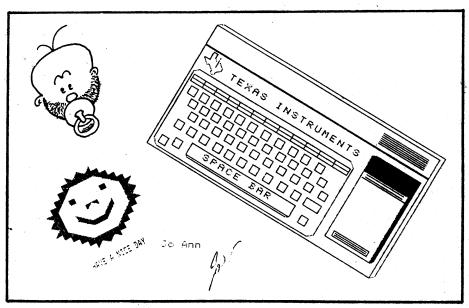
INTERNATIONAL TOLUMES

VOLUME 3. ISSUE 2

JULY 1ST., 1986

A PUBLICATION OF THE INTERNATIONAL TI USER GROUP



Formerly OXON TI USERS

R PUBLICATION
OF THE
INTERNATIONAL
TI USER GROUP



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INTERNATIONAL TI-LINES: A PUBLICATION OF THE INTERNATIONAL TI US	ER GROUS

BALDIE'S BURBLE

I recently had long talks with my accountant and my bank manager, and the upshot of it all is that if I cannot make ITUG and all my other operations (TSC, sales of odd bits of hardware, etc., any other publications) at least break even by December this year, then volume 4 of IT may never actually see the light of day. This would be a shame, as there are huge areas of information which I have yet to even begin to think about covering.

The Inland Revenue are largely to blame for this pressure, in that their view of Life is the prevailing one (whether that view is right or wrong is immaterial; they call the tune whether the piper is paid or not), and I have come to the conclusion that business in the UK generally succeeds or fails not on the strength of the markets, but on the strength of the lack of hindrance from the IR. It's no wonder that many firms cut corners or deal under the counter: the IR make sure that it does not pay you to be honest.

Something, somewhere, needs a complete rethink.

Anyway, I have said in previous issues that the cover price of an issue of IT is not going to increase beyond the £10 for 12, and I cannot see any justification for increasing my charges for Public Domain programs, so that leaves little room for manoeuvre.

After having had a number of lengthy discussions with a financially astute individual who shall remain nameless just in case I start feeling that I ought to be paying a consultancy fee, several suggestions have been made about improving the service in a way which should ensure the survival of whatever services are provided. The full list with prices is printed elsewhere for your edification.

I hope that the modified format of the newsletter is finding favour with its readers; at the time of writing I have yet to receive any feedback, but it is early days yet. Having said that it is early days, by the 11th of June no less than 60% of former subscribers have resubscribed, so I hope that I managed to do something right last (subscription) year!

We have lost two members to other machines so far, and I wish them luck with whatever they have chosen. I haven't heard that they are selling their TIs though, so don't ask me to make them offers!

You may remember that in V3.1 I said that formerly OXON TI USERS was continually being referred to as either Oxford TI Users or just as TI-LINES; I recently received an envelope with some bumph from CRAIG MILLER of MILLER'S GRAPHICS, SMART PROGRAMMER, and GRAMKRACKER fame.

In it there is a bumper listing of TI groups world-wide, and although I

provided exact details of the group's name, software library, etc., the entry in the listing was still wrong, and the group name was given as... TI-LINES. Now that I have changed the group name and altered the name of the newsletter only slightly, no doubt future listings will refer to us not as ITUG but as International TI-LINES. Ever had the feeling that you can't win?

Latest news hot off the presses (well, it will be lukewarm by the time that you read this, but it's hot now) thanks to IVAN NIBUR, is that the dreaded HOME COMPUTER MAGAZINE (formerly 99ER) is now dead. Letters in both my postbag and in overseas newsletters indicate that HCM's method of counting was particularly unique, in that 10 issues a year actually turned out to be either 5 or 6, depending on how fortunate you were.

However, friends, all is not lost, not by a long chalk. GARY KAPLAN is apparently gearing up to produce ANOTHER magazine, catering not just for the TI but for the Apple, the Commodore, and the U.T.C. Andall. It will be quarterly, which one assumes means 4 a year, but as 10 means 5, this will probably turn out to be 2, at the knockdown price of \$25 per issue.

Yes friends, the \$100 a year newsletter has been born. The new magazine is to be called the HOME COMPUTING JOURNAL and, I am told, will contain a disk of software specific to your machine per issue. The first issue went out on May 1st this year and so far appears to have been met with a resoundingly quiet response.

Ivan has offered to review this first issue, which is due to him because he only received half his former subscription, not because he has money to burn.

Since advising interested parties about the NEW HORIZONS RAMDISK last issue, I have changed tack slightly in an effort to reduce delays, cost, and the difficulties of importing electronics. I have requested a licence to produce the RAMDISK in the UK, in the hope that an equitable arrangement can be concluded which benefits everybody.

Watch this space.

I have received a quantity of Public Domain software recently which shows me that there is FUNNELWRITER and there is FUNNELWRITER. I use at present FUNNELWRITER 3.2, which has on board DM1000 2.3. However, one of the items sent to me was FUNNELWRITER 3.0 with DM1000 3.1, and it

appears to be a prototype. I have already received separately DM1000 3.1, which has contributions by RALPH ROMANS, and I was thinking of trying to incorporate the 3.1 with my FNLWRTR (saves typing the name out in full every time!) 3.2, but the authors of FNL... ask that we should not chop and change their disk as each issue forms an exclusive set on its own. To fit the two together would involve reducing the FUNNELDOCS size, as it is the only file which can be reduced by mere mortals such as yours truly, and as the two combined come to more than the capacity of a SSSD disk.

Accordingly I am offering the two (FNLWRTR and DM1000 - what's the matter, getting confused ?) separately, so that purchasers of FNL... will get DM1000 2.3 and purchasers of DM1000 will get 3.1.

I hope that's clear ...

My source of cheap drives is drying up. I have warned in the past that this unfortunate event was imminent, but each time my source managed to find a couple more at the back of the stockroom. However, this IS close to the end. If you have been debating about upgrading your system to double sided, or alternatively been debating about whether to even get a disk system, start thinking carefully now. I was surprised at the Leeds show when the drives I took up with me didn't even merit glances when they were a third of previous retail prices, but there you are. I have been talking with my Astute Financial Adviser, who tells me that the £10 barrier which I discussed in an earlier issue of TI-LINES also seems to apply to EVERYTHING.

That is, there is a gut feeling among Joe Public that if ANYTHING costs more than £10, Joe is being asked to pay too much. This applies not just to disk or cassette based software, but to disk drives, peripherals of every description, you name it, Joe thinks it is over-priced.

This unrealistic view of prices is encouraged in part by some dealers taking a starting price of £150 and bringing it down (because of lack of sales) to £25 or less, and it would appear that some enquirers with whom I have dealt believe that the same is true of my activities in what was OTIU and is now ITUG. That is, they believe that I get my equipment at knockdown prices (say, 50p) and then sell at grossly inflated prices (or grossly inflated in comparison with 50p!), making huge profits in the process. Even some ITUGers seem to operate on this premise, which just shows the folly of trying to charge the minimum price possible from the word go. People take this to be the START of a price reduction scheme, and while this may be true of retail, it is certainly not true of ITUG, and especially not of OTIU. I might show you my accountant's figures and his recommendation that I cease injecting capital (raised by loans) into OTIU/ITUG as I am incurring an operational loss of over £3000 per year even when the profitable areas are taken into account.

I did mention in an earlier issue that I could arrange for a second head to be fitted to your existing drive (if SSSD) but neglected to state that this would be for MPI only. However, if you have another make of drive and you would like to upgrade anyway, I can offer you a trade-in so that £65 will give you a double-sided drive in exchange for your old single-sider as well. There isn't a market within ITUG at present for single-sided drives, at least not at a realistic price. I met one chap

at Leeds who wanted to buy a SSSD drive, a PEB, and a disk controller card for £50 all in! What price an SSSD drive now ?

There has been some suggestion that I ought to cut out the lengthy series' on various topics (like Enhanced BASIC, or Sorting & Searching) and concentrate on short one-off items which are completed within an issue.

The trouble is that many topics cannot be presented pithily and still be usefully informative. To understand any aspect of Computing and be able to make good use of that understanding, you require a wealth of additional background information, which is what gets included in the larger series.

I could virtually guarantee that if I tried to cover say Small C in just one three page article, I would get letters asking me to go into more detail on a number of aspects, simply because there was not room in which to provide that detail the first time round.

I reckon that the pithy shorts (don't fancy washing them!) can be left for the newcomer/beginner who cannot absorb large quantities of data over a lengthy period of time, but the detailed megadocuments on other aspects are aimed at those who want to do more than just one thing on their machines.

