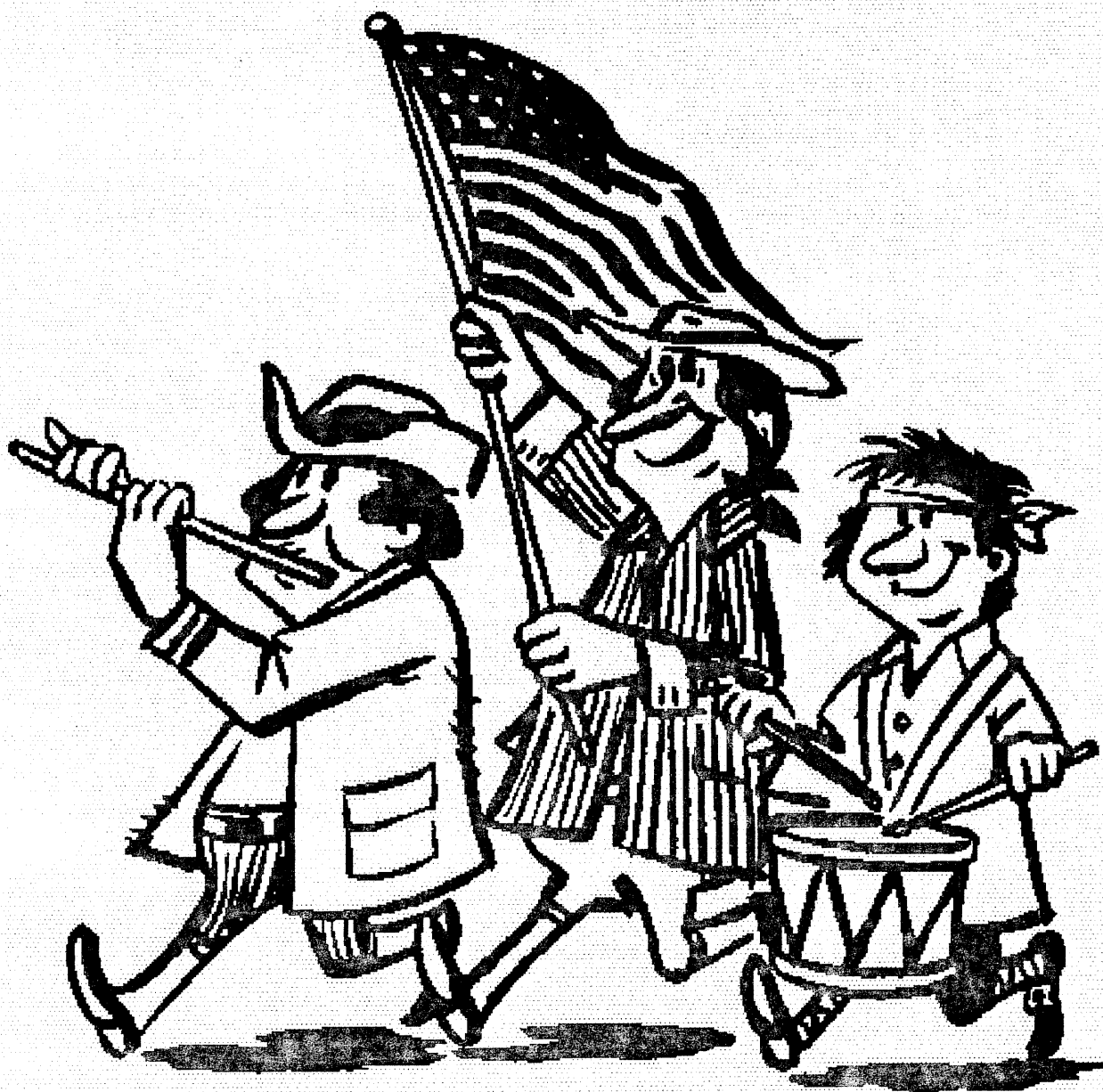


TRSTimes

Volume 6. No. 4. - Jul/Aug 1993 - \$4.00



ONLY 201 MORE PARADES
UNTIL THE MODEL I

LITTLE ORPHAN EIGHTY



This issue I have revived the 'ITEMS OF INTEREST' page that we used to do a few years ago. I am listing the current U.S. users groups that cater to our favorite machines, the Models I, III and 4. Note that this list is not complete; it is simply a collection of the groups that I happen to know about. There are probably other active TRS-80 groups, but I am not familiar with their meeting locations or times. TRSTimes will be happy to publish this information if someone will send the details.

As you can tell from the listing, we here in Southern California are a lucky bunch of TRS-80 users. There are no fewer than five clubs -- three in the Greater Los Angeles area, one in Orange County, and one down in San Diego. That's five meetings in a 200 mile area - not too shabby!

I attend three of the clubs on a regular basis. The first Friday of the month is the Valley TRS-80 Hackers meeting. The 'valley' is the San Fernando Valley, which today is a misnomer, because we no longer meet in the 'valley', but rather at Roy Beck's spacious computer lab and workshop in Los Angeles (the home of the TRSurotrove BBS). Also, I might mention that the term 'hacker' was coined long before the media prostituted it to mean, in essence, criminal activity. We do not engage in unlawful conduct; instead, we help each other with hardware, software, and programming problems. TRS-80's are opened up, Dr. Beck doing skillful surgery to restore and/or enhance the patient. Programming techniques are discussed often - as a matter of fact, the patches to make BOOT5 work with LDOS 5.3.1 were developed at this meeting.

On the second Friday of the month I go to the other 'valley', the San Gabriel Valley, to the SAGATUG meeting. This is indeed a 'trek'. I live in the western-most part of Los Angeles county and Arcadia, where the meeting is held, is located in the eastern-most part of the county. In order to get there, I have to drive a good 35 miles on the Ventura Freeway in Friday rush-hour traffic. You haven't lived until you've been on the Ventura Freeway during Friday rush-hour! I have often questioned the state of my sanity during this drive, but the meeting always ends up being worth the effort. SAGATUG started out 13 years ago as a full-fledged TRS-80 group. Now, to keep up with the times, it also supports CP/M and MS-DOS. The members are, for the most part, TRS types who also own PC clones. Thus, the discussion is likely to jump from LS-DOS to Visual Basic, and back. Roy's much better half, Barbara, is doing an outstanding job as Vice-President. Yes I enjoy that meeting.

The third Friday of the month keeps me close to home. The 'valley' in the Valley TRS-80 Users Group is, again, the San Fernando Valley, and the meeting is

held just a couple of miles up the street from me. VTUG is much like the 'Hackers', which is natural since most members attend both meetings. Thus, things that didn't get finished at a 'Hackers' meeting will often be continued here, or vice versa.

I have only attended one meeting of the Orange County group, as this is quite a distance for me to travel, but I can report that Mike Lingo runs a fine group. Any TRS-80 user in that area will be well served to check out the meetings.

The San Diego Club is run by Mike Baldwin and, unfortunately, I have yet to be in San Diego on a meeting day. Maybe my annual Reds-Padres weekend will fall on the right days!

I have no personal experience with the Mid Cities Tandy Radio Shack Users Group, but Roy Beck went to Ft. Worth on a business trip a couple of years ago, and he managed to attend a meeting. He tells me he was so impressed with the famous Texas friendliness and hospitality that he joined the group. Well, what the heck.... only a thousand miles to the meetings!!!

Now, why I am I devoting so much space to users groups? Simply, because I think that these groups are what make computing fun. There you get the answer to that program problem that has kept you awake at night; there you get your bad keyboard replaced; there you get your disk drive cleaned and aligned; but, most importantly, there you meet people that share your interests. I have made several friends at these meetings - good friends that I will care about for the rest of my life - and that is what it is all about!

So, my advice to all you computer 'loners' out there, join a group; it's just so much better when you have people to turn to.

Before I close this column, let me point out that without Roy Soltoff (Misosys) involved in the TRS-80 world, there wouldn't be much world - he is the undisputed 'guru' of our machines.

Recently, an attempt to malign his business ethics was made public. I obviously do not know the intimate details of the particular transaction, but I do know this:

In my dealings with Roy Soltoff, both personal and as of editor of TRSTimes, he has always treated me with the utmost courtesy - and his ethics have been impeccable. If, for some reason, something wasn't right, Mr. Soltoff fixed, replaced or refunded. Just thought I'd let you know!

And now..... Welcome to TRSTimes 6.4.....

TRSTimes magazine

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Article submissions from our readers are welcomed and encouraged. Anything pertaining to the TRS-80 will be evaluated for possible publication. Please send hardcopy and, if at all possible, a disk with the material saved in ASCII format. Any disk format is acceptable, but please note on label which format is used.

LITTLE ORPHAN EIGHTY 2
Editorial

THE MAIL ROOM 4
Reader mail

POOL..... 5
Joe McDaniel

LOW RES CHAOS 8
Ed Gracely

SECRET MESSAGES 10
Robert Garrett

STOCK TRACKING WITH VISICALC 12
John P. Jones

HINTS & TIPS 14
Krieger, Wolstrup

MODEL 4 AND LASER PRINTERS 16
Martin J. Rapoport

BEAT THE GAME 17
Daniel Myers

ITEMS OF INTEREST..... 20
User Group Information

STONEVILLE MANOR..... 21
Allan & Andrew Lee

REVIEW AND DISCUSSION..... 27
Roy T. Beck

THE MAIL ROOM



ISSUE 6.3

It was a joy to receive the latest TRSTimes, especially the articles on windows and boxes. I even booted NEW-DOS/80 up and assembled the Model III listing - it worked. Don't know a push from a pop - but I liked the results.

Mickey Mephram
Charles City, VA

Thank you for the kind words. We will try to present more of this type material.

Ed.

MORE ISSUE 6.3

The VisiCalc Reference Guide from the last issue was obviously the Model III version, as no mention was made of function keys - and exponents were shown with [rather than ^, which is the Model 4 symbol. It also referred to features that Model 4 VisiCalc doesn't need, like <shift> <O> to toggle the cursor between blinking and steady; that's because Model 4 VisiCalc makes use of reverse video when a cursor is placed over data in a cell. There are several other differences as well that might confuse a reader who has only Model 4 VisiCalc, so the article should have made it clear which version you were talking about.

I'd like to turn now to the Hints & Tips piece by Fred Bennett on the setup for the DMP-200 printer. It's fine as far as it goes, but to *really* run a printer through its paces, it's nice to have a word processor that can do **this** in mid-sentence, and not even have to think about the coding.

As I type this letter, my younger son is using our other Model 4, reading postings in the pet topics on GENie. When he gets through, I'll get on and download a couple of letters that are waiting for me. Now that GENie offers Internet service, too, it's become even more useful, as I have several Internet correspondents, including a friend

from school days who now works as a civilian at a naval research center. And, because Roy Soltoff has a CompuServe account, I can access him through Internet. Do you have an account through which I can send you e-mail?

Henry A. Blumenthal
Jacksonville, FL

The VisiCalc Reference Guide article was published in the hope that our readers would submit their experiences with this great program. It worked! As you can see from this issue, John P. Jones submitted a short article and listing. Hopefully, there will be more. But -- you are right -- we should have indicated that the Reference Guide was for Model I & III.

Word processors are wonderful. Heaven knows that I'd be lost without one (especially one with a spelling checker), but it is also nice to know how to make your printer do the different things it is capable of, rather than depend on the whims of someone else's software.

Do I have an account for e-mail? Well, the answer is NO (and possibly YES). I have never been particularly enamored by BBS and On-Line services. Not that they are not worthwhile, it is just that I am much happier when I use my computer for programming. That was the NO part. The YES part is that my wife just opened an account on CompuServe, and, if I am extra nice to her, she might let me use it for e-mail (I might even send a 'ditto' to Rush). I'll keep you posted on how my e-mail advances are received.

Ed.

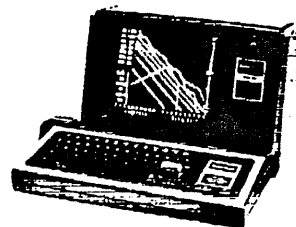
PINK PEARL?

I have just bought three years worth of TRSTimes' back issues, and I would like to know what the 'pink pearl treatment' is that Roy Beck refers to in his articles.

Kenneth Fonseca
Montgomery, AL

The 'Pink Pearl treatment' was, and still is, a way to clean 'edge connector' on a Model I. You would take a moderately hard eraser, such as a 'Pink Pearl' type, and rub it across the pins of the edge connector. This is reasonably effective in removing oxidation from the connector, and it doesn't damage the connector at all (at least, I always had good luck with this method).

Ed.



POOL

A Pool Water Balancing Program

by Joe McDaniel

Purpose

POOL is designed to aid in the management of a swimming pool by performing the calculations to achieve a "balanced" pool. Balancing a pool is desirable for several reasons: the Ph will remain much more stable, the pool itself (whether lined, painted, or plastered) and the filtering equipment will last longer and filter runs (between backwashing or cleaning of filters) will be longer. In general, balancing requires only a relatively few dollars and results in great savings of time, chemicals, and money.

Testing the Water

To use the POOL program, it will be necessary to have the ability to perform tests on your pool for free chlorine, total chlorine, Ph, total alkalinity, calcium hardness, and cyanuric acid (or stabilizer) levels. The Taylor Chemicals, Inc. test kit model 2000 with the 2001 - Total Alkalinity Test Pack, the 2002 - Cyanuric Acid Test Pack, and the 2003 - Calcium Hardness Test Pack is very suitable. Other companies make similar test kits which will also work. The cheap test kits sold at Murphy Mart, etc. are not suitable!

Perform all the necessary tests, following the instructions with your test kit. Record the readings for entry into the POOL program. POOL will also ask for your pool temperature. A pool thermometer is desirable but a guess is sufficient.

Using the POOL Program

POOL is run by entering the command: BASIC POOL/BAS with the POOL program on the same disk as BASIC. POOL will prompt you to enter all required readings. After entry, POOL will perform the calculations necessary to balance your pool water. The recommended actions should always be examined for reasonableness. If the amounts of water to pump out or the chemicals to add seem wrong, recheck the input to the program, redo the tests, or consult your pool manual. (The Taylor test set comes with a very handy reference manual for pool management.) The possibility of errors in the POOL program is always present.

If one of the actions is to drain some of the water and refill, do not add any other chemicals before refilling, retesting, and running POOL again.

Disclaimers, References, Etc.

