Radio Shack

TRS-80® Microcomputer NEWS

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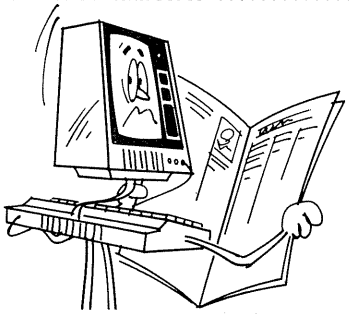
P.O. Box 2910, Fort Worth, Texas 76101

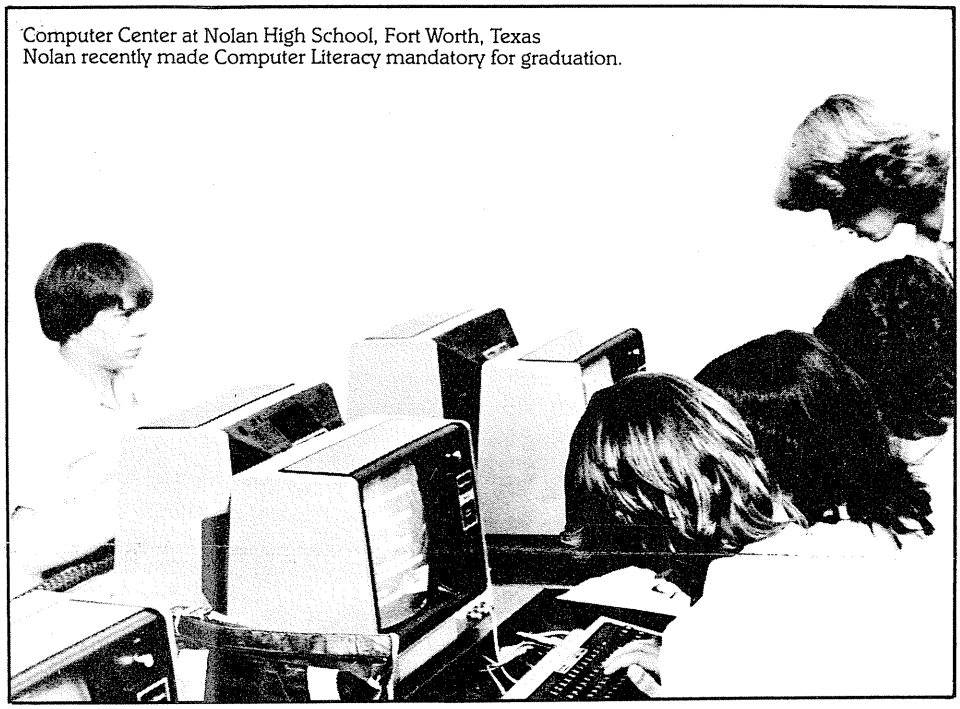
THE MICROCOMPUTER NEWSLETTER PUBLISHED FOR TRS-80 OWNERS

Volume 3, Issue 8

Newsletter Index In This Issue . . .



Computer Center at Nolan High School, Fort Worth, Texas
Nolan recently made Computer Literacy mandatory for graduation.



TRS-80 Awarded in JETS Competition

Radio Shack played an important role in the JETS Academic Competition held April 24, 1981 at The Citadel in Charleston, South Carolina. A Model I 16K TRS-80 microcomputer donated by the Radio Shack Computer Center in the North Charleston Shopping Center, 5900 Rivers Avenue, was the first place award for the academic team that scored the highest on a series of tests. Members of JETS, a non-profit organization of high school engineering clubs, competed for high scores in mathematics, English, biology, chemistry, physics, pocket calculator, engineering graphics, and a specially designed test for those who work with the TRS-80 computer, a TRS-80 BASIC Level II test. The best score in the computer test was 44 correct answers out of 50, achieved by an eighth grader who beat all comers.

The BASIC test was developed by Dr. Jake Halford, area coordinator for JETS and Citadel Evening College Director, who has introduced the TRS-80 computer into area high schools through his work with JETS.

Radio Shack has joined the Lowcountry JETS Industry Advisory Committee to help support JETS financially. Mr. Dick Cain of the Radio Shack Computer Center attended the awards ceremony to personally present the computer to the winning team. Best team out of eleven was the JETS team from Summerville High School, Summerville, South Carolina. The Summerville team gave themselves a standing ovation when they learned they had won and were delighted with their prize.

JETS, also known as the Junior Engineering Technical Society, is a national, pre-college activity for students interested in engineering, technology and science. In a club setting, students choose projects and participate in competitions. They receive the assistance of a faculty member and advisors from engineering professions. Experience in JETS and acquaintances with professional men and women will enable students to appraise their interests and abilities for pursuing a technical career before choosing a curriculum at a college or university.

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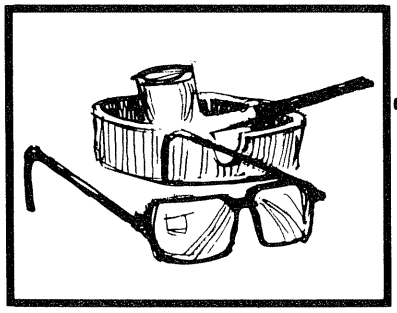


View From the 7th Floor

by Jon Shirley, Vice President Computer Division

New Catalogs

What's new at Radio Shack? As you may know, we did not introduce any new products at the NCC show although we did have an exciting, well attended booth. Radio Shack traditionally has tried to time a lot of its new product introductions for the new annual catalog which comes out in August, as this is also when we go on the road and have our annual store manager meetings. So, if you want to see what's new check your nearest store; the new catalog should be available right now.

For space reasons we cannot show all of our computer line in the annual catalog. If you want to see ALL the goodies return to the store in September and ask for the RSC-6 computer catalog. It's greatly expanded and has lots of new accessories in it, many added to the line because of your suggestion letters.

Customer Services

Customer services continues to be the subject of a lot of calls and letters. In mid-May we added a lot more WATS lines and started to add the people to answer them. It's not easy to hire and train those people and, as I have said before, it's also not easy to sit at a computer with a headset on and answer questions 8 hours a day. We did see a dramatic improvement in the number of completed calls in May, up almost 50% from April. The number of completed calls is still not good enough but we have now moved to a new, much expanded area in Tandy Center so we have room for the additional people to answer those new phones we had put in.

If we are to ever cut the waiting time and busy signals way down we must have your help. First of all, we are very busy from about 1 to 4, Central Standard (or Daylight depending on the time of year) Time. Your chances of getting in fast are much better if you call in the morning rather than the afternoon. We are also super-busy every month-end. I suppose that is because of the normal month-end close of the businesses using our accounting packages. If you buy an accounting package you should do a trial run month-end and a trial year-end close before you ever start using the system with your real data. Give yourself a chance to learn the system first so you do not find yourself at month-end with a problem and all our lines busy.

Another way you can help us is to accurately tell the operator your subject. Do not say, "I have a problem with my Model III," if the subject is software, as you will be sent to the hardware group. Say, "I have a problem with my Model III General Ledger." Remember, we have specialists for each machine, as well as different people for applications software and language software. Also, remember we have specific telephone numbers for different subjects (as printed in the Customer Services section of the Newsletter). I got a very angry call this week from a man who called the "All Other Calls" number and was sent to the Model III hardware group when his subject was a software problem. That hardware group was very busy that day so he waited a long time, only to be transferred to the right group. Our call records show that at the time he called, the group he wanted had no calls and were waiting there with "nothing to do." (There is always something to do; these people spend a lot of time in self-education to become evermore familiar with our products.)

Finally, be patient with the guy or girl on the phone. It is a tough job, and what may seem perfectly obvious to you, may not be coming down the phone line all that clearly. The Customer Services group is proud of what it does, and getting a hard time from a caller does not help the "esprit de corps." I might also note that we are going to be a little tougher about those "How do I hook up my brand Q printer?" calls. We publish full technical information on our interfaces and we are going to answer those calls by sending you, by mail, whatever information we have. In a few cases what we send will include information on your printer, if it is a popular one. If the information on your printer is not there, I suggest you ask the printer manufacturer or the salesman you bought the printer from why it does not work with a TRS-80. In fact, before you buy that printer (and with our printer line I don't really know why you need some other printer), get the seller to assure you that it will work with our computer, or he will make it work or give you a refund. We sell more computers than virtually anyone sells printers, so they should meet our standards, not us theirs. And in case you still miss the point, it is that there are NO printer standards in this confused industry. If you don't believe me, ask an Apple®dealer why a Daisy Wheel II won't work with an Apple parallel interface that's supposed to be a "standard" Centronics parallel interface.

We Moved

Our view has changed. We have moved up to the 15th floor to get some more room and be closer to the action. I will not change the name of the column for sentimental reasons, and because we are expanding so fast, we probably will end up somewhere else next year.

Travel Notes

In May, which was last month as I write this, I visited the NCC show, and the following week, the Ben Rosen small computer forum which was attended by virtually all the microcomputer manufacturers' top people. Then the week after that, I went to Japan for two weeks and attended their microcomputer show, called MICON, in Tokyo. The most lasting impression of all the trips is that microcomputers are very much the future of the computing industry. Almost everyone in the industry who is not now selling micros has plans to introduce one soon. Hopefully this will help create an ever increasing flow of good software as the business grows and grows.

The MICON show was very interesting and reminded me of the West Coast Computer Faire of 3 years ago. There must be

(Continued on Page 3)

Micon Computer Show—Japan

View 7th (From Page 2)

dozens of manufacturers making micros and peripherals in Japan. The show was jammed. In fact it was so jammed they almost needed pushers to get you into the booths like they have to shove you on the rush hour trains. Will the Japanese show up here with super computers at very low costs any day? I doubt it very much. One reason is that their home market is very big and very new and all the companies there are pushing to get a share of that market. And guess what? Their computers cost more than most USA computers. Beautiful color graphics on 80-character-by-24-line screens is almost the rule in Japan. Sound great? The kicker is that a color monitor capable of 80 by 24 sells for $1000 to $1300! And the computer is not cheap either.

On the other hand, they are doing a great job in printers, and if you have been in one of our computer centers and looked at the labels on many of our printers, you will note that quite a few are imported from Japan. Just like VCR's, printers are electro-mechanical, and the Japanese excel in making those kinds of products. Computers are another matter because you need to excel in software to really sell computers, and that is a great lack in Japan. There is such a lack of software there, that many of the booths at Micon were taken by the Japanese importers of American software. Ever see a VisiCalc screen covered with Japanese characters? That was a hot item at our booth, which was one of the most crowded at the show. That's right, the Model I, II and III are all available in Japan with Kana keyboards and Kana character generators.

This month I hope to stay in Fort Worth and work on all the great new items that will help keep the USA microcomputer business an American business.

Until next month.

JETS (From Page 1)

The Objectives of JETS

- To encourage pre-college level students to excel in their studies and to emphasize college preparatory courses in mathematics, science and communicative skills.
- To help students relate science and mathematics to the real world.
- To inform students of the realistic opportunities in engineering, technology and science and to advise them of educational requirements and scholarship opportunities at the high school and college level.
- To provide leadership training through student officer responsibility.
- To acquaint students with our economic system and to demonstrate that the application of engineering, technology and science in a free enterprise system provides for human needs and enhances work opportunities.
- To accomplish the foregoing through programs such as school sponsored clubs; local, state, and national competitions; and other career-related educational activities.

JETS is endorsed and sponsored by the major engineering societies and leading engineering employers. It was founded in 1950, incorporated in 1957, and is classified by the IRS as 501(C)(3), a non-profit, educational organization.

For further information on JETS, contact:

JETS
345 East 47 Street
New York, N.Y. 10017

Computer Accuracy

A few months ago, I received a letter from a reader in Canada who was using the following program to test for Pythagorean triples (remember your high school geometry?):

```
1Ø INPUT"ENTER NUMBERS";A,B,C
2Ø IF A^2+B^2=C^2 THEN PRINT A,B,C;"ARE TRIPLES" ELSE PRINT"NO"
3Ø GOTO 1Ø
```

The reader indicated that he thought he had discovered an error in the Model I Level II ROM. There must be an error in the ROM, he felt, since when he entered 3, 4, and 5 he got NO instead of the required "3 4 5 ARE TRIPLES." The reader also indicated that if he entered 6, 8, 10, that the computer correctly identified these as being a triple.

We can assure both you and that reader that this is not an error in the ROM. Rather, the error is occurring because of the Decimal to Binary and Binary back to Decimal conversions which occur within the computer.

We gave the reader three possible ways to overcome the problem:

1) Don't use exponentiation in this type of program (where you are going to be comparing results for exactness). Instead, the reader could modify the first portion of line 20 to read:

```
2Ø IF A*A+ B*B= C*C THEN ...
```

This allows the computer to compare the values of (A*A + B*B) and (C*C) to a full seventeen digits (exponentiation is ALWAYS single precision — six digits). With this change, 3,4,5 will be recognized as Pythagorean triples.

2) Use exponentiation, but combine it with rounding. I made the assumption that the reader was working with integers (whole numbers). For this approach, the first portion of line 20 would be changed to read:

```
2Ø IF INT(A^2+.5)+ INT(B^2+.5) = INT(C^2+.5) THEN ..
```

This procedure rounds the results of each exponentiation to the nearest integer. Again, with this procedure, 3,4, and 5 are recognized as a Pythagorean triple.

3) The third method (perhaps the most useful for all circumstances) is to not compare "equality," but to see how different the values are. For this version, modify the first portion of line 20 to read:

```
2Ø IF ABS((A^2+B^2) - C^2)< .ØØØØ1 THEN ...
```

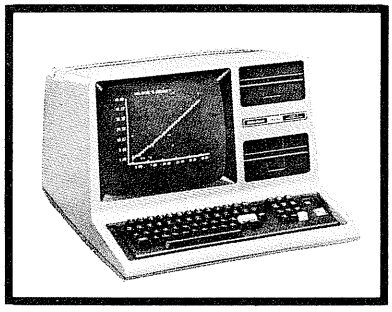
This procedure allows you to control "how equal" the sum of A^2 plus B^2 have to be with C^2. As line 20 is rewritten here, 3, 4, and 5 will be recognized as Pythagorean triples. If you were to move to greater "precision," say a difference less than .000001, then 3, 4, and 5 would be rejected, but 6, 8, and 10 would still be recognized.

Hopefully, the above information will allow you to program around these inaccuracies which are inherent in many computers.

More Computer Clubs

C&C Computer Club
Chris Underwood
3520 Ridgford Dr.
Westlake, CA 91361

TRS-80 Computer Club of Northeast Louisiana
C/O George Luther
117 Pargoud Drive
Monroe, Louisiana 71202
1/318-387-3823



Model I/III

Product Line Manager's News

Model III TRSDOS Version 1.3 and other comments

You will now find an owner's registration card packed with some of our Model I/III Business software packages. We've included it with our accounting software, SCRIPSIT, our new Medical Office System package and several more. The card is stamped with the Radio Shack catalog number and version number of the software package you have purchased. It is included to allow us to notify you of modifications or updates to the programs. Make sure you take the time to fill out your name and address, date of purchase and mail the card as soon as possible.

Model III owners are receiving a final Model III DOS manual to replace the "preliminary" one received with your system. This manual has been distributed to the store or computer center from which you purchased the system along with directions to the store or Computer Center to pass it along to you. We have also trimmed the rough edges off of the Model III TRSDOS Disk Version 1.2 and included it in the package. It's TRSDOS Version 1.3 and is the operating system referenced in your new Model III Disk System Owners manual. After you get thru looking at the beautiful cover OPEN IT UP TO PAGE 73!!!! You will find a utility called XFERSYS for transferring system files. It is necessary to use this on most programs and data files developed previously under versions 1.1 and 1.2. The Directory information in Version 1.3 is slightly different and this utility will upgrade a disk by replacing the original disk's system files or adding them to a data disk. The XFERSYS utility is easy to use but remember to make a backup of the earlier version of your disk first since the utility alters the disk. Once you have used XFERSYS don't access the upgraded disk using an earlier version of TRSDOS. NOTE: The original version 1.3 is dated May 1, 1981. Two patches for version 1.3 dated May 1, 1981 are listed in the Bugs, Errors, and Fixes section of this newsletter. If your version 1.3 disk is dated May 2, 1981, these patches have already been made for you.

If you have purchased Radio Shack Software use the application programs only under the version of TRSDOS under which it was released and do not XFERSYS the disk until you have determined either from Computer Services or your store that you should do so.

