MOD-II
THE NEWSLETTER FOR OWNERS OF THE TRS-80™ MODEL II MICROCOMPUTER

The purpose of the **MOD II NEWSLETTER** is to provide and exchange information related to the care, use and application of the **TRS-80 MOD II** microcomputer system (TRS-80 is a Trademark of the Tandy Corporation). The **MOD II NEWSLETTER** is a user oriented **NEWSLETTER** and will greatly depend on **MOD II** owners for information included in the **NEWSLETTER**.

*** BITS AND PIECES ***

As you know, in the past we have never hesitated to plug products sold by **H & E COMPUTRONICS, INC.** This issue contains one of our biggest plugs yet. The **MOD II NEWSLETTER** is a break-even venture by **H & E COMPUTRONICS, INC.** (since it does not accept advertising). We do make a profit when we are able to tell you about some of the products that we sell...and this issue, we have a very special product to tell you about.

*** FASTBACK ***

FASTBACK is a new product created by **RACET COMPUTES**. **RACET COMPUTES** is the top-notch software house in California that has written other products that we have talked about in the past (such as the GSF software, MOD II UTILITY PAC and others).

What is **FASTBACK**? It does one simple task, it will BACKUP your diskettes. So what, you say! TRSDOS will BACKUP my diskettes! But **FASTBACK** will fully BACKUP any TRSDOS 1.2 or 2.0 diskette in under 55 seconds (compared to 12 minutes on TRSDOS). Not only that, **FASTBACK** fully verifies the accuracy of your

BACKUP (if you don't want your BACKUP verified--an unwise decision--**FASTBACK** will make a full disk BACKUP in under 35 seconds). **FASTBACK** will also work on a one disk drive system.

How does **FASTBACK** work? Just ENTER the command **FASTBACK :1 :2 ALL ABS** (for example) and **FASTBACK** will copy a diskette in drive #1 onto a diskette in drive #2. The ALL part of the command copies the full diskette. The ABS (absolute) part of the command allows FASTBACK to copy over any data that may appear on drive #2.

How does **FASTBACK** work so fast? Internal timing is a crucial element in its operation. In order to provide smooth timing of disk read/write operations at high speed, **FASTBACK** assumes complete control of all computer operations from TRSDOS when it is first started. After the completion of the backup, control is returned to TRSDOS.

Although the main purpose of **FASTBACK** is to provide a fast backup, it is also an excellent disk drive diagnostic tool. Here's how it works: when **FASTBACK** completes a backup, it gives you an error count. If you have a zero error count, you know that you disk drives and diskettes are in perfect shape. Or you may get an error count such as BACKUP COMPLETE 5 READ ERRORS AND 3 WRITE ERRORS. What this tells you is that **FASTBACK** made a full diskette backup. It also tells you that **FASTBACK** had a little trouble reading your original diskette and a little trouble writing onto the new diskette. Don't panic. This just means that either your

diskettes are getting old, your disk drives are dirty or possibly need minor adjustment. Since **FASTBACK** did not abort the operation, it's probable that no immediate adjustment to the diskettes or disk drives are needed. There are times when **FASTBACK** will abort its BACKUP operation. When **FASTBACK** aborts the operation, **FASTBACK** is telling you that something is wrong. It's probably time to use a brand new diskette or have your disk drives serviced. If **FASTBACK** aborts the operation, than all you have to do is use the much slower TRSDOS to backup your diskette onto a brand new diskette. Since TRSDOS is much slower, it is less sensitive to diskette problems and disk drive problems.

Although **FASTBACK** was not meant to be a diagnostic tool, we have found that it does predict future disk drive and diskette problems before they happen. We feel that this adds even more to its original purpose of making fast diskette backups.

FASTBACK is available through H & E COMPUTRONICS, INC. for $75. Although RACET COMPUTES seems to price **FASTBACK** a little high, the amount of time that it saves (and therefore money) makes it an excellent value. You can backup 10 diskettes in 10 minutes. Just like **H & E COMPUTRONICS, INC.**, I'm sure that there are many businesses out there that don't backup their diskettes every day, due to the amount of computer time taken by the task. One additional note--**FASTBACK** is plain and simple. You don't have to know anything about your computer to use it (well, at least you don't have to know too much about your computer).

