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No. 20

July-August

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Issue #9, October/November 1984
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Issue #10, December 1984
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Issue #12, February/March 1985
2068 Mass Storage, Software from England, TS1000 Program Tips, 2068 Word Processor Eval.-2, Bank Switching Concluded, MTerm Patches, 2068 Tutorial.

Issue #13, April 1985
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Special HARDWARE Issue, TS1000 Keyboard Add-on, ZX81 Rampacks on the 2068, Surge Suppressor Project, User Group Report, OL Report, Cassette Tips.

Issue #15, July/August 1985
Byte-Mapped Scroll (2068), Spectrum Conversion Notes, VU-CALC with 80-column Printer(1000), Machine Code (1000), B Reviews, OL, Etc.

Issue #16, November 1985
2068 Line Renumbering (Bell), MTerm on Spectrum, 2068 Clover, Stopper Program (1000), Quick Balance, Logic Families, Sinclair World, News and Reviews.

Issue #17, February/March 1986
FastBox Trilogy (1000), Banta KeyFinder, 2068 Screen Save (Bell), 3D Fractals (2068), 2068 Little Goodies, INDEX - Volume 2, Issues 11-16, Reviews.

Issue #18, April 1986
Software Protection, Partial Pascal Review with Program (1000), Etch-Ah-Sketch (2068), Mikrodrive Backups, Filler Up(1000), Pixel-by-Pixel Screen Scroll,

Issue #19, May/June 1986
2068 Video Modes, Revising Hunter Board, New Wafadrive Column, Quadratic Equations, 2068 Bank Switching Part 1, Zebra Designer Tips, InOLings, etc.

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Coming in the Next Issue of TS Horizons:

OUR SPECIAL SUPERSIZED

NEW TS HORIZONS FEATURE "CATCHUP" ISSUE!
TS FUNNIES

More Little Goodies for the 2068
From George Mockridge

Walter Komlosy's

"The **ULTIMATE ZX81**"

"ZX81 News And Resources"
 by Peter McMullin Returns

A Special Collection
of Graphics Programs

for the 2068 by Bernard Bush

Bill Pedersen's

Bank Switching Article
 Concludes with Parts III & IV



ERROR CODES: Oops!

TS Horizons #19, page 14.

"Revising a Hunter Board to Hold 32K..."

Walter Komlosy has informed us of an error in the program listing of his article. The mistake was ours, not Mr. Komlosy's.

The line numbers after 200 should have read
 210, 220, and 230,
 instead of 110, 120, and 130.

P.S. Don't miss Walter's new article in the next issue of TS Horizons; "The Ultimate ZX81." TSH #21 is our special, super-size, catchup issue.

SPECTRUM CLOSEOUT !!

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ENTER

Dear Readers,

I always like to hear from Tex. Tex Faucette has been a faithful supporter of TS Horizons from almost the beginning. Many of you know Tex as Oscar Sensabaugh from Computer Trader Magazine, where he writes a regular Timex, etc., column he calls "Computin' in the Country." Yes, I'm telling the cat out of the bag. They are one and the same. That must be a surprise to many of you who are familiar with his "country-style" reviews and discussions in CTM. While his CTM articles are full of Texas slang and humor, his TSH reviews are written in virtually perfect grammar and spelling. The one thing that ties Oscar and Tex together is the clarity and thoroughness of his reviews and the humor he brings to his writing.



OSCAR/TEX

Why have I let the secret out now? Actually he has dropped hints before, and I hope he does mind me doing this without asking, but Tex had an accident not too long ago. Nothing tragic, but he had a nasty fall from the back of a semi trailer and spent most of the summer recuperating. This kept him away from his computers and the Cincinnati Computer Fest. When he finally was able to compute again, he accidentally let a test prod slip during a hardware project and he blew up his 2068. Anyway he's still taking physical therapy, but he's a lot better. I'd like to suggest those of you who have come to appreciate his writing take a minute to jot down a note or send a nice get-well card and tell him you wish him and his family well. (He rambles on about his grandkids and his XYL - that's "ex-young lady" or wife-endlessly in CTM). His address is:

Tex Faucette (or Oscar, whatever)
801 N. 7th St., Ballinger TX 76821

Thanks. (I hope he doesn't kill me for this.)

Speaking of Computer Fests

Some people have written to say that they would have liked to see more on the Cincinnati in the last issue; Oscar/Tex being one in particular. For that reason, we pirated the following article from the latest LISTing, the Long Island User Group newsletter:

Review of A Happening In Ohio
by John Sampson

Well I finally got to go to an honest to goodness Timex/Sinclair Computer Fest. I missed the one they had in Boston in November of 1983, so when I heard about this affair, I said "Self--you better get to this one."

I flew to the Cincinnati airport (which is in Kentucky by the way) early Saturday morning, stayed over night at the Ramada Inn where the ComputerFest was held, and flew back to New York late Sunday night, after two very nice days at the affair. Between plane fare, car rental, motel room, food, and miscellaneous expenses, it cost me about \$250.00 not counting the little I spent for the goodies.

Well I wasn't disappointed. I am told almost 300 people from all over the country attended, and they had a good showing of about 30 suppliers of TS products. I got to meet and talk with Tom Woods, Bill Russell, Jerry from Aerco and Tom Bent to name a few. They had a good array of T/S products on display. I would estimate that there was about 40% QL, 20% ZX81 and 40% TS2068 and/or Spectrum.

In addition the people who ran the show scheduled ten hourly seminars, five on Saturday and five on Sunday. These seminars were free and covered such topics as Machine Code Programming, Forth, Using Data Bases to name a few, and were very interesting. I attended five of them, and I got a few answers to some questions. The only negative thing I could say about the Computer Fest is that the Ramada Inn was about 30 miles from the airport and they did not arrange inexpensive, reliable transportation for the incoming guests. I don't know if it was the fault of Ramada or the organizers but I chose to rent a car so I was not inconvenienced at all.

Now that I look back on it, it was great. The weather was beautiful, everything went smoothly and I brought back some software I didn't have before, a brand new 1500, some back issues of CTM and a new Aerco DOS. If there is another Computer Fest being held somewhere, I advise all of you to attend. You probably won't regret it.

I don't remember Mr. Sampson from the Fest but his reactions were very typical. No matter how far people came or how much money they had or how computer-proficient they were, A GOOD TIME WAS HAD BY ALL & that's not just a cliché.

