one disk to another. Unlike normal Disk Managers, however, M-Copier will place all of the FDRs (File Descriptor Records) at the start of the disk, regardless of how many there are. This reduces head stepping of the disk drives, resulting in faster access and less wear and tear on your drives. Two other programs were, "NOLIST" and "OKLIST" of which one will lock your program so it can not be listed and the other will unlock it so it can once again be listable. Another was "SUPERTRACE" by Jim Peterson, a very sophisticated Trace utility for ExBasic. Another was "UNBASHER" an improved version of ExBasic UnBash, and UnSmash. Still another was "BITBATDEMO", by P. Hoddie, Psycho/Puzzle demo of use of BIT subroutine. These new programs sounded very interesting especially, "M-COPIER".

Next was Eric Bray with a demo on a program from MC-Journal, called "IS-BASE" which is a relational database. He entered several names addresses and phone numbers, showing how to enter data into it and the unique way to retrieve the data. It was a very different and interesting type of database.

Next Don Arsenault gave a brief review of the drawing packages "JOYPAINT" and "JOYPAINT PAL" and The New "PRINTER'S APPRENTICE" and it partner, "TPA TOOL BOX". This was touched on lightly to generate some interest in giving some instructional classes at the YDC in the near future.

XXXXXXXXX$X

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PRESIDENT'S COLUMN

By Don Arsenault

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Well I just have a few words this month as this has been a very busy time around our house lately, with the income tax to be prepared, the remodeling to the house, and to top it all, it seems that almost everyone in the family except me has their birthday in this time of year.

I am very pleased with the increasing turn-out of members for our sessions at YDC on the first Saturday of the month. We have a steadily increasing attendance at both our MultiPlan and TI-Writer classes. We hope to start classes in The Printers Apprentice and continue with the communications classes.

At the next regular LaSalle meeting we will be showing you a great new terminal emulator program called TELCO. This program is undoubtedly the most sophisticated program written so far for the TI. It functions very similarly to PRO-COMM for the PC. It features an autodialer, macros, three different terminal types, and many, many more features. The program is written by Charles Earl from Ottowa, Canada. It is reported that he has also written a new BBS program for the TI. This guy is certainly someone to watch in the future, if TELCO is any indication of his programming efforts.

A final bit of information for users of FUNNELWEB version 4. Converting from uppercase characters to lowercase meant you retyped everything, until now! Depress CTRL and "." (PERIOD), the cursor is then able to pass over each character, converting every character the cursor passes over to lower case. Very nice in word wrap mode. Converting lowercase characters to uppercase is just as simple. Press CTRL and ";" (SEMICOLON), autorepeat functions also.

Hope to see you all at the PACS COMPUTER FESTIVAL and at the TICOFF.

9640 WHO CARES?

By Steve Mickelson
(President/NLeditor)
Newsletter 9T9 Toronto Canada

As both newsletter Editor and TI user, I have the opportunity to speak with many TI users and to read many editorials and comments in the various newsletters, databases, and BBS' re: the state of our computer and where the future will lead us. I am disturbed by much of the "negativism" which seems to exist amongst many users re :the Myarc and the 9640, Geneve, much of which seems to reflect either an ignorance of the product or a totally unrealistic understanding of the financial resources of Myarc and the costs of producing a computer and software in the TI market place.

The costs of developing computer hardware today can be prohibitive. Many Geneve critics somehow expected Myarc to introduce the Geneve and its operating system software, simultaneously. Any one with any knowledge of software knows that you cannot write software until the hardware exists. And that such software will take time. Also, the fact that the first Geneve software consisted, initially, of TI-Writer and Multiplan in 80 columns, with a modified GRAM Kracker-type loader. The Atari ST had no, I repeat NO initial software. So whats the big deal? It seems that these critics, want no compatibility with 4A software, if you follow their line of so-called logic. Just who's computer do they support, anyhow?

It was exactly one year ago, that I wrote an editorial, whereby, I drew the analogy of the TI community being like the passengers aboard the Titanic, abondoned by its crew(TI), and in danger of sinking from the flood of words among the "99/4A" vs "9640" camps of survivors. The only apparent alternative, seems to abandon ship and move to another computer, which is not an orphan. Many of those who stay with TI, seem content to fly the "Jolly Roger" and pirate everything in sight.

Also, many critics of Myarc, seem naive enough to misinterpret Mr. Philips' dress, (3 piece suits and clean cut appearance), "pegs" the man in the category of TI. Since he dresses well, and acts with business-like decorum, certainly he must have the Mega-bucks to blow, to hire software writers for $30-$40,000 a pop, as TI did, for ready to use, spam-in-a-can software. When the community sees him taking a grass-roots "appeal to the user for software", approach like Atari ST and Mac-makers did, lynch mobs form. If only he wore a pizza-stained sweat shirt and jeans, then perhaps they may be more accepting of buggy operating systems, as users had done with the v7.1 o/s for the one Meg, Horizon RAMdisks! Or, better yet, why not ignore the errors of Corcomp, extend Myarc's line-of-credit and push his fledgling company to the brink of bankruptcy, to meet the demands of users and nonusers, alike, for instant software gratification? Why can't he be as foolish as some of our expectations?

It should be recognized that the TI User Group network postponed the computer's inevitable demise. This community has become accustomed to one computer for five or so years, and thus inured to the 4A's limitations. The continued desire for cheap and easy software, spurned revival from a compatible, with many TI Guru's recommending users switch to IBM, Apple, Atari, or anybody else, preferring to wallow in self-pity, as an "orphan", than to see the success and succession of a new 9900-series computer. Many, in the community seemed to forget the "incompatibility" between bare consoles with tape-memory, and expanded, (32K/Extended Basic, Disk Controller Cards), TI-Systems. And, no thought has been given to the need for modified software to operate a Horizon RAMdisk, or how many cartridges did not behave properly, or how some disk utilities did not perform, with the Corcomp disk controller. What about the hardware, (pin-out), differences, when one purchased a Corcomp or Axiom interface, etc., etc. To me, the 9640, is just a faster, 80-column TI-upgrade, with a greater RAM. You the user has no obligation to buy one, any more than others have to buy a HRD, or for those with consoles, do to get an expansion system.

Final conclusions, may put the blame on the TItanic, squarely on the shoulders of the users, who instead of pulling for the common survival of the community, at-large, fought amongst themselves and let the pre-occupation with "Myarc bashing" versus "Myarc support" destroy the community from within, like a cancer. A community, many of whom, (ed: incomplete as received)

Have we forgotten that even the "TI-creator" had problem children as the early 99/4 and console BASIC, not to mention cartridges, which used only cassette, thermal printers or had no method to I/O or print data. And such software was locked in GROM space. Perhaps this attitude among many users did more to push TI to abandon the 99/8 and 99/2, than any influence exerted by the forces in the market place.

If you don't get the drift of what I am saying; bluntly, its I, personally, cannot see why someone such as Lou Philips, wastes his time and money on a community which has so many ingrates, who couldn't recognize something positive if it slapped them smack between the eyes. Are these individuals really as stupid as their remarks seem to indicate? That is to say, do they really think Lou Philips has the backing of TI, Yamaha, or some wealthy investor syndicate: and is just too cheap to

spend some of the billions of imaginary R & D bucks on his software? Are we as users, too dim-witted to see that IBM sold a million units of its O/S 2, introduced about the same time as the Geneve, before bringing out an O/S Operating System with none of the knashing of teeth amongst the IBM owners; and still expect Myarc, operating in a dead-end market to have the finances to get software out in a shorter period of time than Big Blue? Let's be realistic in our expectations of any third party manufacturers. Perhaps TI listened to the carping from such users, and for that reason alone, pulled the plug on the home computer market.

While the 9640 may not be the key to the survival of our ever-shrinking community, ie negative non-constructive criticisms against the clone or its small, (small compared to TI), manufacturer and unhealthy bickering amongst various camps of users will only drive sore nails into the TI coffin, you better believe it! So, the next time you have criticism about Myarc, or any other supporter of the TI orphan, keep it constructive or to yourself. Let's save those negative words for those "other" computers and help promote a positive attitude within our community, which is the key to our orphan's continued survival. After all,, we're in this boat together.

```
100 REM WHITE DOT AND COLOR
110 REM BAR GENERATOR
120 REM BY FRANK A. PASSINI
130 CALL CLEAR
140 PRINT TAB(10);"WHITE DOT
*
150 PRINT TAB(15);"&"
160 PRINT TAB(10);"COLOR BAR
*
170 PRINT TAB(10);"GENERATOR
*
180 PRINT ! ! ! ! ! !
190 PRINT TAB(8);"1-WHITE DO
T"
200 PRINT TAB(8);"2-COLOR BA
R"
205 PRINT TAB(8);"3-CROSSHAT
CH"
207 PRINT TAB(8);"4-VIDEO BU
RSTS"! !
210 PRINT "ENTER CHOICE 1,2,
3 OR 4^^^^^ENTER ANY OTHER^K
KEY TO EXIT";"IN PROGRAM^HIT
^ANY KEY^^^^^^^^^^^^^FOR^MENU
*
220 CALL KEY(0,K,S)
222 IF S=0 THEN 220
224 IF K<49 THEN 960
226 IF K>52 THEN 960
250 ON VAL(CHR$(K))GOTO 2
60,370,660,770
260 CALL CLEAR
270 A$="0000001818000000"
280 CALL CHAR(32,A$)
290 CALL COLOR(1,16,1)
300 CALL SCREEN(2)
310 CALL KEY(0,KEY,STATUS
)
320 IF STATUS=0 THEN 310
330 CALL CHAR(32,"0000000000
000000")
340 CALL COLOR(1,2,1)
350 CALL SCREEN(4)
360 GOTO 100
370 CALL CLEAR
380 FOR I=16 TO 4 STEP -1
390 CALL COLOR(I-2,I,I)
400 NEXT I
410 CALL CLEAR
420 CALL SCREEN(2)
430 A=48
440 FOR I=0 TO 7
450 FOR W=1 TO 4
460 CALL VCHAR(1,(I*4)+W,A,1
2)
470 NEXT W
480 A=A+8
490 NEXT I
500 FOR I=0 TO 7
510 FOR W=1 TO 4
520 CALL VCHAR(13,(I*4)+W
,A,12)
530 NEXT W
540 A=A+8
550 IF A<=136 THEN 570
560 A=48
570 NEXT I
580 CALL KEY(0,KEY,STATUS)
590 IF STATUS=0 THEN 580
600 FOR I=2 TO 14
610 CALL COLOR(I,2,1)
620 NEXT I
630 CALL SCREEN(4)
640 GOTO 100
660 CALL CLEAR
670 A$="FF8181818181FF"
680 CALL CHAR(32,A$)
690 CALL COLOR(1,16,1)
700 CALL SCREEN(2)
710 CALL KEY(0,KEY,STATUS)
720 IF STATUS=0 THEN 710
730 CALL CHAR(32,"0000000000
000000")
740 CALL COLOR(1,2,1)
750 CALL SCREEN(4)
760 GOTO 100
770 CALL CLEAR
780 CALL CHAR(33,"FFFFFFFFFF
FFFFFF")
790 CALL CHAR(34,"0F0F0F0F0F
0F0F0F")
800 CALL CHAR(35,"3333333333
333333")
810 CALL CHAR(36,"5555555555
555555")
820 CALL SCREEN(2)
830 FOR I=1 TO 24
840 PRINT " ! ! ******** $$$
$^$$$$ "
850 NEXT I
860 CALL COLOR(1,16,1)
870 CALL KEY(0,KEY,STATUS)
880 IF STATUS=0 THEN 870
890 CALL CHAR(33,"0010101010
100010")
900 CALL CHAR(34,"0028282800
000000")
910 CALL CHAR(35,"0028287C28
7C2828")
920 CALL CHAR(36,"0038545038
145438")
930 CALL COLOR(1,2,1)
940 CALL SCREEN(4)
950 GOTO 100
960 END
```

E TIPS FROM THE TIGERCUB

#42

TIGERCUB SOFTWARE
156 Collingwood Ave.
Columbus, OH 43213

Over 130 original programs in Basic and Extended Basic, available on cassette or disk, now reduced to just $1.00 each, plus $1.50 per order for cassette or disk and PP&M. Cassette programs will not be available after my present stock of blanks is exhausted.
Descriptive catalogs, while they last, $1.00 which is deductable from your first order.