The first IT SUPPLEMENT will shortly be available, once I have managed to renew the printer ribbon! Its subject matter is the disassembly of the TI RS232/PIO DSR ROM, and it will be of interest to those who are looking into the operation of the RS232 card, those interested in learning 9900 Assembly Language programming and wanting to see the way in which a practical application has been implemented, and those who reckon they might have some interest in the near future.

The price, already quoted in a previous issue, will be £2 inclusive of post and packing. There are two disassemblies, one by TIM MacEACHERN of the TI USERS of NOVA SCOTIA, and the other by COLIN HINSON of ITUG.

The two were derived independently, and complement each other in a number of areas which is why they are both being published. Remember that this information is being published for study purposes, and that the copyright in the original code belongs still with TI.

There is a second IT Supplement on the cards, devoted to a couple of uses of the MiniMemory module. One is a printer dump for graphics, by ALLEN BURT, using the Designs program originally presented in an issue of TIHOME's TIDINGS, while the other is a hardware project from BILL REED, providing an RS232 interface from the joystick port and being accessed through the MiniMemory module. Readers should not confuse this with Joytalker, the 99er/HCM project, which required an external 9 volt battery. Bill has taken his power for the unit from a line from the cassette port.

This second supplement will be available once I have concluded final checks with the respective authors, and will be available for $\pounds 2$, including post and packing.

I had originally limited myself to just four pages of Burble, but as usual, information keeps pouring in and begs to be aired here and now.

From the SASKATOON TI COMPUTER CLUB newsletter comes a warning to those who are thinking of replacing the lithium battery in their MiniMemory module themselves. Editor JOHN THOMSON warns that attempts to solder any tabs onto a replacement lithium cell could result in explosion.

TI apparently have a convenient replacement, a Sanyo CR2430 cell, with tabs already welded on. It is available from Lubbock, and may possibly be available from Bedford. It is TI part number 1034598-002, and is priced at US\$2.48 plus \$2 shipping (probably more for us!). If you want to order direct from Lubbock, the address is: TI Repair Centre, Parts Dept., PO Box 2500, Lubbock, Texas 79408.

STEPHEN SHAW now has FUNLWRITER V3.3, which contains DM1000 V3.1. You still need the separate DM1000DDCS for documentation. It appears too that some C99 files have been included as well, although you will need the separate C99 Release 2 package as well (also available through ITUG). FUNLWRITER can now be loaded using Extended BASIC, MiniMemory, TI-Writer, or Editor/Assembler.

You may recall that I was keenly interested in setting up a formal ITUG (OTIU that was) meeting sometime this year, but that pressure of work and other obstacles prevented me. GORDON PITT of the WEST MIDLANDS TI USERS has decided to organise an informal get-together in the BLOXWICH area, the meeting probably to be held during a Saturday in a local Community school, where a bar and restaurant could be provided IF enough people attend (at least 100, the staff say).

If you are seriously interested in attending such a gathering, please let Gordon know on 0922 476373, after 7.30 pm most evenings, but NOT Thursday or Saturday evening. I will be there, and I would like to think that many of the more enthusiastic ITUGers might take this rare opportunity to get together for a head-banging session on 4A projects.

CHARLES SKRZYNSKI has a Summer TENEX catalogue which he will lend to interested parties. Contact me on Oxford 510822.

Aha! What's that odd phone number there, I hear you ask. I forgot to mention in the last issue that my number was due to change, but I had not been notified at that time. Make a note of it now: it is 510822, formerly 50822. There is an intercept which gives you a recorded message, and if dialling within the UK you will not be charged for the call to the old number.

DAVE HEWITT is still sorting out the Composite Video Generator boards, and a few more are now available. Eventually Dave will be offering partly-completed boards for a nominal sum, but in the meantime contact me in the first instance.

SCOTT COPELAND and his alter ego JD ANN will hopefully be making a regular appearance in IT. Scott is following up a number of interests, including a Beginner's Forth called FORTH 4 ALL. Jo Ann has submitted both the TI console in the cartoon panel on the front page (Spike with his juvenile 5 o'clock shadow is one of mine, I hasten to add) and also an Adventure hints column. I have been asked on several occasions to provide an Adventurer's Corner, and so Jo Ann is looking at the Infocom series. Scott and Jo Ann will be happy to try and answer queries about Adventuring, but write in the first instance to me.

You will also find a page or so of vocabulary from JOHN FLOYD concerning Return To Pirates Isle, taken from the NORTHWEST OHIO 99ER NEWS.

Apart from this, Scott has a few requests: does anyone have the DOW 4 GAZELLE FLIGHT SIMULATOR? And can anyone help with problems with a friend's Corcomp system? All correspondence to me, please.

STEPHEN SHAW recently sent me a copy of the book THE ORPHAN CHRONICLES by Ron Albright for perusal. It purports to chart the rise and fall of the 4A, but there are huge gaps in the saga - no mention is ever made of the abortive European machine which eventually sold as the DAI - and there are one or two things with which I would take issue if it was worth it. Certainly it uncovers some of the mechanisms behind the crass marketing decisions, and it would be worth having for the historical perspective it provides.

However, because of the total lack of European detail, Stephen is actively considering producing a book giving such detail. If a publisher cannot be found, Stephen might put it out on disk, although I would certainly welcome the opportunity to do it as either an IT Supplement or as a QUINSOFT booklet.

This won't be out next week, or even next month. Stephen would like to invite anyone who has hard facts, with dates where applicable, or reminiscences, experiences, etc., to provide him with details, although he regrets that he will not be able to respond personally to all material. Write to him at 10 Alstone Road, Stockport, Cheshire, SK4 5AH

The Sorting & Searching series will be continued in the near future once the new format for IT has settled down. At present there has not been sufficient feedback for me to know whether I have got it right this time so send in your brickbats and bouquets if you want to help me out.

Some elders from TIHOME or the start of OTIU might spot the resurrection of items from the past. This is because current new subscribers do not seem interested in purchasing early issues of any publication in the TI field, in which, as you and I know, there is a vast wealth of useful information already available. If Mahomet won't come to the mountain, the mountain must come, piecemeal, to Mahomet...

