

NATGUG

NEWS

Volume 7 Issue 9

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OFFICIAL JOURNAL OF THE

National TRS-80

& Genie Users

Group.

INFORMATION ON THE GROUP

Membership of the Group is by subscription to the Newsletter, which is published monthly. Membership details are obtainable from the Group Secretary. Membership of the Group is open to anyone with an interest in the TRS-80 range of microcomputers, and compatible systems such as the Video Genie.

Details of the Group accounts, and the constitution of the Group, are obtainable from the Secretary.

Members requiring assistance with problems related to the TRS-80/Video Genie may call the Secretary. An attempt will be made to put them in touch with a member who can help with the problem.

Workshops are arranged from time to time in various parts of the country.

Sub-groups exist in many areas. A list is provided in the Newsletter from time to time.

The Group maintains two software libraries (Models I and II) which are free to members. Library lists are obtainable from the Secretary.

For confidentiality reasons, the membership list is not generally available, but members may ask the Secretary for a list of members in their area, and mailshots to all members may be arranged.

Back numbers of the Newsletter are available from the Secretary.

Please send all contributions for the Newsletter to the Editor.

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EDITORIAL

At the AGM, held during the recent Swindon workshop, I resigned as Newsletter Editor. Geoff Smith very kindly volunteered his services as Newsletter Editor for the next year, so, in future, please send all contributions (preferably on disk) to:-

Dr. Geoff Smith,
17 Homefield Road,
Bushey,
Herts.

I also resigned as Chairman, but as it is a mainly titular post, was persuaded to stand again, and was duly elected. Brian Pain continues as Secretary and David Washford as Committee Member, together with Leighton Davies as Software Librarian.

My thanks to Andrew Donald who has pointed out that it was Cobbett, and not Johnson, who disparagingly referred to London as "the great wen". I dredged the quotation up from my long term memory, and didn't check it, hence the error.

My thanks also to Dave Martin who solved the problem with my frequency synthesiser, mentioned in the last issue. There was actually nothing wrong with my circuit, just with my interpretation of the Motorola data sheet.

I recently bought a superb piece of software from Grey Matter for £70. It's a set of B Tree file management functions written in C by SoftFocus, a small Canadian company, and supplied in source code form. I got it on an 8" disk, ported it from the Model II to the QL, and got it working (with some difficulty, I must admit, due to the bugs in Lattice C for the 68000). Once compiled it is very easy to use for the development of applications software written in C and the performance is excellent - any one of 2000 records retrieved in under 2 secs, with floppies. I've asked a couple of QL users with hard disks to try it out with very large files. This package should also be of interest to NATGUG CP/M users, as it should work with the C/80 compiler, although you could have trouble compiling the source, with only 60K or so of TPA available (the standard QL with 128K RAM isn't big enough - I used my 512K system), and might have to split it up into several files, and compile them separately. I'll shortly get it working on the Model II, which will enable me to put the packages I'm developing with it onto the Model 4, and the Amstrad range. I've developed two packages so far - one for union branch membership records, and one for pharmacy labelling.

I would like to thank everyone who has contributed to NATGUG News over the years. Unlike most editors of similar amateur publications, I have rarely had to complain about a lack of material, and have found it an enjoyable and interesting task. I hope your new editor will find it equally enjoyable.

Leon Heller

MEMBERS' LETTERS

First of all I would like to thank all the members who answered my request for the missing part of Bugs from Outer Space. Yes, I realise that it was about four months ago (!), but I haven't had much time to do anything on the computing side leisurewise because I have been involved with a project to translate one of my TRS80 database programs to run on a Matmos PC which our Sales Manager at work has just acquired. Fortunately, it's BASIC is similar to the Model 4's, which is just as well because the manuals for the thing are so awful that I had to dig out all the information I could find about the Model 4 BASIC from 80Micro!

While writing I thought I ought to warn users of the LDOS Toolbox from Powersoft about a problem with the PDIRT/CMD program, which reads TRSDOS 1.3 directories from within LDOS. The program is aptly named, because it is DIRTY! It achieves the reading of TRSDOS disks by changing the Drive Code Table for the selected drive, which includes making LDOS think a disk has 19 sectors, that the directory is really on cylinder 17, and that there are 6 Grants each of 3 sectors each per cylinder. Unfortunately, it doesn't restore the DCT's original information before exiting, with the result that if you now write to an LDOS disk in that drive it will get its granule allocations in a mess and clobber previously-recorded data and certainly the new files will be in a mixed-up state. Just to add injury to insult, it doesn't report that anything is wrong while your writing to the disk because it THINKS it's doing it properly! The only program that I have tried after using PDIRT which does act up as a result is LSI's RDTST/CMD from the Utility1 disk - as soon as it started telling me it was having trouble reading sector 18 I know something must be wrong! My answer to this problem is to assign a spare logical drive (say 4) using MOD3,DCT to use the same drive as drive 1. Write protect this drive and use it exclusively to read TRSDOS 1.3 disks. Once you've finished with it, just DISABLE it, and you're back to normal.

Did you know.....? When in LBASIC you can OPEN"O" devices as well as files? Just try OPEN"O",1,">DO" and then PRINT#1 something and watch the screen! This could be useful for database report programs with the ability to send output to a file, the screen or the printer (or the RS232 I suppose!).

I notice that there aren't that many programs published in the mag., so I have decided to stop NATGUG disappearing when you turn it sideways (!) by contributing some of the utilities and things I have developed for my own use.

R. P. Sainsbury, Park Farm Nurseries, Landford, Salisbury, SP5 2BE.

P.S. I've noticed that the envelope my NATGUG comes in is stamped "Independent QL User's Group" as well!

PROSOFT
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Memo

TO:

Mr. David Washford
6 Houston Wau
Frome, BA11 3Eu
England

DATE:

2/5/86

SUBJECT:

letter of 1/31/86

Thank you for ordering additional DOTWRITER font disks. We've sent them under separate cover, and the combined price for three disks is \$49.95 plus shipping.

→
TDS

Enclosed please find a font catalog summary; we no longer issue update pages or new Reference Catalogs, because the size became excessive. However, each font disk contains a text file that will print the pages for the fonts on that disk, so you can print your own catalog on the actual printer you are using.

We have resumed sales of our products outside of the United States. It became apparent that the pirates were acquiring our software through friends in the U.S.; so the only people we were penalizing were the honest ones who were willing to pay for what they used! (People are a lot more complex and ingenious than any system set up to keep them honest, I guess.)