Tigercub Full Disk Collections, reduced to $5 postpaid. Each of these contains either 5 or 6 of my regular $2 catalog programs, and the remaining disk space has been filled with some of the best public domain programs of the same category. I am NOT selling public domain programs - they are a free bonus!
TIGERCUB'S BEST, PROGRAMMING TUTOR, PROGRAMMER'S UTILITIES, BRAIN GAMES, BRAIN TEASERS, BRAIN BUSTERS!, MANEUVERING GAMES, ACTION REFLEX AND CONCENTRATION, TWO-PLAYER GAMES, KID'S GAMES, MORE GAMES, WORD GAMES, ELEMENTARY MATH, MIDDLE/HIGH SCHOOL MATH, VOCABULARY AND READING, MUSICAL EDUCATION, KALEIDOSCOPES AND DISPLAYS

NUTS & BOLTS (No. 1), a full disk of 100 Extended Basic utility subprograms in merge format, ready to merge into your own programs. Plus the Tigercub Menuloader, a tutorial on using subprograms, and 5 pages of documentation with an example of the use of each subprogram. Reduced to $15.00 postpaid.
NUTS & BOLTS NO. 2, another full disk of 108 utility subprograms in merge format, all new and fully compatible with the last, and with 10 pages of documentation and examples. Also $15 postpaid.

```
*****************************
* NUTS & BOLTS #3 is now    *
* ready, another full disk  *
* of 140 new merge-format   *
* utility subprograms, all  *
* compatible with the pre-  *
* vious. With 11 pages of   *
* documentation, $15 ppd.   *
*****************************
```

TIPS FROM THE TIGERCUB, a full disk containing the complete contents of this newsletter Nos. 1 through 14, 50 original programs and files, reduced to $10 ppd.
TIPS FROM THE TIGERCUB VOL. 2, another diskfull, complete contents of Nos. 15 through 24, over 60 files and programs, also just $10
TIPS FROM THE TIGERCUB VOL. 3, another 62 programs, tips and routines from Nos. 25 through 32, $10 postpaid.
TIPS FROM THE TIGERCUB VOL. 4, another 48 programs and files from issues 33 through 41, also $10 postpaid.

I'm very sorry about the error in the BXB routine in Tips #40. The "program to write a program" generated line number 32000 instead of 30002. Here is the correct line -

```
110 OPEN #1:"DSK1.BXBDATA",V
ARIABLE 163,OUTPUT :: PRINT
#1:CHR$(117)&CHR$(50)&"][\[]
$"&CHR$(190)&CHR$(199)&CHR$(
136)&M$&CHR$(0)
```

The Hyphenated Fill and Adjust in Tips #41 will crash if the file contains a line with one character too many, which may be only an unnecessary control character. This fix will help -

```
300 IF LEN(M$)<=L THEN 310 :
: CALL SOUND(200,110,0,-4,0)
:: PRINT M$;" is";LEN(M$);"c
haracters long":"Truncated t
o ";SEG$(M$,1,L):"OK? (Y/N)"
305 CALL KEY(3,K,S):: IF S=0
 THEN 305 ELSE IF K<>89 THEN
 STOP ELSE M$=SEG$(M$,1,L)
310 PRINT #2:M$ :: IF EOF(1)
<>1 THEN 220 ELSE CLOSE #1 :
: CLOSE #2
```

I know that this line is wrong, but key it in just as it's printed, and see what kind of error message you get -

```
100 !DISPLAY AT(3,1):"Progra
m must be SAVEd in:"MERGE fo
rmat."
```

A friend asked me for a program to help him solve the Scram-Lets puzzles in our local newspaper, so I rewrote the Anagrammer that was published way back in Tips #12. It will print out all possible combinations of any 3- to 6-letter word, or only those which have one or two letters in specified positions.

```
100 CALL CLEAR :: DISPLAY AT
```

```
(3,5)ERASE ALL:"SCRA LETS S
OLVER": :! by Jim Peterson
110 DISPLAY AT(8,1):"OUTPUT
TO? 1":"  (1) SCREEN":"  (2)
 PRINTER" :: ACCEPT AT(8,12)
VALIDATE("12")SIZE(-1):P ::
P=P-1
120 IF P=1 THEN DISPLAY AT(1
2,1):"PRINTER? PIO" :: ACCEP
T AT(12,10)SIZE(-18):P$ :: O
PEN #1:P$
130 PL(1),PL(2)=0 :: L$(1),L
$(2)="" :: DISPLAY AT(5,1)ER
ASE ALL:"TYPE A 3-,4-,5- OR
6-LETTER WORD  " :: ACCEPT A
T(6,6):A$ :: W=LEN(A$):: IF
(W<3)+(W>6)THEN 130
140 DISPLAY AT(14,1):"SEARCH
 FOR COMBINATION WITH":"LETT
ER IN KNOWN POSITION? N" ::
ACCEPT AT(15,27)VALIDATE("YN
")SIZE(-1):Q$ :: IF Q$="N" T
HEN 180
150 DISPLAY AT(17,1):"LETTER
?" :: ACCEPT AT(17,9):L$(1):
: DISPLAY AT(19,1):"POSITION
?" :: ACCEPT AT(19,11):PL(1)
160 DISPLAY AT(21,1):"ANOTHE
R LETTER/POSITION? N" :: ACC
EPT AT(21,26)VALIDATE("YN")S
IZE(-1):X$ :: IF X$="N" THEN
 180
170 DISPLAY AT(21,1):"LETTER
?" :: ACCEPT AT(21,9):L$(2):
: DISPLAY AT(23,1):"POSITION
?" :: ACCEPT AT(23,11):PL(2)
180 PRINT #P :: FOR J=1 TO W
 :: B$(J)=SEG$(A$,J,1):: NEX
T J :: FOR J=2 TO W :: IF B$
(J)>=B$(J-1)THEN 220
190 T$=B$(J):: FOR L=J-1 TO
1 STEP -1 :: B$(L+1)=B$(L)
200 IF B$(L-1)>=T$ THEN 210
:: B$(L)=T$ :: GOTO 220
210 NEXT L
220 NEXT J
230 FOR A=1 TO W :: FOR B=1
TO W :: IF B=A THEN 440
240 FOR C=1 TO W :: IF (C=A)
+(C=B)THEN 430
250 IF W=3 THEN 310
260 FOR D=1 TO W :: IF (D=A)
+(D=B)+(D=C)THEN 420
270 IF W=4 THEN 320
280 FOR E=1 TO W :: IF (E=A)
+(E=B)+(E=C)+(E=D)THEN 410
290 IF W=5 THEN 330
300 FOR F=1 TO W :: IF (F=A)
+(F=B)+(F=C)+(F=D)+(F=E)THEN
 400 ELSE 340
310 W$=B$(A)&B$(B)&B$(C):: I
F W$<=V$ THEN 430 ELSE 350
320 W$=B$(A)&B$(B)&B$(C)&B$(
D):: IF W$<=V$ THEN 420 ELSE
 350
330 W$=B$(A)&B$(B)&B$(C)&B$(
D)&B$(E):: IF W$<=V$ THEN 41
0 ELSE 350
340 W$=B$(A)&B$(B)&B$(C)&B$(
D)&B$(E)&B$(F):: IF W$<=V$ T
HEN 410
350 IF Q$="N" THEN 380
360 IF SEG$(W$,PL(1),1)<>L$(
1)THEN 390
370 IF X$="N" THEN 380 ELSE
IF SEG$(W$,PL(2),1)<>L$(2)TH
EN 390
380 PRINT #P:W$&" ";:: G=G+1
390 V$=W$ :: ON W-2 GOTO 430
,420,410,400
400 NEXT F
410 NEXT E
420 NEXT D
430 NEXT C
440 NEXT B
450 NEXT A
460 PRINT #P: :"  ";G;"TOTAL
 COMBINATIONS.": : :: G=0 ::
 V$="" :: PRINT "PRESS ANY K
EY"
470 CALL KEY(0,K,S):: IF S=0
 THEN 470 ELSE 130
```

And here is a much-improved XBasic version of the Adder-Upper which first appeared in Tips #13. I find it very useful in adding up several categories of figures in one pass.

```
100 CALL CLEAR :: CALL SCREE
N(16):: FOR SET=1 TO 14 :: C
ALL COLOR(SET,5,1):: NEXT SE
T
110 DISPLAY AT(3,4)ERASE ALL
:"TIGERCUB ADDER-UPPER": :"T
o add up several categories"
:"at one time.": :"Input cat
egories - END when":"finishe
d"
120 CALL KEY(3,K,S):: DIM C$
(22),T(22)
130 X=X+1 :: DISPLAY AT(12,1
):"Category #";STR$(X):: ACC
EPT AT(12,13):C$(X):: IF C$(
X)="END" THEN X=X-1 :: GOTO
170
140 A$=SEG$(C$(X),1,1):: IF
POS(F$,A$,1)=0 THEN F$=F$&A$
 :: IF X<17 THEN 130 ELSE 17
0
150 DISPLAY AT(15,1):"Code l
etter ";A$;" already":"used.
":"Pick another code letter"
 :: ACCEPT AT(17,26)SIZE(1):
A$
160 IF POS(F$,A$,1)<>0 THEN
DISPLAY AT(15,1):;;;;;;;;;;
GOTO 150 ELSE F$=F$&A$ :: C$
(X)=A$&C$(X):: DISPLAY AT(15
,1):;;;;;;;;:: IF X<17 THEN 1
30 ELSE 170
170 CALL CLEAR :: R=2+(X>8):
: FOR J=1 TO X :: DISPLAY AT
(R,1):"(";SEG$(C$(J),1,1);")
";SEG$(C$(J),2,255):: R=R+2+
(X>8):: NEXT J
180 DISPLAY AT(R+2,1):"Categ
ory ";F$ :: DISPLAY AT(R+4,1
):"Amount"
190 DISPLAY AT(24,1):"Use mi
nus value to subtract"
200 ACCEPT AT(R+2,11+LEN(F$)
)SIZE(1)VALIDATE(F$):Z$ :: Y
=POS(F$,Z$,1)
210 ACCEPT AT(R+4,8)VALIDATE
(NUMERIC):A :: T(Y)=T(Y)+A :
: DISPLAY AT(Y*(2+(X>8)),20)
:T(Y):: GOTO 200
```