POOL started out as a program published by Olin Corporation in their POOLIFE magazine. (Mailed to all pool owners free of charge. Address is Poolife, 120 Long Ridge Road, Stamford, CT 06904-1355) The original program has been modified and enhanced for my own

needs and to remove somewhat the use of only HTH brand (sold by Olin) chemicals. The original program used some rather gross estimates for some values and the Taylor figures have been integrated where there are any differences. The suggested doses have been computed for HTH brand and generic chemicals in most cases.

For initial balancing, large amounts of Calcium Chloride and Sodium Bicarbonate will be needed (if you have a large pool). Using HTH or any other brand chemicals is a waste of money, generally. Go to a local chemical supplier (most in Baltimore, MD where I live seem to sell cleaning supplies) and buy large quantities of these two chemicals. I buy by the 100 pounds and the costs are about \$20 per 100 pounds of each.

Cyanuric Acid may be available as a generic rather than as a branded version. In any case, only a few (up to 20 pounds) will generally be needed although the cost is high (per pound).

Chlorine is quite expensive as Calcium Hypochlorite. By stabilizing (using Cyanuric Acid) you can reduce the quantities needed considerably. Also, the use of stabilized chlorine (also know as tri-chlor and hundreds of other names) will reduce the quantities needed (on a poundage basis) although the cost per pound is higher. The savings will usually be greater than when using Calcium Hypochlorite (HTH, for instance). Again, generic tri-chlor is available.

I have had good success for the last two years using Potassium Monopersulfate instead of "shock" treating my pool. This chemical reacts with the chloramines to oxidize them, releasing the chlorine into the water for reuse. The standard treatment for chloramines is to superchlorinate by adding something like 10 ppm of chlorine. This is expensive and injurious to solar covers, etc. The Potassium Monopersulfate is cheap and very effective. The only drawback so far has been that the DPD type test kits (like the Taylor) are not compatible (for total chlorine, at least) with potassium monopersulfate. This is not too much of a problem since the need for total chlorine testing is largely eliminated by having the chemical in the water and oxidizing chloramines continuously. I bought my supply from Leslie's (a mail order pool supplier) and have used only about 20 pounds a year - far less than the amount of chlorine chemical that would have been required.

The adjustments suggested by the POOL program for Ph are better determined by use of the Taylor test kit's acid and base demand reagents. The Taylor method is to add drops of acid or base reagents to determine how much acid or base will be required to achieve the correct Ph directly rather than by calculation.

This technique is more accurate than a calculated method. If your test kit has this feature, it is a better way to maintain Ph than by using the POOL program's calculations.

I use an automatic feeder for my chlorine (stabilized trichlor). This has the advantage of maintaining a more constant level of chlorine in the water, thereby reducing the chlorine usage and problems with algae, bacteria, etc. The floating feeder types are also effective and very cheap - they just can't be used with solar covers.

The prices in the Leslie's catalog are often better than those from local stores, even with the costs of United Parcel Service added in. I have found that some local stores, when confronted with the catalog in hand, will match the prices from Leslie's. One claim from the stores is that their product is better than the generic one from Leslie's (other companies also sell by mail order and have similar pricing). I believe that this claim is generally without foundation. I haven't investigated, but I'll bet that virtually all the companies buy from only one or two manufacturers and that the final products differ mostly in packaging. In any case, I have had no problems with the generic chemicals offered by Leslie's or by my local store when pressed to match the price from Leslie's.

My pump motor recently had to be replaced. (Age and occasional immersions from being below ground and pool level killed it.) The prices from the pool companies (including Leslie's) were about \$120. I called a local industrial electric motor repair company (Electric Motor in Baltimore) and got estimates of \$50 to \$80! Again, if you are willing to do a little work to bypass the middlemen such as the pool company (or even Leslie's), you can save a lot.

Buy a winterizing cover if your pool is large enough to justify the costs. The cost of the cover will be recovered quickly in lower costs for balancing chemicals (especially Cyanuric Acid) and water (and sewage) charges. In the fall, you cover your pool after lowering the water level to below the skimmer. The cover keeps out leaves and dirt. In the spring, you clean off the cover and remove it. Your pool water may look cloudy, etc. but with the filter running and some vacuuming, it will be sparkling in about a day. Once you have refilled the pool, do the tests and run the POOL program to rebalance the water. The amounts of Calcium Chloride, Sodium Bicarbonate, and Cyanuric Acid will be relatively small since all you need to balance is the water just used to refill back to operating levels, not the entire water quantity. A side benefit is that some pools will pop right out of the ground if emptied where the water level is high.

I offer this program and these notes without claiming to be an expert or that there are no errors, omissions, faults, etc. My own pool (18 by 42 feet, concrete construction, painted, 40000 gallons) has been better managed using this program and the techniques and sources mentioned above. When I've had problems, Taylor Chem-

ical, Leslie's, Poolife, and my local chemical and pool stores have been of value. I have been operating the pool for 6 seasons now and the above are the results of my experiences and mistakes. I now believe that my knowledge of pool management and of sources for answers is sufficient enough so that I purchase on price, not level of support. (This is analogous to buying your computer by mail order, rather than Radio Shack.) My costs for operating the pool have been lower each year, even with inflation.

POOL/BAS

```

10 'POOL/BAS for TRS-80 Model 4
30 '
40 CLS:PRINT@(9,19),"*** Pool Water Test Program
***":PRINT@(23,0),"";
50 INPUT "What is the temperature of the pool water
(Degrees F)? ",F
60 IF F < 60 OR F > 95 THEN PRINT "That temperature
seems out of range. Try again":GOTO 50
70 INPUT "How many gallons are in the pool? ",G
80 INPUT "What is the Ph of the water? ",P1
90 INPUT "What is the Calcium Hardness (ppm)? ",H
100 IF H < 1000 THEN GOTO 180
110 PRINT
120 PRINT "The hardness is too high. Drain";INT((H-950)
/H*G);
130 PRINT "gallons of pool water and replace"
140 PRINT "with soft (tap?) water"
150 PRINT:PRINT "After refilling wait 4 hours and retest."
160 PRINT "Do not add additional chemicals at this
time!"
170 END
180 INPUT "What is the Total Alkalinity (ppm)? ",A
190 INPUT "What is the Stabilizer (Cyanuric Acid) level
(ppm)? ",S
200 INPUT "What is the Free Available Chlorine level
(ppm)? ",C
210 INPUT "What is the Total (free and combined)
Chlorine level (ppm)? ",X
220 IF X < C THEN PRINT "Total (free and combined)
chlorine must be greater than Free Chlorine level!":
GOTO 210
230 X = X - C
240 PRINT
260 'do calculations
270 IF S = 0 THEN GOTO 300
280 IF P1 < 6! THEN A = A - .04*S ELSE IF P1 < 6.5 THEN
A = A - (.04 + .12*(P1-6!))*S ELSE IF P1 < 7! THEN
A = A - (.1 + (P1-6.5)*.2)*S ELSE IF P1 < 7.5 THEN
A = A - (.21 + (P1-7!)*.18)*S ELSE IF P1 < 8! THEN
A = A - (.3 + (P1-7.5)*.12)*S ELSE A = A - .38*S
290 'adjust Ph for pool temperature

```

```

300 IF F > 85 THEN P2 = P1 + .1 ELSE IF F > 80 THEN
P2 = P1 ELSE P2 = P1 - .1
320 'compute desired total alkalinity using ph and
calcium hardness
330 IF H > 700 THEN P2 = 7.200001# ELSE
IF H > 500 THEN P2 = 7.3 ELSE
IF H > 325 THEN P2 = 7.4 ELSE
IF H > 250 THEN P2 = 7.5 ELSE
IF H > 200 THEN P2 = 7.6 ELSE
T = 100:GOTO 390
350 'compute total alkalinity based on ph and hardness
360 IF P2 = 7.200001# THEN T = 50000!/H ELSE
IF P2 = 7.3 THEN T = 40000!/H ELSE
IF P2 = 7.4 THEN T = 30000/H ELSE
IF P2 = 7.5 THEN T = 25000/H ELSE
IF P2 = 7.6 THEN T = 20000/H
380 'if ph is out of desirable range, force it to optimum
level
390 IF P1 < 7.200001# OR P1 > 7.6 THEN P2 = 7.4
410 'adjust ph for total alkalinity if total alkalinity is out of
desired range
420 IF T < 50 THEN P2 = P2 - .1:GOTO 360 ELSE
IF T > 125 THEN P2 = P2 + .1:GOTO 360
430 PRINT USING "The Ph is #.#. It should be #.#.";
P1;P2
440 PRINT
450 PRINT USING "The Calcium Hardness is ####. It
should be 200 to 1000 ppm.";H
460 PRINT
470 PRINT USING "The Total Alkalinity, adjusted for
stabilizer, is #.#.";A
480 PRINT USING "It should be ### plus or minus 5
ppm.";T
490 PRINT
500 PRINT USING "The Stabilizer level is ###. It should
be 25 to 70 ppm.";S
510 PRINT
520 PRINT "To balance your pool, do the following:"
530 IF S < 25 THEN PRINT USING "Pool is not stabilized.
To stabilize to 25 ppm., add ###.# lb";(25-S)/25*G
/10000*4:PRINT "of HTH Stabilizer (Cyanuric Acid).":
PRINT:GOTO 580
540 IF S <= 100 THEN GOTO 580
550 PRINT "The Stabilizer level is too high. Drain";
INT((S-50)/S*G);
560 PRINT "gallons of pool water and replace with tap
water"
570 PRINT:PRINT "When refilled, test and run POOL
again.":END
580 IF H < 200 THEN PRINT USING "Calcium hardness
is too low. Add ###.# lb. of";1.4*(250-H)*G/10000/16:
PRINT USING "HTH Calcium Plus (or ###.# lb. of
Calcium Chloride).";125*(250-H)*G/10000:PRINT
590 IF A < T-5 THEN PRINT USING "The Total Alkalinity
is low. Add ###.# lb. of";2.4*(T-A)*G/10000/16:

```

```

PRINT "HTH Alkanity Plus (Sodium Bicarbonate or
Baking Soda)":PRINT "This will raise Ph somewhat.
Recheck the Ph after 4 hours.":PRINT:GOTO 730
600 IF A < T + 5 THEN GOTO 680
610 PRINT USING "The Total Alkalinity is high. To lower,
add ###.# lb. of HTH Ph Minus";3.2*(A-T)*G/10000/16
620 PRINT "Add no more than 1 to 2 lbs. per day."
630 PRINT "Add at one spot in the deepest part of the
pool."
640 PRINT
650 PRINT "This will affect the Ph. After Total Alkalinity is
in the proper range,"
660 PRINT "retest for Ph and adjust."
670 GOTO 730
680 IF P1 = P2 THEN PRINT "The Ph is OK.":PRINT:
GOTO 730
690 IF P1 > P2 THEN PRINT USING "Add ### oz. of
HTH Ph Minus.";20*(P1-P2)*G/10000:PRINT:GOTO 730
700 IF P1 < 6.4 THEN PRINT USING "Add ### oz. of
HTH Ph Plus. Retest after 4 hours and adjust.";110*(P2-
P1)*G/10000:PRINT:GOTO 730
710 IF P1 < 6.6 THEN PRINT USING "Add ### oz. of
HTH Ph Plus. Retest after 4 hours and adjust.";80*(P2-
P1)*G/10000:PRINT:GOTO 730
720 IF P1 < P2 THEN PRINT USING "Add ### oz. of
HTH Ph Plus. Retest after 4 hours and adjust.";25*(P2-
P1)*G/10000:PRINT:GOTO 730
730 'compute desired chlorine level based on ph and
stabilizer
740 IF S < 25 THEN C1 = 1!:GOTO 820
750 IF P2 > 7.4 THEN GOTO 770
760 C1 = (S-25)/25*.2 + 1!:GOTO 820
770 IF P2 > 7.6 THEN GOTO 790
780 C1 = (S-25)/25*.2 + 1.4:GOTO 820
790 IF P2 > 7.8 THEN GOTO 810
800 C1 = (S-25)/25*.4 + 1.6:GOTO 820
810 C1 = (S-25)/25*.3 + 2.5:GOTO 820
820 IF C >= C1 THEN GOTO 850
830 PRINT USING "The Total Available Chlorine is #.#.#.
It should be #.# ppm.";C;C1
840 PRINT USING "Add ### oz. of HTH Dry
Chlorinator.";8*(C1-C)*G/10000:PRINT
850 IF X < .3 THEN GOTO 880
860 PRINT "The Combined Chlorine level is too high.
Shock Treat the pool"
870 PRINT USING "by adding ### oz. of HTH
Shock.";X*10*G/10000
880 IF S = 0 THEN PRINT USING "Add ## oz. of HTH
Dry Chlorinator Daily.";8*G/10000:GOTO 900
890 PRINT USING "Add approximately ## oz. of HTH
Dry Chlorinator every";3*G/10000:PRINT "other day for
stabilized pools."
900 PRINT "Superchlorinate (shock) the pool as
necessary according to label directions."
910 END

```


LOW RES CHAOS

Model 4 - Basic

by Ed J. Gracely

Most readers of this magazine have probably encountered some of what is now known as "Chaos" theory. If nothing else, almost everyone has seen the multicolored pattern known as the Mandelbrot set, with its fascinating and endlessly complex swirls within swirls within swirls. Programs exist on the PC to produce such patterns right on your own computer screen, but this is difficult with a monochrome monitor, especially one without a graphics board (like mine!).

I have a program that does a crude, symbol-based version of the Mandelbrot set on the model 4, but it is very slow and not fully satisfying. Nevertheless, I may submit that program in a future article.

This time I am presenting a different, much simpler, but still interesting, application of Chaos theory that can easily be viewed on an ordinary Model 4 screen.

One aspect of Chaos theory is studying what happens to certain iterative processes. An example of such a process would be to start with any positive number, x , of your choice. Pick a positive number value for the parameter, r . Now divide x by r . Divide the result by r . Divide @that@% result by r . Etc...

In this simple iteration, only 3 things can happen. If r is 1.0, nothing! Each iteration returns the same number. If r is greater than 1.0, the whole series goes to 0. If r is less than 1.0, the whole series goes to infinity. This is not, of course, a very interesting iterative process!

Now imagine, once again, picking 2 numbers x and r . Let's let x be .3, as does my program. Compute $r(x)(1-x)$ and call the result x . Repeat the calculation, using the new x . Repeat many times. What will happen?

