

# Computer News 80

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## EDITORIAL COMMENT

Well here we are with Volume 5 Number 1, January 1992. Yes folks, it is the January 1992 issue. We goofed last month, as so few were wont to point out to us, and others never noticed, and others we are sure just chuckled and went on to the important context contained in the articles. Yes, we goofed again, and right on the first page, if you were one of those that never noticed it -- we inadvertently left the month of November in our masthead by mistake. It reads November Volume 4 No. 12, with a great big December at the bottom of the front page. Some new subscribers might have thought that we had gone bi-monthly and this was the November/December issue. It's a surprising thing with the human species. (Other species don't make mistakes, or do they?) It's really not so surprising if you have ever tried to produce a product of this size, that sometimes after working on the same thing for two weeks you become blind to some of the little things. Three people work on this publication, writing, reading, proofreading, and testing. And yet not one of us spotted the error. That is until we opened the first box returned from the printer and there on the first copy we picked up -- staring us in the face was another goof on page one!

We do appreciate those who took the time to write us pointing out the error. But don't you really think your time could have been better spent trying to answer some of the really important things, like answers to some of the users problems in the Open Forum for example. And thanks to all of those who shared in our chuckles, sure proves that no one is perfect. And in that spirit of poking fun at ourselves we can say "Watch our lips folks, this issue is -- (we think).

January  
1992

## TRSCAN UPDATE

Updated copies of the TRSCAN program have been mailed to all who purchased the program. Some of the print drivers provided had a few bugs in them and did not operate various printers listed. Hopefully the new release has corrected this, however as we wrote in our last TRSCAN UPDATE (Vol. 4 No. 11, pg. 4) "we, CN80, the author, and you, the user are entering into a grand adventure of experimentation" and we expect to have problems that creep into any new technology project, but the TRS-80 world is now a world of mutual cooperation and can not be anything but a team effort on the part of all. Finger pointing is nonproductive and only serves to further fragment our forward direction, and it has no place in the philosophy of CN80.

By now the Chinon DS2000 scanner supply has dried up. We are working on making the Chinon DS3000 full page scanner available for use on the Model 4, with perhaps a special price for CN80 subscribers. More on this will be in future issues. We are also interested in anyone who has any suggestions for other scanners that they would like to use on the Model 4. Or for that matter anyone who would like to try their hand at writing a program for other scanners. Now that we have proven (with your help of course) that it can be done, the way is open to new approaches.

-CN80

## Reminders

### MOUSE HOUSE CONTEST

The deadline for the \$100 Mouse House contest entries is January 15th., you may still have time to get your entry in.

### SUBSCRIPTION RENEWAL

If the last four digits on your mailing label is 92/01, then this is your last issue. Time to get your renewal in the mail.

### MOVING

Please remember to send us your change of address if you have moved. The post office will charge you first class mail for issues forwarded to you, and they charge us \$3.00 when they return it to us.

## GATHERING of THE CLANS

by Chris Fara

The "Clan" genealogical data base and charting program is finally coming for Model 4 in true Mod-4 mode. Not only that; CLAN-4 is a completely new design, written 100% in superfast machine language (but of course files created with the Mod-III version can be used in the new Clan). A comparison with Mod-III Clan is really unfair. CLAN-4 is so much faster and more efficient that one wonders how one could have lived without it. Actually it is an amazing program, but my question is: how the heck did I get sucked into doing it? An honest answer reveals the sad truth about programmers. We are born with this fat overblown "ego" that says: I can do it better! Sure, Charlie, sure..... off we go into endless debugging nights.

A genealogy program is a classic case of a "relational" data base. First, of course, are the all-important parent and child relations. On top of that are what might be called "incidental" relations: marriages, other events of interest, and such. To tie it all together and prevent mixups gets to be a real challenge. Along my programming way I ran into some curious results of initial logic. One in particular convinced me that a computer has more common sense than we humans do. As I plugged in some test data, the machine refused to allow any person who had known parents in the file, to get married and have children! What a clever solution for the overpopulation problem that threatens our poor planet! With some regret I had to correct that logic, upon which the computer promptly switched its politics into a liberal extreme: it happily promoted marriages of two males or two females and even produced children from such liaisons. That, too, had to be fixed, because after all "genealogy" is about "genes" and not about liberation politics.

CLAN-4 is conceived in the "natural" way, the way one would go about studying the family tree without a computer. No more cumbersome "math", no numbering systems. The computer takes care of the numbers, as it should, while we humans deal with persons. The "Go to Parent", "Go to Spouse" and "Go to Child" features provide an almost unlimited variety of paths to "visit" a family. Interested in an Uncle? Go up to the



appropriate Parent, then up to that Parent's Parent, down to that Grandparent's Children, and here are the Uncles and Aunts. Pick one, go down to his or her Children and here are your Cousins, and so on, all the way down to the youngest generation, or up to the oldest recorded Patriarch or Matriarch.

This "visiting" is so fast and so interesting that one invariably gets hooked on it. Only trouble is, after a while I began to feel like a monkey in a jungle, hopping around in a family tree. Well, so be it. I was told more than once that I do trace my roots to monkeys. But never fear: CLAN-4 has an amazing range of dates (all the way back to the Roman empire), but it will not go back far enough to reveal any such embarrassing ancestors.

Writing CLAN-4 has been a wonderful adventure. But little did I know when I started, what a monumental job it would be, how much time and energy it would take. In the end I had to promise my family to never again write another major computer program. Sure, Charlie, sure.....  
-Chris Fara-

(Editors note) Clan-4 by Chris Fara is not ready for release as yet, but we would be interested in hearing from those of you who would want to acquire the program. Knowing the quality of Chris' other works we know that this will be a welcome improvement over all other genealogy programs that were available for the TRS-80s. Hearing from you might even provide the little push needed to complete the project. Not that any push is needed in Chris' case, once he starts a project you know that it will be completed, well tested and the best there is. -Ed.



## FFORMAT UPDATE

David Goben's recent release of FFORMAT has received some very interesting replies from readers. One reader wrote "What is the value of this program over the BACKUP that already exists in our DOS, when we can use CTRL R to repeat the last DOS command line?" (Pressing CTL and R keys calls up and repeats the last command line that you used. For example if you wrote the following at DOS level:

```
FORMAT:1 (Q=N,SIDES=2  
,NAME="MYDISK") all on one line
```

the disk in drive one would be formatted for use in a double sided drive and have the disk name of Mydisk, with out asking you any of the other query questions. Pressing CTL with the R key would repeat this command and format the next blank disk with the same format. By the way, both programs will always ask you if you really want to format a disk if that disk has been formatted or contains any data.

What value has FFORMAT then? We also have DISKCOPY in TRSDOS 6.3 that will make a mirror image of any disk in the source drive, without asking any questions. DISKCOPY won't ask you if you want to use the disk in the destination drive if that disk already contains data. DISKCOPY was a pretty handy utility when it was first released to format a bunch of disks at one time, but you had to be very careful that the disk did not already have data on it. Many have wiped out an original disk when they placed a formatted disk in the destination drive and an original data disk in drive zero, then in haste reversing the numbers when keying in the source and destination drive numbers. Suppose you typed DISKCOPY :1 :0, and placed your old disk containing data which you wanted to recycle and placed it in drive one, with your original disk placed in drive zero and pressed <Enter>. Well, you would wind up with a nice duplicate of the old disk in drive zero. Where did the files which were on the disk you put in drive zero. They were overwritten, and consigned to that vast empty land that every computer has and keeps secret from any user know as "Whered'itgo" land.

The value of FFormat? It formats a disk

faster. It has the ability to duplicate the last disk format (the same as using CTL R) or using DISKCOPY to duplicate the process. But formatting disks faster is the key to this program. The following is the average time it takes in seconds, arrived at by formatting a new box of 10 disks.

3-1/2" Disk formatted with 80 tracks, double-sided:

FORMAT (LSDOS 6.3.1)	2 min. 33 sec.
DISKCOPY (LSDOS 6.3.1)	2 min. 33 sec.
FFORMAT (LSDOS 6.3.1)	1 min. 23 sec.

5-1/4" Disk formatted with 40 tracks, double-sided:

FORMAT (LSDOS 6.3.1)	1 min. 18.8 sec.
DISKCOPY (LSDOS 6.3.1)	1 min. 22.9 sec.
FFORMAT (LSDOS 6.3.1)	52.8 sec.

5-1/4" Disk formatted with 40 tracks, single-sided:

FORMAT (LSDOS 6.3.1)	39.5 sec.
DISKCOPY (LSDOS 6.3.1)	39.5 sec.
FFORMAT (LSDOS 6.3.1)	17.9 sec.

Looking at that schedule you can easily see that you could save 10 minutes every time you wanted to format a new box of 10 3-1/2 disks, and nearly the same with a box of 10 new 5-1/4 disks. The only thing faster would be to buy pre-formatted disks. But pre-formatted TRS-80 disks are not available anywhere. (Yet!)

With so many users taking advantage of their ability to add 3-1/2 disk drives to their TRS-80 computers, we have been considering making pre-formatted disks available if there is enough interest in having them available pre-formatted. With so many possible DOSs available for our TRS-80s we might not be able to provide more than LSDOS 6.3.1 disks pre-formatted by the factory, but we could add pre-formatting disks to our custom service list.

We would also consider adding the pre-formatting of 5-1/4 disks to our custom service list, but there are so many variations in formats it would be difficult to do any large quantities in bulk, with the exception of LSDOS 6.3.1.

Let us know if you are interested in having your disks available pre-formatted.

Short of buying pre-formatted disks to save time and remove part of the nuisance from having to format a new box of disk, or in recycling older disks by re-formatting them, then go with FFORMAT. That's what we did.

-CN80

(FFORMAT is available from CN80 \$15 + \$3 S&H.)

A full review of FFORMAT by Bill Newman is on its way, watch for it in our next issue.

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## PROGRAMMING TUTOR Part 36

by Chris Fara (Microdex Corp)

### Mod - 3 BASIC in 128 - K

BASIC programs in Mod-III mode (LDOS 5.3 or TRSDOS 1.3) on a 128-K Model 4 can use the extra banks pretty much like in Mod-4 mode discussed in the last 3 essays. There are only a couple of minor things to watch.

On entry to Mod-III BASIC more than 32-K free memory are available. If the BASIC program is short then some variables (which are stored right above the program) may end up in the lower half of memory and would not be accessible when an extra bank is switched into that memory area. There is a way around this and we'll get back to it later. But in such short programs we probably wouldn't want to bother with bank switching anyway. Any program larger than some 7,000 bytes will push all variables into the upper half of memory.

Another complication is that there is no CALL command in Mod-III BASIC. The USR call to a machine subroutine can pass only one variable, but our BANK scheme needs three. The simplest solution is to put the variables into a small integer array and pass to the routine the VARPTR (ie. the address) of the first element of that array. The routine will index the variables off this address.

For example assuming that our BANK routine is assembled in high memory at a fixed ORG 64000, the call sequence would look like this...

```
DEF USR = 64000-65536
DIM Z%(2): Z%=0
Z%(0) = subscript
Z%(1) = VARPTR (variable)
Z%(2) = 256*page+2*bank+direction
Z% = USR ( VARPTR ( Z%(0) ) )
```

Notice that in Z%(1) we put the "pointer" to our variable and not the variable itself, because all values in the Z%() array must be integers, but our variable may be any type.

