

**SPECIAL  
OFFER!**

# THE DISCIPLE DISC-MANAGER

**A SUITE OF INTERACTIVE PROGRAMS  
TO MAKE THE MOST OF YOUR DISCIPLE**

GET TOTAL CONTROL OF YOUR DISCS

COMPRISES **3** PROGRAMS

SPECIAL INDUG PRICE

ONLY  
**£9.95**  
SAVE £5

The DISCIPLE Disc Manager gives you powerful disc handling and organising capabilities that would cost £100's on other machines!

● **THE CONFIGURER** This program actually **names** and **numbers** DISCIPLE discs to your requirements. Now disc identification is simplicity itself!

● **THE CATALOGUER** An amazing program that allows you to **catalogue**, **search**, **update** and **display** every program on every disc... **NO typing in**, simply insert all your discs, one at a time into drive 1 and the Cataloguer sorts, colates and displays all programs into numerical order, **automatically!**

● **THE AUTOLOADER** This program is the real workhorse of this suite of programs. You can **automatically** load, erase, copy, re-name all programs with 2 catalogue display options, and 2 disc facility. You can now **ERASE** or **RE-NAME** up to **15 programs** at **one time**. (Ideal for multiple re-naming after a snap shot session). The Autoloader on every disc makes using the DISCIPLE so simple, so easy and such a pleasure to use, that you'll wonder how you could ever have Managed without it!

**COMPATIBLE**  
WITH THE NEW  
**★ PLUS D ★**

ONLY  
AVAILABLE  
FROM

## BETTER BYTES

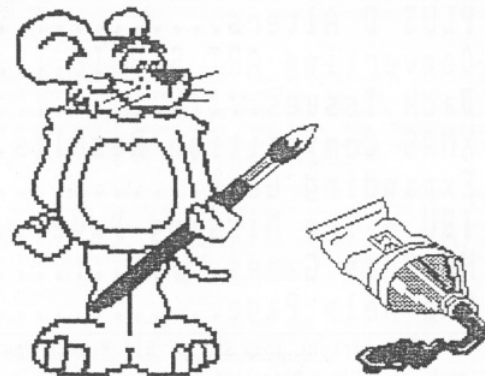
BETTERBYTES, 10 SPITAL TERRACE, GOSFORTH, NEWCASTLE UPON TYNE NE3 1UT

Mail Orders Welcome State if Disciple or Plus D and give details of drive type etc. Overseas orders add £1.50 p&p  
(Please make cheques payable to D.L. HOOD)

# FORMAT

A Magazine from INDUG  
For DISCIPLE & PLUS D Users

ISSUE #8 - MARCH 1988



A TOUCH OF ART...

INDUG.

# CONTENTS

ISSUE #8 - MARCH 1988

The Editor's Page.....	3
DISCiPLE News.....	4
Your Letters.....	5
Kempston Mouse Review.....	7
Software Competition.....	10
PLUS D Alters.....	11
Converting ART STUDIO.....	13
Back Issues.....	16
XMAS Competition Results.....	16
Expanding Gens.....	17
IBU - The Missing Page.....	20
No Snap Games.....	21
The Help Page.....	22

© Copyright 1988 INDUG. All Rights Reserved.

No part of this publication may be reproduced in any form without the written consent of the publisher. INDUG members may copy program material only for their own personal use.

FORMAT is published by INDUG, 34 Bourton Road, Gloucester, GL4 0LE, England. Telephone 0452-412572. DISCiPLE and PLUS-D are trade marks of MILES GORDON TECHNOLOGY, Unit 4, Chesterton Mill, French's Road, Cambridge, CB4 3NP, England. The DISCiPLE interface is marketed by ROCKFORT PRODUCTS, 81 Church Road, Hendon, London, NW4 4DP.



March here already, spring has sprung, the buds are opening, the suns shining but I have to slave over a hot keyboard trying to keep to the deadline at the printers. An editor's life is not a happy one, over-worked; under-paid etc etc. But that's enough of that, lets get down to the bits you really want to read.

The PLUS D and DISCiPLE continue to receive rave reviews in the main-stream magazines (Crash, Sinclair User, Your Sinclair & Popular Computer Weekly) and INDUG has come in for several mentions as well. If anyone finds references in other magazines I would appreciate a copy (with a translation please if its not in English).