*** THE TRS-80 MEANS BUSINESS ***

THE TRS-80 MEANS BUSINESS is the first book published just for TRS-80 MODEL II owners. The book is outstanding and an excellent introduction to the MODEL II computer. It is the first book to unscramble the use of the TRS-80 as a business computer.

THE TRS-80 MEANS BUSINESS is the first practical guide to small business computing that helps you and your TRS-80 really get down to business. What follows is a short review by the publisher:

"Here's the first introduction to computing with the best-selling TRS-80 MODEL II microcomputer that's geared specifically for business users. With **THE TRS-80 MEANS BUSINESS,** you can turn your RADIO SHACK MOD II microcomputer into an efficient business problem-solver. This crystal-clear guide explains what your new computer can and cannot do. And it covers the nuts-and-bolts aspects of business computing--from selecting the right system down to simple programming in easy-to-use BASIC.

You'll discover a wide variety of useful TRS-80 applications you can put to work right away. Case studies show you exactly how programs are implemented in solving everyday business problems. Many ready-to-run subroutines help you transform your TRS-80 into a powerful 'filing cabinet'--for example, to store payroll or customer accounts. You also get outlined examples of business programs that you can develop into fully operational software packages. Even the most difficult aspects of file structure programming are made easy.

With its straightforward explanations of 'computerese' and basic programming concepts, this book lets you put the decision-making capacity of the TRS-80 to work for your business today."

The topics covered include: Who needs a small computer?...Computer people talk funny...Who can afford a computer?...The computer as a filing cabinet...instant

retrieval techniques...the little databaser...analysis of small-business systems...getting started with MODEL II BASIC.

THE TRS-80 MEANS BUSINESS will not teach the Model II owner how to program. It is meant as an introduction to BUSINESS COMPUTING. This book is basically an elementary introduction to using the TRS-80 in business. It is not a BASIC PROGRAMMING TUTORIAL. Those readers interested in actually learning to program their Model II would benefit by reading two other books published by John Wiley and Sons (TRS-80 BASIC and MORE TRS-80 BASIC).

THE TRS-80 MEANS BUSINESS also contains a chapter that will benefit every programmer, called INSTANT RETRIEVAL TECHNIQUES. In this chapter, the author discusses in detail HASH CODE FILE RETRIEVAL METHODS. For those of you who are not familiar with this technique, HASH CODING is a data storage technique that allows the programmer to instantly recover any record stored on a diskette, in any desired field. For example, if you store a name and address file on your diskette using hash code techniques, you can retrieve any particular name (or zip code) from the file instantly. ALL OF THIS IS DONE IN BASIC, without any machine language code at all.

THE TRS-80 MEANS BUSINESS is brand new, written by Ted G. Lewis and published by John Wiley and Sons, Inc. It is available through H & E COMPUTRONICS, INC. for $12.95 (plus postage & handling) or through local book stores.

*** ON SPANNING DISK DRIVES ***

Here's a very interesting concept that most computer owners don't understand. There are very few software programs that span disk drives. Many first-time computer owners believe that having four disk drives will allow them to expand their data storage capacity. They are wrong!

Here is how most programs work (PAYROLL, GENERAL LEDGER, MAILING LIST, etc.). Let's use a mailing list program as an example. Most efficient mailing list programs will work like this. DISK DRIVE #0 contains your TRSDOS operating system and your MAIL LIST program. DISK DRIVE #1 will contain all of your names and addresses (data). The average mail list program will allow the user to store 3,000 names and addresses on one diskette. What happens if you have 5,000 names and addresses? The user has exceeded the limits of his computer. It's probably time to buy a hard disk drive.

There are several alternatives available for the user!

1. The user could put his additional 2,000 names onto another diskette. The problem that occurs is that the user will not be able to print out a list of his 5,000 names and addresses in alphabetical or zip code order, because each of the two diskettes contains a separate list of names.

2. The user could keep all zip codes under 50000 on one diskette and all zip codes above 50000 on another diskette. The problem with doing this is that you have to keep switching diskettes. An even more serious problem is--what happens if you need the list in alphabetical order? (It's even more difficult if you're talking about storing your business records and need payroll or general ledger totals stored on more than one disk drive).

