

# CLEVELAND AREA 99-4A USERS GROUPS NEWSLETTER

JULY, 1986

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BULLETIN BOARD----- (24 HOURS) (216) (944-1072)

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## EDITORIAL COMMENTS

Who said it was going to be a slow summer? We are back to 12 pages and could have printed almost 12 more! The ONLY thing that keeps us from going to larger newsletters is money. The printing costs are stretching some of our clubs to the limit as is.

Please be forewarned that the next issue will be dated AUGUST/SEPTEMBER. Everyone needs a break and it would probably have been better to have made it JULY/AUGUST (next year). There are about 10 people (other editors eat your hearts out) actively involved each month. These are people who in most cases are officers of your local group who also give presentations, obtain materials, etc., and are doing double and triple duties. To ease your disappointment, the next issue will be an 18-pager, so you can read the first 9 in August and save the last 9 for September.

There is more information in the newsletters than we could ever possibly pass on to you, and we would like to initiate some system for archiving and retrieving this. We know it will not be an easy task considering that there are 4 clubs with members scattered from almost to Ashtabula, Vermillion and points south, with only 1 copy of each newsletter. How about some ideas from you? At the moment we are asking for a volunteer(s) who would be willing to read approximately 30 newsletters per month, and index them as to what is found where. This person would not necessarily be the one who would be responsible for seeing that the information is dispersed or for keeping the newsletters. That is something yet to be worked out and for which your input is needed. There are tutorials for Basic, Extended Basic, Assembly, Forth, LOGO, Pascal, and now C99, Pilot, GramCracker utilities, and soon GPL language; Hardware innovations; TI-Writer and Multiplan tips, on and on. A wealth of information that should be saved for future reference for anyone who is interested in a particular subject. Supposedly the secretary of a group on our newsletter exchange became so engrossed reading newsletters, he forgot the day and time of his own club's meeting. Be the best informed person in all the groups by volunteering for this project! Call me at 333-5986 or talk with your newsletter representative who will report to the next

meeting.

Another project proposed for all the groups is a programming contest. This was envisioned by Jim Mekeel of the Northcoast group as a way to add to our library and stimulate interest and competition between the groups. What do you think? No guidelines have been set. This is just a feeler for which we are soliciting your ideas. Very broadly, Jim thought this would be a good fall project which would allow you 3 to 6 months to develop your "dream" program. Hopefully if all the clubs participate, we could come up with some meaningful prizes in either \$\$\$ or merchandise. Now, you have 2 subjects for discussion at your next meeting. Jim checks the mail at the PO box, so if you want to drop a line to the address on the back of this newsletter, he can get an idea of what kind of interest there is and can go from there.

The Northcoast BBS will soon be running the TIBBS board instead of TECHIG. Many at the Northcoast meeting seemed unsure of what equipment is needed to use a BBS, or how to use one. It was decided to hold a seminar/demonstration to which all the groups would be invited. This will be announced in the next newsletter after the SYSOPS feel they have the "bugs" out of the TIBBS and it is running smoothly on our equipment.

Don't forget the next Assembly SIG meeting at Tom Nellis' on Saturday, July 12, 7:30p.m. The numbers attending have been small, but the information gleaned, great.

Thanks again to everyone who submitted an article, hint, etc. for the newsletter. Please keep them coming. Believe me, our newsletter compares favorably with ANY others, large or small, throughout the country.

Look inside for...an enhancement for "132PRINT" and a parallel printer update from Les Kee and Les Israel of Chips; This 'n' That tidbits; build a computer center from 1 sheet of plywood submitted by Jim Mekeel of NC; Fixing Blown Disks; a listing of ALL TI error codes; Review of Pilot and index of Pilot commands; Fix those CorComp woes; Add a function key to the left; Review of Old Dark Caves by Dave Talan of NC.

EXECUTIVE NOTES - TI CHIPS

Highlights of the June meeting included Rich Polivka instructing us on the use of the speech synthesizer utilizing both TE II and Extended Basic. He also demonstrated the Entertainment disk which was raffled at the end of the meeting with Dan Deller the winner.

Mark McCauley demonstrated "Super Disk Cataloger Utility", a freeware program in the library which allows you to add, delete, list by alphabet or disk number up to 1251 files.

Bob McCafferty of McCafferty's in Brunswick demonstrated the MBX box system. It uses its own power source and is voice activated (you can have it greet you when you walk in the house). He showed the baseball game with bunt, steal and slide features

The July meeting will be the third annual picnic in Metropolitan Park, Big Creek Parkway. Following is a map. Bring your family, a picnic lunch, along with bats, ball, volleyball, anything. It is a great opportunity to get to know each other better. See you on July 12 at 10 a.m

JAN FEDOR, SECRETARY

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EXECUTIVE NOTES - NORTHCOAST

There was a good summer crowd for the June 21 meeting. John Blackmer will not be available for meetings through the summer so I would appreciate a temporary secretary for the minutes.

We had a demonstration of TI Artist by Tom Nellis. He showed the many capabilities, and features including reading files of other drawing programs, and printing in three sizes. We also had a demonstration of Entrapment which was well received. It has several skill levels to fit your frustration level. Although similar to breakout it seems more interesting. These programs were raffled off. Thanks to everyone for supporting the raffle and library.

There was a motion to purchase a RAMdisk for the club for use with the bulletin board. Action was deferred to the executive committee for further study.

Next month we will demonstrate PC Keys and Business Graffs 99. Hope to see you there.

RON MINADEO

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A "132PRINT-3" OFFER

The "132PRINT-3" program, from the June C.A.U.G. News-

FOR SALE

"Typewriter" word processor.....\$8.00  
Thermal printer, STX80.....\$35.00  
Call Jan 583-3645

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Gorilla/Bananna Printer - \$60 or best offer. Call Rich Polivka at 238-3971

letter, by Martin A. Swoley of the Northcoast UG appeared to me to be very useful. So, I tried it and found that not all allowed numbers entered at the prompt "Enter Column Spacing" worked properly. They did, however, follow the rules of the 'wonderful' (full of wonder) TAB statement of TI (EX) BASIC.

I suggest adding the following line at 550:

550 SS=(LINE\_END1-LEN(FIRST\$))+SPACE ::

SS\$=RPT\$(CHR\$(32),SS)

And then change line 560 to be as follows:

560 PRINT #9;FIRST\$;SS\$;SECONDS

Also, I would be glad to make available to any one, the additional changes I made (with all due respect to M.A.S.) to the program for use with my Okidata 92 printer.

Les Kee #TI-CHIPS UG# 238-6938

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PARALLEL DEFAULT FOR TI-WRITER FIX