Can you figure this one out? (I can't!) -

```
100 DISPLAY AT(3,4)ERASE ALL
:"ILLOGICAL COMPUTER!!": :"
     by Tigercub"
110 DISPLAY AT(7,1):"100 IF
A=2 THEN IF B=2 THEN C=4 ELS
E IF A=2 THEN IF B=3 THEN C=
6 ELSE IF A=3 THEN IF B=3 TH
EN C=9 ELSE IF A=3 THEN IF B
=4 THEN C=12 ELSE C=9"
120 DISPLAY AT(14,1):"Why ca
n't you get C to ":"equal 9
or 12 or 99?"
130 DISPLAY AT(18,1):"A? " :
: ACCEPT AT(18,4):A :: DISPL
```

```
AY AT(20,1):"B? " :: ACCEPT
AT(20,4):B
140 IF A=2 THEN IF B=2 THEN
C=4 ELSE IF A=2 THEN IF B=3
THEN C=6 ELSE IF A=3 THEN IF
 B=3 THEN C=9 ELSE IF A=3 TH
EN IF B=4 THEN C=12 ELSE C=9
9
150 DISPLAY AT(22,1):"C=";C
:: GOTO 130
```

This might come in handy to dress up a program -

```
100 CALL CLEAR :: CALL COLOR
(2,5,16):: CALL HCHAR(1,1,42
,768)
110 X=X+1 :: DISPLAY AT(X,9)
:"**********";:: DISPLAY
AT(X+1,9):"PRESS ANY KEY";::
 DISPLAY AT(X+2,10):"TO CONT
INUE";
120 CALL KEY(0,K,S):: ON S+1
 GOTO 110,130
130 !continue program here
```

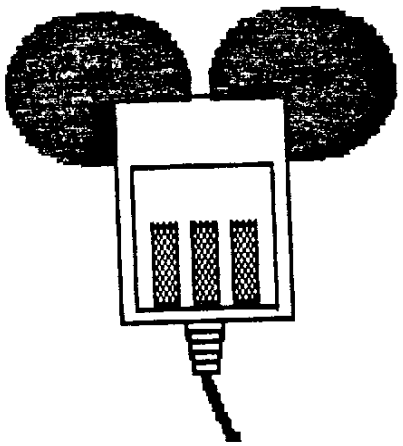
Or, if you'd rather do it backwards -

```
100 CALL CLEAR :: CALL COLOR
(2,5,16):: CALL HCHAR(1,1,42
,768)
110 FOR X=10000 TO 1 STEP -1
 :: DISPLAY AT(X+2,9):"*****
********";:: DISPLAY AT(X+1,
9):"*TO CONTINUE*";:: DISPLA
Y AT(X,9):"PRESS ANY KEY";
120 CALL KEY(0,K,S):: ON S+1
 GOTO 130,140
130 NEXT X
140 !continue program here
```

You might find this one useful -

```
100 ! PAINT CALCULATOR by Ji
m Peterson
110 CALL CLEAR :: FOR SET=1
TO 12 :: CALL COLOR(SET,2,8)
:: NEXT SET :: CALL SCREEN(5
):: CALL KEY(3,K,S):: ON WAR
NING NEXT
120 DISPLAY AT(3,7)ERASE ALL
:"PAINT CALCULATOR": :"To de
termine the amount of":"pain
t needed for a room."
130 DISPLAY AT(8,1):"Is the
room a regular square or rec
tangle? Y" :: ACCEPT AT(9,16
)SIZE(-1)VALIDATE("YN")BEEP:
Q$ :: IF Q$="Y" THEN 160
140 DISPLAY AT(11,1):"How ma
ny rectangular areas":"does
the room contain?" :: CALL A
CCEPTER(12,24,A):: IF A=1 TH
EN 160
150 FOR B=1 TO A :: DISPLAY
AT(3,10)ERASE ALL:"AREA #";B
 :: GOTO 170
160 CALL CLEAR
170 DISPLAY AT(5,1):"How hig
h is the ceiling?":"    ft.
   in." :: CALL ACCEPTER(6,2
,HF)
180 CALL ACCEPTER(6,7,HI)::
HI=HI/12 :: H=HF+HI
190 DISPLAY AT(8,1):"How man
y walls?" :: CALL ACCEPTER(8
,17,W):: CALL HCHAR(5,1,32,6
40)
200 FOR J=1 TO W :: DISPLAY
AT(5,10):"WALL #";J: :"Width
    ft    in" :: CALL ACCEPT
ER(7,7,WF)
210 CALL ACCEPTER(7,13,WI)::
 WI=WI/12 :: WW=WF+WI :: SQ=
SQ+H*WW
220 DISPLAY AT(11,1):"How ma
ny doors, windows or":"other
 areas not to be":"painted i
n wall #";J;"?"
230 CALL ACCEPTER(13,19,D)::
 IF D=0 THEN 280
240 FOR L=1 TO D :: DISPLAY
AT(15,1):"AREA NOT TO PAINT
#";L: :;"Width ft    in" ::
CALL ACCEPTER(17,10,WDF)
250 CALL ACCEPTER(17,16,WDI)
:: WDI=WDI/12 :: WD=WDF+WDI
260 DISPLAY AT(19,1):"Height
 ft    in" :: CALL ACCEPTER(
19,11,HDF)
270 CALL ACCEPTER(19,17,HDI)
:: HDI=HDI/12 :: HD=HDF+HDI
:: SQ=SQ-WD*HD :: NEXT L
280 NEXT J :: DISPLAY AT(21,
1):"Paint the ceiling?" :: A
CCEPT AT(21,20)SIZE(1)VALIDA
TE("YN"):QQ$ :: IF QQ$="N" T
HEN 320
290 CALL HCHAR(5,1,32,640)::
 DISPLAY AT(5,1):"Ceiling di
mensions": :"    ft    in by
    ft    in" :: CALL ACCEPT
ER(7,2,[ ])
300 CALL ACCEPTER(7,8,CWI)::
 CWI=CWI/12 :: CW=CWF+CWI
310 CALL ACCEPTER(7,17,CLF):
: CALL ACCEPTER(7,23,CLI)::
CLI=CLI/12 :: CL=CLF+CLI ::
SQ=SQ+CW*CL
320 CALL HCHAR(5,1,32,640)::
 IF Q$="Y" THEN 340
330 NEXT B
340 DISPLAY AT(3,1)ERASE ALL
:"Total of";INT(SQ+.5);"squa
re feet."
350 DISPLAY AT(5,1):"How man
y square feet will":"one gal
lon of your paint":"cover?"
360 ACCEPT AT(7,8)SIZE(3)VAL
IDATE(DIGIT)BEEP:SF :: DISPL
AY AT(9,1):"How many coats?"
 :: CALL ACCEPTER(9,17,C)::
G=SQ/SF*C :: G=INT(G+.5)
370 DISPLAY AT(15,1):"You wi
ll need";G;"gallons or":G*4;
"quarts of paint."
380 CALL KEY(0,K,S):: IF S=0
 THEN 380 ELSE STOP
390 SUB ACCEPTER(R,C,Q):: AC
CEPT AT(R,C)SIZE(2)VALIDATE(
DIGIT)BEEP:Q :: SUBEND
```

Memory full! - Jim P.



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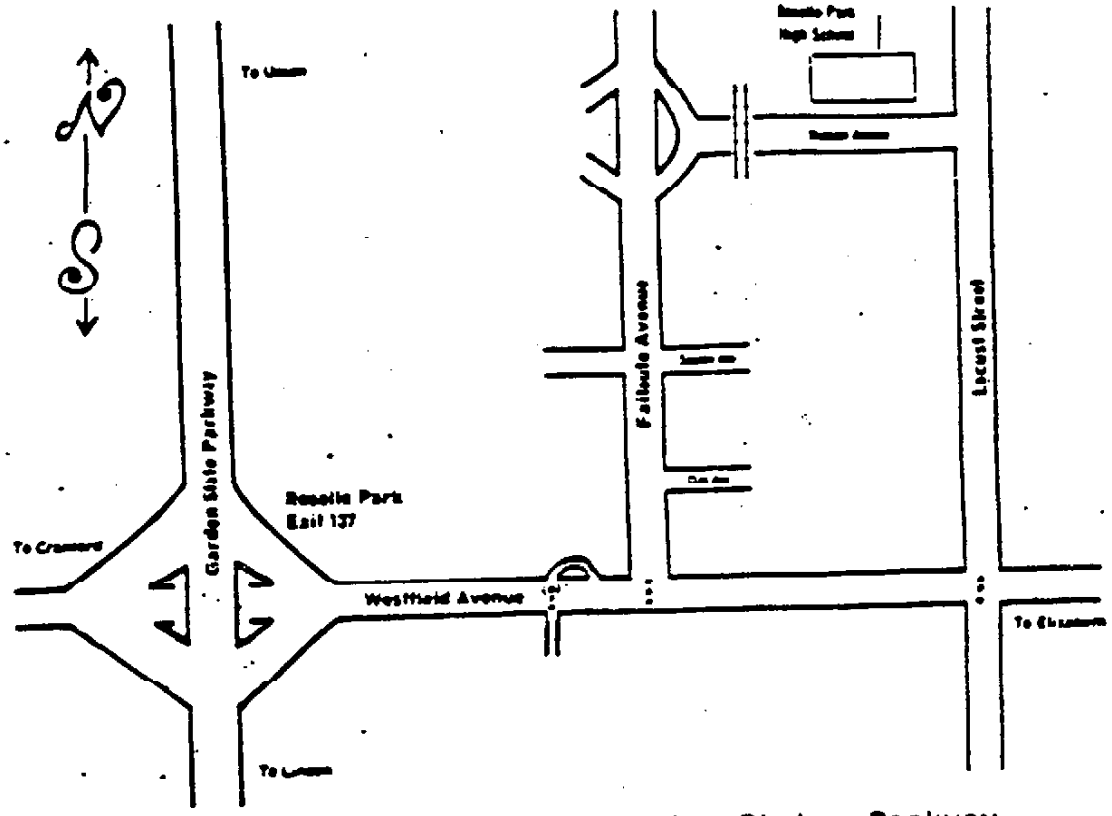
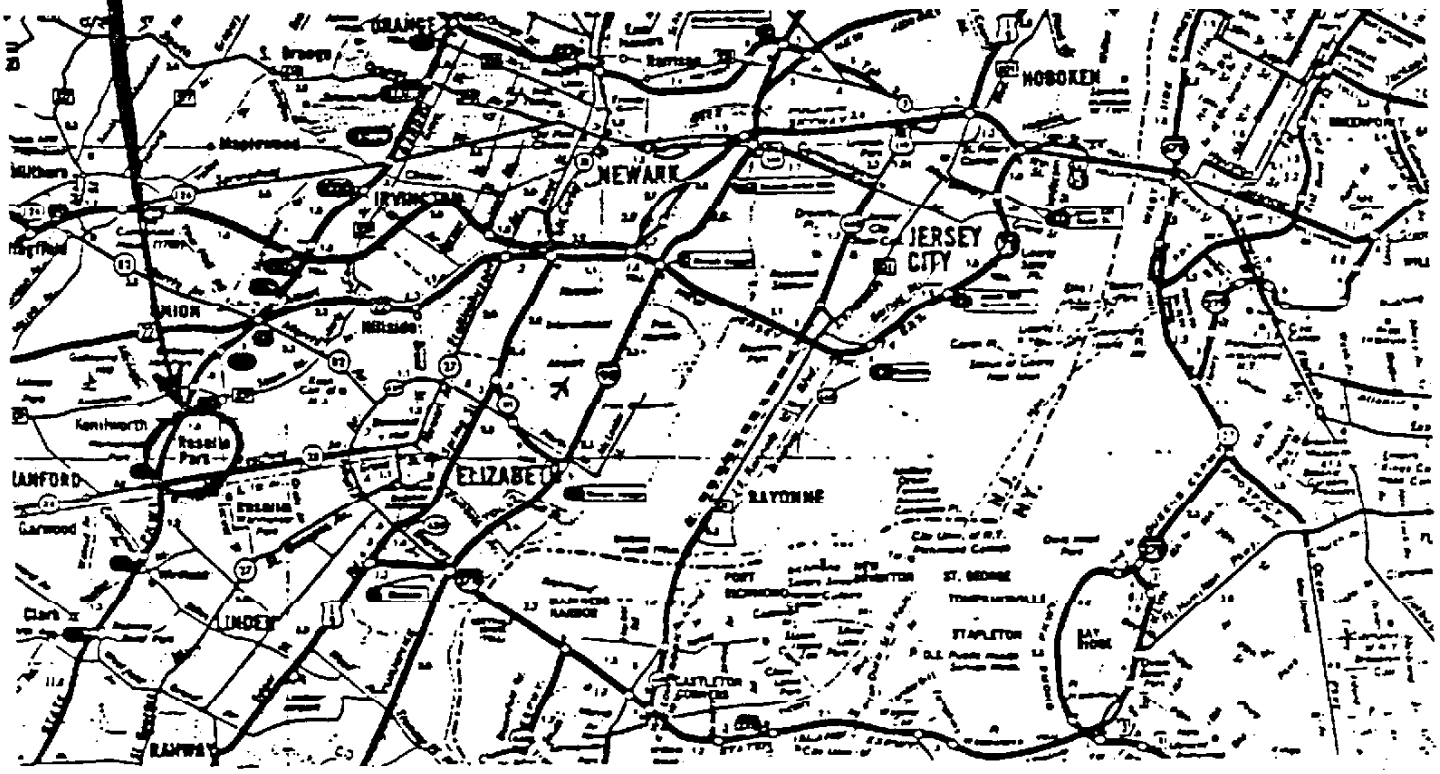
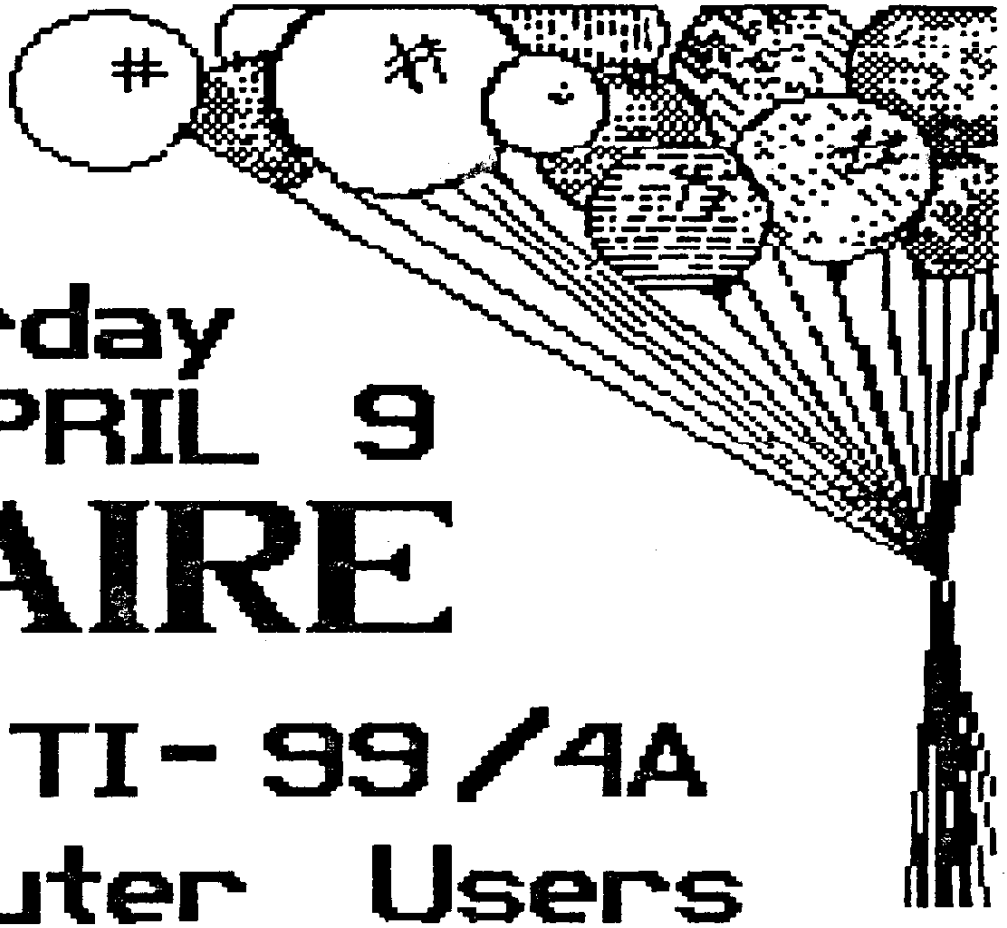


