



Newsletter

JUNE 1987

The Winnipeg 99/4 Users' Group is a non-profit organization made up of people who use the TI-99/4A Home Computer and compatibles. The Winnipeg 99/4 Users' Group holds its' meeting on the last Sunday of each month. The whereabouts and time of the meeting can be found out by calling one of the Winnipeg 99/4 Users' Group Executives. The Winnipeg 99/4 Users' Group publishes a newsletter ten months of the year. The content of the newsletter doesn't necessarily represent the view of the Winnipeg 99/4 Users' Group. With this in mind, the group can't be held responsible for errors, omissions, or copy infringements, as presented in the newsletter. Unless otherwise stated, all articles may be republished in other newsletters provided that source and author are identified. A newsletter exchange will be put on hold when no incoming newsletter is received for three concurrent months. Reactivation of the newsletter exchange will only start once a incoming newsletter is received.

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EDITORIAL:

Editors' thoughts for the month.

The last meeting was held at the home of Sheldon Itscovich. There was a moderate turnout. The highlight was a demonstration of Sheldon's robot. Other demonstrations included TI Sings, Mass Transfer V4.1, and Display Master.

John Thompson, Newsletter Editor of STICC, paid a visit to our city and a mutual friend, Rick Lumsden. Rick was kind enough to let me invite myself over to meet Mr. Thompson. It was a interesting afternoon as much software and conversation was traded.

I was glad to see an old friend drop by, namely Rick Saby. Rick Lumsden and myself greeted the Shoal Lakian and had a productive evening in front of the computer. I hope our friend turns up in our fair city again.

The hard cores had a little get together at Darrell Wyatt's home on the 20th of June. Rick, Charles, Doug, Jim, Peter, Mike and myself gathered with Darrell (hope the head heals) for a insightful evening. I want to thank Peter for providing the SUGAR for our coffee. We should have these get togethers more often during the summer.

This will be the last newsletter until September. The deadline of submissions for the next newsletter is September 20, 1987. Our gatherings will continue throughout the summer months. Location and time can be known by contacting one of the executives.

I want to welcome the QB-99ers of Bayside, NY to our mailing list. Ken Beamer, of the Niagra User Group, called to say he was in the city. I'm sorry we couldn't meet but maybe next time. We also like to welcome the Niagra User Group to our mailing list.

Have a safe and happy summer!

MISCELLANEA:

Miscellaneous news and reminders.

The TI FEST in Ottawa was reviewed by several newsletters in the past month. The general consensus of the reviews is that it was bigger and better than the one held last year. The hospitality suite at the Talisman Motor Inn seemed to be a big draw as many new and old friends were met and you could brush shoulders with the biggies in the TI scene. Rave, Byte Data, Myarc and many other companies attended the fest. Geneve 9640s were fired up and several demonstrations were running that blew the socks of most people who watched. A banquet dinner at the Aristocrat Hotel that night put to rest the fest for another year.

MICROpendium subscriptions are going to \$22.25 US as

of June for delivery to Canada. The increase is due to the popularity of first class subscriptions and MP just can't carry the load as well as the increase of postage for the larger MP. MICROpendium's address: Box 1343, Round Rock TX 78680.

CorComp sent out their Cursor thing (another name for product announcements). The new products are WriterEASE Word Processing and Spell Check Dictionary, enhanced Version 3.0 MEMORY PLUS Ramdisk Manager and THE "REAL" TI/IBM SOFTWARE CONNECTION. The latter is a cartridge based program using the CorComp disk controller that will read and transfer ASCII text files from an IBM formatted diskette to a TI formatted diskette or vice versa. The RAMDISK MANAGER, a eprom, has been enhanced to the likes of their disk controller disk manager. WriterEASE is a word processor and spell checker combination that some interesting features such as ability to have column widths as large as 255! It also has 30,000 word dictionary that be used right from the editor and it seems light years ahead of the Dragonslayer spell checker. No pricing was announced but you can write to CorComp Inc.; 2211-G Winston Road; Anaheim, California 92806.

The latest R/D COMPUTING (VER 21 APRIL) just arrived. In this issue there is a article on EEPROMS by Tony Lewis that gives a informative look into the potential use of these chips with our computers. The R/D COMPUTING subscription price is going up again. It is now at \$22.00 CDN. Several items were advertised in this issue such as MLsystems Model KBM/99 and Monty Schmidt's COMMAND DOS. MLsystems product is a interface for the user to use IBM style keyboards and it sounds similar but has much more expanded features than Rave's one. Monty Schmidt's product is a new operating environment that fits into >6000->7FFF area of your computer. It is a MS-DOS like environment that is more compact than MicroSoft's DOS. It is available at \$39.95 CDN from Rye Data; 210 Mountain Street; Haliburton, Ontario K0M 1S0. KBM/99 is available at \$80 US from MLsystems; P.O. Box 268; Valley Falls, Rhode Island 02864.

I finally received my Intern book from Rye Data with a inclosed note from Bruce Ryan saying "We no longer sell, service or support Mechatronic.". I was lucky I guess just to get the book. They've been having trouble receiving inventory from Mechatronic in Germany. This trouble instigated Rye Data to file a lawsuit against them in Germany. Also included was their 1987 product brochure. In the brochure there is advertised the 99AT Expansion System designed by Pat Saturn of MicroStuph & Microart of Toronto and implimented through Millennium Computers. The box (IBM PC clone) gives you five expansion slots, built-in interface using a smaller round

connector cable and space for four half-height disk drives. The pricing is as follows: \$210 CDN for 135 watt power supply with cooling fan, built-in system interface, card mounting hardware and four drive front panel in a flip-top case. \$230 CDN for the above configuration with 99/4A interfac cable set installed. Call for prices on larger power supplies or other options. Add \$13.50 CDN shipping for each unit. Phone (705)457-2774.