I've had a few phone calls about the final part of IBU which was published last month. Due to missing a file on the original disc the program to enter the machine code by POKES was not listed. You will find this missing section on page 20 this month.

Now an apology for members who ordered the LCOPY tape from the USE page in the last few months. LCOPY was written on a DISCiPLE and alas refused point blank to have anything to do with the PLUS D. It took some time to re-code it to work with both interfaces and as a result tapes only came from the duplicator in mid February. My apology is tendered to anyone who had to wait, I will try to ensure it never happens again.

ARTISTS send me your computer art. I think its time we allocated a page each month to art produce on, or with the aid of, a computer (Spectrum of course). Flat Artwork, or Screen file dumps on disc/tape, can be sent to the usual address. I might even use some as front covers if I really like them. Dont worry about the size, I can reduce to fit. I look forward to seeing some of your efforts.

The INSIDE THE PLUS D article I promised for this month has been held over to next month due to pressure of work and lack of space. I hope you will consider it worth waiting for.

Finally this month, I'm going to get a bit of a rest. I will be on holiday for the week commencing 20th March. As a result a call to the HOTLINE will just get my answerphone (if I remember to put it on). I will be available between 9 and 10pm each evening if there are any really urgent matters, but please be kind and save them for the following week if you can.

See you next month.

Bob Brenchley. Editor.



### SAM

SAM is a secret I have long kept under my hat. I had hoped to be the first to bring you news of this the new computer currently under design at Miles Gordon Technology. However the cats out of the bag through several sources (seen the big write-up in CRASH) so I guess I can spill a few beans now.

SAM is a 256k computer based around the fast Z80B chip. It will be launched sometime before Christmas (if Bruce Gordon will stop trying to squeeze new features into the ULA) but neither a firm date nor a firm price has been fixed yet.

SAM is not a Spectrum clone, rather it is the next logical development beyond. It will have none of the horrid paging problems of the Sinclair 128 and most certainly no plastic bolted-on cassette deck like the Amstrad +2. Pure machine code games written for the 48k Spectrum should run as one screen mode on SAM has exactly the same layout as the Spectrum's (remember the Enterprise did this as well). A very advanced Basic is to be written but at this time there are no concrete specs laid down.

I will be co-operating in several ways with MGT over the SAM project and will bring you further details soon. However I am only allowed to pass on news through these pages. I can't answer questions over the phone so don't ask. I only have one more thing to say on the subject now. BRUCE when can I have one?

### INDIA TO GET ITS OWN GROUP

India is the latest country to get its own DISCIPLE & PLUS D user group. Shailesh Toprani of Bombay is forming a group that will be affiliated to INDUG. The Spectrum is the most widely used home computer in India (only the IBM PC comes even close in numbers) and interest in the DISCIPLE and PLUS D is expanding fast. More news as the group develops.

### WORD-MASTER

WORD-MASTER is a new word processor from CARDEX. Designed for 48k Spectrums it is a full feature processor with the ability to include some graphics within a document if you are using a dot matrix printer. The program comes with a nice little manual which covers each feature of WORD-MASTER quite well and includes instructions for transfer to disc. Two extension programs, HEADLINER and TYPELINER, turn WORD-MASTER into a Desk Top Publishing package. WORD-MASTER costs £14.95 and is available from CARDEX, 3 Barton St, Barrow-in-Furness, Cumbria, LA14 2EP.

Dear Bob,

Help!! The Spectrum+2 has hardware faults. That cap-shift M,N, and symbol-shift A will not operate when cold in 48K mode is easily fixed by the soldering of a 1000pf capacitor across diode 35. (Bless you, Popular Computing Weekly). This fault does not occur in interrupt mode 2 (Tasword 3 is O.K.). In 128K mode, all is well until you use interrupt mode 2. Here, caps shift 7 and 8 (the cursor keys), the same shifted keys in graphics mode, in very cold conditions, symbol shift p (or single key inverted commas) and in extreme conditions, symbol shift o (semicolon) will not work: nor will apostrophe. This makes Tasword+2 almost impossible to use.