On entry to the machine routine the value specified in the USR call (in our case the "pointer" to the Z%() array) is retrieved into register HL by CALL 2687. This is the standard way of passing an integer value from BASIC to a machine routine (see for example "Mod-III by Chris").

Here is the first part of the Mod-III version of the BANK routine. Compare with the Mod-4 version discussed last month.

```
-----
BANK3: CALL 2687 ;get ptr
      PUSH HL ;HL=> Z%(0)
      POP IY ;IY=> Z%(0)
      LD L,(IY+0)
      LD H,(IY+1) ;HL=subsctpt
      LD E,(IY+2)
      LD D,(IY+3) ;DE=varptr
      PUSH DE
      POP IX ;IX=varptr
      LD C,(IX-3) ;type/size
      BIT 0,C ;string?
      PUSH AF ;save flag
      JR Z,MULT ;number
      LD C,(IX+0) ;string
MULT: LD A,C ;A=size
      CALL 17486 ;HL*A=HLA
      LD H,L
      LD L,A ;HL=offset
      LD D,(IY+5) ;D=page
      LD 0,0 ;DE=base
      ADD HL,DE ;HL=address
      LD B,0 ;BC=size
      PUSH IX ;maybe num
      POP DE ;DE=varptr
      POP AF ;get flag
      JR Z,ZIP ;number
      LD E,(IX+1) ;string
      LD D,(IX+2) ;DE=>text
ZIP: LD A,(IY+4) ;low Z%(2)
-----
```

Retrieve into register HL the pointer to Z%(0) by CALLing 2687. Then copy the pointer from HL to IY, and use this index register to retrieve the subscript and the pointer to the variable being moved between BASIC and a bank. The rest is pretty much like last month. But notice that the type of the variable is at IX-3 in Mod-III, and CALL 17486 multiplies HL by A, not by C as SVC 91 does in Mod-4. Notice also how we pick the page number from the high byte, and bank+direction from the low byte of Z%(2) by indexing off the register IY.

In the next part of the routine we'll be setting up and switching the banks. The "image" of the "operations register" is not maintained by DOS: in standard Mod-III mode it is simply zero. To switch the bank we'll output to the Op-Reg port 132 a bit pattern as usual. Bits #4, 5 and 6 will be the same as in Mod-4 version of our routine. We also need to deal with the fact that part of the lower memory in standard Mod-III mode is ROM (Read Only Memory). In order to move an extra bank into the lower memory we need to convert the bottom half of memory into RAM (Random Access Memory) for the duration of the switch. So we also must set bits #0 and #1 in the Op-Reg which will cause the lower half of memory to act like Mod-4 RAM memory. Here goes the second part of the routine.

```
-----
ZIP: LD A,(IY+4) ;low Z%(2)
      SRL A ;0 or 1?
      JR C,BANX ;retrieve
      EX DE,HL ;store
BANX: CP 1 ;bank 1?
      LD A,63H ;01100011
      JR Z,ZAP ;yes bank 1
      SET 4,A ;else 2
ZAP: DI ;no intrpt
      OUT (132),A ;switch
      LDIR ;copy
      XOR A ;opreg=0
      OUT (132),A ;restore
      EI ;enable int
      RET
-----
```

With a couple of minor changes this works pretty much like the Mod-4 version. In the BANX segment load A with the bit pattern needed for the bank switch as discussed above. Initially assume bank 1, but if the value remaining in register A after SRL was not 1 then SET bit #4 to select bank 2. To restore standard Mod-III memory simply

output zero to port 132.

As noted at the beginning of today's essay, this scheme wouldn't work if the variable being moved between BASIC and the bank were in the lower half of memory. This can only happen with numeric variables when the BASIC program is pretty short. String text is always way up in the high memory, which also suggests a solution for numeric variables: just convert a numeric value into a string. For example to store a single-precision value...

```
V$ = MKS$ (V!)
```

```
Z%(1) = VARPTR ( V$ )
```

To convert a retrieved string back into a numeric value...

```
V! = CVS (V$)
```

This rigmarole is only needed when a short program might cause numeric variables to sit in the lower half of memory.

It's easy to find out where the variable area begins in memory. The address of the first variable in any Mod-III BASIC program is stored at the memory locations 16633 (low byte of that address) and 16634 (high byte). Load a program into BASIC and enter...

```
PRINT PEEK(16634)
```

If the displayed value is 128 or greater then the address of the first variable is  $128 \times 256 = 32768$  or higher, ie. all variables are in the upper half of memory. Otherwise some variables are in the lower half.

One interesting application of bank switching has to do with the fact that any values stored in an extra bank remain there even after the BASIC program is changed in any way. This provides an easy method of chaining programs. In Mod-III BASIC there are no CHAIN and COMMON commands like in Mod-4. But we can store the common data in a bank, then simply RUN any other program which uses the same data. Thus a system of related programs can be managed quite easily. In many cases this method is even easier than CHAINing and can be just as well used in Mod-4 BASIC.

### C a v e a t e m p t o r

Buyer beware. Countless runs of the BANK routines never caused any problems in the author's applications. Still, it's a wide world out there and it's just possible that with some systems, filters, and what-nots the scheme might bomb. If so then tough luck:

don't use the routines anymore in the system configuration that caused a crash.

Also remember that the routines are lean (less than 100 bytes) but mean: there is no error checking. As noted in the previous essays, using the routines without 128-K memory, or careless playing with "pages" and "subscripts" can lead to a more or less disastrous result. Plan your arrays and respect your banks.

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## A VISIT WITH DAVID GOBEN

by David Goben

### DMP PRINTER SUPPORT

A question has been raised why I do not support Radio Shack's DMP printers. The reason is that this can quite easily become a Tower of Babel. My suggestion is that those of you who have DMP printers that are switch selectable to support either Tandy or IBM modes is to set it to the IBM mode, which happens to be EPSON-compatible; thus an FX-80 drivers will usually work with them. If I am not mistaken, the first IBM printer was really an Epson MX-80, and they moved on to an FX-80 or an RX-80 model, calling it their IBM Graphics printer. Anyway, it was one of those X-rated brands created equally (I can see that no one seems to be surprised). This is a problem for those who see great printer support program listings for EPSON printers, which will not work with their printer, such as the SIDEWAYS/BAS program listed last month.

The major problem between Epson and DMP printers is that the Epson printers (or modes) support a thing called 8-bit graphics, and the DMP only support 7-bit graphics (which is often a sad thing on 9-pin printers).

What this bit graphics thing means is the number of vertical dots printed per line (the Epsoms also support 9-pin graphics).



Unfortunately not all DMP printers were programs do not use the 8th line, so most codes can be translated quite easily over to DMP format. The bug-a-boo in this is the manner in which the Epson and DMP assign dot positions on the vertical column. Each dot is assigned a pin on the printer head, and each dot therefore has an individual value assigned to it. This is where the similarities between Epsons and DMPs end; for Epsons assign the lower value dots to the bottom pins, and DMPs assign the lower value dots to the upper pins. Below is an illustration of this idea, showing the values assigned to dots from top to bottom:

DMP	EPSON
-----	-----
1	128
2	64
4	32
8	16
16	8
32	4
64	2
N/A	1

As you can see on the chart, aside from the fact that the Epson supports 1 additional 8th pin, the DMP basically "flips" the values around. Thus to print a graphics column on the Epson would require a completely different graphics code to print the =same= dots on the DMP.

Program listing 1 is a short program which will translate an Epson graphics code to DMP format. This program assumes that the user is only using the lower 7 pins of the Epson printer, and will ignore any reference to the top, 8th pin. In fact, I used a variation of this program to automatically translate all the DATA lines in last month's Epson listing to DMP format to construct one of this month's programs.

Program listing 2 is a program called SWDMP/BAS, which is a DMP version of last month's SIDEWAYS/BAS program. It should run unmodified on most DMP printers running in the native DMP (Tandy) mode.

If you have both a DMP printer and an Epson compatible printer (or can switch the DMP to the IBM (Epson) mode), you may find it interesting to try running last month's SIDEWAYS/BAS program and this

month's SWDMP/BAS program, and notice the difference in speed between them. It will be quite apparent.

When Tandy introduced the DMP series, they thought they could set a new standard by introducing a proprietary graphics format. Needless to say they fell flat on their faces. Unfortunately it took them so long to realize this that now they are almost locked into their me-only "standard". It was bad enough that they introduced their own printer codes which were foreign to most other printers, and the fact that they chose to support 7-bit graphics rather than the 8-bit standard, but they also chose not to support similar printer density modes. For example, on the DMP-105 and many others, the only way to change printer densities is to select standard (10-pitch spacing), compressed (12-pitch), and condensed (16.7-pitch). This allowed dot-per-inch (DPI) resolutions of 60 DPI, 72 DPI, and 100 DPI. Epsons support graphic resolutions of 60 DPI, 120 DPI, and 240 DPI on most printers. I expect higher standard densities as dot matrix technology develops, such as the new 300 DPI printers which produce true letter-quality, don't-see-the-dots output. As you can see, a difference in printer densities can create great problems for program authors who wish to support the graphics mode on printers. PostMaster is an example. What works on the majority of printers available does not work quite so well on the DMP series in their native modes. Check your printer manuals and see if they are switch or software selectable between two different modes.

But now that I've put the DMPs down enough, let's take a look at what can be done with them.

The first thing to consider is printer density. If you want to select a graphics density, either from the text mode or from within the graphics mode, you could issue the following BASIC command:

```
LPRINT CHR$(30); CHR$(27); CHR$(x);
CHR$(18);
```

Replace "x" with 19 for 60 DPI, 23 for 72 DPI, and 20 for 100 DPI. Code 30 switches out of graphics mode if you are in it, and is ignored if you are not in it. Code 27 is an escape code, which must be used in

conjunction with the 19, 23, or 20 codes to select the printer density. Code 18 selects graphics mode.

DMP graphics have a beautiful simplicity in comparison to Epson printers in that on a DMP you do not need to tell the printer how many graphics characters you are going to send out. Of course this also means substantially slower speed as the printer has no idea how much is going to be sent to it, and so cannot set up in advance for it.

Dot matrix printers send graphics out in vertical columns. This is natural because that is how the pins in the printer's head are lined up. Most older series DMP printers have 7 pins. The newer ones have 9 pins so that they can be switched to the IBM (Epson) mode and support its 8-pin and 9-pin graphics. (Yes, I know the DMP-2100 has 24 pins, but let's keep to the general DMP population). Since DMP graphics support only 7 pins, this means that a byte sent to the printer, which consists of 8 bits, does not select a dot position with one of its bits. Tandy chose to use this bit to indicate that a code is a graphics code or not. DMP printers utilize bits 0 through 6 to tell it which pins on the printer head to fire, and bit 7 (a value of 128 decimal) to indicate the fact that the code is a graphics code. Let's examine more closely the DMP pin assignments:

PIN #	VALUE
-----	-----
0	1
1	2
2	4
3	8
4	16
5	32
6	64

Using this chart we can construct any graphics code we wish by adding the values for whichever pins we want to use together and adding a final 128 to it. For example, suppose we wanted to print pins 1, 2, 5, and 6. We would refer to our chart and see that pin 1 has a value of 2, pin 2 has a value of 4, pin 5 a value of 32, and pin 6 has a value of 64. Thus we would add  $2 + 4 + 32 + 64$  to obtain a value of 102, and add 128 to it for a graphics code of 230. To illustrate this "graphically" on your DMP printer, enter the following short program in

BASIC and RUN it:

```
10 LPRINT CHR$(30); CHR$(27);  
CHR$(19); CHR$(18);  
20 PRINT STRING$(120,230)
```

This will print 2 bars which are 2 inches long on your printer (60 DPI for 120 dots columns). Bits 1 and 2 create the top bar, and bits 5 and 6 form the bottom bar. Of course when you print something you would like to see something which you can show off to others. I doubt that friends will willingly break traffic laws to race to your house to see a couple of printed bars on a piece of paper.