Speaking as a member of the Computer Fest Board, it was a success that exceeded our fondest hopes. Here was a group of regular guys, none of whom had ever attempted anything like this before, trying to pull off a major event based on a computer that is no longer being made, with no funds. It was really unprecedented. At the beginning we had no commitment from any TS-supporting companies. We were wondering if we could fill one meeting room (or if worse came to worse a large tent) and if we could pay for it. When the event finally came we had a hard time squeezing everything and everyone into two adjacent conference rooms, a separate room for seminars, and about 50 or 60 feet of adjacent hallway.

So how did we pull it off? First, we thought about what we'd like to see if we were going to a TS Fest; this involved a lot of brainstorming and then picking out what we were capable of. Second, we tapped into the already-existing TS network: newsletters, magazines, BBSs, user groups, word of mouth, mailing lists, and any thing else we could think of. The most important thing was organization: everyone had a job to do and everyone did his job.

Of course we made mistakes. We wanted a location that was easy to get to for people driving in and far enough from the city that costs were reasonable. Unfortunately, we underestimated the number of people who would be flying in and we got too far from the airport. Other mistakes were minor ones.

Future Fests

The point I am trying to make above is that user groups in other areas should consider trying the same thing. I know it's being talked about for the New York area, Florida, and Texas, and when and if something definite is established you'll read about it in TS Horizons. The **Second Midwest TS Computer Fest** is scheduled for the first weekend in May (in Indianapolis, this time) and the money that is used to start it will come from the money left over from admissions and vendor fees from the '86 in Cincinnati. For more information contact Frank Davis, see "In Spec" for his address.

This money is also available to help other reputable individuals and groups. Also our groups "acquired wisdom" has been collected and written down and should be available for others to use. The Milwaukee User Group made a video tape of the Fest and copies are available for a minimal fee (\$2 postage and a blank tape, I think). All these things would be very valuable and are available. And you can be sure of vendor support after the response we received.

Think about it.

Apologies Are In Order

In certain letters I have mailed out soliciting companies for advertisements I made some claims that may have appeared in TS Horizons. In the past, I can't remember. One unfortunate claim I made was that TS Horizons is the oldest TS-specific magazine still being published. Not too long ago I received a very irate, but very justified letter from Fred Nachbaur of Syncware News. Among his other matters of concern, he rightly called me on the carpet for claiming implicitly that TSH is older than Syncware. To set the record straight, SWN was published nearly a year before the first issue of TS Horizons. Why the mistake? I wish I could plead senility, but I don't think I could get away with it at 28. Actually, I didn't hear of or see a copy of SWN until after the first issue of TS Horizons was published, and when I wrote the ad copy my memory failed me and I made a dumb mistake. That's no excuse but it is a sincere apology. Another question Fred had was about an exchange advertising arrangement we apparently made way back in the old days. I had forgotten about it and they never sent me an ad to use anyway (unless my memory has failed me again). So anyway, Fred and everyone else at Syncware News, consider this an apology. You guys deserve a lot credit for a great publication (actually two, counting "Quantum Levels") and for being the oldest surviving American TS magazine.

Computers for Convicts

We recently received the following notice from George Mockridge of the Peninsula user group in California. "If you were kind enough to send a copy of your newsletter to Robert Kelly in support of our Prisoner Timex/Sinclair Aid Program, you may have had recent copies returned with the message that Mr. Kelly is no longer there. We have just received word that he has finally been granted parole and we hope that our help may have played a small part in

his release. There are still a number of inmates interested in T/S computing, and we ask that you please continue to send copies of your newsletter to these men. In the future send your newsletter to:

Mr. William Kassel
Pre-Release Supervisor
215 East Bonanza
Las Vegas NV 89158

Mr. Kassel will see to it that your N/L gets distributed to the inmates interested in T/S computing. THANKS FOR CARING."

READer INPUT

Dear Rick, I guess it's time to cough up a renewal fee. I never expected to get this much mileage out of my original subscription. I never expected to get such value out of it either. Please accept my thanks for scaling back your expectations back to your possibilities and stubbornly sticking with through what must have been some discouraging times (and may still be). Thanks also for giving me outstandingly useful, thought provoking reading. It would be cheap at twice the price... You've rejected frills in exchange for honest workmanship and conscientious grit.

Greg Felg, Havre MT

Dear Rick, I am going to take you up on the offer you made to give me a list of all the TS subscribers in my area. I'd like them for the state of Iowa which I think would be zip codes S0000 to S2899. I am trying to start a TS users group locally. I also run a TS sub-board on a local BBS. Many thanks, and keep putting out that great magazine.

Dave Youngquist, 1321 NE 43 Ave.,
Des Moines IA S0313.

Dear Dave, The requested list is now on its way to you. By the way that offer still stands for anyone who wants to start a new group, or pump some new blood into an old one. Just write and let us know what zip codes you want.

More Controversy

The abortion controversy has generated a lot of mail, and several people have written in to say that it makes interesting reading. I think the following sampling of letters is representative of what we've received so far. In the interest of saving space, only the briefest of excerpts are presented here. I am especially sorry to reduce Fred Nachbaur's and Bob Hartung's letters so drastically.

I for one want to be counted among those who agree with you 100% in your decision to put the Pro-Life ad in TSH #18. I believe most strongly that you have every right as an editor and publisher to present this material if you so choose, even if it has nothing whatsoever to do with computing... I also feel that the vast majority of T/S users who have benefitted from your dedication to TSH consider it a small loss that a handful of people see fit to drop out of your subscribers because of their pro-

abortion views. There are some things money can't buy.

Bob Hartung, Hometown, IN

Apparently you are keeping score on the basis of how many people write in. If that is the case, please consider this a vote for the opposition. As a subscriber and avid reader of your magazine I found it very offensive.

D. Lebowitz, Flossmoor, IL

By the way your stand on abortion in issue 19 about abortion (I don't agree with it) was very, very good. A man should stand by what he believes. It was very interesting reading those letters, but more so were the answers.

Luis Ruiz, Miami FL
Dear Luis, Thanks, but do you disagree with abortion or with my stand on it?

The tempest over Right to Life in #18 made very revealing reading. I'm very Pro Choice (former teacher & social worker)... OK, you donated space in your own publication & took heat from some irate types... Now I'm telling you I respect your decent motives anyhow. (PS. Just don't fold TSH!)