I have been following this one up for a long time now. Tasman know all about it, and have a patch to restore normal keyscan (but with the loss of some program features). Mastercare of Doncaster say they will mend the machine for £28 - I now have two! The second came from Curry's in Birmingham just after Christmas. I tested around 12 machines in the city-centre store - the entire stock. All had the same faults. Mastercare say this is due to dirty address lines which can be detected using an oscilloscope: it certainly looks like it as a capacitor cleans up the 48K problem.

Amstrad have been approached on a number of occasions, both by letter and by telephone, although this is rather difficult. My contact there is a Brian Chapell, whom I saw both at the PCW show and also at the Which? Computer Show. I sent him a DISCIPLE 3.5" disc with Tasword3 and Tasword+2 to show him this effect, together with a letter. Although he later denied having received it, I find that he has talked to a Chris Wilshaw, who also has the same problem, and he mentioned the 1000pf capacitor, but denied that there were any other faults. Does anyone know - is this a fault, or is it a program aberration (unlikely, since Tasword+3 works fine). And what is the cure?

Yours sincerely, JOHN WASE.

Well thanks for the tip on the Cap-Shift N problem, both my +2s suffer from this. But can any reader help with the other problem because John is not the only one with this problem. Ed.

Dear Editor,

Can any reader help with the conversion of the 'BLAST' basic compiler to disc. I am a machine knitter and have several programs to do with knitting which are written in basic and are just too slow. I thought BLAST would solve my problem as it would work with microdrive but it will not run on my PLUS D. Can anyone help?

Yours Sincerely, Pam Travis.

Its nice to see someone really using a computer to help their hobby. Anyone out there know how to convert BLAST for Pam. Ed.

# KEMPSTON

AVAILABLE NOW! THE NEW KEMPSTON MOUSE  
TOGETHER WITH TOOLKIT SOFTWARE



The KEMPSTON MOUSE consists of:  
High resolution 2 button mouse,  
mouse interface, Toolkit software and  
manual.

The Toolkit software consists of fast  
machine code routines which can be  
called up from BASIC in order to  
produce a WIMP (Windows, Icons,  
Menus, Pointers) system in your own  
programs.

The Toolkit commands are:

**START** : This initialises one of four  
on-screen pointers.

**MOVE** : Allows the pointer to move  
until a mouse button is  
pressed.

**FINISH** : Removes the on-screen  
pointer.

**SETUP** : Sets up a window in one of  
three formats.

**HIGH** : Highlights a specified field  
within a window.

**REMOVE** : Removes a specified  
window.

A sophisticated ICON and POINTER Editor is also included, supplied with eight  
ICONS and four POINTERS built in.

The complete system with software is available for only **£49.95** inc.

There is also a special version available for the Disciple and +D Disc Systems,  
please specify which you require.

The 'Toolkit' software is available separately for **£9.95** inc.

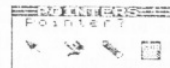
FAST Mail Order Service from:

**KEMPSTON DATA LTD, 22 Linford Forum, Rockingham Drive,  
Linford Wood, Milton Keynes MK14 6LY.**

For Access/Visa sales telephone 0908 690018

# KEMPSTON

# Kempston Mouse



A Review By: John Wase.

A mouse enters information directly into the computer, like a joystick or a keyboard, but using a screen pointer and "click buttons". A good mouse must lie well in the hand, and move easily, with buttons which click nicely; the accompanying software must allow the pointer to move smoothly round the screen and be responsive to control, and the buttons must have a nice click to them.

The DISCiPLE version of the Kempston mouse comes neatly packed, in the obligatory polystyrene, together with a 24-page A5 instruction book, two additional leaflets, tape cassette and inevitable black plastic interface. The cassette contains nine programs, some of which are specific to the DISCiPLE, and listed in one of the supplementary leaflets together with instructions for loading to a formatted disc. Program 2 (merely a fancy loading screen as I afterwards discovered) was listed differently on the sheet from its name on the cassette, which guaranteed that it would not load: it of course took several runs for a dum-dum like me to realise that it was only a wrong name and not my worn out cassette recorder playing up. This ensured that, overall, I spent almost two hours (including the bum loads) getting the software onto the disc - it would not have been difficult to program an autoloading tape, and Kempston have promised that they will look at this.