Coming North or South on the Garden State Parkway, exit at 137 and turn left onto Westfield Avenue. Procede on Westfield Ave. to the third traffic light and turn left onto Locust Street. Proceed up Locust Street and turn left immediately after Railroad Underpass. Roselle Park High School is two blocks in on Webster Avenue. School's phone number - (201) 241-4550.





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Vendors Entrance: Exit 31A Off Route 95 towards Lexington, left at Mobil Station just past the traffic lights onto North Hancock. When N.Hancock joins Hancock Street at a triangle, follow the road that runs behind Lexington Gardens past the side of the greenhouses for rear entrance to Diamond School (building has two parking lots that do not join each other).

==========

THE PRINTERS APPRENTICE
A COMMAND REVIEW

By Rick Alston
MADHUG Dec. '87

==========

I have found The Printers Apprentice to be a most fascinating program. It is available by sending $22.50 to McCann Software P. O. Box 34160 Omaha, NE 68134. It is relatively complex but is also much more versatile than other programs of its type on the TI market to date. This shouldn't scare you away from this outstanding program, since it alone allows you to do things that aren't possible with other "Printshop" type programs, TI or non-TI. Your imagination is your only limitation. I found the documentation to be rather difficult to follow, with no consolidated command listing. This means you have to leaf through the pages of the manual to locate the appropriate information through a series of "Descendents", which for me was confusing.

What follows is not complete enough to replace the manual, but is a consolidated list of commands with a brief explanation of those functions not plainly described in the manual. These should hopefully get you into the program a little more simply, allowing you to experience the vast power and versatility of The Printers Apprentice.

NOTE: The following programs are a must to fully utilize The Printers Apprentice:
T-I Artist with companion disks.
CS6D complete set of disks.
TPA font disk, TPA Toolbox.

>>>>> PICTURE EDITOR <<<<<

Page 11 - 14 of manual.

Prefixes are F=Fctn / C=Ctrl

F-S Cursor left
F-D Cursor right
F-E Cursor up
F-X Cursor down
I Erase cursor left
L Erase cursor right
, Erase cursor down
S Draw cursor left
D Draw cursor right
E Draw cursor up
X Draw cursor down
M Reflect picture horizontal axis
N Reflect picture vertical axis
F-1 Reduce horiz width of paint brush
F-2 Increase horiz width of paint brush
F-3 Reduce vert height of paint brush
F-8 Increase vert height of paint brush
F-4 Clear screen, erase all drawings
NOTE: Use of the red marker is outlined on page 13
F-5 Toggles red marker on and off (shaped like white cursor)
F-7 Draws / Erases a line between cursor and red marker
F-8 Increase vert height of paint brush
F-9 Exit to picture editor exit menu
F-0 Toggles between draw and erase mode
F-C Draws/erases a circle centered at marker position outer edge at cursor
C-9 Toggles row column counter
C-= Klipper allows a 24x24 pixel area to be saved into a font file assigned to a corresponding letter. pg 14.
C-8 Load/Save pg 12
C-P Print/Picture option pg 12

>>>>> CHARACTER EDITOR <<<<<

Page 6 - 10 of manual.

F-S Cursor left
F-D Cursor right
F-E Cursor up
F-X Cursor down
I Erase cursor left
L Erase cursor right
, Erase cursor down
S Draw cursor left
D Draw cursor right
E Draw cursor up
X Draw cursor down
F-1 Delete column at cursor
F-2 Insert column at cursor
F-3 Delete row at cursor
F-4 Clear screen
F-5 Switch editing windows for OUSH editing
F-6 Reflect character through vertical axis
F-7 Reflect character through horizontal axis
F-8 Insert row at cursor and duplicate
F-9 Escape to character editor menu
C-R Redraw small window to screen
NOTE: Printer/file name and variables have to be set before using the next option. (see print options pg 9)
C-P Print the current character
C-1 Delete pixel in current row
C-2 Insert pixel space in current row
NOTE: Select S or O before going to the next two options. (S=single strike 1-479 dots per line), (O=overunder strike 1-959 dots per line).
C-9 Character save and load control
C-= Font height control

D Directory catalogs selected drive
X escape

Space character requires creation and blanking in all font files. Font upgrade, page 11.

>>>>> FORMATTER <<<<<

Page 15 - 20 of manual.

X Main TPA menu
F-4 Stops printing
F-6 Gets next page of directory
F-9 Escape to main formatter menu
T Allows renaming DSK?.Textfile
B Buffer file
E Extrnfile for use with Scheduler
F Allows renaming DSK?.Fontfile
G Go executes formatter
H Allows user to hyphenate during printing
See page 18
J Allows loading/creating text via the Jotter.

>>>>> JOTTER COMMANDS <<<<<

F-1 Delete character
F-2 Insert character
C-R Reformat
F-3 Delete line
F-4 Roll down
F-6 Roll up
F-8 Insert blank line
F-9 Jotter main menu
F-S,D,X,E move cursor
Use "CR" at end of text (pg 19)
P Printer command (Star PIU.CR.LF)

>>>>>NOTICE!!! <<<<<<

Configure the next section before creating any EXTRNFILES.

V Variables allows redefinition of parameters
NOTE: Commands for this should be as follows for Star printers.

Prntr type- G emini E pson
Density S or D
Font Sdsn-Dush-S or U (whichever font you are using)
Linefeed size D
Space Width Ascii32-4
Intercharacter width-2
Font/Ascii-F or A
Wrap/Fixed-W (best) or F
Ragged/Microadjust - R or M (best)

NOTE: When entering the following information keep in mind that any graphics to be printed left, right or center will require special handling of the text. ie: 1st determine how many pixels wide the graphics will be including any margins, and whatever is left of the page is available for text. For example, centered graphics will require separate text files, one for the left side, one for the right side, one below, and possibly one above the graphics. Any other "Broken" text will require separate text files which must be converted to an "EXTRNFILE" for use in the Scheduler. Any file name you choose will work, just remember them and their order to be printed.

S Single density
D Double density
Q Quad density

NOTE: The numbers shown are how many pixels it takes to print across a page.

Left margin - (S 0-479) or (D-Hs 0-959)
Right margin - Same (Q 0-1919)
Next breakpoint -Q (see pg 17)

>>>>> SCHEDULER <<<<<

Page 21 - 24 in manual.

E Toggles Printer/Extrnfile
G Go initiates command shown on screen
M Modify data: Select letter

NOTE: The maximum number of files that can be "Scheduled" for printing in one document is 75. These files consist of files created using "GRAPHIC ART" (artwork) converted to "EXTRNFILES" using the formatter. The "SCHEDULER" ties it all together by allowing you to place the various files in the order and location you want them printed on the page.

