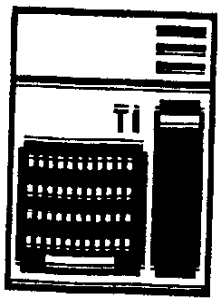

SOONER 99ERS

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POB 61061
Oklahoma City, OK 73146

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JUNE 1989

Greetings again, fellow 99ers... First, let me thank those who have contributed to this issue of our newsletter; Pres. Dave Lewis (father of the Ugly Duckling?) and Ex-Pres. Garth Potts, Multiplan Master. Also, I want to thank the members and editors of those groups we exchange with for their articles. I apologize for sending them back to you in our newsletter, but this way our members get to see them too. I also want to list the other Sooner 99ers who have sent in their articles _____. Now that's done, a pitch for next month; please write your thoughts about a software package, a hardware project, a use for the TI99 or whatever. I will be happy to fix it up if necessary and provide extra copies for your friends and relatives. (I don't guarantee instant fame, but.....) Things have been fairly quiet in the club lately, we have been getting new software but not a lot. I have read somewhere a comment about the size of TI programs; as you already might have noticed, many are HUGE and use a complete SSSD disk or more. Most of the things most of us do, however, are not that large. Many fun games, useful utilities, and important programs are really not that big. I am sure that you are using your computers regularly and often just want to do something 'quick and dirty'. That's the benefit of Basic/Xbasic; you can sit down and write what you need to do what needs to be done. That was how the IUG library began. I know many of those early programs looked AWFUL, but most did the job. If you feel the need, go to work on an old program and speed it up, fix bugs, modify it to do what you want it to do!

What's that I hear? You don't program or aren't very good? Well then, practice! Try it, you might enjoy it! If you get stuck, ask for help and you will learn.
Good luck. Barry Peterson

THE MULTI-TALENTED MULTIPLAN:
(Using Multiplan as an Easy Columnar Word Processor)

Watching our Sooner 99ers club members' reactions to Multiplan demos is akin to observing water coming to a lukewarm boil, but the reality is that for the right task Multiplan is an able performer. I found one job which Multiplan fills perfectly. I compare my summer passion for following baseball to a religious experience. For as long as I can remember this most statistical of all sports provided me with an incentive to learn all manners of the 3 R's: reading box scores, figuring out batting and earned run averages, etc. In a sense, I've merely "graduated" to bigger and more complicated toys. This summer, a bunch of guys organized a Rotisserie (Fantasy) Baseball League which provided me with an excuse to fire up the ole' trusty TI to track our rosters and statistics. The task was to track two sets of rosters for the constant changes due to injuries, trades, etc.

So why use Multiplan instead of TI-Writer? Simple; MP's columnar layout is perfect for the simple breakdown of players, positions, team names, etc. Plus, if I ever wanted to add any calculations, there's no contest. Despite MP's daunting appearance, setting up one of these is really a piece of cake.

I suggest you layout exactly what you want on paper before taking fingers to keys. I wanted to have a total of 8 columns across (2 main columns, subdivided in 4 sections each separated by a column for spacing). First, load the Multiplan disk with the Multiplan module in. Then press "Opt" (Options) and "No" for "Recalc" (Don't need it for this operation and slow as molasses at any time). Next, "Trans" (for Transfer), then "Options" and designate by moving the curser via Ctrl-A, then typing in "DSK2", the data disk drive. Next put in your Printer codes in the first empty block so that you can make the type compressed and 7/72" apart. Otherwise you will be printing your page spread over several sheets. I chose to title my sheet which necessitated printing it out "continuously" over 4 columns because a single column only defaults to 8 characters. This is done by selecting the "Format" command. At the cell prompt type in the Cells you wish to combine (R1C4:7). The ":" connotes "through". Then "Alt-A" to the "Cont" (Continuous) option, press "C", then Enter. You type using the "Alpha", vs. "Value" command and enter your continuous phrases. The same holds true to enter non-calculable digits, such as uniform numbers, addresses, or dates. If you type a number without entering the Alpha command, MP defaults it to Value which will toss it into the the far right end of the column. For underlining a row across, you make an initial "alpha," "-----", then enter. Then command "Copy", "Right" and enter the proper number at the curser for your repetitious "----"'s. You can control the column width through the "Format" command once again as I needed have an extended 20 character name column. Also, editing of a particular line is done through a Fctn or Ctrl-4 (for direction), or Backspace (Fctn-9) or Delete (Fctn-0). Don't use the arrow keys, like a regular word processor unless you are moving around the blocks on your gridsheet. I frequently touch them inadvertently and it automatically enters whatever segment of a word I've typed to that point, much to my chagrin. Those really represent the major commands you need to know. The printing, saving, etc., commands are used exactly like a normal Multiplan file.

Multiplan certainly isn't a full featured word processor, columnar desktop publisher or anything like either. Yet for this limited function it really is the perfect program.

GARTH POTTS Sooner 99ers

FANTASY NATIONAL BASEBALL LEAGUE
June 7, 1989

POS	ORANGE TULLIUS	TEAM	DRAFT #
P	Rick Sutcliffe	Cubs	13
P	Rick Reuschel	Giants	37
P	Ron Darling	Mets	51
P	Paul Kilgus	Cubs	87
P	Rich Aguilera (1)	Mets	5/31
P	Larry Andersen (2)	Astros	5/31
P	Dan Quisenberry	Cards	116
P	Rob Dibble	Reds	129
P	Joe Hesketh	Expos	138
C	Terry Kennedy	Giants	34
C	Steve Lake (3)	Phillies	5/31
1B	Dave Magadan (IR)	Mets	5/24
2B	Willie Randolph	Dodgers	59
SS	Ozzie Smith	Cards	2
3B	Chris Sabo	Reds	23
SS/2B	Kevin Elster	Mets	66
1B/3B	Ken Caminiti	Astros	84
UTIL	Luis Salazar	Padres	96
OF	Kevin McReynolds	Mets	20
OF	Lenny Dykstra	Mets	48
OF	Mookie Wilson	Mets	145
OF	Dion James	Braves	150
OF	Mike Davis	Dodgers	160
DL-1B	Keith Hernandez	Mets	71-5/24
WAIVED	Bob Forsch (1)	Astros	101-5/31
WAIVED	Tim Crews (2)	Dodgers	110-5/31
WAIVED	John Russell (3)	Braves	123-5/31