The nine files, a mixture of programs and code (including four Basic programs all utilising some of the code files) give the overall kit its potential, for they enable you to use a fully-fledged WIMP system in your own programs. "What is a WIMP system?" I hear you cry! (Well, just a few of the unconverted). It is a system in which a "window" opens in your screen on which there is already some information; for example, an engineering flowsheet of a chemical process. By moving a mouse, you manipulate a pointer over the menu in the window to where it says "pump", click a switch on the mouse, and lo and behold, the window disappears and that which had been behind it returns! Move the pointer to where on the drawing you need the pump, click another switch and the pump symbol miraculously appears. Move the pointer up to the little picture of a disc in the screen corner; click, and the drawing is saved. This is a Windows, Icons (the little picture is an icon) Mouse and Pointer (WIMP) system, and the suite of programs allows you to design and include in your own programs up to 16 windows, each containing a menu, 8 icons and 4 pointers. The first program is merely a tester - move the arrow round and round the screen and click the two mouse buttons to get "L" and "R" on the screen. The other three programs are a demo program, an icon-edit

program to enable you to design your own icons and pointers and a toolkit program to design windows and menus.

First the hardware. The black plastic interface box (about 10cm wide and 6.5cm deep) lies flat at the back of the Spectrum rather than the more usual upright, with an edge connector in front and a joystick-type port for the mouse back left of the top which is also ornamented by a smart Kempston logo. There is no through port. Because of the unusual port-mapping of the DISCiPLE, the interface is specific to it (it won't even run on the +D although the standard version will) and, as such, is likely to have been modified from the "standard issue". Inside, the circuit-board fits the screw-holes very badly and has had to have a link wire soldered across. When the case is screwed together, it is further fouled by a couple of components which are possibly again DISCiPLE-specific. The net result of all this is that it's hopelessly distorted; looked at across the edge connector, it's like a banana. On top, the mouse socket fouls the case and the plug is forced in only with a struggle. Once you've got it there, though, there are, surprisingly, no more problems. I understand from a telephone call to Kempston that normal production units do not suffer from such faults and from past experience of Kempston hardware I would tend to believe them. The case didn't overheat, even with prolonged testing, and the thing worked. The overall good performance, then, is marred by these first impressions, a pity, for it might put a prospective purchaser off.

I then tried the mouse. It is, in fact, a standard office Logimouse, in PC light grey with two battleship grey buttons. I am used to a variety of two-button mice - this is probably the squarest and chunkiest I've used. No streamlining - the mouse is oblong; about 7cm by 10cm long, with two very large 2 x 2.5cm buttons up front. Again, unfavourable first impressions (of clumsiness when compared with other mice I habitually use) were quickly reversed - the wide buttons which I had found a nuisance at first I soon got to like. They are easy to press and have a nice positive click. The ball rolls well and positively over a variety of surfaces and the test program showed that the pointer followed the mouse smoothly over the screen. The whole thing was reassuringly solid and well constructed.

The 24 page instruction manual is smartly covered, but inside the print reproduction could be improved. It is, nevertheless, legible and there are only a few mistakes. It starts with information on connecting and using the mouse, testing it, maintaining it, and on WIMP systems in general. Quite good, here. The next sections deal with the toolkit program. This is apparently needed in RAM to run the thing and is a section of code fed in at address 61660; the DISCiPLE version is 24 bytes longer than the standard one. Further space is needed to store additional information necessary when defining windows (size, colour, highlighting, etc.). The demo program is lovely. Feed it in and you are presented with a nice little window on the left in tasteful cyan and blue, heading "menu", choices "tape load", "calculator", "basic", "reset". The calculator is a great little demo; you click it on and select dec, hex, bin or oct: pity its range is a bit limited (well it is only a demo). The first menu

choice displays a weakness apparent throughout: the review software had not been modified to save and load from disc - only cassette. Again, Kempston are busy rectifying this; make sure you get the latest version.

The Demo Basic program tells you how to set the whole thing up and the Basic toolkit program merely aids in inputting text into windows. Finally, there is the Iconedit program. This uses the mouse very effectively to select one of the eight icons or the four pointers: each of these occupies only four character squares. The selected icon is magnified and pressing the buttons enables you to alter the design. Again, saving and loading are to and from cassette, and the thing is from machine code: if you try and break into it, it just goes back to the menu. In the end, I saved icons, used a header reader, went into Basic and saved the same bit to disc - no more trouble after that - I knew which bit to save! The appendices in the back of the instruction book contain tables of useful addresses in the toolkit program and their functions, together with Demo and Toolkit Basic listings and a full list of error codes.