OUT AND ABOUT:

Feature articles from the various sources of information.

The following appeared in MICROpendium's May 87 User Notes section.

Merle Vogt, of Von Ormy, Texas, writes:

I don't know how many 4/A users are aware that the machines uses RAM memory that runs at two different speeds.

There are 128 words of RAM, using two Motorola MC6810 chips, in the console. These run at CPU speed and are called the "RAM PAD" in handbooks.

However, the attached external expansion RAM has its data multiplexed in and out of the console on an 8-bit pipeline. This runs much slower, taking 6 clock cycles per access, as against only 2 clock cycles per access, as against only 2 clock cycles per access for the console RAM.

I have added two more MC6810 chips inside a console, providing 128 more words of fast RAM.

Proceed as follows:

1. Buy two RAM chips, MC6810.
2. Open console, remove covers and gain access to the computer board.
3. Locate the 2 existing MC6810 chips, near the 9900 CPU chip.
4. Locate pin 13 on the 6810 chips(on one corner), solder-suck the connection to free up pin 13, then pull it out of its hole, at each chip, and bend it out flat. You may have to clip off the point of the pin to clear. Be careful, there is little space to work in and, if you break off the pin, you will have to pull the entire chip, a nasty job.
5. Put a 1/2 inch jumper into each pin 3 hole. Be sure it is kept all clear of chip pin 13.
6. Take new chips, bend out flat pins 13 and 14 and clip off the points.
7. Piggy-back the new chips onto the old 6810 chips. Use a low wattage soldering iron with a pencil point. Solder pin Nos. 1 through 12, and pins Nos. 15 through 24 of top chips to bottom chips. Go slowly and be careful here. Don't overheat the chips, and spare the solder.

8. Using short jumper wires, tie together pin 13 of bottom chips to pin 14 of top chips. Then jumper together pin 14 of the two top chips, and extend over to pin 5 of chip U500, a 74LS367 buffer. This feeds address bit A7 to the RAM chips. (See Fig. 1, W3.)

9. Still hanging are pin 13 of the top chips. To these connect the W1 and W2 jumpers laid in at step 5.

10. Recheck everything, reassemble system and turn it on. Things should run as normal as the screens come up. Access to the new RAM is from assembly or Extended BASIC.

Here is what has been done: As built, the fast RAM responded to address 83XX, also 82, 81 and 80. 83XX is used by 4/A software. By picking up address bit A7 and tying to pins 13 and 14 we have:

When A71 things are as original, RAM block 83XX is accessed.

So, what good is it? It runs three times faster than expansion RAM. It's a fine place to put fast-moving work space registers. It could be used for short program subroutines if fast speed is needed. It does not seem to effect any other machine functions. The drawback is that any programs set up to run in this 82XX space will not run on any unmodified machine.

The following appeared on Ariel II BBS here in the city.

To: ALL

From: JOHN ANDROSIAK

9000 11-Jun-87 12:18 am MISC

The article below was originally published in 1958. However the statistics below are roughly the same for the present year, and the conclusions are as valid now as then.

The Dread Tomato Addiction

By Mark Clifton

Ninety-two point four percent of juvenile delinquents have eaten tomatoes.

Eighty-seven point one percent of the adult criminals in penitentiaries throughout the United States have eaten tomatoes.

Informers reliably inform that of all known American Communists, ninety-two point three percent have eaten tomatoes.

Eighty-four percent of all people killed in automobile accidents during the year 1954 had eaten tomatoes.

Those who object to singling out specific groups for statistical proofs require measurements within a total. Of those people born before the year 1900, regardless of race, color, creed or caste, and known to have eaten

tomatoes, there as been one hundred percent mortality!

In spite of their dread addiction, a few tomato eaters born between 1800 and 1850 still manage to survive, but the clinical picture is poor - their bones brittle, their movements feeble, their skin seamed and wrinkled, their eyesight failing, hair falling, and frequently they have lost all their teeth.

Those born between 1850 and 1900 number somewhat more survivors, but the overt signs of the addiction's dread effect differ not in kind but only in degree of deterioration. Prognostication is not hopeful.

Exhaustive experiment shows that when tomatoes are withheld from an addict, invariably his cravings will cause him to turn to substitutes - such as oranges, or steak and potatoes. If both tomatoes and all substitutes are persistantly withheld - death invariably results within a short time!

The skeptic of apocryphal statistics, or the stubborn nonconformist who will not accept the clearly proved conclusions of others, may conduct his own experiment.

Obtain two dozen tomatoes - that may actually be purchased within a block of some high schools, or discovered growing in a respected neighbor's back yard! - crush them to a pulp in exactly the state they would have if introduced into the stomach, pour the vile juice and pulp into a bowl, and place a goldfish therein. Within minutes the goldfish will be dead!

Those who argue that what affects a goldfish might not apply to a human being may, at their own choice, wish to conduct a direct experiment by fully immersing a live human head* into the mixture for a full five minutes.

* It is suggested that the best result will be obtained by using an experimental subject who is thoroughly familiar with and frequently uses the logic methods demonstrated herein, such as:

- (a) the average politician. Extremely unavailible to the average citizen except during the short open season before election.
- (b) The advertising copywriter. Extremely vary and hard to catch due to his experience will many lawsuits for fraudulent claims.
- (c) The dedicated moralist. Extremely plentiful in supply, and the experimenter might even obtain a houny on each from a grateful community

The following appeared in the Edmonton 99'er Computer User's Society August 85 Newsletter and credits Bayou Byte Newsletter from April 85 as the source. I recently did this modification on my Archer Povermate bar. This project seems to be the safest and cheapest way to protect your computer from these power glitches. It wins hands down over those Radio Shack Surge cubes as during a recent storm the cubes were glitching while the

bar was not.