3. The user could buy a hard disk drive (this is probably the best solution). By buying a hard disk drive, the user has virtually unlimited storage ability and doesn't have to worry about diskette switching.

4. The user could buy a software program that spans disk drives.

What does spanning disk drives mean? It means that when you have filled up all of the space on DRIVE #1, the computer automatically starts storing additional data on DRIVE #2. Spanning a disk drive is a process that fools the computer into thinking that disk drive #1 and disk drive #2 are one big disk drive. Most new computer owners believe that spanning the disk drive is a simple process and can't understand why have 3 or 4 disk drives doesn't add to the storage capacity of their computer. The answer is that spanning drives is a very difficult software process. It means that sorted lists have to be kept in a special file that tells the computer which of the two drives data is stored on. If anything goes wrong with a file, that's where the trouble begins. Any I/O error will make it necessary to recreate and resort your files.

What am I trying to tell you? Normally, (and there are exceptions), software programs are written to work on two disk drives. The first drive holds your operating system and the second drive holds your data (if your second drive is a hard disk drive, then you can hold a lot more data). Why buy a third drive? The third drive allows you to easily backup your data on the second drive. Why buy a fourth drive? Having four drives allows you to trouble shoot disk drive problems. Many times, you will find that one of your disk drives is not working perfectly (and this does tend to happen pretty often if you use your computer a lot). By having an additional drive, you can really fully test any hardware problems by putting your diskettes into alternative disk drives .

*** SPEAKING OF SPANNING DISK DRIVES ***

Here is an interesting letter from Bob Miller, Apartment 6Q, 380 Riverside Drive, New York NY 10025.

> "I am a subscriber to the **MOD II NEWSLETTER** and I have a situation which may be of general interest to MOD II owners.
>
> I am developing a system in which the Master File extends over three diskettes in drive 1, 2 and 3. I don't want to keep all three files OPEN at the same time as each OPEN file needs over 800 bytes. So, when I have to access a record on a drive that's not OPEN, I have to CLOSE the file on that and OPEN the file on the drive where my index tells me the record is located. This OPENing and CLOSEing degrades my response time. Can anyone tell me how to have a file which extends over 3 drives without this OPENing and CLOSEing?"

EDITOR'S RESPONSE...I don't think anyone can answer your question. If they could, it would have probably been done already. Just out of curiosity, I'm going to contact Scott Johnson at RACET COMPUTES and find out if it can be done. If anyone else knows the answer, please let us know.

*** A GOOD PRINTER REVIEW ***

From a letter written by a reader in Berkeley, CA (name withheld at writer's request).

> "I had just about written you off when the January 82 MOD-II Newsletter arrived. After reading what you had accumulated in six long months, I must say I was not very encouraged. The Newsletter is a rip-off in my view. If you guys can't do better than this, you ought to close up shop. I'm not going to cancel my subscription, but without dramatic improvement in content and in regularity of service, you can bet that you won't see a renewal when

this trial runs out.

There is a tremendous wealth of information pertinent to the Model II, but you guys, who claim to be specialists, can't even answer a couple of simple questions about the MX-80 printer. Do you have your windows boarded up and your phone lines cut? Well, enough of that. I've got a couple of things to report, then I'm going to sign off and see if you folks can get your act together and publish something better than the sorry piece of self-serving drivel that I just got in the mail.

About the MX-80. It is the perfect companion to the MODEL II. And all you have to do is plug it in and run. There should not be any complications at all. I started out with a Heath H-14 printer (serial, not knowing what I was getting in for), because at the time the Tandy printers were just ridiculously overpriced. There are all kinds of problems with serial printers when used with the Model II, at least in conjunction with Tandy software, not the least of which is the awful documentation which tells you next to nothing about serial hookups. Also, the performance of TRSDOS-based software is degraded when the serial drivers are used, and some of it won't run at all.