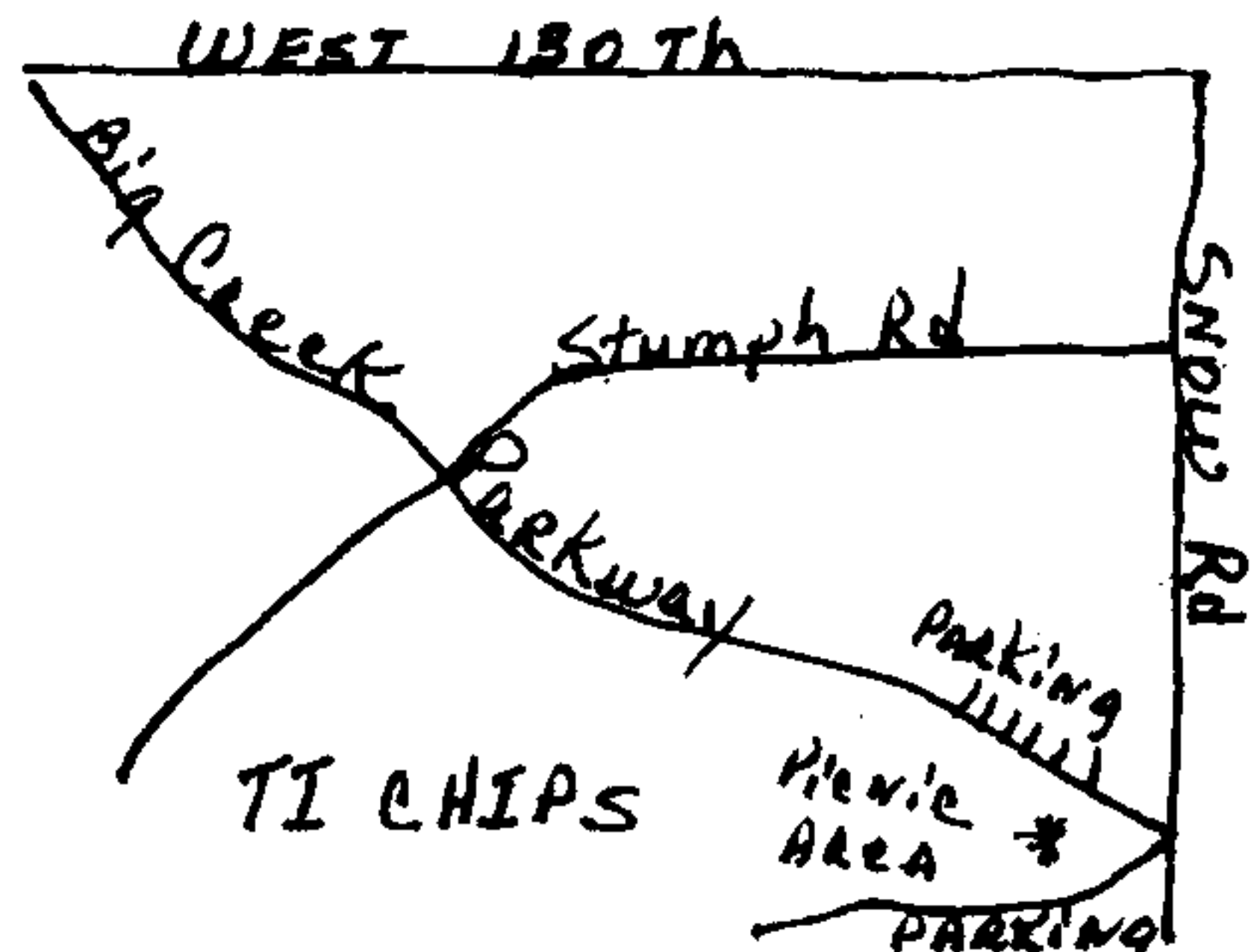
An unaltered version of TI-FORTH is required to install this revision. Here are the steps needed to achieve this change in printer default.

1. Initialize a SS/SD diskette. Copy FORMAL from TI-Writer Fix 1 onto the diskette.
2. Insert the EDITOR/ASSEMBLER cartridge and the FORTH System Disk. Boot FORTH (LOAD and RUN Option 3 ---"DSK1.FORTH").
3. Choose "-EDITOR" for the FORTH System command
4. Insert FORMAL Copy disk. (Item 1 above).
5. Enter 10 EDIT
6. Move the cursor to Row 12 Column 29.
7. Change the "RS232.BA=1200.LF" to match your printer requirements. For example, parallel users would change to "PIO.LF" or "PIO.CR".
8. Press BACK (FCTN 9).
9. Key in "FLUSH" to enter the edited change to the FORTH text buffer. (D'ont forget this, or you will not be able to incorporate the change to the Copy Disk.
10. Copy the new version of the file FORMAL, to your TI-WRITER "FIX-1" and "MASTER" diskette.

Now when you use TI-Writer, your word processing will go faster since there will be a default for your own printer.

REFERENCE: "SUPER 99 MONTHLY" MAGAZINE  
October 1984 -- Vol.1 Issue 2.

Rewritten By: NBBHV  
(Les Israel TI CHIPS)





## THIS 'N' THAT

Some things you may, or may not, want to know....

From the 99er Times of the SFV U6, "If you need a TI-Writer manual, for use with TK-Writer, BA-Writer, Funlwriter, etc., they are available from Lubbock by calling 1-800-TICARES. The price is \$3.00 plus postage.

Handy phone numbers from the MSP 99 U6:

TICARES.....1-800-842-2737  
TI Response.....1-800-232-3200  
Business Computers..1-800-847-2787  
Software.....1-800-858-4075  
Technical.....1-806-741-2663  
Manuals and Parts...1-806-741-3064

From the Southern Nevada U6 re Genie, the General Electric network for information exchange. It is similar to Compuserve and The Source, but is somewhat less expensive. They charge \$5.00 per hour of connect time with no minimum and no premium for 1200 baud. If you are interested, you can get a free tour by calling 1-800-638-8369. Be sure you set up with half duplex or you won't be able to see what you type while on line. Upon connection, type MMH. At the U6 prompt, there are two numbers you can use. According to Micropendium, you can type SJM11999, GENIE to get online for a free tour. The other number comes from an ad in PC WORLD by way of Rowland Holiday in the Daytona 99'ers newsletter. He says that if you use SJM11982, GENIE instead, you can get 3 free hours of connect time if you sign up while online. You have the option of signing up with either number, but since there is an \$18 sign up fee, it seems Rowland's number might be better (with 3 hours free connect time, you net cost for sign up is \$3.00). If you do decide to sign up, be sure to have your VISA or MASTERCARD number handy.

In reference to the above, Craig Miller of Millers Graphics is no longer with Compuserve, but has gone over to Genie. Also on Genie is Smart Programmer and a GraKCracker section.

If any of you are using John Taylor's checkbook program, Jerry Hough of Boise has written a program to print out the entire year's worth of checks. I will try to get it typed up and on an utility disk by the next meeting.

When Frank marks an "L" on your mailing label, it means "LAST" issue. Tom Nellis has been hi-lighting them for you also. Renew before it's too late!!!!

Art Byers of the Westchester, NY group is running a contest to pick the best original newsletter articles for 1986 and will then provide them to users groups if they provide an initialized disk and mailer. This is how I started corresponding with Art last year. The submission date is December 10, so you have plenty of time to get an article in. The prize? The best, a distribution of information about what has happened and is happening with our computer.

Got a flyer from Taxaments of Patchogue, NY, that they have taken over the distribution of Dave Rose' CSGD and in fact, are in the process of developing CSGD III. They also

carry MYARC products and are advertising a Quad Density Card for the MYARC controller for \$49.95.

The fairs continue. The Puget Sound 99ers are sponsoring a 3-day event September 26, 27, 28 at the Sea-Tac Holiday Inn, Seattle. You could combine a trip to the Vancouver World's Fair with this one and also see some fabulous scenery...I know...I've been there. Special guests include Regena, Lou Phillips (Myarc), Craig Miller, Reps from Databiotics, Asgard Software, and Compuserve.

The June issue of the Jackson County 99ers (Mo.) reports the long-awaited first issue of the Home Computing Journal was 32 pages long with an accompanying disk, which comes to about 6 pages devoted to each computer covered. All the programs are on disk and none are "listed". The subscription rate is \$75 per year (\$25/issue). A number of bargains were in effect until June 30 (guess you missed out on them). A 2-volume mini subscription, \$35 (regularly \$45); a year (4 volumes) for \$60. If you had any subscription left to Home Computer Magazine, the VALUE would be fulfilled with Home Computing Journal. If you had one year left, this first issue is your LAST issue. If you had 1/2 year or less, you were not even notified of the new magazine, not did you receive a copy of same. The Genial Traveler is only \$5.00 per issue and has such more information. (Ed. note. Issue #3 of Genial is out, and I received mine on June 28).

You may not think of the Computer Shopper as a magazine for the TI, but I always find something of interest in it. Lately it has had a Forth Page and a programming page, in addition to the TI FORUM by Albright and Littrain. I also learn a lot about other computers from the write-in questions for those departments and often find that our TI is superior in many ways. At \$15 per year, it is a great buy. The July issue has a tutorial on how to write your first program with "c99".

From the June Northwest Ohio 99er News... "Here is an important tip for owners of Funlwriter V3.1 and the Horizon Raddisk. If you install the Funlwriter programs on the Raddisk, the load program will not work. There is an easy solution. Change the name of the program LOAD to another name, say LOAD/FUN. Then write your own one-line load program: 100 RUN "DSK1.LOAD/FUN" and save it under the name LOAD. This will bring up the Funlwriter program when you select Extended Basic.