Every computer user should have a surge suppressor installed between his computer equipment and the power source (wall outlet). Retail prices for effective surge control are \$65.00 (US) and up. Also, since the standard outlet does not provide nearly enough receptacles for most computer setups, you will also need a multiple outlet box that go for about \$20.00 (US) and up. If you are handy with a soldering iron, you can modify one of these gang boxes to provide surge protection and save a few bucks. The two wiring diagrams (elsewhere in this newsletter) show how to add the protection devices to 4 & 6 gang boxes. Parts are available from Radio Shack but you should call before you go; not all are well stocked.

PARTS LIST

Quantity	Description	Part #
3	Metal Oxide Varistor	276-5688
2	0.047 Microfarad Capacitor	272-134
2	Choke, 100 MicroHenri	273102A
1/4 or 6 outlet gang box. Available at many electronics stores or make your own with standard receptacles, boxes, & cable mounted on a board.		

The following appeared in the QR-99'er April 87 Newsletter and credits the Colorado Front Ranger as the source.

Data Base Managers For the TI-99/4A By Bill Goskill

Some owners/authors of the applications I have covered in this article will no doubt be angered by the apparent brutality of it. I choose to view it as honesty rather than brutality. Too many reviewers white-wash the weakness of TI software they critically review. I will not. I think sometimes that we are afraid that the software market will dry up and blow away unless we give favorable reports on the software products that do appear for our computer. I prefer to think of it in another way: if we promote junk software in a favorable light those that do publish product reviews will lose credibility, and those that buy software based upon those reviews will simply be that much more reluctant to get burned a second time.

In the process of searching for the perfect data base manager I have purchased several programs and spent over \$300. All of the programs that I own have positive points and all have negative points. What I have discovered to date is that the "perfect" data base manager does not exist, yet [not even in the business world]. What I am going to share with you are my impressions of the programs I own, and in doing so, will perhaps save you a little time and money if you too are

looking for that "perfect" application.

The programs I own are:

ACORN 99 from Oak Tree Systems

DBMS from Navarone Industries

DATA BASE 1 from SPC Software

DATA BASE99 from Quality 99 Software

DATA BASE 300 from the Int'l Users Group

DATA BASE X from Western Ware

PRBASE V1.2 and 2.0 from William Warren

TURBO DATAMAN from Kasy Ware

I have used these programs enough to feel comfortable with each and could probably write several pages about each one. Unfortunately, publication space is limited and such a voluminous article would never see print because of it.

Thus I have tried to be brief, but to the point, in my comments on each program. Also, please keep in mind that my comments are subjective, based upon how each product meets MY needs and expectations. Yours may be different.

For ease of reference I have included some of the information in a comparison table that allow analysis at a glance. In the paragraphs that follow I will try to provide a little detail to each issue and cover special features, lack of what I view as standard features and product performance of each program. I apologize in advance for the cryptic style you will read, however, I needed to be brief. The DATABASE 300 program will not be looked at since it is not available.

ACORN 99:

Among the top three DBM's available to the TI community. The only relational data base available. Also, the only one with a programming language interface for custom applications. EXTREMELY powerful and well designed. Can support three active files at one time, allows existing data file formats to be edited, copied to another file, resequenced and can reformat a field structure into another file format. Does not have the ability to show number of records in a file. Can hold more than 1500 records per file on a SS/SD disk [depending on file size]. Sorts alpha characters and strings better than numbers. Indexes record location for subfile creation and main file is then concatenated to create the subfile as another database. Possesses ability to search, using "equal to, unequal, greater than, less than, ignore" logical operators. Supports relational operators in search routines through the use of a true/false convention that allows selection of records where all parameters are met, or any parameters are met. CAN print a single record from a display screen. EXTREMELY slow in operation. Uses 40 column text mode. Allows duplicate key field data entries. Allows printer control codes to be encrypted is set up file. Provides input checking for "numeric, integer, money, string, flag and date" entries. Overall, a

fabulous program, with almost limitless potential. The best documentation of the group, giving many examples along with explanations. SUPERB application.

DBMS [Navarone]

Allows 32,000 records per file, but only 350 per SS/sd diskette. Limits you to half that amount if you wish to sort the file since it creates a second sorted file that demands equal space on your data disk. Most interesting report generator I have ever seen, a cut and paste affair that is really neat, but poorly documented. Excellent custom screen design module which includes help screens that you design. FAST, FAST, FAST. Requires unique key field entries only, which I find inconvenient. Documentation is better than originally written, but still confusing at times, and incomplete. Dotes on mundane things and skips over, or entirely omits, important things. Does totaling in reports, but no other computational work. Does not support single record printing, but can use the report module to scroll data on screen, write it to disk or send it to your printer. Can append new data fields to the end of an existing record, but cannot reformat the record in any other way. Can create subfiles, but you have to figure out how to do it for yourself because the documentation does not tell you how. It doesn't even mention subfiles. Allows printer control codes to be encrypted in Report Generator file. Does not perform input checking of any type. All data is considered to be a string entry. Best suited for a hard disk environment. Not difficult to use once you have "played" with it, but can be intimidating at first.

DATA BASE 1:

Best suited for mailing lists or other LIST type data files. Cumbersome design setup requiring records to be accessed by their relative position in the file [record number]. You must first list the records by a specified field if you don't know the record number. Time consuming. Provides three pre-set mailing label report formats and one custom format for your own design. Will NOT do reports that have heading information. Includes several nice utilities, such as a formletter generator, disk file data base which creates a DB1 data base file out of the information on your library of disks. Does not provide for input checking, nor length of field entries. Only looks at the length of overall record. Does searches by "equal to" operator only, only one data field at a time. Requires that you first create an index file and then search. To search by another field you must create another index file. Searches by a maximum of 5 characters in any field. Sorts are limited to 1000 records, no matter how many exist in the file, but both alpha and numeric sorts are offered. Subfiles can be created to a printer in the main program or to disk by using the Utilities options. Selection is by "equal to" or "between two values", which can be either alpha or numeric type.