ALWAYS PRESS RESET WHEN CHANGING FROM ONE APPLICATION TO ANOTHER TO MAKE SURE THAT THE TRSDOS VERSION APPROPRIATE TO THE APPLICATION IS LOADED. Also remember to use data diskettes formatted under the version of TRSDOS for which the application is designed. The reason for all of this is that extraneous information can be read at the end of files giving a false END of File (EOF) indication if you read the files with the wrong version of Model III TRSDOS. Some programs won't work under these conditions. Specifically for files in the directory which have an EOF not equal to zero (i.e., where variable length records have been utilized) XFERSYS will change the number of records to be one less than the previous record count. It doesn't alter the number of records for files with an EOF of zero.

Two New Games

We have introduced two new tape based games for 16K Models I and III using Level II or Model III BASIC. Raaka-Tu is an adventure designed for even experienced players, and Paddle Pinball brings the fun, action and sound of a pinball machine into your living room . . .

RAAKA-TU — Is it possible that the old woman was right? It was hard to believe her story about the god Raaka-Tu and his temple of sacrifice. The old woman had told of treasure kept in the temple, the hideous monsters, and the Khazhadim who serve Raaka-Tu and guard his temple.

She had indicated that the temple lay to the west. Was it wise to have set off looking for the temple without the rest of the group? This is a dense dark damp jungle, and in the distance I can hear the cries of wild animals. Well, just a little further west. If I don't find the temple soon I'll go back for the rest of the group, right?

Wait! Just through the jungle I can see the east wall of a great temple. I might be a little bolder if the jungle weren't wet from that brief tropical rain shower that doused me just a minute ago. Moving north through the jungle, always keeping the temple in sight, I come to the north wall of the temple. Aha! Guards come marching around the corner to my right! Just as the old woman had said. I will have to time any attempt to get into the temple very carefully. Those crossbows the guards are carrying look lethal.

Moving quietly west, I come to the west wall of the temple, and the great bronze gates. Would it be possible? No, I'll check the south wall first then decide how to get in. I move south until I come to the south wall. In my excitement, I move forward to look more closely at the wall. The last thing I heard before the bolts from the guards' crossbows riddled my body was "Stop! Infidel dog!."

Thus ended my first attempt to enter the temple of Raaka-Tu. If in my next session I don't get into the temple, I'll probably open the sealed packet entitled "For Hopeless Situations Only!." The packet includes hints for the beginning adventurer. Oh, the invitation to try again immediately was hard to resist, but I really should get to work on the September newsletter . . . so I'll use Raaka-Tu's SAVE feature to save my game up to this point on tape. Then later I will continue from here. . .

RAAKA-TU — 26-1915 $14.95

PADDLE PINBALL is an action packed graphics game program for 16K Level II or Model III BASIC. This game program combines excellent graphics with sound to create a program that will keep up to three players at a time in constant competition.

Don't worry about keeping a pocketful of change, just begin with the (ENTER) key. It certainly beats quarters. Right off I missed the two central bumpers and the music box, but maybe you'll have better luck. Get those central bumpers, and the random dot field, hit the drop targets and travel through the target chute and maybe you'll amass enough points for an additional game.

(Continued on Page 5)

Model I/III (From Page 4)

If you are smooth enough to begin beating PADDLE PINBALL the way we set it up, you can use the program's screen modification option to create your own custom paddle pinball layout. Once you have created your masterpiece, you can save the layout on tape for use again and again.

Obviously part of the fun in pinball is sound. Well, we have included sound capability with PADDLE PINBALL! All you need is an optional amplifier and you have some really great sound effects to enhance the game. We suggest the Radio Shack Amplifier (Cat #277-1008) as the perfect companion to PADDLE PINBALL.

One thing, PADDLE PINBALL doesn't register TILT, so please, no English on the keyboard!

Paddle Pinball 26-1914 $9.95
Optional Amplifier 277-1008 $11.95

Model I/III Bugs, Errors, and Fixes

Model III TRSDOS 1.3 26-312

The recently released Model III TRSDOS 1.3 dated May 1, 1981 contains two errors which need to be patched. Model III TRSDOS 1.3 diskettes with a May 2, 1981 date have already been modified.

The first error is in the line edit function of the BASIC Interpreter. When editing a BASIC program the up-arrow key is used to list the previous program line. Repeatedly pressing the up-arrow key at the top line of the program could cause the BASIC Interpreter to stop working.

The following patch will correct this error and allow any number of up-arrows to be pressed when you are already at the top of the BASIC program:

```
PATCH BASIC/CMD (ADD=58F8, FIND=F1, CHG=ØØ)
```

A second error in Model III TRSDOS 1.3 dated May 1, 1981 is in the XFERSYS utility. Depending on the order of the system files in the directory, it is possible that the XFERSYS utility may not copy all of the system files. The only occurrence of this problem to date was that the XFERSYS utility did not copy itself, "XFERSYS/CMD," properly. On the destination disk, "XFERSYS/CMD" ended up as a null file with 0 records instead of the required 4.

The following patch will correct this error so that all system files will be copied regardless of the order of the files in the directory:

```
PATCH XFERSYS/CMD (ADD=548E,FIND=35ØØFD21,CHG=FD36ØØØ1)
```

A third error has been found in the Model III TRSDOS 1.3. The error is in the FORMAT utility. At completion of FORMATting a diskette in drive 0, a "0 NS" error is given in 32 character mode. This indicates that when a system file was searched for, it could not be found.

This is a non-fatal error which does not "undo" or affect the FORMATting on the diskette in drive 0. To recover from this error just place a system diskette in drive 0 and press the RESET button.

The storage format for the FORMAT utility will not allow a patch to be made which might correct this problem.

This error will be corrected in a future release of Model III TRSDOS. The error can be avoided by FORMATting in drive 1 with a system disk in drive 0. If this is not possible, when the FORMAT routine is completed, the error message will appear. Simply remove the FORMATted diskette, insert a system diskette, and reboot.

Standard & Poor's STOCKPAK 26-1507

Line 35 of the CREPORT/BAS program refers to a non-existent line 900. Delete line 35, and save a copy of the corrected CREPORT/BAS program.

Line 520 of the MERGE program incorrectly ends in a comma. Delete the comma at the end of line 520 and save a copy of the corrected MERGE program.

Line 2200 of the PTMAINT program is incorrect. Change line 2200 to read as follows (chop off the line after GOSUB 300):

```
22ØØ IF(NT=3ØORLN=3Ø)THENP7%=1:GOSUB1975:GOTO2Ø6ØELSE
    GOSUB91Ø:C%(3)=CVI(B$(3)):NL=C%(3):NL=NL+1:NT=NT+1:P8=NT:
    R$(P8)=FNA$(25):PRINT@183,"LOT: ";NL:L(NL,4)=Ø:PRINT@28Ø,
    "--VALUE--":LN=NL:FORK=1TO4:GOSUB3ØØ
```

Add a line 2201:

```
22Ø1 IFK$="@"THENGOSUB197Ø:NL=NL-1:GOSUB2Ø6ØELSENEXTK:GOSUB51Ø
```

Be sure you save a copy of the corrected PTMAINT program.

Inventory Control System 26-1553

If you are using Inventory Control (ICS) with a Model III, data is lost after you have added 600 items to ICS. To avoid the loss, use this procedure BEFORE you lose information.

When there are about 500 items in the Model III ICS system:

1. Place a copy of Model III TRSDOS in drive 0 and a backup of the ICS data disk in drive 1.
2. At TRSDOS Ready, type:

```
COPY DATAFILE.password:1 to DATAFILE.password:Ø (ENTER)
COPY STOCKNUM.password:1 to STOCKNUM.password:Ø (ENTER)
```

(where "password" is the password you assigned to the ICS system)

3. After these copy procedures have been completed, type:

```
KILL DATAFILE.password:1 (ENTER)
KILL STOCKNUM.password:1 (ENTER)
```

4. When this procedure is complete, type:

```
COPY DATAFILE.password:Ø to DATAFILE.password:1 (ENTER)
COPY STOCKNUM.password:Ø to STOCKNUM.password:1 (ENTER)
```

This procedure will decrease the number of extents used by DATAFILE and STOCKNUM. Reducing the number of extents will allow you to enter as many as 1000 items.

Note: The above procedure must be done before the problem occurs or must be done on a backup on which the STOCKNUM file is still intact, otherwise the file cannot be reconstructed.

Accounts Payable 26-1554

When you update an active account other than GL account #5, the GL report shows the account as a cash account, rather than an accrual. The following line changes must be made to the program "CHECKS":

If you have a Model I/III Accounts Payable version prior to version 3.0, change line 670 to read:

```
67Ø IFCA$="C"ANDG=3THEN68ØELSEIFCA$="A"ANDG>4THENG=GT:GOTO68Ø
    ELSEGOSUB3ØØ:IFCF=2THENGOSUB715:CF=1
```

If you have Model I/III version 3.0 of Accounts Payable, change line 201 to read:

```
2Ø1 IFCA$="C"ANDG=3THEN2Ø5ELSEIFCA$="A"ANDG>4THENG=GT:GOTO2Ø5
    ELSEGOSUB79:IFCF=2THENGOSUB219:CF=1
```

Disk Payroll 26-1556

If you have a Model III and are using Disk Payroll, it is possible that you will lose data when you add the 36th employee.

To eliminate this problem, use the following procedure when you have 33 employees in the Payroll system, and again when you have 66 employees:

1. Place a copy of Model III TRSDOS in drive 0. Be sure that the TRSDOS version number matches the version number that your Disk Payroll is operating under.
2. Place a backup copy of the payroll data disk in drive 1.
3. At TRSDOS Ready, type:

(Continued on Page 6)

Model I/III Bugs, Etc. (From Page 5)

Disk Payroll (Cont.)

```
COPY PR4EARN/DAT:1 TO PR4EARN/DAT:Ø   (ENTER)
COPY PR4EMPLE/DAT:1 TO PR4EMPLE/DAT:Ø (ENTER)
```

4. When you have copied both files, type:

```
KILL PR4EARN/DAT:1   (ENTER)
KILL PR4EMPLE/DAT:1  (ENTER)
```

5. Now, type:

```
COPY PR4EARN/DAT:Ø TO PR4EARN/DAT:1   (ENTER)
COPY PR4EMPLE/DAT:Ø TO PR4EMPLE/DAT:1 (ENTER)
```

This procedure will reduce the number of extents used by these two data files and will allow the maximum utilization of 99 employees for the Payroll system.

Advanced Statistical Analysis 26-1705

Under certain conditions, a function call error can occur when you are doing Multiple Linear Regressions. What occurs is that a negative value is being raised to an improper value (e.g. $-X^{(2/3)}$).

To prevent this problem from happening, change line 920 of the Multiple Linear Regression program to read:

```
92Ø QL=ABS((1-QK)*(((QZ*SGN(QZ))^(1/3))*SGN(QZ))-1+QJ)/
    SQR(QK*(((QZ*SGN(QZ))^(2/3))*SGN(QZ))+QJ)
```

Be sure you save a copy of the corrected program.

Getting Started with TRS-80 BASIC Manual 26-2107

In the graphics program on pages 329 and 330, in lines 240-270, "q" moves the cursor in a Northwest direction, "w" moves the cursor in a Northeast direction, "a" moves the cursor in a Southwest direction and "s" moves the cursor in a Southeast direction.

The program functions correctly, but the comment lines are incorrect.

Model I FORTRAN 26-2201

See Model II FORTRAN (26-4701) correction, page 8.

Printing Adder

Dr. Dennis O. Gehris Center Valley, Pennsylvania

Below is a listing of a revision of Richard Moskovitz's "Quick Adder" program which is on page 6 of the April, 1981 issue. This version of the program requires Disk BASIC and a line printer. It occurred to me that the program could be improved if the numbers, when added, would be printed on a printer, making it similar to a printing calculator. Also, since most numbers entered on a calculator are dollar amounts, I added a 2-place decimal provision in lines 130 and 132. The subtotal continues to be printed on the screen, but I added the printing of the final total on the printer. Lines 51 through 66 are instructions for the use of the program, which are displayed on the screen. Here is the program:

```
44 REM QUICK ADDER FOR PRINTER
45 REM REVISED FOR PRINTER BY DR. DENNIS O. GEHRIS,
46 REM P. O. BOX #1, CENTER VALLEY, PA 18Ø34
47 REM FROM PROGRAM BY R. MOSKOVITZ IN APRIL, 1981 EDITION OF
48 REM TRS-8Ø MICROCOMPUTER NEWS
49 REM MAY 1981
5Ø CLS
51 PRINT TAB(25)"Q U I C K   A D D E R"
52 PRINT TAB(25)"====================="
55 PRINT
56 PRINT"ENTER THE NUMBER TO BE ADDED AND A SUBTOTAL"
57 PRINT"WILL APPEAR ON THE SCREEN."
58 PRINT
59 PRINT"NUMBERS BEING ADDED WILL APPEAR ON THE PRINTER."
6Ø PRINT
61 PRINT"WHEN YOU WANT A FINAL TOTAL, ENTER 8 HYPHENS"
62 PRINT"(--------) AND THE TOTAL WILL ALSO APPEAR."
63 PRINT
64 PRINT"THE MAXIMUM NUMBER THAT CAN BE ENTERED IS
    '99999,999,999.99'."
65 PRINT"IF YOU WANT THE DECIMALS TO LINE UP, YOU MUST ENTER"
66 PRINT"LEADING SPACES UNLESS ALL NUMBERS ARE OF THE SAME
    LENGTH."
67 FOR I=1 TO 6ØØØ
    : NEXT I
68 CLS
1Ø5 PRINT
11Ø LINEINPUT"ENTER A NUMBER ";A$
112 LPRINT TAB(2Ø) A$
12Ø IF A$="" THEN B=Ø ELSE B=B+ VAL(A$)
13Ø PRINT TAB(35) "SUBTOTAL"; USING "#####,###,###.##"; B
132 IF A$="--------" THEN LPRINT TAB(35) "FINAL TOTAL =" USING
    "#####,###,###.##"; B
133 IF A$="--------" THEN LPRINT TAB(35)
    "=============================="
134 IF A$="--------" THEN GOTO 15Ø
14Ø GOTO 11Ø
15Ø END
```

Using PRINT USING

Radio Shack Computer Center Rochester, N.Y.

One of the most useful statements available in Level II BASIC is the modifier known as "PRINT USING." The purpose of PRINT USING is to make it easy for the programmer to prepare business (and other) reports by printing dollar signs where necessary and by aligning columns of numbers evenly at the decimal points, among other things.

PRINT USING is discussed in detail in the "Level II BASIC Reference Manual" at pages 3/4 and 3/8. (In early versions of the manual, start at 3/3.) Model III owners will look at pages BA 3/4 to BA 3/8 in the grey version of the manual or pages 136-140 of the newer brown version. Model II owners should refer to pages 3/68-3/71 in the BASIC section of the Model II Owner's Manual. Extended Color BASIC users can check pages 128-132 of the "Going Ahead With Extended Color BASIC" manual. For each of these machines, it will be worth your time to study these pages and type some of the examples into your computer.

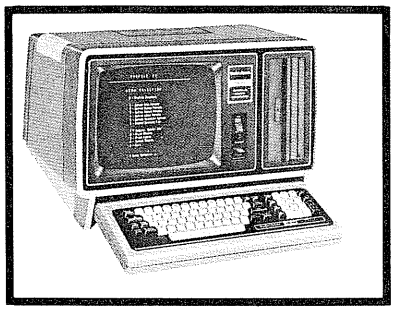
One question, which we are frequently asked, regards combining the PRINT TAB(n) statement with PRINT USING to create several columns on the video screen or on a printer. The simplest answer is, "Don't try to combine the two statements. PRINT USING can do the job all alone."

For example: You need to print 3 columns of numbers on the screen. The largest number will be 6 digits, including two decimal places. These are dollar amounts, so you want a dollar sign attached to each number. It will look best if all the dollar signs are lined up in the columns. You need one space separating each column. Sound difficult? Not at all. PRINT USING makes it simple.