SCOTT COPELAND has provided patches to Forth to enable Brodie's book, Starting Forth, to be used. Details coming in August.

```
100 REM ** RULES **
                                         610 FOR C=1 TO 9
                                         620 L(R,C)=10
110 REM CHEMICALS TAKE ABOUT
                                         630 NEXT C
120 REM 3 TURNS AWAY FROM
                                         640 NEXT R
130 REM THE LIFE OF A FIRE
140 REM AND ANY ADJACENT
                                         650 FOR I=1 TO 3
                                         660 R=RN(9)
150 REM FIRES.
                                         670 C=RN(9)
160 REM FIRES CANNOT SPREAD
                                         680 L(R,C)=9
170 REM PAST A BURNT DUT
                                         690 NEXT I
180 REM BACK-FIRE.
                                         700 M$="123456789"
190 REM A FIRE HAS A 9 TURN
200 REM LIFE WITHOUT CHEMICA
                                         710 Y=8
                                         720 X=8
LS
                                         730 GOSUB 1960
210 REM ** GOOD LUCK !!! **
                                         740 MS="STARTING"
220 CALL CLEAR
                                         750 Y=19
230 Ms="PRESS-FOR"
                                         760 X=8
240 Y=10
                                         770 GOSUB 1960
250 X=18
                                         780 FOR R=1 TO 9
260 GDSUB 1960
                                         790 FOR C=1 TO 9
270 M$="B-BACKFIRE"
                                         800 IF L(R,C) () 10 THEN 830
280 Y=12
                                         810 CALL HCHAR (R+8, C+8, 112)
290 GOSUB 1960
                                         820 GOTO 870
300 M$="C-CHEMICALS"
                                         830 IF (L(R,C))0)+(L(R,C)(10
310 Y=13
                                         ) () -2 THEN 860
320 GDSUB 1960
                                         840 CALL HCHAR (R+8, C+8, 104)
330 M$="Q-QUIT"
                                         850 GDTD 870
340 Y=14
                                         860 CALL HCHAR (R+8, C+8, 120)
350 GOSUB 1960
360 CALL CHAR (104, "226BFFFFF
                                         870 NEXT C
                                         880 NEXT R
E7E7C38")
                                         890 M$="WAITING "
370 CALL CHAR(112, "1038387C7
CFEFE10")
                                         900 Y=19
                                         910 X=B
380 CALL COLOR(10, 9, 16)
390 CALL COLOR(11,13,16)
                                         920 GOSUB 1960
400 CALL COLOR(12, 7, 16)
                                         930 CALL KEY(0, K, S)
410 CALL CHAR(120, "001010729
                                         940 IF S=0 THEN 930
                                         950 IF K=66 THEN 1270
0101010")
                                         960 IF K=81 THEN 2000
420 CALL COLOR(9,7,7)
430 CALL CHAR(100, "FFFFFFFF
                                         970 IF K()67 THEN 930
FFFFFFF")
                                         980 CALL HCHAR (18, 5, 32, 15)
440 CALL SCREEN(7)
                                         990 X=5
450 FOR Y=1 TO 8
                                         1000 Y=21
                                         1010 M$=CHR$(100)&"TYPE ROW"
460 CALL COLOR(Y, 2, 11)
470 NEXT Y
                                         1020 CALL HCHAR (21, 4, 32, 26)
480 CALL VCHAR(1,1,100,48)
                                         1030 CALL HCHAR(19, 5, 32, 15)
                                         1040 GOSUB 1960
490 CALL VCHAR(1,31,100,48)
500 FDR T=1 TD 9
                                         1050 CALL KEY(0, K, S)
510 CALL HCHAR(8+T,8,ASC(STR
                                         1060 IF S=0 THEN 1050
                                         1070 IF (K(49)+(K)57) (O THEN
$(T)))
520 NEXT T
                                          1050
530 DEF RN(M) = INT(M*RND)+1
                                         1080 R=VAL(CHR$(K))
                                         1090 CALL HCHAR (21, 4, 32, 26)
540 RANDOMIZE
                                         1100 M$=CHR$(100)&"TYPE COLU
550 MS=CHR$(112)&" FOREST FI
                                         MN"
RE "&CHR$ (104)
                                         1110 GOSUB 1960
560 Y=5
570 X=6
                                         1120 CALL KEY(O,K.S)
                                         1130 IF S=0 THEN 1120
580 DIM L(9,9)
                                         1140 IF (K(49)+(K)57) (O THEN
590 GOSUB 1960
600 FOR R=1 TO 9
```

```
1150 C=VAL(CHR$(K))
                                        1580 L(A,B)=11
1160 CALL HCHAR (21, 4, 32, 26)
                                        1590 NEXT C
                                        1600 NEXT R
 1170 FOR I=-1 TO 1
 1180 FOR J=-1 TO 1
                                        1610 F=0
                                         1620 FOR R=1 TO 9
 1190 A=R+I
                                        1630 FOR C=1 TO 9
 1200 B=C+J
 1210 IF (A(1)+(A)9)+(B(1)+(B
                                        1640 T=L(R,C)
                                        1650 IF T()11 THEN 1670
1660 T=9:
 )9) (0 THEN 1240
 1220 IF (L(A, B) (1)+(L(A, B)=1
 0) (0 THEN 1240
                                        1670 IF (T)0)+(T(10)()-2 THE
 1230 L(A, B)=L(A, B)-3
                                         N 1700
 1240 NEXT J
                                         1680 T=T-1
 1250 NEXT I
                                        1690 F=F+1
 1260 GOTO 1470
                                        1700 L(R.C)=T
 1270 CALL HCHAR(21, 4, 32, 26)
                                        1710 NEXT C
                                        1720 NEXT R
 1280 CALL HCHAR (19, 5, 32, 15)
                                         1730 IF F(1 THEN 1750
 1290 Y=21
 1300 X=5
                                        1740 GOTO 700 ·
 1310 M$=CHR$(100)&"TYPE BACK
                                        1750 €=0
FIRE ROW"
                                        1760 FOR R=1 TO 9
 1320 GDSUB 1960
                                         1770 FOR C=1 TO 9
 1330 CALL KEY(0,K,S)
                                         1780 IF L(R,C)()10 THEN 1800
 1340 IF S=0 THEN 1330
                                        1790 W=W+1
 1350 IF (K(49)+(K)57) (O THEN
                                        1800 NEXT C
                                        1810 NEXT R
                                        1820 R=W+30
 1360 R=VAL(CHR$(K))
1370 CALL HCHAR(21, 4, 32, 26)
                                        1830 IF R (=100 THEN 1850
 1380 M$=CHR$(100)&"TYPE BACK
                                        1840 R=100
FIRE COLUMN"
                                        1850 M$="YOUR RATING IS "&ST
1390 GOSUB 1960
                                        R$(R)&"."
 1400 CALL KEY (0, K, S)
                                         1860 GDSUB 1960
 1410 IF S=0 THEN 1400
                                         1870 M$="PLAY AGAIN?(Y OR N)
1420 IF (K(49)+(K)57) (O THEN
                                        1880 Y=22
1430 C=VAL (CHR$(K))
                                        1890 GOSUB 1960
1440 CALL HCHAR (21, 4, 32, 26)
                                        1900 CALL KEY(0,K,S)
                                        1910 IF S=0 THEN 1900
 1450 IF L(R,C)()10 THEN 1470
                                        1920 IF K=89 THEN 220
1460 L(R,C)=2
1470 FOR R=1 TO 9
                                        1930 IF K() 78 THEN 1900
1480 FOR C=1 TO 9
                                        1940 CALL CLEAR
1490 IF (L(R,C)(1)+(L(R,C))9
                                        1950 END
) (0 THEN 1590
                                        1960 FOR I=1 TO LEN(M$)
1500 IF L(R,C)(3 THEN 1590
                                        1970 CALL HCHAR(Y, I+X, ASC(SE
1510 I=INT(3*RND)-1
                                        G$(M$, I, 1)))
1520 J=INT (3*RND)-1
                                        1980 NEXT I
1530 A=R+I
                                        1990 RETURN
1540 B=C+J
                                        2000 M$="YOU DID LOUSY"
                                        2010 Y=21
2020 X=5
1550 IF (A(1)+(A)9)+(B(1)+(B
)9) (0 THEN 1590
1560 IF L(A, B) () 10 THEN 1590
                                        2030 CALL HCHAR (19, 5, 32, 15)
1570 IF RND (. 2 THEN 1590
                                        2040 GDTD 1860
```

ACKNOWLEDGEMENT:

This listing was produced from an initial 28 column format output, the product of a program kindly supplied by JIM PETERSON of TIGERCUB SOFTWARE.

This should provide a WYSIWYG effect (What You See Is What You Get) when typing the listing in and checking the screen.

ROVENTURE WELF

Unfortunately submitted by: JD ANN COPELAND (apologies aforehand)....

I am one of the few people who have been drowned, strangled, eaten for dinner, shot, knifed, turned into a newt, and still survived to tell about it. Others in this category know what I'm talking about...the neverending problematic series of Adventuring. As I am quite hooked on the Adventure Series, I live for the moment when the children are put to bed for the evening and I can grab some quiet time on the computer just to prove how ignorant I am. I guess I can be considered slightly masochistic in nature as Adventuring only allows you to acquire migraine headaches, bloodshot eyes, nights consisting of only two hours sleep, and nightmares when you do hit the bed. And yet, we get up the next day and what do we do? Go right back to the game only to try to kill ourselves again. And we do this all for the enjoyment of it ?????

Anyway, I have often had to telephone some of my Adventure friends to ask for hints, and on the rare occasion been able to help others in their games. Sometimes it just comes down to having the right idea but the terminology being beyond our capacity for illogical prompting. I had this case in Cut Throats where I knew what to do, but just didn't term it right. Infocom does this especially just to drive you crazy! I have them there — I started off only playing with a half-deck!

So, if I can perhaps help someone in their attempts to prove they are better than an illogically conceived game I will try my best. Or you can do the most obvious thing and completely skip this column having already recognized it for what it is — the rambling on of a completely deranged nut! (Before you say it — I admit it, so there!)

Zork I

There is a Mirror Room, South and North, they help in your travels back and forth. Besides looking at it, try other things as well, look, feel, and touch. Try it, it's swell.

Author's note: (Don't boo yet - there's more to withstand)

A platinum bar resides in a chamber of echoes. No, the bar..bar.. is not a fault in your disk. Try turning the knobs in the Maintenance Room. Or try typing the word for what it is..an echo by any other name.....

-- (You may have noticed I'm really not in the mood to do this ????)

--it gets worse!--

. Zork II

Around the world in 80 days required the use of a balloon. Zork II allows you one - now figure out how to inflate it. It helps you in your travels, but before you go straight up - examine the shelves along the way, there's more than one pit-stop.

Getting the key from the Unicorn is easier said than done. Fortunately for you, no work is involved in this as the Fair Maiden leads you on the way. To find her, fight the dragon and lead him to his challenge.