To display something practical, you will need to design something which can be constructed using consecutive columns and/or rows of varying graphics commands. As you may discover while experimenting with DMP graphics, when you are in the graphics mode, that when a carriage return is sent, the paper does not advance as far as it will when in the normal print modes. In the graphics mode, the paper will advance only 7/72 of an inch. Since a single dot is 1/72 of an inch high, this means that the paper advances exactly 7 vertical dots. This is handy when printing graphics which are more than 7 dots high. You can do the top 7-dot row of the graphic, then the next 7-dot row, and so forth.

To design a graphic you will need some graph paper, and assign each little box a dot position. Remember that each consecutive vertical column is only 7 dots high, so you might like to draw a line on every 7th row to keep printed rows separate. For example, to print a graphic which is 21 dots wide and 19 dots high, you would have to break the graphic up into 3 rows of graphic. Using the chart shown earlier, you can compute each value to send to the printer (and remembering to add 128 to the sum). If no dots are set on a particular 7-dot column, you would of course set a value of 128 in its place. And in case it is not obvious, we would send each graphics command to the printer by rows, meaning left to right. Once a row is finished, we would send a carriage return code (13) to advance the line, and then process the next row of graphics.

You can get pretty creative with these graphics, and take advantage of the row

positioning commands available on your printer so that you can start printing your graphic on a particular column, away from the left edge of the paper.

I guess I may have stuck my foot into it by presenting this information, as I can see Epson-compatible printer owners asking for more information on their printers. If so, I will be sure to do it.

By the way, since on all 9-pin printers (except for perhaps some wizenheimer printer I don't know about) the standard vertical distance between dots is 1/72 of an inch. Since DMP printer supports a 72 DPI mode, as do Epons, some creative person could come out with a graphics plotter program to support this 1:1 aspect ratio; the same as the expensive plotters use.

#### MOUSE+

I'm starting to feel like Microsoft Corporation when it comes to the Mouse driver. It seems that as more projects involving the mouse are being developed, greater power is required of the mouse driver. The latest version of the MOUSE+ driver is 1.2. I did a couple of interesting things with this version. First of all, I added 2 undocumented function codes to it, aside from the 5 listed in the manual. Function 6 will temporarily turn the mouse driver off and restore to functionality any RS-232 driver which was previously available. Function 7 will re-enable the mouse driver. This may have application where another RS-232 driven device, such as a plotter, may also be in use. Of course you will need to swap between the mouse and the other device being attached. This could be accomplished by an A-B switch.

Another thing I did with the driver was to greatly enhance the resolution definitions. Previously, as long as the driver was in the 80 x 24 mode, the 160 x 72 lo-res graphics mode, or the 640 x 240 hi-res graphics modes, everything works fine. However, if you chose a "window" of dimensions different from these 3 modes, you may have trouble reaching the right edge or bottom edge of the window. This is due to the restrictions of integer math. I finally solved this problem by internally adjusting the factoring ratios so that if you define a window which is, say, 37 x 13, a report of 0-36 and 0-12 will be reported, as would be

expected.

I suppose more enhancements will be required as more mouse projects are being developed. This is an evolutionary process. The final stages are yet unknown. Currently this new version satisfies the requirements I have of it for the current curl-your-socks projects I've got in the works, but others may have different needs which can best be addressed by adding to the driver (at the same time, I don't want to be like Microsoft and have a driver which is 14K+ in size, either).

#### CN-80 MOUSE REVIEWED

I have a box full of mice that I have accumulated during the course of developing my MOUSE+ driver, but none of them measure up to the look and feel that CN-80 finally chose for their official mouse. My first impression was that someone took advantage of the million+ dollars Microsoft spent in developing their new mouse and applied that design to a 3-button version. Unlike most other mice which when being used make your hand feel like it is about to cramp up, the CN-80 mouse is a whopping 4 inches long, and is 1 3/16" high at its highest point, and 3/4" high at its lowest. It has three silicone sliding bars (not those puny buttons found on virtually all others) on the bottom to allow a smooth ride over most surfaces. Its internal ball (the thing that rolls inside which tells the computer it is in motion) is a stainless steel ball bearing sealed in a tough rubberized coating, not just a cheap ball like what can be found in a toy store. The locking mechanism which holds the ball in place is very well constructed, using a firm twist lock, and will -not- pop out like I have seen a lot of other mice do when you lift it too suddenly. Also, the buttons are contoured with the body's shape, and are large enough so that your fingers don't need to use braille to find them. This is the only mouse I have which can fit comfortably in a open palm (not crunched, like with most others), and button presses can be easily accomplished without having to press them with the fingertips -- simple pressure from the base of a digit will do the trick. Finally, the buttons have a distinctive, though not too loud click, and are very responsive, and firm enough not to feel flimsy. We are not talking about a cheaply constructed me-too mouse here; we are talking quality



craftmanship. When I compared it side-by-side with a real Microsoft mouse, which is supposedly the best in the industry (and the most expensive), the only difference I found was that the MS mouse had a glossy finish and only 2 buttons. That's all! You are not going to find the quality you'll find in the CN-80 mouse in just any mail-order catalog. So what if you can get one for less somewhere else? How many of those are you going to go through before you find one with as much quality as CN-80's? Chances are you'll be spending more than CN-80 charges. Plus CN-80 provides support and help along the way. Get that from some discount operation. Good luck.

In closing this review, a suggestion: Don't try using a mouse on a smooth desk top -- its response is usually poor because the ball needs friction to roll. Mouse pads are becoming so cheap that there is no reason not to get one, and they work wonders in mouse-oriented applications. And with what I and others are working on, your mouse may become one of your TRS-80's best allies -- treat your friends right!

#### 8-INCH DRIVE SUPPORT

Help, help, as it were. I am still looking for either the controller or the schematics for a controller which allows 8-inch drive support for the Model III/4. Although 8-drives are not that common anymore, I am greatly interested in their technology. If anyone is wanting to get rid of any of this stuff, or sell it, let me know via CN-80. If anyone has the schematics for such a controller, please let me know; I'll build one. It's very frustrating when people ask for support and you cannot help them because you have nothing to work with.

#### HARD DISK FLOPPY

When is a floppy a hard disk? When you fool the system into thinking it is one. I just got off the phone with Harry Ratner who is wintering down in beautiful Puerto Rico. His hard disk just dies, victim to the corrosiveness of the salty air down there. Suddenly he was stuck with no hard disk, and all his files were backed up on floppy disks in FASTBACK format. He said he could live without a hard disk for a while, but he needed to be able to access his data files. Trying a hunch, over the phone I took him on a tour of DEBUG, where I helped

him patch a working system disk to think that one of his floppy disks was a rigid drive. Once patched, he was able to use FASTREST to restore the data piece at a time.

The trick to this is selecting a drive to designate as a hard disk, and set bit 3 of the 4th byte of the drive code table (DCT+3). Bit 3 of DCT+3 indicates if a disk is a hard disk or a floppy. LS-DOS and LDOS have 8 DCT entries. They begin at 470H on the Model 4, and 4700H on LDOS (Model III). Each DCT is 10 bytes long. Thus drive :4's DCT would be at  $470H + 4 * 10$  on the Model 4, or  $4700H + 4 * 10$  on a Model III. Add 3 to this address will give you DCT+3 for the drive. Peek at the value stored there and OR a value of 8 to it.

Of course, this is for reference ONLY, and you should not use it if you do not need it. However it is worth filing away for future reference.

#### THANKS, BILL

Bill Newman, my ever ready bug detective, found an interesting bug in an early version of FFORMAT. It seems that it doesn't like to work on the floppy disk controllers used in stock Model III's and non-gate array Model 4's. It seems that the FDC in the gate array Model 4 I developed it on has a faster FDC. This problem was easily fixed, but while I had the hood up on FFORMAT I tweaked its engine and added a nitro valve. I'm now formatting 1-sided 40 track double density disks in about 18 seconds, and this is with verify! Double-sided disks take about 45 seconds. A 720K 80-track drive takes less than 1 1/2 minutes. Gee, if Bill hadn't caught that bug, FFORMAT would have been cruising a lot slower.

Those of you who had purchased the older version have already been automatically upgraded to version 1.0.2. I think you'll see a dramatic difference.

This all just goes to show you that bug reports get results. Those little critters sure get us authors scrambling! Of course, I enjoy tracking down these bug-a-boos; bug hunting is an adventurous challenge. Obviously I would enjoy it more if bugs were not found, but we must all face the fact that no one person can test for every possible situation. No one computes exactly like any other



person. Some people can use a program for years and not find anything wrong with it. Another person may not be able to go 5 minutes without running into a snag. Hopefully more people compute like the first guy.

#### NEW POSTMASTER STUFF

I just finished converting 48 new fonts into PostMaster format, making 6 new disks in The File Cabinet. I have also submitted 2 new border disks. I've also just about finished up a huge set of PostMaster support utilities, such as a border and font compiler, so you can create new fonts and borders easily from plain old ASCII files, plus of course the library managers so that you can create the needed map files to access them from PostMaster. This package contains a lot of other utilities, and non-technical documentation has yet to be written.

Other submissions to The File Cabinet are 3 new hi-res (high resolution) picture disks, and 2 disks with screen border files on them. All of these are stored in the standard /HR format.

#### PRINTER DUMPS

How many of you have tried to write special things for your printer, such as graphics, and they just don't seem to work? Or have you tried to support a printer that you do not actually own, which may be the case when you have written a graphics program which you would like to have supported on a great variety of printers? I have spoke to people who say they would give their eye teeth for a chance to actually have a such-and-so printer in hand to see what happens when their program is run on it.

Well, if you know what codes =should= be sent to the printer, you can check to see that those codes are in fact being sent, even if you do not have the printer you are testing for. How? Easy: a printer dump to a disk file. Under LDOS 5 and TRSDOS/LS-DOS 6 it is as easy as pie. Simply route the printer device to a disk file. For example, suppose I wanted to dump what would normally go to my parallel printer to a disk file called TEMP/DMP. I would simply enter from DOS Ready the command:

**ROUTE \*PR TEMP/DMP**

And then go on as though I had the XYZ printer attached to my system. Once done sending data to the printer, I would reset the printer device by entering:

**RESET \*PR**

This command closes my TEMP/DMP file and reactivates my actual printer. Now I can use a "zap" program such as UTILITY4 (on MD4UTL61 in The File Cabinet), FEDII, SuperUtility, or some other utility to examine the TEMP/DMP file. You can then see if the code which you expected to be sent to the printer are in fact being sent, and in the proper order.

On another, similar note, some people are complaining that a file dump of the printer output does -not- save it exactly as it would go to the printer, as when they try to later list the file to the printer, not everything prints exactly as it would if they had just send the data to the printer from the program in the first place.