DATA BASE 99:

More emphasis put on copy protection than on program performance. Allows custom screen design and claims 28 fields of up to 28 characters each. Would be a neat trick to do since four of the 245 rows on screen are used by program prompts. Fast assembly language interface for report generation. Can not generate reports with headings and does not permit printer control codes to be inserted in report data. Does not save a format after design, so you will have to re-create it each time you want a report. Data is printer in continuous format without regard to page breads or anything else. Design of layout is cumbersome, requiring you to conceptualize how many colons and/or semi-colons is limited to 127 characters allowed in a LINPOT command. A terrible system. Disk catalog accessed from main menu will crash program if you enter an alpha character instead of a number to be cataloged. Color is lost after a crash since it was CALLED from the LOAD program. Does not permit single record screen print (unless you buy the DB 99 utilities), must use REDIT option to search for a record or search sequentially. Can not go directly to a record by its relative position in the file. Will create subfiles to disk, allowing the search by "less than, equal to or greater than" operators. Search is limited to one field for all practical purposes. Sorts can be performed in ascending order, by any one field. Sort is an actual re-write of the file. All data is considered string information. No number crunching (again, unless you buy the DB 99 Utilities), no input checking. Documentation consists of two 9 1/2 X 11" sheets of paper printed on both sides. Program is slow, inflexible, inconvenient in many ways and cumbersome to use. It might have been an advanced application two years ago. Today it is a dinosaur, even with the DB 99 Utilities. MUCH TOO EXPENSIVE.

DATA BASE X:

Very modular, meaning that each function (adding, editing, printing, deleting etc.) is a separate program that must be loaded each time you want to use that function. Does statistical analysis of data. Record counter is inaccurate, code of program is jumbled and entirely unstructured. Does not sort data, even though documentation uses the term "sort". What it means is "select". When DATA BASE X "sorts" by a particular parameter it is really selecting records for dumping to a printer that meets that parameter. Does allow selection between ranges. Can not create subfiles, does not index existing records. Access of a record is done sequentially, unless you know the record number. No way to tell the record number, you must guess. Supports 1 or 2 disk drives. Excruciatingly slow. Requires that you name the data disk DBXDATA, for no good reason that I can see, otherwise program errors out. Does not save report definition, but does allow it to be printed in normal or

compressed mode. Definition process is fairly simple, but time consuming. Documentation is the "shabbiest" I have ever seen. It is photocopied and put into booklet form with the pages not even cut straight, so that some information is missing off of some pages. Overall, this program is JUNK! As with the IUG's DATA BASE 300/500, it never really belonged on the market in that stat that it is in. Unfortunately, I didn't know that and paid out over \$30 to find out.

PRBASE:

Totally assembly language coded. THE BEST all-round application in my opinion. FASE, flexible, does virtually anything a user would want in the way of data handling, except number crunching. It will not do anything in that area. Treats all data as part of a big string just as DBMS and DATA BASE 99 do. As long as you own the PRB Utilities written by John Johnson you can create subfiles, otherwise you can't. Has on-line help for commands, creates an index by any input field you choose and then accesses any record in about 1 second. Also has a FIND feature to look at data sequentially in any single field and a GLOBAL option that searches for a single data entry anywhere in the record. Saves up to five report formats, V2.0 allows you to format data disk. Custom screen layout with terrific graphics options for borders/windows etc. is available. A TREMENDOUS PROGRAM, well thought out, well designed, artistically executed. FAIRWAIRE!!!! PRB Utilities are free for the asking as long as you provide the disk and mailer. Report design is cumbersome and confusing. Prints single record from screen display in either 40 or 80 column mode. Program is very sensitive about I/O device names. My copies (V1.2 and V2.0) both require PIO. to work rather than just PIO or PIO/1, etc. With number crunching abilities this program would be a perfect "flat-file data manager" for most TI users. As it is, the value and performance for a FAIRWARE application, or a commercial application too for that matter, is unsurpassed. If you don't have PR BASE then you are missing out on one of the premier productivity tools available to the TI Community.

TURBO DATAMAN:

This is the second most powerful and useful data manager, taking a backseat only to PR BASE. It runs slightly ahead of ACORN because it performs number crunching and is faster in operation. Like ACORN, TURBO DATAMAN allows you to create a dictionary of data items (fields) and then lets you choose from that library of fields to put a record together. Up to 30 fields are allowed per record. Twenty pre-defined records (file formats) can exist on one disk. Allows custom screen layout design, complete with graphics borders/windows etc. Does input checking, allows secondary screen access, like ACORN's Detail Records. Allows formulas to be created and saved that perform the for basic math

functions. Report definitions can be saved. Allows wildcard type operators in searches, will print single record from screen display. Provides "less than, greater than, equal to, not equal to, greater than or equal to, less than or equal to" operators in screen display and report generation modules. Permits sub-totals in reports that can be formatted like TI Extended BASIC does with IMAGE statement. Subfiles can be created through the report generator by sending the output selected to a disk file rather than a printer. The results must be converted back to INTERNAL, FIXED from DISPLAY FIXED before you can use it in the program however. TURBO DATAMAN does not provide you with that utility. The documentation instructs you to "write a program" to do it. Names used for different modules in the program are confusing. Ex: ETCH, SKETCH, SKETCHR, FETCH. Should change names to more accurately reflect function of module. Documentation acceptable, but lacks adequate coverage in some areas. Utilities are provided to perform some mundane operations, such as counting the amount of records in a database. Reformatting or restructuring of an existing file is not permitted, unless the input field is appended to the end of a record format. This program needs some "fine tuning" in some areas, but is still an exciting productivity tool with immense possibilities. Its speed of operation is not fast, but acceptable. It is faster than ACORN. One can set up the SKETCH program to auto-load if desired, but the whole application should be centered around a menu in my opinion. As it is now, you must RUN each module from the READY> prompt when you need to use it, because every module exists with an END statement. If you don't own this program, you should. Whenever you want to manage a mailing list or do accounting, TURBO DATAMAN is for you.