Well, if r is less than about 3, the iteration settles down to a single number, such as .6 if r is 2.5. After all $2.5(.6)(.4) = .6$, so that once you get to .6, further iterations cannot move you away.

Somewhere around $r = 3$, something interesting happens. The series splits such that the final stage is a perpetual alteration between 2 points, rather than a stopping at 1. Several more splits occur as you increase r from 3 to 3.5.

Around 3.6 is "the boundary of chaos". After than point, the results of the iteration jump around between a large number of points without ever returning to a given one. For this to be literally true, of course, you would need infinitely precise calculations. On a mere computer,

there are a finite number of possible values, so eventually the series would repeat itself. In theory it never would.

So what does BIFURC/BAS do for you? In a nutshell, you enter a value for r , and an increment. The program prints the pattern of iteration results on the screen, using the first line for your choice of r , and each successive line for $r + \text{increment}$. For example, if you enter r as 3 and the increment as .1, you can see what happens as r goes from 3 to 3.1 to 3.2 to 3.3 etc... The program stops at $r = 4.0$, because the iteration goes to infinity above that point.

It is worthwhile to explore some narrow regions above $r = 3.6$. For example, I suggest trying $r = 3.82$ with increment = 0.005. You may be surprised at what happens.

By the way, the particular numbers used above (e.g., 0.3 for x) come from an article I read somewhere, although I no longer have the exact citation. This material is pretty general and widely described, but I hereby acknowledge the assistance of an unstated author on some aspects of Chaos.

BIFURC/BAS

```
10 CLS
20 PRINT "          BIFURC/BAS by Ed J. Gracely
30 PRINT :PRINT
40 PRINT "Creates a bifurcation tree illustrating the
   transition from a simple"
50 PRINT "regular pattern to a chaotic pattern."
60 PRINT:PRINT
70 PRINT "The user inputs the starting value of the
   parameter and the increment"
80 PRINT
90 PRINT "First split happens around 3.0; things get
   rapidly more"
100 PRINT "interesting around 3.4 and become a jumble
   around 3.6"
110 PRINT
120 PRINT "There are still interesting things to see with a
   fine incrementation"
130 PRINT "even down in the 3.7, 3.8, 3.9 region,
   however."
140 PRINT:PRINT
150 INPUT "What starting value ";START
160 INPUT "What increment ";INC
170 R = START - INC
180 CLS
```



```

190 PRINT CHR$(15) ' Cursor off
200 FOR LR = 1 TO 23
210 X = .3 ' Starting value for X
220 R = R + INC ' Value of R for this row
230 IF R > 4 THEN PRINT @(LR,20), "Values over 4
don't work":END
240 PRINT USING "#.###";R;
250 FOR L = 1 TO 100 ' Toss first 100
260 X = R*X*(1-X) ' The iteration at the heart of the
program
270 IF X > 1000 OR X < -1000 THEN GOSUB 420:
GOTO 390
280 NEXT L
290 NTIME = 50
300 IF R > 3.4 THEN NTIME = 200 ' Need more
samples out here
310 FOR L = 1 TO NTIME
320 X = R*X*(1-X)
330 IF X > 1000 OR X < -1000 THEN GOSUB 420:
GOTO 390
340 XPRI = FIX(79*X + 1)
350 IF XPRI < 6 OR XPRI > 79 THEN 370
360 PRINT @(LR,XPRI),"*";
370 NEXT L

```

```

380 PRINT
390 NEXT LR
400 INPUT CDUM$
410 END
420 PRINT @(LR,20), "Value < -1000 or > 1000. Going
to infinity? "
430 RETURN

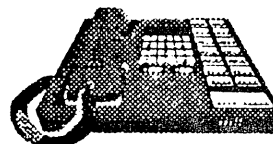
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SECRET MESSAGES

Model I/III & 4 - Basic

by Robert L. Garrett

Your TRS-80 can be a powerful ally, coding or decoding secret messages for you automatically. A French nobleman, Blaise de Vigenere, created a polyalphabetic cipher using more than one cipher alphabet to encrypt a given message. De Vigenere's cipher sabotages the method by which cryptographers conventionally broke secret codes in the past.

For example, if the letter E is coded to be the letter X, then X will show up for the letter E everywhere in the simpler, earlier-method secret message. Cryptographers count the number of X's in the simpler code and conclude that it represents an E, because E is the most frequently used letter. T is the next most frequently used letter, followed by A, O, N, I, R, S, etc. By merely taking a frequency count of the letters, and making substitutions, cryptographers could easily break a code.

In de Vigenere's code, however, the letter E is represented differently everywhere in the secret message. Look at the Table to see what de Vigenere did.

TABLE - capitals represents key letters

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
A	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
B	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a
C	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b
D	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c
E	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	s
F	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e
G	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f
H	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g
I	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h
J	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i
K	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j
L	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k
M	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l
N	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m
O	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n
P	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Q	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
R	r	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
S	s	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r
T	t	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s
U	u	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t
V	v	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u
W	w	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v
X	x	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w
Y	y	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x
Z	z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y

he made a 26 by 26 matrix of alphabetic letters. When a secret message is to be sent the two communicating parties agree beforehand on a keyword. The sender must write the keyword repeatedly above the "clear letters," or plaintext.

For example, the keyword "FOXTROT" will be used to encode the message "THIS COMPUTER IS GREAT". The encoder would write:

Keywords: FOXTROTFOXTROTFOXTROT

Plaintext: THISCOMPUTERISGREAT

Now look at the Table and find the F in the key letters column, and the T in the clear letters row. Look down the column and row to find the first cipher letter, Y. The complete cipher text, or encoded message is: YVFLTCFUIQXIWLLFBTK using FOXTROT as the keyword.

Try this message with the program listed below, and see how easy it is to encode or decode a message provided you know the keyword. The computer can do the ciphering more quickly than you can yourself, but be sure not to leave any spaces between words or the code will not come out correctly. De Vigenere claimed this code was unbreakable, and so it was found to be for many years. However, it can now be broken by an expert, but takes quite a bit of time.

The program, once entered into the computer, works as follows:

You have two options, 1. Encode, or 2. Decode. To encode means to encrypt, or make into a secret message. To decode means to unscramble the secret message into a readable message. After pressing 1 for encode, the computer asks for the keywords, and then for the plain text or message to be coded.

If you push 2 for decode, the program asks for the cipher text, or scrambled message. Remember, the code you use must be based on de Vigenere's code. The program then asks for the keyword, and the message is unscrambled.

The program is written on the Model 4, but it will also work on Models I and III if you include the following line:

2 CLEAR 5000

CRYPTO/BAS

```

2 'CLEAR 5000
3 CLS
4 DATA A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,
S,T,U,V,W,X,Y,Z
5 DIM A$(26,26)
6 PRINT STRING$(12,"*")
7 PRINT "CRYPTOGRAPHY"
8 PRINT STRING$(12,"*")
10 FOR Z = 1 TO 26:READ A$(Z,1):A$(Z,0) = "":NEXT Z
40 FOR Y = 2 TO 26:FOR X = 2 TO 26:
A$(X-1,Y) = A$(X,Y-1):NEXT X
45 PRINT " ";
80 A$(26,Y) = A$(1,Y-1):A$(0,Y) = "":NEXT Y
90 A$(0,0) = "":A$(0,1) = ""
100 CLS:PRINT:PRINT
110 PRINT"1. ENCODE"
120 PRINT"2. DECODE"
130 PRINT:PRINT"CHOOSE 1 OR 2 ";
135 I$ = INKEY$:IF I$ = "2" THEN 300
ELSE IF I$ = "1" THEN 150
ELSE 135
150 PRINT I$:PRINT:PRINT:INPUT"KEYWORDS ";K1$
160 PRINT:INPUT"PLAIN TEXT ";P$
170 B = LEN(P$):K$ = ""
180 FOR Z = 1 TO B/LEN(K1$) + 1
190 K$ = K$ + K1$:NEXT Z
200 FOR Z = 1 TO B:X1 = 0:Y1 = 0
210 FOR X = 1 TO 26
220 IF A$(X,1) = MID$(P$,Z,1) THEN Y1 = X
230 IF A$(X,1) = MID$(K$,Z,1) THEN X1 = X
240 NEXT X
250 PRINT A$(X1,Y1);
260 NEXT Z:GOTO 430
300 PRINT I$:PRINT:PRINT:INPUT"CIPHER TEXT ";C1$
310 INPUT"KEY WORDS ";K1$
320 F = LEN(C1$)
330 FOR Z = 1 TO F/LEN(K1$) + 1
340 K$ = K$ + K1$:NEXT Z
350 FOR Z = 1 TO F:YF = 0:X1 = 0
360 FOR X = 1 TO 26
370 IF A$(X,1) = MID$(K$,Z,1) THEN X1 = X
380 NEXT X
390 FOR Y = 1 TO 26
400 IF A$(X1,Y) = MID$(C1$,Z,1) THEN YF = Y
410 NEXT Y
420 PRINT A$(YF,1);:NEXT Z
430 PRINT:PRINT:GOTO 110

```

YES, OF COURSE !

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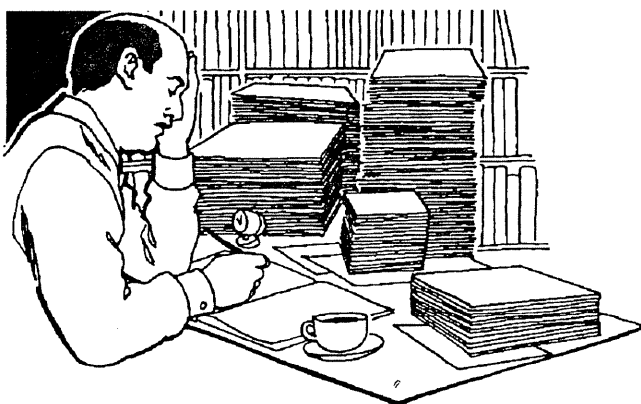
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STOCK TRACKING WITH VISICALC

by John P. Jones



I am a recent subscriber and was surprised that no one has submitted a use for Visicalc. I have been using it for about 10 years. I use it for all taxes, both personal and corporate. Since I need to make quarterly estimates, it sure comes in handy. It also keeps me from forgetting deductions, etc. (I just zero out last year's and use it again, as TAX93/vc). I like the idea of being able to customize it for my own use and at not having to make all calculations by hand.

Since TAX/vc is too complex to publish, I am submitting a part of my method for keeping track of stocks. I have deleted dividends, capital gains from sales, etc., for simplicity. Also, I prefer the horizontal display, but I transferred this to vertical for ease of publication. For this I used the /L # command, converting rows to columns, and then replacing values with the formulas. By the way, I consider Double Duty a must, so I can, for instance, transfer dividends from STOCK/vc to TAX/vc.

The formula below are for ABC Corp. (Column E):

E5 Purchase cost should include commissions, etc.
E6 + E5/E4
E8 Entered as 4.5/12 + 87. Note that the year is only 4 1/2 months old on May 15.
E10 I obtain latest prices from QQOUTES on CompuServe.
E11 + E4*E10
E14 + E11/E5
E15 + E13-E8
E16 100*@LN(E14)/E15

H5 @SUM(E5...G5)

All formulas can be replicated (relative) to the following columns, and to the totals where they are meaningful. The formula for compound gain was derived using calculus to figure mortgage rates when I bought my first house (the only difference is that principal declines on a mortgage). Note the gain assumes re-investing the principal on a continuous basis (very close to a daily basis). The same rate will give less gain if compounded monthly or yearly, much less if not compounded. The differences are greater for a higher gain and especially for a longer period.

The ratio at E14 makes ABC look like the best investment. However, it has been held longer and DEF has given a better rate of return. GHI looks good, but it has been held for such a short period that it's doubtful it can keep growing at this rate.

STOCVAL/VC

> C18:"c
> B18:"STOCKVAL/v
> G16:100*@LN(G14)/G15
> F16:100*@LN(F14)/F15
> E16:100*@LN(E14)/E15
> D16:" (Calc.)
> C16:"pound Gain
> B16:" % Com
> A16:/FI + A15 + 1
> G15: + G13-G8
> F15: + F13-F8
> E15: + E13-E8
> D15:"culated)
> C15:" Held (Cal
> B15:" Years
> A15:/FI + A14 + 1
> H14: + H11/H5
> G14: + G11/G5
> F14: + F11/F5
> E14: + E11/E5
> D14:"urchase
> C14:" Present/P
> B14:" Ratio
> A14:/FI + A13 + 1
> G13:4.5/12 + 93
> F13:4.5/12 + 93
> E13:4.5/12 + 93
> C13:" (Digital)
> A13:/FI + A12 + 1
> G12:" 05/15/93
> F12:" 05/15/93
> E12:" 05/15/93
> C12:"nt Date
> B12:" Prese
> A12:/FI + A11 + 1
> H11:@SUM(E11...G11)
> G11: + G4*G10
> F11: + F4*F10

> E11: + E4*E10
 > D11:"e
 > C11:"lated Valu
 > B11:" Calcu
 > A11:/FI + A10 + 1
 > G10:11
 > F10:75
 > E10:120
 > C10:"nt \$/SH
 > B10:" Prese
 > A10:/FI + A9 + 1
 > A9:/FI + A8 + 1
 > G8:1/12 + 93
 > F8:1/12 + 90
 > E8:4.5/12 + 87
 > C8:" (Digital)
 > A8:/FI + A7 + 1
 > G7:" 01/31/93
 > F7:" 01/31/90
 > E7:" 05/15/87
 > D7:"e
 > C7:"of Purchas
 > B7:" Date
 > A7:/FI + A6 + 1
 > G6: + G5/G4
 > F6: + F5/F4
 > E6: + E5/E4
 > C6:"ated \$/SH
 > B6:" Calcu
 > A6:/FI + A5 + 1
 > H5:@SUM(E5...G5)
 > G5:5000
 > F5:10000
 > E5:7000
 > C5:"ase Cost
 > B5:" Purch
 > A5:/FI + A4 + 1
 > G4:500
 > F4:200
 > E4:100
 > D4:"s Held
 > C4:"r of Share
 > B4:" Numb
 > A4:/FI4
 > A3:" (row)
 > H2:" Total
 > G2:" Company
 > F2:" Corp.
 > E2:" Corp.
 > G1:" GHI
 > F1:" DEF
 > E1:" ABC
 /W1
 /GOC
 /GRA
 /GF\$
 /GC10
 /X>A1:>A1:

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HINTS & TIPS

NUMERIC EDITING ROUTINES

by Michael Krieger

The purpose of the following three subroutines is to perform numeric editing especially for DATE and TIME fields, which CAN NOT be edited with "PRINT USING". They are just string manipulation routines which run very fast, and will take your number and return a nice edited string of a FIXED LENGTH for you to use to make output more legible.

FIELD NAMES USED BY THE ROUTINES

NAME	SET BY	DESCRIPTION
A2	user	Field to be edited
ISIG	user	Number of significant places desired (left of decimal point)
IDEC	user	No. of Decimal positions desired in result (to RIGHT of decimal point)
DLM\$	user	DELIMITER desired ("/", ":", "-", etc)
LPAD\$	user	Left Pad Character (" ", "0", "\$", etc.)
O\$	routine	THE EDITED STRING !!

The length of the returned string will be the total of ISIG plus IDEC plus 1 for decimal point, plus 1 for trailing minus sign, which will be added if the field is negative.

TO USE THE ROUTINES

1. first, if the number is to be rounded off, store your field into A2 and GOSUB 1670 (or whatever you renumber it to)
2. Next, set ISIG, IDEC, DLM\$, and LPAD\$ to the values you want; for a normal DATE field, this would be:
ISIG = 6:IDEC = 0:DLM\$ = "/":LPAD\$ = " "
3. GOSUB to the JUSTIFICATION routine with GOSUB 1730.
4. To complete the DATE/TIME edit, GOSUB 1600 to insert the delimiter characters.

NUMERIC EDITING SUBROUTINE FOR DATE & TIME