We expect to have additional fonts in a few months, and will send print samples to all registered DOTWRITER owners when they are ready. Thank you for your support, and please give my best wishes to the other TRS-80 supporters in your group.



Chuck Tesler

SPELLSYS - A cheap and efficient CPM spelling checker.

=====

Spelling checkers come in two types - those like HEXSPELL that scroll through text on the screen highlighting words that they don't recognise and those that grind away analysing the text before presenting you with a list of unrecognised words, out of context, to check and correct. SpellSys is the second type.

The disk comes with a 42,000 word master dictionary, a user dictionary and six .COM files - SS is the executive programme which controls SPELL, REVIEW and FIX which create the word list, review the words and replace misspelled words respectively. CONFIG allows you to specify default drives for output files and set SpellSys up for whichever word processor you use. WORDS is a standalone programme which rearranges a group of letters and checks to see if the new combination is in the dictionary.

Before running SpellSys with any word processor for the first time you need to run CONFIG, which asks for the characters used to identify lines such as formatting lines, which you want it to ignore, and for embedded characters to ignore like soft hyphens. If you use more than one word processor you can have an appropriately configured version of SS for each. You can also temporarily add or remove control, embedded or delimiter characters when entering SS

To use SpellSys just enter SS and enter drive and file names when prompted.

SS calls WORDS.COM which analyses and sorts the words in the file. It displays the total number of words and number of different words and then looks up all the words in the master and user dictionaries, making a temporary file of those not found in either.

REVIEW.COM then takes you through the unrecognised words one by one asking if you want to -

- show it in context
- Look up the dictionary
- Correct a Misspelling
- Put in user dictionary
- Ignore it
- Go to Previous word
- Skip to next word
- Exit reviewing.

Show in context searches sequentially through the file and shows all lines in which the word appears, with line numbers and the word marked in reverse video. The dictionary lookup allows wildcards and is very fast but only the main dictionary is searched, not the user one. You can go back and forward through the list as much as you want, unlike some much more expensive spelling checkers. When the end of the list is reached SS displays 'this is the last word' and entering Exit then calls FIX.COM which automatically replaces the mis-spelled words in the source file with the corrected version and updates the user dictionary.

SpellSys works exactly as described in its manual. The only part which needs attention from the user is the actual review of words. I can't compare its speed with other spelling checkers as I never used CPM for word processing before taking on the dBase User Group magazine but for a 20K text file it took about 4 minutes to do the word analysis and dictionary checks and 1 minute to replace the 3 misspelled words in that particular article. I have also used it to check our year-end diagnostic index which was almost 200 K and that took about 15 minutes to analyse, but I don't think that matters as the programme only needs attention when actually reviewing the list of unfamiliar words.

If the programme is started by entering SS the three .COM files are called automatically as required but they can also be used alone to sort word lists and add words to the user dictionary. SPELL.COM can also be used to sort or merge any Ascii files with records up to 128 characters and separated by line feeds, deleting any duplicated records in the merged file.

This is an American programme and the main dictionary of course has American spelling and cannot be easily changed. The user dictionary is a simple ASCII file and can be edited with any word processor (it must be saved in non-document format though)

The stand-alone programme WORDS.COM also included on the disk seems designed for crossword puzzle addicts. It takes a group of up to 15 characters and lists all words in the dictionary that use all, or just some, of the characters. Naturally the time it takes depends on the number of letters supplied - between 3 and 4 minutes to unscramble a 15 letter word

SpellSys must be one of the best bargains outside the public domain. Its cost is under \$30 and it seems to do as much, if not more than the usual CPM spelling checkers in the over \$150 range. There is a 30 day money-back guarantee which, in my experience, usually guarantees a good programme. It also has the most sensible licensing agreement I've seen yet - no restriction on the number of copies you can make for your own use and the owner is encouraged to make one copy for someone else to try. If the borrower likes the programme they can become a registered owner for only \$15.

SpellSys is produced by MicroGroup, Po Box 65, Bend, OR 97709, USA

Ariela Taylor
42 Davenham Avenue
Northwood
Middx

ZBasic Compiler

The full price of Zedcor's latest version of ZBasic is around £80, allowing for arrangements to pay in US dollars and a guess as to the future value of our £!

For Model I & III: When version 3.0 was originally announced there was a special upgrade price (from v.2.2) for around £55 if you sent your old disk in by the end of November - 1985. For us Frits Zedcor have now agreed to extend this offer until the end of April. I told them news was slow in reaching this country, and they replied by extending the deadline.

For Model 4 & 4P: (or IBM PC's, Macintoshes, Apple IIe/c etc.) the full cost of £80 holds. BUT if we can raise at least 5 orders this falls to £60.

Any takers? Contact Vernon Blackmore, 64 Glenorchy Road, Sheffield S7 2EN
Phone (0742) 584685

A ZBasic 2.2 'Dostamer'

While on the subject of ZBasic I have written a simplified DOS shell like the Dostamer available from Molimerx. The Dostamer advertised there looks a marvelous programme, and no doubt it is on a Model 4. However, the Model I (and I assume Model III) version has far fewer facilities than the write-up in the Molimerx catalogue. I don't think Molimerx themselves realised this when they produced their blurb; certainly Mr. Harding was very willing to refund my money when I complained.

So out came my ZBasic 2.2 and I now have a DOS shell for LDOS on my Model I. Does anyone want a copy? The basic idea is that it auto boots and displays the disk directory in 3-across format. You can then tag filenames and perform mass copies or deletes. Placing the cursor over a /CMD programme or a /BAS file will run that file, first loading LBASIC if necessary.

Obviously I've written the shell with my own needs in mind, and it is far from a generalised DOS shell such as Dostamer. However, for a lot of routine operations it has made my life easier. To a limited extent I could customise a version for your own needs, e.g. change the call to Superscript to Visicalc or whatever. But remember it's for LDOS on the Model I and I doubt whether it would transfer to another operating system since I've used LDOS locations and system calls.

Vernon Blackmore 64 Glenorchy Road., Sheffield S7 2EN Tel: (0742) 584685

BENCHMARKS

Here is another offering for your TRS-80 Newsletter. It's on an old subject, but may provide some amusement. Twenty or so years ago, long before the days of micros, computing was done on main-frames. Round about then I was involved in setting up a REMOTE-JOB-ENTRY (RJE) terminal to a far off 1107 machine. Various other facility suppliers also wanted our custom. They all told us how fast their processors were and could sometimes quote figures for 'Gibson mixes' and the like for cpu actions; but it seemed to me that we also needed to know about the effects of software, after all we were not interested in trophies for best machine speed, we wanted results. So I wrote a FORTRAN routine which was small enough to avoid writer's cramp yet was guaranteed to load the machine in a not unrepresentative manner; it was named HORROR. In fact a couple of weeks after first testing HORROR an engineering problem arose which, from the computing operations aspect, was quite similar.