HELPFUL HINTS AND TIPS!
(FOR THE USERS, BY THE USERS!)

This column features tips brought to my attention from members of this group. WARNING: These hints and tips are to be used at your own risk!

By Rick Lumsden

This month, as promised, I'll endeavour to explain what happens when you format a disk and hopefully how the programs etc. are stored there.

The first thing any of us do with a new disk is to initialize or format it. A new disk is like a phono record with no grooves cut in it and you must install these "grooves". TI disks are formatted with 40 tracks. Some of the older drives only formatted 35 but the idea is the same for both. These tracks are concentric circles on the disk starting with track 0 on the outer edge and moving to track 39 near the inner hole at the

center. It is fairly easy to see here that all tracks are not the same length as each circle as you move inward becomes smaller. This is of little consequence because each track stores the same amount of data. These tracks are further sectioned into nine pieces called sectors. Now a little multiplication, 40 tracks X 9 sectors/track=360 sectors. When you are initializing a disk with DM-II you may hear your drive clicking off the tracks. As it initializes each track, the drive head must move inward to the next track. When all tracks have been initialized, the drive head steps all the way back to track zero, and then begins to verify that all sectors are good. You can observe this on your screen when the numbers appear and begin to fly by starting at zero and going up to 358. I say 358 because two sectors are set aside for the disk controller to recognize a disk. I'll explain this further later. If you watch and listen carefully, you will see 9 numbers fly by and then the drive will click as the head steps to the next track. Disk Manager II does this verifying automatically and if it detects any bad sectors it will write those sectors off as bad and you may get the final count instead of 358 may only be 355. When a disk is good with no bad sectors, you will get the screen display of: 358 FREE 2 USED. The two used are the sectors mentioned earlier, however if you have 3 bad sectors you will get the display: 355 FREE 5 USED. This verification is not necessary and some disk managers do not bother with it but remember that if there is indeed a bad sector and you do not verify the disk, that bad sector will not be written off and when an attempt to save data to that sector is made an error will result.

Each sector is capable of storing 256 bytes of data. Now adding all this up 40 tracks X 9 sectors/track X 256 bytes/sector=90K of data storage. Seems like quite a lot for a 48K machine. Well I think you will soon find the need for more storage per disk but that is an option you can follow at any time you wish.

The two sectors mentioned earlier, tracks 0 and 1 to be specific, are reserved for the computer to recognize a disk and to see how much room is left on the disk. Track 0 contains information such as Disk name (the name you call the disk when formatting) number of sides, single or double density, and other initializing information. The computer also maintains a list of the sectors used and available in this sector. Sector 1 contains the alphabetical index of all programs on the disk. Our own June/85 newsletter has a complete breakdown of both these sectors and the others and their functions. This account was written by Terry Atkinson of the TI Nova Scotia club and is EXTREMELY helpful in understanding disk use. If you like, we may be able to reprint this article as it is required reading before we can go on to using a Disk Fixer program. Please call me and voice your opinion on this. If I have the response I will try and reprint it

but if not, I will head directly into the Disk Fixer programs.

As you can see by the sector size, the little blurb file storage on disk mentioned in last month newsletter now will make a little more sense. Since the sector is 256 bytes long and you have say a DIS/FIX 80 file stored, there can be three files of 80 bytes each per sector. Three times eighty equals 240 bytes. That leaves 16 bytes of empty space in a sector. Not too much but it cannot be used because the files are accessed a sector at a time. Now you can also see why Barry Traver's Archiver program stores it's files in a DIS/FIX 128 file. It simply leaves no wasted space since $2 \times 128 = 256$.

Whenever you store a program on disk, the computer will store that program in the first available sectors. This is no problem with a newly formatted disk, but for example say you had stored a ten sector program or file on disk and then for your own reasons, had deleted that program or file. When you delete a program from disk, the actual data is not erased, but just the directory the computer looks at on disk to find that program. In other words those sectors that were originally used by your program still contain that program but the directory says (since you deleted it) those sectors are now available for storage. This is how a program like DM-1000 can search for a file or program and recover it if it has been deleted. The only problem here is if you delete the file and then save another file to the same disk. Since the sectors are now flagged as free, the computer will search for the first available free space and store your new program there. In all likelihood the first free area will be the program you just deleted and will overwrite that program with the new rendering recovery impossible. But what if the new program is say 15 sectors long where the old was only 10? Well the computer handles that as well. It will store the first 10 sectors in the area formally occupied by your old program and store the rest in the next available area. A program or file can be divided in this way as many as 76 times but in all fairness, this is unlikely to happen. This is known as file fracturing and will slow down the loading of files in relation to the amount of fracturing because the drive must move the head to the directory (at the start of the disk) back to the program, load that portion, back to the directory and find the next part of the program, and back to the program to load that portion and so on. It is very cumbersome to try and listen for this fracturing so there are a couple ways to find out which files are fractured. The first and the easiest is to load up Funnel Writer again and do the Show Directory from the Editor on the disk in question. Use the trick I mentioned last month where you try to use the 'QUIT' key to find the E/A and XB program files. Now look in between the file size and type. If you see an of the disk and re-writes it back out exactly as it was on the

original.

Well I hope that clears up some things for you. This next part is not entirely related to the above but does relate to disk drives. I will try and explain the different drive configurations and which drives to look for when you have decided to upgrade to newer drives or more drives.

There are many different types, sizes and styles of drives to be had and to the novice it is really quite forboding. The type of drives that are available for the TI alone is quite extensive.