```

1600 '
1610 '
1620 B$=O$
' SET UP THE WORK STRING
1630 O$=LEFT$(B$,2)+DLM$+MID$(B$,3,2):

```

```

IF LEN(B$) > 5 THEN O$=O$+DLM$+MID$(B$,5,2)
' COMPLETE FOR DATE
1650 RETURN
1660 '
1670 ' ***ROUND OFF  SUBROUTINE ***
1680 IRFCT = 1:
IF IDEC <= 0 THEN RETURN
' NO ROUNDOFF FOR INTEGERS
1690 FOR IWX1 = 1 TO IDEC:
IRFCT = IRFCT * 10: NEXT
1700 A2 = INT((A2 + (.5*(1/IRFCT)))*IRFCT)/IRFCT:
RETURN
1710 '
1720 '
1730 ' *** NUMERIC LEFT & RIGHT JUSTIFICATION ***
1735 '
1740 ID = 1:
IS1 = 0:
ID1 = 0:
B2$ = "":
INEG = 0:
IF A2 <= 0 THEN INEG = -1:
A2 = ABS(A2)
' SET PARMS & SIGN
1750 B$ = STR$(A2):
B$ = RIGHT$(B$, (LEN(B$)-1))
' STRIP THE FIRST BLANK.
1760 FOR IWX1 = 1 TO LEN(B$):
IF MID$(B$,IWX1,1) = "." THEN ID = 3
' DEC POINT FOUND
1770 ON ID GOTO 1780,1790,1800
1780 IS1 = IS1 + 1:
GOTO 1810
1790 ID1 = ID1 + 1:
GOTO 1810
1800 ID = 2
1810 NEXT
1830 IWX1 = 1:IWX2 = 2:
IF IS1 >= ISIG THEN 1870
' PAD LEFT
1840 FOR IWX1 = 1 TO ISIG-IS1:
B2$ = B2$ + LPAD$:
IWX2 = IWX2 + 1:
NEXT
' BEGIN STRING WITH THE PADS.
1850 IF LPAD$ < > "$" OR IWX2 < 2 THEN 1870
' BYPASS DOLLAR SIGN BLANKOUT.
1860 FOR IWX1 = 1 TO IWX2-1:
MID$(B2$,IWX1,1) = " ":
NEXT
' BLANK OUT THE $ IN STRING

```