Good buys from the Johnson Space Center group...a 1200-baud modem for \$87 from Wholesale Outlet NYC (1-800-344-3487 PN 97070). They also have a few 300-baud at \$25 each. Also American Design Components, NJ, has \$15 power supplies that can be used for disk drives, Item #6642 (1-800-425-0809). Charles Smith of that group is working on a double density disk controller for about \$32!

How about a bare bones PEB box for \$35. John Milforth of the West Penn Group describes one he purchased from Captain's Wheel, J. Jon Gould, 17295 Chippendale Ave., Farmington, MN 55024 (612)460-6348. It is a bare unit without a case, but complete in every other way. He put the unit together in a couple of hours, plugged it into his console which has 32K of internal memory and pushed a PASCAL

card and TI Disk Controller card into this very strange unit. He says the cards were just standing there flopping about loosely (no enclosure), and turned on the power. It fired up...no firehose, no fan and even with 2 1/2 height drives and its own internal power supply, it can't weigh more than 12 pounds. Another item of interest from this supplier is a 32K memory unit, with switch selectable (optional) 8K blocks, up to 24K of additional memory. Price \$49.00. Supposedly there will be no more when his current supply is depleted.

The June issue of Mass Users of the NinetyNine and Computer Hobbyist reports a message on the Boston Computer Society BBS that NYARC announced at the Chicago CES show they will be taking orders in July for the computer which fits in the PEB. Other sources also indicate the new computer is almost ready. It will be called "GENE'VE". It was demonstrated at the TI FAIRE in Nashville, but again broke down at times. When running, the reports indicate incredible speed and graphics. Price, everything quoted from \$400 to \$599. No cartridge slot, but a module emulator provided at no cost to run modules from disk. By the way this emulator will be available from Pilgrimage in Pennsylvania as a separate item. It will cost about \$70, plus about another \$30 for the software to run the modules after they have been dumped to disk.

A note in the June Bytesinger, of Lexington, KY, is that Danny Michaels of Screen Dump fame now has a version for both Epson and Prowriter printers and you can screen dump MOST modules without a load interrupt switch. Does anyone want to get this for the library? The librarian has taken the position that with close to 60 freeware items in the library, it would be an impossible task to track down all of the revisions, updates, etc. and she is relying on the membership who uses these software items to help out and get the updates for the programs they use.

The same newsletter reports that Danny Michael is developing some software for Craig Miller that will permit going from Extended Basic to Editor/Assembler and vice versa without losing the Reference Definition Table and not passing through the Title Screen. This program will most likely only work with the Gram Kracker.

From the June issue of the Greater Orlando newsletter..COMPUSERVE starter kits are available from E. Arthur Brown Company, 3404 Pawnee Drive, Alexandria, MN 56308 for the low price of \$18.95 + \$1.95 S/H. Limited Time Only.

Another tidbit from JUS (Johnson Space), John Lessene (Austin, TX Users Group) has built a Voice Command Interface for the 99/4A. It is up and working and was to have been demonstrated at the Austin TI FAIR in June. If you are interested, call John at (415) 863-8021 or write to him at 4411 So. IH35, Austin, TX 78626. He uses standard components and plans to put the KNOW HOW in public domain. He has also built an EPROM programmer that works off the PIO port that can be built for less than \$30.

Articles by Steve Weinkamer, Tom Mellis, Marty Smoley and Ken Gladyszewski have appeared in recent issues of the Decatur, ILL, Northwest, OH, and Southern Nevada newsletters. A big hand for our authors.

Computer Warehouse has been running ads on and off for DS/DD disks for \$.49 apiece. The ad may not be in effect when you read this, but check the Business Section of the PD as that is where the ads usually appear.

Ads from a 1980 BYTE magazine...24K Atari 800, \$748, Used TI 99/4(no A) console, \$450, new TI-99/4 computer, \$925; Shugart drive, \$349; Radio Shack 16K Color Computer, \$399; Epson MX80, \$650; Atari 400 computer system, 8K, \$629.95; Atari 800 Computer System, 16K, \$1079.95; Commodore Pet, 8K, \$729; 16K, \$888; 32K, \$1088. Had enough? What was that about the "good ol' days"?

NOTE: I was chastised at the June Northcoast meeting for not signing my name to the things I write. Most of the above was taken from other groups newsletters which I usually try to take care of in the opening remarks. However, there seemed to be more items than usual this month, with which I have taken the liberty of interspersing some of my own comments.

DEANNA

#### SOLON EXECUTIVE NOTES JULY

Our last meeting was devoted entirely to copying disks from the master library. Since only nine people showed up for the session, we hope to have another copy session in a few more months. Due to the amount of copying that was being done and the small turnout, we had no business meeting.

Several people have requested a demonstration of how to use the program that allows T.I. Writer files to print in the double column format, as used in our newsletter. Next month I will show how this process works, along with a demonstration of a utility that allows T.I. Writer files to be alphabetically sorted. I recently used the latter program to sort a V.C.R. tape library for a local store, and provide an alphabetized listing of their titles. I will also give a demo of the transliteration commands and how to use them in your

documents.

I have had the club T.V. at home with me this month because there was a problem of not being able to turn it on. It turns out that the plug had a bad connection in it, and replacing it cured the problem. It has been working fine ever since!

Due to my busy work load and preparations for a trip out of town, I won't be giving my quickie review of the month this time. Look for a special one next time.

Please again note that there will be no August meeting. The September meeting will be held as scheduled.

See you July 12!

Steve Weinkamer



**Computer Center  
by Jim Mekeel  
NorthCoast 99er's**

This month, I thought that I would share with you some plans I found at a lumberyard for a computer work center that you can make from a single sheet of plywood. Of course, you can modify the plans to suit your own needs. The center has a seat for two people and uses an easily assembled slot-together design that just as easily permits dismantling for storage or transport. (Plans by American Plywood Association)