E Edit
Row enter how far down page printing should begin for each file. (microlinefeeds "pixels")
Col enter how far from left margin printing is to begin for each file. (pixels)
#Reps enter how many times the file will be printed (works well for borders)
U Up scrools back through file names in the reverse order they will be printed, (can be edited)
D Down scrolls forward through file names in the order they are to be printed. (can be edited also)
I Insert a blank file name

A Active jumps to the selected Disk Directory Window
F E/X enabled, (helps to recall file names)
P Prints contents of "SCHEDULER" including headers.

(confirms contents). Use PIO.CR.LF for Star printers.

S Size reads the row and colum information stored in an EXTRNFILE header into the Row/Col (this helps during layout)

B Blockmove allows a "Block" of contiguous files to be moved horizontally or vertically as a unit.

Z Zap deletes current data item

E Exit to main Scheduler menu

C Clears data

D Disk directory (select drive) F-E/X scrolls file names

R ReadS the EXTRNFILS currently shown on screen including Row/Col/#Reps. (useful for confirmation/ editing)

W WriteS over the EXTRNFILE shown on screen after editing of Row/Col/#Reps. (be careful)

X Exits to Main Menu.

XIXIXIXIXIXIXIXIXIX

$$$$$$$$$$$$$$$$$$
ARRAYS AND SORTS

by Jim Peterson
$$$$$$$$$$$$$$$$$$

The concept of arrays, and especially of multi-dimensional arrays, is very difficult for many people to grasp. The following is the best explanation that I know of.

A variable name is a box in which you store something. When you write A$="X" you are telling the computer to "go to the box labeled A$ and put the character "X" in it". Or, more acurately, "go to the box labeled A$, throw away anything you find in it, and put "X" in it."

A simple array such as A$(3) is a row, labeled A$, of at least 3 boxes, labeled (1), (2), (3), and maybe more. When you tell the computer that A$(3)="X" you are again telling it to go to the row of boxes labeled A$, find the box labeled (3), and put "X" in it.

A 2-dimensional array such as A$(3,3) is a row, labeled A$, of at least 3 filing cabinets, labeled (1, and (2, and (3, and each having at least 3 drawers labeled 1) and 2) and 3). So, you can use A$(3,3)="X" to tell the computer to find the row of filing cabinets labeled A$, go to the one labeled (3, and open the drawer labeled 3) and put "X" in it.

And in a 3-dimensional array, A$(3,3,3)="X" tells the computer to find the A$ row of cabinets, find the one labeled (3 and find the drawer labeled ,3, and find the folder in that drawer labeled 3) and put.....

Finally, you can write A$(2,2,2,2,2,2,2)="X" to tell the computer to find row A$; cabinet (2 ; drawer ,2 ; folder ,2 ; paper 2, in the folder; line 2, on the paper; word 2, on the line; and letter 2) of the word!

Yes, TI Extended Basic can handle 7-dimensional arrays, but it is not very practical. Try running this - 100 DIM A(3,3,3,3,3,3,3) - and you will get MEMORY FULL IN LINE 100. Arrays with several dimensions are very wasteful of memory. I don't think I have ever seen a program that used more than a 4-dimensional array, and very rarely more than 3 dimensions.

Now then - A$(J)="X" means "go to the box labeled "J", find the number in it, then go to the row of boxes labeled A$ and find the box in that row which is labeled with that number....."

And even something as horrible-looking as A$(Y(J),Z(A,B))="X" just tells the computer to - 1. go to box J and find the number in it;
2. go to row of boxes Y and find the number in box number J of that row;
3. go to box A and find the number in it;
4. go to box B and find the number in it;
5. go to the row of filing cabinets labeled Z, find the one labeled with number A, open the drawer labeled with number B and find the number in it; 6. go to the row of filing cabinets labeled A$, find the one labeled with the number you found in Y(J), open the drawer labeled with the number you found in Z(A,B) and;
7 put the "X" in it!

Simple, isn't it?

Remember that, in a multi- dimensional array, only the last dimension holds the value; the others are just pointers to its location. A$(2,3)=A$(3,3) throws out whatever is in the 3rd drawer of the 2nd cabinet of the A$ row, and replaces it with whatever is in the 3rd drawer of the 3rd cabinet of that row, but the contents of the 3rd drawer of the 3rd cabinet are unchanged.

Also remember that box X or box X(1) or cabinet drawer X(1,1) or whatever, contain a 0 until you put something else in; box X$ or X$(1) or drawer X$(1,1) contain nothing at all until you put a string value into them. When you put something in the box, you throw away whatever was previously in the box. And to empty a box without putting anything in, you put a 0 in a numeric box or "" into a string box.

Enough, on that subject. Now, when you have all your data crammed into an array, the next thing you will

probably need to do is to sort it into alphabetic or numeric sequence.

Sorting is one of the hardest jobs that you can give to a computer, and one of the things that a computer is the slowest at doing. Your TI can figure your bank balance in a split second, but might take half an hour to sort your mailing list.

Here's why. You can sort a bridge hand of 13 cards into sequence in 13 moves or less, by simply pulling out each card and slipping it back into its proper place. But, suppose those 13 cards were in 13 boxes, and you had to sort them without removing them from the boxes, except that you could hold one card in your hand? Even if you could figure out the best way, it would take you far more than 13 moves.

That is the problem that the computer has. You have just learned that the computer stores all those values in labeled boxes, or file drawers, and therefore must sort them by shuffling them from one box to another, emptying a box to shuffle into by holding one value in a temporary box while its value is compared with the others to find its proper place.

Of course, you could just set up a new row of empty boxes, and then search through the old boxes for the lowest value and move that to the first box in your new row, etc. - but that would double the amount of memory that the job would require. This would be no problem for a small array, but the computer can sort small arrays fast enough by the one-row method - it is the largest arrays that are too slow by the one-row method and would need too much memory by the two-row method.

Many ingenious routines have been written to accomplish these one-row sorts. I have written a program called "Sort Watcher" which enables you to actually watch various sorts taking place on the screen. It will also tell you the number of swaps and comparisons that were made.

This program demonstrates that the time required for a sort increases greatly as the size of the array increases. Sorting an array of 20 does not take just twice as long as sorting an array of 10 - it may take 4 times as long. For this reason, some of the faster and more complex sorting routines divide an array into smaller segments to be individually sorted and then merged.

After an array has been sorted, my program will also let you change any value in any part of the array, and then let you watch the array being resorted. From this, you will learn that a sorting routine which is very fast for a completely random array may be very slow for an array which is already almost in sequence!

In fact, to add just one additional value to a sorted array, the fastest method is the simple "shoehorn" - just set up an empty box at the end of the row, and move each value down by one box until you come to the proper place for the new value.

A sorting routine can be either numeric or alphabetic depending on whether the variable names used are numeric or string. A numeric sort will be in strict numeric sequence and an alphabetic sort will be in ASCII sequence. That means that if all your strings are composed of upper case alphabetic characters, or all are lower case alphabetic characters, you will get an alphabetic sort - but if they are mixed, all of the upper case strings will come before any of the lower case strings, because the upper case ASCIIs are 65-90 and the lower case are 97-122. And if you have lower case words with capitalized initial letters...!

For the same reason, if you perform an alphabet sort of strings containing numeric digits, you will not get a numeric sequence - 10000 will come before 2 because 1 has a lower ASCII code than 2. It would be extremely difficult to devise a sorting routine which could sort numeric digits numerically within strings. However, if all the numbers are the same length, such as ZIP codes, the ASCII sort will be numeric.

Sorting a multi-dimension array becomes a very complex task. If you swap values around without also swapping all the related values, you will end up with complete garbage. Swapping all the related values takes time, and a dimensioned temporary variable name is also required.

Another way around this is to combine the data from an array into simple strings, or set it up originally as simple strings, and then perform a simple sort based on a specified segment of the string. For instance, you could use TI-Writer with tab settings to create a mailing list having first name at tab 1, second name at tab 15, address at tab 25, city at tab 45, state at tab 55 and zip code at tab 65. Then you could sort into last-name alphabetic sequence by sorting on SEG$(M$(J),10,255), or into zip code sequence by sorting on VAL(SEG$(M$(J),70,5)).

When using TI-Writer to set up such a file, be very sure to save it by PF with the C option, not by SF, and don't leave any blank lines at the end or elsewhere.

Alternatively, elements of data can be crammed into a string separated by control codes, and sorted by position of the code - FOR J=1 TO 5 :: READ A$ :: M$=M$&CHR$(J)&A$ :: NEXT J and then sort on element X by - SEG$(M$(J),POS(M$(J),CHR$(X) ,1),255)

!!!!!!!!!!!!!!!!!!!!!!!!!
GENEVE SUPPORT ARTICLE
by Don Jones
fm Chicago Times
January Issue
!!!!!!!!!!!!!!!!!!!!!!!!!

Howdy doody there, Sport Fans! How are you surviving the cold weather these days? I must admit that it is kinda difficult to get very cozy next to a computer, but true computer freaks keep on hackin' and crunchin' regardless of the climate! At this time, I am looking for an old pair of cotton gloves, with the finger tips removed. In this way, I can keep my fingers warm and still retain my touch typing sensitivity.

Well, this month, we are going to get seriously into some useful Geneve activities, but first some important and unfinished business:

If you ever bothered to read my articles, in the past, you will have noticed that I often attempted to express appreciation to he many individuals who have made sacrifices, of some sort, to help me to do my job. Here, I must admit to a most unfortunate oversight. I am speaking about the persion who has taken on the responsibility as our volunteer cooridinator. You may remember, in the past, we used to have membership drives, where local members would distribute membership information to TI owners. in their own zip code areas. The pereson who volunteered to coordinate this activity for me was Pat Vetter. In all of my last articles as the membership chairman, in which I made statements of thanks and of appreciation, I neglected to mention her. It was Pat Vitter who placed a 1000 labels on post cards, which went out to local TI owners, just before the Faire. I regret the omission and apologize for it. This particular job was a very important one for me at a very critical time. during my term as Faire Chairman. Pat I truly regret the error. Thanks for everything.

In the last issue of our newsletter, there was a snide and oblique remark made referring to those contributors whose articles are rather "long winded." Well, let me make it clear that I would prefer be known as being windy rather than having smell of bugs on my breath! (How about a cheer for THE BONE CRUSHER!!!) NOW, on to the serious stuff:

First, let me make it clear that last month's cover art was done on a Geneve, using the Myart program. Even thought this was mentioned on page two, I just wanted to reinforced the fact even further.

Last month, an anonymous article appeared, regarding the Geneve. Coincidentally, it was printed in the same issue in which my first article appeared. This article contained some good information, which I, too was intending on bringing to your attention, in this article. The emergence of this article doesn't bother me in the slightest. It only makes me feel that the efforts of Geneve owners, tonard receiving some respect, recognition, and balanced criticism, for the 9640, are successful. Also, by having the other article, with its support informationa, printed, frees me up to deal with other important aspects of the Geneve. I therefore refer you to this useful article, which was printed on pages 30 to 32, of last months newsletter. At the same time, I feel that some clarifications, relative to some of the information, contained in that article, are in order, to wit: "There is no way to find the built in Ramdisk. And, DOS can't find the Horizon RAM disk." These statements just simply aren't true.

Using DOS 1.0 and GPL loader .98, finding the built in RAM disk or a Horizon RAM disk is no problem at either the DOS level or the GPL (TI mode) level. In fact, the latest version of DOS was written with the idea of helping you to find your Horizon RAM disk, but in order to use your Horizon RAM disk (HRD) with your Geneve, your HRD must sit at the CRU 1400 and take the drive name, DSK6. If you do this, you will have no trouble "finding" your HRD and you will not have to make any alterations of the DOS, with a sector editor. (This was necessary with DOS versions .97 and .98, but it is totally unnecessary with the current versions of DOS.) Later in this article, I will print for you an AUTOEXEC file which easily finds your built in RAM disk at the DOS level.