```

1870 B2$ = B2$ + B$:
IF ID1 > = IDEC THEN 1900
' DECIMAL PLACES NEED PADDING ?
1880 IF ID1 = 0 THEN B2$ = B2$ + "."
' ADD THE DEC POINT
1890 FOR IWX1 = LEN(B2$) + 1 TO LEN(B2$) + (IDEC-
ID1):
B2$ = B2$ + "0":
NEXT
1900 IF NEG THEN B2$ = B2$ + "-"
ELSE B2$ = B2$ + " "
' TRAIL A BLANK OR A MINUS SIGN.
1910 O$ = B2$:
RETURN
'END OF *** JUSTIFY *** ROUTINE
1920 ' *** END OF EDITING ROUTINES ***

```

LDOS/LS-DOS TO TRSDOS 1.3

by Lance Wolstrup

Bill West had recently acquired a used Model 4P at a very favorable price. He wanted to use it to do some minor word processing, so the deal had included a copy of SCRIPSIT - for Model III. This is where the trouble began!

The computer just wouldn't run, so Bill contacted his local Radio Shack store, who put him in touch with me at TRSTimes. He called me and, as luck would have it, he was not only in Southern California, he was just up the street from the office, so we arranged that he should bring his machine and software over the following day.

When I attempted to boot his Model 4P with the Model III TRSDOS 1.3 SCRIPSIT disk it was easy to see why the machine "wouldn't run". The poor Mod 4P was desperately looking for the MODEL A/III file - and it wasn't there. Easy fix! Copy the file from my Model 4 DOS disk to the Model III SCRIPSIT disk. As it turned out, we hit a couple of snags, consuming a little more time than I had anticipated, but the story does have a happy ending. We did accomplish the task, and Bill is now using SCIPSIT to process his words. Welcome to a new TRS-80 user.

Now, why did the copying of one lousy file take up so much time? Because Tandy made TRSDOS 1.3 completely incompatible with all other TRS-80 operating systems. In fairness, though, this misaligned DOS does contain a utility that will copy files from Model I disks over to TRSDOS 1.3, called CONVERT/CMD.

Thus, my plan of attack was to use my desktop Mod 4 and my normal DOS (LS-DOS 6.3.1) to format a Model I 35 track, single-sided, single-density disk in drive :1, and then copy MODEL A/III from drive :0 to drive :1. Then, from TRSDOS 1.3 I would use the CONVERT utility to copy MODEL A/III from the data disk in drive :1 to the TRSDOS 1.3 boot disk in drive :0.

Formatting the Mod I, 35 track SSSD disk and then copying MODEL A/III to drive :1 went without a hitch.

Booting TRSDOS 1.3 went fine.

But, when using the CONVERT utility, there were no files on drive :1 to convert and copy to drive :0. The problem was that MODEL A/III is an invisible file and had been copied to drive :1 with that attribute. CONVERT/CMD does not recognize invisible files. The fix - go back to LS-DOS 6.3.1 and change MODEL A/III to a visible file.

Again, I booted TRSDOS 1.3 - no problem.

The CONVERT utility found MODEL A/III - but refused to convert and copy because the 'file was password protected'.

Why did TRSDOS 1.3 think that MODEL A/III was password protected? Because the file was copied from an LS-DOS 6.3.1 master disk, and LS-DOS uses the old 'user password' for the new date scheme. The fix - use a ZAP utility to change MODEL A/III's directory entry to the code that TRSDOS 1.3 expects.

Once all these details were taken care of, CONVERT/CMD worked like a charm, copied MODEL A/III to Bill's disk in drive :0 and, as mentioned above, he is now running Model III SCRIPSIT on his Model 4P.

The exact steps taken are as follows:

1. Boot LS-DOS 6.3.1.
2. Insert a blank disk in drive :1
3. Type:
FORMAT :1 (CYL=35,SDEN,SIDES=1,NAME="S",ABS)
4. Type: COPY MODEL A/III:0 :1
5. Type: ATTRIB MODEL A/III:1 (V)
6. Use a ZAP utility to modify MODEL A/III's directory entry. I used David Goben's public domain program called UTILITY4/CMD. From the main menu I chose the Display Cylinder Sectors option, answering 1,17,2 to the prompt. This means: drive 1, track 17, sector 2. You should find MODEL A/III's directory entry right there, occupying bytes 40 through 5F. Note that bytes 50 & 51 read 96 42. You need to change bytes 52 & 53 to these numbers - 96 42. In other words, bytes 50, 51, 52, and 53 will read: 96 42 96 42. Press M to modify, and type 52 in response to the 'hex address' prompt. The cursor moves to byte 52 and you can now type 96, followed by 42. Press Q to quit, and then press W to write the sector back to disk and exit the program. You have now made MODEL A/III acceptable for the TRSDOS 1.3 CONVERT utility.
7. Boot TRSDOS 1.3
8. Type: CONVERT
answer 1 to the 'Source drive' prompt
answer 0 to the 'Destination drive' prompt

MODEL 4 AND LASER PRINTERS

by Martin J. Rapoport, CPA

The equipment

This article is a pay-back for all the tips and help I have received from others in the past. My computer of choice is a Model 4/4P with 40-meg hard drive, hard drive boot, 3.5" 720 K and 5.25" 360K floppies. I have two Model 4Ps, one Model 4, one MS-DOS laptop and two MS-DOS 286s, one laser, three nine-pin, and one twenty-four pin printer. This article was written using Superscript on a Model 4P and a laser printer. All the articles telling us that it can't be done are wrong, although certain laser printers may not have the features necessary to work. I use a Kyocera F-800A, and have set my Superscript printer codes to use sixteen different fonts on the fly. My method, with some changes, can probably work with most laser printers. At this time, I deal with a known quantity. I have been using laser printers for four months and I have set one up for a friend writing a book. He knows next to nothing about how computers and printers work, and he has had no problems in two months.

The problem

Based on other articles I have read, the two primary problems apparently have been no driver and the fact that certain lasers re-set themselves during the Superscript startup. I have had no problem whatsoever with the startup or initializing the laser. The driver was supplied by Radio Shack and patched. The key to the startup may be that the country code is not subject to re-set in the same manner as a font style. Experimentation will be necessary with various models. There may be other drivers that can also be changed. I used the Legal-2 because that is what I had used previously with complete success.

The solution

My first letter quality printer was a Star Micronics Power-type daisy wheel, bought seven years ago. As a CPA I need double-underline capability. The Legal-2 wheel gave it to me. We used the DW2 printer driver and patched the program to print the Legal-2 double-underline character instead of the Radio Shack default double-underline. As you will see, this turned out to be a critical part of the laser setup. No nine-pin dot matrix or daisy wheel combination, other than the Legal-2, allows a double-underline. Some twenty-four pin dot matrix printers like the Epson LQ series will provide for double-underline or double-underscore. My printer of choice before the laser was an Epson LQ-1050. However, the laser printers I have seen emulate nine-pin printers, not twenty-four pin printers, so a daisy wheel configuration was the best bet.

My Kyocera allows for the Legal-2 as a country code, rather than a font style. This then enables me to use any

font style any time using the "ascii" Legal-2 characters. Setting up the Legal-2 country code through Basic and a JCL file puts the laser in working order. My JCL also opens up Superscript at the same time. My default setting is 63 lines per page. The driver must be patched again to replace the Star Micronics Power-type codes with the laser codes. I have included the patches below so you don't have to figure them out. The fonts are then entered as printer codes using the "ascii" codes sequences as specified in the manual. Because the instruction set requires two lines of printer codes, I use "clear-1" as the second line for all font codes. As you can see below, it works quite well. The only caveat is that you cannot end a font. The current font stays resident until it is changed. This has not been a problem for me. Other users will have to adapt accordingly.

The patches

The following patch to the Radio Shack DW2 driver was made for the laser printer. This allows the double-underline using the Radio Shack "clear =" at beginning and end of double-underline:

PATCH DW2/CTL (X'BC74 = 1EBC)

The following patch was made to the DW2 driver for the Star Micronics Power-type Legal-2 daisy wheel:

PATCH DW2/CTL (X'BC74 = 1E7C)

Included in my DW2 driver are non-conflicting patches allowing for use of the Epson LQ-1050 double-underline. The only difference is that "=" cannot be used. I use "(" and ")" for my printer code to double-underline with the LQ. For anyone interested, they are:

PATCH DW2/CTL (X'BB91 = 064D)

PATCH DW2/CTL (X'BB97 = 0650)

PATCH DW2/CTL (X'BE21 = 3E54)

PATCH DW2/CTL (X'BE32 = 3E54)

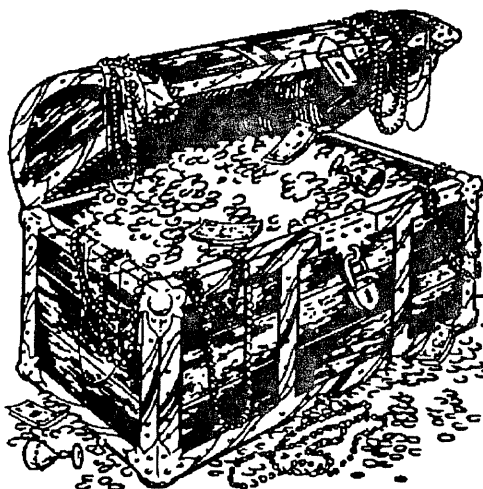
Be sure to rename the new driver! I make a copy of the original and change the copy because I have found that the longer you keep the computer and change printers, the more changes are required to be made to the driver.

Comment

I have used Radio Shack computers since 1984 with almost no problems. I have one of my MS-DOS machines apart monthly. I run an accounting office with the Model 4's, using them for everything but tax return preparation. The use of the laser printer alone adds several more years to their use, and with the other enhancements, I do not anticipate converting from the Radio Shacks for quite some time.

BEAT THE GAME

by Daniel Myers



ZORK I

So, you're all set for The Great Underground Empire, eh? Okay, but before we begin, a few words about this walkthrough. First, this is not the only way to solve the game. It's just one of the faster ones. Second, because there is no "wasted motion" in this game, you will not be visiting all the locations. So, you might want to play around with the game on your own for a while, mapping out as much as you can, without much regard for gathering treasures.

Actually, mapping is a good idea, since, if you make a misstep somewhere, you might find yourself in trouble! Be especially careful to follow the directions when in the mazes; a wrong move there, and you could be lost for quite some time!

Finally, you may not go through this in exactly the way it's written because of the thief. He is a variable item in the game; you never know where he will show up. Try to move out of the room he's in as soon as he shows up. But keep in mind that even if he does steal anything from you, you will get it all back from him in the end. Okay? Let's start the adventure!

You begin West of the house, and your first chore is to get inside. So, go South and East. Open the window and enter the house (you're in the kitchen), then go West into the living room. Get the lamp, then move the rug, reveal-

ing the trap door. Open the trap door, turn on the lamp, and go down. At this point, some mysterious person will shut the door on you; don't worry about that for now.

Okay, so here you are in the cellar. It's time to pick up your first treasure, so go South, then East to the Gallery. Get the painting, then continue North to the Studio. Go up the chimney (you can only fit with the lamp and the painting), and you will be in the kitchen again. Now, go upstairs to the attic, and get the knife and rope. Come back down and go into the living room.

Open the case and put the painting inside. Then, drop the knife and get the sword. Open the trap door again, and return to the cellar. Again, the door is shut by someone (you never will find out who's doing this, but it doesn't matter). Now you're back in the cellar, and since we're coming to one of the more dangerous parts of the game, you might want to do a save here.

Gripping your trusty sword, head North into the Troll room. There's a nasty troll here with a bloody axe, and the only way past is to kill him. So, do just that: "Kill Troll With Sword." It will most likely take more than one attempt, so keep at it, and eventually he will disappear in a cloud of black smoke. Now, drop the sword, because you really don't need it any more, and it will hinder you in carrying other, more important items.

Having dispatched the troll, you move along East, East (into the Round room), then SE and East. You are now in the Dome room. It's a long way down, and too far to jump, so here's where the rope comes in handy. Tie the rope to the railing, then climb down the rope. You will be in the Torch room. Leave the torch for now; you'll be coming back this way again later.

From the Torch room, go South, then East and get the coffin. Return West, then continue South to the Altar. There's no way you're going to get down that hole with the coffin, and even the program will tell you that you haven't got a prayer. That's a hint, folks: Just "Pray," and you will find yourself in the forest again. Since it's daylight out, save energy and turn off the lamp.

Now, head along South, then North (I know, but it works!) to the clearing, then East to the Canyon View. Climb all the way down to the bottom, then go North to Rainbow's End. Drop the coffin and open it. Inside is a jeweled sceptre. Get that, and wave it. The rainbow will become solid (you'll need to cross over from the other side later). Now, "Look." You should see a pot of gold. Get that, and the coffin.

After that, go SW, then all the way back up to Canyon View. From there, it's NW to the clearing, and then West to the window. Once in the kitchen, open the bag and get the garlic (nothing else, just the garlic). Go on into the living room, and put your treasures in the case. Now, sit

down and take a breather, because you're about to do a lot of traveling!

Once again, open the trap door, turn on the lamp, and go down. Watch carefully, and you will notice that this time, the door doesn't close! Whoever was doing it before must have gotten bored. Anyway, you're on your way to the dam, so move along North, East, North, NE, and East. You are now on top of the dam.

From there, go North to the Lobby. Pick up the matches, then go either North or East (doesn't matter) into the Maintenance room. Get the wrench and the screwdriver, then push the yellow button. Now, return to the dam, and you will see that the green bubble is lit. Turn the bolt with the wrench, then drop the wrench. You have opened the dam, and you will be coming back this way again to reap the fruits of your labors. However, right now, you're on your way to Hades, so let's get going!

Go South, then down into the Loud room. Leave the platinum bar for now; you'll get it later. Head West into the Round room, then SE and East (hmmmm, haven't you been here before?). Again, climb down the rope. This time, get the torch. At this point, you can turn off your lamp; the torch will provide light so long as you have it.

Now, continue straight South, getting the bell, then the book and candles from the altar. Go down the hole to the cave, then down again to the entrance to Hades. Your candles will have blown out by this time, but don't worry about it. Okay, here's where you have to be careful. First, ring the bell. It will become red hot and you will drop it. You will also drop the candles. Stay calm, and do the following, all in one command: Get the candles, light match, light candles with match (necessary, because of the torch, and *DON'T* use the torch, or you'll vaporize the candles!). Okay, strange things happened when you lit the candles, now read the book. Whew! The demons have been exorcised!

Drop the book, then go South and get the crystal skull. Now, back North, then up to the cave, then North to the Mirror room. By the way, better put out the candles. Rub the mirror, and you will now be in another Mirror room (this one is North of the dam, as the other one is South).

Now, go North, then West, then North, then West into the Squeaky room (well, I told you you'd be doing a lot of traveling this time!). Make sure you have the garlic with you, then go North into the Bat room. So long as you have the garlic, he won't bother you. There is a jade figurine here, but leave it for now. You'll pick it up on your way out.

Go East to the Shaft room. Put the torch into the basket, then turn on your lamp and head North to the Smelly

room, then down to the Gas Room (best not to carry any open flames here!). Now, you are about to enter a small maze, so follow these directions *CAREFULLY*!

East, Northeast, Southeast, Southwest, down, and you should be at the top of the ladder (if you aren't, may God have mercy on your soul!). From there, go down to the Ladder Bottom, and then South to the Dead End for the coal. Get that, then return to the ladder top. From there, go up, North, East, South, North, and you will be back in the Gas room. Go up, then South to the Shaft room again.

Put the coal in the basket, and lower the basket. Now, guess what? You have to go back through the coal mine again! So, make your way to the Ladder Bottom, but this time, go West to the Timber room. Ignore the broken timber (not useful for anything), and drop all but the screwdriver. Now, you can squeeze through the crack to the West.

And here you are in the Drafty Room, which is also at the bottom of the shaft. There's the basket, so get the coal and the torch, and move South into the Machine room. Open the lid, put the coal in the machine, close the lid, and turn the switch with the screwdriver. Drop the screwdriver, open the lid, and get the diamond (well, no one ever said Zork was an *EASY* game!). Now, go back North, and put the torch and the diamond in the basket. Squeeze back East into the Timber room. Get the skull, lamp, and garlic. You won't be needing the matches and the candles any more, so you can leave them. (They were insurance in case the thief came along and stole the torch before you could get the diamond). Now, head East again to the Ladder Bottom, and from there up and through the coal mine (you know the way now!), to the Gas room. Pick up the bracelet, then continue on up and South to the Shaft room. Get the torch and the diamond from the basket, turn off the lamp, then go West into the Bat room. Get the jade, then go South, East, South to the Slide room.

Now, here's a fast way back to the cellar: Just go down the slide! Wheeeee! Then it's up to the living room (remember, the trap door is open now), and all the treasures go into the case. Huff! Puff! Bet you didn't know you'd be doing *THIS* much running around! But, don't get too relaxed, there's still plenty more to come (urk!).

Turn on the lamp, and return to the cellar. From there, it's North (ah, *deja vu*!), then East, North, NE to Reservoir South. Now that the sluice gates are open, you can head North, picking up the trunk of jewels, North again to Reservoir North, getting the air pump, and North one more time, getting the crystal trident. After that, go all the way back South again to Reservoir South, then East to the dam, and then East once more to the Dam Base.

Here you find a little pile of folded plastic; guess what it is? Right, it's an inflatable boat! So, inflate it with the pump, then drop the pump, then get inside the boat, say "Launch," and you're floating off along the Frigid River.

Now, just keep waiting until you see the buoy. Get that, then "East" to the beach. Get out of the boat, then get the shovel and move on to the Sandy Cave to the NE. You might want to save the game at this point, since you have to dig here until the scarab turns up, and I'm sure you don't want to get buried alive (it's been known to happen!). Okay, drop the shovel and get the scarab, then go back SW. Drop the buoy and open it; inside is an emerald. Get that, then continue South to the Aragain Falls.

Here you can cross the rainbow (so do that!), which brings you to the End of The Rainbow. Turn off the lamp, then go SW to the Canyon Bottom. From there, make your way back to the living room, and put all the treasures in the case. Your collection is quite impressive by now, but you aren't finished yet. Go East twice, then North twice. Climb up the tree and get the egg. Climb down again, and go South, East, and back to the living room. However, this time, you don't put the treasure in the case.

Turn on the lamp, and go down (once again!) into the cellar, and North to the Troll room. Now, you are about to enter a maze, so follow the directions very carefully!

West (this brings you into the maze), South, East, up, and you find several items here. Take only the coins and the key, and be careful not to touch the skeleton! From here, go SW, East, South, SE, and you will be in the Cyclops room. The Cyclops is not friendly, but you can deal with him effortlessly: Just type in "Ulysses" (or "Odysseus," if you prefer). Old One-Eye will tear out of there right through the wall! In fact, he will create a passage eastward from that room right into the living room!

However, you don't want to go that way yet! Instead, go upstairs, and you will be in the Treasure Room, the thief's secret lair. Now, give him the egg, and go back downstairs, then East to the living room. Deposit the coins in the case, then get the knife (the thief needs a little time to open the egg). Okay, go back West to the Cyclops room. Again, at this point, saving is recommended; the thief will not be easy to kill!

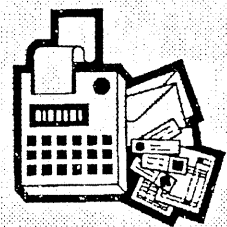
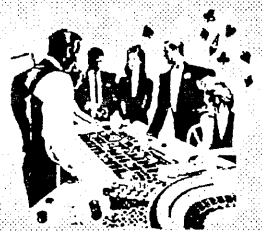
So, head upstairs and use the nasty knife to kill the thief. Once he's dead, all treasures in the room will be visible. This includes the egg, a silver chalice, and anything he may have stolen from you before. Get everything, then follow these directions: Down, NW, South, West, up, down, NE, and you will be in the Grating Room. Unlock and open the grate (watch out for falling leaves!), then go up. You will be in a clearing. From there, go South and climb the tree again. Wind up the canary that's inside the

egg. A songbird will come by and drop a bauble for you. Climb down again and get the bauble, then return to the living room. Put all the treasures in the case, making sure you ***REMOVE THE CANARY*** from the egg and put it in the case separately! You're almost finished! Just one more trip to make!

Now, for the last time, enter the cellar and go North. From the Troll Room, go East until you come again to the Loud Room. Type in: "Echo," and you will now be able to get the bar. So, grab it and return to the living room. Once you place it in the case, you will get a message. Follow the advice of that message, and you will get a map. Take that, and return to the place where this all started, the mailbox West of the house. You should have no trouble getting to the barrow from there. Of course, once you enter the barrow....

You didn't really think it would end there, did you? Not when there's still Zork II and Zork III waiting for you up ahead! Ah, but it's too late; you can't turn back now! You'll just have to grit your teeth and follow through to the end (with a little help, of course). See you in Zork III!

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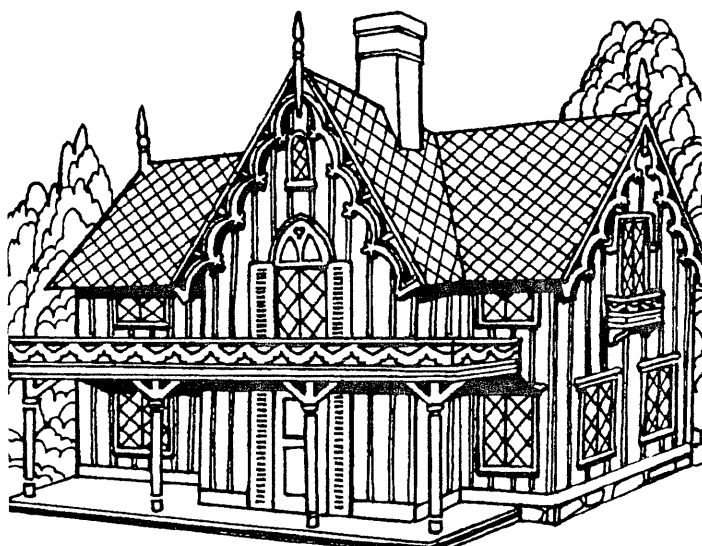
Write to:

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P.O. Box 171566
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STONEVILLE MANOR

an adventure game for Model 4

by Allan & Andrew Lee



Rich Mr. Stone has recently died and rumor has it that this eccentric miser has left his entire estate to whomever finds and opens his safe.

To play, you must manipulate objects and explore your surroundings by using two-word commands. For example, 'get basket' or 'go south'. To speed up directional movement, 'go' commands may be shortened to include one letter, such as 'go s'.

The command 'save game' will preserve your progress for play at a later time, or if you prefer to just end the game then type 'end game'. If the screen gets messy, and/or the room description scrolls off, you can regain it by typing 'clear screen'.

We hope you have fun playing Stoneville Manor.

MANOR/BAS

```
1 'MANOR/BAS
2 'by Allan & Andrew Lee
3 'for TRS-80 Model 4
4 '
10 L=9: DIM I$(33), O$(33), O(33), L$(37), D$(3,37), D(3,37)
100 RANDOM
110 CLS: PRINT CHR$(15):
PRINT@(9,32), "STONEVILLE MANOR"
120 PRINT@(12,30), "by Allan & Andrew Lee"
400 FOR X=1 TO 33: READ I$(X), O$(X), O(X): NEXT X
430 FOR X=1 TO 37: READ L$(X): NEXT X
460 FOR Y=1 TO 37: FOR X=1 TO 3:
READ D$(X,Y), D(X,Y): NEXT X: NEXT Y
```