First we need to generate a lot of numbers in our program so we can illustrate how they print out. For simplicity we can use a FOR...NEXT loop to do this. Then we can use PRINT USING, followed by an appropriate format, to print the numbers. Remember, we need three columns, spaced one space apart.

```
1Ø CLS
2Ø FOR K=1ØØØ TO 2ØØØ STEP 1ØØ
3Ø A=K
4Ø B=A/3
5Ø C=A/4
6Ø PRINT USING "$#,###.## ";A,B,C
7Ø NEXT
```

Lines 20 through 50 simply "make up" some numbers for us to print out. Line 60 provides the print format, including the dollar sign, the decimal point, and the spacing. Note that there is a single space in the format line between the last "#" and the second quote mark. See how easy it is? RUN this program again, but this time change the first "#" sign to a second "$" (like this $$,###.##) and see the difference. (Continued on Page 17)



Model II

Product Line Manager's News

Profile Plus 26-4515

I do listen. I do read the customer suggestions. Proof? OK, as I mentioned 2 issues ago, I will try to give you as many enhancements to Profile II as possible, but some of the requested changes were more than a few simple patches. I also mentioned that some of the changes were a prime target for the next generation of Profile.

Now, Profile Plus is on its way to production, and some of the many enhancements are the results of phone calls and letters from Profile II users. The most important point is that the data file structure was not changed.

If you are currently a user of Profile II, you can upgrade to Profile Plus with a minimum effort. After a "DO" file conversion is executed, the only other thing you must accomplish is to load each of the print and label formats and save them back out. This will immediately give you some of the new features such as the ability for an index and instant screen switching, but the majority of the new features will show up when you study the new field designators that are available. You can go back into your current screens and implement some of them, but adding any additional fields may require changing the field numbers in each of your reports screens to match.

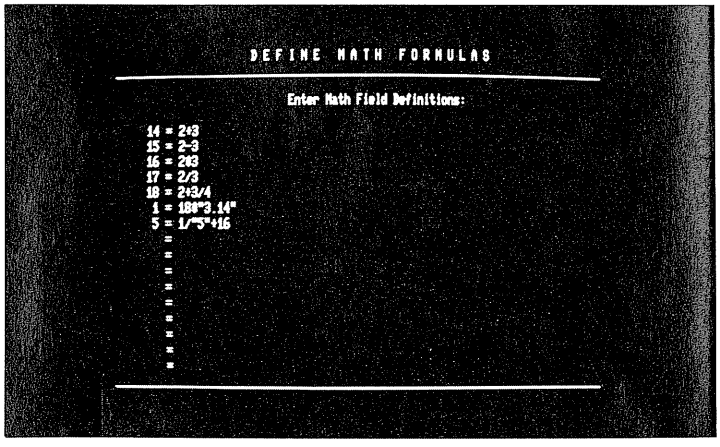
Now, some of the new features:

USER MENUS — Allows users to create their own customized menus. All programs can receive the file name, format number and selection criteria from these User Menus.

INDEXING — Supports an INDEX file which allows high speed access to records on a PROFILE file. INDEXING also allows you to browse through a file as if it were in sorted order. INDEXING may be performed on any field within segment one.

ASSOCIATED FIELDS — Allows you to cluster multiple fields into search groups. When performing search operations, Profile Plus will scan all associated fields in each record for a match.

MATH PACKAGE — Supports addition, subtraction, multiplication, and division. The results of these mathematical operations are stored in fields of the record. Up to 16 equations of up to 63 characters are supported. Calculation results may be specified as being integer, two-place decimal or unrounded formats.



RECALCULATE MODE — Allows the mass recalculation of totals for selected records on the file.

SCREEN SWITCHING — Permits the use of multiple screens during a single execution of the program. The user may switch screens while a record is being displayed. All five possible screens will be available if they are defined.

ADVANCED FIELD TYPES — Implements 12 new field types/edits, including date fields, must-fill fields, and date-of-last-update fields.

DUPLICATE KEY — Uses the 'HOLD' key to act as a duplicate key during update or add operations. The field duplicated will come from the last record successfully updated.

TWO LINE REPORTS — Allows an extra line of data to be extracted from each record during reports.

SINGLE LINE TOTALS — Supports 2 single line totals on reports. An overflow area is provided if required.

SUPPRESSING REPORT LINES — Permits the suppression of title, heading, or detail lines. This allows the creation of summary reports.

EIGHT LINE LABELS — Supports labels of from one to eight lines of data in length.

PAUSE BETWEEN PAGES — Supports either single sheet or continuous form operations in both the report and label printing programs.

SELECTABLE RECORD LENGTHS — Allows you to specify the record length for segments 2 to 4 of the database. Each can be from 1 to 256 characters. This prevents wasted disk space and may be used to increase the maximum number of records in a multi-segment file.

ADVANCED SCREEN EDITING — Supports insert line and delete line during screen creation. Hardcopying of the defined screen is also supported.

ADDING FIELDS AND SEGMENTS — Supports the adding of new fields and segments to existing files.

UPPER/LOWER CASE SUPPORT — Ignores upper/lower case differences during sorting or searching operations.

MODIFIED BREAK KEY — Requires that the BREAK key be pressed a second time to confirm your intention. This prevents accidental exiting of PROFILE programs.

TYPE AHEAD — Enables type ahead in all areas except when first entering the update mode.

Profile Plus should be in the warehouse by the time this is in print. The catalog number is 26-4515 and retail is $299.00, but if you are now a Profile II owner, you should order 26-4517 for only $120.00.

(Continued on Page 8)

Model II (From Page 7)

The upgrade package contains all of the new modules and several "merge" modules to upgrade your original Profile II disk to the Profile Plus level, and Two "DO" files make the conversion very painless. Both packages contain a "NEW" manual that will start you at ground "ZERO" and carry you to the expert level of data handling with Profile.

By the way, the original Profile II (26-4512) will stay in the line, so if you don't feel you need all of the features of "Plus" you can still start with the basic package then, if you wish, add the "Plus" features at a later date.

Again, I wish to thank the people that called or wrote in with many of these improvements. Keep the ideas coming.

Model II Bugs, Errors, and Fixes

Accounts Payable 26-4505

We blew it! In the May newsletter we gave you a list of instructions to modify version 1.0 of Accounts Payable. The change was to the APCHECKS/BAS program, and was supposed to change the program from pointing to "Align Checks" after you have updated vendors to point to "Return to Main Menu." That was what it was supposed to do. In fact the instructions we gave were to change a corrected version of the program back to pointing to "Align Checks"! Here are the correct instructions:

1. Load BASIC.
2. At Ready, type `LOAD"APCHECKS/BAS"` (ENTER)
3. At Ready, type `LIST 4ØØ2` (ENTER)
4. The screen will now show:

```
4ØØ2 IFEP=-3THENEP=4:AM=1ELSEAM=Ø:EP=4
```

5. At Ready, type `EDIT 4ØØ2` (ENTER)
6. Press (S)(4). The cursor should now be on top of the 4 in the first EP = 4. Press (C)(5) then (S)(4). The cursor should now be on top of the 4 in the second EP = 4. Press (C)(5)(ENTER).
7. At Ready, type `LIST 4ØØ2` (ENTER)
8. The screen will now show:

```
4ØØ2 IFEP=-3THENEP=5:AM=1ELSEAM=Ø:EP=5
```

9. At Ready, type `LIST 7ØØ2` (ENTER)
10. The screen will now show:

```
7ØØ2 IFABS(EP)=1OREP=4THENEP=Ø
```

11. At Ready, type `EDIT 7ØØ2` (ENTER)
12. Press (S)(4). The cursor should now be on top of the 4 in EP = 4. Press (C)(5)(ENTER)
13. At Ready, type `LIST 7ØØ2` (ENTER)
14. The screen will now show:

```
7ØØ2 IFABS(EP)=1OREP=5THENEP=Ø
```

There are other changes to be made to APCHECKS/BAS. This correction is due to the fact that if you have activity in an account other than GL acct #5, and you update the GL report, it looks as if the account is a cash account rather than an accrual account. The following change must be made to the program "APCHECKS/BAS":

1. Change line 4430 to read:

```
443Ø IFCA$="C"ANDG=3THEN445ØELSEIFCA$="A"ANDG>=4THEN
     G=GT:GOTO445Ø
```

A third correction to be made to APCHECKS/BAS results from the fact that the check register is not accurate. The check register shows checks that have been printed after the discount date as having the discount amount deducted rather than showing the accurate amount of the printed check. To correct this, change line 445 as follows:

1. Type: `LIST 445` (ENTER)
2. Line 445 should currently look like this:

```
445 IFABS(EP)>1ØØØØTHENTD=(EP)-1ØØØØ:EP=2*SGN(EP)
```

3. Type: `EDIT 445` (ENTER)
4. Press (2)(S)(←). This should move the cursor over the (in the second (EP). Press (I)(A)(B)(S)(ENTER).
5. Type: `LIST 445` (ENTER)
6. The corrected line 445 should look like:

```
445 IFABS(EP)>1ØØØØTHENTD=ABS(EP)-1ØØØØ:EP=2*SGN(EP)
```

7. This completes the corrections to APCHECKS/BAS. Save a copy of your corrections using:

```
SAVE"APCHECKS/BAS" (ENTER)
```

One additional change needs to be made in the Model II Accounts Payable program. When you are selecting invoices, an unexpected error code 61 in line 1620 can occur.

To prevent this error from occurring, change line 1615 of the APS/BAS program to read:

```
1615 IFP(N,AM)<1THENN=N+1:GOTO161Ø
```

After you have changed the line, save a copy of the corrected APS/BAS.

FORTRAN 26-4701

Both of our FORTRAN manuals indicate that no object file will be created if an object filespec is not given in the command line. This is not, and never has been, the case. A relocatable object file will be created, using the fileNAME in the source file filespec and a fileEXTENSION of "/REL." In order to compile a source file without creating an object file, a comma must be used as a dummy place holder for the object filespec. Examples are given below:

To create a default relocatable object file:
From TRSDOS the command line is:

F80 = filespec

From F-80, the command line is:

* = filespec

(In both cases, a default object file will be created with the filespec of – filespec/REL)

To compile without creating an object file:
From TRSDOS the command line is:

F80 , = filespec

From F-80, the command line is:

*, = filespec

COBOL 26-4703

Many people have been asking why the most recent version of the COBOL development system (1.3b on TRSDOS 2.0a) does not have the program COBPRT, the ASCII print utility that was on the previous version.

The reason is that the new TRSDOS version 2.0a has a command "PRINT", which essentially does the same thing as the old COBPRT utility. For example, if you have a source file with a name of TEST1/CBL, and you would like a listing, at TRSDOS Ready you would type in the command:

```
PRINT TEST1/CBL A (ENTER)
```

ReformaTTer™ 26-4714

The ReformaTTer program version 1.5 contains an intermittent error when transferring TRSDOS FIXED LENGTH 1 logical records and VARIABLE LENGTH records to an IBM format LENGTH 128 logical record. Sometimes, depending on the data, spurious characters are added to the end of the record in the IBM file. (Continued on Page 9)

Model II Bugs, Etc. (From Page 8)

ReformaTTer (Cont.)

The following patch will correct this error and allow the files to be transferred properly:

```
PATCH REFM A=46D3 F=13C13E8Ø9Ø28ØB C=C13E8Ø9Ø28ØC13
```

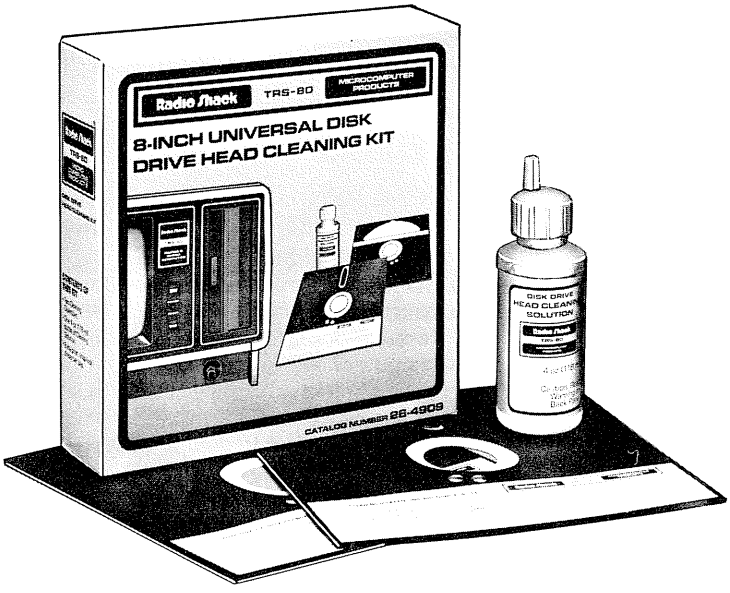
26-4920 Model II Owner's Manual

Page 3/72 of the Model II BASIC Reference Manual indicates that in an LPRINT TAB(n) statement the value of 'n' can be any numeric expression between 0 and 1919. This is not correct. The value of 'n' can be any numeric expression between 0 and 255.

Product Compatibility Notice

8" Disk Drive Head Cleaner—26-4909

We have discovered that some of the early units of the 8" Head Cleaner Disk (26-4909) will not function properly in a Model II Expansion Bay. The head cleaner disks will not harm or damage any drives, they simply will not work in some expansion bays. If you have tried to use the head cleaner disk in your expansion bay, and you got an Error Code #8 — DRIVE NOT READY, please return the head cleaner disk to your local store for replacement.



Please note: the head cleaner diskettes we are referring to will work in drive 0 on all Model II's, and they will also work in some expansion bays. The problem is that some of our expansion bays (ones with LSI electronics) have sector boundary light sensors which are sensitive enough to "see through" the cleaning media. The cleaning media in our more recent cleaning disks has been modified to prevent this problem from happening.

If you have a single drive Model II, this problem will not affect you, and there is no need to replace the cleaning disk.

This is also a good place to remind you that the head cleaning disks are "expendable." Each disk can be used 36 times before it needs to be replaced. Please do not try to extend the life of this product and use it more times than we recommend. You may save a little on replacing cleaning disks, and spend a lot on replacing disk heads.

Ideas—Expanded

Kenneth Willoughby Fairacres, New Mexico

I have come up with 2 major modifications which add speed as well as power to the original word processor program that was printed in the April, 1981 Microcomputer NEWS. The modifications use the file management capabilities of the MOD II to compose, file, store, and manage letter information to add more power to letter writing.

One of the problems of the original program was that the right-hand margin was abnormally large due to the instructions used to command each line. These used up the 80 character line limit. This new program bypasses this problem. Another problem with the old program was that each line had to be sequentially numbered and contain the LPRINT instruction. This became tedious in long letters.

I have included 2 programs which deal with the letter information in the file. The first program writes the letter information into the file. The name of the letter is contained in the OPEN statement which has a "/LØ2" at the end. This is to use the WILDCARD sort technique of the directory to sort out particular vendor letters. Also, the last 2 digits will indicate when you have reached the 96 file limit of the diskette if you use sequential numbering for each extension.

The second program takes the letter information from the file and reads it out to the CRT. By editing the print statement and inserting an "L" before the print, you can cause the printer to make a hard copy of the intended letter. With appropriate IF-statements, you can cause the printer to page count and give a NEXT PAGE note.

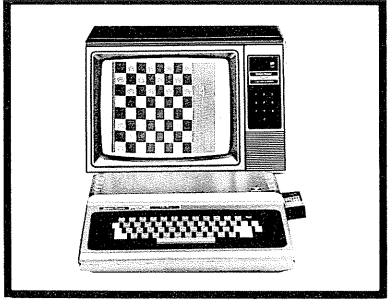
Note: the END statement merely tells the programs to stop, otherwise you get an end-of-file error.