The new-fangled things called mini-computers, time-sharing services and programmable pocket calculators were coming along, so HORROR was tried on as many as possible. The results were quite illuminating. The standard run in those days used 50000 iterations, but if the calendar wouldn't permit so much then fewer were used. The fastest found was 4 seconds on a CDC 6600 and the slowest was around two days on either the DEC PDP8S or the Hewlett Packard programmable calculator of the day (cannot recall which took what, but the other took about half the time). I haven't been able to try it on a CRAY.

When micros turned up naturally they too were subjected to HORROR, although usually the iterations were limited to 32766. Again the results were most interesting and, in a devious way, had some bearing on my decision to set up on my own, but that's another story.

HORROR PROGRAM

```
10 REM HORROR (C) Copyright N.C.Baust
20 X=0: INPUT "N=";N%: IF N%=0 THEN END
30 FOR I%=1 TO N%
40 X=X+SIN(EXP(COS(I%))): REM Sometimes (FLOAT(I%))
50 NEXT
60 PRINT I%, N%, X, X/N%
70 GOTO 20
```

Essentially HORROR is a composite test of software efficiency, effects of resolution matching, word length, clock speed, cpu operations and scheduling. When a program calls for, say, COS(X), you not only expect the library routine to be reasonably accurate but also to run to appropriate resolution. In other words the algorithm should use as few terms as possible (to keep time low) but enough to match the resolution in the result.

The duration of this work is obviously dependent on the number of bytes to the variable for any given clock speed. If we assume that the functions use 5-term polynomials, evaluated in nested fashion, then every iteration involves about 15 each of floating point additions and multiplications, plus use of multi-brackets. There is also an INTEGER to REAL conversion.

Overall the 32766 iterations involve maybe half a million additions and half a million multiplications; quite a load, and note that the algorithms may use other than 5 terms. Of course in a multi-tasking or time-sharing mode then turn-round time is also affected by the amount of other work the system is doing, i.e. how much overhead is used by the OPSYS in allocating cpu time to tasks, etc. as well as how much time is allocated to those other tasks.

Recently HORROR was run on several micros and under various operating systems. The following table of results has times in seconds. The value of X (for N=1000) shows the final resolution of each system although not all calculations done in HORROR are necessarily to that extent.

No attempt has been made to find coding which produces fastest results on each machine, that would be a different exercise. What was done was to use (as near as possible) the same direct style of coding on all machines.

Five comments:-

a) Quite obviously the tremendous amount of type conversion (INTEGER to REAL) incurs extreme penalties in the 6,8 byte/REAL systems; note the non-linear growth in time with iterations.

b) Just as claimed, the TRS-80 internal clocks lose time, i.e. effectively run slow so that timing by differences between start and stop TIME\$ are low; see figures for model III.

c) The model I performs well in comparison with the new 'super' systems except under CP/M CBASIC where it took almost 8.5 days (12169 mins=730140 secs). (There is no clock in CP/M so auto-timing is not possible. Both test runs ended during the night, so devious means had to be used to compute the end time.) Note that the CP/M runs in 14 figure resolution, presumably for all real number calculations. Actually this took so long to run that, for a while, it became a way of life to check the display on getting-up, returning from work and prior to going to bed. Since there was no way of monitoring operation without interfering with or disturbing the run (batteries in the radio need replacing), it was an act of faith to keep the machine on all that time.

d) If you are interested in speed-up mods, try contacting Os House.

e) What have ACORN been up to in the BBC (resolution v speed)?

Norman Baust

HORROR cpu time in seconds

Micro	X for 1000	N=100	N=1000	N=10000	N=32766
TRS-80 I	649.32	9	87	880	2880
10.64MHz XTAL, 1.774MHz cpu, NEWDOS+, 8 bit*4 byte REALs					
ibid OMIKRON MAPPER CP/M (? 8 bit*6 byte REALs in CBASIC)					
OBASIC	649.321	7.8	79		
MBASIC	649.321	8.5	74.5	781	2530
CBASIC	649.321389813	94	1342	65700	730140
TRS-80 III	649.322	7	64	643	2104 (2485 by stopwatch)
10.14MHz XTAL, 2MHz cpu, TRSDOS, 8 bits*4 bytes REALs					
ibid + speed-up mod			25	256	839 (904 by stopwatch)
ibid and compiled		7	61	615	
ibid in DBL	649.3214636445046		60	662	2169
TRS-80 4P	649.322	6	62	622	2035
= III, 2MHz cpu, TRSDOS					
TRS-80 4P	649.321	3	20	291	951
= 4P, 4MHz cpu, TRSDOS					
TRS-80 4P	649.321	3.8	35.5	354	1126
= 4P, 4MHz cpu, MONTEZUMA CP/M					

BBC 649.321392 6.47 64.7 648.1 2122
16MHz XTAL, 2MHz cpu, DOS, 8 bits*4 bytes INT, *5 bytes REALs

68008 upgrade 649.32139 8.49 85.6 1276 7627
8MHz cpu, OS9, 8 bits*4 byte INT, *8 byte REALs

ANALOGUE DEVICES 150 649.322 .266 2.7337 27.217 89.247
? XTAL, ?cpu, ?co-proc, MACBASIC, 8 bits*2 byte INT, *4 byte REALs
Micro-MAC 5000 11.4 117 1177
(Simpler version of AD 150)

IBM XT 649.322 5 52 512 1674
? XTAL, ? cpu, NO co-proc, ? PC DOS, ? 8 bits*2 byte INT, *4 byte REALs

DOUBLE PRECISION and/or compile on TRSDOS/NEWDOS runs has little effect on cpu time for HORROR because the maths functions are SINGLE PRECISION, only X is DBL.

MORE ON dBASE II =====

As a long-time (by micro standards) user of dBASE II I'm pleased to see it spreading among NATGUG members. Bugs notwithstanding I think it deserves its place as top selling data management programme for 8 bit machines, if only because of its flexibility. dBASE is actually a programming language rather like BASIC with some features of PASCAL and writing your own data based applications in it is as easy as writing in BASIC with all the file and index handling code done for you. It has a reputation as difficult to learn, which I'm sure Dave Holman's articles will show to be unjustified; it is probably just due to a large but limited manual. The fact that there were over 20 books on dBASE in the last computer book list I saw says enough about the manual's quality.