OWNER MIKE TULLIUS
11213 Cedar Ridge Rd., 73162
H:722-5261,O:524-2400
REMAINING MOVES:21
REMAINING TRANSACTION POINTS:63

POS	ROVAN'S BLACKSOCKS	TEAM	DRAFT #
P	Orel Hershiser	Dodgers	3
P	Jose DeLeon	Cards	17
P	John Smoltz (2)	Braves	1(2-5/6
P	Steve Bedrosian (6)	Phillies	28-5/31
P	Danny Darwin	Astros	74
P	Mike Morgan	Dodgers	89
P	Mike Bielecki	Cubs	94
P	Greg Harris (5)	Padres	5/31
P	Ray Searage	Dodgers	146
C	Benito Santiago	Padres	38
C	Mike Fitzgerald	Expos	125
1B	Rickey Jordan	Phillies	63
2B	Jeff Treadway (4)	Braves	5/24
SS	Rafael Belliard	Pirates	34
3B	Tim Wallach	Expos	26
SS/2B	Tom Foley	Expos	149
1B/3B	Vance Law	Cubs	114
UTIL	Dwight Smith (3)	Cubs	5/16
OF	Tony Gwynn	Padres	12
OF	Marvell Wynne	Padres	44
OF	Mitch Webster	Cubs	81
OF	Terry Puhl	Astros	137
OF	R. J. Reynolds (1)	Pirates	5/8
WAIVED	Candy Maldonado (1)	Giants	130-5/8
TRADED	Roger McDowell (2)	Mets	47-5/8
WAIVED	Curt Wilkerson (3)	Cubs	159-5/16
WAIVED	Gregg Jefferies (4)	Mets	118-5/24
WAIVED	Jim Clancy (5)	Astros	100-5/31
TRADED	Danny Jackson (6)	Reds	52-5/31

OWNER JIM ROVAN
217 NW 34, 73118
H:525-8818,O:278-1550
REMAINING MOVES:19
REMAINING TRANSACTION POINTS:36

AUTOMATED TAX RETURN PREPARATION:
BEFORE AND AFTER

DISK DRIVES #8

by John F. Willforth (PUG May, '89)

This month I'm going to talk about a more technical aspect of disk drives and that is ALIGNMENT. Specifically the Head Alignment. You must first understand the physical relationship between the drive and any media you insert.

COMPATIBILITY is probably the main concern here between the media that you create and that which is created either by a fellow TI user, or any commercial program you purchase. In order to have this compatibility, a standard must be adheared to by all creating the media, and reading it. The Alignment Disk!

Before attempting to align, check:

* Drive rotational speed. For 5 1/4" drives 300 RPM is ideal.
* Check for gummy residue on carriage shafts.
* Check for sloppy or worn parts in all areas governing head travel from the stepping motor to the head(s).
* See if you can read a file that was just written to a disk.
* If single-sided check felt pad on the Upper Arm Assembly.
* If double-sided determine if problem is exclusive to one head, by initializing a good diskette, and monitoring the VERIFY.
* Be certain that Track 00 End Stop is adjusted so as to not limit movement of head(s) to track 0.
* These are some major causes of READ errors, and DO NOT WARRANT ALIGNMENT!

If you can't afford an Alignment Disk as is the case with most of us, get a friend with a new, low mileage disk to create two diskettes for you. One will be just a regular initialized diskette single or double sided as your needs dictate, and the other a diskette with a "LOAD" file runnable from Extended and filled with other runnable programs that will be used in "seat-of-the-pants" disk alignment.

These two diskettes will be used next month, however, since this month I will discuss the right way to do it. Well almost? We won't use a scope to do the adjustment and see the famous "CAT'S EYE", but rather an inexpensive NULL METER made from an ANALOG VOLTMETER and a simple circuit shown in Figure 1. CE Disk refers to "Cats Eye".

The circuit shown below, in Figure 1 can be integrated into the Exerciser I described to you several months ago.

After building the circuit, attach an Analog Voltmeter to "C" and it's ground reference to "D". Attach "B" to the logic ground of the drive being aligned. The hardest part is finding a point to attach "A" which is the read data in analog form coming from the head selected. This will, of course, be found on the drive logic board, and may be a leg of an IC chip, test point or resistor lead, depending on your drive.

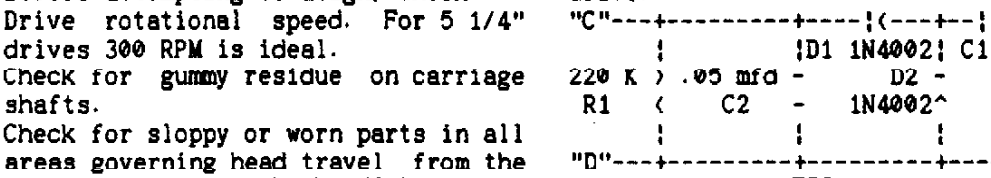

FIG. 1

If you are sure you are now ready, we can put the write protected CE disk another term for the Alignment Disk in the drive. Power up the Exerciser or where you couldn't get one built, you may use your system and a good Disk Utility program that will be used in either case to position and select the head to read the alignment track from Track 16. Before you do any adjustment warm up the drive and media by selecting to turn the MOTOR ON. You may in the case of using your system for this use Advanced Diagnostic, or short pin 16 on the edge connector to the logic board to ground (any odd pin). Do this only with the logic cable disconnected from your controller, but with power cable attached.

When ready, step the head to TK 16, and verify if no reading on NULL METER by stepping one track either direction IN or OUT, also being sure that the correct head has been selected! Locate and loosen the collar, motor housing, or whatever type head alignment device your drive is equiped with. Be sure to hold it as you loosen, so that you are in the general area that you started, and as soon as some freedom is felt, look at the NULL METER. When appx. 3v is reached lock it down. More in June.

ONE GALLON INTO A ONE QUART BOTTLE.

Manipulating files bigger than RAM

PART 1. Understanding Records

By Art Byers, CW 99'ers.

The advent of new data bases, such as FIRST BASE and TI-BASE, that promise scads of storage space is only possible because of some tried and true techniques of being able to sort and search disk files that are much too large to fit into RAM.

Although these articles refer to XB programming, the techniques can be and are being applied to other 99/4A languages. This is really a generic tutorial. You may want to refresh your memory on just how the 99/4A DOS handles file records on disk.

Helpful study references are:

TI Basic User's reference Guide, section II, pages 118 thru 136.

TI Extended Basic Owner's Reference Manual, pages 61,74,82,104,113,138, 144,150,156.

Disk Memory System Manual, pages 30-36.