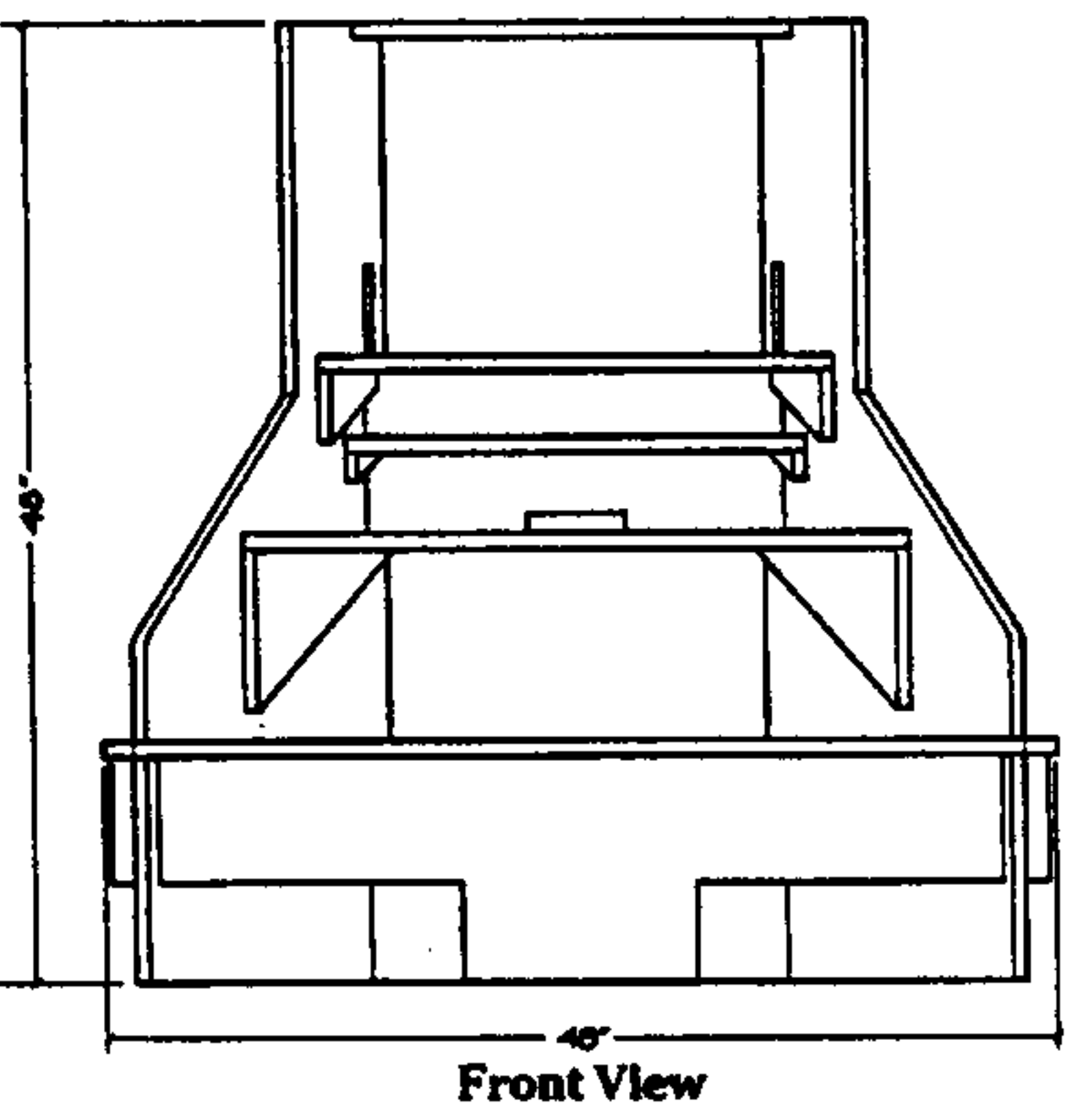
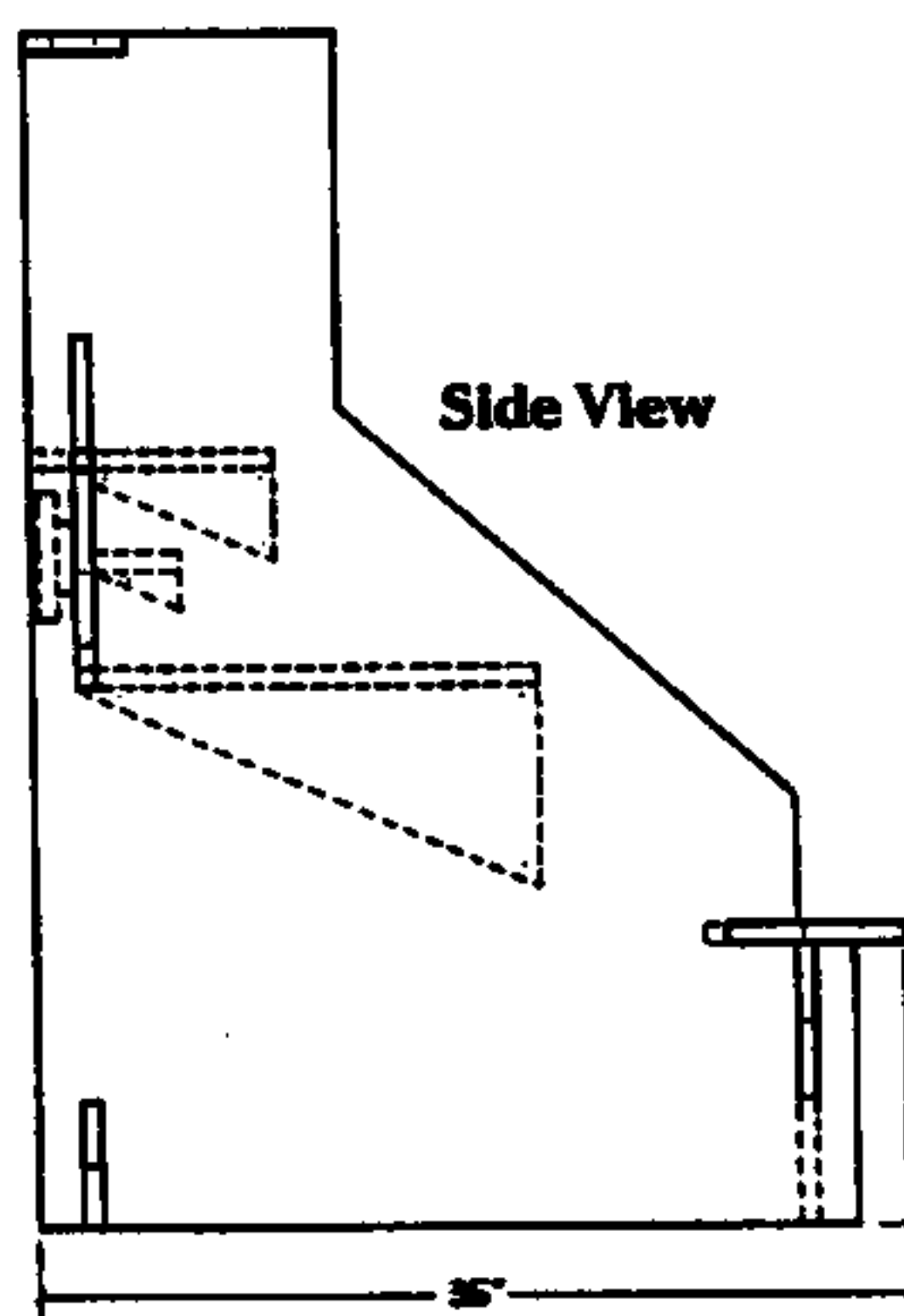
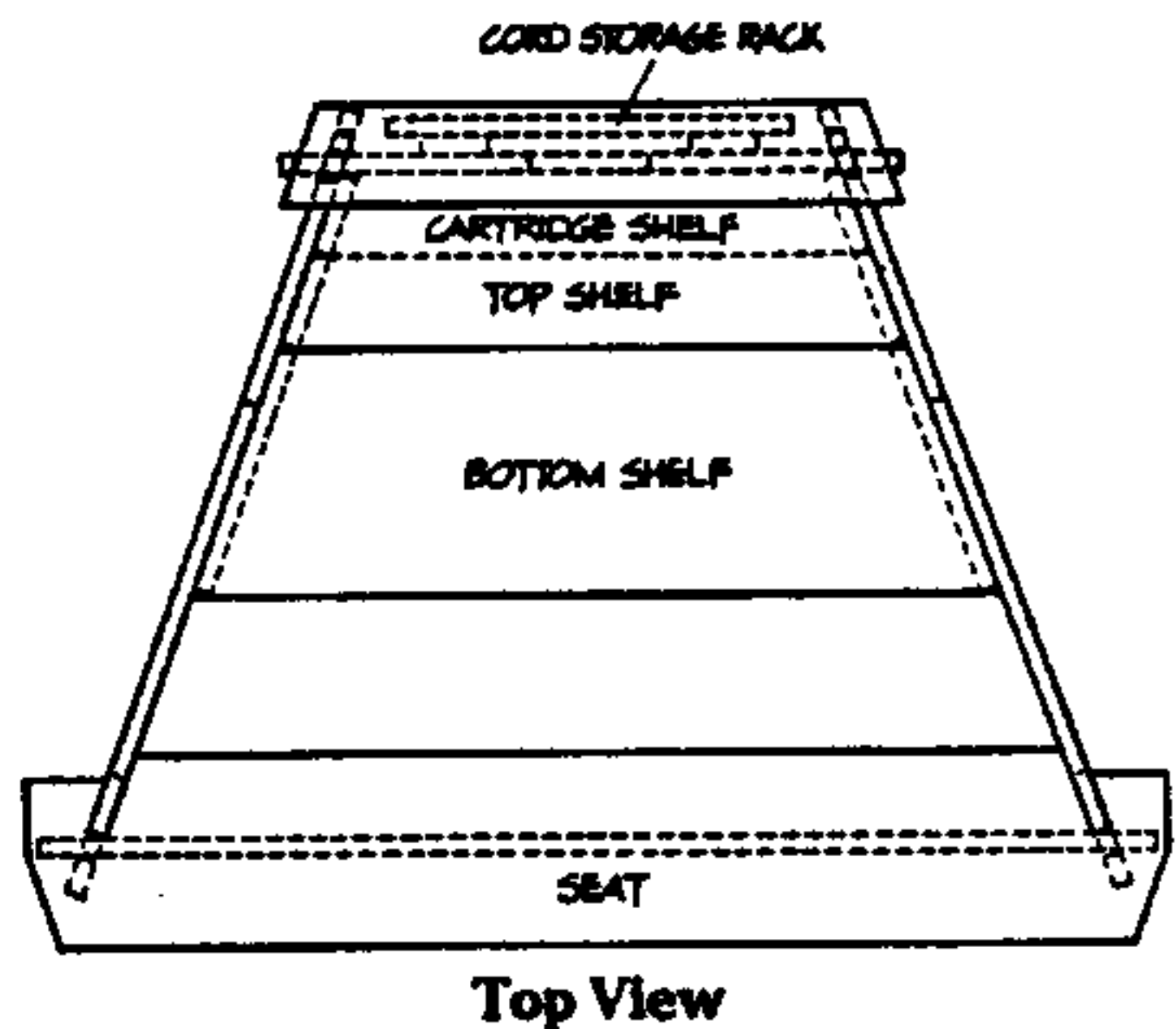
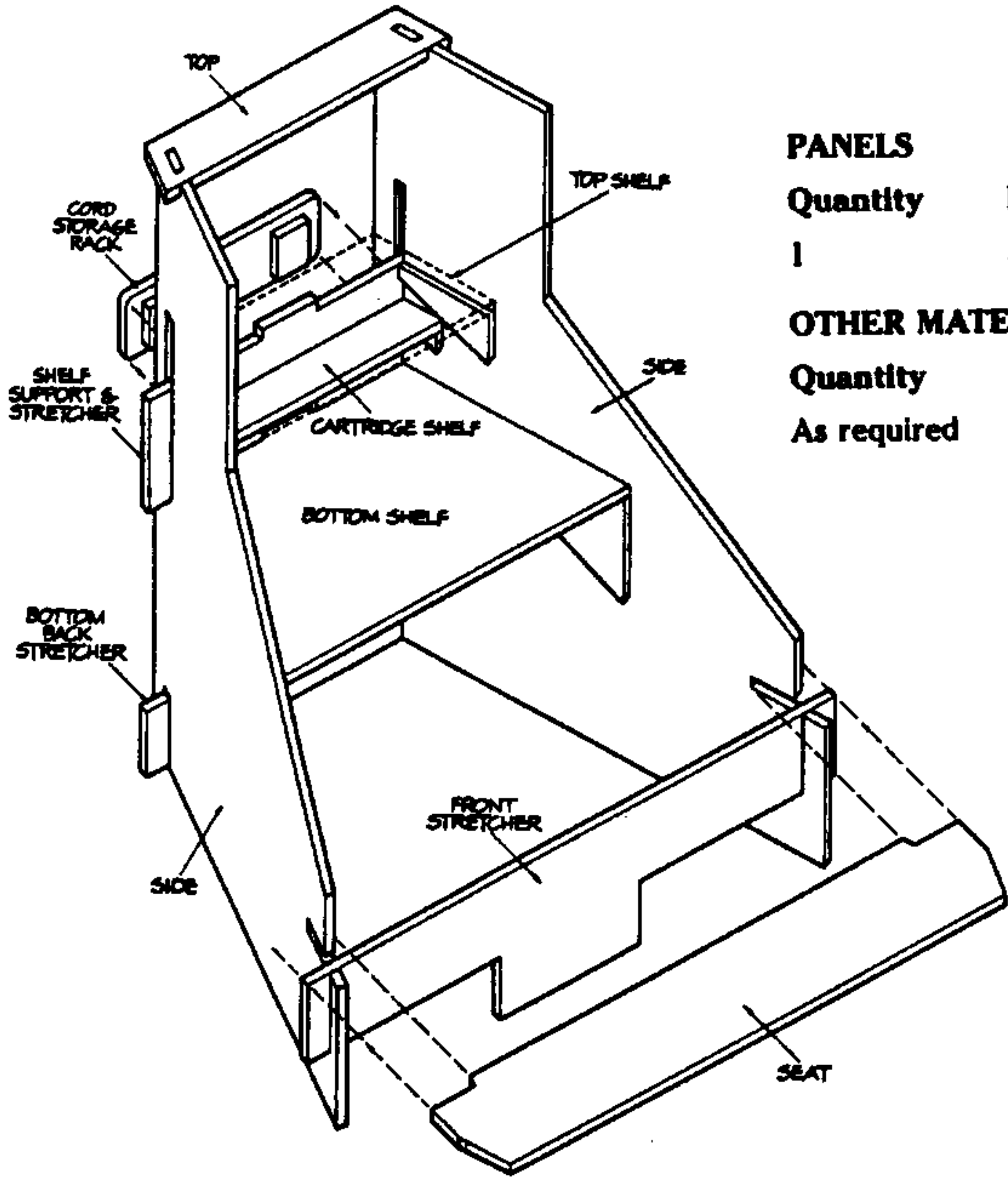
**Recommended panels:** APA trademarked Medium Density Overlay (MDO), overlaid both sides, if available, or APA trademarked A-B or A-C, or For unique appearance, an APA trademarked reconstituted wood panel