The key to success with the MX-80 is to use the parallel interface version--which is just fine since this is the least expensive baseline configuration, and can be obtained at prices now going below $450. Use the Radio Shack interface cable #26-4401 (Note!--Some Epson manuals show 26-4402--this is an error). You need to pay attention to how you set up the internal switches on the MX-80, but this is kid stuff. Once set, you can run TRSDOS or CP/M based software with equal ease, except that with CP/M you should set up for separate control of Carriage Return and Line Feed, whereas with Tandy, you must set the printer so you get an automatic LF when the computer sends a CR. The switch to go back and forth is fairly easily accessible through a porthole in the back of the printer. When you use separate LF and CR under CP/M, you have much more flexible control of the printer which allows you to easily handle stuff like underscoring, multiple strike, etc.

The GRAFTRAX package available as an option is definitely a good deal, because in addition to providing excellent dot-addressable graphics capability (the exploitation of which is unfortunately thus far impeded by lack of available graphics software), such nice touches as italics are included. I also strongly recommend anyone buying the MX-80 to get the F/T model, about $100 more and worth it, and a a better way to go than aftermarket friction-feed kits. The graphics package can be easly retrofitted at any time.

This brings me to CP/M vs. TRSDOS. CP/M may not have certain of the "user-friendly" touches of TRSDOS, but you can get some decent software to run under it. Some of the Tandy software is OK, and some is an abomination (Mail List, for instance, has so many limitations as to border on uselessness in serious applications...my opinion of course). My recommendation to any MODEL II user or purchaser is to forget all about Tandy software. Get a good CP/M e.g., the Pickles & Trout package, and buy your software from any the rapidly increasing base of vendors who are providing ever-more-sophisticated material for every conceivable kind of application. A single-source, a single-application deal such as the one Tandy tries to box you in with can never match the depth and quality available in the vastly wider world of CP/M. One of these days, Tandy will see the light, but until then, nobody need suffer the limitations of TRSDOS.

The MODEL II is a nice machine, and it just loves CP/M.

A very interesting new CP/M is available from Aton, in California. This setup allows you to explit the remarkable built-in capability (never announced by Tandy, of course) of bank-switching, which permits you to install and use up to 256K of memory! The additional memory, believe it or not, can be obtained simply by plugging in standard Radio Shack RAM boards!

Another fascinating development is the half-height disc drive, being made by both Shugart and by Tandon. This allows you to put two disk drives in the space now occupied by the built-in single drive of the Model II, and since these can be double-sided drives, you can get the equivalent of a full four drives in the space now occupied by the single main drive. As I understand it, the kinks with double-sided drives have pretty well been ironed out, and both the Shugart and Tandon setups are very slick. The Shugart unit has already been announced by Radio Shack for its Model 16. What a terrific retrofit package one of these drives would make for some enterprising person--I can barely wait! Here is a retrofit opportunity made in heaven. Among other things, these new drives are quieter and have much faster track-to-track access times (3 vs 10 milliseconds). These drives, with a good CP/M would turn the Model II into a real screamer and give the machine many more years of useful service.

Finally, one area that Tandy neglected in the Model II was screen graphics. In business applications, it is advantageous to be able to generate and output various types of graphs, primarily X-Y plots, histograms, and pie charts. Some new machines, such as the NorthStar Advantage, have built-in capability for this. Now there are at least a couple of packages that work in the Model II, although they are not cheap. They involve hardware modifications that enhance screen-mapping resolution over the crude graphics elements that a stock Model II provides, and include the necessary software from which graphic output can be generated. One of the capablitites thus provided is 3-D, the sort that you can draw a cube or an airplane, and then rotate it to view it from different perspectives. Very heady stuff.

Well, that's about enough. I am not a computer expert, just a canned-package user. This is just stuff I have picked up here and there, except for the MX-80 part which is personal experience, I learned the hard way."

EDITOR'S REPLY

That's a rough review of our MOD-II Newsletter, but I would like to make a couple of points very clear.

We are the only publication devoted exclusively to the TRS-80 MODEL II. The MOD-II Newsletter has 1,973 subscribers. We do not make a single cent of profit on the publication itself. Since we have no advertising, the subscription cost pays for the printing, advertising and postage. As we have previously admitted, we do make a profit on any software sales that we may receive after someone reads the Newsletter.