J. Kealy, El Paso TX

It's not a political issue. If anything, it's a moral and legal issue that has been handled (as so many of our society's issues are) as a political football game... In my younger days, I casually aborted two (or perhaps, three - I can't exactly remember) of my wife's pregnancies. I say, "I" did this, because my wife was persuaded by my overpowering arguments and went along with my decisions. These were aborted because they were "inconvenient"... Your article was not some shrill diatribe, but was a calm report of some thought-provoking information... Please feel free to present such low-key treatment. If I don't like it, I don't have to read it!

Anon

In the interest of fairness, equal time, etc., how about a "pro-choice" ad? If the magazine is going to be a public forum, it should be open to all.

C. Burk, El Cerrito CA

I found the anti-abortion ad in Issue #18 to be most appropriate. I believe that abortion is everyone's problem and will never be solved if the truth is not shown to the public. Maybe some of your readers should wake up and realize that human life is much more important than any computer. I commend TS Horizons.

Jon Roketenetz, Cincinnati OH

Rick, I can agree as Pro Life though like some wondered about the TSH medium.

Al Francis, Yucaipa CA

I applaud your courage in expressing your views on abortion. Murder by any other name is still murder... Let's finally put an end to it. We have a world to lose, or a world to gain. The choice is ours. Fred Nachbaur, Nelson BC

I read the ad in Issue #18 and at the time I thought about the controversy it might involve. But what kind of person would cancel a subscription because of an opposing view?... How narrow minded can some people be to ramble on about the freedom of choice and, at the same time, forget about the freedoms of speech and of the press. If they prefer to remain ignorant of opposing views, maybe they are afraid they will find some truth in the ads and be convinced. Whatever your beliefs are, you have the right to express them if the opportunity exists. Congratulations on your courage.

David Merchlewitz, Cottage Grove MN

I do agree with those who feel that a computer magazine is not an appropriate forum for such a divisive subject.

Thomas Barich, Oakland CA

I cannot understand Americans who would resent the publishing of opinions in any publication. The heritage of our nation is freedom of expression. You certainly supported that by publishing opposite viewpoints in the May/June issue. Fact is, most computer publications could be made more interesting with a bit of variety... Everyone does have a right to an opinion, and a right not to remain silent.

Bill Jones, Panama City FL

CLASSIFIED ADS

TS 2068

For Sale: TS 2068; Aerco FD 68; 2-DS/DD 5-1/4 Drives; Drive Case & Power Supply; Aerco and Tasman CPI; A & J Micro Or.; All cables, manuals and SW. Also CPM Disc; War in the East; ProFile; TasWide; TasWord; Tech Draw Jr.; MScript; Fish Locator & others. Most on Disc and Tape---Everything for \$500. N.G. Robins, Rt. 3 Box 744, Hayes VA 23072.

TS 1000

Any WORM user know machine code well enough to get the cursor to blink so it won't get lost in the text? I'd sure like to add it to the program. N. Paddison, 1932, SE Rex, Portland OR 97202.

WANTED: Programs for the TS-1000 to trade. Send me your list and large SASE. Also programs for above 16K RAM. Anyone have a copy of Memotech Memopak instruction manual? Any information will be appreciated. Richard Beier, One Darwin Drive, North Merick NY 11566.

User Groups Forming, Etc.

New Western South Dakota Users Group forming: For all TS users regardless of background. Call or write - Jim Hunkins, RR10 Box 141, Rapid City SD 57701, (605) 348-2296.

Harrisburg Area TS Users Group. Meets on third Tuesday each month. David Bennett, 329 Walton St. (Rear), Lemoyne PA 17043.

Chicago Area Timex Users Group, 210 Bernice, Northlake IL 60088. Newly formed by TSH author Gary Lessenberry. Call 312-473-9415.

try these

```

100 CLS
110 PRINT " "
120 FOR I=1 TO 4
130 PRINT " "
140 NEXT I
150 PRINT " "
160 FOR I=1 TO 5
170 PRINT " "
180 NEXT I
190 PRINT " "
195 LET D$=" "
197 FOR X=1 TO 9
200 FOR Y=1 TO 4
210 PRINT AT 4+Y,X+6;" "+Ds(Y+1
TO X+6)
220 NEXT Y
230 NEXT X
235 PAUSE 35
240 PRINT AT 2,18;"00"
250 PRINT " X-RAY"

```

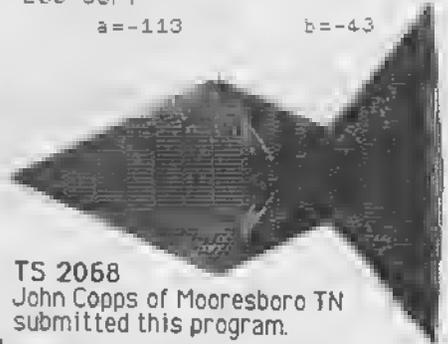


```

1 LLIST : LPRINT
4 LET a=5: LET b=75
6 INK 2
7 PRINT AT 2,5:"a=";a
8 PRINT AT 2,20;"b=";b
10 PLOT 225,90
20 DRAW a,b
30 DRAW a,-b
35 INK 4
40 DRAW -a,-b
70 DRAW -a,b
90 LET a=a-1
95 LET b=b-1
98 INK 4: PAUSE 15
100 GO TO 5
200 COPY

```

a=-113 b=-43



TS 2068
John Copps of Mooresboro TN submitted this program.

TS1000/1500/ZX81

An unusual graphics program using the unique graphics of the ZX81, by Daniel Richardson. The graphics characters for each line can be accessed on the following keys:

```

110: _/_/6/6, _/8/6/3/S, _/8/3/4/S, _/_/Y/T
130: A/H/H/ H/H/A
150: A/G/G/G/G/A, H/O/O/O/O/H
170: _/O/5/8/O
190: _/A/A/H/H
195: O/O/O/O/O /O/O/O/O/S/E/1/2/R/B

```

Note: \square Graphics space.