Think of storage of information on a disk rather like storage of folders in a file cabinet. Each folder can hold so many sheets of paper, and each file drawer or cabinet a finite number of folders. So our disks can hold a finite number of pieces of information, so many to a sector, so many to a disk. This information and what we can do with it is really the heart of soul of one of a computer's most useful functions. It can sort and search. It can store and retrieve information very quickly. It can update files, etc.

It does not matter if the information retrieved ends up on the screen as a chart, drawing, a digitalized reproduction of a photograph, or becomes an invoice going out to the printer through the parallel port. The time and effort saved, in that we do not have to go to a file cabinet, open the drawer, search for a file folder, remove a sheet of paper that has the information we are seeking, copy it or modify it, put it back into the folder, put the folder back into the drawer etc., is really what computing is about. The 99/4A is pretty good at handling files and records. Let's take a look.

When the TI-99/4A first came out, it was, in many ways, superior to most of its contemporary home computers. Among these superiorities was its many flexible and varied methods of handling disk files. Even many years later, a few much newer well known computers have yet to match it. Let me give you just one example out of the many possible: My friends with Apples and IBM PC's, who program in Basic, must use error traps to find the end of a file. The 99/4A has the EOF(n) function instead.(a)

Among the best features of a good computers' file access is the ability to go directly to a disk file and read a single record of our choice, modify it if we want and rewrite it back to the same place on disk. Additionally, a record can be divided into segments or fields. Each part of a record can then be accessed and read and, if we choose, changed and rewritten.

If we want to obtain specific record numbers at will, we must set up our files as random access or RELATIVE files. If we have only one field in the record, it can be read with either INPUT or LINPUT. However, if we have divided the record into several fields, it must be read with INPUT. There is a small problem with INPUT and DISPLAY VARIABLE files in that it recognizes the comma as a field divider and will only read a string until it comes to a comma. Therefore, text records having commas are best read with LINPUT.

To avoid system errors, the INPUT statement must match the record format. If you have stored 4 numbers in four fields of a record, INPUTing 5 fields will cause a disrupting error. For example, if we have OPENed file #1, record 6, and PRINTed four fields with four numeric values - 10,15,20,25: trying to access the information with INPUT #1, REC 6: A,B,C,D,E would have one field too many and cause an error.

You can mix numeric and string data fields -that is format fields any way you want. ie PRINT #1, REC 8:A$,B,C, D$,E$,F. However, you must then INPUT or read them off the disk in the exact same form they were written. You cannot read a string record as a numeric field.

When we OPEN a disk file, we must specify the length such as DISPLAY, VARIABLE 80 or INTERNAL, FIXED 127. The TI manuals tell us that the most efficient method of file storage for the 99/4A is in binary or INTERNAL form. In order to use our available disk storage space to its maximum efficiency, we need to know what size or length to set our records. If a record is only 10 bytes, we can fit 25 records to a sector. If it is 125 bytes, we will get only 2 records to a sector. How do we count Bytes?

Take a look at the PRINT list. Assume we are writing two fields - one numeric and one string of 18 characters. PRINT #12,REC 22:N,M$

When written to an INTERNAL format file, each numeric item will use 9 bytes. The first byte gives the length and is always followed by 8 bytes for the number. A String also has a length byte followed by one byte for each char, so the 18 char field would take 19 bytes. We also need one byte for each of our field separators, the comma, totaling that up means a minimum of 29 bytes for that record. I think there is also one byte of

other disk overhead used so we would end up needing 30 bytes for each record. If we have made it a fixed length record and some strings are less than 18 characters, the empty spaces are padded out with binary zeros. If the strings are longer than 18 bytes, they will be truncated. We can get eight 30 byte records to a sector. It follows that because a SSSD disk has 358 usable sectors, the format described above would allow 2864 SUCH records on the disk.

The 99/4A disk system starts numbering records with zero as the first record number. Record #1 is actually the second record of the file. I have found it useful to store pertinent file information in record zero and begin data storage with record #1. When we begin reading data, we either RESTORE the pointer to record one, or specify the record number in the INPUT statement. In record zero I usually put the title of the file, number of records, date of the last update, a password if required by the software, etc. This is a carry-over from my early days of using Cassette for data file storage. The OS for cassette does not create or recognize end of file markers and it was customary to either load all the needed info as to number of records etc into the very first record or place a dummy marker file as the last file record and have the program look for the dummy file and take appropriate action when it was found. (b)

When programming for cassette, the first record would be read and the number of records obtained so that the balance of the records could be read with a do loop. (FOR/NEXT in Basic). The title and last update printed on the screen helped us to know we had the correct file, etc. I see no reason to abandon this just because data is now on disk.

Since access to cassette was so slow, when we first got our 99's, we tended to make our data files small enough so that everything could be read into RAM and searched, sorted, changed, in RAM, as that was very fast. Then everything was rewritten out to tape, even the records we might never have touched.

Although disk access speeded up data retrieval, its most important time saving factor was the ability, mentioned above, not to have to read a whole file into memory, but rather to go like an arrow to a target bull's eye and pick out one record or even a segment of a record.

However, there is another side to this - in short order we soon had more information, more records in storage on disk than would fit in RAM. This is not unique to our computer. Even main frames have massive amounts of data stored on tape or disks that they cannot fit into RAM. For home computers, the need to speed up data access has resulted in RAM-disks and Hard disks a/w/a floppies. That has just made some problems worse. There is no way to fit 20 meg of hard disk info into a PC's RAM. If we can't fit all this into RAM, how can we work with data without innumerable time consuming accesses to disk, no matter how fast the access may be. How can we sort a file too big to fit into ram? How can we search huge files without it taking hours and hours to go through hundreds or thousands of records??

Before we go on to the techniques of solving these seemingly impossible problems, you must fully understand how the 99/4A stores data in record form because it is the individual records we will be reading and manipulating as we search, sort, change, and rewrite back out to disk.

The next part will explain how we can sort and search large disk-based files.

Footnotes:

(a) There is an evident contradiction in the TI manuals listed above. TI BASIC warns on page II-129 that EOF() cannot be used with Relative files. This caveat is not mentioned in either the XB or Disk System manuals, and in fact the other two say specifically "The EOF() function always assumes that the next record is going to be read sequentially even if you are using a RELATIVE file." This implies that EOF() will work with RELATIVE files in XB, and in fact, that is true.

(b) A side comment: Cassette files have one safety feature lacking in disk files. If you have an electric power lapse, or computer failure while saving a disk file and it is not properly closed, you will have real difficulty retrieving your data and will need considerable expertise to do so. With a cassette file, all you will lose is the single record that was being processed when the failure took place. You will be able to read and retrieve all the other data on the tape with a few lines of simple Basic programming. This is true only for Data file storage. A program being stored on tape will be busted by a failure during the storage process.