Program 1

```
1Ø PRINT"------LETTER WRITER WITH FILES CHECK LINE 2Ø FOR
    FILENAME ------"
12 CLEAR 5ØØ
2Ø OPEN"O", 1, "RADIO/LØ3"
4Ø FOR J=Ø TO 55
5Ø LINE INPUT B$
7Ø IF B$="END" THEN CLOSE 1
    : END
8Ø PRINT #1, B$
9Ø NEXT J
1ØØ CLOSE 1
```

Program 2

```
5 D$=LEFT$(DATE$,3)+ " "+ MID$(DATE$,4,3)+ " "+
    MID$(DATE$,7,2)+ " "+ MID$(DATE$,9,4)
6 LPRINT TAB(4Ø) D$
7 P=1
1Ø PRINT"------LETTER READER WITH FILES CHECK LINE 2Ø FOR
    FILENAME------"
12 CLEAR 5ØØ
2Ø OPEN"I", 1, "RADIO/LØ3"
4Ø FOR J=Ø TO 55
5Ø LINE INPUT #1, B$
6Ø ON ERROR GOTO 1ØØ
7Ø IF B$="END" THEN CLOSE 1
    : END
8Ø LPRINT B$
9Ø NEXT J
94 IF J=56 THEN LPRINT TAB(3Ø) "CONTINUED NEXT PAGE"
95 IF J=56 THEN SYSTEM"FORMS T"
    : LPRINT TAB(4Ø) "PAGE "; P+1
96 GOTO 4Ø
1ØØ CLOSE 1
2ØØ STOP
```



Color Computer

Product Line Manager's News

Well, here it is August already. With summer fading fast into fall, that means that the new Radio Shack catalog is being delivered to your local Shack. If you haven't seen one yet, you ought to stop by and pick one up. (Just to see what's new in the computer area, namely, the Color Computer area.) I'm not going to belabor the point of telling you all about the new stuff, so rest easy.

What I have in mind this month are some customer programs which were submitted to the Newsletter staff that show what happens when you use some of the features of Extended Basic that I've been talking about. You'll find the programs elsewhere in this issue. Besides that, I thought I would bring you up to date on what's been happening in the world of computer communication . . . to dispel some bad rumors and to offer you some facts.

As you might be aware, Radio Shack is selling software packages under the name of TRS-80 Videotex Software which can be used to convert your computer into a communications terminal allowing you to access information data bases such as CompuServe or Dow Jones. Actually, the software will allow you to access any other computer as long as the other computer acts as a host (assuming it has the proper protocol—buzz word for sending and receiving with both machines understanding what the other is doing). We even have a package with no software in it (26-2224) which gives you access numbers/ID numbers/passwords for both CompuServe and Dow Jones but assumes that you already have the communications software built into your system. Enough of the propaganda for awhile . . .

CompuServe (there's an article on them elsewhere in this month's Newsletter) is one of the two information databases with which Radio Shack has an agreement, the other one being the Dow Jones News/Information Service (more on them later). CompuServe offers numerous major newspapers electronically, the AP news wire service, a personal computing area, computer games that can be played by yourself or with someone across the country, electronic mail or electronic "CB" simulation, government publications, magazine supplemental information and a host of other topics from A to Z. CompuServe also offers historical financial information on over 32,000 stocks and bonds, some dating back as far as the late 1960's. The service is user friendly. Another buzz word meaning you don't have to learn coded instructions to operate the system. It is menu driven. This means all you have to do is select options from the menus shown on the screen to get to the information you are interested in.

Dow Jones is another type of database. It is directed more towards the businessman who needs to know what is going on in his or her particular field of endeavor. With the Dow Jones News Service, you can call a phone number, usually local, ask a specific question (in a certain format) and get exactly the information you asked for and only the information you asked for. This service is not as user friendly as the CompuServe service, since it is not menu driven. You need to ask specific questions to get information. However, the manuals supplied with the software give you everything you need to know about how to operate the service and get the type of information you need. Dow Jones even sends you additional supplemental information once your free introductory hour is up.

Didn't I tell you? Included in each of the TRS-80 Videotex packages, there is a free hour of non-prime time use on both the CompuServe Information Service and the Dow Jones Information Network.

The Dow Jones database offers news off of their own news wire which supplies the Wall Street Journal and Barron's magazine. We all know that if it's important financial news, it'll be in the Wall Street Journal. Now you can read that important financial news within 90 seconds of the time it happens. You also have access to stock quote prices (delayed the mandatory 15 minutes) from the four major stock exchanges in the U.S. (New York, American, Pacific, and Midwest), or get a composite quote from all four. There is also statistical and fundamental stock information supplied to Dow Jones by Media General. You can also get information on Corporate and Foreign Bonds, Mutual funds, U.S. Treasury issues and options. The Dow Jones Information Service also offers headlines and news stories on the various government branches, foreign governments, and any general news that applies to the business world. This information is stored on the service for 90 days, so if you miss a week while you're on vacation, you really haven't missed out on what has been happening. It's there for you to read, electronically.

We feel that these two information networks offer you the best of both worlds. Whether it's deciding whether to buy or sell stock or checking on the nutritional value of the cherry cheese cake in last month's Better Homes and Gardens, we offer you a way to make that intelligent decision.

Now that I've climbed down off my soapbox for the month, enjoy the programs for the Color Computer in this month's issue. Until next month . . .

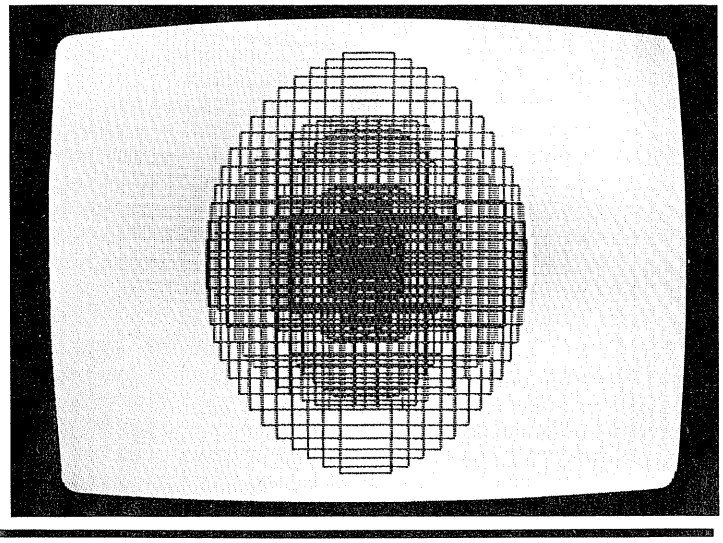
Color Programs

Golden Richard III New Orleans, Lousiana

Here are two programs for Color Computer owners with Extended Color BASIC. I am thoroughly convinced that Extended Color BASIC is POWERFUL! Also, I think a full explanation of the OPEN/CLOSE/EOF commands would be appreciated. The manuals do not cover these areas. Also, #2, Is an Editor/Assembler in the works for the Color Computer?

Editor: We will try to get an article on OPEN/CLOSE/EOF in an upcoming newsletter. As far as an Editor/Assembler for the Color Computer is concerned, we are looking into getting one.

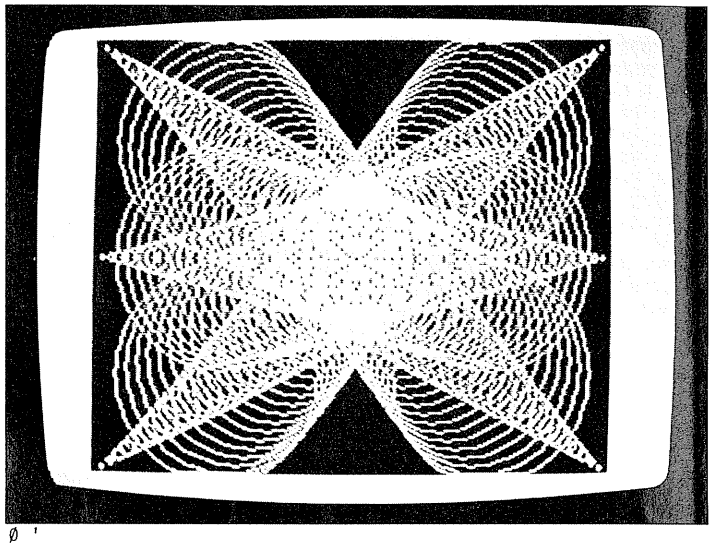
Program #1 — SPIRO I (Interesting Graphics) (Continued on Page 11)



Color Programs (From Page 10)

```
Ø '
1 ' SPIRO I
2 ' BY GOLDEN RICHARD III
3 ' SPIRO I
4 '
1Ø PCLS
2Ø PMODE 3,1
3Ø SCREEN 1,1
4Ø FOR T=Ø TO 6.28 STEP .1
5Ø AØ=AØ + B1
6Ø IF AØ=96 THEN B1=-1
    : GOTO 5Ø ELSE IF AØ=Ø THEN B1=1
    : GOTO 5Ø
7Ø Y=AØ* COS(T)
8Ø X=AØ* SIN(T)
9Ø Y1=AØ* COS(T+3.14)
1ØØ X1=AØ* SIN(T+3.14)
11Ø COLOR T/2+5.8
12Ø LINE(128+X, 96+Y)-(128+X1, 96+Y1), PSET, B
13Ø NEXT
14Ø GOTO 4Ø
```

Program #2—STAR II (Complex Star)



```
Ø '
1 ' STAR II
2 ' BY GOLDEN RICHARD III
3 ' STAR II
4 '
1Ø PCLS
2Ø PMODE 4,1
3Ø SCREEN 1,1
4Ø S1=4
    : S2=3
5Ø FOR T=1 TO 6
6Ø X=X+ S1
    : Y=Y+ S2
    : R=R+1
    : IF R=5Ø THEN 9Ø
7Ø CIRCLE(X,Y),R
8Ø GOTO 6Ø
9Ø READ X, Y, S1, S2
    : R=Ø
    : NEXT
1ØØ DATA 255, Ø, -4, 3, Ø, 192, 4, -3, 255, 192, -4, -3
11Ø DATA Ø, 96, 4, Ø, 255, 96, -4, Ø, Ø, Ø, Ø, Ø
12Ø GOTO 12Ø
```

Rotating Square

Mark Granger La Jolla, California

I am writing you about a useful trick to use on the Extended Color BASIC Computer. I'd like to start by saying that I am very pleased with my 16K model. I have had it for about a month now and I have been using it almost all the time. It has been a worthy investment.

The trick I'd like to show you is that of animation. The trick to good animation is to draw one page while viewing another. Unlike many micros, this is very easy to accomplish on the Color Computer. The page displayed on the screen is only changed when the SCREEN command is executed so you can change the PMODE, draw the frame, and then switch the SCREEN to look at the new page.

I have been experimenting quite a bit with this. The program enclosed is an example of what can be done. When you run it, the program displays a rotating square controlled by the joysticks.

I do have one problem with my computer, however. I cannot seem to execute a "PCLEAR0". This becomes annoying when I am writing long programs which do not require graphics because 1.3K of memory is "wasted" at graphics page 1. I would greatly appreciate any help you could give me with this.

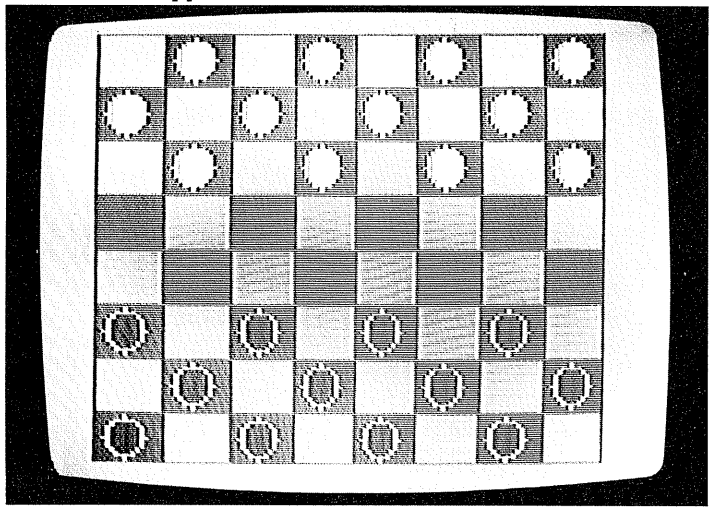
Editor: Sorry, Mark, there is no way to release that last page of graphics memory for use by your program. If any of our readers has written a data save utility that uses this page for data storage, we would be interested in publishing it.

```
5 '==============
6 '=  ROTATING  =
7 '=   SQUARE   =
8 '==============
1Ø PCLEAR 8
2Ø PMODE 4,1
3Ø PCLS
4Ø T=1
5Ø N1=4Ø* SIN(I)
    : N2=4Ø* COS(I)
6Ø N3=4Ø* SIN(I+ 1.57)
    : N4=4Ø* COS(I+ 1.57)
7Ø N5=4Ø* SIN(I+ 3.14)
    : N6=4Ø* COS(I+ 3.14)
8Ø N7=4Ø* SIN(I+ 4.71)
    : N8=4Ø* COS(I+ 4.71)
9Ø LINE(N1+127, N2+96)-(N3+127, N4+96), PSET
    : LINE -(N5+127, N6+96), PSET
    : LINE -(N7+127, N8+96), PSET
    : LINE -(N1+127, N2+96), PSET
1ØØ I=I+ (31.5- JOYSTK(Ø))/63
11Ø SCREEN 1,1
12Ø IF T=1 THEN PMODE 4,1 ELSE PMODE 4,5
13Ø PCLS
14Ø T=-T
15Ø GOTO 5Ø
```

Checker Board

William Cotton Hollywood, Florida

Mr. Cotton sent the following program which draws a checker board, and allows you to make moves including multiple jumps. Crowning of pieces which reach the opponent's base line is automatic. Please note that this is not a checkers game, only a board for two opponents to use. (Continued on Page 12)



Checker Board (From Page 11)

Mr. Cotton made good use of the 16K Extended BASIC GET and PUT commands in creating this board.

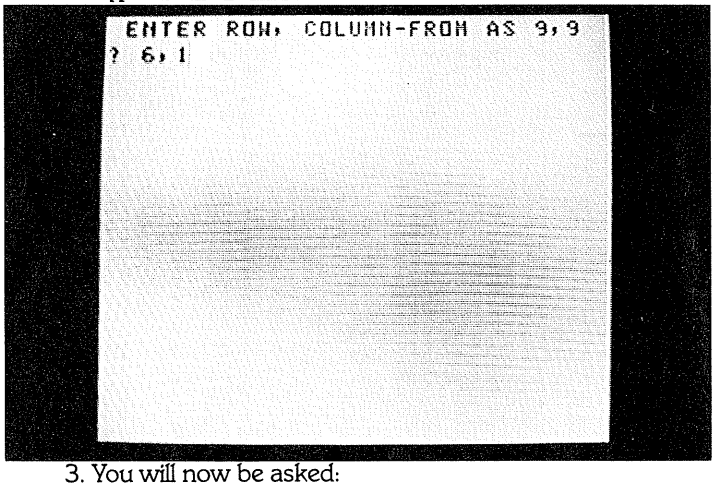
To use the checker board, you will need to figure out the row (top to bottom) and column (left to right) position of the square you wish to move FROM and the row and column position of the square you wish to move TO. (Ed.—You may want to have paper and pencil handy; I always forget one of the numbers, which is why I modified the program to work with joysticks.)

If the game has just begun, and you are making the first move with the pieces at the bottom of the board, your move might go like this:

You wish to move the piece in row 6, column 1 to the square in row 5, column 2. Here is the procedure:

1. Press D.
2. The checker board will be replaced by a screen asking you:

   ENTER ROW, COLUMN-FROM AS 9,9
   ?
   Type 6,1 ENTER



3. You will now be asked:

   ENTER ROW, COL TO AS 9,9
   ?
   Type 5,2 ENTER

When you press ENTER after typing the row and column (don't forget the comma) for TO, the checker board will return and your move will have been made.

This version of the checker board will allow you to jump as many as three opponent pieces at one time. As in a regular move, record the row and column you wish to move FROM and TO. In addition, make note of the row and column of the pieces you wish to jump.

Enter the FROM and TO information as in a regular move. The computer will "see" that you are moving more than one square and prompt you as follows:

ENTER CHECKERS TO BE REMOVED AS
R,C,R,C,R,C, OR 0'S IF NONE

The R's and C's stand for Row and Column. The three pairs of R,C allow three squares to be jumped at one time. Please note that you must enter six (6) digits with commas even if you intend to jump only one piece.

If you are in square 3,2 and want to jump your opponent's piece at 4,3; landing in the open square at 5,4; you would follow this procedure:

1. Press D
2. Type 3,2 ENTER
3. Type 5,4 ENTER
4. The computer would now ask for the jumps:

   ENTER CHECKERS TO BE REMOVED AS
   R,C,R,C,R,C, OR 0'S IF NONE

   Type 4,3,0,0,0,0 ENTER
5. The checker board will reappear, the jump will be made and the indicated piece will be removed.

This information should allow you to use the checker board. If you hear a "beep" after you have entered move information, the computer is telling you that the move cannot be made. Check your row and column information, and try again.

For those of you who have joysticks, we have included some modifications which let you move the pieces using a joystick. These modifications follow Mr. Cotton's program.