The most recent version of dBASE II is 2.43* (sorry Dave), which has only recently become available in the UK. Anyone about to buy should be sure that they get this and not 2.43 (no star). This is VERY important as 2.43 had a bug affecting APPENDs to indexed files and the only solution Ashton Tate (the publishers of dBASE) had to offer was to suggest that you APPENDED without the index and re-indexed afterwards. Fine for small data files but mine are near the 8 Mb limit by the year-end and have indexes in constant use

Like most large and complex programmes dBASE has bugs, which vary for each version but are mostly not as catastrophic as 2.43s APPEND one. Version 2.3B, where I started, used to add empty sectors to programme files edited with the built in editor (removed again by PIPing with both V and E options), occasionally ran the .BAK file instead of the .CMD one and, much more serious, used to get data and programme files mixed up. I was thinking of invoking the Trades Description Act when Ashton Tate set up its UK branch and I finally found someone who knew about the bugs and told me they were being corrected in version 2.4. 2.4 had stack problems under certain conditions but they could be programmed round and it ran our rather large and complex laboratory record system for almost 3 years. I don't know about versions 2.41 and 42 as they didn't offer any improvements that we wanted and we obviously didn't get 2.43 but I've had an evaluation copy of 2.43* for about

three months now and we've found no real problems. Ashton Tate do have a 'hot-line' and also publish a rather pricey monthly magazine called Tech Tips which includes bug reports, with their solutions if possible.

I'd also like to draw the attention of 'serious' dBASE users to the existence of the UK dBASE User Group. This runs quarterly London seminars and a bimonthly magazine (of which I'm the present editor). The subscription is £25 + vat, and most of the members are either corporate users or computer 'professionals' so it is nothing like as friendly as NATGUG but still useful to those who have to use dBASE

Ariela Taylor
42 Davenham Avenue
Northwood
Middx

OGGY OGGY OGGY

And yet another really great Swindon Weekend passes into memory ! It truly was wonderful, not only to see so many people there, but also to see how many came early on Friday - at least a dozen by lunchtime, followed by a steady stream all through the afternoon, although zapper John Newgas and data 'Star' Ariela were missed. It was good to see that most of last autumn's absentees, including that benign boatee, were back again. The hotel excelled itself once again, allowing us the full Table d'Hôte menu for Dinner (\$9.95 Friday night and \$12.75 on Saturday). For the few of you who didn't come, the next one is already booked, **OCTOBER 17th-19th**, and the Hotel will accept reservations on 0793 28282.

The best part about Swindon, for me personally, was that I finally acquired two 80/40 double-sided drives - and my Model 4 Super Utility actually boots now ! Peter Hall kindly got and fitted them for me, and I understand from Os that supplies are now at last becoming more plentiful. Anyway the transportation of software from 40I SS to 80I DS has begun - do these disks ever get full ? !

Who likes puzzles ? Dave Holman showed me a CP/M script package that he'd written, and worked well on his Model 4 and MX80 outfit; put the disk into my machine and the printer would generate an extra line feed - ruining the effect. One would suspect dip-switches, and so these were manipulated profusely - with no effect. We swapped printers - still no good, but my printer on his Model 4 was fine. Eventually we swapped the actual printer cable and, Presto, the extraneous linefeed disappeared down its own carriage return !! Persistent examination by Keith Howell revealed that pin 24 needed to be disconnected for this one piece of software to work - although my faithful original cable works everything else. I mention it in the hope that it might help someone else in difficulty.

At the AGM, held also this weekend, Leon resigned as Chairman and Newsletter Editor, and declined to stand for re-election. A major disaster was averted by splitting these two functions and persuading Leon to continue as our Chairman. Dr Geoffrey Smith is our new Magazine Editor, but for one year only, so will all the budding Robert Maxwells ensure that their names are on next year's nomination list. One immediate benefit of Geoff's editorship will be

that HE will print out all contributions sent to him on disk, and so if you'll all kindly submit your articles to him on disk then the quality of the next NATGUG magazine is promised to be tremendously improved. Please include a return label and postage with your disk.

Of major concern at the AGM, once again, was the low number of members. Folks, you must understand that we are extremely close to becoming non-viable and this danger can only, in practical terms, be averted by heavy recruitment. It has been proposed that we court firstly the serious Amstrad user (common Z80 and CP/M), and then later the IBM clone gang (common MS-DOS), and if that is the way to ensure that our Group, our Magazine, and our Workshops, all continue then so be it. But can I ask you all to give us your full support in recruiting more TRS80 users ? We nearly all seem to know someone who has just picked up a second-hand model I or III or even a 4 (and who was it that got a Model II for \$70?) - can we persuade them to join Natgug, especially whilst Brian is offering a special rate of 12 months for \$10 ? I've enclosed a couple of forms for you to send in - Brian has more when you need them !

It seems to be mandatory now that when talking of Swindon then one must mention Don Bannister. Well, would you believe that in the restaurant on Saturday night they'd laid on a St. Patricks night ? !

David Washford, 6 Houston Way, Frome, Somerset BA11 3EU (0373 72739)

RANDOM ACCESS FILES

In the December 85 issue M.C.Matthews had a report on the model 4 and random file allocations which left me perplexed. There were FIELD statements defining GF\$ (and other variables) and later calls of LSET GF\$=..... and finally GF\$=.... The point of the last was to allow clearance of strings from memory, but it would also wipe out the definition in the field statements rendering further disc accesses under the original definitions impossible (model I manual; models III and 4 empirically so).

The GF\$ string definition code remains in memory, and it seems to me that if there is no statement such as GF\$=.... then (in respect of GF\$) the space occupied remains as specified by FILES at the time of the call for BASIC (from TRSDOS) whatever referencing is made of GF\$. Garbage clearance does not affect the FILES space - each string in a FIELD definition occupies only one region in memory and that FIELD space remains at least until the file is closed. Strings not defined in FIELD statements do accumulate in memory (on each re-assignment except perhaps for MID\$()=...), whence the need for clearance, e.g. by FRE(A\$). In other words, if Mr. Matthews dropped his use of GF\$=... there would be no need for garbage clearance on that score.

A further point, if there really is a need to concatenate all those string representations into GF\$ in the FIELD statement, it can be done at one go, i.e.

```
LSET GF$=MKD$(BBE)+MKI$(NI)+MKS$(N3)+.....+MKI$(F2)
```

This will remove almost all of those LSET and LEFT\$() code repetitions - which take up lots of memory.