My overall impressions? The mouse works well and is well designed. The software makes good menus and icons. Kempston had a beautiful demo working at the PCW show on a prototype on the Spectrum +3 last autumn, selecting food from a menu and feeding a man at a table. This sort of program really makes you appreciate the possibilities of the kit. Where the instructions do let you down is in the working of the whole thing - what goes on in the interface; how much space do you really need, and where; is the code relocatable and how should one change its addresses to fit in with, say, BetaBasic? So there are some limitations and reservations. These apart, it's a good little mouse, well engineered and good value at £49.95, with a useful tool kit. Try it!

If you already have a Kempston mouse and wish to have it upgraded to the DISCiPLE then Kempston will do this for you for £15.00 which includes the new toolkit software.

When ordering remember to state whether you have a DISCiPLE or PLUS D. PLUS D owners receive the standard interface but the disc compatible software.





# COMPETITION

Our SPRING SOFTWARE COMPETITION, open to all INDUG members, has really **FANTASTIC** prizes.

Yes our latest COMPETITION is a must for everyone. We have lots of prizes including a super NEW PRINTER, Lots of SOFTWARE, stacks of DISCs and much much more. In fact over **THREE HUNDRED POUNDS** worth of prizes for members to win.

So what have you got to do to win a prize? It's simple really (well not too difficult) just write a piece of software. It could be a UTILITY, a BUSINESS program, an EDUCATIONAL program or a GAME. It can be in Basic, Machine Code or any other language the Spectrum will understand, provided we can run it of course.

Each program we receive, and you can submit more than one, will be evaluated by a small team of reviewers and prizes will be awarded on the basis of:-

- a) Use of machine.
- b) Standard of programming.
- c) it's appeal to Spectrum and/or DISCiPLE / PLUS D users.
- d) Originality.

Your program need not use the DISCiPLE or PLUS D, it could be written for an unexpanded Spectrum and it wouldn't lose marks. Entries should be on 5.25" 40/80 track, 3.5" 80 track discs or on tape. Please include detailed instructions and a short write-up on how (and why) you wrote the program.

Address to INDUG, 34 Bourton Road, Gloucester, GL4 0LE. and mark the envelope :- SPRING SOFTWARE COMPETITION.

Closing date is 30th April 1988. Winners will be notified by post and the results will be published in the July issue. So get writing, there's no limit to the number of entries you can make. As usual in these things, the Editor's decision is final (and no bribes under £500 will be considered)

The winners, and in fact all other submissions, will also be considered for publication in **FORMAT**, or on tape, so even if you don't win a top prize you can still earn money from you efforts. A copy of the full rules will be available on request.

GOOD LUCK

# PLUS D ALTERS

By: Walter Kelly.

Since buying a PLUS D to use with my Spectrum +2 I have found only one major fault. On page 3 of the PLUS D manual it says, referring to +2 users, 'go into the EDIT mode then select SCREEN and press enter. You must be in this screen mode to avoid problems later on'. That is a bit of an understatement, what they really meant to say was 'do not use the full screen edit mode or you will crash'.

Well I prefer the full screen editor so, as no one else seemed to be coming up with a fix, I set out to trace the problem myself.

The crash happens during the call to the PLUS D shadow ROM routine at 01134, this eventually leads, if all the syntax checks are passed to a call to an address in ROM 0 of the 128K. This address is at 14498 in the +2 model and 14465 in the older 128K model, from here it jumps to 15231 on the +2, this routine seems to clear a given number of bytes on the screen, but in calculating the position that the bytes are to be cleared from, it uses the contents of the address that the IX register holds plus one. The PLUS D during all of the basic commands loads the IX register with the number 15043, so that the byte used by the screen clearing program will be found at 15044 in ROM 0, which has the value 193.

What happens is that instead of just clearing a set number of bytes on the screen, the program continues to clear bytes beyond 23296, as you know doing this will cause a crash if you are in 128K mode because this is where the ROM/RAM paging routines are located. The previous model of 128K does not crash when entering direct commands because of the slight difference in the addresses of ROM 0, the byte at 15044 holds 24 and not 193 as in the +2.