The problem these people are running into is that the LIST command support is translating some of the codes being sent through it. For example, if a 9 code is a part of another instruction, such as a count for the number of graphic codes about to be sent to an Epson printer, the LIST command will instead interpret this as a TAB, and expand it to the proper number of spaces. By the same token, codes being sent with a value greater than 127 are truncated to a value less than 128. What to do?

The solution on LDOS and TRSDOS/LS-DOS 6 is to take advantage of the ASCII8 and TAB parameters for the LIST command. Were I wanting to dump my TEMP/DMP file to my printer, I would use the command:

**LIST TEMP/DMP(P,Ascii8,Tab=NO)**

The ASCII8 parameter tells LIST to allow codes greater than 127 through unaltered to the printer (or dump file). TABS=NO tells the LIST command not to expand tab codes (code 9). These parameters can be abbreviated to A8 and T=.

#### NOSTALGIC NOTES

As a note of nostalgic trivia: do any of you remember when big ol' Microsoft was a 2-man kitchen table operation who owed

their livelihood to the humble TRS-80 Model I? Even when the Model III was still young, they were promising undying support for as long as you own your TRS-80 computer. Yeah, right. Give me a break. It's almost too bad that Bill Gate's father gave Bill the funds to obtain the rights to Q-DOS, which became PC-DOS and MS-DOS. By the way, Q-DOS stands for Quick and Dirty Operating System (for real), although Microsoft claims that its actual name was 86-DOS. But try asking Tim Paterson of Seattle Computer Products, who originally wrote the thing, what its name was. It was a quick and dirty way to port CP/M programs over to the 8086 processor, which was then basically just a hardware hacker supported chip. Microsoft adapted it to the 8088 used in the original 64K IBM PC. Yeah, and ask IBM how proud they were of the fact that a person could upgrade their system to a whopping 128K and add one or two single sided double density disk drives. And OOO! Look, you can add a 5-meg hard disk for unheard-of disk storage capacity. I remember their ads being filled with all sorts of big words and bold, pioneerish statements about their great technological leaps. Pioneering, my butt. Everything that came into the IBM world was old hat technology that had already existed in most cases in the TRS-80 world for some time.

## CONCLUSION

Well, enough rambling. I hope to be doing more with printers in future columns. As I get into graphics and printers, the easier everything seems to be. I'd like to pass some of that experience on to you, so that more of us can play with our toys effectively (tools! I mean tools!).

Happy Computing!  
-David Goblen



## THE NEWCOMERS CORNER

For Novices, Beginners, and First Time TRS-80 Users. Part 7

In our opening article for the Newcomers Corner (Vol. 4 No. 5, pg. 16) we told you that there were eight Command Words that you needed to become familiar with which are used from DOS Ready to get the most out of your computing. They were:  
 FORMAT (see Vol. 4 No. 6, pg. 17)  
 DIRectory (see Vol. 4 No. 7, pg. 14)  
 LIST (see Vol. 4 No. 8, pg. 17)  
 COPY (see Vol. 4 No. 9, pg. 12)  
 BACKUP (see Vol. 4 No. 10, pg. 11)  
 BASIC -LOAD-SAVE (Vol. 4 No. 11, pg. 10)  
 QUESTIONS ON DISK DRIVES (Vol. 4 No. 12, pg. 13)

In part one through six we covered the few computer command terms that you need to know to operate your TRS-80 computer with some comfort. In part 7 we took the opportunity to answer many of the questions we have been asked by new owners about floppy disk drives and floppy disks.

In this issue we would like to cover some of the questions that we have received concerning what can be connected to the Model 4/4P/4D computers. Please keep in mind that our discussions are about the Model 4 computer just as it was manufactured, and just as in many of our answers in the Open Forum we give answers that refer to the plain "vanilla" computer as it was originally purchased. We could go into all the "third party modifications" that were or are available, but our intent here is discuss what can be added to your computer without extensive internal modification. Super hackers will be writing in telling us how we can do this or do that, and we gave the wrong answer when we say no it can't be done. But how many users have the time or experience to take the cover off their computer and start waving the soldering iron around? We are aware of many of the products that can be adapted to these computers and have published many articles about specific items like the SmartWatch, which we now stock by the way. (\$29.95 + \$3 S&H) Or about the many memory ad-ins, ad-ins should be the proper term and less confusing than "ad-ons". And if anyone has ever worked inside these computers they know that the inside workings of these

computers are not the same. Tandy like any other manufacturer made several changes internally as they produced the product. Most of these internal changes had no effect on the exterior or operation of the computer, but it did create a nightmare for those who want to get inside and do some modifications. That is why it is difficult to create a "one-size-fits-all" set of installation instructions for adding products internally.

We will be publishing many more articles in future issues that pertain to specific adaptations, but here we will stick to describing what can be added to your computer just as it came from the store.

**Q:** Can I add an external disk drive to my 4P?

**A:** No, the Model 4P portable model was not manufactured with an external disk drive connector. The 50 pin cardedge connector is there to connect a hard disk drive, and is referred to as the I/O bus connector.

**Q:** How many external floppy drives can I connect to the external disk drive connector and does it make any difference in what size they are?

**A:** You can connect one or two external floppy disk drives to your Model 4 or 4D. It doesn't make any difference what size they are (180K, 360K or 720K) or if they are single sided or double sided drives. Except the computer will not support high-density drives, which are formatted up to 1.2 meg. bytes or 1.44 meg. bytes.

**Q:** What is the difference between a Model 4 and a Model 4D?

**A:** The only EXTERNAL difference between the two are the disk drives installed at the factory. The Model 4 has only single-sided drives, the Model 4D was sold with double-sided drives installed.

**Q:** I have a Model 4P with the internal modem installed, can I connect a mouse and use an A-B switch to switch between the two?

**A:** No, the internal modem is wired into the computer internally and the RS232 connector is separately wired. You could not switch between the two with an A-B switch.

Since the internal modem for a 4P is only 300 baud it would be better to install an external modem of at least 1200 or 2400 baud which would send and receive information 4 to 8 times faster. Then you would use an A-B switch to switch between the mouse and the external modem.

**Q:** What is the RS232 connector I keep reading about in CN80.

**A:** The RS232 connector is the 25 pin (pin referring to the connector type that has wire like pins that make the connection from male to female connectors, whereas the cardedge type of connector is the thin piece of computer board with silver-looking printed contacts on it). The RS232 connector on the Model III model 4/4P/4Ds is the serial port connector that is used to connect serial devices like a mouse, an external modem and other devices. There is only one connector of this type on each computer, on older NonGate Array computers it is generally pointing straight down on the bottom of the computer. On the newer Gate Array computers it points straight out the back of the computer.

**Q:** Why is there several types of connectors installed on these computers?

**A:** The cardedge type connector is the least expensive connector to provide because it is printed directly on the board that the computer integrated chips and printed circuits are on. These do need occasional cleaning if they are silver looking because they do build up corrosion that prevents a good tight connection. The easiest way to do this cleaning is with a red rubber school type eraser. Rub each printed terminal carefully in the direction to the edge of the board. Check the connectors on your cables, they should be gold plated, gold connectors do not produce the corrosion and generally do not need cleaning, except they do lose their tension and may not grip as well as they originally did.

Check to see if the cardedge connectors still have a good solid printed terminals. These can be worn off if you have plugged and unplugged it frequently.

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## MOUSE+ AND MTK REVIEWED

by Matthew Reed

Mice are now standard equipment on MS-DOS computers and Apple Macintoshes, but until recently, if you wanted to use a mouse on a Model 4, you were out of luck. Today that has changed: there are now several Model 4 mouse drivers, accompanied by a small but growing body of mouse compatible software.

### MOUSE+

The newest mouse driver is David Goblen's MOUSE+, which replaces his earlier Computer News 80 mouse driver. MOUSE+ costs \$10.00, plus \$3.00 for shipping and handling. Owners of the original CN80 driver can upgrade to MOUSE+ for \$5.00.

The MOUSE+ package includes a program disk and a nine-page, laser-printed instruction manual. The manual clearly explains how to connect a two- or three-button mouse and correctly install MOUSE+. It also describes the established mouse SVC interface and provides some BASIC program fragments for people who want to write their own mouse compatible programs.

People who have used the original CN80 driver will be very pleased with MOUSE+. The CN80 driver was a pioneering effort, but its response was rather jerky, which made the driver difficult to use. David has corrected this problem in MOUSE+; the driver now feels smooth and responsive.

Two simple mouse programs are included on the MOUSE+ disk. The first allows you to test mouse movement by displaying a free-floating mouse pointer on the screen. The second displays the numbers that represent the mouse's position on an imaginary grid. If you have never used a mouse before, these programs may help you get used to its feel.

I did notice something strange while using the first test program. When you move the mouse pointer to the bottom or right edge of the screen, it disappears. David explains that he programmed this trait into MOUSE+ to make it easy to scroll the screen up or to the left, but it is disconcerting to have the pointer disappear like that. I would rather have the pointer stop at the edge of the

screen; there are other ways to solve the scrolling problem.

This complaint aside, MOUSE+ is a good mouse driver that will serve your needs well. Current owners of the CN80 driver will definitely want to upgrade, and people who haven't added a mouse to their Model 4 may decide that now is the time.

### MTK

What do you do when you add a mouse to your system, but none of your software will use it? One solution to this problem is MTK, a new "mouse to keyboard" utility for the Model 4 by David Goblen. MTK costs \$18.00, plus \$3.00 for shipping and handling. To use MTK, you must already own a mouse driver, such as MOUSE+, the original CN80 driver, or MMOUSE.

The MTK package includes a program disk and a six-page, laser-printed instruction manual. The manual is very complete in its description of MTK; no one should have any difficulty in using this program.

MTK works by installing itself in high memory and intercepting all communications from the mouse. Every time it senses mouse movement, MTK converts that movement into appropriate keystrokes. For example, if you moved the mouse to the right, MTK might fool the computer into thinking you had pressed the right arrow key. If you moved the mouse up, MTK might make the computer think you had pressed the up arrow key. MTK can also simulate keystrokes every time you press a mouse button. You choose which keystrokes MTK will produce when you install the program.

The MTK program disk includes two public domain games that help demonstrate MTK's use. One of them, INVADE/CMD, is particularly improved by the use of MTK and the mouse. Of course, MTK's use is not limited to games. It can also be used to position the cursor in text editors, word processors, drawing programs, and more. MTK makes it especially easy to move the cursor along a diagonal line.

Be aware that MTK only works with programs that use the @KBD supervisory call (for assembly language programs) or the INKEY\$ statement (for BASIC programs). Programs such as LeScript and SuperScript,



which use alternative methods of reading the keyboard, will probably not work with MTK, and neither will games that switch your Model 4 into Model III mode.

My only complaint against MTK is its price; \$18.00 seems rather expensive. However, if you can justify the cost, and if you are looking for a way to use the mouse with the software you already have, MTK may be just what you are looking for.

-Matthew Reed

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## The Model One Corner

### THE HIGHER SCHOOL MATHEMATICS STUDENTS BEST EVER FRIEND

by Ian R Mavric

(A quick addendum first: a bug has appeared when using polar-coordinates: if you draw diagrams which run off the screen, the error checking (line 54) does not contain a RESUME statement, so it'll recover once, but the next time you draw a graph (polar with different speed) it'll fall on its head with an illegal function call in line 54. To remedy this, RUN the program each time you draw a polar graph.)