TS 2068

I'm afraid I've lost track of who sent in this program, but I think it was TSH author Richard Watts. It's a very interesting music program: play the keys q,w,e,r,t,y,u,i,o,p,2,3,S,6,7,9 and 0 to play songs.

```

10 LET a$="q2w3e4r5t6y7u8i9o0p"
20 DIM b(255)
30 FOR c=1 TO 17: LET b(CODE a$(c)+1)=c:
40 NEXT c
50 LET d=CODE INKEYS-1
60 IF b(d) THEN BEEP .5,b(d)-1
70 GO TO 50

```

TS2068/Spectrum or TS1000/1500/ZX81

This little program was submitted to Try These by Dave Johnson. Listing No. 1 is written for the TS2068 with the OS-64 cartridge from Zebra Systems. We haven't tried it on the TS1000 but the effect on the 2068 is very interesting. Also try it without line 21.

```

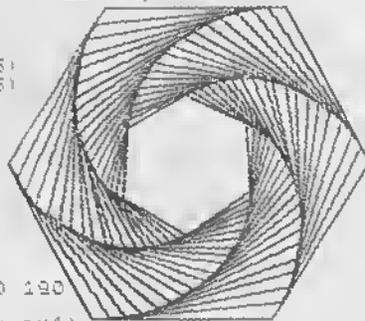
5 REM PROGRAM FOR TS-2068 BY
JOE JENKINS, 3100 Mockingbird,
AMARILLO, TX 79109. Date is 11-NO
V-85. USJEN
10 REM SPIRAL, a conversion b
y Ted Knyszek from APPLE II to
TS-2068 See CREATIVE COMP
UTING FEB 1984 FEB 1984
15 REM the PI in line 20 is a
GREEK LETTER PI, A SHIFTED M,
YOU SEE.

```

```

20 LET c=COS (PI/3)
30 LET s=SIN (PI/3)
40 LET c1=COS (PI/35)
50 LET s1=SIN (PI/35)
60 LET a=.95
70 LET x=95
80 LET y=0
90 LET cx=130
100 LET cy=88
110 LET sc=1.15
120 FOR j=1 TO 43
130 FOR i=0 TO 5
140 LET sx=x+sc-LY
150 LET sy=y+cy+5
160 IF i=0 THEN GO TO 190
170 PLOT sx1, sy1
180 DRAW (sx-sx1), (y-sy1)
190 LET sx1=sx: LET sy1=sy
200 LET x=x+c-y+s
210 LET y=y+s+y+c
220 LET x=xn
230 NEXT i
240 LET xn=sf+(x+c1-y+s1)
250 LET y=sf*(x+s1+y-c1)
260 LET x=xn
270 NEXT j
280 STOP

```



```

1 REM "cool"
2 FOR a=1 TO 20
10 PRINT AT a,a;" "
20 PRINT AT a,a;" "

```

```

21 PRINT "Hi Robby, you are in
computers."
35 NEXT a
40 LET a=0: GO TO 1
50 REM BY DAVID JOHNSON 1985

```

```

1 REM "cool"
2 FOR a=1 TO 20
10 PRINT AT a,a;" "
20 PRINT AT a,a;" "
21 PRINT "Hi Robby, you are in
computers."
35 NEXT a
40 LET a=0: GO TO 1
50 REM BY DAVID JOHNSON 1985

```

```

20 LET A=4+INT (RND+12)-1 70 PLOT J,A
30 LET B=4+INT (RND+42)-1 80 PLOT B,J
40 LET C=4+INT (RND+2)+1 90 PLOT J,B
50 FOR J=1 TO 6 STEP C 100 NEXT J
60 PLOT A,J 110 GOTO 20

```

TS1000/1500/ZX81

This is an early program written by TS Horizons author Bernard Bush. We borrowed it from The Best of SYNC, Volume 1. Don't miss next issue's feature by Mr. Bush, a collection of TS 2068 graphics programs.

TS2068

This program was converted by Joe E. Jenkins from an Apple II program. For a different look change the upper limit in line 120 to something besides 43.

BRIDGING THE GAP & BETWEEN SINCLAIR & IBM

For the TS1000/ZX81

I finally got my hands on an IBM PC this summer. After having worked on a main frame for so long, I found the IBM to be a pleasant experience. I also discovered that the file system on the IBM was similar to that of the main frame--though much slower. Since I was still hacking away on my ZX 81, I decided to simulate a file system on the Sinclair. The following program is what I came up with.

Before getting to the program, I'll answer the question some of you are probably asking: "What is a file?". A file is a place to permanently store information. Programs such as text editors and checkbook balancers use files to store their text and data, respectively. A file is made up of many records, each of which contains information. The records are stored sequentially (i.e. back to back) in the file for easy access. As an analogy, think of a file as a page of a book. Each record would thus be a single line of text on that page.

The first part of the program is a machine code subroutine that is used to allocate space for each new record in the file. You'll need 39 characters in the "REM" statement.

```
1 REM 1234567890123456789012345678
90123456789
10 LET A$="017,126,064,042,127,064,229,
025,001,032,000,197,205,158,009,193,225,
009,034,127,064,042,041,064,009,034,041,
064,201,"
15 FOR N=16514 TO 16542
20 POKE N,VAL A$(TO 3)
25 LET A$=A$(S TO )
30 NEXT N
```

Make sure to double check line 10 before running the program. After you have run it, delete lines 10-30, making sure not to delete line 1. Finally, enter the rest of the (BASIC) program below.

```
10 REM ***INITIALIZE***
15 LET WRITE=150
20 LET READ=200
25 LET TOP=16553
30 LET SIZE=32
35 DIM R$(SIZE)
40 LET REC=1
45 LET EOF=0
50 GOTO 5000
100 REM ***CHECK***
105 LET BOTTOM=16512+PEEK 16511+
256*PEEK 16512
110 LET EOF=TOP+REC*SIZE>BOTTOM
115 IF EOF THEN LET REC=INT ((BOTTOM-TOP)
/SIZE)+1
120 IF REC<1 THEN LET REC=1
125 LET POS=TOP+(REC-1)*SIZE
130 RETURN
150 REM ***WRITE***
155 FAST
160 GOSUB 100
```

```
165 IF EOF THEN RAND USR 16514
170 FOR R=POS TO POS+SIZE-1
175 POKE R, CODE R$(R-POS+1)
180 NEXT R
185 LET REC=REC+1
190 SLOW
195 RETURN
200 REM ***READ***
205 FAST
210 GOSUB 100
215 IF EOF THEN GOTO 240
220 FOR R=POS TO POS+SIZE-1
225 LET R$(R-POS+1)=CHR$(PEEK R)
230 NEXT R
235 LET REC=REC+1
240 SLOW
245 RETURN
```

Save the program before running it so you have a clean copy to reuse in the future. To use the program, first run it. This will initialize all of the necessary variables. You now have two new commands and one function at your disposal.