An oddity noticed ages ago is that the manuals say that FILES specifies the maximum number of files which can be open simultaneously i.e. it presumably is used to allocate overall field space. However it seems rather to specify the highest number a file may have, i.e. FILES 4 means you can have open any combination of files 1,2,3 and 4 but you could not have 1,3, and 5. (Which was a nuisance when first discovered, it meant retyping a lot of code when a change in requirement allowed a reduction in open files.)

PATCHES FOR ALL =====

This article collects together a number of program modifications which might be useful to some members of NATBUG. If any of them make you yawn because you've seen them umpteed times before, please forgive me - hopefully they'll be of use to new members who haven't!

DIAG/CMD - Users of Howe Software's System Diagnostics program may already be aware that after use of this program, certain DOS commands can crash the system - indeed, in my case it also crashed the system disk! (Thankfully, good old Super Utility was able to totally recover it). I have traced this to the fact that the "Byte I/O" hook from ROM (which is contained at address 4033H) has been corrupted, but as yet I haven't been able to find out why, so until such time as I do, here is a patch that makes the "Exit Program" option reboot so that the corrupted DOS is reloaded. I know it's not A Good Thing to have programs reboot when finished, but it will save your disks!

Address 5312: Change from 2D40 to 0000.

PDRAW/CMD - Hands up how many PowerDraw users who are fed up with being asked "Tape or Disk" each time they load or save a file? Join the club! The following modification will bypass this prompt and default to disk operation only.

Address 6317: Change from 21816BCD to 3E44180D.

The following patch ensures that the correct buffer number is put into the heading on "source" files (It currently seems to send the highest used buffer instead).

Address 557C: Change from 0C to 2D.

I also have a few useful tips on PowerDraw:

1. You can type PDRAW * to recover buffers after accidental exit instead of holding down "R" during load.
2. You can type PDRAW FILENAME to automatically load a file when PowerDraw has loaded.
3. Assembler "source" files will not load into the Tandy Series-I assembler because PowerDraw assumes a file header which Series-I doesn't have. You can make it load by replacing the first 7 bytes of the file with 80B2B0B0B0200D. Once loaded, delete line zero and re-save it.

TRSDOS 1.3 - The first patch for this (non-standard!) operating system is to get rid of the "Type in up to 63 characters" message in the BUILD command: it clutters the display and means you can only see the last eight lines you have typed.

PATCH *5 (ADD=5FE4, FIND=CD1B02, CHG=000000)

The next one cuts about 2 seconds off the (long) boot time by stopping the DOS testing for non-existent drives. As it stands, it should only be used on 2-drive systems.

PATCH *6 (ADD=4EE2, FIND=00, CHG=01)

PATCH *0 (ADD=4EE4, FIND=04, CHG=01)

The first line starts the drive-test from drive 1 (what's the point of testing drive 0(!)?). The second line makes it only test one drive instead of four, so once it has restored the head on drive 1 it will immediately return to drive 0 and continue the boot process. If you add external drives you will of course have to reverse the patch to use them.

The following patch for TRSDOS 1.3 comes from The Alternate Source (hope they don't mind my reprinting it!), and corrects ".....a wonderful little bug which can destroy the operating system environment". Apparently, the AUTO command was written by the same idiot who decided to keep the directory sectors looking tidy by wiping out the record for a file being killed, thus preventing any chance of recovery. In this case, he has arranged that the AUTO command buffer is padded out with blanks to fill the 32-byte space. It is done by padding out the DOS command-line buffer before copying it to the GAT sector, but unfortunately a slight error in calculation means that if the hapless user types in an AUTO command with 32 or more characters it's goodbye DOS and probably goodbye disk as well! OK, so who's going to do that anyway? Well, as TAS says, "The wonderful charm of computers and programming is that you can always depend on someone at some time to do something out of the ordinary". They even give a suitable AUTO command to prove it:-

AUTO GREAT WAY TO CRASH A TRSDOS DISK(ENTER)

Try it at your peril! I disassembled the code instead, and sure enough, they're right! Anyway, the answer is simple - stop it padding out the buffer: it's unnecessary, and it doesn't crash the system.

PATCH *6 (ADD=531A,FIND=3620,CHG=0000)

Incidentally, it IS possible to have a legitimate AUTO command that long, such as:-

BASIC PROGRAM/BAS -F:4 -M:40000(ENTER)

Remember that (ENTER) counts!

LDOS: BOOT WRITE-PROTECTED! - The following method described how to patch LDOS so that drive 0 boots write-protected. It involves changing a single byte in CONFIG/SYS. It will be necessary for me to describe why it works rather than give an "instant" patch because it will vary depending on your system. I am using LDOS version 5.1.4 on Model III: other versions may vary slightly.

The CONFIG/SYS file is made up of a number of load-module blocks just like any /CMD file. First there is a header, then 19 bytes that get written directly to the screen (the "****CONFIGURING****" message), a 1-byte block to disable interrupts, followed by as many blocks as are necessary to hold the contents of protected memory, followed by 2 bytes which contain the value of HIGH%. (The protected-memory blocks are obvious because of their load address). Then there comes a lot of short blocks, the exact number and size of which will depend upon the DOS version, the model (I or III), and the requirements of your configuration. At the end of the file are another 19 bytes that get rid of "****CONFIGURING****", and just above this is the block we are interested in. It has 80 bytes and loads from 4152H on my version. This block contains the Drive Code Tables as they were at SYSGEN. Note that these do NOT load into the locations your LDOS manual tells you for the DCTs. (Think about it!). You will have to find out for yourself where they load. You could use CMDFILE, although I used a BASIC program modified from "Machine Language Disk I/O and Other Mysteries" to do it (Anyone who would like it please send me an A4 s.e.a. for a listing. I have a TRSDOS and LDOS versions, please state which). WARNING! Don't use something like Monitor-5, because it will actually load CONFIG/SYS into memory, and this could cause havoc!