Plotting graphs always used to haunt me, particularly intricate ones or ones which are not easily recognizable from the equation. Sine, Cosine, and hyperbolas all suffer from this problem. Unfortunately, they gave me trouble in Yr 10, more trouble in Yr 11 and almost sent me to the grave in Yr 12. And what's more, you do about 10 times as many as high school whence you enter University. And to add to that, about half way through first year of uni we start encountering polar graphs. Really, I find trying to visualize polar graphs comprised to combinations of Sine and Cosine virtually impossible; even with my years in the mathematics game. Anyway some time during Yr 11 a great book came into my possession which detailed how to draw either of these types of graphs on the TRS-80 using the old 128x48 graphics resolution. A short literature search later led me to a routine which would dump my graphs from the screen to a Radio Shack Line Printer VII - just what I owned. I have

been using a hacked together version of that program for some years now, and only earlier this year has any impetus to "properly" finish the job. Unfortunately, time has got the better of me (well my other projects have, anyway) and some features I intended to add to the program have not been implemented; namely Disk access and other printer options. At least the program won't crash, even though the options are offered on the windows.

"Windows?" I hear you ask. Well, not really, it's more of just an interesting way to present the various menus. I used the same technique that I used in my previous program, IatPTaaW/BAS, but this time with a little more finesse, these windows run faster and look more complete than the previous programs offerings.

Type in and RUN the program. Line 1 offers default settings, which you may change depending on how detailed or how quickly you want the graphs drawn. Generally, the faster they are drawn the more detail they lack. Now the tricky bit, especially if you are a non-programmer. Line 60000 must contain the polar equation, and line 60003 must contain the cartesian equation. It's not hard to change a polynomial to a computer equation and after doing a few you soon become fairly dexterous.

Once the program is running it becomes quite self explanatory. H key for help on the main status screen is all one should need. In order to increase the simplicity of using the program you can enter options two ways, with the letter keys representing the option you want, or with the arrow keys and space bar selecting the option you want. I suppose I could make the program mouse compatible when someone comes up with a mouse driver for the Model I.

Here are some suggested projects for this program. The type of disk storage I had in mind would have the graphic screen to disk and allow them for instant recall. Some graphs can take quite a long time to draw, I usually do them once fast and then on the slowest setting for maximum detail. Slow graphs take more than 15 minutes in most cases.

I also wanted to add other printer drivers;

my trusty LinePrinter VII is dead, but being replaced with a DMP-100 it still prints graphs just the same. Other printers I use include: LPVIII, DMP-110, DMP-120, DMP-420, Quick Printer II, and CGP-115. If anyone can supply me with a printer driver for any of these printers please don't fail to contact me directly. Anyhow, the graph on a DMP-100 takes about 15 minutes but it is well worth the wait.

-Ian R Mavric

#### References:

Kater, DA & Thomas, SJ TRS-80 Graphics for the Model I and Model III, Radio Shack Cat. No. 62-2087, 1982. pp. 126 - 137

Rosenfelder, L BASIC Faster and Better & other mysteries, Radio Shack Cat. No. 62-1002, 1981. pp. 193 - 195

Barden Jr., W How to do it on the TRS-80, IJG Publishing, 1983, pp. AN13, GHS1, SRBH, SUBP

Robertson, JD & Grillo, JP TRS-80 Graphics, Radio Shack Cat. No. 62-2073, 1981. pp. 132 - 133

Calmettes, S LP VII Screen Printout, 80 micro February 1983, pp. 252, Wayne Green Publishing.

(Editors Note) Ian's program is three pages long with tightly packed basic program lines. It is too long to be published here and it will be available on our Disk Series #16 which will be available in March. In the meantime, if anyone wants an advance copy of this program send \$2 to cover postage and handling and we will send you a copy.

f File h Help P Print d Draw m Mode

Mode selected: Cartesian co-ordinates

Printer selected: Radio Shack Line Printer VII

Drawing speed: .100

Filename: none

Graph currently in memory? No

## CN80 DISK SERIES 15

Disk number 15 in our series of disks is now available for distribution. Along with all the programs published in October, November and December issues, it also contains the complete CN80 INDEX data file for use with your CN80 Index program. Thanks to Louis Carson of Boulder Colorado who is kind enough to construct the data base for us. A lot of work goes into these indexes, but they really save a lot of work when searching for past articles. Our gratitude goes to Louis for taking his time to produce these index data bases for the benefit of all TRS-80 users.

Due to the size of the complete CN80 1990 index data file (72K) Disk Series #15 will be on two disks. One side containing all the programs formatted for LSDOS 6.3 with the index on the flip side. And a second disk with the files stored on a disk formatted with TRSDOS 1.3, with the index on the flip side.

We needed to do this to make room for the fine bonus programs we have added to this issue of the Disk Series. One that we should mention here is a public domain basic program by Warren Shea, which is designed to construct a Compact Disk Catalogue data bank. It is really a neat program and thoughtfully constructed. We were very tempted to publish the full printout in CN80, but alas, it takes five pages to list the complete Basic listing.

The charge for CN80 Disk Series disks is still \$5 with postage included. If you were having trouble after typing in programs from the pages of CN80, here is the way to receive the programs and avoid searching for your typo-syntax errors. -CN80

## SESQUIPEDALIAN BUFFOONERY Troubadour Incognito

One should hyperesthetically exercise macrography upon that situs which one will eventually tenent if one propels oneself into the troposphere.

Equine quadrupeds may indubitably be induced to approach the wellknown standard of specific gravity, but not necessarily be induced to imbibe thereof.

## MY "SUPER4" REVIEW

by Frank Gottschalk

### DESCRIPTION

Let me first describe my latest "SUPER 4" machine. I've enhanced my latest Model 4 which is a non-gate array machine with a black and white screen (because my graphics print out in black and white) by adding a 1 Megabyte Hypermem RAM kit from Anitek. (Would highly recommend the later Megamem Kit for much easier installation and operation.) The Megamem Kit is available up to 8 Megabytes, but think the 1 to 3 MB board is sufficient for most applications unless you want to load up all your Fonts and Icons too, to have them all on line at once. I highly recommend one of these RAM Kits for truly high speed operation! I mean programs come up in a flash!

Then I installed dual internal 1/2 height double sided 40 track 360K drives in the lower drive bay and dual internal 1/2 height double sided 80 track 720K drives in the upper drive bay. This gives me over 2 Megabytes of disk space available within the machine! I did mount a second small standard power supply in the bottom of the machine for just the drives. The real use for these is to boot up and load the RAMDRIVE for drive 0 and load it with about 600K of operating programs for the lightning speed.

Then came the Hi-Resolution board addition. I found a couple of Radio Shack boards, but they are still available from Micro-Labs I believe. The resolution is as good as a Mac, but on a readable size screen. This opened the door for the new PostMaster (equivalent of PrintMaster on IBM's), GIF4MOD4 (a great graphics pictures program), Hires4 (very versatile program to display Hi-Res and Macintosh type pictures), and many good drawing programs available from the File Cabinet along with tons of pictures to select from.

Well, then I added a 15 Meg Hard Drive to hold all my Fonts for both ALLWRITE and DOTWRITER, as well as my Icon files. All available from CN-80.

As if the lightning flash response from my RAMDRIVE operation wasn't fast enough, I installed a 5.2 MHz speed-up kit from

Anitek for a 33% increase in speed. (Fastest available for non-gate array machines, but 6.2MHz is available for gate array versions.)

Last but not least was the addition of the Hewlet Packard DeskJet Plus printer. Maybe the "poor man's (that's me) laser" but it sure does a beautiful job for me at 300 dpi. With the new printer drivers available from CN-80 for SuperScripts and Allwrite and the new Fonts available, I'm in Seventh Heaven. Can now really do Desk-Top Publishing types of things on my Model 4. Maybe a bit cumbersome at times, but the cost was sure right! The DeskJet Utility package from Gary Shanafelt thru CN-80 sure brought it all together.

START UP: When I boot up the machine now from a 40 track disk, it sysgens in four floppy drives and the typeahead, graphics, KSM, and fast options. Then using the TYPEIN utility it Auto types in my HYPSTART/JCL which then sets up the RAMDRIVE as :0 and copies the system files to it. It then activates the Hard Drive into drive slots 3 & 5. Then using FBACKUP it copies about 600K of my main operating programs from the Hard Drive into the RAMDRIVE:0 for operational speed. (This probably is about equivalent to 60 Megs in MS-DOS.) These include Allwrite, SuperScripts, with the dictionaries for both and Profile4 for an Invoice program plus a bunch of small JCL programs for special functions. Then it proceeds to set up drive slots 4, 6, and 7 with HD subdisks for documentation on line, Basic programs, and Graphics programs. These subdisks can be switched in and out rapidly and easily if I want to bring Fonts or Icons "on line". It then comes up in a Menu in about 1-1/2 minutes. The Menu comes from Chris Fara's DIRECT program and is as good as any I've seen in MS-DOS.

The biggest stumbling block right now is I can't get it to sysgen in the Hard Drive with the HYPERMEM installed, nor will the normal BACKUP function work with it. It would do all the above in one minute if it would Sysgen in the Hard Drive at the start as I do with an older machine using SUPERMEM. Any ideas on this problem? Peter Ray of Anitek can't put his finger on it, saying it must be my machine. Soon I'll have a second backup machine built up but with a different rev. level motherboard in it

to see if that makes any difference.

## OPERATION

From the Menu, a single keystroke calls up either wordprocessor in just a couple of flashes. Either Allwrite for quick multifonts, columns and special characters, SuperScriptit for familiarity, or the Invoice program for obvious reasons.

You can easily build your own menu and sub-menus. F3 key brings up some standard options. My "F" key for Floppy file operations, and "G" for graphics programs, "H" for SHELL fans.

the F2 key allows for DOS commands at which I can use my KSM (Key Stroke Multiplier) setup in which I have about 20 keys programmed to do a variety of things automatically with two keystrokes. The latest versions can accommodate 52 key definitions.

I have the command line editor SEDIT installed that allows editing the last DOS command line (for my constant mistyping or incorrect parameters) instead of re-typing the whole line. There is a newer version that I have yet to install, that will remember several of your last command lines for recall at any time.

Many new programs are now available (in case you haven't read your CN-80's lately!): A SPELLING CHECKER for any ASCII file, FASTBACK for fast HD backups, a text reader that allows scrolling both forward and backwards, can now add comments to your directory listings (what it is or startup commands), a MOVE utility, PRINT to send printer codes to your printer directly from DOS READY instead of going into Basic to do it, Change System drives without changing your drive numbers around, Mouse drivers, and on, and on, and on!

My next wish is to get the Page Scanner that runs with the Model 4 that is now available. (Or will the 300 dpi version that would match my DeskJet printer resolution be available soon?--How about it Frank Slinkman?)(Or would the better resolution be worth the extra scanner cost?) After that, my wish would be for a driver for the new DeskJet 500C to print in color. How about it Gary Shanafelt? My Model III Business

Graphics program can print in color on my CGP220 color ink jet printer, but the colors are very washed out. The new DJ-C has very vivid red and blue that looks much better.