- 1) WRITE command:
Set REC to desired record number (1,2,...), R\$ to desired record content and execute via GOSUB WRITE.
- 2) READ command:
Set REC to desired record number (1,2,...), execute via GOSUB READ and desired record will be in R\$.
- 3) EOF function:
Check for end-of-file condition while reading (i.e. IF EOF THEN STOP).

Here is a sample program to test your new commands:

```
5000 REM *** EXAMPLE ***
5005 PRINT "ENTER A STRING:"
5010 INPUT R$
5015 GOSUB WRITE
5020 LET REC=1
5025 GOSUB READ
5030 IF EOF THEN GOTO 5045
5035 PRINT R$
5040 GOTO 5025
5045 PRINT "THAT IS ALL..."
```

There are a wide variety of things you can do with this file system. You can write your own text editor, checkbook balancer, or anything else that needs to store information. I myself wrote a checkbook balancer in a couple of days; a program that otherwise would have taken much longer to write.

Here is a list of variables that are used by the program. You should not change any of these or you'll cause the program to crash.

Variables: TOP, BOTTOM, SIZE, POS, R, WRITE, READ, and EOF. TSH

ZX81/TS1000
TS1500
TS2068/Spectrum

Hi, my name is Joe C. Smith, Jr. I am the author of this new column which will contain product reviews, stories, and program listings for the T/S line of computers.

Now a little about myself. I have been using computers and writing computer programs since 1978. I am currently attending Central Arizona College and Emmaus Bible College, which are both located in Arizona. I am currently writing articles which appear in several computer magazines, covering Apple computers, T/S computers, Tandy computers, and hand held computers.

This month's program is a game I call 'SECRET NUMBER.' The computer holds a secret number whose value is anywhere between 0 and 50. You have to guess that number by using messages as cross references. As you enter a guess (input

a number) the computer gives you a clue as to the general area of the secret number.

Listing 1 is the program. (Compatible with TS1000/ZX81 and 2068.) Listing 2 is a sample run.

```

5 LET Y=0
10 LET Z=50
15 LET I=0
20 LET X=INT (RND*50)
30 LET I=I+1
40 PRINT Y;" / ";Z;" : ";I
50 INPUT N
60 IF N=X THEN GOTO 100
70 IF N<X THEN IF N>Y THEN LET Y=N
80 IF N>X THEN IF N<Z THEN LET Z=N
90 GO TO 30
100 PRINT "YOU HIT IT IN:";I;" GUESSES."
    
```

Listing 1

<u>Screen output:</u>	<u>No. entered:</u>	
0/50:1	25	
25/50:2	33	<u>Listing 2</u>
25/33:3	29	
25/29:4	27	
YOU HIT IN 4 GUESSES.		TSH

ZX81

Pascal

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BANK ↔ SWITCHING...

The TIMEX/Sinclair 2068 Computer

PART 2

by William J. Pedersen

Welcome back! The first installment might have given you the idea that machine code was necessary for understanding bank switching. Would I do that to you? On occasion, machine code will be presented to support "fixes", but if you don't actually make the fixes you can skip it without any loss.

We previously discussed how to fix a statement like: CLOSE*3 when new devices had been added. "C" for a Centronix printer is a typical example. The OPEN statement pulls an error which can be trapped with ON ERR. Fixing this type of problem is quite simple. The error number and location are available in the system variables.

OPEN *3, "C" is sufficient syntax if patches have been made to the CHANS table, or a new channel has been inserted.

The complete syntax for OPEN goes beyond this. The statement for an EXBU floppy disc drive, bearing a BEU chip is:

```
OPEN*7,"O",[parameter list]
```

The parameter list includes such information as drive number, disk label, filename, extension, disk format standard, and file attributes. This syntax is common to all bus expansion units. Different devices require different parameters of course.

Does this give you the idea that you can read, say an IBM formatted disc? Yup, but it won't be easy until the interface routines become available.

What an OPEN statement does is to verify the presence of the device, then post the offset to STRMS pointing to either CHANS or SYSCON as appropriate. In the process, a device dependent OPEN routine is generally required - just for CLOSE. The key here is "the presence of the device". That is where bank switching begins.

When you turn your computer on, it goes through a lengthy initialization process to make it possible to do all those wondrous things. Just before the copyright message appears, the bank switching system is invoked to search out and identify what is connected; and to prepare a sorted list of them. That list is the system configuration table (SYSCON).

Ah! There is more to this than you thought! Cartridges which plug into the dock have reserved places at the bottom of SYSCON; one for AROS and one for LROS types. Does it make more sense now, that this article began with I/O? It was necessary to put in perspective what bank switching does, before showing how it works.

It is still too early to explore how it works, but in

the interest of fairness, a short description is in order.

Geel! This is kind of embarrassing! Because Timex never came out with any kind of EXBU, their version of bank switching does not exist either! Writing about something that does not exist is called fiction. Bank switching using standard I/O is totally fictitious. It can be done, but preferably using a different method than shown in the literature.

A BSC reached through memory mapped I/O resides partly inside the SCLO. That part is real, powerful, and relatively simple. It is supported in hardware and ROM (with some patches needed).

The BSC has a separate data bus it shares with joysticks. This consists of four lines from the joystick port (which transfer "nibbles") for multiplexed data, and one line from the rear connector, the function of which is better described later.

Bank switching control lines include OZOUT, OZIN, and BUSISO. The buffered address lines A13 through A15 tell what to do with the nibbles passed through the joystick port IOA. Anyone interested in learning more about peripheral control can find the IEEE 488 standard in their libraries or in the INTEL manual.

None of the control lines are connected in the TS206B. We'll cross that bridge when we come to it. For now, we'll assume all signals are available.

Most BEUs need an identification number (IO) which it recognizes. This can be its position in a daisy chain harness or any other scheme. No two devices can have the same IO. The value 0 is not allowed. The system polls from 1 to 255, pausing as DZIN is sensed. In this way it finds all attached devices, one at a time. It returns control to the CPU each time.