Zork III

As in King Arthur, there's a sword in the stone. Don't waste your time and effort... As you are not capable of removing it yourself, don't bother. If you can't take the sword, let the sword come to you.

More entrances and exits that are blocked...finding the way to go through is the key. One answer is the Engraving Room...offer to share your possessions and you might be pleasantly surprised.

Enchanter

It seems most Adventures make use of Spells, Witchcraft, etc. Could it be because they can't figure out a logical reasoning to their means? "If you can't do it logically, make up a spell." In this case, it works...most of the time. And of course, where would we be without eating and drinking? Well, if it helps score, let's do it.

This Adventure was pretty new... I had rarely found the occasion to talk to the animal population. In this case it helps alot, and not only do the frogs offer you help, but the turtle does your dirty work for you. A few simple spells and you are on your way.

You thought you were done with Zork I, II, and III? Well, you're back again in Enchanter..strange as it seems. Again you help out..just carry a treasure and see what you can get the Adventurer to do for you.

Planetfall

Floyd is a bit immature, but he was put there to help you. When he states "Let's play hidey-and-seekey" why not give it a try? The least that can happen is you get lost!

You start out with a scrub brush and a bucket besides. Remember to do your job and stay right where you are. Access to the pod is a must!!!

I could write a book on Adventure hints (although I know it wouldn't sell) as we've completed the entire Scott Adams series and the following Infocom Series: Deadline, Cut Throats, Enchanter, Zork I, II, and III, Hitchhiker's Guide to the Galaxy, Infidel, and I am 90% of the way through Witness. Only five more to go and then I won't know what to do! As it is easier to write help columns having questions to review (which I don't have) I try to remember what the harder or more challenging parts were to each game. So if you think you can stand another article on Adventuring hints I'll be back next issue...that is unless everyone calls/writes in saying "I can't stand any more!". In that case, I will politely bow out and send threatening letters to everyone involved.

If you have a particular game you're having trouble with, and you think this abnormal idiot can be of help, write in or call Peter Brooks in the first instance (Oxford 510822).

We'll see what we can do!

Until next time, Happy Adventuring - and quit pulling your hair out over these games - I'm already half bald and I'm a female! Try hitting the wall instead!

And as usual, the proverbial question still exists... "What do the people in the Scottish Highlands really wear under their kilts?"

AN AID FOR RETURN TO PIRATES ISLE

By JOHN FLOYD, taken from the NORTHWEST OHIO 99ER NEWS

Well, let's face it!!!!! Mr. Adams outdid himself on this one! This Adventure has got to be the most difficult of the entire series.

With a few sneaky tricks I have compiled a list of what I believe to be ALL of the nouns and verbs used within the Adventure. There are a few words that I am unsure of as to their use.

The word AUTO may be a verb rather than a noun and the words HAND, HYPE and SHOR can mean several things.

I hope that this list of words can be of some assistance to those of you who have become stumped while playing this Adventure. If you are one of those that becomes offended by someone else offering hints, I recommend that you destroy this list immediately! (Or at least put it someplace that you cannot refer to it until you decide that you really need it!)

I have divided the list into nouns and verbs and have alphabetized each category for ease of locating words. All of the treasures are noted with an asterisk so that you can easily refer to them.

Now I myself have not been playing this Adventure very long and by no means know the solution to the game. The list has however helped me in a few situations.

Okay now! Try all of the verb/noun combinations as you trek through this fantastic Adventure but don't get discouraged, you will die many times in this Adventure and each is a learning experience.

Directions	FUEL	YDHO	PRESs
	GAME		PROBe
	GAS	Verbs	PULL
ANY	GLASses		PUSH
NORTH	GLUE	:	PUT
SOUTh	HAMMe r	BREAthe	PUTOn
EAST	HANDle ?	BURN	QUIT
WEST	HELM	CHARge	READ
UP	HILL	CLEAn	RECHarge
DOWN	INVEntory	CLIMb	RELEase
	ISLE	CRANK	REMOve
Nouns	IT	CRAWI	REPAir
	JETSam	DESCribe	RINSe
	LADDer	DIG	RIP
ALARm	LEDGe	DIVE	ROLL
ALGAe	LENS	DON	RUB
AMBEr *	LIGHts	DRINK	SAIL
AROUnd	MAP	DRIVe	SAVE
AUTOpilot ?	MASK	DROP	SAY
BACK	MATTress	EAT	SCORe
BATTery	OBJEct	EMPTY	
BEACH	OCEAn	<u> </u>	
BEAM		ENTER	SHUToff
BED	OILSkin	EXAMine	SLEEp
	OPENing	FEEL	SPIT
BLACkbeard	OYSTer	FIND	SQUInt
BLADe	PAINting	FIX	STAB
BOAT	PEAR1 *	FOLD	STANd
BOOK *	PICTure	FOLLow	STARt
BOX	PILIng	GET	STOP
BREAth	PIN *	GIVE	SWIM
BROOch *	PIRAte	GLUE	TAKE
BUNKbed	POOL	GO	TEAR
BUTTon	PORThole	GRAB	THROW
CABIn	RAINcoat	HEAR	TO
CEILing	REMBrant *	HELP	TOUCh
CHESt *	RIM	HOLD	UNLOck
CLOCK	RING *	HYPErventilate	UNRO11
CRACK	ROCK	IN	UNSCrew
CRAWlway	RUM	INVEntory	USE
CREVice	SCREwdriver	Inventory	UNWRap
CURRent	SEA	JUMP	WAIT
DECK	SHED	KILL	WAKE
DEEP	SHIP	LEAP	WALK
DOCK	SHOVe1	LEAVe	WASH
DOLLar *	SIGN	LIFT	WEAR
DOOR	SILT	LIGHt	WITH
DUBLoons *	SNAI1	LISTen	WRAP
EARRing *	STAMps *	LOOK	YAWN
ENGIne	SUMMit	Look	
EYES	TOOLshed	MAKE	
FACEmask	TOP	MIX	
FAN	TORCh	MOVE	
FL00dlights	WATCh *	OPEN	
FLOTsam	WATEr	PAUSe	
FRAMe	WIRErim	PICK	

TI-WRITER/FUNLWRITER OVERVIEW : PART 1

SUBMITTED BY (Horror of Horrors): Mrs. JO ANN COPELAND

For those of us who were fortunate enough to gain access to the TI-Writer Word Processor, you found having the manual on hand even better. All those confusing keys and statements were simply looked up for explanation. However, if you weren't fortunate enough to get the manual and would like to review the keys and statements YDU ARE IN LUCK! Or, if considered, you are in trouble, as it is the crazy abnormal person again, trying to prove she knows what she is talking about when we all know she doesn't. So, I am here to prove just that. If the readers of this newsletter can stand it, I will try to take a step-by-step review of the Writer/Funlwriter and hope that someone, somewhere, out there can gain knowledge from it. Well, we can always hope, can't we?

For starters, (yes - go ahead and cringe so you can get it over with), the hardware/software required should follow as: TI-Writer Word Processor Cartridge; Program Diskette; TI 99/4A Console; Monitor; Disk Memory Drive; Peripheral Expansion System including Memory Expansion, Disk Controller Card, and RS232 Card; and an RS232 compatible printer. Of course, the infamous stand-alone peripherals may be used. Whew! If you have the TI-Writer Word Processer Module and Disk you will use those, and if you have Funlwriter you will use the Extended Basic module and Funlwriter Disk. After loading, these two work along the same lines, although Funlwriter, in this author's opinion, is much better. I have both, but find Funlwriter easier to use and quicker, plus it saves on feed paper. Okay, check off and see what you've got and let's go from there. Or drop this and go have a cup of tea, and come back later to go on to the next column. The latter are the

I'll skip the normally good reasons for having the Writer / Funlwriter and assume we all use it consistently. First, I am going to use CTRL 3 to change my screen colour. This blue colour gets awfully boring after a while. While I'm doing that, load up your disk and let's go.....

After loading, you'll find another menu...