**PANELS**

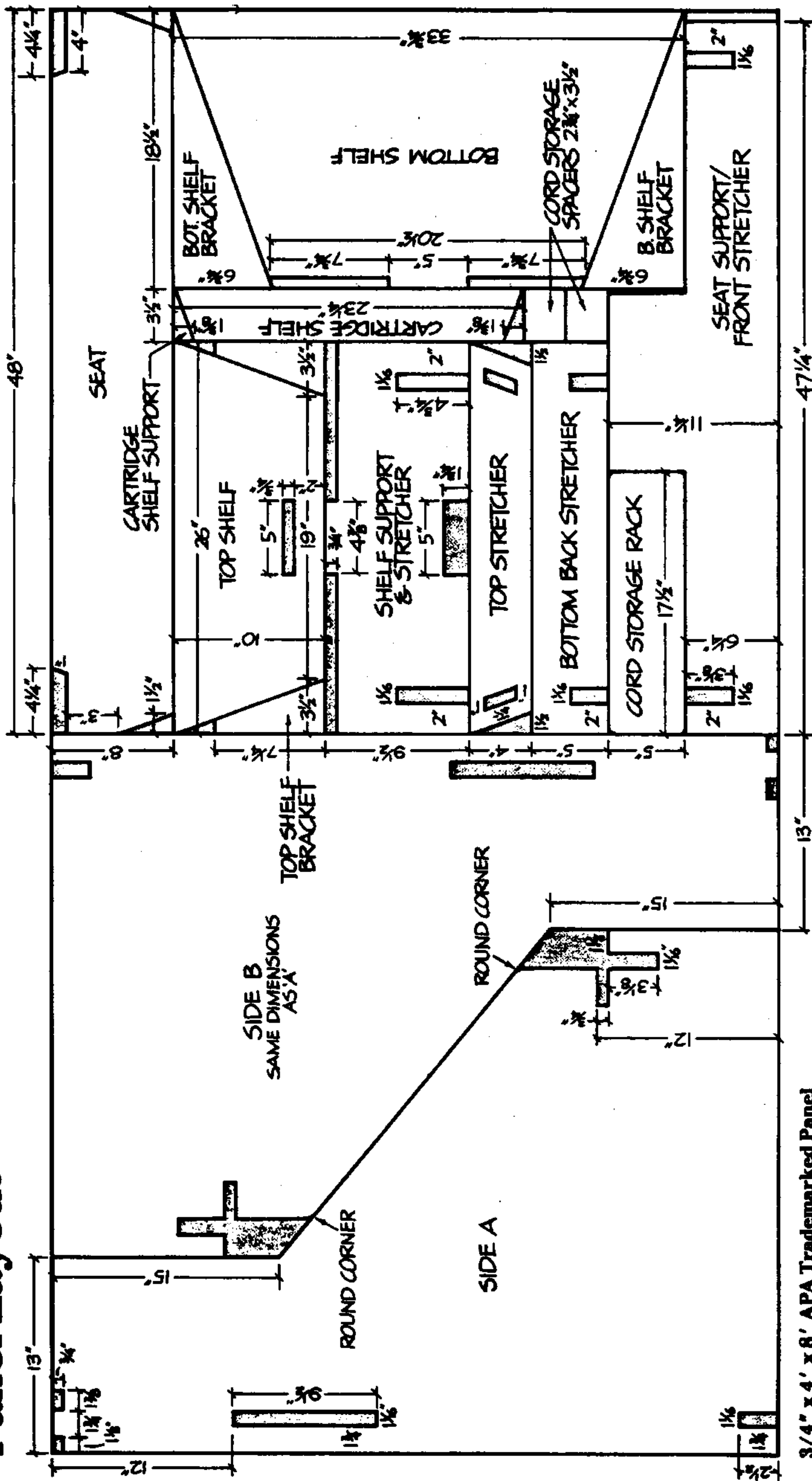
Quantity	Description
1	3/4 in. x 4 ft. x 8 ft.