The CPU tests the bank for being RAM or ROM and creates an entry for it in the SYSCON table. All RAM is treated alike, but ROM is prepared for sorting. Before going on, the BEU is told to recognize its position in the SYSCON table instead of its IO.

The XFER_BYTES routine in chunk 3 lets the CPU get data from chunk 0 of the bank into the SYSCON table, using bank switching of course. Only one byte is needed to test if it is RAM. For ROM, the first 22 bytes are copied into SYSCON. If the device is not an EXBU, these bytes (and others perhaps) belong to the BEU chip. The data is used for initialization, but the device is never bank switched. This is the case with most printers and the better implementations of OOS systems. OPENING a printer loads its "kernel" from BEU chip to RAM.

Those first 22 bytes of ROM carry all the information needed to identify and operate the device. Some devices are not ROM, requiring additional testing to classify them, e.g., MOOEM.

Once the table is complete, and all BEUs are recognizing the new assigned bank numbers (ABN), it is sorted according to the priority read in byte 22, lower numbers mean higher priority to be placed near the bottom of the SYSCON table. RAM is given a priority of 255 so it is always above any ROM entries. Devices which have handling routines in the HOME ROM are at the bottom. It is planned to accommodate thirteen different devices, but which has not been said. RAM banks are loaded with the interrupt handler from the EXROM.

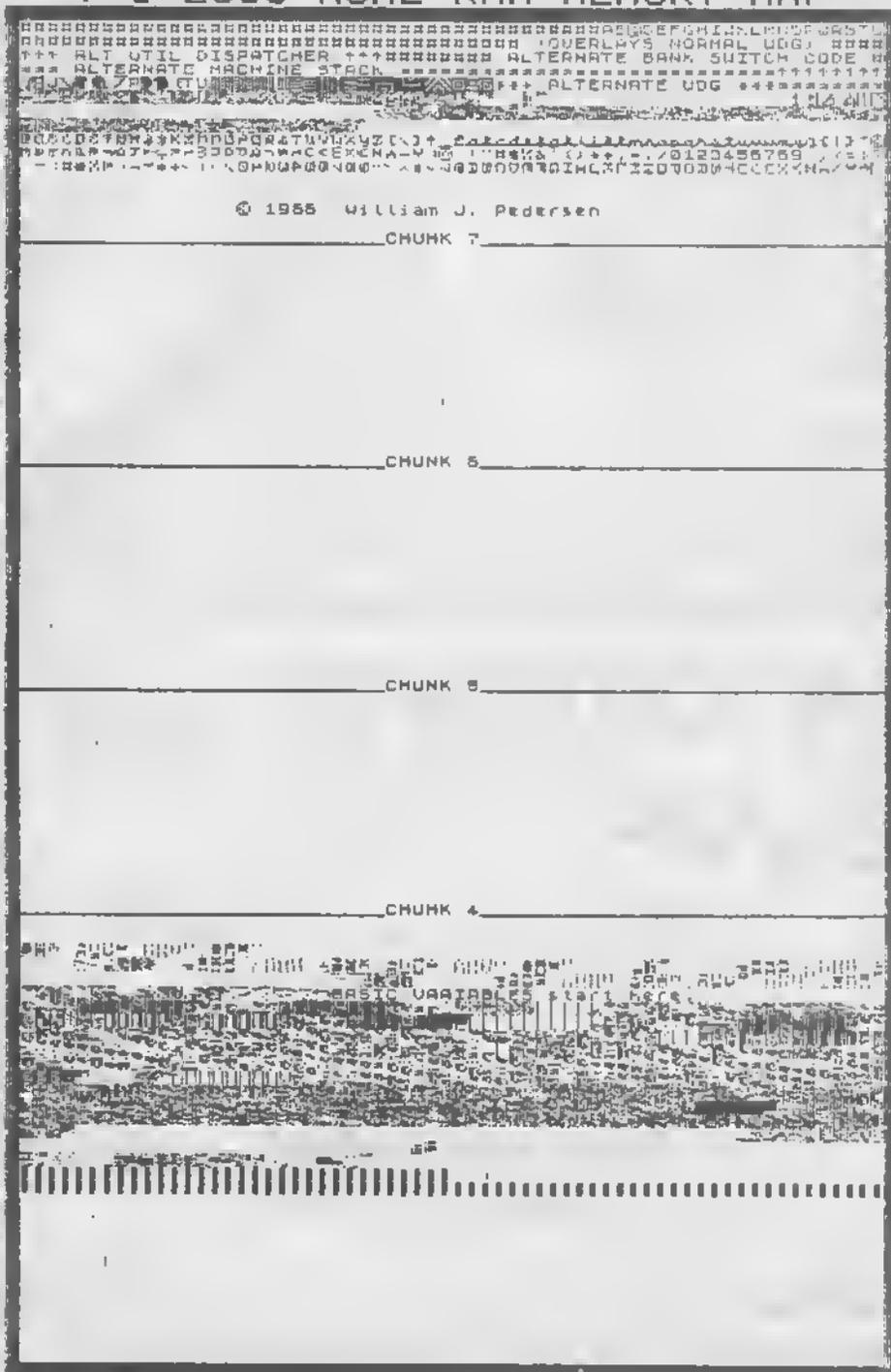
The IDs are then reassigned to match the sorted SYSCON table. The last phase of initialization is the posting of non-EXBUS to CHANS and posting that fact back to SYSCON.

Then - the computer is ready to serve you.

Next we will look a lot more closely at that SCLD, examining its power and limitations, but not now. Yes, the system will be summarized, but not until the final article in this series. Complicated, isn't it? Like life, it's "verrrry interesting".

Part II of this series originally contained an example of how easily one could be led astray by deliberately misleading data. Though it was intended to be a warning to the reader, it led to blind acceptance, or rejection of the whole presentation. Few recognized my intent. My warning still stands. © 1985 Wm. J. Pedersen

T-S 2068 HOME RAM MEMORY MAP



Bill's Bank Switching Series Concludes Next Issue with Parts Three and Four
Don't miss Our Special Super Size "Catchup" Issue Next Time.

Book Review by Art Gindin
Book: GOSUBS
McGraw Hill/Byte Books

[Editor's Note: This review was submitted originally as part of Art Gindin's "Reviews for the Non-Programmer" series.]