(To be continued)

MY EXPERIENCES WITH THE DIJIT SYSTEMS AVPC CARD

by Charles Good
Lima Ohio User Group

INTRODUCTION:

Lets be honest with ourselves. Probably the biggest single technical limitation of the TI99/4A, besides limited CPU memory, is its lack of an 80 column text display. With only 256 pixels of screen width to play with, there is absolutely no way you can get 80 columns. Each letter would be only 3 pixels wide with no space between letters! Perhaps some of you have seen the 64 column TI Forth editor or the 64 column DV80 text scroll program that is in many user group libraries. These 64 column displays are just awful.

Yes, I know you can simulate 80 columns with left/right windowing as in the TI-Writer or Funnelweb text editors. But actually reading an 80 colum page on the 99/4A's 40 column screen with these text editors is a big pain. You have to keep pushing FCTN/S as you scan left/right on each line, and it is sometimes hard to move your eyes from the end of one line (right margin) to the beginning of the next line (left margin). You can also view 80 column text on the 99/4A's 40 column screen without windowing by using T(ype) with DM1000 or V(iew) with DSKU or the Funnelweb 40 column editor, but the resulting text display on the screen is less than satisfactory. Each actual text line wraps on the screen to become two screen lines. You do not get a "what you see is what you get" (WYSIWIG) display and words get cut into two parts at the point of line wrap.

The lack of an 80 column display with the 99/4A is a major reason cited by previous TI users who have sold their TI systems and purchased IBM clones for home use. This is based on conversations I have had with several ex TI users, including two past TI user group presidents, who have abandoned the TI for IBM land. Hardware and software that permit an 80 column text display is really needed to make our 99/4As technically comparable to the competition and to maintain user interest.

THE 80 COLUMN CHOICES:

Currently there are only two hardware choices if you want to upgrade your TI to 80 columns, the Myarc Geneve computer on a card or the DIJIT Systems AVPC card, both of which use the TI PE box. Both use exactly the same video chip and thus both have exactly the same capability to produce 80 column text using a screen width of 512 pixels. You can also display up to 512 colors at a time, if you have the right color monitor. This color display is said to be comparable to or better than the display of any other currently available personal computer.

The Geneve currently costs about $500-$520 new and gives you a nice 101 key keyboard and lots of CPU memory. There is, however, very little software that takes advantage of all this CPU memory. Most of the commercial and PD software available for the Geneve is also designed to run on the 99/4A and thus doesn't use vast quantities of memory. Based upon conversations with Geneve owners present at the Nov 88 Chicago faire, the answer to the question "What can your Geneve do that the 99/4A can't do?" is usually "Not much other than 80 columns and better graphics." Those same Geneve users also complained about what their computers would NOT do. This and that software which runs fine on the 99/4A has problems when run on a Geneve. I suspect that the full potential of the Geneve, with all its CPU memory, may never be utilized. Because of the small user base (estimated in exchange newsletters to be much less than 2000), there is no financial incentive for the few existing TI assembly language programmers to write really massive programs that utilize the Geneve's large CPU memory. Such software would be too big to work from a 99/4A.

The main subject of this review article, the DIJIT AVPC (advanced video processor card), costs $220. To date, discounts are not available.

Functionally it appears to me to be the equivalent of the Geneve without the fancy keyboard and without the extra CPU memory. With the AVPC and a 99/4A system you can run some of the software that is designed specifically for the Geneve in GPL mode. The AVPC is the only currently available alternative to the Geneve for 80 column work using a system built around the TI peripheral expansion box.

Until recently a third choice existed for 80 column work. Mechatronic, of West Germany, manufactured a circuit board that plugged into the side expansion port of the 99/4A console and used the same video chip as the Geneve and the AVPC. This product is, however, no longer available. On Feb 15, 1989 I gave TAPE Ltd of Ontario CA a telephone call and talked to the owner Franz Wagenbach. TAPE is the only North American importer of Mechatronic products. Mr. Wagenbach told me that he is completely sold out of all Mechatronics hardware, and with the exception of the TI mouse he does not expect Mechatronics to manufacture any more TI hardware products in the future. Mr. Wagenbach did say, however, that if he had in hand 100 prepaid orders he believed he could convince Mechatronics to resume production of its 80 column peripheral. Uh huh! Don't hold your breath waiting for this to happen. TAPE's phone number is 714-989-9906. Mr. Wagenbach stated that he DOES intend to stay in the TI market and offers products not available from other sources, including Mechatronic

XBII Plus (a module I think), the 99/4A intern book, and the TI Mouse (used instead of a joystick from the joystick port).

As currently sold the $220 AVPC card comes with 128k of RAM governed by the Yamaha V9938 video chip. The AVPC card requires the use of a composite monochrome 80 column monitor ($75-100) or an Amiga compatible RGB analog color monitor ($275-$500). See the discussion of monitors elsewhere in this newsletter. YOU CANNOT USE A TV OR A COMPOSITE COLOR MONITOR OR A TTL MONITOR WITH THE AVPC CARD FOR 80 COLUMN WORK. There are sockets on the AVPC card for an additional 64K of VDP RAM which can be directly accessed by the V9938. However, to date no software has been written to take advantage of this extra 64K, so to keep costs down the AVPC leaves this memory for future expansion. The Geneve also has 128K of VDP RAM and the V9938 chip, but with the Geneve there is no provision for adding the additional 64K. You plug the card into any empty slot in the PE box and make a slight modification to your console, as described below. A DIN 6 video port and a 9 pin DB-9 light pen/mouse port are at the back of the card and stick out the back of the PE box. You run a cable directly from the video port of the AVPC to the monitor video input. For sound, you need a separate cable between the console and the monitor audio input. You have to make these cables or have your dealer make them for you. They

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are easy to make using the "typical monitor connections" section of the AVPC docs and parts from Radio Shack.

NECESSARY CONSOLE MODIFICATION:

"What? Modify the console! Not me," you may be saying. I understand the fear many have of taking your favorite computer apart. Believe me, you can do it. No soldering is required, and the job is only a little more complex than taking the console apart to clean out the cartridge port. The documentation that came with my AVPC is labeled "Preliminary Copy" and contains excellent step by step written directions and detailed diagrams relating to the console modification. Working very slowly while carefully reading the instructions the console modification took me about 1 hour from start to finish. If the job had been at all difficult I wouldn't have attempted the modification. DIJIT SYSTEMS will do the work for you for $25. if you ship them your console.