To fix this problem I changed all 23 calls to 01134, to call 14820 in the PLUS D, here I changed IX to 00012 and then called 01134. The address at 00013 in the ROM holds 0, in both models of Spectrum, then on returning to this small program the IX register is changed back to 15043 before returning to the PLUS D program. All of the calls to 01134 are, bar one, in the System File of the PLUS D, and the only one that is not, is I think part of the POKE @ command routine, which strangely enough does not crash in the normal full screen edit mode.

If IX holds the number 0, then it clears text and attributes up to address 23296, in the full screen edit mode this means,

# ART STUDIO → DISC

that it will clear the lower 3 lines of the screen including the 128 Basic sign.

Having made the alterations I tested out the new version of the system with each and every command (both disc and normal basic) and tried every type of error I could think of. I'm pleased to say it worked and I can now edit programs in my favourite mode.

The listing below should be typed in and then saved for safety. Insert a copy of your system disc (dont use the original just in case you made a mistake in typing) and run the program.

The file 'CONFIG2\_C' (the high memory version of the System File) is loaded, altered and re-saved to disc. The version number of G+DOS is set to '3' so you know the alterations have been done. Now run the CONFIG program to set up your system file.

## PLUS D ALTER PROGRAM

```

1 REM *****
2 REM *** G+DOS ALTERATIONS ***
3 REM *** By: Walter Kelly. ***
4 REM *** (c) INDUG Feb '88 ***
5 REM *****
10 LOAD d1"CONFIG2_C"CODE
20 LET a=228: LET b=57
30 FOR d=1 TO 23
40 READ c
50 POKE c,a: POKE c+1,b
60 NEXT d
70 DATA 43055,43408,43418,43558,43628,43926,44039,44053
72 DATA 44079,44090,44132,44144,44199,44280,44393,45012
74 DATA 45077,45446,45865,45877,45889,46017,46393
80 FOR e=48868 TO 48879
90 READ f
100 POKE e,f
110 NEXT e
120 DATA 221,33,12,0,205,110,4,221,33,195,58,201
125 POKE 46514,CODE "3": REM version number
130 CLS : PRINT AT 10,8;"SYSTEM ALTERED": PAUSE 50
140 SAVE d1"CONFIG2_C"CODE 42240,6656

```

I hope this will be of help to other +2 users. I am sure that there are many others who, like me, prefer not to be forced to use the bottom screen edit mode to enter a basic command.

## EDITORS NOTE

There are two versions of G+DOS around, V1 & V2, there is however no difference in the two System Files. The changes are due to the moving of some routines between version 1 & 1a of the ROM. These alterations work with all versions of G+DOS.

or a STORY OF KEYBOARD BLUES, SWEAT & TEARS.

By: VILLY FELTMANN.

ONCE upon a time, a long time ago, up in the high north where the winter was black and wet, in a kingdom called Denmark and in the suburban-slum of the capital Copenhagen lived an OIK (1). Up under the roof of the house, he sat one evening rewinding his tape for the 25th time, when all of a sudden a thought struck him. Here below the cassette-deck I have a DISC DRIVE, "why not convert the ART-STUDIO program to use it" he said. That must be a piece of cake he thought, the only thing I have to change is the cassette routines. That was in the year '87.

The very evening after, he was sitting in front of his screen and trusted SPECTRUM computer with the DISCIPLE on the back of it, ready to fight his way through the traps the PA (2) had set up, and the only help he had was DEVPAC, old but not out of date. The first hurdle was the LENSLOCK code, well not really, first he went searching for the text to the windows, that was easy MONS helped him, #8C3D it said when he was searching for the word "cassette", though he didn't like the word, he had to use it. That was the first trap; when the CODE was running it ran at a different address, but where? the answer he finally found after several evenings (and nights) tracing through the LENSLOCK code, and it was #963D, the whole CODE was moved 2816 bytes up in memory.

So now he had found two vital items: address of the datafile for the window and the correct address when running. but the task wasn't completed with that, because how did ARTSTUDIO find out which window it had to use? and when doing that how did it know which routines to jump to? -- Well it was all in window files. The head window tells where the cassette window is and that leads on to the main routines. But to reach even that understanding took many more evenings of tracing through the code. Then christmas was near so things came to a temporary halt.