Finding your built in RAM disk, at the GPL (TI mode) level, has never been a problem; it has always been there. All that one needed to do was write to it, but, with present level GPL loader, there is a small problem: The RAM disk is not properly formatted. This is a bug in the GPL loader. If you look at the built in RAM disk (DSK5), using a disk manager, it may indicate that soathing like 6962 sectors have been used and 1436 sectors are still available. This is not correct; only 718 sectors are available, and if you attempt to write beyond that number, you will end up writing over your DOS, which is loaded into this same memory area and thereby cause your machine to crash. Still, there is a way to prevent this: When you boot up the TI mode, use a disk manager to initialize DSK5. Format is as a double sided, single density disk, but do not bother to verify the sectors. YoU will then come up with 718 free sectors used. You can name this RAM disk anything that you want. (Out of my regard for tradition, I usually call it RAMDISK.) Then, for the remainder of the time that you remain in the TI mode, you will have, at your beck and call, 718 sectors free to use at your discretion. You

can save programs to this space, and then call them from this disk emulation. You can temporarily save your working files, that you are writing, using Myword or TI Writer, into this space. You can even load your entire TI Microsoft Multiplan cartridge to this area. In fact, you can even "archive", "unarchive," compress, or decompress files to and from this area. By doing this, you will save wear and tear on your mechanical drives. Nut, whatever you do, you must remember to save any altered programs, results, or files to disk. It is important that you do this, because when you turn off the power, you will "wipe" the entire contents of this area from memory; the one disadvantage with this space is that you lose it when you lose power or re-boot your DOS, still it can be a very useful tool. I use it whenever I do any telecommunications. Whenever I wish to do an upload, I will first load the file(s) to the RAM disk area, using a disk manager. When I log-on to the b.b.s., that I am working with, I transfer the file(s) from the RAM disk rather than my floppy drive. I do this for two reasons: 1.) The RAM disk is faster than the mechanical drive, and 2.) It saves wear and tear on my mechanical drive. Also, when I download, from a b.b.s., or an individual, I write the file(s) to the RAM disk, for the same reasons as given above. When the communications session is over, I then transfer the file contents to a floppy disk, for a more permanent form of storage.

Here, let us talk about the creation of the BATCH file. A BATCH file is merely a file which is a program that is written using a computer's text editor (Myword or TI-Writer). The computer reads it at the DOS level. These files are very useful as they can make the machine do all sorts of "house-keeping" functions. By assigning these regular routines to BATCH files, we can save ourselves a lot of extra typing, work hassles. Here is an example that I have written for the purpose of example and demonstration. By being on the same disk (floppy or RAM) as my DOS (SYSTEM/SYS) and having the name AUTOEXEC, this file will be executed as soon as the DOS is "booted". Please note, there is only one command per line, the commands are entered in upper case (though lower case will also work), each command must start in column zero (0), and all formatting commands (carriage returns) must be stripped from the file before it is run. I urge each Geneve user to type this file out, save it to disk, and run it with his/her DOS. Later, you can experiment and change the commands so that you can customize this file to meet your personal needs and your system's requirements. I will follow each command with a short explanation:

```
ECHO OFF .(Keeps the command from being read on the CRT,
         during its execution)
TIMODE ...(Allocates 128K of memory for execution of
         TI 99/4A programs)
RAMDISK 180 (Allocates 180K of memory for the built in
         RAM disk)
SPOOL 128 (Allocates 128K of memory for the built in
         printer spooler function. Using the current
         DOS, version 1.0, and GPL loader, version .98,
         I strongly suggest that you allocate at least
         128K of memory for your spooler for both the
         functioning of Myword and Myart. I have found
         that with an insufficent amount of memory
         given
         to the print spooler buffer, attempts to print
         a file, from the FOrmatter, in Myword, will
         also lock up the machine. I have also been
         told that if you attempt to print a Myart
         picture with an insufficent amount of memory
         allocated to the printer buffer spooler, you
         would lock up the machine. The reason for this
         is that the machine is so fast that, during
         some printing operations, only the built in
         spooler is fast enough to keep up with it.
         Therefore, as long as you allocate a suff-
         icient amount of memory, to the spooler, all
         print functions work just fine.)
ASSIGN G=DSK6: (Changes the prompt "G" to DSK6. The
         colon [:] is essential to this command:)
ASSIGN E=DSK5: (Changes the prompt "E" to DSK5. This
         also happens to be your built in RAM disk.
         This comand allows you to "find" your built-in
         RAM disk at the DOS level of operation.)
LASTDRIVE = L (Allows you to use letters A-L as names for
         drives.)
MODE 80 ..(Changes the screen output from 40 columns.
         This command should be used only if you are
         using an 80 Columns monochrome or RGB monitor.
ECHO .....(This allows the line following it to be read
         from the screen.)
PAUSE .....(Causes the system to wait for you to press a
         key, and will leave a message to the effect of
         asking you to do so.)
CLS .......(Clears the screen.)
DIR /W ....(Gives you a directory of the main drive
         [drive 1.] The "/W" causes a wide directory
         display. This display gives only the file
         names, and lists them horizontally across the
         screen, rather than vertically. This allows
         more files to be listed, without the screen
         scrolling.)
PAUSE .....(I put the pause in to allow me a chance to
         study the directory of each disk.)
DIR B: /W  (Gives you a directory of drive #2.)
PAUSE
DIR C: /W  (Gives you a directory of drive #3.)
@PAUSE
DIR G: /W .(This will be a directory of my Horizon RAM
         disk, sitting at CRU 1400 and emulating disk
         drive #6.)
ECHO Hello Don! How are you today? It's nice to be able
ECHO to work with you again. I think that we will make
```

ECHO a great team, don't you? Have a nice day, Don!
(Here I was just being cute. It is a message that Geneve will give each time that the machine is turned on.)
TIME .....(Gives you the current time, as recorded by the computer, and allows you to change it.)
DATE .....(Gives you the current date, as recorded by the computer, and allows you to change it.)
CLS
ECHO .....(Gives you a blank line.)
ECHO ON ...(Turns the ECHO function back on.)
PAUSE Press any key to load GPL (Pauses the system one last time and prints the above messages. This gives me one last to stop the process, by pressing CTRL C or CTRL BREAK [SCROLL LOCK].

This will allow you to stop the execution of the BATCH file.)
G: .....(This changes the default prompt to "G" instead of "A". I only do this because my HRD has the name DSK6, and DSK6 has been assigned the "G" prompt. What is important for me is the fact that I have installed my GPL on my HRD. If you don't have one, be sure that you don't use the "G:" command. Instead, place your disk, with your GPL on it, in drive 1.)
GPL .....(Loads the GPL loader from current default prompt.)

The above represents my initial efforts at writing a BATCH file. By running this file, with my DOS, I am saved a lot of boring and redundant typing. This file meets my personal and system needs. I submit it so that you may use it as an example to write your own. In future installments, of this column, I will make further additions and changes to this BATCH file.

The above mentioned article, in last month's newsletter, tells you how to write your BATCH files at the DOS level. This is all well and good, except that, to the best of my knowledge, you must always write it from scratch. In other words, you can't load and alter an already existing one. This is the reason that I write my BATCH files with Myword. Be sure, when doing it this way to be in the fixed mode by striking CTRL O, so that you will have a hollow cursor. Also, set your tabs so that your left margin is all the way to the left of the screen. When you have finished, don't simply save the file to your disk. Rather, do a PF (Print File), and when you are asked for a device, indicate CDSK1, or whatever disk you want to save it to. When you do this, don't forget to preceed the location with the "C". This procedure will strip all control characters from the file.

Here, I would like to discuss the work of a very innovative user/programmer named Jim Schroeder. When the 9640 first came out, Jim modified some existing 99/4A programs, so that they would work on the 9640. He also wrote some original "Fair ware" programs, which help to make the 9640 into a more useful instrument. I am very impressed with this man's work.

One of the existing 4A files, which he has altered, is John Johnson's HRD menu program. This program gives you two screens (which are toggled by pressing the space bar), with a total of 15 different program file names, that you may alter and enter by merely pressing FCTN 5. The whole file is then written (SAVEd) to your built in RAM disk, DSK5. (From there, you can remove it and save it on a floppy disk.) This neat loader utility will allow you to not only load program files, that are installed into the program, but it will allow you to catalogue any of your existing drives. Then, by moving the high-lighting cursor, with the arrow keys, you can indicate the file which you want to load. If you press ENTER, you will then be returned to the program title screen (which also includes a real-time, twenty-four hour clock, which also shows the tenths of a second, with the day of the week (1 to 7), the year, the month, and the day. Then by pressing the number 3, you will find the title of the file, which you high-lighted, in the directory mode. Pressing ENTER will automatically load it! (If it is a DV/80 file, pressing the number 2 will display it.) In order to fully appreciate and take advantage of all of the features and benefits of this program, you will need to refer to the documentation, which comes with the HRD.) This program, which was written by John Johnson, is also one of the most innovative programs for the ti 99/4A. Without it, the HRD loses lot of its appeal. Also, to the best of my knowledge, this is a truly "free-ware" program, that is, it is given with no expectations for any future renumeration. Consequently, Jim Schroeder is not asking for any payment for this program. This program is one of the nicest things that you can use with the Geneve. I believe that its name is 9640 MENU, at least that is the name which it has had in the Geneve download section of the group's b.b.s. Take this program: try it, you'll like it! (Next month, I will discuss Edward Hallett's use of the program module in his innovative menu/loader program.)

Well, Sports Fans, I guess that it's time for Krome Dome Jonz to mosey off, into the wild blue yonder of the computer world. I realy have lot more to say, but I have been restricted by our president and editor to a mere four pages, and I have so much more to say! Maybe this is a good idea.

(:)(:)(:)(:)(:)(:)(:)(:)(:)(:)(:)(:)(:)

PUTTING IT ALL TOGETHER #1

by Jim Peterson

The hardest part of learning to program is not in learning what the various commands do - it is in learning how to put them all together to do what you want them to do!

Key in this simple routine and run it, to see what it does. Then read the explanations of each line and see how they do what they do!

```
100 CALL CLEAR :: RANDOMIZE
110 B=INT(5*RND+2):: IF B=B2
 THEN 110 ELSE B2=B
120 F=INT(5*RND+2):: IF F=F2
 THEN 120 ELSE F2=F
130 D=INT(5*RND+2):: IF D=D2
 THEN 130 ELSE D2=D
140 X=F*B*D
150 BB=INT(5*RND+2):: IF BB=
BB2 OR BB=B THEN 150 ELSE BB
2=BB
160 DD=INT(5*RND+2):: IF DD=
DD2 OR DD=D THEN 160 ELSE DD
2=DD
170 F=F*BB*DD
180 DISPLAY AT(3,1)ERASE ALL
:"IF";B;"BOYS CAN CATCH";X;"
FROGS IN";D;"DAYS,"
190 DISPLAY AT(6,1):"HOW MAN
Y FROGS CAN";BB;"BOYS":"CATC
H IN";DD;"DAYS?"
210 ACCEPT AT(7,19):Q
220 IF Q=F THEN DISPLAY AT(9
,1):"THAT'S RIGHT!" :: GOTO
110
230 DISPLAY AT(9,1):"NO, THA
T'S WRONG."
240 DISPLAY AT(11,1):"IF";B;
"BOYS CAN CATCH";X;"FROGS IN
";D;"DAYS"
250 DISPLAY AT(13,1):"THEN O
NE BOY CAN CATCH";X/B;"FROGS
 IN";D;"DAYS"
260 DISPLAY AT(15,1):"AND ON
E BOY CAN CATCH";X/B/D;"FROG
S IN ONE DAY."
270 DISPLAY AT(17,1):"SO, IF
 ONE BOY CAN CATCH",X/B/D;"F
ROGS IN ONE DAY,"
280 DISPLAY AT(19,1):"THEN";
BB;"BOYS CAN CATCH";X/B/D*BB
;"FROGS IN ONE DAY"
290 DISPLAY AT(21,1):"AND";B
B;"BOYS CAN CATCH";X/B/D*BB*
DD;"FROGS IN";DD;"DAYS."300
DISPLAY AT(24,1):"PRESS ANY
KEY" :: CALL KEY(0,K,S):: IF
 S=0 THEN 300 ELSE 110
```

Clear the screen and insure that selection of random numbers will be different each time.