After completely disassembling the console and exposing the mother board the first thing you do is sever one of the printed traces on the circuit board. You need a good hand lens and an xacto knife for this job. I used a 10X microscope eyepiece removed from the microscope and turned upside down for my hand lens. You use the hand lens to make sure that absolutely no metal remains at the point where you are severing the trace. You then remove the console's VDP chip from its socket, bend out one of the pins, hook a wiring harness to some of the chip's pins, and reinsert the chip in its socket. The wiring harness has very tiny insulated spring loaded clip hooks resembling the sort of clip hook one finds on the end of a dog leash. I have seen these tiny insulated clips at several area Radio Shack stores. The use of these clip hooks eliminates the need for soldering, and they are quite reliable according to the AVPC documentation.

WHAT CAN YOUR COMPUTER DO
WITH THE AVC AVPC?

In my opinion 80 column word processing is the most important useful application of the AVPC. The card comes with a public domain 80 column version of TI-Writer and is also distributed with Funnelweb v4.13 in 80 columns. Charles Earl told me at the Nov 88 Chicago faire that PRESS will work in 80 columns with the AVPC (if and when PRESS is ever released).

I am writing this article using 80 column Funnelweb v4.13. I can't imagine ever wanting to go back to a 40 column text editor. I really like the 80 column Funnelweb! One of the nice features is the ease with which you can V(iew) a file that is listed in the ShowDirectory display. You don't have to load the whole file into memory to V(iew) it, and this is nice because loading a large file into memory can seem very time consuming. Just mark one of the 20 displayed files and (if it is a DV80 or DF80 file) press V. The first screen full

of text from the marked file appears in 80 columns. The first and last file line numbers of the screen display are also indicated. If you want to look at the next screen full of text from the file press any key. If you want to abort viewing the file, press BACK and you are returned to the ShowDirectory display. From there you can view another file. If you want to check the contents of another disk while the ShowDirectory is on the screen, just insert the disk, press REDO, and the new disk directory appears on the screen. All of these features of Funnelweb's 80 column ShowDirectory make it real easy to quickly scan a disk full of text files, such as Central Westchester's "newsletter on a disk", and then read specific files on the screen.

Another thing you get with the AVPC is the ability to display high resolution graphics in up to 512 colors. The card comes with a utility that allows you to view any graphic that is in MYART format. You need a Geneve to create new pictures with MYART or to convert other graphic formats over to MYART format. Once these graphics have been created, however, they can be viewed using a 99/4A system that includes the AVPC card. The results are sometimes spectacular. Several nice MYART pictures are included on disk with the AVPC.

A number of graphics demonstration programs and fractal programs originally written on the Geneve work just fine with the AVPC. Some of these are distributed with the AVPC and others are available from the DIJIT Systems BBS. These "gee whiz" demos are fun to look at but don't do anything really useful.

In the area of Terminal Emulation software, there is an experimental version of Fast Term that works, with a few bugs, in 80 columns on the AVPC. TELCO versions greater than 2.0 use the extra VDP memory of the AVPC as a sort of RAM disk to store TELCO modules. Using the AVPC, TELCO executes much faster than it does using a 99/4A without an AVPC card.

I understand that there is a MULTIPLAN patch available that allows the AVPC to display MULTIPLAN in 80 columns. I don't have this software yet.

You are supposed to be able to use mice and trackballs with the AVPC, but I am not sure for what. There is a "mouse/light pen port" on the AVPC. Assembly language mouse routines have been written for mouse use in assembly language software and from XBASIC. DIJIT systems provides these mouse routines as well as detailed instructions on how to make cables to properly hook just about any of the currently marketed mice to the AVPC. To date, no software that actually does anything has been written to take advantage of these mice.

As this article is being written, DIJIT Systems is demonstrating a video digitizer (the DIJIT-EYE-ZER) at the Feb 89 TI FEST WEST. This device is said to include Genlocking and "real time frame grabbing". It is a peripheral that attaches to the AVPC card. The digitizer will be able to create a computer image in 1/25 of a second of anything seen by a video camera, a video tape, or off the air and seen by a TV. I have no information on price or other specifications. This sounds like a very serious, and expensive, piece of equipment.

Software not specifically written for the AVPC runs normally in 28, 32, or 40 columns just as it would without the AVPC. Because you are using a better monitor with better resolution the screen display with this software is much sharper. You can easily see every individual pixel of the 256 pixel wide normal screen display.

WHAT YOUR COMPUTER CANNOT DO WITH THE AVPC CARD:

It seems that whenever a new peripheral comes out it turns out that this or that software won't work with the new peripheral. This is true for the AVPC, although I suspect that the list of 99/4A software that won't work with the AVPC is much smaller than the list of 99/4A software that won't work with the Geneve.

Any terminal emulator software that uses interrupts will have problems with the AVPC. TELCO works ok, most of the others don't. The problem is with the ROM based software that is part of the various RS232 cards. DIJIT has solved this problem by selling EPROMS for the TI, CorComp, and Myarc RS232 cards that make these cards fully compatible with the AVPC.

Most versions of the Horizon Ramdisk software based ramdisk operating system (ROS) are partially incompatible with the AVPC. The problem shows up in software that is designed to use 80 columns of text. With FUNNELWEB for example, you can boot the 80 column FWB editor from a Horizon just fine, and you can without difficulty exit the 80 column editor and go back to other parts of FWB that are stored on a Horizon. However from within the 80 column FWB editor you can only load or save text files with LF and SF to and from a floppy. You can't LF and SF to and from a Horizon if you use FWB's 80 column editor or the public domain 80 column version of TI Writer that comes with the AVPC. Using the FWB 40 column editor causes no problems with LF or SF in 99/4A systems equipped with an AVPC. The solution is simple. Load a corrected ROS into the Horizon's RAM. Such an ROS is available from Bud Mills Services (manufacturer of the Horizon and owner of the Horizon ROS copyright) and from DIJIT. This special ROS makes the Horizon fully compatible with the AVPC. Unfortunately, the ROM based Horizon

operating system sold by Genial Computerware cannot be corrected, because it is in ROM. The AVPV card is not compatible in 80 column mode with Genial Computerware's Horizon EPROM operating system, which exhibits the problems with LF and SF described above.

The following 99/4A software is known by me not to work properly on systems equipped with an AVPC card. There is probably other incompatible software that I don't know about.

---BOOT v4, by John Johnson, will not boot programs from its menu. You can, however, bring up a disk directory with BOOT, mark a program, and then boot the marked program from LOAD A PROGRAM.