From the letters and phone calls we receive, we sincerely believe that the MOD-II Newsletter is worth the money, and that our readers are satisfied with the contents. Our readers are now paying $18 per 12 issues for the newsletter. Our single most important goal is to provide our readers with information that is worth $18. According to the letters we have received from readers, we have been meeting this goal. For example, in one of our past issues alone, we

reviewed the MOD-II UTILITY PAC. Although we sell the package, we reviewed the package because we chose to review it. We only choose to review what we feel is extremely important to MOD-II owners. Yes, we did sell plenty of UTILITY PACs from the review, but our readers also recovered hundreds of lost files. This month, we reviewed FASTBACK. Yes, we will sell plenty of FASTBACKs but how many people even knew about the product before we wrote about it? Just knowing about FASTBACK may be worth $18 to a good 1/3 of our readers.

We do try to help people on the telephone when we are able to. Unfortunately, like yourself, about 3/4 of our readers are only computer users and do not know how to program the MOD-II. Our programming staff is hit with every question in the book on every day of the week. We only answer the ones that can easily be answered. We can't follow up on the hundreds of questions that we get that take plenty of research. Who knows what the dip-switch settings should be on a Heath printer? Who knows how to convert Model-I SCRIPSIT files written under TRSDOS 2.2 to Model II Profile files written for TRSDOS 1.2? Yes, we could send someone to find out the answers to all of these questions...but they come in at the rate of over 10 per day (just for the Model II). It would cost us about $50,000 per year to answer all of these MOD-II questions (and our total gross income from the MOD-II Newsletter before expenses is less than $36,000).

Our MOD-II Newsletter is just meant to be a friendly exchange of information. We depend on reader participation to accomplish this exchange. We use the MOD-II machines at COMPUTRONICS to run our business and we want to use the MOD-II Newsletter as a communications vehicle. Our goal is to provide every reader with information worth $18 within the 12 issues of the publication. When we write the newsletter, we hope that we provide $18 worth of information in every issue (and one important fact or letter--such as yours related to the EPSON MX-80--can be worth $18 to someone ready to buy a more expensive printer).

On TRSDOS vs. CP/M, we use TRSDOS to run all of our business records and keep files on our more than 50,000 total customer base. CP/M is a good alternative if you find software that is only available under CP/M and not TRSDOS and we do agree that people should not be afraid of CP/M on their MODEL II...but if you don't have CP/M and only work under TRSDOS, you can still get your MOD-II to do anything you want it to do.

About the MX-80 printer, the print quality is excellent. There is a lack of graphic software because it costs a lot of money to develop software. Remember, there are probably less than 100,000 MOD-II computers out there. Maybe 1,000 of those MOD-II owners also own the EPSON MX-80. Out of those, maybe 10 (that's normal) will purchase a graphics package upon seeing an ad for it in a magazine. Let's say the package sells for $100. That means this great program writer stands to make $1,000 on writing the package...but the ad will cost about $3,000 to run...so the net loss is $2,000. That's why no one has developed an inexpensive graphics package for the MODEL II. Everyone has a special application software package that they would like to see for the MOD-II--it's not around for the same reason. As you see from our ads, H & E COMPUTRONICS, INC. only sells mass market appeal software. That's the only software that is cost-effective to sell and advertise.

*** ERROR 4 CAUTION ***

Many readers have asked about an ERROR 4 message that sometimes appears when they are making a diskette backup. The ERROR 4 message appears during the backup. TRSDOS continues the backup and when done states that the backup is complete and all files have been correctly copied. THIS IS NOT NECESSARILY TRUE. We strongly advise you to BACKUP your diskette again and keep doing it

until you get a BACKUP without the ERROR 4. The ERROR 4 usually indicates that the diskette is getting old or your disk drives need some kind of service (maybe just a disk head cleaning).

*** MORE TRSDOS 2.0 RESISTANCE ***

From Michael H. Cohoon, President, Acadia Refrigeration & Air Conditioning Limited, Kentville N.S. Canada.

"You said you wanted input from Model II users; here it is. Your Newsletter #6 stated that, 'Everyone should get rid of their 1.2 DOS.' I did and still 'can't believe it.'

I FORMATed some 2.0 disks, made some BACKUPs, PURGEd unnecessary files and XFERSYS a couple of disks. At this point I was thinking: Wow, this is great, they have really improved the DOS, everything is easy.