There are reasons why some of us remain non-programmers. For me there has always seemed to be a big gap between the rules and the execution. A FOR-NEXT loop looks obvious in a book. It just doesn't appear as an obvious solution when I try to get the computer to "do something", i.e., program. A cure for this hangup was written some years ago. Unfortunately the book GOSUBS by Ewin and Shirley Gaby came out about the time Timex was going under. It is "A BYTE BOOK" and published by McGraw-Hill. Although I have known about the book for some time, I was only recently able to find one at B. Dalton for \$9.95. Since they are written for the original ZX81, the programs are applicable to the 2068 as well as the 01.

The index is complete but there is no Table of Contents so let's write one. The first two chapters of introduction show how to write a program using GOSUBS to maintain organization. We discussed this type of programming before in TSH No. 10. Chapter 3 is for subroutines of area and volume:

TS 1000/ZX81 Review

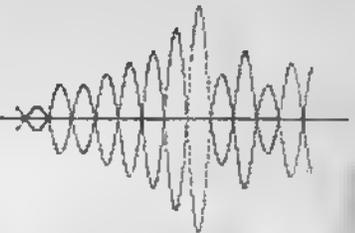
triangles, polygons, circles, spheres, etc. Chapter 4 has conversions of quarts to liters, yards to meters, celsius to fahrenheit, decimal to hex, etc. Chapter 5 has statistical formulae: means, modes, ranks, variance, linear regression, etc. Chapter 6 is for business and shows how to enter data into a string (directory), interest and discount, depreciation and moving average, etc.

Chapter 7 has routines for maximum, minimum, random numbers, sorts, etc. Chapter 8 discusses INPUT and SCROLL and is really preliminary to the final chapter (10) where they show how to make a table (spreadsheet). This is probably a bit more programming than most of us can handle and even includes some machine language. Chapter 9 shows how to construct various types of graphs: point, bar, pie, etc.

The book is clearly worth the money. If you can find it, even if you use only one program. Many tapes have been sold with less information than is contained in one chapter of GOSUBS. Such is the history of computing.
TSH

SyncWare News

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SyncWare News is a journal by, for and about Sinclair-Timex hobbyists. We bring you projects, listings and articles written and developed by fellow hobbyists. We at SyncWare want to stimulate and challenge your imagination. We want to give you ideas and computer know how. We want to take you to the core of your computer and show you what makes it tick. You won't get fluff with SyncWare News. Instead, you'll go right to your computer's roots with useful enlightening program listings and detailed sophisticated hardware improvements. SyncWare brings you KNOWLEDGE. Why not subscribe today.

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Book Review
by Ken Lewis, Ph. D.

Review: "Applied Sinclair:
Subroutines for the Math-
ematically-Minded"
Description: Math - Book, 168 pp.
(Tape Available for 2068)
Computer: TS 2068, Spectrum, ZX81
TS1000/1500
Price: \$13 (with 2068 tape, \$16)
From: Richard Booth, Lehigh Univ.
Sherman Fairchild Lab
Bethlehem PA 18105
(215) 861-3951

I have recently had a chance to review Richard Booth's "Applied Sinclair - Subroutines for the Mathematically Minded." This publication is, in a word, "impressive." To complement his powerful cadre of sub-routines, which are capable of handling some rather formidable problems from applied math, Booth has also included some very elegant plotting routines, which, used in conjunction with the numerical programs through a (simply written) main program will actually plot the solution for you. Most of the content of Booth's book would seem to have particular appeal and usefulness to engineering and science students in undergrad school, or to practicing scientists and engineers whose work takes them into the realms of differential equations and matrix operations; however the title of this book is somewhat misleading, for it is definitely not written for the casual, uninitiated dabbler - such a person would recognize few if any words in the table of contents, let alone understand what these programs do.

"Applied Sinclair ..." is neatly packaged in a beautiful, orange colored cover. The type is, for the most part, dark, clear and crisp; however one draw-back is that the book cannot be opened flat because of the type of binding that is used. The author is offering the book and a cassette tape of the programs as a package, all for a very reasonable and altogether affordable 16 bucks. (Although the routines in the book are written for both the 2068 and ZX81/TS1000, the cassette is only available for the 2068). If you own a 2068, this is definitely the option to take to save yourself a mountain of typing. The book alone sells for 13 dollars.

Although I did not have occasion to review the cassette, along with the book, the text appears to complement the tape well. In sum, Richard Booth has produced what may well become a classic publication among the literature for the T/S faithful. I heartily recommend his work to those who can appreciate its contents; besides, along with Lee Iacocca and myself, Booth is an alumnus of Lehigh University, which tells you something (Good job, Booth!)

TSH

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TS2068 Reviews

Program: Pixel Sketch and Graphics Editor,
 Version 2.0
 Computer: TS 2068
 Price: \$19.95
 Available from:
 LEMKE SOFTWARE DEVELOPMENT
 2144 White Oak
 Wichita KS 67207

Having recently written a graphics program for the 2068, I can appreciate all the capabilities represented in this program

The Pixel Sketch and Graphics Editor, Version 2.0 (or PS/GE, for short) uses the standard video mode, the extended color video mode with eight times the standard color resolution, and the high resolution graphics video mode to draw and to print text. This versatility is very useful especially if you like lots of color or lots of room to work with.

The capabilities are great and many. It has the usual commands like plot, erase (unplot), circle, draw, ink and paper colors, bright, and flash. But that's not all. What makes this program great are functions like zoom, wide, mirror image, rotate, move, paint, merge (two pictures), inverse, fill/shade, erase, digitize, and text/print. Each function helps to show the great graphics ability of the 2068. All of the above functions, except for paint and fill/shade are accessed by a useful (if not unique) process called "windowing", in which a rectangular window appears on the screen which can be made larger or smaller, taller or shorter, wider or narrower, and it can easily be located on the screen.

Most of the functions are self-explanatory and I didn't have any trouble with them, except for "digitize". This function was very new to me. It is used to "digitize" the picture in the user-defined window. The digitize function displays the decimal and binary equivalents of the screen display file. These data can be used (outside the PS/GE) to define user-defined graphics characters. Each data point is defined by its row and column number

Five different fonts

- Chancery
- Standard
- Bold
- Modern
- Italics

And you can intermingle the fonts.

- Modern Chancery
- Modern Bold
- Bold Italics, etc...