You really need to be there to appreciate the speed at which these things happen when they operate out of the RAMDRIVE. You can get the idea in your own machine if you have 128K installed and use MEMDISK, but it's space is very limited. If you have a Hi-Res board, you can use its memory also to make a bigger MEMDISK, up to 96K for more program space. Can also boot and load it in 20 seconds using GRAFDISK.

From the menu, a touch of the S key flashes the SuperScriptit logo on the screen, but still have to wait a second or two while it searches the drives for who knows what reason, then up comes opening menu. Alternatively from DOS READY I can use the KSM with CLEAR+S and can then add a filename and directly go to the document. If I happen to mistype (often) a filename or open a new file, my Open Document Menu tells me: NEW DOCUMENT!!!! If that's what I want, I erase it with SHIFT+CLEAR and continue, it will open it in the RAMDRIVE. If my editing of an existing disk file will be extensive, or going to proofread it I hit C in the menu and copy it into the RAMDRIVE before opening it for operating speed. SuperScriptit will show the document pretty much as it will be except for the right justification in proportional printing. The Global Search/Replace with @G is through a menu and a little slow compared to Allwrite. Proofreading is done from the main menu which requires quitting the document first, and then requires re-entering the filename. With the RAMDRIVE it sooo much faster than off disk. It then takes you through the document on the screen unrecognized word by word for correcting or adding it to the dictionary, or skipping it.

When you quit any program, DIRECT returns you automatically to the Menu. From there a touch of the A key flashes up Allwrite. Entering the filename brings it up in a flash. In Allwrite the Formatter control words and lines clutter up the screen pretty badly and visualizing what the printout will look like is difficult. Fortunately, there is a way to have it display on the screen what



the printout will look like, including emphasis marks such as underling, bold characters, etc., but it is comparatively slow. Global SEARCH is done with BREAK+S and adding the search word, then replacement instructions with BREAK+ and adding the replacement. Once done, the BREAK+SR command is lightning fast! The spell checking with Electric Webster is done from within the document with just three keystrokes and is lightning fast as it runs in the machine operating Ram as opposed to the RAMDRIVE. Electric Webster then shows you all the unrecognized words at once for review. If indeed they are all correct, you can skip right back to the document. If you choose to go word by word, you have the options of correcting the word, seeing its context on the screen, or scanning the dictionary for words that are spelled similarly and can scroll through the words, add the word, or skip it for the rest of the document.

I have my Allwrite set up so it will automatically save the document every fifth change I make. The screen just blinks as it saves it to the RAMDRIVE, it's that fast. The advantages I like about Allwrite is I can change fonts and sizes mid line and call up special characters from the keyboard like the smily face, fractions, etc. Many Fonts and sizes are available to print out on the DeskJet. It is also very easy to print in columns like a newspaper or magazine. I save the document off to a disk periodically in case of a glitch very easily and can save it off to a different name for different versions.

DOTWRITER is another useful program that is similar to Allwrite and can be called in from Allwrite. There are many, many Fonts and Icons available for Dotwriter (showed about 50 pages of printed out fonts and icons here.) With the use of HYPERCROSS I have converted many Icons from IBM format for use in Dotwriter.

LeScript, I've heard, is the Cadillac of the word processors. I have the Demo disk from Anitek, and it looks impressive with "What You See Is What You Get" and displays bolding, underlining, etc. Just haven't taken the plunge for it yet because having been out of work for almost a year now, my bucks are running very short!

Other Menu choices I have programmed in are "M" for "MINITERM", a JCL program that saves off all new and modified documents from the RAMDRIVE to the disk in drive 1, any modified files on drive 1 disk to an "archive" section in the Hard Drive (thus saving all files out of the RAMDRIVE in case of a glitch, and saving a backup copy in the HD), it then automatically goes to the Invoice program for invoice updating.

The other choice of note is "T" in the menu which is for "TERMINATE" at the end of each day. It automatically saves all the visible files (new ones only, as I make all the operating files invisible) to the "archive" section of the HD, saves off the updated invoice data to the booting section of the HD as well as to a floppy in one of the drives (just in case the HD should crash), it then parks the HD for safety. Then it's time to walk away or shut it down. The screensaver will turn off the screen to prevent burn-in.

SUPERLOG is another "sleeper" I have found. It is super for keeping notes. In a 128K machine it can be kept in the background and called up in an instant. I don't remember how many thousand pages (screenfuls) of notes it can keep, but it's plenty. It has powerful search functions to search for words or phrases, both case sensitive or not. Cut and paste, and page printout capabilities. I use it to keep all kinds of notes, including company and personal phone numbers and addresses as well as technical notes about various things such as drive jumper setups, hardware installation notes, "to do" notes, and reminder notes for various people. I can search for a person's name or a particular drive by ID# and up comes the page with those notes. It's easy to use and fast.

DDUTY is also very useful. It makes two separate computers in one with fast switching between two windows. Like while printing out of one (through a buffer) I can switch to another program in the other window and continue doing something else. Can have different documents in each window and copy blocks from one to the other, or have data in one for easy reference for program in the other window. A newer version is available from MISOSYS.

I'm currently still using XTERM for my

communications program. Just haven't installed my FASTERM by Mel Patrick yet. Just too many new things to try out and get used to. It's programmed to automatically come up and dial the local club's BBS when I call it up. I like to automate everything I can, it's much faster than typing (especially mine) and don't have to remember all the details.

HI-RESOLUTION is maybe the best part yet, at least the most fun and interesting. I have the Radio Shack Model 4 HR board in one of my Model 4s, the R.S. Model III HR boards in this Model 4 (yes MIII HR board in a M4!), and a Model III with a Micro Labs HR board in it. Its resolution is as good as a Mac and there is a multitude of programs available for it from the File Cabinet as Public Domain, many shareware, as well as commercial programs available. New programs are still coming out from some very clever people as I've mentioned before. There are too many to name, but I use GIF4MOD4, with GIF pictures available on CompuServe, HIRES4, TRSDRAW/TRSTEXT, MOUSEDRAW, all from File Cabinet, PRO-DRAW available from Micro Labs, and xT.CAD from CN80. There are programs available to print pictures directly from disk picture files without a Hi-Res board installed, but you miss the fun of without seeing them on the screen.

To really give a fun demo I use GIF for pictures and effects of different dithering, HIRES4 and its ability to read MAC pictures, and then print out some very nice pictures of "SCROOGE" in different sizes and locations on the page using HPPRINT. Yes you can superimpose Dotwriter font text right on the picture and print them all out together in a customized picture with TRSDRAW and TRSTEXT. I use MOUSEDRAW and have some fun drawing with the mouse. Next comes the 3-D draw program and have fun rotating the 3-D objects right on the screen with different perspective angles and distances. Last but not least of REMBRANT with its handy tools for automatic cones, polygons, painting patterns, sideways text, and cutting and pasting. All in all a pretty good demo of graphics capabilities.

Can't believe I've rambled on here for four

pages, but as you can see, I think I've got a pretty neat system here. It sure does everything I want it to, and it's FAST, at least for now, and for most of it, the prices sure are very reasonable. Maybe we can't have a color screen (yet), but I'm still printing out in black and white and my black and white screen gives me a more real display of what I'm going to get!

As long as my TRS-80's do what I need, and these new programs and utilities keep coming along that make it easier and easier to do them, I'll forego the glitter and clumsiness of MS-DOS and save my bucks for my good old compact easy to use TRS-80's!

Hope this has inspired you to forge ahead and try some of these things, and perhaps upgrade your machines.

-The RECYCLER, Frank Gottschalk

*(Editors Note) Let us hear about your super4 system, and share your experiences with your fellow readers.*

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## FASTBACK REVIEW

by Roy T. Beck

This is a review of David Goben's recently new program, FASTBACK. But before I get into the review, let me philosophize a little.

I suppose you could say this is a review with an attached guilt trip! The first thing I would like to note is that I have several hard drives for my own use. I have one 35 Meg in my office at home, another in my office at work, and a 5 Meg which I use for club meetings, testing, and general tinkering. Do I back them up regularly as I and we all know I should? Of course not! I'm just as guilty as many of us about failing to backup HD files. Have I suffered because of this? Yes. My 35 Meg at the office went flaky a year ago, and talk about cold sweat.... But the trouble turned out to be a bad power supply, and that was easily solved. Still, the trouble was real, and for a while, at least, I could not access files needed in business. Have I learned anything? Well, maybe.

At any rate, David Goben recently came out

with a new version of his HD backup utility, this one named FASTBACK. (He did an earlier one called FBACKUP, and that is a different program). FASTBACK actually comes in two versions, one for Model III and one for Model 4.

Finally getting some religion, I backed up my two 35 Meg drives. My, it does take a lot of floppies to backup a large drive! It took 16 floppies to record the approximately 5 Megs of material I have on the drive at work. Actually, a lot of that space is occupied by diskDISK files. Empty or full, these files require the same space to backup. Since they are actually mirror images of floppies themselves, each diskDISK requires essentially one full floppy all to itself in the backup process.

FASTBACK has nine optional parameters for use at backup time. These include:

ALPHA	Backs up the files in alphabetic sequence.
DATE	Backs up according to file dates.
INV	Backs up invisible files, also.
MOD	Backs up files modified since last backup.
QUERY	Asks you about every file before beginning the backup.
SIZE	Allows you to specify only files exceeding your floppy in size or minimum sector size to copy.
TEST	This checks and tells you how many floppies will be required.
UPDATE	Allows you to specify whether MOD flag should be updated.
VERIFY	Allows you to call for verification of backups, which is slower.

All of these can be abbreviated to first letter only, a thoughtful convenience. I find myself using Alpha, Inv and Test all the time, and sometimes Verify. Obviously there will be times when I will need the others, also.

I was especially pleased with the "Test" parameter, as it zips through a drive in a matter of seconds and then tells you how many floppies to prepare. (You have to insert a formatted floppy so Test knows what size floppy you plan to use).

Note that FASTBACK cannot save and restore the DOS SYStem files. These are ignored, and you must use normal DOS procedures to restore system files.

When you reload the files, a different program FASTREST with a different set of parameters is available:

CYLST	Allows setting starting cylinder for file restoration.
DATE	Restores according to file dates.
NEW	Restores only files not on the hard disk.
OLD	Restores only files already on the hard disk.
QUERY	Asks you about every file before restoration of any of them.
VERIFY	Allows you to call for verification of backups, which is slower.

Partspecs are also supported, as is normal in LS-DOS and LDOS.

As an experiment, I used FASTBACK to backup all the files on my 35 Meg at work, using a 4P with 128K and speed set at FAST. I saved several partitions with and without "Verify" just to see what the difference was. With Verify on, the time to save was about 18 minutes per Meg of storage. Without Verify, the time required dropped by 75%. In other words, the backup speed went up by a factor of 4! This works out to about 4.5 minutes per Meg.

Altogether, the FASTBACK system seems quite versatile. Its principal virtues are its speed and the fact that it can handle files which are larger than the floppy disk you are saving to.

For a price of \$29.95 plus S&H, I think this is an excellent program which every hard disk user should own. Note that the versions for LDOS and LS-DOS are sold separately, same price. Furthermore, if you are running LDOS on a Model 4/4D/4P with extra memory, either "128K" or the XLR8er, you should consider buying MISOSYS' Hardware Interface Kit. This will provide more buffer space for the LDOS version when running in the Model 4 and will speed up operation of FASTBACK somewhat.