```
490 FOR X=1 TO 3: READ P$(X): NEXT X
520 FOR X=1 TO 8: READ VE(X): NEXT X
550 FOR X=1 TO 3: Z=RND(89)+10: N(X)=Z: NEXT X
590 FOR X=1 TO 3
600 Z=RND(3)
610 IF SQ(Z)=Z THEN 600 ELSE S(Z)=N(Z):
SQ(Z)=Z: NEXT X
660 PRINT@(21,28), CHR$(14):;
INPUT "Do you want instructions"; C$: PRINT CHR$(15):
IF LEFT$(C$,1)="y" OR LEFT$(C$,1)="Y" THEN
GOSUB 7500
700 CLS: PRINT@(11,22), CHR$(14):;
INPUT "Do you want to continue an old game"; C$:
PRINT CHR$(15): IF LEFT$(C$,1)="y" OR
LEFT$(C$,1)="Y" THEN GOSUB 8300
1000 RANDOM: CLS
1010 PRINT "Location:": PRINT L$(L)
1020 PRINT: PRINT "Directions:"
1030 FOR X=1 TO 3: GOSUB 5010: NEXT X
1060 PRINT: PRINT "Visible objects:"
1070 IF L=30 AND O(13)<0 THEN 1190
1075 IF L=31 AND O(13)<0 THEN 1190
1085 FOR X=1 TO 33: IF O(X)=L THEN PRINT O$(X)
1087 NEXT X
1100 GOSUB 5210
1190 PRINT CHR$(14): INPUT "", C$: PRINT CHR$(15)
1195 FOR X=1 TO LEN(C$):
MID$(C$,X,1)=CHR$(ASC(MID$(C$,X,1)) OR 32): NEXT
1220 IF LEFT$(C$,3)="get" THEN 2030
1225 IF C$="drop snorkel" THEN 3640
1230 IF LEFT$(C$,4)="drop" THEN 2190
1240 IF LEFT$(C$,8)="take inv" THEN 2350
1260 IF C$="enter vent" THEN 2395
1270 IF C$="enter balloon" THEN 2540
1280 IF C$="enter lake" THEN 2600
1290 IF C$="enter door" THEN 2650
1300 IF C$="enter store" THEN 2680
1320 IF LEFT$(C$,5)="enter" THEN 2750
1340 IF LEFT$(C$,8)="examine" THEN 2840
1350 IF LEFT$(C$,5)="look" THEN 2850
1360 IF LEFT$(C$,6)="go jog" THEN 3000
1370 IF LEFT$(C$,4)="go e" AND L=32 THEN 3950
1380 IF LEFT$(C$,4)="go o" THEN 3030
1390 IF LEFT$(C$,2)="go" THEN 3080
1400 IF C$="pet serval" THEN 3130
1410 IF C$="feed serval" THEN 3150
1420 IF C$="give trout" THEN 3150
1430 IF LEFT$(C$,8)="cut tree" THEN 3190
1435 IF LEFT$(C$,10)="climb tree" THEN 3800
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1440 IF LEFT$(C$,9) = "chop tree" THEN 3190
1450 IF LEFT$(C$,4) = "dive" THEN 3210
1460 IF C$ = "end game" THEN CLS:END
1470 IF LEFT$(C$,3) = "buy" AND L = 10 THEN 2060
1475 IF C$ = "remove cover" THEN 3250
1480 IF LEFT$(C$,9) = "open vent" THEN 3250
1485 IF C$ = "open book" THEN 2850
1490 IF C$ = "open door" THEN 3295
1495 IF C$ = "open credenza" THEN 2850
1500 IF C$ = "open bag" THEN 2850
1510 IF C$ = "open safe" THEN 7000
1520 IF C$ = "unlock door" THEN 3295
1540 IF C$ = "inflate raft" THEN 3350
1550 IF C$ = "inflate balloon" THEN 3380
1560 IF C$ = "build balloon" THEN 3380
1570 IF C$ = "fly balloon" THEN 3460
1580 IF C$ = "sail balloon" THEN 3460
1590 IF C$ = "read will" AND F = 1 THEN 7200
1600 IF C$ = "read book" THEN 2850
1605 IF C$ = "read sign" THEN 3900
1610 IF C$ = "save game" THEN GOSUB 8400:
GOTO 1000
1620 IF C$ = "clear screen" THEN 1000
1990 PRINT "I don't understand.": GOTO 1190
2030 IF C$ = "get trout" AND L = 29 AND O(10) < 0 THEN
PRINT "It slipped out of your hands.": GOTO 1190
2035 IF C$ = "get picture" AND L = 16 THEN PRINT "Too
valuable.": GOTO 1190
2040 IF L = 10 THEN PRINT "Can only buy from the
store.": GOTO 1190
2045 IF C$ = "get table" AND L = 37 THEN PRINT "It's
nailed down.": GOTO 1190
2050 IF S = 1 THEN 6000
2055 IF I = 4 THEN PRINT "Inventory too heavy.":
GOTO 1190
2060 IF C$ = "get mask" THEN 6150
2065 IF C$ = "get snorkel" THEN 6100
2070 FOR X = 1 TO 19
2080 G = LEN(I$(X))
2090 IF MID$(C$,5,G) = I$(X) AND O(X) = 0 THEN
PRINT "Already have object.": X = 19: HERP = 1: GOTO 2110
2100 IF MID$(C$,5,G) = I$(X) AND O(X) = L THEN
O(X) = 0: I = I + 1: X = 19: HERP = 2
2110 NEXT X: IF HERP = 1 THEN HERP = 0: GOTO 1190
ELSE IF HERP = 2 THEN HERP = 0: GOTO 1000
2120 IF C$ = "get serval" AND O(30) = L THEN 6210
2130 IF C$ = "get credenza" AND L = 14 THEN
PRINT "Can't lift it.": GOTO 1190
2140 IF C$ = "get case" AND O(26) = L THEN
PRINT "Not thirsty.": GOTO 1190
2150 IF C$ = "get safe" AND O(25) = L THEN
PRINT "Safe is secured to wall.": GOTO 1190
2170 GOTO 1990
2190 FOR X = 1 TO 19
2200 G = LEN(I$(X))
2210 IF MID$(C$,6,G) = I$(X) AND O(X) = 0 THEN
P = X: X = 19: HERP = 1
2220 NEXT X: IF HERP = 1 THEN HERP = 0: X = P:
GOTO 2240
2230 GOTO 1990
2240 IF X = 8 AND L = 28 THEN O(8) = 5: I = I - 1:
PRINT "Raft drifts away"
2245 IF X = 8 AND L = 29 THEN O(8) = 5: I = I - 1:
PRINT "Raft drifts away"
2270 I = I - 1
2280 IF L = 28 THEN O(X) = 30: GOTO 1000
2290 IF L = 29 THEN O(X) = 31: GOTO 1000
2300 O(X) = L: GOTO 1000
2350 FOR X = 1 TO 19
2360 IF O(X) = 0 THEN PRINT O$(X)
2370 NEXT X
2380 GOTO 1190
2395 FOR X = 1 TO 8
2400 IF VE(X) = L THEN HERP = 1: X = 8
2405 NEXT X: IF HERP = 1 THEN HERP = 0: GOTO 2415
2410 GOTO 1990
2415 IF O(8) = 0 AND R = 1 THEN PRINT P$(2):
GOTO 1190
2420 FOR X = 1 TO 4
2425 IF O(X) = 0 THEN PRINT P$(2): HERP = 1: X = 4
2430 NEXT X: IF HERP = 1 THEN HERP = 0: GOTO 1190
2450 IF L = 13 AND C1 = 0 THEN PRINT P$(1):
GOTO 1190
2460 IF L = 14 AND C2 = 0 THEN PRINT P$(1):
GOTO 1190
2470 IF L = 17 AND C3 = 0 THEN PRINT P$(1):
GOTO 1190
2480 IF L = 18 AND C4 = 0 THEN PRINT P$(1):
GOTO 1190
2485 IF W = 0 THEN PRINT "You weigh too much.":
GOTO 1190
2490 IF L = 13 AND C1 = 1 THEN L = 21: GOTO 1000
2500 IF L = 14 AND C2 = 1 THEN L = 24: GOTO 1000
2510 IF L = 17 AND C3 = 1 THEN L = 26: GOTO 1000
2520 IF L = 18 AND C4 = 1 THEN L = 27: GOTO 1000
2530 GOTO 1990
2540 IF H = 0 THEN PRINT "Not ready yet.": GOTO 1190
2550 IF L = 8 THEN L = 34: GOTO 1000
2560 IF L = 36 THEN L = 5: GOTO 1000
2570 PRINT "Can't find.": GOTO 1190
2600 IF L < 5 THEN 1990
2610 IF O(8) < 0 THEN PRINT "Need something to float
on.": GOTO 1190
2630 IF R = 0 THEN PRINT "Raft is too flat.": GOTO 1190
2640 L = 28: GOTO 1000
2650 IF L = 16 AND K = 0 THEN PRINT "Door is locked.":
GOTO 1190
2655 IF L = 20 THEN L = 16: K = 1: GOTO 1000
2660 IF L = 16 THEN L = 20: GOTO 1000

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2670 GOTO 1990
2680 IF L < 9 THEN 1990
2690 FOR X = 1 TO 19
2700 IF O(X) = 0 THEN PRINT "Can't enter store with
inventory.": HERP = 1: X = 19
2710 NEXT X: IF HERP = 1 THEN HERP = 0: GOTO 1190
2720 L = 10: GOTO 1000
2750 IF C$ = "enter manor" AND L = 9 THEN L = 12:
GOTO 1000
2760 IF C$ = "enter manor" AND L = 1 THEN L = 17:
GOTO 1000
2770 IF C$ = "enter hospital" AND L = 9 THEN L = 11:
GOTO 1000
2780 IF C$ = "enter tunnel" AND L = 31 AND O(13) = 0
THEN L = 32: GOTO 1000
2790 IF C$ = "enter creek" AND L = 4 THEN
PRINT "You slipped and fell.": FOR X = 1 TO 3000: NEXT X:
S = 1: L = 11: GOTO 1000
2800 IF C$ = "enter gorge" AND L = 8 THEN PRINT "Too
steep.": GOTO 1190
2810 IF C$ = "enter shack" AND L = 36 THEN L = 37:
GOTO 1000
2820 GOTO 1990
2840 G = LEN(C$) - 8: Q$ = MID$(C$, 9, G): GOTO 2860
2850 G = LEN(C$) - 5: Q$ = MID$(C$, 6, G)
2860 FOR X = 1 TO 33
2870 IF Q$ = I$(X) AND O(X) = L THEN HERP = 1:
X = 33: GOTO 2880
2875 IF Q$ = I$(X) AND O(X) = 0 THEN HERP = 1: X = 33
2880 NEXT X: IF HERP = 1 THEN HERP = 0: GOTO 2900
2890 GOTO 1990
2900 IF Q$ = "bottle" THEN PRINT P$(3); N(1): GOTO 1190
2910 IF Q$ = "goblet" THEN PRINT P$(3); N(2):
GOTO 1190
2920 IF Q$ = "table" THEN PRINT "On top is a note with
the number "; N(3): GOTO 1190
2930 IF Q$ = "case" THEN PRINT "One bottle is missing.":
GOTO 1190
2940 IF Q$ = "book" THEN 6550
2950 IF Q$ = "credenza" AND O(13) = 40 THEN
PRINT "Inside is a swim mask.": GOTO 1190
2960 IF Q$ = "bag" AND O(19) = 40 THEN
PRINT "Inside is a snorkel.": GOTO 1190
2970 IF Q$ = "picture" THEN PRINT "Behind picture is a
safe.": E = 1: GOTO 1190
2980 PRINT "Nothing unusual.": GOTO 1190
3000 IF O(11) < 0 THEN PRINT "Need shoes.": GOTO 1190
3010 IF L9 THEN PRINT "Can't jog here.": GOTO 1190
3015 W = 1: PRINT "Whew!...done.": GOTO 1190
3020 IF L = 28 THEN L = 5: GOTO 1000
3025 GOTO 1990
3030 IF S = 1 THEN PRINT "Not well.": GOTO 1190
3040 IF L = 21 AND C1 = 0 THEN PRINT P$(1):
GOTO 1190
3050 IF L = 24 AND C2 = 0 THEN PRINT P$(1):

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GOTO 1190
3060 IF L = 26 AND C3 = 0 THEN PRINT P$(1):
GOTO 1190
3070 IF L = 27 AND C4 = 0 THEN PRINT P$(1):
GOTO 1190
3080 IF LEFT$(C$, 4) = "go e" AND L = 18 THEN 6300
3090 FOR X = 1 TO 3
3100 IF MID$(C$, 4, 1) = D$(X, L) THEN L = D(X, L):
HERP = 1: X = 3
3110 NEXT X: IF HERP = 1 THEN HERP = 0: GOTO 1000
3120 PRINT "Direction not clear.": GOTO 1190
3130 IF V = 0 AND L = 18 THEN 6200
3140 GOTO 1990
3150 IF V = 1 THEN 1990
3160 IF L < 18 THEN 1990
3170 IF O(14) < 0 OR L < 18 THEN PRINT "Need food.":
GOTO 1190
3180 PRINT "Serval took trout and escaped!":
IF O(14) = 0 THEN I = I - 1
3185 V = 1: O(14) = 40: O(30) = 40: FOR X = 1 TO 3000:
NEXT X: GOTO 1000
3190 IF L = 2 AND O(12) = 0 OR O(12) = L THEN
O(4) = 2: GOTO 1000
3200 GOTO 1990
3210 IF L = 8 AND O(8) = 0 AND O(19) = 0 THEN
O(8) = 5: I = I - 1: L = 30: PRINT "Raft drifts away.":
FOR X = 1 TO 3000: NEXT X: O(OR 7, 0): GOTO 1000
3215 IF L = 29 AND O(8) = 0 AND O(19) = 0 THEN
O(8) = 5: I = I - 1: L = 31: PRINT "Raft drifts away.":
FOR X = 1 TO 3000: NEXT X: O(OR 7, 0): GOTO 1000
3220 IF L = 28 AND O(19) = 0 THEN L = 30: GOTO 1000
3225 IF L = 29 AND O(19) = 0 THEN L = 31: GOTO 1000
3230 IF L = 28 OR L = 29 THEN PRINT "Need snorkel.":
GOTO 1190
3240 GOTO 1990
3250 IF L = 13 THEN C1 = 1: GOTO 1000
3255 IF L = 21 THEN C1 = 1: GOTO 1000
3260 IF L = 14 THEN C2 = 1: GOTO 1000
3265 IF L = 24 THEN C2 = 1: GOTO 1000
3270 IF L = 17 THEN C3 = 1: GOTO 1000
3275 IF L = 26 THEN C3 = 1: GOTO 1000
3280 IF L = 18 THEN C4 = 1: GOTO 1000
3285 IF L = 27 THEN C4 = 1: GOTO 1000
3290 GOTO 1990
3295 IF L = 16 OR L = 20 THEN 3305
3300 GOTO 1990
3305 IF L = 16 AND K = 0 THEN PRINT "Can't, door is
locked from other side.": GOTO 1190
3310 PRINT "O.K.": GOTO 1190
3350 IF L < 5 THEN PRINT "Not here.": GOTO 1190
3360 IF R = 1 THEN PRINT "Already inflated.": GOTO 1190
3370 PRINT "O.K.": R = 1: GOTO 1190
3380 IF L < 8 THEN PRINT "Not here.": GOTO 1190
3390 FOR X = 1 TO 6
3395 IF O(X) = 0 OR O(X) = 8 THEN HB = HB + 1