**OTHER MATERIALS**

Quantity	Description
As required	Finishing nails and white or urea resin glue, (for shelves and cord storage rack), wood dough or synthetic filler, fine sandpaper, top quality finish (see finishing section)



# Panel Layout



3/4' x 4' x 8' APA Trademarked Panel

If you have had a disk drive for any length of time, chances are you have encountered such devastating messages as "disk not initialized" (when you know full well it is!), or "program not found" (when you know it is supposed to be there!). Or, perhaps, you have accidentally deleted a program and want to get it back. All of the above can be remedied.

#### FIXING THE DISK BIT MAP (AU0)

AU0, or Sector 0 contains the disk bit map, and if the characters "DSK" are altered, you will be unable to catalog or copy the disk. Indeed, a "DISK NOT INITIALIZED" error will show up. You can, however, retrieve programs and files individually and transfer them to another disk. That is, if you KNEW the names of ALL the programs/files on that disk. There is a better way which eliminates the possibility that you "forgot" about a particular program.

Boot up your disk fixer and load sector 0 from a disk. ANY disk will do. Then write the good sector 0 to the bad disk. This restores AU0 on the bad disk, but the bit map is NOT correct, but this does not matter. All you want to do is to be able to catalog and copy the disk using DM2. Use DM2 (not FORTH) to copy the entire disk to a new disk. You can then initialize the bad disk. That is all there is to it.

Ruined bit maps may not be discovered until it is too late. Any new programs saved to a disk with a ruined bit map may write over older programs or data. Goodbye older program. There's nothing you can do about it.

Another possibility is that sector 0 has been damaged, perhaps by magnetism or a scratch on the surface. In this case, you'll find out when you try to read/write sector 0. You won't be able to. Now you have a problem, but not insurmountable. The only "fix" for this is to copy all sectors from the bad disk to a good disk, sector-by-sector. A tedious chore to be sure, but at least you can get all your programs back. It will still be necessary to proceed as above to get your programs back, as the bit map on the new disk will not be correct. Now, I am not sure how FORTH would behave under this circumstance. I know FORTH will "choke" when it tries to copy a damaged sector, but whether or not it will continue to copy the "good" sectors and put them into their proper places on the new disk, is beyond me. I wouldn't chance it. Better to be safe than sorry and stick to tried and proven methods. Of course, you could experiment. If it works, let us all know. If some of you FORTH addicts out there could shed some light on the subject, your comments would be most welcome.

#### FIXING THE DIRECTORY LINK MAP-(AU1)

SI keeps track (alphabetically) of all the programs/files on the disk. Bad si's could produce errors such that attempts to catalog the disk will produce a heading, but no programs, or maybe just "some" programs will

be listed. To fix this, though, is extremely simple. Here's how:

First, look at AU0. Read the bit map to determine which sectors between 2 and 33 inclusive (>2->21) are flagged as used. Make a list of these sectors in a column. Now, load each of these sectors in turn, and examine the first 10 bytes of each. Copy the bytes down beside the relevant used sector. Determine the alphabetical order of these programs merely by reading the numerical values. The lower the number, the closer to the front of the alphabet it is. Now, produce a list of these sectors arranged alphabetically. Here's a short example:

Sector used	Hex Values in 1st 10 bytes ( )	Program Name
2	4B 20 20 20 20 20 20 20 20 20	K
3	49 20 20 20 20 20 20 20 20 20	I
5	4C 20 20 20 20 20 20 20 20 20	L
6	41 20 20 20 20 20 20 20 20 20	A
A	41 20 20 20 20 20 20 20 20 20	AB

Re-arranging the above alphabetically by sector would produce: 6,A,3,2,5 which are going to form the directory link map in WORD.

Next, copy sector 1 from ANY freshly initialized disk and write it to the bad disk. This is the easiest way to "restore" SI to all zero's. Now, use the (A)lter command, and change the first, and each successive word to produce the alphabetical pointers. For example: 0006 000A 0003 0002 0005 0000. Note the 0000 at the end. The directory link map must be terminated with the value. Now, write this sector to the bad disk, and you're in business.

#### RETRIEVING AN ACCIDENTALLY 'DELETED' PROGRAM

When you have a program in main memory, and type "new", the program is not erased. Only the pointers are changed, but the program is still in memory. A knowledgeable programmer could actually "unnew" a program, although not without difficulty.

The same applies if you "delete" a program from the disk. Only pointers are changed, and the program is still on the disk provided you have not performed a "save" since the deletion. Unlike main memory, retrieval of a deleted program from disk is extremely easy.

Locate the sector containing the deleted file's directory (between (>2->21)). You can do this by using the "FIND STRING" command, or, if your disk fixer does not have this command, merely load them in one at a time and look for your "deleted" program's name in the first 10 bytes. Change the program name to "?????????" (HEX code, of course). Now, write that sector back to its proper spot. Load-in sector 1 and locate the first word containing 0000 and replace it with the directory sector # of your deleted program. Ensure the next word is 0000. Now, exit the DF and load the subject program as per normal. Exit the disk-fixer and load the program as normal and save it BACK to the same disk under the same program name (????????????). Why? Because this will automatically update the disk bit map (AU0). Now use DM2 to change the program name back to its original name and the task is complete.



ERROR CODE LISTING

REPRINTED FROM FEBRUARY, 1986 ISSUE OF HOCUS NEWSLETTER

EXTENDED BASIC ERROR CODES

10 Numeric overflow  
 14 Syntax Error  
 16 Illegal after Sbrtn  
 19 Name too long  
 20 Unrecognized Char  
 24 \$/# Mismatch  
 28 Improperly used name  
 36 Image error  
 39 Memory Full  
 40 Stack Overflow  
 43 Next without For  
 44 FOR-NEXT Nesting  
 47 Must be in Sbrtn  
 48 Recursive Sbrtn CALL  
 49 Missing SUBEND  
 51 RETURN without GOSUB  
 54 String Truncated  
 56 Speech \$ too long  
 57 Bad Subscript  
 60 Line not found  
 61 Bad Line #  
 62 Line too long  
 67 Can't CONTINUE  
 69 Command Illegal in Prgrm  
 70 Only legal in prgrm  
 74 Bad Argument  
 78 No Program Present  
 79 Bad Value  
 80 Nil  
 81 Incorrect Argument List  
 82 Nil  
 83 Input Error  
 84 Data Error  
 97 Protection Violation  
 109 File Error  
 130 I/O Error  
 135 Sbrtn not found