Here is Mr. Cotton's program:

```
5 REM DRAW THE BOARD FOR PLAYING
7 CLS 1
10 L=0
11 D= -1
12 PCLEAR 4
13 J=1
15 DIM Q(23,31)
22 PMODE 3,1
25 SCREEN 1,1
26 FOR B=4 TO 5 STEP 1
    : D= -1
27 D= D+1
    : RR(B,D)=0
28 IF D<4 THEN 27
29 NEXT B
30 PCLS 1
45 Y=31
50 FOR X=0 TO 192 STEP 24
60 LINE(1,X)-(255,X), PSET
70 NEXT X
80 FOR X=0 TO 255 STEP 32
90 LINE(X,1)-(X,191), PSET
100 NEXT X
110 LINE(255,1)-(X,191), PSET
115 FOR Y=12 TO 185 STEP 24
116 IF L=1 THEN 118
117 L=1
    : GOTO 120
118 L=0
120 FOR X=15 TO 245 STEP 32
125 IF L=1 THEN 135
130 PAINT(X,Y), 4, 4
131 IF Y=108 GOTO 133 ELSE IF Y=84 GOTO 133
132 CIRCLE(X,Y), 10, 1, 1
133 L=1
    : GO TO 136
135 L=0
136 IF L=1 THEN 137 ELSE GOTO 140
137 IF Y<84 THEN PRINT (X+1, Y+1), 2, 1
138 IF Y>108 THEN PRINT (X+1, Y+6), 3, 1
140 NEXT X
150 NEXT Y
160 A$=" "
170 A$=INKEY$
180 IF A$="D" THEN 190
185 GOTO 170
190 PRINT" ENTER ROW, COLUMN FROM - AS 9,9"
195 INPUT U, T
200 CLS 1
201 IF U=1 THEN 206 ELSE IF U=3 THEN 206 ELSE IF U=5 THEN 206
    ELSE IF U=7 THEN 206
202 IF U=2 THEN 204 ELSE IF U=4 THEN 204 ELSE IF U=6 THEN 204
    ELSE IF U=8 THEN 204
203 SOUND 100, 3
    : GOTO 190
204 IF T=1 THEN 210 ELSE IF T=3 THEN 210 ELSE IF T=5 THEN 210
    ELSE IF T=7 THEN 210
205 SOUND 100, 3
    : GOTO 190
206 IF T=2 THEN 210 ELSE IF T=4 THEN 210 ELSE IF T=6 THEN 210
    ELSE IF T=8 THEN 210
207 SOUND 100, 3
    : GOTO 190
```

(Continued on Page 13)

Checker Board (From Page 12)

```
21Ø PRINT"ENTER ROW, COL, TO - AS 9,9"
22Ø INPUT O,P
221 IF O=7 THEN 224 ELSE IF Ø=5 THEN 224 ELSE IF O=3 THEN 224
    ELSE IF O=1 THEN 224
222 IF O=2 THEN 226 ELSE IF O=4 THEN 226 ELSE IF O=6 THEN 226
    ELSE IF O=8 THEN 226
223 SOUND 1ØØ, 3
    : GOTO 21Ø
224 IF P=2 THEN 23Ø ELSE IF P=4 THEN 23Ø ELSE IF P=6 THEN 23Ø
    ELSE IF P=8 THEN 23Ø
225 SOUND 1ØØ, 3
    : GOTO 21Ø
226 IF P=1 THEN 23Ø ELSE IF P=3 THEN 23Ø ELSE IF P=5 THEN 23Ø
    ELSE IF P=7 THEN 23Ø
227 SOUND 1ØØ, 3
    : GOTO 21Ø
23Ø IF ABS(U-O)>1 THEN 237
231 IF ABS(U-O)=Ø THEN 237
235 GOTO 239
237 PRINT"ENTER CHECKERS TO BE REMOVED AS R, C, R, C, R, C OR
    Ø'S IF NONE"
238 INPUT D, E, F, G, H, I
239 U= (U*24)
24Ø T= (T*32)-1
25Ø O= (O*24)
26Ø P= (P*32)-1
261 GOSUB 6ØØ
262 IF DD=Ø THEN 265
263 DD=Ø
264 GOTO 19Ø
265 SCREEN 1, 1
27Ø GET(T-31, U-24)-(T, U), Q
28Ø LINE(T-31, U-24)-(T, U), PSET, BF
29Ø PUT(P-31, O-24)-(P, O), Q
3ØØ IF O<3Ø THEN 32Ø
31Ø IF O>172 THEN 32Ø
315 GOTO 325
32Ø LINE(P-31, O-24)-(P, O), PSET
321 LINE(P-31, O)-(P, O-24), PSET
325 IF D=Ø THEN 16Ø
326 IF D>8 THEN 16Ø
33Ø D=D* 24
331 IF E=Ø THEN 16Ø
332 IF E>8 THEN 16Ø
335 E=(E* 32)-1
336 LINE(E-31, D-24)-(E,D), PSET, BF
337 IF F=Ø THEN 16Ø
338 IF F>8 THEN 16Ø
339 IF G=Ø THEN 16Ø
34Ø IF G>8 THEN 16Ø
342 F=F* 24
344 G=(G* 32)-1
346 LINE(G-31, F-24)-(G,F), PSET, BF
348 IF H=Ø THEN 16Ø
35Ø IF H>8 THEN 16Ø
355 IF I=Ø THEN 16Ø
36Ø IF I>8 THEN 16Ø
37Ø H=H* 24
375 I=(I* 32)-1
38Ø LINE(I-31, H-24)-(I,H), PSET, BF
39Ø GOTO 16Ø
6ØØ ZZ= PPOINT(T-2Ø, U-2Ø)
61Ø IF ZZ=8 THEN 615
611 GOTO 62Ø
615 DD=1
616 RETURN
62Ø DD=Ø
63Ø ZZ=PPOINT(P-2Ø, O-2Ø)
64Ø IF ZZ=8 THEN 66Ø
641 GOTO 65Ø
65Ø DD=1
655 RETURN
66Ø DD=Ø
67Ø RETURN
```

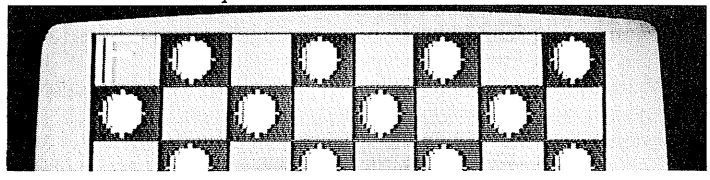
If you have joysticks and would like to move the pieces using the joysticks, make the following program changes.

Either change the lines to read as shown here, or add the line if it was not in the original program.

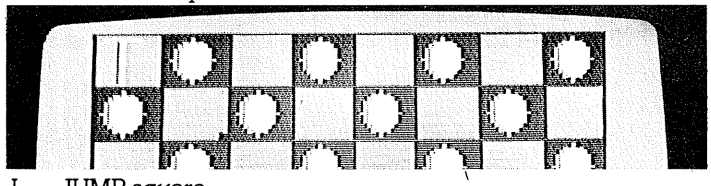
```
16Ø GOTO 19Ø
19Ø T=INT(JOYSTK(Ø)/8)+1
    : U=INT(JOYSTK(1)/8)+1
193 GOSUB 7ØØ
195 IF (PEEK(6528Ø)=255) OR (PEEK(6528Ø)=127) THEN 19Ø ELSE
    SOUND 2ØØ,3
21Ø P=INT(JOYSTK(Ø)/8)+1
    : O=INT(JOYSTK(1)/8)+1
215 GOSUB 8ØØ
22Ø IF (PEEK(6528Ø)=255) OR (PEEK(6528Ø)=127) THEN 21Ø ELSE
    SOUND 2ØØ,3
231 IF ABS(U-O)=Ø AND ABS(T-P)<>Ø THEN 237
237 GOSUB 9ØØ
238 F=Ø
    : G=Ø
    : H=Ø
    : I=Ø
264 SCREEN 1,1
    : GOTO 19Ø

7ØØ UU=U*24
71Ø TT=T*32-1
72Ø LINE(TT-3, UU-3)-(TT,UU), PRESET, BF
725 DRAW "BM 6, 22; C2; U13; R1Ø; BL1Ø; U7; R15; C4"
73Ø FOR QQ=1 TO 2ØØ
    : NEXT
735 PAINT(5, 5), 1, 4
74Ø LINE(TT-3, UU-3)-(TT,UU), PSET, BF
75Ø RETURN
8ØØ OO=O*24
81Ø PP=P*32-1
82Ø LINE(PP-3, OO-3)-(PP,OO), PRESET, BF
825 LINE(2Ø,2)-(3Ø,2Ø), PSET, BF
83Ø FOR QQ=1 TO 2ØØ
    : NEXT
835 PAINT(5, 5), 1, 4
84Ø LINE(PP-3, OO-3)-(PP,OO), PSET, BF
85Ø RETURN
9ØØ E=INT(JOYSTK(Ø)/8)+1
    : D=INT(JOYSTK(1)/8)+1
91Ø DD= D*24
92Ø EE= E*32-1
93Ø LINE(EE-3, DD-3)-(EE,DD), PRESET, BF
935 DRAW "BM 6,18; C2; D4; R15; U2Ø; C4"
94Ø FOR QQ=1 TO 2ØØ
    : NEXT
945 PAINT(5, 5), 1, 4
95Ø LINE(EE-3, DD-3)-(EE, DD), PSET, BF
96Ø IF (PEEK(6528Ø)=255) OR (PEEK(6528Ø)=127) THEN 9ØØ ELSE
    SOUND 2ØØ,3
97Ø RETURN
```

With these changes you will be able to use the right joystick to move pieces. The upper left square of the checker board will be used to tell you what move the computer is expecting next:

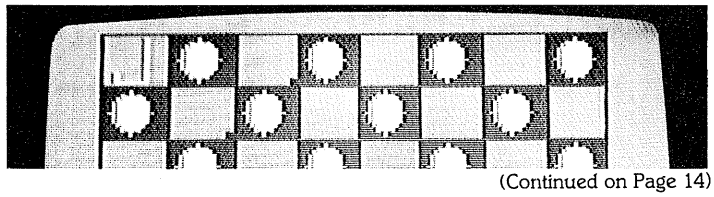
F — Move FROM square



T — Move TO square



J — JUMP square



(Continued on Page 14)

Checker Board (From Page 13)

In addition, a small box will flash on and off in the lower right corner of a square to indicate where you are on the board. To move a man, follow this procedure:

1. The letter in the upper left corner should be an "F." This tells you to place the flashing box in the square which contains the piece you want to move.
2. Press the red "Fire" button on the joystick. The computer will "Beep" and the indicator in the upper left box of the checker board will change to a "T."
3. Move the flashing box to the square you want to move TO. Press the "Fire" button. The computer will "beep" and your piece will be moved FROM the first square you indicated TO the second square.

To jump a single opponent checker:

Follow steps 1 through 3 above.

4. After you have indicated where you are moving FROM, and where you are jumping TO, the indicator in the upper left corner will change to a "J." Move the flashing box to the square of the piece you are jumping. Press the "Fire" Button and the computer will "beep," make the jump, and remove the jumped piece.

To jump more than one piece, follow the above procedure for each piece you wish to jump.

Whichever version of this program you choose to use, you will never have lost checker pieces that need to be replaced by bottle caps and rocks.

Wheel of Fortune

J. W. Myers Bastrop, Louisiana

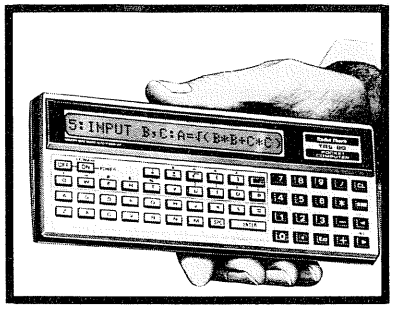
This is a program I developed to imitate the old "Wheel of Fortune" game. Basically it is designed for the TRS-80 4K Color Computer since both color and sound are utilized.

One problem I had to overcome was the pattern of selecting random numbers by the computer. Each time I loaded the computer from the cassette, the same sequence of random numbers was selected. To break up this problem, I enclosed the program from line 40 to line 200 in a loop and inserted an INKEY$ line, so when "P" is typed in, the loop is broken and the balance of the program is allowed to run. After the balance of the program is run and the winning number and color are listed, the program goes back into the loop until "P" is typed again.

The amount of time the program is allowed to run in the loop is up to the operator. As long as the program stays in the loop, the sequence of random numbers is being altered.

You can entertain a large group of people with this program. You will need three tables — one for people wanting to bet on the number, one for betting only on the colors and another for betting on the colors and the numbers — using play money or match sticks, of course!

```
1Ø CLS(5)
2Ø PRINT@23Ø, "THE WHEEL OF FORTUNE ";
3Ø FOR Z=1 TO 2ØØØ
    : NEXT
4Ø X= RND(9999)
5Ø PRINT@297, "TYPE P TO PLAY ";
6Ø IF X<1ØØØ THEN 4Ø
7Ø A1=X/1Ø
    : A2=INT(A1)
8Ø A3=(A1-A2)*1Ø
    : A3=INT(A3)
9Ø IF A3=Ø THEN 4Ø
1ØØ IF A3>7 THEN 4Ø
11Ø Y=RND(9999)
12Ø A5=Y/1Ø
    : A6=INT(A5)
13Ø A7=(A5-A6)*1Ø
    : A7=INT(A7)
14Ø IF A7=Ø THEN 11Ø
15Ø IF A7>7 THEN 11Ø
16Ø B$=INKEY$
17Ø IF B$="P" THEN 21Ø
18Ø PRINT@365, A3;
19Ø PRINT@368, A7;
2ØØ GOTO 4Ø
21Ø CLS(5)
22Ø PRINT@23Ø, "THE WHEEL IS TURNING ";
23Ø FOR Z=1 TO 1Ø
24Ø SOUND 2ØØ,1
25Ø SOUND 128,1
26Ø NEXT
27Ø FOR Z=1 TO 1Ø
28Ø SOUND 2ØØ,1
29Ø SOUND 128,1
3ØØ FOR X=1 TO 25
    :NEXT
31Ø NEXT
32Ø FOR Z=1 TO 1Ø
33Ø SOUND 2ØØ,1
34Ø SOUND 128,2
35Ø FOR X=1 TO 35
    : NEXT
36Ø NEXT
37Ø FOR Z=1 TO 6
38Ø SOUND 2ØØ,1
39Ø SOUND 128,3
4ØØ FOR X=1 TO 45
    : NEXT
41Ø NEXT
42Ø FOR Z=1 TO 3
43Ø SOUND 2ØØ,2
44Ø SOUND 128,4
45Ø FOR X=1 TO 55
    : NEXT
46Ø NEXT
47Ø SOUND 2ØØ,3
48Ø SOUND 128,5
49Ø IF A3=1 THEN A$="BLACK"
5ØØ IF A3=2 THEN A$="RED"
51Ø IF A3=3 THEN A$="BLUE"
52Ø IF A3=4 THEN A$="ORANGE"
53Ø IF A3=5 THEN A$="GREEN"
54Ø IF A3=6 THEN A$="YELLOW"
55Ø IF A3=7 THEN A$="WHITE"
56Ø CLS(8)
57Ø FOR T=215 TO 23Ø STEP 1
58Ø PRINT@229, "WE HAVE A WINNER!!!!! ";
59Ø SOUND T,2
6ØØ NEXT
61Ø FOR T=231 TO 241 STEP 5
62Ø SOUND T,1
63Ø NEXT
64Ø FOR T=241 TO 231 STEP -5
65Ø SOUND T,1
66Ø NEXT
67Ø IF A3=1 THEN CLS(Ø)
68Ø IF A3=2 THEN CLS(4)
69Ø IF A3=3 THEN CLS(3)
7ØØ IF A3=4 THEN CLS(8)
71Ø IF A3=5 THEN CLS(1)
72Ø IF A3=6 THEN CLS(2)
73Ø IF A3=7 THEN CLS(5)
74Ø PRINT@231, "NUMBER "; A7 "--"; A$; " ";
75Ø FOR Z=1 TO 2ØØØ
    : NEXT
76Ø GOTO 4Ø
```



Pocket Computer

Product Line Manager's News

Cassette Operation

Here is some "technical" information about cassette operations with the Pocket Computer that you may find interesting.