Using LSI's DCT/CMD, look at the table for drive 0 when it's NOT write-protected, and you should see something like this:-

Logical Drive 0

X'4700' = C3 85 45 44 41 05 27 11 45 14

X'C3' = 1100 0011	Enabled
X'85' = 1000 0101	LSB of Disk Driver
X'45' = 0100 0101	MSB of Disk Driver
X'44' = 0-1-0-0-0-1-00	DD, 5", Floppy, 0.5 sec, 6 ms
X'41' = 0-1-0-0-0001	DDC, Sides=1, STD DC, Phys #1
X'05' = 0000 0101	Current Cylinder = 5
X'27' = 0010 0111	Cylinder Count = 40
X'11' = 000-10001	Sectors/Track = 18
X'45' = 010-00101	Gran/Track = 3, Sectors/Gran = 6
X'14' = 0001 0100	Directory Cylinder = 20

If you now software-write-protect drive 0 and run DCT/CMD again, you'll see that relative byte 3 has changed:-

Logical Drive 0

X'4700' = C3 85 45 C4 41 05 27 11 45 14

X'C3' = 1100 0011	Enabled
X'85' = 1000 0101	LSB of Disk Driver
X'45' = 0100 0101	MSB of Disk Driver
X'C4' = 1-1-0-0-0-1-00	WP, DD, 5", Floppy, 0.5 sec, 6 ms

....(The rest as before).

(If you don't have DCT/CMD, use DEBUG to see the DCTs and read the description in the LDOS Technical Section). From this, you can deduce that you have to SET bit 7 of relative byte 3 of drive 0's DCT within CONFIG/SYS to boot up write-protected. Now it's easy! Using FED, display CONFIG/SYS.CCC, and (L)ocate the start address of the block of DCT's and move the cursor 3 places right (to relative byte 3). Now, look at the byte there, and change it so that bit 7 is set and so that NO OTHER BITS CHANGE! This last point is important - get it wrong and it'll throw a wobbly! (S)ave the record to disk, E(X)it FED, reboot and Viola!

The patch is easiest removed simply by un-write-protecting drive 0 and re-SYSGENning. You could possibly apply the patch as an X-patch, but it'll make CONFIG/SYS longer. Don't ever try a D-patch because the position within CONFIG/SYS of the required byte varies depending upon the configuration done.

BOOTSTRAP STEP-RATE - As LDOS users know, the Bootstrap Step-rate is set when you FORMAT a disk. Now, suppose you want to give the disk to someone with non-Tandy drives and they moan that it won't boot? On the other hand, you may have been given a disk by that same person and want to speed-up it's boot time by changing the steprate from 30ms to 6ms. Here's how: Decide on the required steprate and convert it into the required byte as follows:- 6ms=1BH, 12ms=19H, 20=1AH and 30=1BH. Now, apply this patch.

PATCH BOOT/SYS.SYSTEM (D00,95=XX:D01,95=XX)

where XX is the required number. There are two sectors to patch because LDOS (at least the Model-III version) has two Boots, one on sector 0, the other on sector 1. This is necessary because the Model-III ROM expects it's Boot to be on sector 1 (for TRSDOS's oddball format!), whereas LDOS must refer to it's Boot on sector 0 for Model-I compatibility! A similar technique may well work to make TRSDOS 6 boot on slow-step drives (I suspect that also has two Boots because it must use the Model-III ROM bootstrap loader before it switches into Model-4 mode).

SYSTEM INFORMATION - Cylinder 0, sector 2 on an LDOS system disk contains the so-called System Information. Beginning from relative byte 70H can be found the default Drive Code Tables which are used to set the drive configurations in the absence of CONFIG/SYS, or when a global RESET command is performed. (there seems to be a duplicate set starting at 20H, but these do not seem to do anything!). These tables are set out in the usual way as shown above, and can be zapped to change the default information. For instance, a Model III owner with slow-stepping drives will find that after doing a global RESET command, he will then have to reset the STEP parameter for the non-system drives. To change the defaults to avoid this, zap relative byte 3 of each DCT accordingly, using the same method as for changing software-write-protect previously described. The best way to be sure you are right is to do a global reset, then set the STEP parameter as needed and then examine the DCT's in memory to see how to change the defaults.

Another useful trick for 2-drive owners is to prevent the automatic re-enabling of drives 2 and 3 upon global reset or reboot without CONFIG/SYS. To do this, make the following patch:

PATCH BOOT/SYS.SYSYSTEM (D02,84=C9:D02,8E=C9

To return to normal, use C3 instead of C9.

Some other useful locations in CYL 0, SEC 2 are:

Byte 00: Always contains 51H, even on data disks.

Byte 01: C9H=CONFIG/SYS active, 0=not

Byte 02: 0=Date prompt ON, FFH=not

Byte 03: 0=Time prompt ON, FFH=not.

FED PATCH - Would you like FED to start up using the tidy 128-byte display mode instead of the untidy 256-byte mode? OK, here's what you do. Type the following to modify your FED:

FED FED/CMD.RRW3(ENTER) Load FED to modify itself

LE017 Locate address 5017H

H01(BREAK) Change the display mode flag

S(ENTER) X(ENTER) Save change and exit

This works with the free FED that comes with LDOS 5.1.4. I don't know about other versions

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**** Some typo's I found after printing this article:

There are a few @ symbols that should really be 0.

In the list of System Information bytes above,

The "CONFIG/SYS" flag info is transposed - that is,

C9H=CONFIG/SYS NOT active, 0=Active. Sorry about that!

DISKNAME - A utility for TRSDOS

=====

This program provides the facility to change the name and/or date of TRSDOS 1.3 disks. With modifications, it should also work for Model I TRSDOS 2.3.

Assemble the listing below, and give it the filename DISKNAME/CMD. To run the program, type DISKNAME :d at TRSDOS Ready. :d is an optional drive number, which defaults to drive 0 if omitted. Single-drive users need not have a copy of the program on every disk - just specify :0 and the program will prompt for you to swap disks.