---EZ-KEYS PLUS appears to load properly, and the macros appear to work. However, if you load (or type in) XBASIC code after loading EZ-KEYS PLUS, the XBASIC code will not work properly. On systems equipped with an AVPC, EZ-KEYS PLUS does not properly print out 28 column lists of XBASIC code with checksums added.

---QUICK RUN doesn't work at all. XBASIC programs that have been modified on another 99/4A computer to run quicker won't run at all on systems that have an AVPC.

MANUFACTURER SUPPORT FOR THE AVPC

DIJIT systems has a free BBS to support its products. The BBS is available to anyone, not just registered AVPC owners, and the only cost is your telephone charge. The BBS contains text files, software, and MYART picture files in its download section. This BBS was the first in the country to have Funnelweb v4.13 in 80 columns available for download. Any new software that is found to be compatible with the AVPC is put on the BBS. There is also an upload section and an E mail section that allows you to leave and receive messages for DIJIT's owner Tom Spillane.

You can also talk to DIJIT over the phone using plain old-fashioned voice communication. I have DIJIT's voice line a call and almost immediately the phone was answered by Tom Spillane, DIJIT's owner. Tom gave me direct answers to some questions I had about the AVPC, and provided some of the information used in this article. I really appreciate this kind of manufacturer support.

The AVPC is apparently a completely open system. Unlike Myarc, which is keeping to itself important information about its Geneve computer, DIJIT will provide any and all technical information about the AVPC to anyone who asks. In its promotional literature DIJIT mentions a "programming package" that they will send out to those who wish to try their hand at programming for the AVPC. Personal communications I have had with Tony McGovern (author of FUNNELWEB) and Charles Earl (author of TELCO and PRESS) indicate that DIJIT Systems has been very generous in providing all needed technical details about the AVPC for programming purposes. To date, DIJIT has not marketed any of its own software and has relied on others to write software for the AVPC. If DIJIT does stay out of the software marketing business there is no reason for DIJIT to keep any details of its hardware a secret. DIJIT apparently does not want to make the same mistakes that TI made when TI tried to corner the market for 99/4A software.

THE FUTURE OF THE AVPC CARD:

The AVPC is like the Geneve in that it is a piece of hardware in need of really good assembly language software. There are relatively few really good assembly programmers left in the TI community. Besides the software already available, there is the definite promise of Charles Earl that PRESS will work with the AVPC in 80 columns, and a vague suggestion by Tony McGovern (in the doc file that accompanies the 80 column Funnelweb editor) that he may do further programming specifically designed for the AVPC. DIJIT's "open system" policy may very well encourage other software programmers to create software for the AVPC. Nevertheless, I think it would be unwise for 99/4A users thinking of "upgrading" to purchase the AVPC and wait for desired software to appear later. There are disappointed Geneve owners who are still waiting for software. Take a look at the software and hardware peripherals described above that are currently available for use with the AVPC and make a purchase decision accordingly. Don't assume that any fantastic new stuff will come along in the future. Maybe it will and maybe it won't. If you don't like what is available now, wait for the future to arrive if it ever does. Personally I find the ability to do word processing in 80 columns with high quality software (Funnelweb, maybe later PRESS) fully justifies the $220 I paid for my AVPC. My AVPC will help maintain my interest in my 99/4A system and postpone, perhaps indefinitely, the need to "upgrade" to an IBM clone system.

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HIGH RES GRAPHICS AND THE 99/4A

PART 1

by Anne Dhein

Our Heritage

CONTINUED FROM LAST MONTH..... Besides Sketchmate, Amerisoft International introduced several other graphics packages during 1984, most of which are now hard to find. Graphics Grabber is much like the earlier Screen Dump Utility from Extended Software except that this newer program is in assembly language and much faster. It can dump a screen either horizontally or vertically onto the paper, and the printout is larger. Master Painter 99 is a very useable drawing and painting program, but like Draw A Bit requires the remembering of quite a number of function key strokes in order to use. Like Draw A Bit, it also has a hard-to-read manual. A screen dump is on the disk.

3D World had a new twist. It allowed one to make complex, colorful, 3 dimensional designs that could be rotated, inverted or made partially invisible. Designs could be saved to disk or printed out. Programming experience is not necessary in order to use the program. Access to the image file for use in a Basic program is explained in the manual. Be prepared for a learning experience when you use this program. It's complicated, but very interesting if you have the time to spend.

Expanded Graphics Basic lets you add 30 new commands to either Basic or Extended Basic. After XGB is loaded into the computer the new commands can be accessed by a series of CALL LINKS right along with the regular programming language. Although not a drawing program per say, it does allow the programmer fairly easy access to the bit map mode and to screen drawing. The commands include graphing and plotting routines, and a screen dump. Like 3D World it is a fascinating educational experience to use this program if you have time to spend. It is an ambitious program, with nearly all available memory used up. If you aren't careful you may run into errors due to memory full, and lose your data.

Quality Software's Draw 'N Plot also lets you add a number of new graphics commands to your Extended Basic programs by means of CALL LINKS. But besides the eleven callable subroutines, Draw 'N Plot includes a drawing editor which allows drawing and erasing a pixel width line. Circles, squares, and lines between two points may be drawn automatically. Shapes may be filled in solid on command. Use of color is limited to two at a time - Forground and background. Pictures may be saved to disk or printed. Although this package does not support some of the nicer frills such as magnification, rotation, etc., it is the best program yet for adding graphics to XB programs. However, like Expanded Basic Graphics, be warned that memory is a problem. You can crash the system if your program is too large!

A companion disk, Chart Maker, originally worked with Draw 'N Plot to create all kinds of charts and graphs. The newer version of Chart Maker only requires Extended Basic. Quality 99 Software has done an excellent job of keeping their programs revised and updated since they began putting them out in 1983. Their graphics programs also include a Banner Maker and a very fast Screen Dump which will even print module screens if an interrupt switch is installed on the computer.

With so much graphics software coming out so fast for awhile, it was hardly suprising that some of it would be obsolete almost before it hit the market. Navarone's Paint 'N Print cartridge was originally meant for the unexpanded system. Apparently not enough users were interested in a software package which only did about half of what competing programs could do. In an effort to save Paint 'N Print from complete obscurity, Navarone released a companion disk which greatly expanded Paint 'N Print's capabilities. But by that time there were many graphics packages on the market competing for the customer dollar. One of them was Graphx. Another was TI Artist, which, along with Graphx, would radically affect the 994/A graphics software market.