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3400 NEXT X
3405 IF HB = 6 THEN 3420
3410 PRINT"Not ready.":HB = 0:GOTO 1190
3420 FOR X = 1 TO 6
3425 IF O(X) = 0 THEN I = I - 1
3430 O(X) = 40
3440 NEXT X
3450 H = 1:GOTO 1000
3460 IF H = 0 THEN PRINT"Not ready.":GOTO 1190
3470 IF L = 8 OR L = 36 THEN PRINT"Need to get in
first.":GOTO 1190
3480 IF L = 34 THEN 3500
3485 IF L = 35 THEN 3570
3490 GOTO 1990
3500 CLS:Y = 0:FOR H = 6 TO -6 STEP -1:
Z = ABS(H):Y = Y + 2:GOSUB 6420:NEXT H
3550 CLS
3560 L = 35:GOTO 1000
3570 CLS:Y = 29:FOR H = 6 TO -6 STEP -1:
Z = ABS(H):Y = Y - 2:GOSUB 6420:NEXT H
3620 CLS
3630 L = 34:GOTO 1000
3640 IF O(19) < 0 THEN PRINT"Don't have.":GOTO 1190
3650 IF L27 AND L < 32 THEN PRINT"You quickly grab it
back.":GOTO 1190
3660 O(19) = L:I = I - 1:GOTO 1000
3800 IF L < 2 THEN 1990
3810 PRINT"You fell off.":FOR X = 1 TO 3000:NEXT X:
S = 1:L = 11:GOTO 1000
3900 IF O(9) = 0 OR O(9) = L THEN PRINT"Sign says: An
appropriate place.":GOTO 1190
3910 PRINT"Can't find.":GOTO 1190
3950 IF O(19) = 0 THEN 3080
3960 PRINT"Need snorkel.":GOTO 1190
5010 IF D$(X,L) = "-" THEN RETURN
5020 IF D$(X,L) = "o" THEN PRINT"Out":RETURN
5030 IF D$(X,L) = "n" THEN PRINT"North":RETURN
5040 IF D$(X,L) = "e" THEN PRINT"East":RETURN
5050 IF D$(X,L) = "s" THEN PRINT"South":RETURN
5060 IF D$(X,L) = "w" THEN PRINT"West":RETURN
5070 IF D$(X,L) = "u" THEN PRINT"Up":RETURN
5080 IF D$(X,L) = "d" THEN PRINT"Down":RETURN
5210 IF O(13) = 0 AND L = 31 THEN
PRINT"an underwater tunnel":RETURN
5220 IF L = 13 OR L = 14 OR L = 17 OR L = 18 THEN
PRINT"vent"
5230 IF L = 13 AND C1 = 1 THEN PRINT"vent cover":
RETURN
5240 IF L = 14 AND C2 = 1 THEN PRINT"vent cover":
RETURN
5250 IF L = 17 AND C3 = 1 THEN PRINT"vent cover":
RETURN
5260 IF L = 18 AND C4 = 1 THEN PRINT"vent cover":
RETURN
5270 IF H = 1 AND L = 8 OR L = 36 THEN

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PRINT"hot air balloon":RETURN
5280 Z = RND(10)
5290 IF L = 6 AND Z = 1 THEN PRINT"the butler with two
sticks of dynamite":RETURN
5300 IF L = 3 AND Z = 3 THEN PRINT"the maid with a
pack of bloodhounds":RETURN
5310 IF L = 7 AND Z = 5 THEN PRINT"the gardener with
a bulldozer":RETURN
5320 IF L = 33 AND Z < 5 THEN PRINT"A bat passes
close by.":RETURN
5330 IF L = 27 AND Z < 3 THEN
PRINT"You have cobwebs in your hair.":RETURN
5340 IF L = 25 AND Z < 3 THEN PRINT"A rodent brushes
your leg.":RETURN
5350 IF L = 4 AND Z = 7 THEN PRINT"A toad jumps
across the creek.":RETURN
5360 IF L = 8 AND O(14) = 0 AND Z < 5 THEN
PRINT"A hungry gull circles overhead.":RETURN
5370 IF L = 2 AND Z = 6 THEN PRINT"A primate watches
from above.":RETURN
5390 RETURN
6000 IF C$ = "get well" THEN S = 0:PRINT"Recovered.":
GOTO 1190
6020 GOTO 1990
6100 IF O(19) = 0 THEN PRINT"Already have object.":
GOTO 1190
6115 IF O(19) = 40 AND O(7) = 0 THEN O(19) = 0:I = I + 1:
GOTO 1000
6120 IF O(19) = 40 AND O(7) = L THEN O(19) = 0:I = I + 1:
GOTO 1000
6130 IF O(19) = L THEN O(19) = 0:I = I + 1:GOTO 1000
6140 GOTO 1990
6150 IF O(13) = 0 THEN PRINT"Already have.":
GOTO 1190
6160 IF O(13) = 40 AND L = 14 THEN O(13) = 0:I = I + 1:
GOTO 1000
6170 IF O(13) = L THEN O(13) = 0:I = I + 1:GOTO 1000
6180 GOTO 1990
6210 PRINT"You have just enough strength to get away.":
FOR X = 1 TO 3000:NEXT X:S = 1:L = 11:GOTO 1000
6300 IF V = 0 THEN PRINT"Serval won't let you.":
GOTO 1190
6310 L = 19:GOTO 1000
6420 PRINT@(Z,Y-1),SPC(10):PRINT@(Z+1,Y-1)," ";
CHR$(151)STRING$(3,131);CHR$(171);" "
6425 PRINT@(Z+2,Y)," / \ "
6430 PRINT@(Z+3,Y)," "STRING$(7,179);" "
6440 PRINT@(Z+4,Y)," \ / "
6445 PRINT@(Z+5,Y-1)," \ / "
6450 PRINT@(Z+6,Y)," "CHR$(157);CHR$(140);
CHR$(174);" "
6455 PRINT@(Z+7,Y)," ";CHR$(149)"CHR$(170);" "
6460 PRINT@(Z+8,Y)," "CHR$(157);CHR$(140);
CHR$(174);" "
6470 PRINT@(Z+9,Y)," *** "

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6480 PRINT@(Z+10,Y),"  ";CHR$(141);CHR$(140);
CHR$(142):PRINT@(Z+11,Y-2),"      "
6490 RETURN
6550 CLS
6560 PRINT:PRINT TAB(5)"How to build a hot air balloon"
6570 PRINT:PRINT TAB(8)"#1 Balloon"
6575 PRINT TAB(8)"#2 Heat source"
6580 PRINT TAB(8)"#3 Fuel"
6585 PRINT TAB(8)"#4 Gondola or container"
6590 PRINT TAB(8)"#5 Cable or twine"
6595 PRINT TAB(8)"#6 Matches or lighter"
6600 PRINT "Build at an appropriate place."
6605 PRINT@(23,28),"Press return to continue";
C$=INPUT$(1)
6620 GOTO 1000
7000 IF E=0 THEN PRINT"Can't find.":GOTO 1190
7010 IF E=0 THEN PRINT"Can't find.":GOTO 1190
7030 IF L<16 THEN PRINT"Not here.":GOTO 1190
7040 PRINT"Combination lock"
7050 INPUT"Enter first number--",F(1)
7055 '
7060 IF F(1)<S(1)THEN PRINT"Not correct":GOTO 1190
7070 INPUT"Enter second number--",F(2)
7075 '
7080 IF F(2)<S(2)THEN PRINT"Not correct":GOTO 1190
7090 INPUT"Enter last number--",F(3)
7095 '
7100 IF F(3)<S(3)THEN PRINT"Not correct":GOTO 1190
7105 F=1
7110 PRINT"Click!.....Inside is a will":GOTO 1190
7200 CLS
7210 PRINT@(5,0),CHR$(151);STRING$(38,131);
CHR$(171)
7225 PRINT CHR$(149);SPC(38);CHR$(170)
7230 PRINT CHR$(149);"      WILL      ";
CHR$(170)
7235 PRINT CHR$(149);SPC(38);CHR$(170)
7240 PRINT CHR$(149);" I, Mr. Stone, leave all my
worldly ";CHR$(170)
7245 PRINT CHR$(149);" possessions to whomever
opens this ";CHR$(170)
7250 PRINT CHR$(149);" safe.
";CHR$(170)
7255 PRINT CHR$(149);SPC(38);CHR$(170)
7260 PRINT CHR$(141);STRING$(38,140);CHR$(142)
7265 PRINT:PRINT"      < < < Congratulations > > >":
END
7500 CLS:PRINT
7510 PRINT"Welcome to Stoneville. You have recently
learned that rich Mr. Stone died and"
7530 PRINT"rumor has it that this eccentric miser has left
his entire estate to whomever"
7550 PRINT"finds and opens his safe.":PRINT
7570 PRINT"To play, you must manipulate objects and
explore your surroundings by using two";

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7590 PRINT"word commands. For example, 'get basket'
or 'go south'. To speed up directional";
7605 PRINT"movement, 'go' commands may be short-
ened to include one letter such as 'go s'.":PRINT
7615 PRINT"The command 'save game' will preserve
your progress for play at a later time"
7625 PRINT"or if you prefer to just end the game then
enter 'end game'. And, if needed,"
7640 PRINT""clear screen' will reset your location."
7670 PRINT@(23,28),"Press any key to continue";
C$=INPUT$(1):RETURN
8000 DATA balloon,fallen weather balloon,3,stove,small
wood burning stove,1,basket,large wicker basket,12
8010 DATA logs,logs,40,twine,roll of twine,17,
matches,book of matches,15
8020 DATA bag,burlap bag,18,raft,inflatable raft,1,
sign,sign,8
8030 DATA net,fish net,7,shoes,jogging shoes,10,
axe,axe,10
8040 DATA mask,swim mask,40,trout,trout,29,goblet,
crystal goblet,19
8050 DATA bottle,empty bottle of chablis,33,
book,book,14,picture,picture of Mr. Stone,16
8060 DATA snorkel,snorkel,40,manor,Stoneville Manor,9,
manor,Stoneville Manor,1
8070 DATA shack,old abandoned shack,36,
table,wooden table,37,credenza,wooden credenza,14
8080 DATA safe,safe,40,case,case of chablis,18,
trees,trees,2
8090 DATA door,door,20,door,door,16,serval,
an imported serval,18
8100 DATA store,general store,9,stairway,stairway,19,
hospital,hospital,9
8110 DATA in the courtyard,in a wooded area,in a
meadow,along a slippery creek,on the bank of a lake,in a
barren field,on a rocky trail
8120 DATA at the edge of a gorge,on main street,inside
the general store,inside the hospital,in the foyer,in the
parlour
8130 DATA in the study,in an oriel,in the gallery,in the
atrium,in the west wing of the wine cellar,in the east wing
of the wine cellar
8140 DATA at top of an air way,at an outlet in the duct,
at a turn in the duct,at a fork in the duct,at an outlet in
the duct,at a turn in the duct
8150 DATA at an outlet in the duct,at an outlet in the
duct,on the lake,in the southern bay,under the surface of
the lake,under the surface of the lake
8160 DATA along an underground river,inside a cavern,
in a hot air balloon,in a hot air balloon,on top of a plateau,
inside the shack
8170 DATA w,2,s,4,"-",0,e,1,s,3,n,9,n,2,e,4,"-",
0,w,3,e,5,n,1,w,4,"-",0,"-",0,s,9,e,7,"-",0,w,6,e,8,"-",0
8180 DATA w,7,"-",0,"-",0,s,2,n,6,"-",0,o,9,"-",0,"-",0,o,9,"-",
0,"-",0,o,9,s,13,"-",0,n,12,e,14,s,17,w,13,e,15,s,16

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8190 DATA w,14,"-",0,"-",0,n,14,w,17,"-",0,o,1,n,13,
e,16,e,19,"-",0,"-",0,w,18,u,20,"-",0,d,19,"-",0,"-",0,o,13,
s,22,"-",0,n,21,e,23,"-",0
8200 DATA w,22,n,24,s,25,o,14,s,23,"-",0,n,23,w,26,"-",
0,o,17,d,27,e,25,o,18,u,26,"-",0,o,5,s,29,"-",0,n,28,"-",0,"-",0
8210 DATA u,28,s,31,"-",0,u,29,n,30,"-",0,e,31,w,33,"-",
0,e,32,"-",0,"-",0,o,8,"-",0,"-",0,o,36,"-",0,"-",0,"-",0,"-",
0,o,36,"-",0,"-",0
8220 DATA Vent is covered.,Something is too big.,
Inside is a note with the number.
8230 DATA 13,14,17,18,21,24,26,27
8300 OPEN"i",1,"manor/dat"

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8340 INPUT#1,L,W,S,I,F,H,R,K,E,V,C1,C2,C3,C4,
N$(1),N$(2),N$(3),S$(1),S$(2),S$(3)
8370 FOR X=1 TO 33:INPUT#1,O(X):NEXT X
8395 CLOSE#1:RETURN
8400 OPEN"o",1,"manor/dat"
8435 PRINT#1,L,W,S,I,F,H,R,K,E,V,C1,C2,C3,C4,
N$(1),N$(2),N$(3),S$(1),S$(2),S$(3)
8470 FOR X=1 TO 33:WRITE#1,O(X):NEXT X
8495 CLOSE#1:RETURN

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REVIEW AND DISCUSSION OF ROY SOLTOFF'S 40 MEG HD IN A MODEL 4P

by Roy T. Beck

In his MISOSYS Quarterly of April 1993, issue VII.ii, Roy Soltoff explained how he fitted a 40 Meg SCSI hard drive into a Model 4P. I read the article with great interest.

The problem has three major facets; hardware to fit the available space, hardware to logically function with his modified 4P, and software to operate the drive. I am greatly impressed with his accomplishments in all three areas. His first task was to discover what drive was suitable, both physically and logically, for use in the limited interior space of a 4P.

By way of explanation, older SASI drive setups consisted of a host adapter (H/A) to interface a SASI bus with the particular computer, and a SASI hard disk controller (HDC) to control the bubble. The SASI bus was simply the short piece of ribbon cable between the host adapter and the HDC. Since the bubble was a separate physical device from the HDC, then the HDC had to have a second connection to match up with the bubble. In early times, the MFM bubble was commonplace, so Xebec and others built their HDC to have a SASI interface on the machine side and an MFM interface on the bubble side. Soltoff's available 20 and 40 meg packages are of that variety. What used to be the SASI bus has evolved into the SCSI bus as standardization has progressed. Today we only refer to SCSI.