EDITOR/ASSEMBLER ERROR CODES

ERRNO	>0200	2	Numeric Overflow
ERRSYN	>0300	3	Syntax Error
ERRIBS	>0400	4	Ill. after Sbrprgm
ERRNQS	>0500	5	Unmatched Quotes
ERRNTL	>0600	6	Name too long
ERRSNM	>0700	7	\$/# Mismatch
ERROBE	>0800	8	Option Base Error
ERRMUV	>0900	9	Improperly used name
ERRIM	>0A00	10	Image Error
ERRMEM	>0B00	11	Memory Full
ERRSD	>0C00	12	Stack Overflow
ERRNMF	>0D00	13	Next without For
ERRFNN	>0E00	14	FOR-NEXT Nesting
ERRSNS	>0F00	15	Must be in Sbrprgm
ERRRSC	>1000	16	Recursive Sbrprgm
ERRMS	>1100	17	Missing SUBEND
ERRRWG	>1200	18	RETURN without GOSUB
ERRST	>1300	19	String Truncated
ERRRBS	>1400	20	Bad Subscript
ERRSSL	>1500	21	Speech \$ too long
ERRLNF	>1600	22	Line not found
ERRBLN	>1700	23	Bad Line Number
ERRLTL	>1800	24	Line too long
ERRCC	>1900	25	Can't Continue
ERRCIP	>1A00	26	Illegal in Program
ERROLP	>1B00	27	Only legal in Program
ERRBA	>1C00	28	Bad Argument
ERRNPP	>1D00	29	No Program Present
ERRBV	>1E00	30	Bad Value
ERRIAL	>1F00	31	Incorrect Argument List
ERRINP	>2000	32	Input Error
ERRDAT	>2100	33	Data Error
ERRFE	>2200	34	File Error
ERRIO	>2400	36	I/O Error
ERRSNF	>2500	37	Subprogram not found
ERRPV	>2700	39	Protection Violation
ERRINV	>2800	40	Unrecognized character
WRNNO	>2900	41	Numeric Overflow
WRNST	>2A00	42	String Truncated
WRNPP	>2B00	43	No Program Present
WRNINP	>2C00	44	Input Error
WRNIO	>2D00	45	I/O Error

EXECUTION ERRORS

0-7 Standard I/O  
 08 Memory Full  
 09 Incorrect Statement  
 0A Illegal Tag  
 0B Checksum Error  
 0C Dup. Definition  
 0D Unresolved Ref.  
 0E Incorrect Statement  
 0F Program not found  
 10 Incorrect Statement  
 11 Bad Name  
 12 Can't Continue  
 13 Bad Value  
 14 Number too big  
 15 String/Number  
 16 Bad Argument  
 17 Bad Subscript  
 18 Name Conflict  
 19 Can't do that  
 1A Bad Line Number  
 1B FOR NEXT Error  
 1C I/O Error  
 1D File Error  
 1E Input Error  
 1F Data Error  
 20 Line too long  
 21 Memory Full  
 22 Unknown Error Code

LOADER ERROR CODES

0-7 Standard I/O  
 8 Memory Overflow  
 9 Not Used  
 10 Illegal Tag  
 11 Checksum Error  
 12 Unresolved Ref.

TI BASIC ERROR CODES PERTAINING TO DISK SYSTEM

#:	FIRST #	SECOND #
0:	OPEN	Can't find specified Disk Drive
1:	CLOSE	Disk or program is Write Protected
2:	INPUT	Bad Open Attribute
3:	PRINT	Illegal Operation
4:	RESTORE	Disk full or too many files opened
5:	OLD	Attempt to read past EOF
6:	SAVE	Device Error
7:	DELETE	File Error
9:	EOF	

TI WRITER ERROR CODES

0 - Indicates Disk Controller not on;  
 OR: Diskette not Initialized  
 6 - No Disk in Drive; OR: Is upside down;  
 OR: Drive is not turned on  
 7 - No Disk in Drive  
 00 - Illegal use of LoadF, PrintF; OR:  
 02 - No file in Diskette with Filename used  
 04 - Disk is full  
 06 - PrintF Command in progress was  
 interrupted; OR: Disk Door was opened  
 while Red Light was on  
 07 - Invalid Filename (I.E. Name too long  
 or using invalid characters)  
 15 - Invalid Disk Drive Number, or Device

DISK MANAGER ERROR CODES

#:	FIRST #	SECOND #
1:	OTHER	Rec not found
2:	SEEK/STEP	Cyclic Redundancy
3:	INPUT	Lost Data
4:	PRINT	Write protect
5:	NIL	Write fault
6:	NIL	No Disk Drive
7:	NIL	Invalid input
8:	NIL	
9:	Special Error Code for Comprehensive Test	

I/O ERRORS

#	FIRST #	SECOND #
1:	OPEN	Device not found
2:	CLOSE	Write Protected
3:	PRINT	Invalid I/O Command
4:	RESTORE	Out of space
5:	OLD	EOF
6:	SAVE	Device Error
7:	DELETE	File/Data Mismatch



## REVIEW OF PILOT

By Bill Hares, From Poona Valley Computer Group, March, Via  
LA TOPICS, May, 1986

Although I've just spent a few days learning about PILOT, I can write a useful, enjoyable program. This language is EASY. It doesn't have many of the capabilities of TI BASIC, but it does have others not found in even TI EXTENDED BASIC.

Thomas P. Weithofer developed PILOT 99 with help from Texas Instruments, Cin-Day Users Group and Xavier University professionals. PILOT was largely created by John A. Starkweather, PHD, at the University of California in San Francisco, starting in 1962. In 1973 national standards were developed for the basic commands (only 8) and syntax, and now one can get a version of PILOT for most personal computers. It was developed on a small computer to be able to function completely on a small computer. Dr. Starkweather wrote a short book, which I've found to be the perfect guide. It's called, "A User's Guide to PILOT" and published by Prentice-hall, Inc. at Englewood Cliffs, NJ 07632. I ordered it at the local B.Dalton Bookseller.

I would evaluate the TI version as one of the best teaching aids available in the world of software, since it's easy to write programs and offers most of the features that make a lesson useful and enjoyable. The only feature I would like to see added is that of Speech.

PILOT 99 seems to be written in TI-FORTH, and thus a program can run pretty fast. It shows the power and versatility of TI-FORTH. While one is limited to a small program running at one time, one can run programs quickly with each drawing needed data from files the other programs have created.

To use the version that I got, you will need the E/A cartridge, expanded memory, disk system and a word processor that can create display-variable 80 (text) files. You would write the program in the word processor just like the big computers/software use, which is nice in some ways since with one like TI-Writer, you have a full-screen editor and other useful commands available. Then you file up the E/A and use the Load and Run Option, entering Dskn.PILOT. Enter the file name of the program you created with the word processor. The PILOT 99 software will run the program until it finds an error, in which case you get an error message. There is also a version which can be used from TI Extended Basic.

PILOT 99 adds many commands beyond the basic PILOT set. You have all the normal Extended Basic Sprite commands, which provide enjoyment to the user and liven the presentation. Thomas has also added the joystick commands, TI's character graphics commands with color, real live Bit Map Graphics, i.e., Draw Circle, and Mass Storage device commands for file usage.

The manual is excellent, all 70 pages (on disk). Each command is described and an example given in a program context. However, it says that data files are Internal

Fixed 80 Relative Update, but the file I got when writing data out to disk was Display Fixed 80. To help me use the manual, I created a kind of Table of Contents and Index.

Bit Map graphics are easy to create and are displayed in the top 2/3 of the screen with the bottom 1/3 reserved for full-sized text. In the top 2/3 graphics area, you can also display text, but it will be smaller (64 characters per line). The command for Draw Rectangle is: DR:row1, col1, row2, col2, i.e., DR:50,50,100,100 will draw a rectangle with the top left at position 50,50 and the bottom right at 100,100. Then one could use the command "T:That's a rectangle, folks!" to produce the message at the bottom of the screen.

Better yet, to describe the language, you could ask the computer operator, i.e., student some questions about the rectangle. Here's a really short program to illustrate.

PILOT doesn't use line numbers. It's like LOGO, LISP and some other advanced languages. One uses labels and subProgram-like techniques to structure the program and direct the flow of action.

R: Remark only - prog. to demo a Q&A.

IG:

BR: 50,50,100,75

TB: 1,5,shape is 50 by 25 units

T: how high is that rectangle?

A: 8A

M: 50,50 UNITS

TY: That's perfectly correct

TN: Nope, that's not just right

T(@A=25): You were thinking of the WIDTH

T: press any key to proceed

#####

R: is for a REMark

IG: is to initialize graphics

TB: puts the text at row,column used

T: is to Type something to the screen.