WORD PROCESSOR

PRESS

- 1. For Text Editor
- 2. For Text Formatter
- 3. Utility

Press 1 and you will find yourself involved with the Text Editor. Here you can create, edit or save documents, reports, books, etc. You will also see the lines appear as follows:

Edit, Tab, Files, Lines, SearcH, RecoverEdit

(cursor mark)

0001

*End of file version

The first line is the command mode prompt line; second is cursor; third is line number; and fourth is end-of-marker file. The very top line offers you the available categories to choose from, such as going to Files, or Recovering material or setting up Tabs. The cursor should be blinking and is filled-in (the other is hollow in Fixed Mode). Line numbers mark lines, as stated, and can be used with other commands such as copying, moving, etc. End-of-File marker shows the last line of text and is only an on-screen indicator. You will also find, if you use the arrow keys (FCTN S, X, D, E) that if you go across the screen it seems to 'wrap'. You will find this called Word-Wrap, and consists of three 'windows' (views). A line is up to 80 columns (characters) long but only 40 show on screen at one time. So you have three overlapping 'windows', i.e.:

1	(>
1	<third window=""></third>
i	(

As you pass your cursor along the next window is automatically dislayed and at the end of the line, instead of hitting a carriage return as on a typewriter the line automatically goes to the next line so you can keep typing and find yourself going down one line at a time. If you want to find the next window from where your cursor is displayed, try pressing FCTN 5 - this is 'horizontal block scrolling'.

ON TO COMMAND MODE

FCTN 9 is your entry to COMMAND MODE, a step you will find yourself using over and over again. This gives you the list of available commands displayed at the very top of your screen. Let's go through these commands one by one and see what each does.

Files is exactly what it states. If you press FCTN 9 for command mode, F for files, and ENTER you will see another list of commands: LoadF, SaveF, PrintF, DeleteF, Purge or Show. Press FCTN 9 to return to command mode prompt and type E for Edit and press ENTER. This causes you to leave command mode and get into your text. If you have a text typed in, you could edit (change) it with this command.

As with a typewriter, you set up margins and tabs. If you enter command mode (FCTN 9), T for Tabs, ENTER, you can set up margins and tabs before writing a text. You should see something like:

```
TABS 123456789 123456789 123456789 1....T....T....T....2....T....3
```

Using your space bar, tap over to where you want your left margin. Type L and space over again to where you want your first tab and press T. Continue spacing, placing T where you want more tabs and continuing over to the right margin side where you will type R for right margin. Your text will be typed inside the left and right margins as placed. (I) can also be placed where you wish to have a paragraph indentation (optional) as I usually use T (tab) for this.

Any other characters are usually ignored, and if you need to change the input use your arrow keys to do so, or press Command/Escape. The preset values are Left Margin O, Right Margin 79, and Tabs at 5, 10, 15, 25, 35, 45, 55 and 65. When you have set it up as you want it, press ENTER and you will be in text.

Loading, Saving, or Deleting a file follow pretty much the same lines. LF (load file), SF (save file) or DF (delete file) allow you to do just as they say. So for each of these, if you go into command mode, FCTN 9, type in LF or SF or DF you will be asked what to load, save or delete. If you have a text, let's say named LETTER, you will type in DSK2.LETTER and hit ENTER for the computer to load it. To save, FCTN 9, SF, ENTER, and DSK2.YOURFILE. To delete, FCTN 9, DF, DSK2.LETTER and ENTER. These commands will either load, save or delete depending on which you chose.

Well, if I haven't confused you enough (heaven knows I am) I will take a shortcut and list some commands you will need to know, for right now and for future articles (OH NO!). Hush up — you should find these helpful.

Left Arrow = FCTN S Right Arrow = FCTN D

Up Arrow = FCTN E Down Arrow = FCTN X

Tab = FCTN 7 Word Tab = CTRL 7

Beginning of Line = CTRL V Command Mode = FCTN 9

There is some really meaty stuff involved with the Writer / Funlwriter, and rather go too slow or too fast (which I am probably going depending on who's reading) let's practice the aforementioned commands and next article we'll go into further practices such as: Editing, Inserting, Reformatting, Scrolling, etc. Later we'll discuss fixed Mode vs. Word Wrap and find ourselves going into Transliteration, Find String, Replace String, etc. In each article I will try to remember to list out the commands used, but in case I don't, here is a list that most Users will find helpful.

Back Tab CTRL T Beginning of Line CTRL V Command/Escape FCTN 9/CTRL C Delete Character FCTN 1/CTRL F CTRL K Delete End of Line Delete Line FCTN 3/CTRL N Display Line Numbers FCTN O (zero) Down Arrow FCTN X/CTRL X Duplicate Line CTRL 5 Home Cursor CTRL L FCTN 8/CTRL 0 Insert Blank Line Insert Character FCTN 2/CTRL 6 CTRL 6/CTRL H Last Paragraph Left Arrow FCTN S/CTRL S Left Margin Release CTRL Y

(More to follow in next article.) If you feel I am going too slow, or too fast, please bear with me, as not everyone is experienced, and some are completely new to the Writer / Funlwriter. Everyone has to start somewhere and, who knows, we may find something we never noticed before (or get totally lost). So if all of you can put up with me some more, I'll continue this next time. Besides, I don't want Peter complaining I took up too much space! I don't take criticism very well, and would more than likely do something terrible if I get criticized. (Don't you think about it!) See you next issue, and I hope I haven't totally messed up anyone's mind. Although, meeting someone like myself would be nice for a change....



Have you subscribed to 4FRONT yet? If so, this is what you've got:-ARTICLES/REVIEWS/ADVENTURER'S TIPS/ GREAT GAMES/UTILITIES/FUN & FROLICS (that was FRolics)/and more besides for basic, extended basic, assembly language and PRK users and this lot all for 3.50 on tape - 4.50 on disk or a year sub(4) for the price of 3 If not, that's what you're missing. By the way, why not send an SAE for our latest pricelist which includes * SHAMUS * PROTECTOR * DEFENDER * at the most ridiculous prices..... (plus some new titles on disk/tape) DAY COMPUTING JERRARD CLOSE, HONITON, DEVON EX148EF



COMPUTING:

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TEHAS SPECIAL! 4

JOHN BINGHAM

At periodic intervals, like everytime TI*MES arrives I have thought that I should write an article, but that is as far as I have previously got. Not that I have any particular gems of wisdom to impart, nor am I a high powered expert programmer, nor an electronics wizard with marvellous hardware mods, but as a regular user of the 99/4A (my wife would use the term "addict", she being resigned to being a computer widow - although she says that at least she knows where I am) I have built up quite a lot of everyday useage experience, which I feel might be of interest to others.

Firstly by way of introduction, I am one of the older generation of members having written my first programs, including a pure machine code utility, some 22 years ago. Being a Chartered Engineer (civil/structural), I have rubbed shoulders with computers for many years, although my direct exposure has been relatively limited for this field.

However I did find that I had an aptitude for using computers, bordering on the addictive (yes, I admit it), and was therefore both thrilled and immediately at home when I was able to obtain my own home computer, the 99/4A, now almost 4 years ago. How different things were then. I chose the 99/4A essentially because of its Texas pedigree, and the expectation that there would be continuity (!!). Looking back, it has certainly performed well, other than the reliability of the cartridge slot, it still looks smart, unlike others I have seen. The continuity has been worrying, but thanks to the very active user groups, and faithful suppliers, this question has been deferred. Indeed the tight closeknit very personal user community is almost a good reason on its own for staying with the 99/4A.

I soon found that deciding which machine was the easy part, finding one was another matter. Advertised everwhere, but "expected in". At last I found one (the only one in stock) and offered with a free Invaders module. The only trouble was that these were out of stock, further supplies unknown, but he had two others - Household Budget Management and Beginning Grammar - not quite the same as an action game. However I took the first and bought the second, the former has never really been used - I soon found that it didn't do what I wanted it to do and I preferred to write my own. The latter was used quite a lot initially by my children, but then they grew out of it. In fact I have had great difficulty getting them to use educational modules (let alone any programming), although they love pure games.

I took it home, and, as the whole family waited expectantly, unpacked and connected it up. Nothing. I tried everything umpteen times without success. Back to the dealer, he was not perturbed - quite usual - replacement would be in next week. At last I got it home, it worked, but what next? I wanted a good game, the dealer had none (after all I had cleaned him out!), searched magazines in vain, writing something myself would (a) be pathetic (b) take a long time. Fortunately the next month C&VG had "Laser", I rushed home crunched it in, you can guess - it didn't work. So I took it apart, worked out some of the logic, failed to comprehend others, even found what as far I could see were some redundant lines. But at last managed to get it to work satisfactorily. The next step was to link up a cassette

recorder, that is another long story, but eventually it worked How things have changed now I have more material that I know what to do with, in those days I was so desparate I started to translate from other wachines.