In the year 1988 he was ready, he had fought his way through all traps set by the PA, found the idea behind windows and control of ARTSTUDIO, so now to the easy job, making the code to control the DISCIPLE. That was done in a week despite the fact that he had to go off to work each day. Finally the day came when it all was ready for a test, would it work?, he asked himself. Who doesn't dare, doesn't win, so off he went. LOAD d\*"studio\_mc" CODE : LOAD d\*"stud\_disc." CODE 34524 : SAVE d\*"studio\_mc" CODE 26000,30672 he typed, and then came the big step : RANDOMIZE USR 26000 ..... NO RESET, NO ENDLESS LOOP, IT WORKED !!!! and the smile on his face grew bigger and bigger

while he ran the test, it worked. But what was that? - LOAD a font didn't load it, it disappeared and the original font was still there !. Back to work, what went wrong? ah the code changes an address when handling fonts, what now? was it all for nothing? Oh no this hacker was a stubborn man, nobody could stop him now, not when he was so near his goal. So after a few changes he was ready again and this time it all turned out to be alright.

Here ends the story and from what I have been told he is still on that keyboard, still up under the roof, happy tracing yet another program.

This article is translated with help from Susanne, who doesn't understand a word of it. Thank you.

- (1) OIK : One Income and Kid. The Observer 29/3/87.  
(2) PA : Protection Artist. YOUR SPECTRUM no. 14/5/86.

So here are the secrets from the man called ALL-BITS. First install the ARTSTUDIO program as the manual tells you, then save the CODE to disc as "studio" CODE 26000,30672. Now type in the hexloader, RUN, and enter the hex codes from the table. The table contains the addresses in decimal and the code in hex follow by a checksum. Type it all in, prepare a new disc for the converted code and save it together with an auto-loader like this:-

1 CLEAR 25999: LOAD d\*"studio\_mc" CODE: RANDOMIZE USR 26000

You will notice that in ARTSTUDIO there are two 'LOAD FILE' messages in the DISCIPLE window, its done so you have less to type in. There is no difference between them. It also will only work with the last drive used except for ERASE, this uses drive 1, it can be changed by poking address #958E, CHRS "2".

```
1 REM *****
2 REM   HEXLOADER FOR CONVERSION OF ARTSTUDIO VER. 1.5C
4 REM *****
10 CLEAR 25999: LOAD d*"studio_mc"CODE 26000
15 POKE 23658,8: FOR N=1 TO 1E9
20 INPUT "Please enter address ";a;"and checksum ";c
25 LET check=0: INPUT "NOW ENTER BYTES ";b$
30 LET len=LEN b$: PRINT a;" ";b$;" C=";C
50 FOR b=1 TO len STEP 2: LET byte=16*(CODE b$(1)-48-(7 AND b$
(1)>"9"))+(CODE b$(2)-48-(7 AND b$(2)>"9")): POKE a+b-1,byte: LE
T check=check+byte: LET b$b$(3 TO ): NEXT b
60 IF check<>c THEN PRINT check;" ERROR IN STRING -INPUT AGAIN
": BEEP .2,-12: GOTO 25
65 INPUT "END OF HEX (Y/N) ?";Q$: IF Q$="Y" THEN GOTO 80
70 NEXT n
80 POKE 34525,147: POKE 34526,149: POKE 34536,147: POKE 34537,
149
90 POKE 34994,141: POKE 34995,149: POKE 35029,28: POKE 35030,1
49: POKE 35032,141: POKE 35033,149: POKE 35036,109
110 SAVE D*"STUDIO_MC"CODE 26000,30672: REM SAVE IT ON AN EMPTY
DISC JUST TO BE SURE !
```