(TP: is to Type to Printer)

A: is to Accept an Answer

M: is to Match to the following possible strings  
each separated by a comma

TY: is to Type only if the previous Match was True

TN: is to Type only if the previous Match was Not-True

T(@A=25): is to Type only if the expression is True  
(here user's answer of 25 would be true)

Instead of the TY: and TN:, we could have used a command - JM:\$LABEL for Jump-on-Match to a label. After the \$label would come some testing routine that ended with an E: command to return the program flow to the line following the JM:\$label.

We could have used the Match or Jump command- MJ: string-to-match, more. If no match is found to the strings in the statement, the program jumps to the next M: or MJ:

statement.

User subroutines are invoked with a simple-  
"U:YOUALL" (U:title). They are also ended with the  
command- e:.

Problems can be identified with the PR: command, then  
you can jump to them easily.

You can put the Y or the N or the conditional  
expression, i.e., (AA=25) after any of the basic commands.

To save that answer to a disk file, we would just add a  
command-Write Answer- WA: right after the A: in the program  
above. Earlier in the program, you would have the command  
to open the file- OF: DSKn.FILENAME or some other file and  
then later would close the file with- CF:.

For math you use the C: (Compute command) with the  
characters <- instead of the = sign. For examples C: BF<-88  
or C: BE<-86). The first sets F equal to 88 while the  
second sets E equal to the value of 6. All the other TI  
numeric operators, i.e., + are available as are the numeric  
functions such as TAN for TANgent.

PILOT is for easy interaction between the computer and  
the user. A simple example of it is:

T: Enter your name

A: SA

T: Enter an adjective

A: SB

T: Enter a type of animal

A: SC

T: Enter a part of an animal

A: SD

T: Enter a color

A: SE

CH: (this means Clear-home the cursor)

R: ! ! ! !

T: SA had a SB SC,

T: whose SD, was SE as snow

T: Everywhere that SA went, the SC

T: was sure to follow.

There are many other commands in PILOT 99, but most are  
just like TI BASIC or the sprites in Extended Basic. Most  
are easy to remember and there are only 54 with the 1 or  
2-digit code. I've barely scratched the surface in the many  
ways the commands can be combined to produce a very  
enjoyable interactive session of learning or data  
collection. Dr. Starkweather describes many in his book.

**CORCOMP WDES (How to Get Rid of Some)  
DOWNLOADED FROM COMPUSERVE  
PUBLISHED IN THE PENN OHIO JUNE NEWSLETTER**

**TRIPLE TECH CARD:** The main problem is due to the  
lithium battery exploding. This occurs because something is  
failing, allowing current to pass from the P-Box to the  
battery. Lithium batteries do not like any form of  
recharging. Exploding is their normal response to  
recharging (the same applies to alkaline, mercury  
batteries). The cure is to remove a 100 OHM resistor, R7,  
and replace it with a 1N914 diode. The anode end must face  
toward the battery holder.

If the buffer starts printing garbage, and if you  
bypass it and the printer prints normally, replace the I/O  
chips 74H374s. Use 74LS374s for replacement. You will need  
2 of them. The "h"s are failing for unknown reasons.

PEB RS232 Card and the Micro Expansion System (MES)  
Revisions: Pin 38 of the TMS9901 IC should have a 1.5 Kohm  
resistor to ground. If it does not, it could cause you to  
have no menu screen when using the CorComp Floppy Disk  
Controller (FC). DTR/1 and DTR/2 Outputs on the RS232 port  
needs a 3.3 Kohm resistor to +5 volts (pullup).

PEB FDC and MES: Pin 15 of the 74LS123 should have a

200 Kohm resistor instead of the 100 Kohms resistor to +5V.  
Possible problems without this resistor are: 1) No Diskette  
or Drive Error, 2) Problems when copying with one drive, 3)  
Cannot initialize a new disk, 4) Will not run Miller's  
Graphics Advanced Diagnostics program. After you add the  
resistor and if the drive motor goes off and on repeatedly,  
then the 74LS123 is shot. Replace it. Any 2793A FDC ICs,  
unless having an "07" number marked prominently on it, is  
bad. Usual failure mode is failure during reading or  
writing in double density mode. If the 2793 has no "a"  
behind it, it is OK. If you have a 2793A, replace it.

ALL CARDS with Voltage Regulator IC's and very much the  
FDC: Heatsinks are required on these regulators. Silicone  
grease thermal compound is highly recommended. Without the  
heatsink, you could have numerous problems as the regulator  
can and will go into thermal shutdown, which limits current  
to the card.

FDC alignment for the cards using the 2793 FDC IC:  
Allow computer and card to warm up a minimum of fifteen  
minutes. Install a jumper clip across the W5 connector.  
Adjust variable capacitor so that frequency counter reads  
250 KHz. Use an oscscope and adjust R6 (10K) to .3 uS. Use  
the oscscope again and adjust R5 (50 K) to .5 uS.

**ADD A NEW FUNCTION KEY ON THE LEFT  
BY JOHN OWEN, JOHNSON SPACE CENTER, MAY, 84**

My wife didn't like the way the 99/4A keyboard is laid  
out for "quotes" and "question marks". I added a new  
function key to the left of "A". This allows a touch typist  
to make a "quote" or "question mark" without going into  
hysteria or swearing. It is a simple task. Buy a surplus  
TI994 keyboard that has individual keys. Remove a key using  
solder wick (Radio Shack) and then drill/file a 5/8 in.  
hole to the left of your "A" key (make a hole pattern out of  
the junk keyboard). Drill 2 3/32 in. holes in the keyboard

circuit board for the two terminals on the new function  
switch. Repair circuit paths that are cut by drilling these  
two holes. Mount the new switch and run two parallel wires  
to the contacts of the old function switch and (remove  
plastic left of console to allow room for top of new switch)  
solder in place. There are about 4 or 5 different types of  
TI keyboards. The new beige ones with individual switches  
are the best. There are also black ones with individual  
switches. Don't try to modify membrane type keyboards that  
don't have individual switches. After you are through, sell  
the other 46 switches to your TI friends for \$1 each, and  
you will make a profit of \$40 off the junk keyboard.



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PREPARED BY BILL HARMS

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OLD DARK CAVES V.2  
A Review by Dave Talan

Do you have the adventure BLAA's? Or are you just sick and tired of the same old text adventures? Maybe even Tunnels of Doom is starting to bore you; it's boring me!

Don't worry, there is a new kid in town: Old Dark Caves. In ODC, "The last friendly dragon of Old Earth has been imprisoned in the Old Dark Caves by a group of evil wizards and their allies. Your mission in the Old Dark Caves is to rescue the friendly dragon thereby restoring peace and harmony to your world. There are rumors of riches to be found along the way and of creatures of dazzling color and very poor manners. There are stories of fountains, chests of gold and magic. Who knows, some of them may be true." This is the intro. to ODC.

Old Dark Caves is truly an excellent adventure, rivaling Tunnels of Doom. The graphics are, in my opinion, clearly superior than TOD. I will not tell you all about the adventure because I will spoil it for you. But what I will tell you is that ODC is action packed.

Unlike Tunnels of Doom, Old Dark Caves is a one-player

game. This, to some people may be seen as an advantage, and to others a drawback. One thing that stood out in my mind was how each monster is not the same like in TOD. In TOD, every monster's mission is to KILL, this to me sounds obsurb. In ODC however, monsters actually THINK! If they know they may be killed, they run, or even beg you to spare them. Others may even lie, cheat, or steal! So, as one can see, ODC's monsters are far more advanced.

Old Dark Caves is an adventure well worth purchasing. The package comes with two disks (Upper and Lower Caves), and a nifty folder with clean, crisp documentation. (The documentation I might add is excellent!)

The program can be purchased from Tenex or directly from the author. His address is :

Donn Granros  
6320 4th Ave So.  
MPLS, MINN 55423

The program requires Extended Basic, 32K memory, and one (1) disk drive. For more information, contact Dave Talan. My phone number is (216)-333-5829.

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