I soon joined TIHOME, which opened the vista up, and made one feel less isolated. It was through a review in this that I made my first contact with a firm called Arcade Hardware and bought their special joystick. This is still performing well, and I still prefer it to their next one (which the children prefer). Typical of Howard Greenberg, when I ordered my second (because as will follow I had bought a second console and being so satisfied with the first joystick had decided to obtain another) I had a very anxious note back "why a second?" had something gone wrong with the first? Such concern with the durability of his wares. Needless to say I was pleased to reply that there was nothing amiss, the second order was because of full satisfaction with the first. As I say typical of Howard, I have bought a number of products from him over the years and I have always found him to be helpful, very honest, and reliable. As my wife said after ordering something one Christmas: "you feel he cares".

My first year of ownership was rather frustrating, so much else to do and little time to spare for computing. Invaders and Parsec were obtained amongst others, and gave much satisfaction. During this period I found out the hard way how slow cassette handling of data is - painful. After a year, I was posted to Norway, hence the second console - one in the UK, one in Norway - and found more time for computing. I also crossed my first higher hardware threshold (from the basic of console and cassette recorder) with the purchase from Arcade (of course) of an Alphacom printer. It had been so frustrating not being able to obtain hard copy, but the cost of upgrading to a printer was prohibitive. Consequently the Alphacom opened up new horizons as I churned through thermal paper. It has continued to perform satisfactorily (I hope the devil does not hear and I suffer one failure after another after this article!), I had some connector problems at the start, but after some anxious moments it worked after trying and trying again. I did find that it would not work with a Speech Synthesizer (I didn't try removing the flap as suggested by another member) but this didn't worry me as most of my useage didn't require one.

Another threshold was crossed last year, when I decided to upgrade. I had often dreamed of doing so, but quickly dismissed the idea when I thought of the cost. However a year ago I realised that I had outgrown the basic console and cassette storage, plus my continuance overseas allowed me the means to do something. Expand or change system? Was it wise to sink a lot of capital into a possibly dying breed. After much agonising I decided to upgrade, OK it was going to be expensive but if I changed system (a) I would not get much for my existing equipment (b) I would have to discard all my own written programs and accumulated data (I had laboured to build up quite an extensive data base of Norwegian vocabularly, and the thought of recompiling this was soul destroying). I wonder how many people have calculated the total "as-purchased" cost of their system, I think they would be shattered if they did. The next stage was to decide what upgrade. At this stage I was thinking mainly of disk

drives and 32K, but decided that if one was doing this then it was folly not to also have a printer capability. After more agonising, talking to Howard (honest and helpful), Parco, and useful insider information from Peter Brooks. I decided to go for a Myarc MPES from Arcade, this having as standard 32K, printer and disk drive interfaces. To this Howard added twin DSDD drives. This resulted in a very nice package, yes it seemed a lot of money, but one can easily spend a lot in dribs and drabs. The alternative from Parco would have been a standard TI PEB with a SSSD drive.

With hindsight I feel that I made the best choice at the time, although a possibly better alternative might have been (if it had been available) a TI PEB with one of the new disk controllers and DSDD drives - I cannot add the new generation of cards to my box, and Myarc don't seem to be developing expansion capabilities for their MPES (I gather from the Orphan Chronicles that, as good as it was, the MPES was not a success for Myarc because there was still a good supply of TI PEB's in the States). One point on which I certainly don't have any second thoughts is the decision to opt for twin DSDD drives. Firstly a second drive is not essential, but I cannot imagine getting by without one. The thought of copying disks with only one drive is exhausting. Having two allows one to readily back up as one goes. I have had a rare failure of reading a TI-WRITER file from one disk, switch to and read from the second reinstate on the first, so easy. Again more than SSSD is not essential, but it makes life so much easier. Instead of having of having a program and a data disk, they can be combined into a single composite disk. Generally I tend only to go up to SSDD, because access times come to be rather long on a full DSDD disk, but the capability is exceedingly useful, especially if access time is not too important or where archive back-ups are being made.

Despite what I might have implied earlier, I have been very satisfied with my MPES, it has behaved impeccably, it tucks neatly away and is relatively quiet. Although I have mentioned the new generation of cards, one must also ask "do I need them?". I read the other day an article which said that many who want to trade up/change machine, , don't really know why they need to. One should ask oneself "what will I really gain?", "what will I be able to do that I cannot do now?". I have to admit that my current set-up satisfies all my needs. Even the lamented lack of speed is not really troublesome. With my expanded system, many new horizons have opened up, only a few of which I have so far explored. The immediate gains have been (i) much faster handling of programs and data (ii) word processing capabilities.

In summary, if you don't have a printer, you should endeavour to get one. If you can stretch to expansion, you won't regret it, even if it does mean using up your next few years computing budget all at once.

BULLETIN BOARD

WANTED / 4 SALE / WANTED / 4 SALE / WANTED / 4 SALE /

RICHARD SIERAKOWSKI has a quantity of disks for sale. These are made by XIDEX, and are QUAD DENSITY (DSDD 96TPI).

The price is £12 for ten disks, plus £1 post and packing. If you want a plastic library case, these are £1.50 each.

Contact Richard on 0672 54975.

DAVE HEWITT has a handful more of the COMPOSITE VIDEO GENERATOR boards for sale, enabling you to connect your 4A to a colour monitor (or any TV with composite video input) instead of through the standard modulator.

The price for each board is £5, exclusive of post and packing.

Contact me on Oxford 510822 to order.

ALAN DAVEY of 4ABC has a BUZZBOX modem for sale at £35 including post and packing. It includes a connecting cable and a phone adaptor to allow the phone to be connected (new BT type jack). The baud rate of the modem is 300-300 only.

Contact Alan on 04606 4511.

If you want your RS232/PIO card to cope properly with peripherals which possess a CENTRONICS interface — that is, make use of the PIO option without having to add bits of circuit board to the cable — then I have an answer for you: a replacement RS232 DSR RDM. Unsolder (carefully) the original RDM from the card, preferably replace it with an IC socket first, and then plug in the replacement RDM. One of the pins has been folded under the body of the chip and connected to another pin, by design.

If you would like one of these chips, the cost is £10 inclusive of post and packing. Order them from me on Oxford 510822.

99/4A DISK PERIPHERAL SOFTWARE OVERVIEW

Calin Hinson

The Device Service Routine (DSR) ROM in the 99/4a Disk peripheral is designed to give the User access to the disk by means of a system using three different 'levels', which, with the addition of some utility routines gives the User complete access to a normally formatted disk without the need for any knowledge as to how the actual disk controller works.

Each level uses those features implemented at a lower level to add new features, (a sort of 'building block' system).

LEVEL 1 FEATURES:

- * Communication with the FD1771 chip
- * Record read/write functions
- * Disk formatting functions
- * Soft error corrections

This level is the only level which must know precisely what the disk hardware is. This allows higher levels to be independent of both the controller chip type, and the rest of the disk controller hardware. Each of the higher levels sees the disk simply as a linear storage device, addressed by disk unit-number, a physical record number, and a read or write operation.

If the disk controller chip is changed (such as the Myarc card) then it should only be necessary to replace this part of the software. All the higher levels are designed to be independent of the actual physical disk structure which this level deals with, except for sector size which is assumed to be 256 bytes. Smaller sector sizes could easily be supported by setting up the sectors in such a way that the total adds up to 256 bytes - for instance, if a sector size of 64 is used, each sector requested from a higher level would take up 4 sectors at level 1.

LEVEL 2 FEATURES

- * All level 1 features plus:
- * Creation and deletion of files
- * File allocation dynamically extendable
- * Data accessed by filename and physical record displacement
- * 'Mixed hybrid' file format (see below)

The actual 'file' concept is created at this level, with each file being known by its name and the displacement of the physical record within the file - a physical record being defined as one disk sector (256 bytes).

2022- Colin Hinson was a UK TI employee and had access to any technical information available to TI UK.

On each disk is maintained a directory and bit-map of the sectors. This allows for file and record management (i.e. deletion and creation). The file format available is called the 'mixed hybrid' format, and is a mixture of contiguous and non-contiguous (fragmented) file formats. A lot of overhead has to be carried by fragmented files in the form of pointers — these pointers are required in case relative access is required to the file and point to each data record of the file.

The files on this level are allocated in 'clusters' of contiguous records in order to combine the advantage of the flexible allocation of non-contiguous files with the low overhead, and the easy access of contiguous files. Whenever new records are requested, the clusters are expanded if possible, if a cluster cannot be expanded then a new one is started.

LEVEL 3 FEATURES

- * All level 2 features, plus:
- * Program and data files
- * Fixed and variable record formats
- * Relative and sequential access
- * Internal and ASCII data types

The disk management software is completed by the addition at this level, of the relative/sequential access and the fixed/variable record formats. This level takes care of the 'blocking' of one or more logical records into a physical record (as with DIS/VAR format). When relative access is required, it computes the physical record in which the logical record is to be found, updates that record and passes the physical record back to the level 2 file update routines.