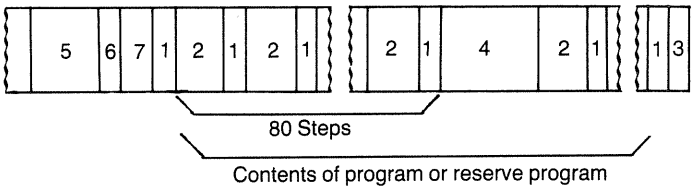
First, notes about proper tape recorders:

While Radio Shack's CTR-80A (26-1206) or our Minisette®-9 (14-1812) are the intended recorders for use with the Pocket Computer, other recorders can be used. Here is some information that may help you choose a recorder:

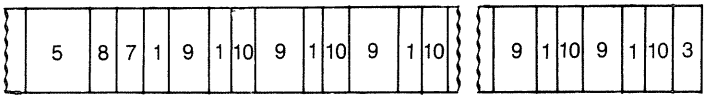
1. Cassettes or open-reel types can be used.
2. The Mic input jack must have an input impedance of 1K or less, with a sensitivity level of at least 3mV.
3. The Earphone output must have an output impedance of 10K or less and an output level of 1 volt or more.
4. Allowable distortion is +/− 15%, with a frequency response from 2k to 4kHz.

Second, if you have wondered how information is actually stored on tape, here are some of the details:

The recording format for programs (Regular or RESERVE) is:



For Data memory, the recording format is:



In the above diagrams, the numbers shown have the following meanings:

1 = Check sum code − after every 8 steps (8 bytes) for program/reserved program, or after one data (8 bytes) for data recording.

2 = 8 steps of program or reserve program

3 = Code for End of Recording

4 = This "gap" is composed of all ones (1), lasts approximately 4 seconds, and is inserted after recording 80 steps of program/reserved program. During the time that this gap is being recorded, the next block of 80 bytes of program or data to be output is being prepared in the I/O buffer.

5 = A "leader" of all ones (1) is recorded for a period of about 6 seconds. This leader is used to synchronize the computer with the tape on input.

6 = Code to indicate program or reserve program.

7 = File name (8 BYTES)

8 = Code to indicate data values rather than program

9 = Area for recording the contents of one data memory (8 bytes).

10 = All ones (1) gap of about 0.2 seconds.

The data is recorded on tape using a binary output. A binary zero "0" is indicated by a 2k Hertz tone, while a binary one "1" is indicated by a 4k Hertz tone.

Cassette I/O is handled by CPU II in the Pocket Computer.

Pocket Calculator

Randy Rable Tulsa, Oklahoma

I use my pocket computer in class a lot and I need the use of many math functions. Until I wrote this program my TI-55 was much more convenient to use. This program assigns most of the commonly used functions to the Reservable Keys, making their use quite similar to the Texas Instruments AOS™ system. I then wrote the function above the appropriate keys on the plastic template provided with the calculator.

The "calculator" functions are:

(SHFT) A — SIN
(SHFT) S — COS
(SHFT) D — TAN
(SHFT) F — ABS (ABSolute value)
(SHFT) G — X^2 (X squared)
(SHFT) H — Y^X (Y raised to the X power)
(SHFT) J — X √ Y (Xth root of Y)
(SHFT) K — LOG (Common Logarithm)
(SHFT) L — LN (Natural Logarithm)
(SHFT) = — anti-LN
(SHFT) Z — ASN (Arcsin)
(SHFT) X — ACS (Arccos)
(SHFT) C — ATN (Arctan)
(SHFT) V — INT
(SHFT) B — 1/X
(SHFT) N — Input Data for average calculation
(SHFT) M — Compute Average of input data

I started the program line numbering at 979 so other programs, whose line numbering usually starts at 10 and seldom get as high as 970, could be used.

```
979 REM TI "CALC" RANDY RABLE 4-26-81
98Ø "A" A.X: X=SIN X: P.X: E.
981 "S" A.X: X=COS X: P.X: E.
982 "D" A.X: X=TAN X: P.X: E.
983 "F" A.X: X=ABS X: P.X: E.
984 "G" A.X: X=X^2: P.X: E.
985 "H" A.Y: I.X: X=Y^X: P.X: E.
986 "J" A.Y: I.X: A=Y^(1/X): P.A: E.
987 "K" A.X: X=LOG X: P.X: E.
988 "L" A.X: X=LN X: P.X: E.
989 "=" A.X: X=EXP X: P.X: E.
99Ø "Z" A.X: X=ASN X: P.X: E.
991 "X" A.X: X=ACS X: P.X: E.
992 "C" A.X: X=ATN X: P.X: E.
993 "V" A.X: X=INT X: P.X: E.
994 "B" A.X: X=X^-1: P.X: E.
996 "N": T=Ø: X=Ø
997 I.Y: T=Y+T: X=X+1: G.997
998 "M": A=T/X: P.A: E.
```

Editor's Comments: Mr. Rables has given us a very interesting calculator which uses at least one "unique" feature of the Pocket Computer—The AREAD function.

The "A.X" abbreviation used in the program expands to "AREAD X". The AREAD function can be used only in the DEF mode. The function allows you to enter a value into the Pocket Computer, and then use (SHFT) v, where v is a key which you have DEFined in your program. Let's look at an example:

(Continued on Page 16)

Pocket Calculator (From Page 15)

If you want to know the square of 2, using Mr. Rable's program you would enter the following:

2
SHFT G

The computer will branch to the "G" function in line 984, read the value 2 into the variable X, assign the square of 2 to A, print the result 4 on the display and stop.

We would recommend that you modify line 984 of the program to read:

```
984 "G" A.X: X=X*X: P.X: E.
```

The reason for the change is that the exponentiation function "^" does not work properly with negative values which are raised to even powers. The square of −2 should be 4, but the Pocket Computer will return −4.

We would like to thank Mr. Rables for his very useful program. If you would like to have a similar ability to Mr. Rable's, but you would rather not use your program space, consider using Reserve keys in RUN mode.

Press the MODE key until the computer is in the RESERVE mode. Now make the following entries:

SHFT A SIN ENTER
SHFT S COS ENTER
SHFT D TAN ENTER
SHFT F ABS ENTER
SHFT K LOG ENTER
SHFT L LN ENTER
SHFT = EXP ENTER
SHFT Z ASN ENTER
SHFT X ACS ENTER
SHFT C ATN ENTER
SHFT V INT ENTER
SHFT M DMS ENTER
SHFT N DEG ENTER

SHFT G ^2 ENTER
SHFT H ,Y^X ENTER
SHFT J ,Y^(1/X) ENTER
SHFT B ^−1 ENTER

All of these keys will work in the RUN mode. For instance, if you want the square of 2 again, press:

2
SHFT G
ENTER

You should notice two differences (other than the operating mode) between this technique and Mr. Rable's. First, there is an extra keystroke—you have to press ENTER. Second, the result is not assigned to the variable X as it was in Mr. Rable's version. If you need the result stored in X, use the following sequence:

X=2
SHFT G
ENTER

To use multiplication rather than exponentiation for the "G" function (as we suggested above), change your entry in the RESERVE mode to:

SHFT G ,X*X ENTER

Your operation would now be:

X=2
SHFT G
ENTER

Notice the use of the comma (,) to separate statements for immediate execution rather than a colon (:).

You may also have noticed that we moved four of the functions (SHFT G ,X*X; SHFT H ,Y^X; SHFT J ,Y^(1/X); SHFT B ^−1) to the bottom of the list and separated them slightly. This is to emphasize a distinction between the groups. In the first group you key the reserve function first, then the value:

SHFT F −5 ENTER

which will give you:

ABS −5 and the ENTER will print the result.

In the second group, you need to key some information first, then the reserve function:

To square a value n, use this sequence:

X=n SHFT G ENTER

To raise a value y to the power x, use:

Y=y, X=x SHFT H ENTER

To raise a value c to the 1/x power, use:

Y=y, X=x SHFT J ENTER

To find the reciprocal of a number n (raise the n to the −1 power), use:

X=n SHFT B ENTER

Telephone Book (Second Edition)

Donald Parson DelRay Beach, Florida

Referring to Randy Bonin's ingenious contribution: "TRS-80 Pocket Computer Telephone Book" (April, 1981 — Pg. 14), you might try the following changes:

```
6Ø PA. "SORRY NOT ON FILE": G. 2Ø
14Ø IF A(C)=Ø THEN 18Ø
16Ø PA. "SORRY NO MEMORY LEFT": G. 2Ø
17Ø PA. "NAME PRESENTLY ON FILE": G. 1ØØ
22Ø PA. "DATA RECORDED": G. 1ØØ
```

I believe that line 140 was originally in error. (Ed. note: Mr. Parson changed 0=A(C) to read A(C)=0. Both methods should be correct when used in comparisons.)

After I developed the above modifications, I discovered that there was no means provided to correct or update the log, without starting at the beginning and re-entering the whole thing.

I therefore came up with an addition to the program, titled "C" (for 'Change').

I have re-written the entire program to include "C" as well as the other changes I have suggested. In addition, I have edited some of the wording. Here is the revised program:

```
1Ø "L" I."NAME", A$
3Ø F=Ø: F. B=27 TO 12Ø STEP 2
4Ø IF A$=A$(B) LET F=B:B=12Ø
5Ø N. B
6Ø IF F=Ø PA. "NOT LISTED": G.1Ø
7Ø C=F+1
8Ø P. A$, A(C): G.1Ø
1ØØ "N" I. "NEW NAME",A$
11Ø F=Ø: F. B=27 TO 12Ø STEP 2
12Ø IF A$=A$(B) LET F=1: B=121
13Ø C=B+1
14Ø IF (F=Ø) * (A(C)=Ø) LET F=B: B=12Ø
15Ø N. B
155 IF F=1 G. 17Ø
157 IF F<>Ø G. 18Ø
16Ø PA. "FULL": G.1Ø
17Ø PA. "ALREADY LISTED": G. 1ØØ
18Ø A$(F)=A$
19Ø I. "NEW NUMBER",A
2ØØ C=F+1
21Ø A(C)=A
22Ø PA. "ENTERED": G. 1ØØ
23Ø "C" I. "NAME TO BE REPLACED",A$
235 I. "NAME OF REPLACEMENT",A$(3)
24Ø F=Ø: F. B=27 TO 12Ø STEP 2
25Ø IF A$=A$(B) LET F=B: B=12Ø
```

(Continued on Page 17)

Telephone Book (From Page 16)

```
26Ø N. B
265 IF F=Ø PA."NOT FOUND": G.23Ø
27Ø A$(F)=A$(3)
28Ø C=F+1
29Ø I. "REPLACEMENT NUMBER", A
3ØØ A(C)=A
31Ø PA. "LOG UPDATED"
315 G. 23Ø
32Ø "D" F=Ø: F. B=27 TO 12Ø STEP 2
33Ø C=B+1
34Ø IF A(C)=Ø LET F=1: B=12Ø
35Ø IF F=Ø P. A$(B),A(C)
36Ø N. B
37Ø E.
```

Editor's Notes: We took the liberty of further modifying the Telephone Book program. First, we added the ability to "page" through the book. This is the "D" option. This option will list each name and number sequentially.

If a number is found which equals zero (0), the listing stops since we assume that there are not further entries in the telephone book. This option was added partly to let you scan the directory if you have forgotten who is in it, and partly to use the Pocket Printer. The "D" option will give you a printed copy of the telephone book if the printer is connected and selected.

The second change we made has to do with FOR...NEXT loops. Many of us write programs (myself included) in which we use a FOR...NEXT loop to search for a condition. When we find the condition, we jump out of the loop and continue program execution somewhere else in the program.

This is not a very good habit to get into. The Pocket Computer only allows four levels of FOR...NEXT loops. This means that you can nest up to four loops, but not five. If you exit a FOR...NEXT loop without a proper ending, the computer "thinks" that particular loop is still active. When you enter several loops and leave by jumping out (GOTO n), you soon use up the FOR...NEXT loops available, even though YOU are through with those loops. You forgot to tell the computer you were through!

Here is an example of what I am talking about:

```
1Ø A=5: B=1
2Ø FOR I=1 TO 2Ø
3Ø IF I=A THEN 6Ø
4Ø NEXT I
5Ø END
6Ø PAUSE B: B=B+1
7Ø GOTO 2Ø
```

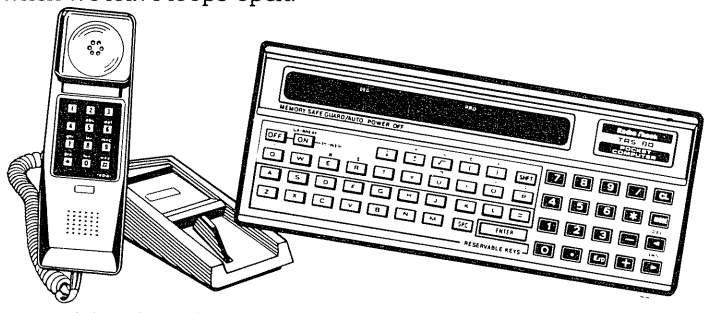
When you run this program, the computer will display 1, 2, 3, 4 and then you will get an error code 3 in line 20. If you examine where the error occurred by pressing the (up arrow) key, the cursor will be flashing over the I in the FOR...NEXT loop of line 20. Now, make these changes to the program:

```
5 F=Ø
3Ø IF I=A LET F=1: I=2Ø
45 IF I<>Ø THEN 6Ø
```

The changes use F as a flag to tell us if the loop is ending "normally" or if the condition "I=A" was true. In line 30, the computer still tests to see if I=A. If I does not equal A, the program continues to line 40 and the loop index I increments. When I does equal A, the computer sets our flag F to 1 and sets the loop index to 20 (the ending loop value). With I set to 20, the program continues to the NEXT I statement in line 40. The index I is incremented and tested. Since the index is now greater than the ending value of 20, the loop ends and the computer frees one level in the FOR...NEXT stack. Line 45 then tests the flag F. If F is still 0, the condition I=A was never met, and the program ends. If I does not equal 0, the condition was met and we continue to line 60 for further processing.

Now when you run the program, it will run until you stop it. No more error code 3s. If you will use this procedure in your FOR...NEXT loops, you should avoid error code 3s because of too many FOR...NEXT levels.

We would like to point out that this information is equally valid for our other computers. The other computers permit more FOR...NEXT loop levels, and so most of us do not get caught when we leave loops open.



PRINT USING (From Page 6)

Now, if you don't think what we just showed you is all that impressive, we are going to let you Model I and III owners in on a secret that the Model II and Color Computer users already may know. You can combine PRINT @ and PRINT USING to create a very powerful statement. The format is:

PRINT@nnn,USING"format";variables

I tried this on both the Model I and III recently and it worked well. I don't believe this combination is mentioned in either the Model I or III manuals.

The PRINT@, USING combination gives you total control over what will be printed where. Consider this example:

We want the computer to allow us to input a screen position to print at. We will also input values for two strings, and a number between 0 and 100. Once these values are input, we want the computer to print the first three letters of the first string, the number, the first letter of the second string, the number again, and then the first letter of both strings next to each other. This sequence is to be repeated anywhere we designate on the screen.

If the two strings were "ANOTHER" and "G," and the number was 25, a single print would give:

```
ANO 25 G 25 AG
```

Here is the program:

```
1Ø CLEAR 1ØØ
2Ø CLS
3Ø MAX=512
4Ø U$="% % ## ! ## !!"
5Ø INPUT"WHERE";P
6Ø IF P>MAX-15 THEN 5Ø
7Ø INPUT"FIRST STRING";A$
8Ø INPUT"SECOND STRING";B$
9Ø INPUT"NUMBER";N
1ØØ IF N>1ØØ THEN 9Ø
11Ø PRINT@ P, USING U$; A$,N,B$,N,A$,B$;
12Ø PRINT@Ø,"";
13Ø GOTO 5Ø
```

Line 10 gives us some string space to work with.

Line 30 MAX should be the maximum number of PRINT@ positions on your computer. For the Color Computer MAX=512, for Model I/III MAX=1024, and for the Model II, MAX=1920.

Line 40 is the format to print the first 3 characters of the first string variable, a 2 digit value, a single letter, a 2 digit value, and the first character of two different string values.