RND gives a random number between 0 and .999... Therefore RND*5 gives a random number between 0 and 4.99999.... INT drops the decimal part of a number, so INT(RND*5) gives a random whole number between 0 and 4, and INT(RND*5+2) gives a whole number between 2 and 6.

The first time the program is run, B2 has never been given a value, so it equals 0. Since B is between 2 and 6, it does not equal B2; the program continues, B2 is given the value of B. When the next random problem is selected, if the same value happens to be selected again for B, B2 will equal B and the program will go back to make another selection. This prevents the "stupid computer syndrome" of the same question being asked twice in a row.

B was the number of boys in the first question. In the same way, F is selected to be the number of frogs that one boy can catch in one day, and D is selected to be the number of days in the first question.

In line 140, F is multiplied by B by D to find the total number of frogs in the first question. This method insures that all calculations will be in whole numbers.

In lines 150 and 160, BB and DD are randomly selected as the numbers of boys and days in the second question. These values are rejected if they are the same as the previous time or if they are the same as were selected for the first question.

Line 170 then multiplies the number of frogs that one boy can catch in one day by the number of boys and days in the second question.

The rest is merely a matter of screen formatting. Note that numeric variables can be incorporated in string text, by separating them with semicolons; they will print out their value with a blank space before and after. Note also that numeric calculations can be performed within the DISPLAY AT statements, and will print the numeric result of the calculation preceded and followed by a blank space.

```
   THIS PROGRAM WILL ALLOW
YOU TO LOAD, SAVE, EDIT, AND
PRINT 4X6 POSTCARDS. IT WILL
ALSO ALLOW GRAPHICS ON YOUR
POSTCARD WITH TI-PRINTER,
GEMINI 10X, SG-10, ETC. THIS
PROGRAM ACTS LIKE TI-WRITER
IN THAT YOU NEVER SEE THE
ENTIRE POSTCARD AT ONCE BUT
TOGGLE BETWEEN TWO SCREENS.
       ** ENJOY **
-------------------------------
100 ! ********************
-------------------------------
110 ! *     POSTCARD     *
-------------------------------
120 ! *  by John Behnke  *
-------------------------------
130 ! * fm Chicago Times *
-------------------------------
140 ! *    April 1987    *
-------------------------------
150 ! ********************
-------------------------------
160 !
-------------------------------
170 DATA 235,231,236,233,234
,237,232,238,167,164,165,166
,168,174,173,175,190,239
-------------------------------
180 AA=1 :: Z$="YNyn"
-------------------------------
190 CALL CLEAR :: CALL SCREE
N(5):: FOR I=1 TO 14 :: CALL
 COLOR(I,16,1):: NEXT I
-------------------------------
200 !ON ERROR 1900
-------------------------------
210 DISPLAY AT(6,11):"POSTCA
RD": :"       by John Behnke
"
-------------------------------
220 DISPLAY AT(10,1):"
   MARCH 1987"
-------------------------------
230 DIM A$(22),B$(22),C$(22)
,D$(18),E$(18),F$(5),G$(127)
-------------------------------
240 F$(1)="DIS/FIX" :: F$(2)
="DIS/VAR" :: F$(3)="INT/FIX
" :: F$(4)="INT/VAR"
-------------------------------
250 F$(5)="PROGRAM    " :: GO
TO 300
-------------------------------
260 A,B,C,D,E,F,G,H,I,J,K,L,
M,Z=0 :: H$,I$,J$,K$,L$,M$,N
$,O$,P$=""
-------------------------------
270 CALL DELSPRITE :: CALL C
HAR :: CALL HCHAR :: CALL KE
Y :: CALL VCHAR
-------------------------------
280 CALL SPRITE :: CALL LOCA
TE
-------------------------------
290 !@P-
-------------------------------
300 CALL CHAR(126,"FFFFFFFFF
0F0F0F0FFFFFFFF00000000FFFFF
FFF0F0F0F0F")
-------------------------------
310 CALL CHAR(129,"F0F0F0F0F
0F0F0F")
-------------------------------
320 CALL CHAR(130,"0F0F0F0F0
F0F0F0FF0F0F0F0FFFFFFFF00000
000FFFFFFFF")
-------------------------------
330 CALL CHAR(133,"0F0F0F0FF
FFFFFFF")
-------------------------------
340 H$=CHR$(27):: D$(1)=H$&"
B"&CHR$(4):: D$(2)=H$&"B"&CH
R$(5)
-------------------------------
350 D$(3)=H$&"B"&CHR$(1):: D
$(4)=H$&"B"&CHR$(2):: D$(5)=
H$&"B"&CHR$(3)
-------------------------------
360 D$(6)=H$&"H"&CHR$(1):: D
$(7)=H$&"H"&CHR$(0):: D$(8)=
H$&"G" :: D$(9)=H$&"H"
-------------------------------
370 D$(10)=H$&"E" :: D$(11)=
H$&"F" :: D$(12)=H$&"2" :: D
$(13)=H$&"1"
-------------------------------
380 D$(14)=H$&"0" :: D$(15)=
H$&"U"&CHR$(1):: D$(16)=H$&"
U"&CHR$(0)
-------------------------------
390 FOR A=0 TO 17 :: READ B
:: E$(A)=CHR$(B):: NEXT A
-------------------------------
400 CALL CHAR(138,"708888887
00000002070F8702000000020508
85020000000F888888BF8")
-------------------------------
410 CALL CHAR(134,"0004023F0
2040000103B5410101000000000
8080B2A1C08002040FC402")
-------------------------------
420 CALL CHAR(142,"008850205
0880000007E7E7E7E7E7E"):: GO
TO 840
-------------------------------
430 DISPLAY AT(1,1):"CTRL 9
TO Abort" :: D$(16)=H$&"U"&C
HR$(0)
-------------------------------
440 CALL HCHAR(2,3,127,28)::
 CALL HCHAR(24,3,132,28):: G
OSUB 740
-------------------------------
450 FOR A=1 TO 21 :: GOSUB 7
40 :: ACCEPT AT(A+2,1)BEEP S
IZE(-28):A$(A)
-------------------------------
460 IF SEG$(A$(A),1,1)=CHR$(
159)THEN 500
-------------------------------
470 GOSUB 790 :: ACCEPT AT(A
+2,1)BEEP SIZE(-28):B$(A)
-------------------------------
480 IF SEG$(B$(A),1,1)=CHR$(
159)THEN 500
-------------------------------
490 NEXT A
-------------------------------
500 DISPLAY AT(1,19):"Done?
N" :: ACCEPT AT(1,25)VALIDAT
E(Z$)BEEP SIZE(-1):I$
-------------------------------
510 IF SEG$(A$(A),1,1)=CHR$(
159)THEN A$(A)=""
-------------------------------
520 IF SEG$(B$(A),1,1)=CHR$(
159)THEN B$(A)=""
-------------------------------
530 IF I$="N" OR I$="n" THEN
 440
-------------------------------
540 GOTO 840
-------------------------------
550 CALL CLEAR :: DISPLAY AT
(1,1):"PRINTER NAME: PIO"
-------------------------------
560 ACCEPT AT(1,15)BEEP SIZE
(-14):J$ :: DISPLAY AT(1,1):
"HOW MANY: 1"
-------------------------------
570 ACCEPT AT(1,11)VALIDATE(
DIGIT)BEEP SIZE(-4):C
-------------------------------
580 CALL HCHAR(2,3,127,28)::
 CALL HCHAR(24,3,132,28):: G
OSUB 740
-------------------------------
590 DISPLAY AT(1,18):"SCANNI
NG..." :: CALL SPRITE(#1,134
,16,16,9)
-------------------------------
600 FOR A=1 TO 21 :: Z=LEN(B
$(A))
-------------------------------
610 IF Z>0 THEN C$(A)=A$(A)&
RPT$(" ",28-LEN(A$(A)))&B$(A
)ELSE C$(A)=A$(A)
-------------------------------
620 CALL LOCATE(#1,9+A*8,8):
: IF LEN(C$(A))=0 THEN 670
-------------------------------
630 FOR D=126 TO 143 :: E=0
:: Z=LEN(C$(A)):: F=POS(C$(A
),CHR$(D),E+1)
-------------------------------
640 IF F=0 THEN 660 ELSE C$(
A)=SEG$(C$(A),1,F-1)&E$(D-12
6)&SEG$(C$(A),F+1,2-F)
-------------------------------
650 IF F<LEN(C$(A))THEN E=F
:: GOTO 640
-------------------------------
660 NEXT D
-------------------------------
670 NEXT A :: OPEN #1:J$ ::
PRINT #1:H$&"C"&CHR$(0)&CHR$
(4)
-------------------------------
680 DISPLAY AT(1,18):"A TO A
BORT" :: FOR A=C TO 1 STEP -
1
-------------------------------
690 DISPLAY AT(1,10)SIZE(5):
A :: PRINT #1: : :: FOR G=1
TO 21 :: CALL KEY(0,D,H)
-------------------------------
700 IF D=65 OR D=97 THEN 730
-------------------------------
710 CALL LOCATE(#1,9+G*8,8)
-------------------------------
720 PRINT #1:C$(G):: NEXT G
:: PRINT #1:CHR$(12):: NEXT
A
-------------------------------
730 CLOSE #1 :: CALL DELSPRI
TE(#1):: GOTO 840
-------------------------------