Graphx - The Giant of the Industry

Graphx got its start in Australia, and was such a good paint program that before anybody realized what was happening, the era of the TI 99/4A Paint Program was in full swing. With Graphx, freehand drawing and erasing in the bitmap mode are controlled by the joystick. It offers speed control and full color capability. Circles, boxes and lines can be drawn automatically. Shapes can be filled with built-in patterns as well as color. Portions of the picture can be copied and/or moved to another location in the picture, or even to an entirely different picture by means of the "clipboard" feature. Text may be incorporated into the drawing. A "zoom" mode lets the user view and edit a small portion of the picture that has been magnified to four times its original size. The resident screen dump prints to an Epson or compatible printer in four different formats. A unique feature of Graphx is the aforementioned clipboard which lets you store and retrieve parts of pictures while you are working on them. Picture parts or special alphabets (fonts) can also be saved to disk to be incorporated into drawings whenever you

want them. With the clipboard, you can also try your hand at computer animation. This program's not only easy to use but has an excellent tutorial/reference manual that comes with it. The manual even explains how to display a Graphx picture file in an assembly language program.

TI Artist, like Graphx, was a sleeper at first. But it quietly ran down competition until, today, it is the frontrunner of all graphics programs. Like Graphx, TI Artist can be used almost without ever referring to the manual. Drawing and erasing are done freehand in full color with various brush widths and with most of the frills that Graphx supplies plus some of its own. The screen dump is the best of any program around, and will work with practically any printer. Another thing that makes this program a winner is the ability to take files from other popular paint programs and convert them to be used with TI Artist. But the one feature that makes this program really outstanding is the ability to save any part of a screen as an "instance". This instance is saved in a display/variable 80 file format that can be looked at by TI Writer. When converted, the numbers in this file can be used for Call Character routines in Basic, or even for transliterate codes that will dump graphics into TI Writer files! These features make TI Artist the most versatile program on the graphics market, and have spawned a new type of software: Artist support packages.

As support packages pour out for Graphx and TI Artist, these two have become more and more established as the best paint programs for the 99/4A, and fewer paint programs are being introduced. Bitmac, which made its appearance in 1985 was another good program doomed to obscurity. Authored by David Vaughan, Bitmac was simultaneously introduced by Data Biotics and Vaughan Software, both of whom claimed copyrights. Despite its cloudy beginnings it is a nice program with many of the features of Graphx and TI Artist as well as a couple new ones. This program is operated by icons which are pointed at with the Joystick. To select, the fire button is pressed. Besides the standard features you would expect a good drawing program to have, this one can reduce or enlarge your drawing for you - something neither Graphx or TI Artist can do at this point. A screen dump to Epson compatible printers and a Slide Show feature are also contained right within the program. Where Graphx has its Clipboard feature and TI Artist has its Instance file, Bitmac has its Boolean input. This option allows the user to overlay current screen graphics with graphics that are stored on a disk. For an advanced or specialized user the program also has an interesting coprocess feature which allows the use of a second computer, not necessarily a TI, to calculate plots for Bitmac. All you need for the second computer is an RS232 and the proper cable to interface it to the 99/4A's RS232/2 port. With this setup, very elaborate and beautiful graphics can be created on the 99/4A while the second computer manipulates data for business graphs, maps, satellites or a host of other things.

Because of their unique differences, Graphx and TI Artist have been able to flourish side by side, complimenting rather than competing with each other. As yet no other program has come close to replacing either of them, but there may be a contender in the newest paint program. Joy Paint, from Great Lakes Software has some impressive new features of its own. Like TI Artist and Graphx, it is a full-fledged paint program, with one exception: it has no color capability other than a choice of screen background color and black or white for the pencil. The lack of color is not necessarily a disadvantage - you may never use color anyway if your main objective is to dump the graphics to a printer. Painting here refers to filling in with patterns, and Joypaint has a large selection of patterns with which to paint. With the companion disk, Joypaint's Pal, you can even create and save you own patterns.

Joypaint is fully Joystick controlled. The drawing board features are accessed by pointing your drawing tool at the function you wish to use and pressing the fire button. Parts of drawings can be moved, copied and even enlarged, but only with 10,000 pixels at a time. Since there are somewhat under 50,000 pixels, that's just over 1/5 of the screen area. Joypaint employs a windowing technique that allows 92% more drawing space than just the normal screen. Joypaint's Pal allows files from other programs such as Graphx and TI Artist to be converted to the Joypaint format, and back again, so compatibility is carried on. This easy-to-use program is truly impressive! Whether or not it will catch up to Graphx and TI Artist in popularity may depend more on what kinds of companion disks become available for it than anything else.

Now a better definition of a drawing package can be given. As seen here, it is a program, or group of programs, that will allow users of the 99/4A to create high resolution graphics on the monitor or TV screen. The graphics should be able to be saved and later reloaded, edited, and, in most cases, printed to a dot-matrix printer. High resolution means that each pixel can be placed anywhere on the screen individually and removed (erased) as desired. We have seen that the programs discussed here can do this and much more besides.

The next thing to consider is, how the program is to be used. The program you buy for your own use should be a program which will best do the things you want and need a paint program to do. There are three distinct ways in which a drawing package can be of value: as a utility for adding graphics to your own programs, as a tool for designing slide presentations and printed material for business and home purposes, and last but not least, as personal enrichment. Using a drawing program in this manner can be rewarding and satisfying as well as simply entertaining. Each of the packages focuses just a little differently on these three aspects, and this is something that will be explored further in the next issue. Part 2 will set up a comparison chart that will let you see at a glance just what each of the 10 main drawing packages for the 99/4A can or cannot do, and how each can best be used. Following the chart, each function will be described in detail. As you go down the list you will see that each program has some features that no other program has, and which may make it the most important program for YOU.

THE UGLY DUCKLING

INTEGRITY 101
(or how NOT to run a mail order business)

Back around Christmas I got very interested in the possibilities of exchanging IBM PC files with my Geneve. I asked a bunch of dumb questions, looked at PC Transfer and Macflix, and decided to purchase copies of both programs. I remembered a blurb in Micropendium about the Macflix program so I sent off a check for eleven dollars to our good friends at Genial Computerware.

Genial has never really been noted for their high speed in filling orders - despite the well known Federal Trade Commission regulations which state that all mail orders must be filled within 30 days - so I was prepared to wait four or five weeks for my program. After about five weeks and the return of my cancelled check I fired up my computer, placed MYWORD in "What's the problem guys ?" mode, and sent a letter to Genial asking about the hold up. We all know that expecting a reply to any kind of a reasonable inquiry is futile these days and about three weeks later, with no reply from the Bay State, I engaged the full blown nasty mode of MYWORD and reminded Genial that I would be pleased to contact the Massachusetts Attorney general's Office, the Postal Inspectors, the Better Business Bureau, the CIA, the FBI, the NRA, and anybody else I could think of concerning the non - delivery of my software.