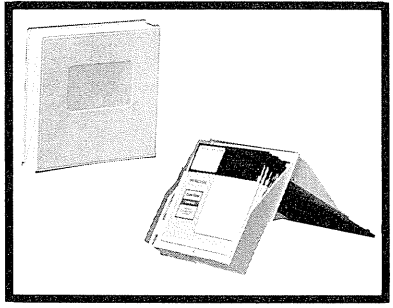
Line 50 inputs the position to start printing at.

Line 60 makes sure the string will fit on the screen.

Line 110 does the actual printing.

Line 120 positions the cursor at the top of the screen so the INPUT statements won't be all over the screen.

We hope that our article has given you some hint of the power and flexibility of the PRINT USING statement.



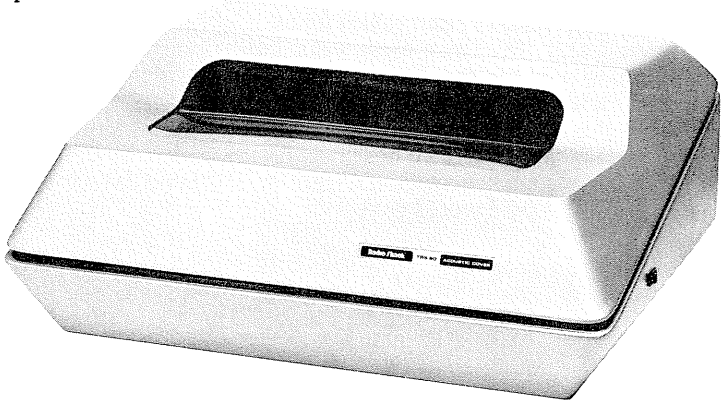
Peripherals

Product Line Manager's News

This is preview month. The new RADIO SHACK catalogs should be reaching the stores late this month. I would like to devote a little space to let you know what's new with peripherals this year.

Our printer line this fall is entirely exclusive to RADIO SHACK. These printers offer performance features, options, and compatibilities developed to our specifications and unavailable from any other source. Line printer VII you already know about. There will also be a new dual mode Word Processing/Data Processing dot matrix unit which embodies the new "standards" described in these pages last May. More about this jewel next month.

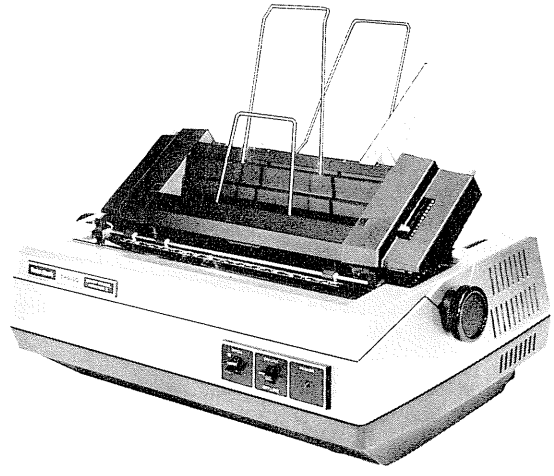
Our support of Word Processing will be enhanced by two new products. Deliveries should start in late September on a uniquely designed sound control enclosure for D.W. II. Constructed of molded fiberglass, this product (26-1455 $399.00) offers unprecedented aesthetic styling and effective noise control for the Daisy Wheel printer. It is an absolute first of its kind in the industry. The unit includes its own fan. The power switch and indicator also control the printer for easy use. Its design is integrated into the universal printer stand top. It's a perfect fit and produces a very eye-catching package. Your secretary will love this product!



Deliveries should have already started of the new cut sheet feeder (26-1448 $1495.00) for the Daisy Wheel II. This device mounts on the printer in the same manner as a tractor mechanism. In fact, the printer and software think the tractor is still there. However, instead of a supply of continuous tractor paper, individual sheets are fed from a hopper as needed. Please note that the user has to adjust the page length information stored by the computer. The sheet feeder unit requires that a power connector be installed in your D.W. II. This is a simple installation performed at a Radio Shack service center. The charge for this installation is much, much less than the $100.00 or more that a separate power supply would cost.

The sheet feeder will give you automatic paper insertion and stacking of paper. The form length selector switch allows you to adjust the sheet feeder for the different length sheets (from 3.6" to 14"). The adjustable side plates let you adjust for paper widths from 5.5" to 12." An automatic alarm sounds and the printer stops if the sheet feeder runs out of paper, or if the paper should jam.

Deliveries of the D.W. II should be increasing by now. Continued high demand for this quality printer will prevent an "off the shelf" status for some time to come, but the increased factory production is now becoming available and is being accelerated by air shipments to Fort Worth. We hope to trim the wait time to a reasonable interval. (It's worth the wait!!)



Owners who receive D.W. II printers in August will probably find a notice about an enhanced control code response. A change in the ROM to fix an obscure "bug" in the underline response has brought with it two other options: there will be a control code sequence to allow software defeat of the automatic line feed and an External Program Mode to allow the host computer to control the hammer intensity, carriage advance distance and ribbon motion on a character-by-character basis. These functions will not affect normal operation of the printer or any Radio Shack software. Should any product sold by R.S. make use of these features a ROM upgrade by your service center will be available. Details will appear here first!

Don't forget that the two new print wheels for the Daisy Wheel II, announced last December (remember December?) are now available. In case you have forgotten, these new print wheels are Title Italic (12) and Cubic (P.S.). More print wheels for the Daily Wheel II will come but you will have to be very patient!

Take a look at your August Flyer. It announces a "Block Buster" sale on Line Printer IV. This unit, which regularly sells for $999.00, is available for $699.00. A saving of $300. The LP IV is off the shelf in the warehouse. Why wait to join the fun? This printer and SCRIPSIT are an excellent entry level word processing duo. I've seen some very good looking newsletters produced with these two products.

I believe that's all for now, folks. Plan on looking to these pages for complete product descriptions as they become available.

Peripheral Bugs, Errors, and Fixes

Line Printer VII 26-1167

Please change the sample program on page 15 of the printer manual to read:

```
10 FOR N=128 TO 255
20 LPRINT CHR$(30); "N= ";N;
30 LPRINT CHR$(18); CHR$(N);
40 NEXT N
```

Education

Educational Products News

READING AND THE TRS-80

Today more and more teachers are becoming aware of the instructional potential of microcomputers. One area of special interest to many teachers is that of reading instruction with the computer. To meet the need for quality computer assisted instruction materials in reading, the Education Division of Radio Shack is offering two new series of programs: the RADIO SHACK HIGH MOTIVATION READING SERIES and the PHILADELPHIA COMPUTER ASSISTED READING DEVELOPMENT PROGRAM.

RADIO SHACK HIGH MOTIVATION READING SERIES

As its name implies, this series is designed to motivate students to read. Each title in this series comes with four copies of the student reader, an audio cassette tape, a diskette with computer assisted instruction activities, and a manual containing instructions for the teacher and additional student activities. A student can read the book, listen to the read-along audio tape if needed, then work through the instructional activities for that reader at the computer. If the Student Records System is being used, the student's score will automatically be stored in a disk file for later review by the teacher. The teacher can also reproduce the additional activities provided in the manual.

The student readers are biographies, adaptations of classics, histories, and other quality books presented in an illustrated format. Their text and illustrations balance each other to provide an enjoyable reading experience. The books are written at an intermediate reading level (4-6), and new or unfamiliar words are defined at the bottom of the page when needed. The books are equally well-suited for younger students working above grade level, students working on grade level who want to sharpen their reading skills, and older students who need extra motivation to succeed in reading.

The diskette contains student activities which are written with one of Radio Shack's new authoring systems, TRS-80 PILOT Plus. The lessons consist of comprehension activities in true-false and multiple-choice formats. The activities test the student's ability to remember what he or she has read, draw conclusions from facts, understand vocabulary words, choose the proper meaning for words, and decide whether certain facts were important to the story.

To do the activities, the student reads the instructions on the screen, reads the question, and chooses an answer by pressing a single key on the keyboard. The computer evaluates the student's choice and displays an appropriate message. If the question was missed, the student is given another opportunity to answer it. If the answer was correct, the student is given a reinforcement message and can then go to the next question.

At the end of each activity, the student is shown a report which tells the percent correct for that activity. If the Student Records System is being used, the student's score is then stored in a disk file for later review by the teacher. If the Student Record System is not being used, the teacher can record the student's score on a copy of the record sheet provided with the manual.

The first titles available in the Radio Shack High Motivation Reading Series include Charles Lindbergh/Amelia Earhart, The Hound of the Baskervilles, Dracula, Moby Dick, The Beatles, and 20,000 Leagues Under the Sea.

THE PHILADELPHIA COMPUTER ASSISTED READING DEVELOPMENT PROGRAM

Since 1966, the Philadelphia School District has been developing and refining its computer assisted reading comprehension program. Eight studies conducted between 1968 and 1979 showed that students who had worked with the program did better in areas of reading comprehension and motivation than students who had not worked with the program. The studies have shown this program to be especially effective with lower-achieving secondary students.

Philadelphia's original reading program was written for a large time-sharing system with many terminals for student use. Now, the Education Division of Radio Shack is adapting this program for the TRS-80 microcomputer using another new authoring system, TRS-80 AUTHOR I.

The program, intended for reading levels four to eight, consists of four modules: Sentences, Paragraphs, Following Directions, and Reading Comprehension. Each module covers two to five topics. Within each topic is a pretest, five to ten development lessons, and a posttest. For example, the Sentences module presents four topics: identifying sentences, labeling key words in a sentence, discriminating related and unrelated sentences, and ordering sentences into proper sequence. Each of these topics, in turn, contains lessons and tests.

To begin using the program, the student takes the pretest for a certain topic. If the student meets the specified criteria for that test, he or she goes to the next topic. If the student does not meet the criteria on the pretest, he or she goes through all the development lessons for the topic and then takes the posttest. At the end of each lesson, the student is shown his or her score, and the score is stored in a disk file for later review by the teacher.

The objectives for each topic, contained in the teacher's manual, allow the teacher to monitor the progress of each student with each objective.

The Education Division of Radio Shack is working to meet the needs of the education community for computer assisted reading instruction, by providing both a series of motivational reading and comprehension materials in its HIGH MOTIVATION READING SERIES, and a series of comprehension skill development materials in the PHILADELPHIA COMPUTER ASSISTED READING DEVELOPMENT PROGRAM.

NEW PRODUCTS FROM THE EDUCATION DIVISION

NUMERIC DATA ENTRY PRACTICE helps students increase their speed and accuracy on the TRS-80 numeric keypad. Designed by a high school teacher, this program presents sets of numbers on the video display for the student to practice entering at the numeric keypad.

To use this program, the teacher enters all the students' names into the computer along with a password for each name, and tells each student his or her password. The first time each student works with the program, he or she is automatically placed in the first lesson. The program presents five sets of practice exercises, then gives fifty sets of timed exercises. At the end of the

(Continued on Page 23)

Customer Service

Hints, Help and Tips

In this month's feature article we thought we would tell you what the computer customer service group does. Basically, we answer phone calls from customers, stores, and computer centers about questions dealing with all of our software and hardware. Our main function is to aid you, the customer, in the proper use of our products and to keep you informed of any existing problems which may relate to your software or hardware. We are staffed with approximately 50 people and spend around $1 million per year for our toll-free telephone lines. No, we don't forget about you after the sale!

Described below is a brief summary of what our job entails.

We do not modify our pre-packaged software. If one of our programs does not perform a particular function you would like to see, we will be glad to take your suggestions for improvements or enhancements. These suggestions will be passed to the proper department for their consideration and review for possible inclusion in any future release.

If, on the other hand, you report to us that our software is not operating the way we say it should, we will investigate to verify that something is wrong and fill out a problem report. Once we have the problem report, we send the information to the proper department for action. At this point, if the problem is in the software a fix to the existing software is released or a new version of the program is released if extensive repairs are needed. This process can take some time, depending upon the complexity of the problem.

We often get calls from customers who are writing their own programs. This is perhaps the most difficult area for us to support. We do not do custom programming. We can tell you how a certain command or utility works, but we cannot analyze why a program you have written isn't functioning. For example, if you are writing a sort routine and it won't sort a two dimensional array, we can give you general information on how to set up such a routine, but we cannot write the routine for you.

When you call with a problem that is diagnosed as a possible hardware fault, we will try to tell you which unit needs to be taken in for service. Please remember though, that in many cases it is virtually impossible to pin-point a suspected hardware fault over the phone. Therefore, we do not give any instructions on repairs. We recommend that all repairs be done by our service centers.

If you are experiencing a problem interfacing non-Radio Shack peripherals to your TRS-80, we will try to help you with the pin-by-pin connection information. We are not intimately familiar with everyone's products, and cannot guarantee that our suggestions will work. Interfacing of different units is accomplished through no small amount of experimentation, so if our first suggestion does not work, we would be pleased to help you try to find a different approach to the problem.

Another point of confusion lies with updated versions of our programs. New versions of our programs are often available free or at a nominal charge by ordering a 700-series catalog number. We do not stock these items here in Customer Services. 700 numbered items are available through your local Radio Shack store or Computer Center. We can inform you of the updated version's "700" number (for example Model III Disk Scripsit has the number 700-2006), but we cannot send a copy of this update to you, nor can we place the order for the updated version for you. This can only be done by your local store.

For those of you who are upset because you cannot get through on our telephone lines, please remember that we are working as hard as we can to answer the calls that do reach us as efficiently and accurately as is possible. We are expanding our department to meet the growing needs and some time around July 15, we will be moving to a new office area that will give us enough space to expand even more.

We trust this gives you an idea of what we do. We look forward to being of assistance to you.

FREQUENTLY ASKED QUESTIONS:

QUESTION: How do I get more than 8747 bytes of memory in my 16K Extended Color BASIC TRS-80?

ANSWER: When the Extended Color BASIC computer powers up, it automatically reserves 200 bytes of string space and four "pages" of memory are reserved for graphics. If you will not need four pages for graphics, you can increase available memory by using PCLEAR n where n is the number of 1536 byte graphics pages that you will need. If you will not need any graphics space, PCLEAR 1 will release the maximum amount of space to BASIC. Using PCLEAR1 just after power-up gives you 13095 as the response to ?MEM. If you will not be using any strings, you can do a CLEAR 0 to release the entire 200 bytes of string space to BASIC. Using both PCLEAR 1 and CLEAR 0 will give the maximum amount of memory space, 13295 bytes. Caution: If you have used CLEAR 0 you will not be able to CSAVE your program. Before you could CSAVE you would need to CLEAR at least enough string space for your tape file name.

QUESTION: What are the pin outs on the Model III I/O bus and how do I initialize it?

ANSWER: The I/O bus on the Model III looks like this:

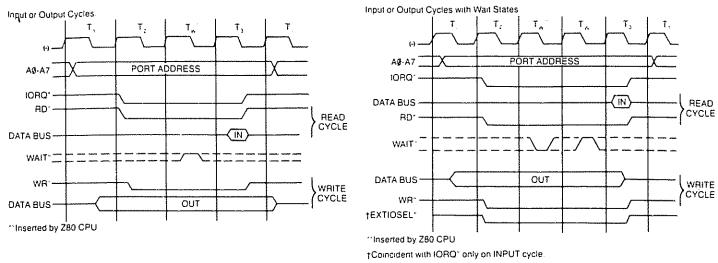
PIN 1	DB0
PIN 3	DB1
PIN 5	DB2
PIN 7	DB3
PIN 9	DB4
PIN 11	DB5
PIN 13	DB6
PIN 15	DB7
PIN 17	A0
PIN 19	A1
PIN 21	A2
PIN 23	A3
PIN 25	A4
PIN 27	A5
PIN 29	A6
PIN 31	A7
PIN 33	IN*
PIN 35	OUT*
PIN 37	RESET*
PIN 39	IOBUSINT*
PIN 41	IOBUSWAIT*
PIN 43	EXTIOSEL*
PIN 45	NOT USED
PIN 47	M1*
PIN 49	IORQ*

ALL EVEN PINS ARE GROUND.
*ACTIVE LOW

To initialize the I/O bus you must write to PORT ØECH with bit 4 on in the user software. During input EXTIOSEL must be brought low. It is high for output. See timing chart.

(Continued on Page 21)

Customer Services (From Page 20)



QUESTION: I can't backup my Model II data diskettes due to an Error 25. Why?