-Roy T. Beck

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## OPEN FORUM

### LTR: PLAUDIT FOR CN-80 MAGAZINE

After we learned that Ray Parodi's house was lost in the great Oakland fire, Al Mowers called the editor of CN-80 magazine Stan profusely thanked Al for calling him and telling him that Ray lost his complete library of CN-80's along with all his computers and programs.

Within three days a bundle with all three years of back issues of CN-80 were on Ray's doorstep at no charge! How's that for support from the friendly TRS-80 users and community?

Since then, Ray has acquired another Model 4P and Al and I have managed to resurrect some of his vital programs and data from disks that Ray had so graciously given us before to show us his setups for various programs. What goes around, comes around!

A big THANK YOU to CN-80 for Ray's bundle.

F. G. Fremont, CA

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**LTR:** Gentlemen: Just finished copying about 7 Post Master font and border disks. Each font and each border cluster comes with its own map, labelled font1/map, font2/map etc., or border1/map and so forth. In order for the program to function properly, the map or maps for each disk must be copied over or renamed, to a neutral name as designated in the read/me file, and the maps cannot be on the same disk as the borders to which they point.

PM can only read two map titles. PMBORDER/MAP and FONT/MAP.

Therefore it would be very easy to end up with a confusion of maps on disk, particularly if you forget the name of the original map you want to recreate. The /map files will overwrite each other if you aren't careful.

I dealt with this problem as follows: first put all fonts and all borders on as few disks as possible. Then put all font and border maps on a single disk. Then create a memdisk (bank 1 should suffice) and make it drive 3 or whatever. Then copy the /map

file you need to the memdisk. Auto the memdisk as follows, <auto=system Drive=n,driver="memdisk">).

Thus when you start PM with a system disk that has the auto, the memdisk will automatically be created, and by copying your /map files to it, there is no need to copy it to a real disk, or rename it, thereby avoiding serious errors, and perhaps files that you don't need. Additionally, Memdisk copying is very rapid.

-C. H. NJ

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**LTR:** I appreciated F.O.'s review and comments on "My Adventures with Hard Drives, Part 8". It's very interesting that he was also on the verge of writing an article on the internal connections of RS's hard drives. Looks like no one has an exclusive on any aspect of these delightful machines! However, I do have to offer a comment to a couple of F.O.'s points.

1. F.O. is correct. If the three wires are properly connected and the plug is connected to J-10, then the Write Protect switch functions correctly for either position of the jumper. The only time it is important is if either the three wires are not connected OR the plug is not connected to J-10. In the latter situation, then the jumper must be set E13/E14, and the Write Protect switch will have no effect. You will be able to write to the drive regardless of the position of the WP switch.

If the jumper is set to E14/E15 and the wires or plug are not connected, then the drive is always write protected, regardless of the position of the WP switch. Obviously the jumper should always be set E13/E14 for our purposes.

2. F.O. suggests the white wire should be moved to HDC J-6, pin 8, not pin 6 as I noted. I think the problem here is that F.O. trusted the RS schematic diagram. The schematic diagram does NOT match the actual boards, (at least the ones I have worked with). The trace from J-5, pin 8 does not connect to J-6, pin 8, it goes to J-6, pin 6! Since RS did not install a connector at J-6, no harm was caused by the printing error. But, the white wire should go to J-6, pin 6 if the circuit is to work properly.



3. F.O. is correct that the white wire should go to HDC U-31 pin 8. With this connection, the light will be normally on, flickering off, just as in the 5 Meg drives. While my circuit works, I prefer F.O.'s arrangement as his has the benefit of making the green light function as a power-on pilot light in addition to its select and activity function.

4. I stand by my suggestion of cutting the trace per Note 1 or Note 2. My reason is that I don't trust ALL drive vendors to have implemented J-2 pin 5 in the same way. I do this for insurance, as I don't want to risk possible damage due to backfeed into the hard drive.

5. We obviously agree fully on this point!

I really do appreciate F.O.'s comments, as I certainly do not claim to be perfect. I'm still learning, and hope to keep on doing so. It is always true that the more checking you do, the better the design; further, I have learned it is always better to have someone else involved in the checking, as one person can stare at a mistake for a long time without recognizing it. In this case, F.O.'s comments stimulated me to go do some further research, and I learned a few things in the process. Thank you, F.O.

Reference: Open Forum, December 1991, comments by R.D.H. of Nashville, TN.

I'm glad my article was helpful to R.D.H. but he obviously is not yet getting full advantage of his 20 Meg drive. If he will buy RSHARD from MISOSYS (phone 1-800-MISOSYS) for \$29.95 plus shipping, he can expand his LS-DOS horizons to a full 20 Meg! RSHARD will accept any drive from 5 Meg to 70 Meg, as long as the drive is MFM with ST-412 interface. The specifics are that his hard drive controller will accept any drive with up to 8 heads and up to 1024 tracks (cylinders). The RSHARD package includes drivers for both LS-DOS and LDOS, and will allow both DOSes to exist simultaneously on the drive; by means of two separate boot floppies, the drive will come up with LS-DOS or LDOS as desired. It will even allow both DOSes to access a partition in common. This last feature allows a person to save a file from one DOS to the common partition, then copy it off with the other DOS onto a floppy disk

under the other DOS. Very handy in moving files from LDOS to LS-DOS and vice versa. R.D.H. need not wait on David Goben, and should also know that Goben's driver probably would not do him any good anyway, as I believe that driver is written for a SCSI controller, and will not work with R.D.H.'s Radio Shack drive. Go with RSHARD, it is the answer for Radio Shack hard drives.

## COMMENTARY

I have recently learned that Seagate offers a valuable free service. By calling their SeaFAX service on 1-408-438-2620 from a touch-tone phone, they will send out (by FAX) a data sheet for any Seagate hard drive. The first time, you should order their Index by hitting the "1" button when asked. They will ask for your FAX receiving number, and the three page index list will show up promptly at your FAX machine. The index list provides a document number for each Seagate drive. They will allow you to order up to three documents on each call. For the drives I have, the data sheet is typically one page, listing the heads, cylinders, stepping rate, shunt positions, write precomp, etc. This normally will provide sufficient information to allow you to install a particular Seagate drive in a computer. Thank you, Seagate!

Seagate will NOT provide schematic diagrams for their drives. I tried. Boo to you, Seagate!  
-Roy T. Beck

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Q: I have a 4P with 128K and dual 720K drives that I use with a RS 15meg. hard drive. Now when I try to initialize it using TRSDOS 6.2 the formatting aborts at cylinder 153. Any ideas what the problem is or what to try? Is there a program like QUICKEN for my Model 4P.

I am using Profile 4+ for my inventory Data Base, does anyone know how to print my new entries for the day (other than one per sheet of paper) without printing the previous entries? I have 600 entries in one category and when I add 10 more, the only way I can print the new entries is one per page, or print the entire 610 again.  
-E. F. Dallas, TX

**SAMPLE/PRT Program Listing Number One by David Goben**

```
10 DEFINT A-Z:CLS
20 INPUT"Epson value";V$
30 V=VAL(V$):D=64:E=1:B=7:C=128
40 A=V AND D
50 IF A THEN C = C OR E
60 D = D / 2
70 E = E * 2
80 B = B-1:IF B THEN 40
90 PRINT"DMP value:"C
100 PRINT:GOTO 20
```

**SWDMP/BAS Program Listing Number Two by David Goben (for Tandy DMP printers).**

```
10 CLS:PRINT"SIDEWAYS PRINTING DEMO FOR DMP PRINTERS"
20 PRINT"(c)1991 David Goben. Free for distribution"
30 PRINT:DEFINT A-Z:DIM D$(60),P$(127-31)
40 PRINT"initializing...";
50 FOR X=32 TO 127:P$(X-31)="
60 FOR Y=1 TO 8
70 READ A:P$(X-31)=P$(X-31)+CHR$(A)
80 NEXT Y,X
90 PRINT CHR$(29);CHR$(30);
100 A$="":INPUT"Enter filename to print sideways, or BREAK";F$
110 IF F$=""THEN 100 ELSE OPEN"I",1,F$:EF=0
120 LPRINT CHR$(30);CHR$(27);CHR$(19);
130 IF EF THEN CLS:GOTO 100 ELSE X=0:LPRINT CHR$(18);
140 IF EOF(1) THEN CLOSE 1:EF=X:GOTO 170
150 LINE INPUT#1,D$(0):IF D$(0)=""THEN 140
160 X=X+1:D$(X)=D$(0):IF X<60 THEN 140
170 IF X=0 THEN GOTO 130
180 FOR Z=1 TO LEN(D$(1))
190 FOR Y=60 TO 1 STEP -1
200 IF Y>X THEN LPRINT STRING$(8,128);:GOTO 220
210 LPRINT P$(ASC(MID$(D$(Y),Z,1))-31);
220 NEXT Y:LPRINT CHR$(30);CHR$(27)"Z"CHR$(1);CHR$(18)
230 NEXT Z:LPRINT CHR$(30);
240 Z=LEN(D$(1)):Z=99-(Z-FIX(Z/99)*99)
250 Y=FIX(Z/9):IF Y THEN FOR X=1 TO Y:LPRINT CHR$(27)"Z"CHR$(72);:NEXT X
260 Z=Z-Y*9:IF Z THEN LPRINT CHR$(27)"Z"CHR$(Z);
270 GOTO 130
280 DATA 128,128,128,128,128,128,128,128
290 DATA 128,132,128,132,132,142,142,132
300 DATA 128,128,128,128,128,146,146,146
310 DATA 128,146,146,191,146,191,146,146
320 DATA 128,140,159,160,158,129,190,140
330 DATA 128,177,178,132,136,147,163,128
340 DATA 128,183,136,136,181,134,137,134
350 DATA 128,128,128,128,128,130,132,132
360 DATA 128,132,130,129,129,129,130,132
370 DATA 128,130,132,136,136,136,132,130
380 DATA 128,128,145,142,191,142,145,128
390 DATA 128,128,132,132,159,132,132,128
```

Cont'd on next page

400 DATA 130,132,132,128,128,128,128,128  
 410 DATA 128,128,128,128,191,128,128,128  
 420 DATA 128,132,132,128,128,128,128,128  
 430 DATA 128,129,130,132,136,144,160,128  
 440 DATA 128,158,163,165,169,177,161,158  
 450 DATA 128,159,132,132,132,133,134,132  
 460 DATA 128,191,161,134,152,160,161,158  
 470 DATA 128,158,161,160,156,160,161,158  
 480 DATA 128,156,136,191,137,138,140,136  
 490 DATA 128,158,161,160,160,159,129,191  
 500 DATA 128,158,161,161,159,129,130,156  
 510 DATA 128,132,132,132,136,144,161,191  
 520 DATA 128,158,161,161,158,161,161,158  
 530 DATA 128,142,144,160,190,161,161,158  
 540 DATA 128,132,132,128,128,132,132,128  
 550 DATA 130,132,132,128,128,132,132,128  
 560 DATA 128,136,132,130,129,130,132,136  
 570 DATA 128,128,191,128,128,191,128,128  
 580 DATA 128,132,136,144,160,144,136,132  
 590 DATA 128,136,128,136,144,160,161,158  
 600 DATA 128,158,129,189,165,189,161,158  
 610 DATA 128,161,161,191,161,161,146,140  
 620 DATA 128,159,162,162,158,162,162,159  
 630 DATA 128,156,162,129,129,129,162,156  
 640 DATA 128,143,146,162,162,162,146,143  
 650 DATA 128,191,162,138,142,138,162,191  
 660 DATA 128,135,130,138,142,138,162,191  
 670 DATA 128,188,162,185,129,129,162,156  
 680 DATA 128,161,161,161,191,161,161,161  
 690 DATA 128,142,132,132,132,132,132,142  
 700 DATA 128,142,145,145,144,144,144,184  
 710 DATA 128,227,146,138,134,138,146,163  
 720 DATA 128,191,162,130,130,130,130,135  
 730 DATA 128,193,193,193,193,201,213,227  
 740 DATA 128,161,161,161,177,169,165,163  
 750 DATA 128,140,146,161,161,161,146,140  
 760 DATA 128,135,130,130,158,162,162,159  
 770 DATA 128,224,158,169,161,161,161,158  
 780 DATA 128,167,146,138,158,162,162,159  
 790 DATA 128,158,161,160,158,129,161,158  
 800 DATA 128,156,136,136,136,136,201,255