Two weeks later there was still no reply. Since I was fairly sure that Massachusetts had not been swallowed by the Atlantic Ocean (such an event would have been covered in the Daily Oklahoman - under "civic improvements" no doubt) I became convinced that the boys at Genial weren't all that interested in filling my order, or assisting me with my problem, but were awfully interested in holding on to my money. At that point I contacted every consumer protection agency that I could find in that part of the world and waited to see if I could get somebody to listen to me.

Within less than a week I received a phone call from Genial. They advised me that 1) I had made an error on the price of the program - it was fifteen dollars rather than eleven - and 2) they just handle the money and don't actually fill the orders. I'm a little slow when it comes to such complex financial dealings, but apparently when orders are sent to Genial for a particular program, the check is deposited and the request for the program is forwarded to the author of the software, who is then responsible for shipping the merchandise. They claimed that my original order, various requests for information, and complaints had all been sent along to Peter Hoddie, the author of Macflix, and he should have sent me a card advising me of the difference in price. I advised Genial that I'd send them a check for the difference and asked them to get their act together and fill my order.

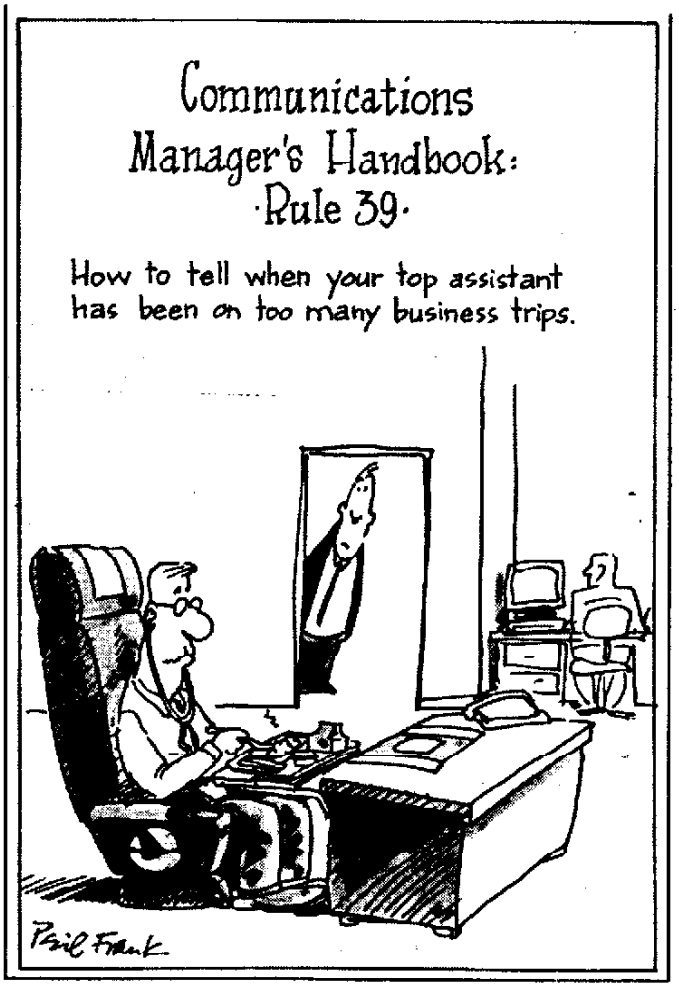
At this point, about a month after my phone conversation with Genial and over five months since my initial order I am fifteen dollars poorer and still without my software. I'm beginning to have serious doubts about this whole business and I really can't imagine what the problem is.

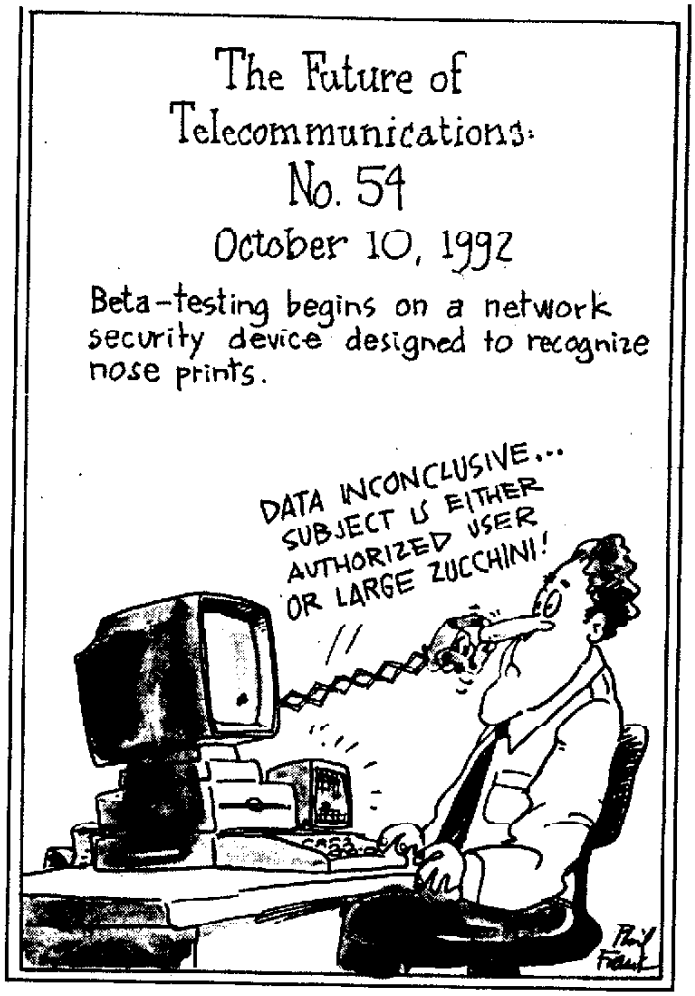
Fifteen bucks isn't all that much money - I've blown that much on a round of golf or on a tough steak. I do wonder, however , why Genial can't conduct business in a reasonable and timely manner. I've operated a number of part time small business enterprises and it really isn't all that hard to remember that any business is built of SERVICE.

At this point I'd advise everyone to avoid dealing with Genial until they can prove that they deliver their products within a reasonable time frame.

Dave Lewis

Sooner 99ers





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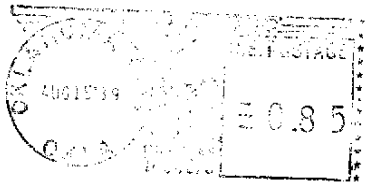

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