ANSWER: Error 25 on a Model II is FILE ACCESS DENIED DUE TO PASSWORD PROTECTION. During BACKUP this error occurs when you use the wrong disk master password. When you FORMAT a diskette, you assign a master password to the disk. You need to keep a record of this password (or be able to remember it) if you intend to make backup copies of the disk. Here is an example of FORMATting a disk with the master password 'PASSWORD':

Example:

FORMAT :1 (ID = diskname,PW = PASSWORD)

QUESTION:

A. When I am working with my BASIC programs I sometimes get a BASIC Error 59, which is a disk full error, but when I do a DIR I still have free granules available.

B. When I am working with my Cobol programs I sometimes get a Cobol Write Error.

ANSWER: Check the number of extents in each of your data files to make sure that the extents do not exceed 15. A disk extent is a block of granules that are physically next to each other. As files are changed, added, and deleted it is possible for the number of extents on the disk to reach 15. Fifteen extents is the maximum number that TRSDOS can handle. If there are 15 or more extents, COPY the data files to another data disk. By copying each file to a new disk, TRSDOS is able to reallocate disk space, bring files together, and reduce the total number of extents used. This procedure should solve the error problems described.

QUESTION: When running my BASIC programs on my Model II, I get a BASIC Error 52.

ANSWER: Error code 52 in Model II BASIC is BAD FILE NUMBER. This usually means that you did not tell the Model II you were going to OPEN and CLOSE disk files while in BASIC. On a Model II, you must specify how many files you will need at any one time while running the program when entering BASIC. This is done as follows:

Example:

BASIC – F:3

This command line in TRSDOS will load the BASIC Interpreter and allow you to have as many as three files OPEN at any one time.

If you have specified one or more files when you initialized BASIC, then you need to be sure that your various file statements (OPEN, CLOSE, PRINT#, etc.) are referring to currently available and OPEN (if appropriate) file numbers.

QUESTION: What equipment do you need to use Videotex?

ANSWER: Here are the equipment requirements for various machines:

Model I:

4K RAM with Level II BASIC minimum
A telephone
and either:
Expansion Interface
RS-232 Interface (26-1145)
Videotex software (26-2220)
Telephone Interface II (and a standard telephone) or
Direct Connect Modem I (and a modular telephone jack)
or
Videotex Dumb Terminal Package (26-2224)
Cassette Comm (26-1139)
Direct Connect Modem I (26-1172) (and a modular phone jack)
Cassette Comm Cable (26-3009)

Model II

Minimum 32K RAM
A telephone
Telephone Interface II (and a standard telephone) or
Direct Connect Modem I (and a modular phone jack)
RS-232 Cable (26-4403)
and either
Videotex Software (26-2221) or
Videotex Dumb Terminal package (26-2224) and Model II's TERMINAL Utility.

Model III

Minimum 16K RAM with Model III BASIC
A telephone
RS-232 Interface (26-1148 — included in 26-1063 but requires cable 26-1408)
Videotex Software (26-2220)
Telephone Interface II (and a standard telephone) or
Direct Connect Modem I (and a modular phone jack)

Color Computer

Minimum 4K RAM
A telephone
Videotex Software (26-2222)
Telephone Interface II, RS-232 Cable (26-3014) (and a standard telephone) or
Direct Connect Modem I (and a modular phone jack) and either the RS-232 Cable (26-3014) or the 4 Pin to 4 Pin Cable (26-3009)

CUSTOMER SERVICES ADDRESS AND PHONE NUMBERS

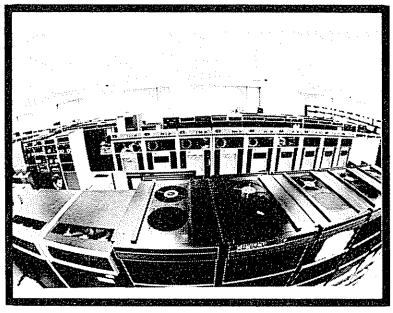
8AM to 5PM Central Time
Customer Services
400 Atrium One Tandy Center
Fort Worth, Texas 76102

Model I/III Business Software
Outside Texas 1-800-433-5641 In Texas 1-800-772-5973

Model II Business Software
Outside Texas 1-800-433-5640 In Texas 1-800-772-5972

All Other Calls
Outside Texas 1-800-433-1679 In Texas 1-800-772-5914

Switchboard — 1-817-390-3583



CompuServe

CompuServe Information Service

We at CompuServe will be providing a monthly article to Radio Shack's Microcomputer News.

I see the columns growing more specific with each issue, talking perhaps in detail about individual products or services on CIS, such as our Citizen Band simulator, MicroQuote, newspapers and various aspects for the MicroNET personal computing area.

Here is our first column. I've made it a general description of the CompuServe Information Service (CIS) with a little history thrown in for good measure.

The CompuServe Information Service

Now there's a service which can bring a world of information to your home or business. It's called CompuServe, and it's an information service to serve your information needs.

Through the use of the most sophisticated computer-based electronic communications, CompuServe offers information on a variety of topics in easy-to-read, comprehensive formats. CompuServe can provide added value to your personal computer system or computer terminal by connecting you with many sources of information.

CompuServe can also provide you the means to communicate with other people throughout the country and can give you the necessary tool to increase dramatically the capabilities of your TRS-80 computer or Videotex terminal.

CompuServe has been bringing people and information together for more than a decade. CompuServe, a major computer services company, is applying the same technology it has developed from serving industry and government to the delivery of information services to homes and smaller businesses.

CompuServe's primary and supplementary communications networks provide access to the information service through a local telephone call in more than 260 U.S. cities.

The power behind the CompuServe Information Service is centered at two modern complexes in Columbus, Ohio, housing large computer systems processing billions of characters of information.

History

In August 1979, CompuServe introduced a service called MicroNET designed mainly to give the computer hobbyist the opportunity to enhance the capabilities of his personal computer by using CompuServe's network, mainframe computer power and many of the computer languages made available.

The scope and number of services offered expanded rapidly until CompuServe decided to drop the name MicroNET in favor of CompuServe Information Service (CIS).

That was on July 1, 1980. Also on that day CompuServe and Tandy Corporation announced that the CompuServe Information Service would be sold through the hundreds of Radio Shack computer centers and, eventually, through the thousands of electronics outlets across the country.

CompuServe Information Service (CIS)

CIS offers the owner of a home computer, or a computer terminal, the capability of accessing CompuServe's nationwide network to utilize a variety of sources of information and/or entertainment. The service was initially designed to be used before 8 a.m. and after 6 p.m., thereby utilizing CompuServe's off-peak hours computer capacity. Now, daytime access is also available. Customers can play games like chess and Star Trek, can communicate across CompuServe's nationwide network in real time (as on Citizens Band radio), can ask for financial information from major data bases such as Value, can purchase software for use offline on their home computers, or any number of other applications.

The CompuServe Information Service includes:

Newspapers

- A daily electronic edition of 11 major newspapers including The New York Times, the Los Angeles Times, the San Francisco Chronicle, the Washington Post and The Columbus Dispatch.
- The Associated Press news and sports wires.

Finance

- MicroQuote: Current and historical information on more than 32,000 stocks, bonds and options. Information includes volumes, dividends, earning per share, ratings and shares outstanding. Updated daily.
- Commodity News Service: Information includes pricing, news and commentary on energy, metals, financial instruments and agricultural commodities. Also weather, agricultural and economic news of interest to farmers, businessmen and the investing public.
- AP Financial Wire.
- Financial pages of major newspapers.
- Raylux Financial Advisory Service: Commentary on today's economy, its fluctuations and the general health of the national and world economies.
- Value Line Database-II: Historical corporate financial information on more than 1,600 companies.
- Fintol: Personal financial programs for items such as mortgage loans, compound interest calculations, depreciation analysis, compound growth rates and salary calculations.
- Electronic Banking: Pay bills, transfer funds and get the latest bank information right in your home.

Entertainment

- Games: Including Adventure, Hangman, MicroThello, Chess, Backgammon, Roulet, Space War, Blackjack, Football, Fastermind. Also casino games, multiplayer games with players across the country and educational games using words and math.
- Literary, entertainment and movie reviews, including reviews of video cassettes and equipment.
- Astrology.
- The latest standings in major sporting events, such as championship auto racing, football, basketball and the latest point spreads and injury lists.

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CompuServe (From Page 22)

Electronic Communications

— Electronic Mail: Allows users to compose, send and receive messages from other CompuServe subscribers across the street or across the country. Send messages to individuals or groups.

— Bulletin Board: Post items for sale, wanted items and general items of interest to a national audience.

— Citizens Band Simulation: Use your own "handle" to talk with other subscribers on a real-time basis across the country.

— Specific users group communications: Including electronic feedback bulletin board services for direct communications with equipment manufacturers. Also newsletters from Radio Shack, Atari, Apple, DEC, Heath and others.

CompuServe Users Information

— A variety of information designed to help users of the CIS, including "how to" tips, subject indexes, descriptions of new services and databases.

Home Information

— Better Homes & Gardens: Food and gardening information specially prepared to supplement each month's printed magazine. Food information includes recipes (some submitted by readers), nutritional analyses of foods, meal plans and "how to" tips on shopping and food preparation.

— CompuServe Energy Management System: An easy-to-use program which helps analyze the energy efficiency of homes or businesses. Includes analyses of insulation factors, heat loss, heating and cooling efficiency considerations and points out where energy efficiency can be increased to save money in energy dollars.

— Home repairs and remodeling tips.

— Specific dieting information and tips on preparing low calorie yet tasty foods.

— Supermarket shopper, including information of discounts and dollar-saving coupons.

— Personal counseling and family living advice.

— Valuable information on personal health and physical fitness.

— Information on canning or freezing foods.

— Automobile maintenance and safety, driving and fuel conservation tips, things to watch for when buying new or used cars.

Personal Computing

— Programming aids and technical capabilities for the computer hobbyist.

— CompuServe Software Exchange: Allows users to purchase programs electronically.

— Programming languages such as BASIC, APL, BLIS10, MACRO, SNOBOL, FORTRAN, PASCAL.

— Technical publications and documentation.

— Word processing and text editors.

— Special programs which allow personal computers to take full advantage of many built-in capabilities of the CompuServe Communications Network.

Other services available on the CIS include:

— Aviation Safety Institute: Newsletter and commentary on current aviation hazards, updates on flying conditions and general aviation news.

— CompuServe Art Gallery: High-quality line printer graphics of some of the most popular art in history, including Mona Lisa, Mr. Spock, a wall-size reproduction of the moon, Snoopy, and custom drawings.

— National User Opinion Poll: A periodic poll of CompuServe customers on current and historical topics of interest. Customers have the chance to let their opinions be heard using the nationwide communications capability of CompuServe.

The CompuServe Information Service costs $5 per hour weekday evenings between 6 p.m. and 5 a.m., all day weekends and holidays. The cost is $22.50 between 5 a.m. and 6 p.m. weekdays for prime time access. Billing is conveniently made to VISA or MasterCard, or you can apply for direct billing.

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Columbus, Ohio 43220
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Education (From Page 19)

timed exercises, the student is shown a report of speed and accuracy for that session, and these scores are recorded on a disk file.

The same procedure is followed for each lesson, with the student automatically placed at the next lesson in the series each time he or she signs on. The progress report graphs all the student's previous scores next to current scores for a quick visual comparison.

The teacher's program, which is password-protected, allows the teacher to review and print out the scores by lesson or by student. The teacher can also review a list of student names and passwords, and change the students' passwords.

26-2601 NUMERIC DATA ENTRY PRACTICE

Available November, 1981 Suggested retail price: $39.95

RADIO SHACK K-8 MATH CROSS-REFERENCE assists teachers who want to use the K-8 Math Program with their basal math series. It coordinates individual K-8 Math lessons with specific pages in each of the following six math series, so the teacher can reinforce material being presented in class:

MATHEMATICS IN OUR WORLD — Addison-Wesley

GROWTH IN MATHEMATICS SERIES —
Harcourt Brace Jovanovich, Inc.

HEATH MATHEMATICS SERIES —
D. C. Heath and Company

HOLT SCHOOL MATHEMATICS SERIES —
Holt, Rinehart and Winston

MATHEMATICS AROUND US SERIES —
Scott, Foresman and Company

MATHEMATICS FOR MASTERY SERIES —
Silver Burdett Company

This reference provides a quick means of finding additional drill-and-practice, remedial, or enrichment activities appropriate for students learning a specific skill or further developing a learned skill.

26-2750 RADIO SHACK K-8 MATH CROSS-REFERENCE Suggested retail price: $4.95

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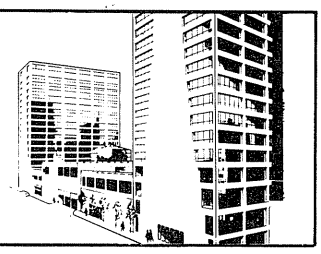

It is middle June when I am writing this column.

As I read through the Product Line Manager's pages, and as I talked with the PLMs I can feel a lot of excitement over the new products announced in the 1982 Radio Shack Catalog, available in the stores as you read this. I have not seen all of the catalog yet, and there are still some items which I am not aware of. The items I do know about all seem to fill needs and answer often made requests. I hope you will be as excited as we are when you get the catalog. As Jon Shirley points out in View From the 7th Floor, RSC-6 — the full line computer catalog — should be out in September and will give you a good idea of what will be coming out in the months ahead. Make sure you get both of these catalogs from your local store.

I am very pleased to have been able to include the first article direct from CompuServe in this month's edition. While this month's column repeats some information we have given you recently, it should fill in some gaps and give you a little more detail on some of the features available from CompuServe.

I recently gained access to CompuServe, and really enjoy "browsing" through the various newspapers for information and viewpoints which are not available in our local newspapers. As a consumer, I am not thoroughly familiar with this new world of computer communications, and I will be writing at least one article to describe what happened to me on the road to successful hook-up with CompuServe. I have been "on" CompuServe several times recently and still have not found certain features that I know exist. It seems that everytime I go looking for one item I get sidetracked by something else and forget my original objective.

CompuServe has assured us that in coming months they will review many of the features of the CompuServe Information Service (CIS) and will be explaining some of the many options and capabilities that are available.

You may have noticed that for the last two issues, we have changed the format of program lines that we list in the newsletter. When the newsletter was much smaller, we would often take a program and "edit" it so that there was only one program statement in each program line. That is just not possible now, so we are listing each statement in a given program line on a separate line in the newsletter. We hope that this makes the program easier to enter. A second change occurred this month as we switched from "Universal Dot Matrix" (UDM) print for programs and shifted to Daisy Wheel II generated program listings. The new style should help to eliminate some of the confusion that UDM has caused. We have had several reports of individuals having difficulty distinguishing 8s and Bs, 6s and Gs. Any comments on these changes?

I am constantly looking for material for the newsletter. Our primary restriction on printing material is that it must pertain to "stock" Radio Shack equipment and use only Radio Shack approved modifications, if any. We try to publish any material we receive which falls within the mentioned restriction, and which we can "figure out."

I have received several letters which contained nothing more than a program listing. No explanation, hints or guidelines. That is alright, but it means either the program will never be printed (because of work loads or our inability to figure out what is supposed to be happening) or it will take longer since we have to figure out what the program is supposed to do, and then write an article to support the program.

If you want your program or information published, please give us as much help as possible. Tell us what machines (model, level, memory required) the program was written for, what hardware is required (e.g. Model I expansion interface, printers, etc.), and what it is that makes this program special or useful to you.

By the way, we are planning a special issue for December, 1981. If you have a special program you would like to have in that issue, get it to us NOW! Especially if you have a program which is holiday oriented. Get your program for the December issue to us by the end of September, or it may be too late.

TRS-80 Microcomputer News is published monthly by Radio Shack, a division of Tandy Corporation. A single one year subscription is available free to purchasers of new TRS-80 Microcomputer systems with addresses in the United States, and APO or FPO addresses. Subscriptions to other addresses are not available. The subscription rate for renewals and other interested persons is twelve dollars ($12.00) per year, check or money order in U.S. funds. All correspondence related to subscriptions should be sent to: Microcomputer News, P.O. Box 2910, Fort Worth, Texas 76101.

Back issues of Microcomputer News are not available.

The TRS-80 Newsletter welcomes the receipt of computer programs, or other material which you would like to make available to users of TRS-80 Microcomputer systems. In order for us to reprint your submission, you must specifically request that your material be considered for reprinting in the newsletter and provide no notice that you retain copyrights or other exclusive rights in the material. This assures that our readers may be permitted to recopy and use your material without creating any legal hassles.