UTILITY ROUTINES.

As you may have noticed, there are some functions which have not been catered for, as they are not part of the normal file I/O system. These are catered for by means of some utility routines which have been mentioned previously in this publication. These 'subprograms' are:

- * Direct level 2 file access
- * Direct sector (Allocatable unit) access
- * Modification of file protection
- * Disk formatting
- * File rename.

Methods of accessing these routines will be described later.

99/4a DISK PERIPHERAL - OPERATIONAL INFORMATION.

There are three basic methods used to store data on the diskette, these are:

- 1/. 'Program' (Memory Image) format.
- 2/. Variable format
- 3/. Fixed format

Variable and Fixed format are really 'variations on a theme', in that each sector (or AU), contains as many records of either format as it is possible to write to that sector without overflowing it (i.e. without writing more than 256 bytes).

Program format is used to store an image of the data in memory on the diskette byte for byte, each byte in each sector being used (except for the last sector associated with the particular file, which may not be fully used due to the length of the file not being exactly divisible by 256).

Methods of access.

There are three methods of access, each one being associated with one particular format described above. The methods of access are (in order):

- 1/. Physical I/O.
- 2/. Sequential access
- 3/. Relative access

Sequential access

When the data records in a file are accessed strictly in the order of increasing address on the medium, each record is said to be 'sequentially' accessed. This is the access method used for accessing such things as magnetic and paper tapes etc, in which all the records up to and including the one required must be read in order to access the particular record required. In this mode of access, the parameters for the data transfer do not specify a physical record number, as it is implied that the logical record currently indicated by some data transfer pointer is the one which is required. Restore/rewind operations are either implicitly done or explicitly done prior to the first data transfer. As each logical record is transferred, the access pointer moves to the first byte of the next logical record (which in the case of this DSR is usually the length indicator).

Sequential access methods have the advantage that variable record lengths can be used (such as the well known "VAR 80") and so the number of records per sector can be increased by an amount dependent on the length of each particular record. For instance, ten 24 byte records could be written on a 256 byte sector, whereas if "FIXED 80" were to be used, then only 3 records (\approx 240 bytes) could be written even though there are still only 24 bytes of usable data per record.

Variable format (sequential access) sectors are recorded on the disk with an extra byte added at the start of each record, and a final byte at the end of the last record of the sector. The first byte of each record indicates the length of the record in bytes, a negative number (usually)FF) indicating that there are no more records on that sector. The action of the computer when reading the sectors from the data buffer in VDP RAM is to read the first byte (length of record), then read the required number of bytes as the record from VDP RAM to a new location, read the next byte (length of record), etc., etc., until a negative number is found as the length. At this point another sector is read from the disk to VDP RAM and the process repeated again until all the data for the appropriate file has been read.

) MORE)

Relative (Random) access.

Relative access allows data in a file recorded in fixed format to be accessed by logical record number. The records may be accessed in any order regardless of the order in which they were written or the order in which they appear in the file.

As the DSR software must be able to locate a record solely by its number, relative access can only be supported on either Indexed Files or Fixed Length files. In this DSR, only "Fixed length" files are supported. (Indexed files are files for which an "Index" is maintained on the diskette through which a particular record can be located by looking it up in the index.)

Physical I/O

With the Physical I/O access, the data on the disk is considered to be organised in blocks of 256 bytes by the DSR software. Each byte can be of any value (ie -128 to +127) and no attempt is made to interpret these at data transfer. The existence of records or files is completely ignored by this access method.

You will notice that this method of access is a "Level 1" access. The rest of the disk software (i.e. Levels 2 & 3) reduces all access methods to physical I/O by converting logical record numbers into physical track and sector data. This information is used to specify the disk sector that is to be transferred by the Physical I/O. Physical I/O is not available directly to the User other than in the form of an assembly language sub- program within the DSR. (See later for Sub-Programs).

Directory Organisation.

The directory organisation implemented within the DSR supports only a single level directory, that is to say that no FILE can be a directory containing pointers to other files. This means that each file on the disk can be readily identified by a single name, e.q.:

DSK1.filename

which would specify a file called "filename" on the diskette in drive 1.

This approach to the diskette file organisation prevents access to a catalogue file as such on the disk, as no such file can physically exist. In order to overcome this problem, a semi-catalogue file can be created by the DSR software and accessed by the User. The file which is created (and remember it is not physically on the disk, so don't go looking for it with the Disk Manager!), is of the Fixed format, relative access type. The file contains 128 records, each containing information about the associated catalogue entry and is described in detail below. It can be accessed as:

DSK1. or DSK.volname.

as a standard data file but without a name.

Please note that not all the file operations have been defined for this catalogue file, and only the standard OPEN, READ, and CLOSE are supported. Other operations such as DELETE, EOF etc are considered to be illegal, and an error will be returned if these operations are used.

Catalogue file access from Basic.

The Catalogue file can be accessed as a read-only file by the Basic The file has no name, and is of the INTERNAL, FIXED format type. The file can be opened by (for example):

OPEN #1: "DSK. ". INPUT, INTERNAL, RELATIVE

The record length will automatically be defaulted by Basic to the correct value, so this should not be entered. If however the User wants to specify the length, then it must be specified as 38 - all other lengths will result in an error message.

The Catalogue file acts as if it is Protected, and as mentioned above, it will only allow INPUT access.

The file is written in the normal Basic INTERNAL format, and each record contains four items: one string and three numerics. There are 128 records in the file, and they are numbered 0 through to 127.

Record O:

This record contains data about the volume for which the catalogue file was created. The string gives the name of the disk (up to 10 characters) and the numerical items are as follows:

- Always 0 (for record 0)
- Total number of sectors on the disk
 Total number of free sectors on the disk.

Records 1 through to 127:

These records contain information on the corresponding file in the Catalogue. Non-existent files will give a null string for the first item and Os (zeros) for the numeric items. Files which exist will give the file name for the string, and the following numeric items:

- 1/. = Filetype (if number is negative, file is protected)
 - 1= DISPLAY/FIXED datafile
 - 2= DISPLAY/VARIABLE datafile
 - 3= INTERNAL/FIXED datafile
 - 4= INTERNAL/VARIABLE datafile
 - 5= Memory Image file (Program File)
- 2/. = Number of AUs allocated to the file
- 3/. Number of bytes per record (O for type 5 file)

Catalogue file access by application program or User.

(Please read the above information first)

In order to enable access from assembly language programs, the following additional information is required:

The Catalogue file contains 128 records of 38 bytes and is output INTERNAL format (i.e. a length byte followed by a data item.). Each of the records contains four of these data items:

- * An ASCII string containing up to 10 characters, or a null string.
- * Three numeric values in standard 8 byte floating point format.

Record O contains information about the volume itself, while records 1 through to 127 contain information about the relevant file for each slot" in the catalogue.

The information in the records is as follows:

- 1/. An ASCII string of up to 10 characters containing the name of the file in the specified slot. For record 0 this is the Volume name.
- 27. A floating point value of between -5 and +5. These values represent the same information as given for Basic.
- 3/. The number of AUs allocated for the file (record 0 = total AUs on the disk)
- 4/. The number of bytes per logical record O for Program file. (record O= Free AUs remaining on the disk)

If a catalogue slot is empty, the filename will contain a null string and the numeric entries will contain floating point zeros.

INTERNAL DATA STRUCTURE.

Physical device format.

The physical device (diskette) is logically subdivided into "Allocatable Units" (AU's). An AU is defined as being an integral number of physical records on the device. The total number of AUs on any device is less than 4096 (ie each AU can be addressed by a 12 bit word). The first AU is numbered 0.

The physical record length is the size of the block of data which can be read or written to the device at one time. For the Disk Peripheral, the AU and the Physical Record are equivalent to one disk sector (256 bytes).

Summary of system reserved sectors:

Sector 0 contains data concerning the volume, such as available (free) sectors, disk name etc.

Sector 1 contains pointers to other sectors which contain descriptions of the appropriate file. Normally there is a pointer in sector one for each file which exists on the disk.

Volume information block (VIB), sector O.