740 CALL VCHAR(2,31,32,23)::
 CALL HCHAR(2,2,126):: CALL
VCHAR(3,2,128,21)
-------------------------------
750 CALL HCHAR(24,2,131):: D
ISPLAY AT(1,19):"LEFT SIDE"
-------------------------------
760 DISPLAY AT(3,1):A$(1):A$
(2):A$(3):A$(4):A$(5):A$(6):
A$(7):A$(8):A$(9):A$(10)
-------------------------------
770 DISPLAY AT(13,1):A$(11):
A$(12):A$(13):A$(14):A$(15):
A$(16):A$(17):A$(18)
-------------------------------
780 DISPLAY AT(21,1):A$(19):
A$(20):A$(21):: RETURN
-------------------------------
790 DISPLAY AT(3,1):B$(1):B$
(2):B$(3):B$(4):B$(5):B$(6):
B$(7):B$(8):B$(9):B$(10)
-------------------------------
800 DISPLAY AT(13,1):B$(11):
B$(12):B$(13):B$(14):B$(15):
B$(16):B$(17)
-------------------------------
810 DISPLAY AT(20,1):B$(18):
B$(19):B$(20):B$(21)
-------------------------------
820 CALL VCHAR(2,2,32,23)::
CALL HCHAR(2,31,128):: CALL
VCHAR(3,31,130,21)
-------------------------------
830 CALL HCHAR(24,31,133)::
DISPLAY AT(1,19):"RIGHT SIDE
" :: RETURN
-------------------------------
840 CALL CLEAR
-------------------------------
850 CALL HCHAR(1,12,126):: C
ALL HCHAR(1,13,127,8):: CALL
 HCHAR(1,21,128)
-------------------------------
860 DISPLAY AT(2,10):CHR$(12
9)&"POSTCARD"&CHR$(130)
-------------------------------
870 CALL HCHAR(3,3,132,28)::
 CALL HCHAR(3,12,131):: CALL
 HCHAR(3,21,133)
-------------------------------
880 CALL HCHAR(3,2,132):: CA
LL HCHAR(3,31,132)
-------------------------------
890 CALL VCHAR(4,2,129,20)::
 CALL VCHAR(4,31,130,20):: C
ALL HCHAR(23,2,127,30)
-------------------------------
900 DISPLAY AT(5,6):"1 - LOA
D A CARD": :"     2 - SAVE A
 CARD"
-------------------------------
910 DISPLAY AT(9,6):"3 - EDI
T A CARD": :"     4 - PRINT
A CARD"
-------------------------------
920 DISPLAY AT(13,6):"5 - PR
INTER MODES": :"     6 - CLE
AR MEMORY"
-------------------------------
930 DISPLAY AT(17,6):"7  CA
TALOG A DISK": :"     8 - DI
SPLAY COLORS"
-------------------------------
940 DISPLAY AT(21,6):"9 - EX
IT PROGRAM"
-------------------------------
```

```
950 DISPLAY AT(24,3):"Use Ae
row Keys To Select"
960 CALL HCHAR(3+AA%2,7,134)
970 CALL KEY(0,K,D):: IF D=0
 THEN 970
980 IF K=88 OR K=120 OR K=69
 OR K=101 THEN CALL HCHAR(3+
AA%2,7,32)
990 IF K=88 OR K=120 THEN AA
=AA+1
1000 IF K=69 OR K=101 THEN A
A=AA-1
1010 IF AA=0 THEN AA=9
1020 IF AA=10 THEN AA=1
1030 IF K<>13 THEN 960
1040 ON AA GOTO 1050,1050,13
10,550,1100,1270,1440,1830,1
280
1050 DISPLAY AT(24,1):"FILEN
AME: DSK1.CARD" :: ACCEPT AT
(24,14)BEEP SIZE(-15):K$
1060 K$="DSK"&K$ :: OPEN #1:
K$ :: FOR A=1 TO 21
1070 IF AA=1 THEN LINPUT #1:
L$ :: A$(A)=SEG$(L$,1,28)::
B$(A)=SEG$(L$,29,28)
1080 IF AA=2 THEN PRINT #1:A
$(A);B$(A)
1090 NEXT A :: CLOSE #1 :: G
OTO 840
1100 DISPLAY AT(1,8)ERASE AL
L:"PRINTER MODES": :"PRINTER
 NAME: PIO"
1110 ACCEPT AT(3,15)BEEP SIZ
E(-14):J$
1120 DISPLAY AT(5,1):"<N> NL
Q ON":"<N> NLQ OFF":"<N> PIC
A MODE":"<N> ELETE MODE"
1130 DISPLAY AT(9,1):"<N> CO
NDENSED MODE":"<N> EXPANDED
MODE ON"
1140 DISPLAY AT(11,1):"<N> D
OUBLE STRIKE ON"
1150 DISPLAY AT(13,1):"<N> D
OUBLE STRIKE OFF"
1160 DISPLAY AT(14,1):"<N> E
MPHASIZED ON":"<N> EMPHASIZE
D OFF"
1170 DISPLAY AT(16,1):"<N> 1
/6  INCH LINE SPACING  <N> 7
/27 INCH LINE SPACING"
1180 DISPLAY AT(18,1):"<N> 1
/8  INCH LINE SPACING  <N> U
NI-DIRECTION PRINT ON"
1190 DISPLAY AT(20,1):"<N> U
NI-DIRECTION PRINT OFF <N> E
NTER OTHER LINE SPACING"
1200 FOR A=5 TO 20 :: ACCEPT
 AT(A,2)VALIDATE(Z$)BEEP SIZ
E(-1):I$
1210 IF I$="Y" OR I$="y" THE
N OPEN #1:J$ :: PRINT #1:D$(
A-4);:: CLOSE #1
1220 NEXT A :: ACCEPT AT(21,
2)VALIDATE(Z$)BEEP SIZE(-1):
I$
1230 IF I$="N" OR I$="n" THE
N 840
1240 DISPLAY AT(21,1):"NEW L
INE SPACING =12/72 inch"
1250 ACCEPT AT(21,19)VALIDAT
E(DIGIT)BEEP SIZE(-2):I :: O
PEN #1:J$
1260 PRINT #1:H$&"A"&CHR$(I)
:: CLOSE #1 :: GOTO 840
1270 FOR A=1 TO 21 :: A$(A),
B$(A)="" :: NEXT A :: GOTO 8
40
1280 DISPLAY AT(24,1):"
ARE YOU SURE?  N"
1290 ACCEPT AT(24,21)VALIDAT
E(Z$)BEEP SIZE(-1):I$ :: IF
I$="N" OR I$="n" THEN 840
1300 CALL CLEAR :: END
1310 DISPLAY AT(1,7)ERASE AL
L:"SPECIAL GRAPHICS"
1320 DISPLAY AT(4,3):CHR$(12
6)&" = FCTN W     "&CHR$(127)
&" = FCTN V"
1330 DISPLAY AT(6,3):CHR$(12
8)&" = CTRL ,     "&CHR$(129)
&" = CTRL A"
1340 DISPLAY AT(8,3):CHR$(13
0)&" = CTRL B     "&CHR$(131)
&" = CTRL C"
1350 DISPLAY AT(10,3):CHR$(1
32)&" = CTRL D     "&CHR$(133
)&" = CTRL E"
1360 DISPLAY AT(12,3):CHR$(1
34)&" = CTRL F     "&CHR$(135
)&" = CTRL G"
1370 DISPLAY AT(14,3):CHR$(1
36)&" = CTRL H     "&CHR$(137
)&" = CTRL I"
1380 DISPLAY AT(16,3):CHR$(1
38)&" = CTRL J     "&CHR$(139
)&" = CTRL K"
1390 DISPLAY AT(18,3):CHR$(1
40)&" = CTRL L     "&CHR$(141
)&" = CTRL M"
1400 DISPLAY AT(20,3):CHR$(1
42)&" = CTRL N     "&CHR$(143
)&" = CTRL O"
1410 DISPLAY AT(24,4):"PRESS
 ANY KEY TO EDIT."
1420 CALL KEY(0,D,H):: IF H=
0 THEN 1420
1430 GOTO 430
1440 DISPLAY AT(1,9)ERASE AL
L:"CATALOG DISK" :: CALL HCH
AR(2,1,132,32)
1450 DISPLAY AT(5,1):"DRIVE?
 [0-5]: <1>"
1460 ACCEPT AT(5,16)VALIDATE
("012345")BEEP SIZE(-1):M$
1470 IF M$<>"0" THEN 1490 EL
SE DISPLAY AT(5,1):"DEVICE N
AME? <               >"
1480 ACCEPT AT(5,15)BEEP SIZ
E(-13):M$
1490 M$="DSK"&M$&"." :: DISP
LAY AT(6,1):"OUTPUT TO PRINT
ER? [Y/N]: N"
1500 ACCEPT AT(6,27)VALIDATE
(Z$)BEEP SIZE(-1):I$ :: IF I
$="y" THEN I$="Y"
1510 IF I$<>"Y" THEN 1530 EL
SE DISPLAY AT(6,1):"PRINTER
NAME: PIO"
1520 ACCEPT AT(6,15)BEEP SIZ
E(-14):J$
1530 DISPLAY AT(8,1):"READIN
G...": : : : : :"A TO ABORT"
1540 CALL HCHAR(10,2,126)::
CALL HCHAR(10,3,127,28):: CA
LL HCHAR(11,2,129)
1550 CALL HCHAR(10,31,128)::
 CALL HCHAR(11,31,130):: CAL
L HCHAR(12,2,131)
1560 CALL HCHAR(12,3,132,28)
:: CALL HCHAR(12,31,133)
1570 OPEN #1:M$,INPUT ,RELAT
IVE,INTERNAL :: INPUT #1:N$,
G,G,D :: FOR A=1 TO 127
1580 CALL KEY(0,J,H):: IF J=
65 OR J=97 THEN 1640
1590 INPUT #1:D$,K,L,M :: IF
 LEN(D$)=0 THEN 1640
1600 G$(A)=D$&RPT$(" ",11 LE
N(D$))&STR$(L)&RPT$(" ",5-LE
N(STR$(L)))&F$(ABS(K))
1610 IF ABS(K)<5 THEN P$=" "
&STR$(M)&: G$(A)=G$(A)&SEG$(
P$,LEN(P$)-2,3)
1620 IF K<1 THEN G$(A)=G$(A)
&" Y"
1630 DISPLAY AT(11,1):G$(A):
: NEXT A
1640 CLOSE #1
1650 CALL CLEAR :: IF I$="Y"
 THEN OPEN #1:J$
1660 PRINT TAB(9);"A TO ABOR
T";TAB(9);"P TO PAUSE": :
1670 PRINT M$;" - DISKNAME=
";N$;"AVAILABLE=";D;"USED=";
G-D
1680 IF I$="Y" THEN PRINT #1
:M$;"   DISKNAME= ";N$;"AVAI
LABLE=";D;"USED=";G-D
1690 PRINT :" FILENAME  SIZE
  FILETYPE  P---------- ----
 ---------- -";
1700 IF I$="N" THEN 1720
1710 PRINT #1:" FILENAME  SI
ZE  FILETYPE  P":"----------
 ---- ---------- -"
1720 FOR A=1 TO A :: CALL KE
Y(0,D,H):: IF D=65 OR D=97 T
HEN 1760
1730 IF D=80 OR D=112 THEN 1
810
1740 PRINT G$(A):: IF I$="Y"
 THEN PRINT #1:G$(A)
1750 NEXT A
1760 IF I$="Y" THEN CLOSE #1
1770 PRINT :"LIST AGAIN [Y/N
]?"
1780 CALL KEY(0,D,H):: IF H=
0 THEN 1780
1790 IF D=89 THEN 1650
1800 GOTO 840
1810 FOR D=1 TO 50 :: NEXT D
 :: CALL KEY(0,D,H):: IF H=0
 THEN 1810
1820 GOTO 1740
1830 DISPLAY AT(24,1):"SCREE
N COLOR? [2-16]: <2 >"
```

```
1840 ACCEPT AT(24,24)VALIDAT|1860 ACCEPT AT(24,24)VALIDAT|1 TO 14 :: CALL COLOR(I,A,1)|ROR, RE-BOOTING..." :: RUN
E(DIGIT)BEEP SIZE(-2):I     |E(DIGIT)BEEP SIZE(-2):A     |:: NEXT I                 |
----------------------------|----------------------------|--------------------------|
1850 DISPLAY AT(24,1):"LETTE|1870 IF A=1 THEN 1830       |1890 GOTO 840             |
R COLOR? [2-16]: <16>"      |----------------------------|--------------------------|
----------------------------|1880 CALL SCREEN(I):: FOR I=|1900 CALL CLEAR :: PRINT "ER|
```

for

PACS

COMPUTER

FESTIVAL

MARCH 19th

11AM TO 4PM

There will be

NO REGULAR

MEETING

ON THAT DAY

SEE YOU THERE