The Chancery font is on the tape

And you can do mirror images.

relative to the upper-left corner of the user-defined window. Digitize will analyze an 8x8 pixel area at a time.

Using the text/print option allows you to choose from four built-in fonts, plus there is an additional font (chancery) on the tape which can also be used. (See Figure 1.)

You can also use the "zoom" statement to enlarge lettering as seen in Figure 2.

Figure 3 shows some other functions of the PS/GE.

Also on the tape is a very useful program that changes a 32 column picture into a 64 column

You can even ENLARGE



lettering to suit your taste. And all this can be done on your TS2068/PS/ENCLASR 2068

You can ~~ENLARGE~~ a section.

You can make circles and



shade them with your own 8 bit binary code, this one is 01001010.

Or a section.

PS/GE 32 -> 64

Use this program to convert a standard 32 column screen to a 64 (hi res) column screen.

Press 1-5 to select an option.

- 1) DOUBLE IMAGE (32 => 32 + 32)
- 2) LEFT ONLY
- 3) RIGHT ONLY
- 4) USER SPECIFIC
- 5) LEFT + RIGHT (32 + 32 => 64)

Lemke
Software
Development
PS/GE 2068
Version 2.0



picture. (See menu, Figure 4.) You can do a double image of a picture, place it on either the right or left side, start it on any of the 32 columns, or merge the pictures side by side.

The booklet accompanying the program explains each function as well as telling you how to make modifications to the program for a full-sized printer.

The original version of the program has been on the market for over a year now, and for those who purchased the old version, you can order version 2.0 by sending \$10.95 and the

original tape back to Lemke Software Development.

PS/GE is simple to understand, very user-friendly, and overall a great graphics program. TSH

...received my moneys worth with just one issue.."
—J. Trenbick

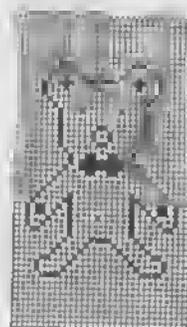
"...always stop to read CTM, even though most other magazines I receive (and write for) only get cursory examination..."
—Fred Blechman, K6UGT

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GRAPHIC SAMPLES

for the
Zebra Designer
Series



Here are the last of Bill Ferebee's graphic designs he submitted for his reviews in Issues 18 and 19 of TS Horizons. The programs reviewed are Sign Designer, Banner Designer, and Greeting Card Designer.

GRAPHIC DESIGNER

teddy



CONTROL KEYS
P=Plot O=Unplot
CS/S=Store graphic
CS/C=Clear graphic
CS/X=Exit
CS/P=Copy screen
Arrow keys to move
ENTER=Next Line

GRAPHIC DESIGNER

running



CONTROL KEYS
P=Plot O=Unplot
CS/S=Store graphic
CS/C=Clear graphic
CS/X=Exit
CS/P=Copy screen
Arrow keys to move
ENTER=Next Line

Reviews

by



Software Review
by Tex Faucette

SMART TEXT TS-2068
Copyright 1984 by Gulf Micro Electronics,
1317 Stratford Ave., Panama City, FL 32404.
(904) 871-4513.

Please note that this is a limited review. I began with this program some time ago, but before my review was completed my 2068 "expired." I hasten to note that the program had nothing to do with said demise.

Many programs may be evaluated and either reviewed or rejected in a single session at the keyboard. THIS IS NOT TRUE in the case of Bill Jones' SMART TEXT TS-2068. In fact, upon first reading the 70-page manual, my reaction was, "Egad, he has reinvented Wordstar!" Of course I jest. Nevertheless, a mere listing of the features and functions approaches the unbelievable.

Quoting from the attractive cover of the latest (and in my judgement, improved) 70-page manual, SMART TEXT TS-2068 is, "Integrated Administrative Software Featuring Data Base Management, Mailing List, Word Processing, Label Printing, Auto Letterheads, Form Letters, Repeat Print Multi-page Manuals [such as the one from which I am quoting], Direct Type-Print, Supports all Interfaces, Universal Printer Patch." Versions are available for Cassette and all Interfaces, Zebra OS-64 Cartridge, Aerco Disk, and A&J Microdrive.

All the above features would appear to stretch the capacity of the un-expanded 2068. Bill Jones admits that his first version ate up all available memory before he had all the features he desired, and he was forced to "invent" what he terms "DENSE PACK BASIC."

"DENSE PACK" being Bill Jones' invention, I leave the full tutorial chore to him. And, of course, I hope he will write it up for a future issue of TSH. In brief, the system utilizes all of the memory saving tricks I ever heard of plus more that may forever remain "beyond my ken." Such things as "PSEUDO-HEX variables" almost make sense to me, but such things as 10 conditional IF THEN statements with a few VALS thrown in residing in a single program line leaves me gasping for breath. Even so, IT IS BASIC and can be readily modified by following instructions contained in the manual. In this regard, it behooves one to LLIST the program for reference during the modifications. It only requires somewhere around 12 feet of paper on the 2040 printer, and the results may be wrapped around a couple of pieces of broomstick or mop handle for manual scrolling. Of course the knowledgeable user will perform any such modification on a "working copy" of the program. According to the manual the original program length was 32K. DENSE PACK yielded the current program length of only 20K.

Use of the "Universal Printer Patch" requires entry of certain data obtained from one's printer manual (it should be noted that some older printers are sadly deficient in the manual department) and also may require editing of a few program lines. This operation is very thoroughly explained in the SMART TEXT MANUAL. Those who have ranted, raved, and resorted to strong language trying to make a printer behave will appreciate this feature.

SMART TEXT TS-2068 is menu-driven. In fact, there is an abundance of menus. Fortunately, the latest version of the manual has four pages of diagrams of menu relationships; a veritable "road map" to assist one in arriving at Proficiencyville. Data is stored in "array cells" or "data banks" by menu selection from whence it may be recalled in any desired order for further printing, or whatever. This results in a high degree of flexibility, but the rather complex system will require some study and usage before maximum productivity is attained.

I end up with mixed feelings concerning SMART TEXT TS-2068. It is much too complex a program for most of my writing chores. Yet, on the other hand, when I write The Great American Novel... I will probably also have to publish it.

Due to the time lapse, I hesitate to quote prices for the various versions of SMART TEXT TS-2068, so why not write or call Bill Jones at the above address or number. Tell him who sent you. TSH

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