The difference in most drives is in the amount of data it will store on a single disk. In the case of TI's you can go from a minimum of 90K to a maximum of 720K per disk. The limiting factors are not only the drive but also the controller card or peripheral that controls the drive.

Let's start with the original equipment from Texas Instruments. TI produced two different controllers for the 4A. The original was the old stand alone unit and when the PEB was released a new card was released to fit into a slot in the PEB. The old stand alone unit was only capable of controlling Single Sided Single Density (SSSD) drives while the newer card is capable of handling Double Sided Single Density (DSSD) drives. Either one can handle the older 35 track or 40 track drives. You may see these drives advertised as 48TPI drives as well. This stands for Tracks Per Inch and generally is the same thing as the 40 track units. The limiting factor in your system will always be the unit with the lower capacity. For example if you have a TI card in your PEB capable of DSSD operation and a Double Sided Double Density drive you can only address the Single Density but you can use the Double Sided.

There are also the aftermarket Disk Drive Controllers (DDC's). There are at least 3 I know of for the PEB and a couple other stand alone units available. I'll deal only with the cards to keep things short. All three of the new cards are capable of Double Sided Double Density (DSDD) operation. The three cards I know of are the Myarc, Corcomp and Atronic. All work well and the decision which is best will have to be made by you. One thing to keep in mind however, is the aftermarket units are not always completely compatible with all programs. That is because the program that resides on the DDC card and the actual chips they use are not the same as the original TI. Programs written to access the controller card directly may not work with the newer cards. This is of minor concern however as most programs will not make such direct reaches and will operate correctly. The advantage of the newer cards far outweigh the disadvantages. There are many new calls in the Basics and faster operation not even mentioning the increased disk storage. I do not have too much information on the Atronic card but what I have heard is very promising. It

seems to be very similar to TI's own but with the added DSDD feature. All these cards (the exception being the Atronic which I am unsure of) are capable of handling four drives whereas the TI DDC's could only handle three.

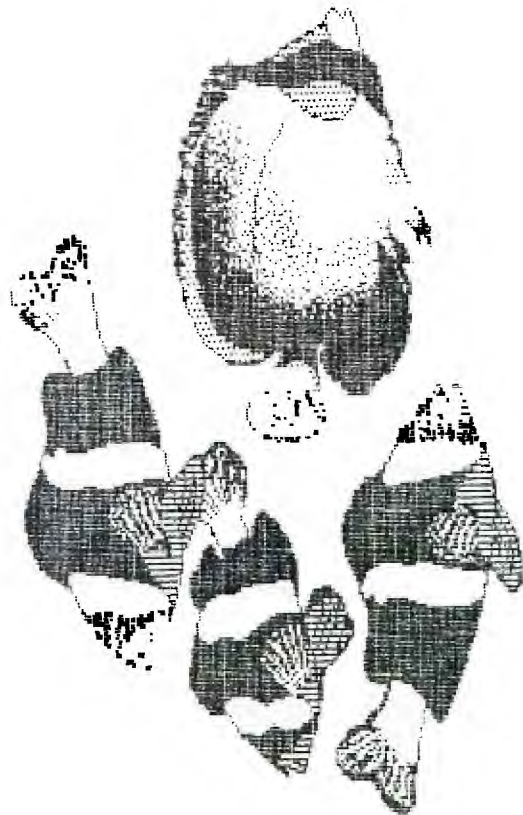
Now the actual drives themselves. As mentioned there are SSSD drives DSDD drives and many others with larger and smaller capacity. All the drives I will mention here are the 5 1/4" variety. The drives you want should be IBM compatible with a maximum storage size of 360K. This is DSDD operation and as mentioned will be limited by your controller. The important thing to remember is that the old standalone unit that handles only SSSD operation will work with the DSDD drive but will only operate that drive in SSSD format. Likewise for the TI card only then you will be able to use the double side end of the drive and finally with the aftermarket cards you can then use the drive to it's full potential. Double sided drives have two heads that can read from either side of the disk. This is not the same as the popular 'Flippies' where you punch additional holes in the disk cover and then physically install the disk upside down in the drive. You cannot hope to take a DS disk that has Data on the second side and hope to read it on a SS drive by simply adding the required holes and flipping it over. The reason is when you flip the the disk over you are now actually turning the disk in the opposite direction. The drive does not turn the opposite way but when you flip the disk the disk inside the protective jacket is turning the opposite way. What this means is that a disk that has had programs stored on it by a DS drive may not be accesible by a SS drive. The programs may show up when you catalog the disk but that is because in most cases the directory for the disk is on the first side even when the program is on the second side. It's a little more involved when it comes to Double Density. To achieve double density, the manufacturers now install 16 or 18 sectors per track instead of the 9 used by the older units. The amount of sectors per track is a function of the controller and not the drive. Myarc cards can handle either the 16 or 18 format while the Corcomp units use the 18/track format. Obvioulsy the 18/track will store more but both are considered DSDD. The sectors are actually half the size of the 9/track and hence the reason for a better quality disk. The sectors still store 256 bytes each but it is much more densely packed. This also means that if you have no double density capabilty, you cannot read these disks. A controller that is expecting 9 sectors/track that is faced with 18 instead will become confused and send out an error. A note about disks here. They also come in various formats. SSSD DSSD DSDD and so on. You can use the higher storage disks in the lower storage drives with no adverse affects and may even be lucky enough to use the low storage(SSSD) disks in the higher capacity(DSDD) drive but when you use the latter of these

two you run the risk of losing data.