The program will first display the current name on the disk and prompt for a new one. Enter a new date, or press (ENTER) if you don't want to change the name. Next you will be prompted for the date in the same way. You may a) Type in a new date, b) Press (ENTER) to leave the date unchanged, or c) Enter a single slash (/) to take Today's Date from the system clock. The entered date MUST be valid or the program will print an error message and re-prompt for the correct date. (To avoid complications, the program will NOT accept Feb 29th, but as this only happens once every four years it won't matter too much!). The date and time will then be re-written to the disk and a return taken to DOS. Note that at any of the prompts you may press (BREAK) and the program will abort without changing anything.

```

00100 ; * * * * *
00110 ; *   DISKNAME - NOVEMBER 1985   *
00120 ; *   SYSTEM   - MODEL-III/TRSDOS 1.3   *
00130 ; *   CHANGES DISK NAME AND CREATION DATE   *
00140 ; * * * * *
00150 ;
00160      ORG      7000H
00170 KBCHAR EQU    002BH      ;SCAN KEYBOARD
00180 VDCHAR EQU    003BH      ;DISPLAY CHAR. ON VDU
00190 KBLINE EQU    0040H      ;GET LINE OF I/P FROM KB
00200 VDLIN EQU    021BH      ;DISPLAY MESSAGE ON VDU
00210 DATE EQU     3033H      ;GET TODAY'S DATE
00220 CURSOR EQU    4020H      ;POINTER TO CURSOR POS'N
00230 EXIT EQU     402DH      ;EXIT TO TRSDOS
00240 ABORT EQU    4030H      ;ABORT TO TRSDOS
00250 ERRDSP EQU    4409H      ;DISPLAY TRSDOS ERROR
00260 RDGAT EQU    4A93H      ;READ GAT SECTOR
00270 WTGAT EQU    4A9BH      ;WRITE GAT SECTOR
00280 SYSBUF EQU    4D00H      ;SYSTEM SECTOR BUFFER
00290 START XOR     A        ;SET SPACE COMPRESSION
00300      LD      (CURSOR+4),A ;MODE
00310      LD      A,(HL)       ;CHECK FOR DRIVE NUMBER
00320      CP      ' '
00330      JR      NZ,DEF0      ;DEFAULT IF NOT
00340      INC     HL
00350      LD      A,(HL)       ;GET DRIVE NUMBER
00360      SUB     '0'          ;CONV. TO BINARY
00370      LD      (DRIVE),A     ;SAVE DRIVE
00380      JR      NZ,DEF0      ;GO IF NOT DRIVE ZERO
00390 SWAP LD      HL,(CURSOR) ;GET CURSOR POS'N
00400      LD      A,(HL)       ;GET CHAR. FROM SCREEN
00410      CP      ' '
00420      JR      NZ,BLANK     ;IS THE MESSAGE THERE?
                                ;YES, GO REMOVE IT

```

00430		LD	HL, PRSWAP	:DISPLAY MESSAGE
00440		CALL	VDLINE	
00450		JR	TIME	:SKIP NEXT BIT
00460	BLANK	LD	A, 30	:BLANK OUT MESSAGE
00470		CALL	VDCHAR	
00480	TIME	LD	BC, 0200H	:SET TIME DELAY COUNTER
00490	LOOP	PUSH	BC	
00500		CALL	KBCHAR	:SCAN KEYBOARD
00510		POP	BC	
00520		CP	13	: (ENTER)?
00530		JR	Z, GO	
00540		CP	1	: (BREAK)?
00550		JR	Z, GO	
00560		DEC	BC	:COUNT DOWN....
00570		LD	A, B	
00580		OR	C	
00590		JR	NZ, LOOP	:REPEAT IF NOT ZERO
00600		JR	SWAP	
00610	GO	PUSH	AF	:SAVE KEY CODE
00620		LD	A, 30	:BLANK OUT MESSAGE
00630		CALL	VDCHAR	
00640		POP	AF	:GET BACK KEYCODE
00650		DEC	A	:ZERO IF (BREAK)
00660		JP	Z, ABORT	:CHICKEN!
00670	DEF0	LD	A, (DRIVE)	:GET DRIVE NUMBER
00680		LD	C, A	
00690		CALL	RDGAT	:READ GAT TO SYSBUF
00700		JP	NZ, ERRDSP	:ABORT IF I/O ERROR
00710		LD	HL, SYSBUF+0D0H	:POINT TO NAME FIELD
00720		LD	DE, PRNAME+6	:LOC. IN NAME PROMPT
00730		LD	BC, 8	
00740		LDIR		:COPY NAME TO MESSAGE
00750		LD	DE, PRDATE+6	:LOC. IN DATE FIELD
00760		LD	C, 8	
00770		LDIR		:COPY DATE TO MESSAGE
00780		LD	HL, PRNAME	:PROMPT FOR NEW NAME
00790		CALL	INPUT	:AND GET IT
00800		JR	Z, NAMEOK	:ACCEPT CURRENT NAME
00810		LD	DE, SYSBUF+0D0H	:NAME FIELD IN GAT
00820		CALL	UPDATE	:PUT NEW NAME INTO IT
00830	NAMEOK	LD	HL, PRDATE	:PROMPT FOR NEW DATE
00840		CALL	INPUT	:AND GET IT
00850		JR	Z, DATEOK	:ACCEPT CURRENT DATE
00860		LD	A, (HL)	:GET 1ST CHAR.
00870		CP	'/'	:DO WE WANT TODAY'S DATE?
00880		CALL	Z, TODAY	:GO LOOK AT CALENDER!
00890		PUSH	HL	:SAVE BUFFER POINTER
00900		CALL	VALID	:CHECK FOR VALID DATE
00910		POP	HL	:GET BACK POINTER
00920		JR	NC, ACCEPT	:DATE IS OK
00930		LD	HL, DERR	:DISPLAY ERROR MESSAGE
00940		CALL	VDLINE	
00950		JR	NAMEOK	:TRY AGAIN!
00960	ACCEPT	LD	DE, SYSBUF+0D8H	:DATE FIELD IN GAT
00970		CALL	UPDATE	:PUT NEW DATE INTO IT
00980	DATEOK	LD	A, (FLAG)	:ANY CHANGES MADE?
00990		OR	A	
01000		JP	Z, EXIT	:DON'T WRITE IF NOT
01010		LD	A, (DRIVE)	:GET DRIVE TO UPDATE
01020		LD	C, A	
01030		CALL	WTGAT	:WRITE UPDATED GAT

```

01040      JP      NZ,ERRDSP      ;ABORT IF I/O ERROR
01050      JP      EXIT          ;RETURN TO TRSDOS
01060 ;
01070 ; ***** SUBROUTINES
01080 INPUT  CALL    VDLIN        ;DISPLAY PROMPT
01090      LD      HL,INBUF        ;GET KEYBOARD INPUT
01100      LD      B,8             ;MAX. INPUT LENGTH
01110      CALL    KBLIN
01120      JP      C,ABORT         ;CHICKEN!
01130      INC     B               ;CHECK FOR NOTHING INPUT
01140      DEC     B
01150      RET
01160 UPDATE LD      A,(FLAG)     ;SIGNAL AN UPDATE
01170      INC     A
01180      LD      (FLAG),A
01190      EX      DE,HL            ;SWAP POINTERS
01200      LD      B,8             ;LENGTH OF FIELD
01210 COPY   LD      A,(DE)       ;GET CHAR. FROM INPUT
01220      CP      13             ;CR?
01230      JR      Z,PADOUT       ;FILL REST WITH BLANKS
01240      LD      (HL),A           ;COPY TO NAME/DATE FIELD
01250      INC     DE              ;BUMP POINTERS
01260      INC     HL
01270      DJNZ   COPY             ;DO NEXT CHAR.
01280      RET                     ;NO PADDING REQ'D
01290 PADOUT LD      (HL),' '     ;STORE A SPACE
01300      INC     HL
01310      DJNZ   PADOUT           ;FILL NEXT POS'N
01320      RET
01330 TODAY  PUSH    HL           ;SAVE INBUF POINTE
01340      CALL    DATE             ;PUT "TODAY" INTO IT
01350      LD      (HL),13         ;TERMINATE WITH CR
01360      POP     HL              ;POINT BACK TO START
01370      PUSH   HL               ;AND SAVE IT AGAIN
01380      DEC     HL              ;POINT BACK TO
01390      DEC     HL              ;CURSOR CODES
01400      CALL    VDLIN           ;DISPLAY TODAY'S DATE
01410      POP     HL              ;RESTORE POINTER
01420      RET
01430 VALID  LD      D,'/'        ;SET TERMINATOR
01440      CALL    NUM              ;GET MONTH
01450      RET     C                ;ERROR ABORT
01460      CP      12              ;MONTH > 12?
01470      CCF                     ;ERROR ABORT
01480      RET     C                ;ERROR ABORT
01490      LD      E,A              ;SAVE MONTH-1
01500      CALL    NUM              ;GET DAY
01510      RET     C                ;ERROR ABORT
01520      PUSH   HL               ;SAVE BUFFER POINTER
01530      LD      HL,TABLE        ;LENGTHS OF MONTHS
01540      LD      D,0              ;CLEAR FOR ADDITION
01550      ADD     HL,DE            ;GET LENGTH OF THIS MONTH
01560      CP      (HL)            ;DAY > LENGTH OF MONTH?
01570      POP     HL              ;RECOVER POINTER
01580      CCF                     ;ERROR ABORT
01590      RET     C                ;ERROR ABORT
01600      LD      D,13            ;SET NEW TERMINATOR
01610 NUM     XOR     A            ;CLEAR FOR 1ST LOOP
01620      LD      B,2              ;FOR 2 DIGITS.....
01630 MULT   ADD     A,A          ;MULTIPLY ACCUMULATOR
01640      LD      C,A            ;BY TEN