I have done my own programming and an invoicing program is the main core, as it calls up inventory (3,000 items), customer names and addresses, mechanic rates, codes and subcodes (for commission control). All of the above are used to build invoices on the screen, then if the invoice is correct, it is printed and saved on a disk and inventory is adjusted.

So, the first place I headed in my brand new shiny 2.0 disk was the invoice program. Now, this program used to take approximately a minute and one-half to read the first three characters of 3,000 part numbers and seven mechanics rates and names on the 1.2 DOS, it now takes nearly four minutes. Well, after I got over the shock, I tried the program and it was consistenly slow in all files and there was much more clickety-clack of disk drives.

I let the office use the new disk for a day and the only error they came up with was "A/O", it seems CLOSE command has to be changed to CLOSE (buffer number). At the end of the day we used to XCOPY all files with the /DAT extention to get a backup. I knew XCOPY wouldn't work but the MOVE command looked compatible, so I MOVEd seven files allright (slow), the eighth file came up ERROR 7 with a record number of 17. I tried another MOVE on the eighth file, good old #7 again but with record number 152, also error caused a jump to TRSDOS READY without any options to continue in spite of error.

So much for MOVE, I tried COPY on the eighth file, there were 1,117 records in that file and it copied every one but, I am sure I got more than 1,117 clickety-clacks; tell me that's not hard on my drives.

I'm going back to 1.2 DOS and XCOPY, it's better even with all its mistakes. I hope there is someone in Computer Land that can write a DOS that is as good as the Model II Computer."

EDITOR'S RESPONSE

1. I stick to my guns. TRSDOS 2.0 should be used and anyone using TRSDOS 1.2 should get rid of it. TRSDOS 1.2 does contain some serious errors.

2. Yes, TRSDOS 2.0 is slower to use, but you could probably make it run more efficiently by using better programming techniques. I haven't seen your program, but it shouldn't be that slow.

3. I don't understand why you use the XCOPY command. Why don't you just backup the entire diskette? **FASTBACK** is even faster (see previous item in this issue).

4. For those readers who don't know what XCOPY is, Mr. Cohoon brings up an excellent point. When you use the COPY or MOVE command under TRSDOS, TRSDOS will abort the entire operation if it has any problem reading any part of a file. XCOPY (part of the MOD-II UTILITY PAC) will copy the entire file and display an error on any part of the file it may have a problem with. This is extremely important when part of a file goes bad.

5. TRSDOS does copy with disk drive clickety-clacks. I don't know why they haven't changed that. TRSDOS copies one record at a time so it clicks each time it puts a record into memory. The RACET COMPUTES MOD-II UTILITY PAC puts as many records as possible into memory (let's say 200)...so you only hear one click per 200 or so records...then it places the entire contents of memory onto the destination diskette.

6. If your program works exactly correctly on TRSDOS 1.2 then use it...but I still think TRSDOS 2.0 is a major step up.

*** TRSDOS PATCH FOR PROGRAM EDITOR ***

The following PATCH to TRSDOS alters the "delete character" function of the program line-editor. This PATCH will cause any deleted or killed characters (during program editing) to be displayed in reverse video, rather than surrounded by slashes. (These patches were submitted by Les N. Delmarter, Owner, Customer Software Service, Post Office Box 150, Porterville CA 93258).

```
PATCH BASIC A=5446, F=5C, C=1A
PATCH BASIC A=5458, F=5C, C=19
PATCH BASIC A=541C, F=5754, C=F367
PATCH BASIC A=67F3, F=AFCD8761C5CD, C=3E1ACDB656C9
PATCH BASIC A=2A80, F=F367, C=0E59
```

Note: The last PATCH disables BASIC's NAME command. The area used by this command was needed for some additional code, so the last PATCH disables it completely.

These patches may cause a conflict with other patches and enhancements.

*** COMMUNICATIONS BETWEEN MODEL II AND MODEL III ***

(by Richard Kaplan)

If you've recently upgraded from a MODEL III to a MODEL II, or if you own both machines and develop programs for both, chances are you have experienced the frustrating problem of transferring programs between these two machines. When a program must be converted from one machine to the other, 95% of the original code can usually be salvaged. The major drawback is that retyping a program can often turn into a most horrendous chore. This need not be so, however. It is possible to transfer your programs directly, WITHOUT the need for ANY retyping!