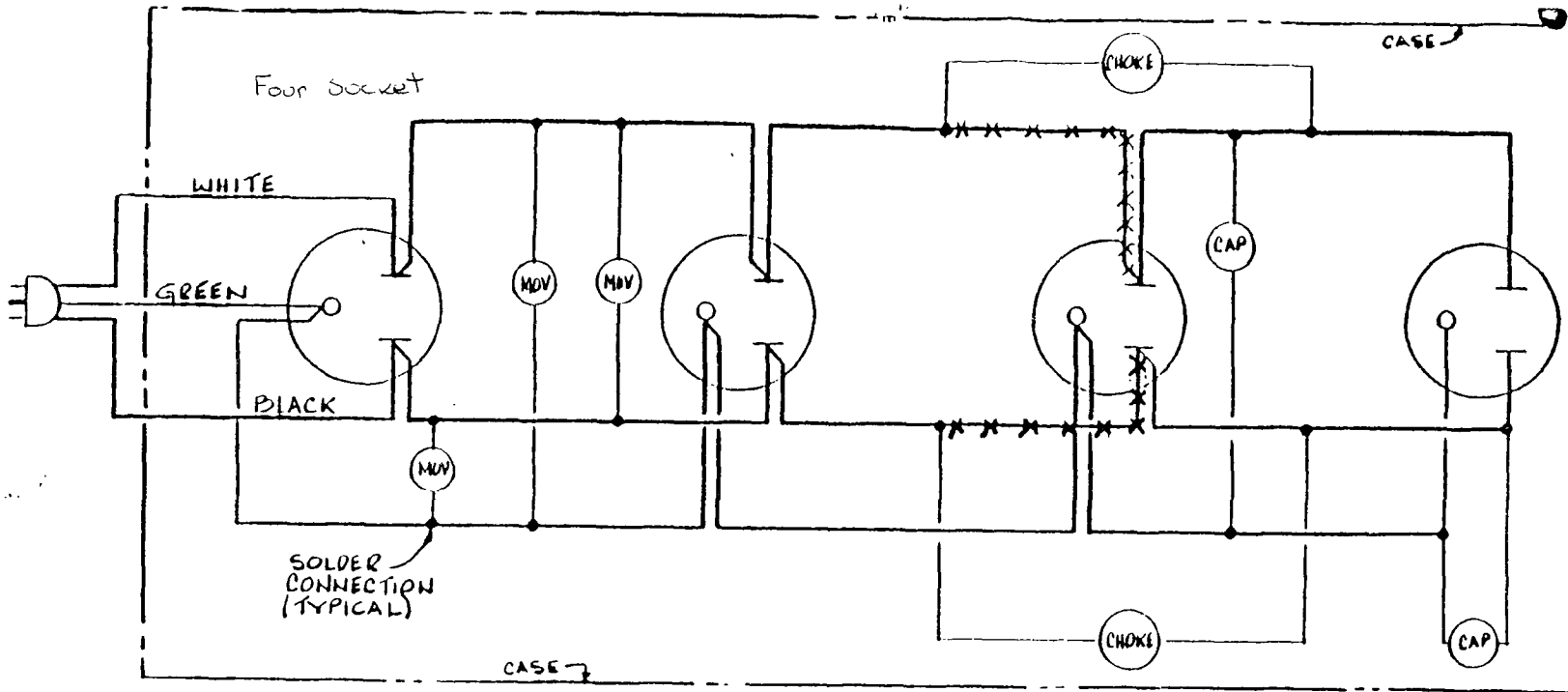
If you plan on just upgrading to a DS drive from you old SS drive, then any drive that is IBM compatible, 40 track or 48 TPI, soft sectored, 5 1/4", 180K, or 360K will work just fine. If you want a second drive as an external unit, then the same thing applies but you will now need a power supply to run the new drive and a case to put the drive and supply in. If you want to use a couple of the newer 1/2 height drives in the PEB remember to get the 1/2 power versions as well. The PEB power supply will not handle two full power drives without some modification.

There are other drives available but they require special equipment to operate with your TI. You may come across the so called Quad Density or 96 TPI drives. These will work with the Myarc controller with a special chip installed so this is best left until you really decide you need more storage. There are also the newest 3 1/2" drives but they also require a special controller.

I hope this clears up a bit about the drive mystery. Hooking up the drives and getting them running properly is an article in itself. If you need help ask at the meetings or if there is enough interest I'll try and put something here in the newsletter. I think I'll stop here since the temperature is about 95 degrees right now and I need a cool drink so have a good summer and type at you all next time.