This block contains disk configuration data as required by the disk software. This includes available number of AUs, Volume name, format information etc. Included in this block is the "Allocation Bit Map":

The allocation bit map is used to indicate to the disk software the availability of individual sectors on the disk. A "1" indicates that the sector associated with that "bit" has been allocated, and a "0" that the sector is available for use. The first bit in the map is for sector 0, the second for sector 1 and so forth. When the disk is initialised (WITH VERIFY = YES if using DM1000 or similar), then the bits for bad AUs are set to "1" along with the bits for non-existent AUs and the 2 system reserved AUs. All the remaining bits are of course set to zero.

File Descriptor Index Record (FDI), sector 1.

This sector contains alphabetically sorted pointers to each File Descriptor Record (FDR), and enables the system to keep track of the location of each FDR on the disk.

NOTE: If either Sector 0 (VIB) or sector 1 (FDR) are bad or corrupted then the whole disk is considered bad by the system, as it can no longer keep track of information stored on the disk.

File Descriptor Record. (FDR) (any sector)

This record is used to map filenames into physical locations of the files on the disk. Each entry contains information about the file such as type, record type, data type, size of file etc.

File Control Block (FCB) in VDP RAM.

This is a copy of the FDR which is maintained in VDP RAM while the file is open. It may additionally contain some more up to date information about the file. One FCB is required for each file which is currently opened. It is the memory taken by these FCBs which is affected when "CALL FILES" is used in BASIC.

DETAILED DESCRIPTION OF DISK FORMAT

A single sided diskette used with the T.I. Disk Controller has the following specifications:

Diskette type: Encoding method: FM single density Capacity:

SA 104 (ANSI standard 5.25")

92160 Bytes per disk

2304 Bytes per track

256 Bytes per sector 40 Tracks per side 9 Sectors per track

The capacities given are for a single sided, single density system. Using double sided will of course double the bytes per disk, using double density (Myarc type controller) will double the capacity again.

For ease of description, the following information assumes that the diskette $\,$ is addressed as a 'linear' medium, that is to say, sector O is the first sector of track zero, sector 1 is the second and so on -sector 359 being the last sector of track 39. It should be noted that this is not strictly correct as the sectors are in fact 'interleaved' on each track to obtain faster access when reading. If a double sided set up is being used then the physical layout of the second side is the reverse of the first side, that is to say, sector 360 is physically on the opposite side of the disk to sector 359, and sector 719 is opposite sector O.

	+	
0 2 4 6 8	DISK VOLUME NAME The volume name can be any combination of ten ASCII characters except for space, '.' or NULL. It is space filled to the right, and must have at least one none-space character.	1 3 5 7 9
λA	1 TOTAL NUMBER OF AUS	λB
) C	! SECTORS PER TRACK ! 'D'	₫⟨
) E	,) F
>10	PROTECTION NUMBER OF TRACKS PER SIDE	>11
12	IQTY FORMATTED SIDES. DENSITY	>13
) 14	I RESERVED) 15
> 36	1	>37
) 38) 3A	*.) 39) 38
)FC)FE	1 1 +	>FD >FF

Bytes A - B show the total number of allocation units on the volume. This information should match the Allocation Bit Map data.

Bytes $\rangle D$ - $\rangle F$ contain the ASCII letters 'DSK'. These letters are checked by the T.I. disk managers to see if the disk has been initialised.

Byte >10 Contains the ASCII 'P' if the disk is Proprietary Protected. This byte will normally otherwise be an ASCII space.

Bytes >12 - >37 are reserved for what were intended to be future expansion. This could be date and time of creation etc. The T.I. controller will set all these to zero.

Bytes >38 - >FF contain the allocation bit map. The map can control up to 1600 256-byte sectors (=400K bytes) - this will allow double sided, double density diskettes without modification to the map layout. Each bit in the map represents one sector on the disk. A logical one in the bit map means that the corresponding sector has been allocated, a logical zero means that the sector is available for use.

The Volume name can be used as an alternative to the drive name - that is to say the User can specify a disk drive in either of the following ways:

If the volume name is specified, then the system will look at each drive in sequence until it finds the specified volume. If more that one drive contains a volume with that name, then the lowest drive number will be assigned.

FILE DESCRIPTOR INDEX RECORD. (Sector 1)

This sector contains up to 127 two byte entries. Each of these points to a File Descriptor Record, and are alphabetically sorted according to the file name in the File Descriptor Record. The list starts at the beginning of the block, and ends with a zero entry.

As the file descriptors are alphabetically sorted, a binary search can be used to find any given filename. This limits the maximum number of searches to 7 if more than 63 files are defined. Generally if between $2^{\circ}(N-1)$ and $2^{\circ}N$ files are defined, a file search will take at the most N disk searches. To obtain faster directory response times, data blocks are normally allocated in the area above sector >22, the area below this being used for file descriptors and only used for file data when there are no more sectors available above >22.

To be continued.



PROGRAMMER'S NOTES

JOHN ROE wrote to me and offered a solution to the problem that I had experienced when using FUNLWRITER - namely, that when using SaveFile or LoadFile, the cursor always comes up over the D in DSK, instead of over the first space immediately following the period (.).

He suggests using TAB (FCTN 7) which places the cursor in exactly the right place.

It works - but only if you have a T in the TAB line in the right place!

Most of my documents do not unfortunately have a tab position in just the right place, but it is worth noting if you too have been niggled by this minor problem.

It isn't so much a fault as a lack of cosmetics (the little touches which, while unnecessary, make life that little bit easier).

I hadn't thought of using a tab position before, so I've learned something.

Other Users of TI-Writer or FUNLWRITER might also remember that almost all of the editing function keys are active when you are on that top command line: including word tab (CTRL 7), clear to end of line (CTRL K) and move to beginning of line (CTRL V) amongst others.

THE TIHOME SOFTWARE COLLECTION

Pricing for TSC disks has been reorganised, although the full Collection is still offered at £35 inclusive.

Check the TSC Catalogue (available free to ITUG subscribers on request) to find out what the TSC entries stand for. Make sure that you indicate clearly what your choice is, specifying the name of the disk/s you want.

GAMES:	TSC ENTRIES:	PRICING
TSC_DSK_E TSC_DSK_F	GA0001 - GA0011 GA0012 - GA0022 GA0023 - GA0032 GA0033 - GA0043 GA0044 - GA0055 GA0056 - GA0066	The number of programs on a disk can vary between about 7 and 11, dependent upon the sizes of the programs in terms of sectors used. The exception is the DEMONSTRATION disk, which alone is offered at £2.95 inclusive of post and packing
		·
TSC_DSK_G TSC_DSK_H TSC_NSK_H DEMONSTRATION:	ED0001 - ED0009 ED0010 - ED0017	The rest are priced as follows: & 3.95 for ANY 1 DISK & 6.90 for ANY 2 DISKS (SAVE & 1)
		£ 9.85 for ANY 3 DISKS (SAVE £ 2)
TSC_DSK_I	DE0001 - DE0006	£12.80 for ANY 4 DISKS (SAVE £ 3)
MUSIC:		£14.75 for ANY 5 DISKS (SAVE £ 5) £16.70 for ANY 6 DISKS (SAVE £ 7) £18.65 for ANY 7 DISKS (SAVE £ 9)
TSC_DSK_J	MU0001 - MU0009	\$20.60 for ANY B DISKS (SAVE \$11)
TSC_DSK_K	MU0001 - MU0009 MU0010 - MU0017	£22.55 for ANY 9 DISKS (SAVE £13)
ISC_DSK_L	MU0018 - MU0026	£24.50 for ANY 10 DISKS (SAVE £15)
UTILITIES:	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	£26.45 for ANY 11 DISKS (SAVE £17) £28.40 for ANY 12 DISKS (SAVE £19) £30.35 for ANY 13 DISKS (SAVE £21)
TSC_DSK_M	UT0001 - UT0011	\$32.30 for ANY 14 DISKS (SAVE £23)
TSC_DSK_N	UT0012 - UT0022	£34.25 for ANY 15 DISKS (SAVE £25)
TSC_DSK_O	UT0023 - UT0033 I	£35.00 ENTIRE (SAVE £28.20)
TSC_DSK_P	UT0034 - UT0044 	

All programs are recorded on Single-sided disks.

You may elect to be supplied with software on Double-sided disks, when you should deduct £1 from the prices shown above.

If you prefer, you may send in your own disks, in which case deduct 50p for each disk from the prices shown above.

For example, 8 disks supplied by you would work out at £20.60 - $(8 \times 50p = £4) = £16.60$ nett.

All the above prices are inclusive of post and packing.

The pricing for programs recorded on cassette remains $\pounds 1$ per program, with an overall charge of 65p for post and packing.

PLEASE MAKE ALL CHEQUES PAYABLE TO "PETER BROOKS"