MODEL III--MODEL II CONNECTION

Transferring a program from a MODEL III to a MODEL II, or vice versa, requires that you construct a cable to connect the RS-232 ports on each computer. (This port is an option on the MODEL III, so check to see if you have this feature. If you do, you will see a 25-pin female connector on the underside of your computer.) To build this cable, you should purchase a standard 25-pin RS-232

connector cable from a computer dealer, and you should have a soldering iron
ready.

Once you have purchased your cable, DISCONNECT ALL CONNECTIONS AT BOTH ENDS.
This should be done to reduce confusion later on when connecting wires. The
connections your new cable should have are:

```
            SIDE A                        SIDE B

          1 --------------------- 1

          2 --------------------- 3

          3 --------------------- 2

          4 --------------------- 5

          5 --------------------- 4

          7 --------------------- 7

       6,20 --------------------- 8

          8 --------------------- 6,20
```

Note that "6,20" means that these two pins should be soldered together ON THE
SAME SIDE and then a wire from either of these should go to pin 8 on the other
side. The pins are usually numbered on the side of the connector.

After you have constructed your cable, you should insert one end in your MODEL
III RS-232 port and the other end into port A on your MODEL II (port A is the
top of two serial channel ports on the rear of your MODEL II).

TRANSMISSION FROM MODEL III TO MODEL II

Type the following commands on your MODEL III from TRSDOS READY:

       SETCOM (BAUD=600,STOP=2,WORD=8,PARITY=3,WAIT)   <ENTER>

       ROUTE (SOURCE=PR,DESTIN=RO)   <ENTER>

The first command initializes the RS-232 port for 600 baud, 8-bit words, 2 stop
bits and no parity. The second command tells your MODEL III to send all
SUBSEQUENT line printer output to the RS-232 port.

After this is done, you should type the following commands on your MODEL II,
from TRSDOS READY:

       SETCOM A=(600,8,N,2)

       TERMINAL

The first command initializes the RS-232 port A for the same parameters as we
used on the MODEL III. The second commands loads the TRSDOS communications
utility, TERMINAL.

The TERMINAL menu should now appear on the MODEL II screen. If you wish to see
the program onscreen as it is received by the MODEL II, select menu option <E>

10

for Self-Echo. Now you must open a buffer to receive the text so that it may be stored on disk later. Select menu option <R> (Toggle RAM Buffer). You will see the prompt "RAM Buffer Now Open--Reset RAM Buffer (Y/N)?" Answer <Y>. Finally, select menu option <T> to Enter Terminal Mode. The screen will clear, and the MODEL II is now ready to receive the program.

Now you should get into BASIC on your MODEL III, and LOAD the program you want to send. When loaded, type LLIST <ENTER>...VOILA! Your program is now being transmitted to the MODEL II (If you selected TERMINAL menu option <E>, you should now see your program start to appear on the MODEL II screen). No more sleepless nights rekeyboarding programs!

What has actually happened is that the MODEL III has been instructed to divert all printer output to the RS-232 port. The LLIST command now sends the program through this port to the MODEL II.

Once your program has been completely received, you should store it on disk on the MODEL II. Press <HOLD> to return to TERMINAL's menu. Select option <R> to close the RAM buffer. Now use option <C> to Copy RAM Buffer to Disk--you will be prompted to enter a filename, then your program will be stored on disk.

If you wish to receive another file, use menu option <R> to open the RAM buffer again, and when asked to "Reset RAM Buffer (Y/N)?" answer <Y> (This erases the previous program from the RAM buffer). Now use option <T> to Enter Terminal Mode, and the MODEL II is ready to receive the next program.

TRANSMISSION FROM MODEL II TO MODEL III

Transferring a program from a MODEL II to a MODEL III requires the same cable as described earlier. This time, however, the cable should be connected to serial port B of the MODEL II, not port A.

There is one modification you may have to make to your MODEL II program before it can be transmitted to the MODEL III. If, in the writing of your MODEL II program, you have used either the tab key or the linefeed without carriage return function (Control-J), these codes will have to be removed from the program before it can be transmitted. If you attempt to transmit a program which contains the codes for either of these features (CHR$ numbers 9 or 10), you will get a DIRECT STATEMENT IN FILE error. If you know that your program does have these codes in it, or if you are unsure, use the program that accompanies this article--it will search through your program, automatically stripping out the codes if they appear, telling you whether these codes were found, and if found, how many times.