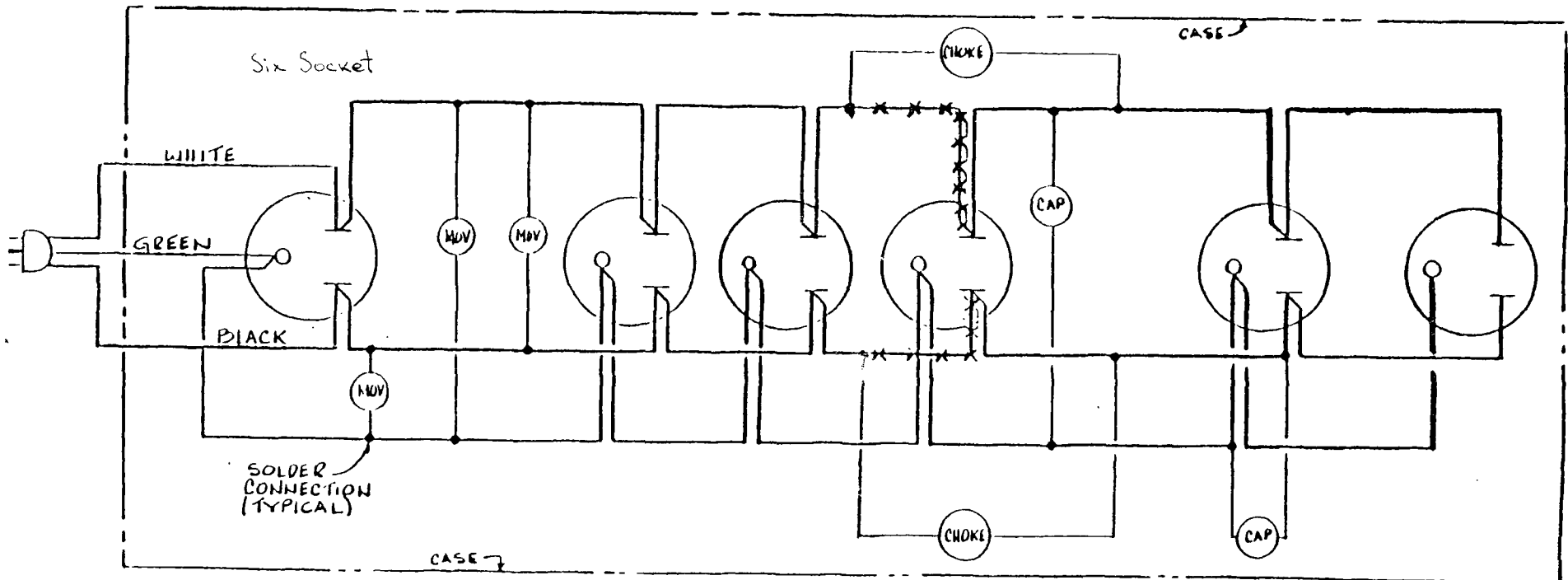


Wiring Diagram
Voltage-Surge Prot. for



Legend:

- EXIST WIRING
- - - NEW WIRING
- X X X REMOVE WIRE
- MOV METAL-OXIDE VARIATORS
(RADIO SHACK 276-5688)
- CHOKE 100 MICROHERTZ RF
(RADIO SHACK 273-102A)
- CAP 0.047 MICROFARAD CAPACITOR
(RADIO SHACK 272-134)



PRODUCT ANNOUNCEMENT

TIGERCUB SOFTWARE
 156 Collingwood Ave.
 Columbus, OH 43213
 (614) 235-3545

TigerCub Software has released Nuts & Bolts Disk #3, containing another 140 subprograms in MERGE format. Contents include 19 screen character fonts, etc.; 17 screen display routines; 6 screen formatting, 8 plotting, 6 joystick and keyboard, 32 math, 4 time and date, 10 input and accept, 9 string handling, 15 file handling, and 9 miscellaneous routines. The 11 pages of documentation contain a programming example to demonstrate the use of each routine.

The three Nuts & Bolts Disks now provide a total of 348 subprograms which even a beginning programmer can merge into his own programs and use, almost like having another 348 CALLs available in Extended Basic. The price of all three of these disks has been reduced to \$15 each, postpaid.

The four Tips From The TigerCub disks, and the 18 TigerCub Collection disks, have been reduced to \$10 each, postpaid. The 100 individual TigerCub programs have been reduced to \$2 each, plus \$1.50 per order for cassette or disk and postage (minimum order \$10). Cassette orders will only be filled until stocks of blank cassettes have been exhausted. TigerCub catalogs are available for \$1, deductible from first order, until stocks are exhausted.

I am very grateful to all of the user groups who have kept me on the mailing list for their newsletters, and I thank all those who have told me that they will miss my Tips. So, I have collected all the odds and ends in my files and put together Tips Nos. 42, 43, 44 and 45. I have also collected all the articles that I have written for my own user group newsletter and for others, plus some lesson plans for an Extended Basic class I have been teaching, etc., and I ended up with 4 full 5 1/4 disks. I can't afford to have these printed and mail them to everyone, but if any user group newsletter editor wants them on disk, I will be glad to send them at no charge. Anyone else can have them for \$5 per diskfull.

Many TI users will be travelling during the summer, and they might like to contact a user group in the area they visit. The only comprehensive up-to-date listing of user groups, as far as I know, is in Computer Shopper. A year or so ago I furnished Randy Holcomb, who wrote the TI Forum for Computer Shopper, my user group mailing list. Since then, TI user groups have almost disappeared from the Computer Shopper list, which is now maintained by the FOG organization. I recently sent FOG a copy of my mailing list, and I hope that they will accept and use it. My list is also available to user groups (and commercial TI suppliers) for the cost of a diskette and mailing, or can be downloaded from the Spirit of 89 BBS (614)237-3412. If you all would give me your telephone contact number, I will add that to the list.

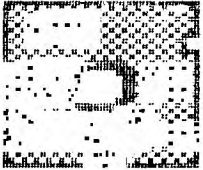
I am mailing this announcement to a number of groups from which I have not heard for some time. If you are still in existence, would you please let me know so that I can add your name to the list?

Jim Peterson

Feature table:

----- DATA BASE NAME -----

FEATURE	ACORN99	DBMS	DB1	DB99	DBX	TURBO DM
RECORDS/FILE	LIMITED	32,000	LIMITED	350-1400	LIMITED	350/710
BY DISK	BY DISK	BY DISK	BY DISK	BY DISK	BY DISK	BY DISK
FIELDS/REC.	54	25	10	28	10	30
MAX. RECORD LENGTH	255	255	245	246	246	255
MAX. FIELD LENGTH	40	40	28	28	28	28
MEMORY REQ'D	32K	32K	32K	32K	16K	32K
LANGUAGE	XB/ASSM	ASSM	XB/ASSM	XB/ASSM	XB/ASSM	ASSM
CUSTOM DESIGN						
SCREEN LAYOUT	NO	YES	NO	YES	NO	YES
SCRN GRPHCS						
CAPABILITY	NO	NO	NO	NO	NO	YES
ALTERED CHAR						
SET USED	NO	YES	YES	NO	NO	YES
CUSTOM REPORT						
DEFINITION	YES	YES	YES	YES	YES	YES
SAVES REPORT						
DEFINITION	NO	YES	YES	NO	NO	YES



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