810 DATA 128,158,161,161,161,161,161,161  
 820 DATA 128,136,148,162,193,193,193,193  
 830 DATA 128,182,201,201,201,193,193,193  
 840 DATA 128,193,162,148,136,148,162,193  
 850 DATA 128,156,136,136,136,148,162,193  
 860 DATA 128,255,194,132,136,144,161,255  
 870 DATA 128,143,129,129,129,129,129,143  
 880 DATA 128,160,144,136,132,130,129,128  
 890 DATA 128,143,136,136,136,136,136,143  
 900 DATA 128,128,128,128,160,145,138,132  
 910 DATA 255,128,128,128,128,128,128,128  
 920 DATA 128,128,128,128,128,136,132,132  
 930 DATA 128,254,161,190,160,158,128,128  
 940 DATA 128,186,198,198,186,130,130,131  
 950 DATA 128,158,161,129,161,158,128,128  
 960 DATA 128,238,177,177,174,160,160,176  
 970 DATA 128,158,129,191,161,158,128,128  
 980 DATA 128,142,132,132,142,132,164,152  
 990 DATA 159,160,190,161,161,222,128,128  
 1000 DATA 128,163,162,162,166,154,130,131  
 1010 DATA 128,142,132,132,132,134,128,132  
 1020 DATA 158,161,161,160,160,176,128,160  
 1030 DATA 128,178,138,134,138,146,130,131  
 1040 DATA 128,142,132,132,132,132,132,134  
 1050 DATA 128,201,201,201,201,183,128,128  
 1060 DATA 128,161,161,161,163,157,128,128  
 1070 DATA 128,158,161,161,161,158,128,128  
 1080 DATA 135,130,154,166,166,155,128,128  
 1090 DATA 184,144,150,153,153,182,128,128  
 1100 DATA 128,135,130,162,166,155,128,128  
 1110 DATA 128,159,160,158,129,190,128,128  
 1120 DATA 128,152,164,132,132,159,132,132  
 1130 DATA 128,174,177,161,161,161,128,128  
 1140 DATA 128,136,148,162,193,193,128,128  
 1150 DATA 128,182,201,201,201,193,128,128  
 1160 DATA 128,145,138,132,138,145,128,128  
 1170 DATA 159,160,190,161,161,161,128,128  
 1180 DATA 128,159,130,132,136,159,128,128  
 1190 DATA 128,152,132,132,131,132,132,152  
 1200 DATA 128,132,132,132,128,132,132,132  
 1210 DATA 128,134,136,136,176,136,136,134  
 1220 DATA 128,128,128,128,128,128,153,166  
 1230 DATA 128,255,193,193,162,148,136,128

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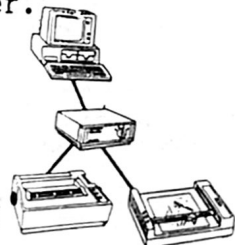


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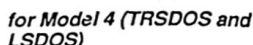
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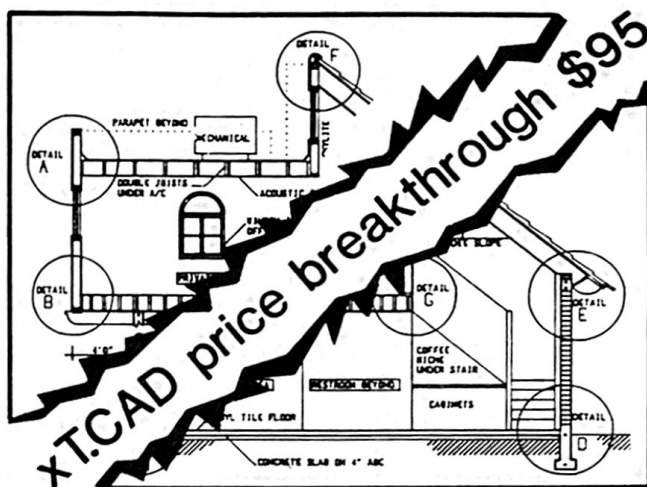
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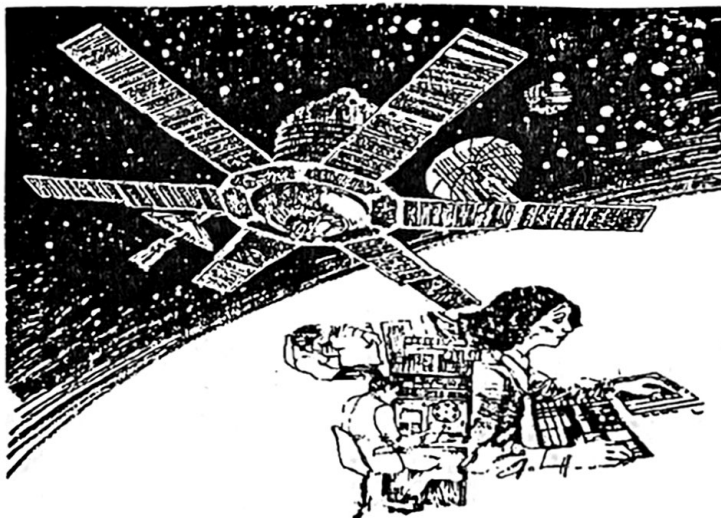
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## Books by Christopher Fara

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Written in plain English, the manuals are better organized, with more and better examples for the use of DOS, JCL and BASIC; include chapters with examples on interfacing of DOS and BASIC with assembly language; describe in detail popular ROM, RAM and DOS subroutines; and provide lots of useful extra information never before published in the Model III and Model 4 manuals.

"... no matter how long one is using a system, there will be times to look up the manual ... nothing easier than looking into Chris' comprehensive, beautifully arranged and printed treatise ... the organization is exceptional good ..." (review by Henry H. Herrdegen)

"... excellent alternative ... not only does it offer information I have not been able to find in the regular BASIC manuals, it explains in better detail what some of the more arcane commands are good for, or not good for ... here is a manual where you can find it all ..." (review by Henry A. Blumenthal)



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"... highly readable ... I realized how much I had been missing in Edtasm manual ..." (review by Jane A. Layman)

"... somehow Chris Fara manages to bring the subject down to earth ... explains simply and effectively ... in clear, concise and, most importantly, in plain and easy to understand English. Now, that's impressive ..." (Lance Wolstrup)

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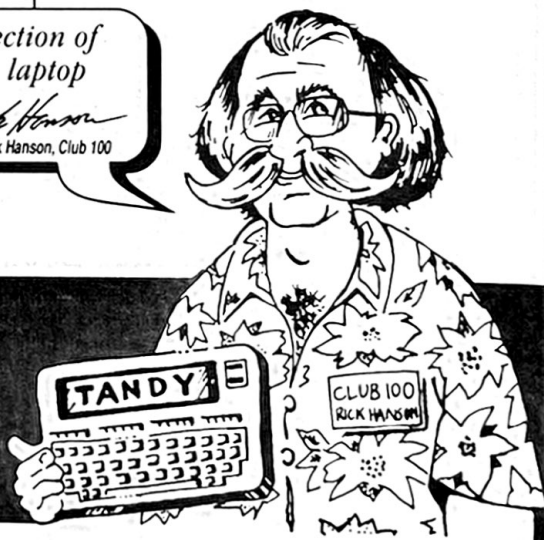
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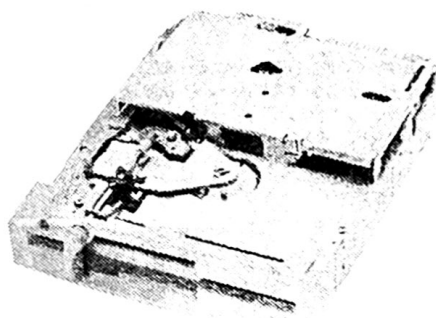
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# Computer News 80 Product Guide

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—	<b>CN80 INDEX on Disk</b> \$ 2.00 (V) Complete index for CN80 1988 thru 1991 on a Flippy disk. 24 classifications of search. Search by Mod #, "word" only, book (issue), system, articles w/program listings, etc. Specify LSDOS 6.3 or TRSDOS 1.3	
—	<b>CN80 DISK SERIES NUMBER ONE</b> \$ 5.00 (V) All the programs printed in Vol 1 No. 1 to No. 6, first six months, plus a Shell Utility Bonus Prog.	
—	<b>CN80 DISK SERIES NUMBER TWO</b> \$ 5.00 (V) All the programs printed in Vol 1 No. 7, 8 and 9, plus bonus programs.	
—	<b>CN80 DISK SERIES NUMBER THREE</b> \$ 5.00 (V) All the programs printed in Vol 1 No.10, 11 and 12, plus bonus programs.	
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PLEASE NOTE: All CN80 DISK SERIES are on FLIPPY disks; TRS/LS-DOS 6.3 format on Side 1 and TRSDOS 1.3 format on Side 2. The programs are identical on both sides, only the format of the disk is different.

## MANUALS & PROGRAMS PUBLISHED BY CN80

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—	<b>MOD 4 by CHRIS</b> \$ 24.95 (Z) by Chris Fara (Microdex, Corp.) For Mod 4/4P/4D TRS-DOS 6 & LSDOS 6.3 in plain English. 8-1/2 x 11, and 3 ring binder.	
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—	<b>Z-80 TUTOR II by Chris Fara</b> \$ 9.95 (X) The 1990 Toolbox series of essays published in CN80 revised in book form.	
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—	<b>VOLUME X: by Chris Fara</b> \$ 12.95 (Y) "Z-80 TUTOR X" stand-alone reference manual for assembly programming on any Z-80 Computer. 62 pages; thorough, yet compact and easy-to-use.	
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_____	Times Roman	10 point
_____	Palitine	12 point
_____	Centrum	12 point
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See pricing on next page.

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Sold only with Composer or Player program.	
Interface and Composer	\$89 (Z)
Model 3 or Model 4 Versions.	
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Model 3 or Model 4 Versions.	
Y CABLE	\$18.00 (Y)
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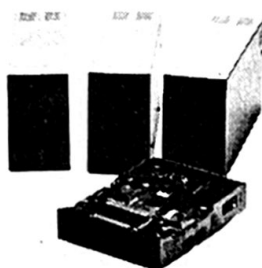
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