(NOTE: there are very few commands in MODEL II BASIC that do not exist in MODEL III BASIC. The keywords SWAP, ERASE and PRINT @ (X,Y) are not usable on the MODEL III. In addition, the formats of PRINT @, PRINT USING, ERR and calling a SYSTEM routine from BASIC are different on the MODEL III.)

Transferring a program from the III to the II requires a SMART TERMINAL program. (A SMART TERMINAL program for the MODEL III, by HOWE SOFTWARE, is available through H & E COMPUTRONICS--$69.95 on cassette, $74.95 on disk.) You should read the manual which accompanies your program and set up the communications parameters for 600 baud, 8-bit words, 2 stop bits, and no parity. Once this is done, enter the terminal mode and proceed with the next steps.

Now you should type the following on your MODEL II from TRSDOS:

```
        SETCOM B=(600,8,N,2)

        FORMS S

        FORMS X
```

The first command initializes serial port A with the parameters previously
described. The second command directs the computer to divert all subsequent
printer output to the serial port (Port B--also known as the RS-232 port),
rather than to the parallel port. The FORMS X command instructs the computer not
to issue a carriage return every 132 characters, as is customarily done with
line printer output, so that you do not wind up with extraneous linefeeds.

Now that these commands have been issued, get into BASIC on the MODEL II and
LOAD your program. Check to be sure your MODEL III has its terminal control
program loaded and ready to receive information. Now type LLIST and once again,
you are freed from bondage. You can walk away while your computer frees you from
all that tedious and unnecessary typing (don't forget to save the transmitted
program on the MODEL III disk!).

MODIFYING YOUR MODEL II PROGRAM FOR TRANSMISSION TO MODEL III

The following program will strip tab and linefeed codes out of your MODEL II
program, so that it may be transmitted to MODEL III. The program will read your
program, searching for the codes (CHR$ 9 and 10), removing them if they appear,
and telling you if any were found, and if so, how many times.

To process your program, load it into memory and then save it again, using the
'A' option. This will store your program in ASCII format. To save your program
in ASCII format type: **SAVE "filename", A**

Next, type in the following program (save it on disk) and run it (to run this
program you must have the capability of opening one file under BASIC--load BASIC
with the command: **BASIC -F:1**). The program will prompt you to enter your
program's filename, and then display your program line-by-line as it reads and
searches. Finally, it will close your program file, and report to you on what it
found.

```
100 CLS:T$=CHR$(9):L$=CHR$(10)
110 PRINT"PROGRAM TO STRIP TAB AND LINEFEED CHARACTERS FROM MODEL II PROGRAMS"
120 PRINT:INPUT "ENTER THE FILESPEC OF YOUR ASCII-STORED PROGRAM";F$
130 PRINT:INPUT "PRESS <ENTER> TO START PROCESSING PROGRAM FILE";EN$:PRINT
140 PRINT "OPENING ";F$:PRINT
150 OPEN "R",1,F$,1:FIELD 1, 1 AS B$
160 FOR I = 1 TO LOF(1)
170    GET 1, I
180    IF B$=T$ THEN LSET B$=" ":F1=F1+1:PUT 1, I
190    IF B$=L$ THEN LSET B$=" ":F2=F2+1:PUT 1, I:I=I+1:PUT 1, I
200    PRINT B$;
210 NEXT I:CLOSE:PRINT:PRINT:PRINT"FINISHED SEARCHING--FILE CLOSED":PRINT
220 IF F1 > 1 THEN PRINT"DELETED ";F1;" TAB CHARACTERS":GOTO240
230 PRINT"FOUND NO TAB CHARACTERS"
240 IF F2 > 1 THEN PRINT"DELETED ";F2;" LINEFEED CHARACTERS":GOTO260
250 PRINT"FOUND NO LINEFEED CHARACTERS"
260 PRINT:PRINT"PROGRAM END":PRINT
270 END
```

*** UNTIL THE NEXT ISSUE...SEND US YOUR LETTERS, IDEAS AND COMMENTS ***