```



```

01650      ADD      A, A
01660      ADD      A, A
01670      ADD      A, C
01680      LD       C, A           ;SAVE PRODUCTS
01690      LD       A, (HL)       ;GET DIGIT
01700      SUB     '0'           ;CONV. TO BINARY
01710      RET     C             ;ERROR IF < 0?
01720      CP      10            ;DIGIT > 9?
01730      CCF
01740      RET     C             ;ERROR IF > 9
01750      INC     HL
01760      DJNZ    MULT          ;DO UNITS DIGIT
01770      ADD     A, C           ;ADD TENS DIGIT
01780      DEC     A             ;MINUS 1
01790      LD     C, A           ;SAVE IT
01800      LD     A, (HL)       ;GET TERMINATOR
01810      CP     D             ;CORRECT?
01820      INC     HL           ;START OF NEXT FIELD
01830      SCF           ;IN CASE OF ERROR
01840      RET     NZ           ;ERROR IF INVALID
01850      CCF           ;CLEAR ERROR FLAG
01860      LD     A, C           ;RESTORE VALUE
01870      RET
01880 ;
01890 ;***** MESSAGES AND STORAGE LOCATIONS
01900 PRNAME DEFM 'NAME: DISKNAME ==) '
01910 DEFB 3 ;TERMINATOR
01920 PRDATE DEFM 'DATE: MM/DD/YY ==) '
01930 DEFB 3
01940 PRSWAP DEFM 'Mount target disk and press (ENTER) '
01950 DEFB 29 ;RETURN TO START OF LINE
01960 DEFB 3
01970 DERR DEFM 'INVALID DATE - Try again!'
01980 DEFB 29 ;RETURN TO START OF LINE
01990 DEFB 27 ;CURSOR-UP
02000 DEFB 30 ;REASE TO END OF LINE
02010 DEFB 3
02020 DEFB 192+19 ;COMPRESS 19 SPACES
02030 DEFB 27 ;THEN CURSOR-UP
02040 INBUF DEFM ' ' ;BUFFER FOR USER INPUT
02050 DEFB 13 ;TERMINATOR
02060 TABLE DEFB 31 ;TABLE OF LENGTHS
02070 DEFB 29 ;OF MONTHS
02080 DEFB 31
02090 DEFB 30
02100 DEFB 31
02110 DEFB 30
02120 DEFB 31
02130 DEFB 31
02140 DEFB 30
02150 DEFB 31
02160 DEFB 30
02170 DEFB 31
02180 DRIVE DEFB 0 ;DEFAULT DRIVE
02190 FLAG DEFB 0 ;FLAGS CHANGES MADE
02200 LENGTH EQU $-START
02210 END START

```

To convert the program for Model I TRSDOS 2.3, change the following lines:

```

00200 VDLIN EQU 4467H ;DISPLAY MESSAGE ON VDU

```

```
00260 RDGAT  EDU      4AF0H      ;READ GAT SECTOR
00270 WTGAT  EDU      4B03H      ;WRITE GAT SECTOR
```

Delete the following lines:

00210, 00300, 00860, 00870, 00880, and lines 01330 to 01420 inclusive. The Model I version will not be able to take the system date, but this is no great loss since TRSDOS 2.3 makes no use of it anyway! Be aware that I have not tested it on a Model I, but the addresses that needed changing were obtained from "TRSDOS 2.3 Decoded", so it should work.

Finally, for those inquisitive minds who are wondering how I got the Series-I source listing into Scripsit for this article, here's how: First, CONVERT it from TRSDOS 1.3 to LDOS. Then ROUTE printer output to a file, run EDAS 3.5 and load the source file (remembering to use the "-" parameter because Series-I doesn't have a header!). Then, do a "Hardcopy" of the listing, which goes to the file instead. After returning to LDOS and RESETting the printer, Run Scripsit and load the "printout". All that remains to do now is to scan through and delete the page-markers that EDAS has inserted! Easy, Eh?

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Phone: Romsey (0794) 390318 after 6pm.

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Goldsmith Court,
Stukely St,
London WC2B 5LF.
Tel: 01-831 7063

* * * LOST * * *

Will the person who "borrowed" the Juki 6100 manual from the top table at the Swindon workshop please return it to:-

Keith Howell,
7 Matthews Terrace,
Aldershot,
Hants. GU11 2AD.