What we know now as a SCSI hard drive is a bubble with an HDC built into it and an interface to match existing SCSI buses. Therefore, the SCSI bubble is a SCSI device, it simply no longer requires a separate HDC. Because Soltoff's host adapter created a SCSI bus, it is

quite happy to connect to a SCSI bubble. Since the Seagate drives are SCSI type, with an onboard controller, the need for the Xebec or Adaptec controller is eliminated. This was a tremendous plus, as the space inside a 4P and its power supply capacity are both limited.

Roy began by researching the available SCSI drives. He discovered Seagate Technology had a series of drives which are physically small enough (3.5" nominal) and logically compatible with his H/A. These include the ST-125-N, the ST-138-N and the ST-157-N. All three of these drives are now out of production, but are still available. According to my reference sources, these drives are:

ST-125-N
4 heads ? cyls ?-512 byte sectors, ? Megs in IBM

ST-138-N
4 heads 615 cyls 35-512 byte sectors, 42.9 Megs in IBM

ST-157-N
6 heads 615 cyls 26-512 byte sectors, 48.7 Megs in IBM

Roy did not give the effective capacity of the first and second units in a TRS; he said the ST-157-N provides 40 Megs. By the way, the ST-157-N is self parking, (the others probably are, also), so you need not remember that chore.

The gist of the plan was to remove the :1 floppy, physically mount the 3.5" HD in its place, and locate Roy's existing H/A (which is 3 5/8" by 6 1/4") near the power supply.

The third part of the puzzle is Roy's specialty, and that is the software to make the SCSI drive function with LS-DOS 6.3. For him that was a breeze.

For documentation, he added an 8 page addendum to his existing MSCSI manual to cover the differences between his 20 and 40 meg MFM hard drives and this 40 meg SCSI drive. As a plus, his current software handles both the SCSI drive and the previously accommodated Xebec/Adaptec plus MFM drive combinations.

As a further step, Roy removed the :0 floppy from his 4P and installed a 3.5" 720K floppy in its place. Now he has a 720K floppy to boot with and a 40 Meg HD in the second physical slot to store data and files, all within the capability of the 4P case and its 68 watt (nominal) power supply. A slick package! The missing capability at this point was the ability to read 40 track DSDD floppies. To satisfy this need, Roy installed a connector on the rear of the 4P into which two external floppies can plug. Roy also had the external case and floppies in his product line, so these also were off-the-shelf items for him. His 4P is a gate array machine, which only required 4 jumpers to enable the external floppies. By the way, PAL machines (non-gate array) require slightly more work, but they also

can be made to handle two external floppies. To top it all off, he has an XLR8er board in his machine. Quite a package.

And what would all of this cost you or me? The H/A is available from MISOSYS for \$75. Further, Roy had to develop new software for the combination of his H/A and the Seagate drive, and that software goes for \$25.

Roy does not sell the SCSI drives, but noted that jb Technologies, 5105 Maureen Lane, Moorpark, CA 93021 has the ST-157-N available. I spoke to John Andari at phone 805-529-0908, X145 who quoted the drive for \$179, used, with 90 day warranty or \$215, new, with one year warranty.

Other bits and pieces required include an adapter to mount the 3.5" drive in the 5" opening of the 4P, and there is a need for a wye cable to bring power to the H/A board.

I would summarize the minimum approach as follows:

Host adapter	\$ 75
Software	\$ 25
40 Meg Hard Drive ST-157-N	\$179
Hardware bits and pieces	\$ 25
Shipping etc	\$ 15

Approximate Total	\$320

Obviously the price of the first two items is fixed by Roy; The price of the drive is what you can find, and the remaining pieces depend largely on the contents of your junk box.

By the way, Roy advises that you must not consider the equivalent Quantum drives. Superficially they may look attractive, but they are locked into 512 byte sectors, and cannot be used in this application. Also, there is a 3.5" x 1" thick Seagate series, including the ST-325-N, which is also unable to write 256 byte sectors under software control, so avoid these also. As of this writing (June 1993), Roy advises only the three drives mentioned above are usable.

Let me throw in a few other scraps of information. Roy has provided two options on his host adapter. First, he provided for a real time clock. For \$20 extra, you get a Dallas Semiconductor clock chip plugged into a socket on the board. For another \$20, he will include a joystick, which plugs into yet another connection on the board. Neither of these is essential, but they are available. I very much appreciate having a hardware clock in my machines.

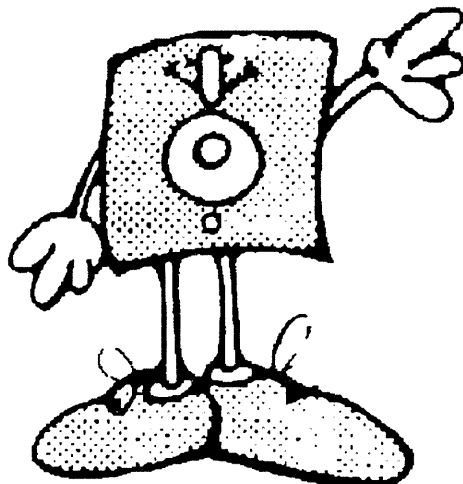
I will cite here some other articles of general interest to Model 4P owners. 80 Microcomputing of January, 1986

had an article entitled "On The Upgrade" by Tsun Tam in which he described an assortment of updates which an owner might like to install in his machine. Roy Soltoff reprinted excerpts from that article in his MISOSYS Quarterly of Spring 1990, Vol IV, No iii. Roy will supply reprints of this article for a copying fee. In The MISOSYS Quarterly (TMQ) Vol VII, No. i Roy described his trials and tribulations in getting info from Seagate, and finally TMQ Vol VII, No ii has the writeup on installing the 40 Meg SCSI drive in the 4P.

So far, I have not got my own 4P going, due to a minor problem of some sort, but I'm working on it. (All troubles are minor after you identify them!) I naturally expect to report success very shortly. If Roy Soltoff can do it, then I expect to, also. I'm reporting in this fashion because I promised this article to TRSTimes, and the deadline is upon me!

As is the nature of software, Soltoff received a report from another user about a bug in the new package. Roy tracked it down, and it turned out to be due to an undocumented quirk in the ST-157N drive. Seems if it was previously formatted with 512 byte sectors, it required an extra instruction to tell it to accept a new format with 256 byte sectors. Roy has sent out a patch list for current users, and I have correspondingly patched my copy. Future users will receive the updated version. By the way, the 4P plus SCSI drive will also operate under LDOS; Roy includes the necessary drivers for both LS-DOS and LDOS (Model 4 and Model 3 mode) in the same SCSI software package.

Regardless of the dwindling state of our machines, I feel this is a worthwhile modification, and I am immensely pleased that Roy Soltoff is still doing things on our behalf. After all, he could have tossed in the sponge some time ago, and we would never have seen this development. Thanks mucho, Roy!



Model I & III Public Domain Disks

PD#1: binclock/cmd, binclock/doc, checker/bas, checker/doc, chomper/bas, cls/cmd, dduty3/cmd, driver/cmd, driver/doc, drivtime/cmd, mazeswp/bas, minibase/bas, minitest/dat, mx/cmd, piazza/bas, spdup/cmd, spdwn/cmd, vici/bas, vid80/cmd, words/dic.
PD#2: creator/bas, editor/cmd, maze3d/cmd, miner/cmd, note/cmd, poker/bas, psycho/cmd, supdraw/cmd, vader/cmd
PD#3: d/cmd, trsvoice/cmd, xmodem/cmd, xt3/cmd, xt3/txt, xthelp/dat
PD#4: cobra/cmd, disklog/cmd, flight/bas, flight/doc, narzabur/bas, narzabur/dat, narzabur/his, narzabur/txt, othello/bas, vid80x24/cmd, vid80x24/txt
PD#5: eliza/cmd, lu31/cmd, sq31/cmd, usq31/cmd
PD#6: clawdos/cmd, clawdos/doc, cocoxf40/cmd, dscknam/bas, menu/cmd, ripper3/bas, sky2/bas, sky2/his, space/cmd, stocks/bas, trs13pat/bas, vidsheet/bas
PD#7: cards/bas, cities/bas, coder/bas, eye/bas, heataudt/bas, hicalc/bas, life/bas, moustrap/bas, ohare/bas, slots/bas, stars/cmd, tapedit/bas
PD#8: craps/bas, fighter/bas, float/bas, hangman/bas, jewels/cmd, lifespan/bas, varidump/bas, xindex/bas, xor/bas
PD#9: bublsort/bas, chess/bas, finratio/bas, homebudg/bas, inflat/bas, mathdril/bas, midway/bas, nitefly/bas, pokrpete/bas, teaser/bas
PD#10: ltc21/bas, ltc21/ins, lynched/bas, match/bas, math/bas, message/bas, message/ins, portfol/bas, portfol/ins, spellegg/bas, storybld/bas
PD#11: alpha/bas, caterpil/cmd, cointoss/bas, crolon/bas, cube/cmd, dragon/cmd, fastgraf/bas, fastgraf/ins, lunarexp/bas, music/bas, music/ins, planets/bas, volcano/cmd
PD#12: baccarat/bas, backpack/bas, backpack/ins, doodle/bas, dragons/bas, dragons/ins, king/bas, sinewave/bas, snoopy/bas, wallst/bas, wallst/ins
PD#13: atomtabl/bas, boa/bas, chekbook/bas, conquer/cmd, dominos/bas, morse/bas, mountain/bas, quiz/bas, signbord/bas, sketcher/bas
PD#14: autoscans/bas, checkers/bas, craps/bas, ducks/bas, isleadv/bas, nim/bas, rtriangl/bas, sammy/cmd, typing/bas, wordpuzl/bas
PD#15: budget/bas, corp/bas, corp/ins, fourcolr/bas, fullback/bas, grapher/bas, illusion/bas, jukebox/bas, ledger/bas, maze/cmd, reactest/bas, shpspre/bas, states/bas, tapecntr/bas, tiar/bas, tiar/ins
PD#16: amchase/bas, constell/bas, filemastr/bas, foneword/bas, geometry/bas, heartalk/bas, hidnumbr/bas, lgame/bas, marvello/bas, powers/bas, scramble/bas, speed/bas, subs/bas
PD#17: conundrm/bas, eclipse/bas, esp/bas, esp/ins, hustle/bas, jacklant/bas, mindblow/bas, othello/bas, pleng/bas, rubik/bas, trend/bas, ufo/bas, veggies/bas
PD#18: backgam/bas, chess/cmd, cosmip/cmd, distance/bas, hexpawn/bas, music/cmd, stokpage/bas,

texted/bas, texted/ins, trex/bas, twodates/bas, wanderer/bas

PD#19: banner/bas, cresta/cmd, lander/bas, medical/bas, moons/bas, par/bas, parachut/bas, pillbox/bas, readtrn/bas, replace/bas, ship/cmd, solomadv/bas, space/cmd, survival/bas

PD#20: bomber/bas, bumbee/cmd, ciaadv/bas, dice31/bas, dice31/ins, diskcat1/bas, firesafe/bas, flashcrd/bas, hitnmiss/bas, mazegen/bas, mazescap/cmd, roulette/bas, seasonal/bas

PD#21: aprfool/bas, catmouse/bas, d/cmd, escape/bas, header/bas, kalah/bas, mathwrl/bas, nameit/bas, note/cmd, photo/bas, read/cmd, syzygy/bas, timeshar/cmd, timeshar/doc, trace80/cmd, trsdir/cmd, worm/bas, yatz80/bas

PD#22: arcade/bas, cube/cmd, eclipse/bas, lcd/bas, leastsq/bas, medical/bas, million/bas, pwrplant/bas, round/bas, subway/bas, tapeid/bas

PD#23: artil/bas, artil/ins, baseconv/bas, crushman/bas, dissert/bas, huntpeck/bas, jungle/bas, jungle/ins, messages/bas, monitor/bas, monster/bas, moons/bas, ohmlaw/bas, stockpage/bas, tictacto/bas

PD#24: baslist/asm, baslist/cmd, baslist/doc, cleaner3/cmd, cleaner3/doc, difkit1/bas, difkit1/doc, dirpatch/asm, dirpatch/cmd, e/cmd, ei/doc, i/cmd, newmap/bas, newmap/doc, varlst/asm, varlst/cmd, varlst/doc

PD#25: copy/bas, copy/doc, dirpw/asm, dirpw/cmd, dirpw/doc, dskfmt/bas, dskfmt/doc, himap/asm, himap/cmd, hurricane/bas, hv/bas, hv/doc, keydemo/bas, keyin/bas, keyin/doc, lazyptch/asm, lazyptch/doc, salvage/bas, salvage/doc, wpfit/asm, wpfit/fit

PD#26: constell/bas, divisor/bas, frame/bas, heatfus/bas, heatfus/doc, hicalc/bas, mathlprt/bas, mathquiz/bas, molecule/bas, morscode/bas, phyalpha/bas, phyalpha/doc, remaindr/bas, usa/bas, wiring/bas

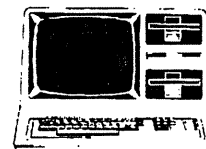
PD#27: engine/bas, fraction/bas, geosat/bas, grades/bas, julian/bas, lunarcals/bas, mailist/bas, metaboli/bas, musictrn/bas, perindex/bas, potrack/bas

PD#28: chainfil/bas, citoset/bas, convnum/bas, cursors/bas, cursors/doc, datamkr/bas, deprec/bas, gmenuii/bas, ledger12/bas, menui/bas, menuii/bas, minives/bas, ninteres/bas, refinanc/bas, regdepo/bas, rembal/bas, rndbodr/bas

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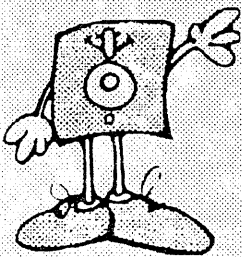
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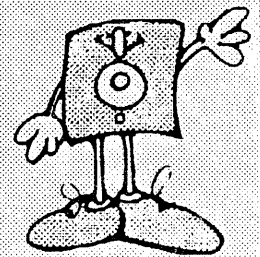
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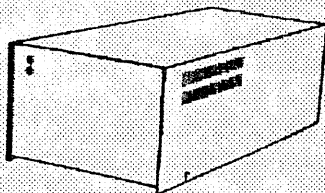
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