# The Hex Table

26675 to 26705 = 30 bytes.		
26675	6E64E863E5F1986EE39866E66F70E8E9	check=2672
26691	9298EC93F19398E8636698E5E4E202	check=2491
26888 to 26912 = 24 bytes.		
26888	EC98E971E4F16EE2E8F1986EE398E862	check=2983
26904	62989898989802A49D	check=1181
27009 to 27036 = 27 bytes.		
27009	E862621269E46EF198FFF8019874F681	check=2429
27025	F69273F3FF98F6737EF68102	check=2021
27222 to 27334 = 112 bytes.		
27222	6EE8F16E98A1986C98E6636EE6719D02	check=2359
27238	AA63078BA1D3E7EFA2B2F7B2E937F57F	check=2682
27254	B2E537F505B2E937F57CE09496A2A775	check=2515
27270	94B2A553A2DA75BE9BB1AFC09539F5FF	check=2666
27286	199939F59D31F59AA131F53B8994868C	check=2158
27302	231FA4878EA23D74183EF5103AF58789	check=1768
27318	8D111990BDD7A4103EF59BBEA15B758D	check=2073
27334	A4	check=164
34838 to 34936 = 98 bytes.		
34838	222B963E58322E96AF32C396AF32E993	check=1798
34854	210E8822B894228A9521005F22A09521	check=1374
34870	001B229E95AF328C95C926102E08222B	check=1268
34886	963E50322E96E3FF32C3963E0D32E993	check=1755
34902	211695228A9521007C22A09521000322	check=1095
34918	9E95AF328C95C93A8C95B720273D328C	check=1874
34934	95DD21	check=403
35063 to 35245 = 182 bytes.		
35063	DD218E953A8D95FE04281DCF3BDA5494	check=1936
35079	11805B0609CF3C121310FA3A805BF03	check=1355
35095	281BDD2128951825CF413831DD212994	check=1391
35111	181B46494C45204552415345C42A815B	check=1197
35127	ED5B9E9537ED523835DD215495216080	check=1862
35143	AF328C9506FFED438AB1C312DEF1A28	check=2149
35159	C13FFE06DD21319528E3DD21389538DD	check=1971
35175	FE17DD21429528D5DD214B9518CF3A8D	check=1907
35191	95FE03201E2AA095ED4B815BESC5CF3C	check=2044
35207	C1E1BE2008230B78B120F11813DD215B	check=1652
35223	9518AAED5BA095ED4B815BCF3DDA5494	check=2230
35239	CD1C953A8D953D	check=791
35341 to 35494 = 153 bytes.		
35341	C93A3A5CFE0CC2DE93CD1C95C32FDD3A	check=2141
35357	8C95B7C42FDDAF328C95C94E4F542046	check=1994
35373	4F554EC44E4F20444953C34449534320	check=1369
35389	4552524FD250524F5445435445C44449	check=1473
35405	53432046554CCC544F204249C75665	check=1416
35421	72696669636174696F6E206572726FF2	check=1778
35437	DD218E95AFCF35DA5494ED5BA095ED4B	check=2379
35453	9E95CF37CF38DA5494CD1C95C30E8800	check=2009
35469	0001000064044449534369504C452020	check=790
35485	030000005F0000FFFFF00	check=608



35627	10007085602080000000000000000000	check=478
35643	00B84449334369504CC5000E70030000	check=162
35659	8088FF0010700D0B93C0895361766520	check=174
35675	66696C65202EEAE001C700DB93C089	check=519
35691	4CF6F1642066696C65202EEAE002870	check=1282
35707	0DB093C0894C6F1642066696C65202E	check=575
35723	2EAEO034700DB093C089566572696679	check=678
35739	2066696C65202EEAE0040700DB903C0	check=450
35755	89545241534526669696C65202EEAE00	check=1251
35771	4C700400008088FF004C700CB093C089	check=563
35787	4D657267652066696C65202EEAE0057	check=1329
35803	700100008088FFFF	check=887

\* — \* — \* — \*

The cost is 65p per copy (85p overseas) which includes postage. Your copies will be sent out as soon as possible but, in order to keep printing costs down, it may take up to 21 days for us to dispatch.

Issue 1 - August 1987.	Issue 5 - December 1987.
Issue 2 - September 1987.	Issue 6 - January 1988.
Issue 3 - October 1987.	Issue 7 - February 1988.
Issue 4 - November 1987.	

※ — ※ — ※ — ※

16

By: DAVE KENNEDY

Lets start off with the last of the PUT, GET & OUT command coding.

17

```

1300 INC DE
1310 DJNZ GET1
1320 R18 LD HL,(TXTEND) ;current textfile end
1330 PUSH HL
1340 R19 LD (BUFFER+18),HL ;load new code at current end
1350 EX DE,HL ;"de" = load code at
1360 R20 LD BC,(BUFFER+16) ;code length
1370 PUSH BC ;save code length
1380 RST 8
1390 DEFB #3D ;load code block
1400 POP HL ;code length
1410 POP DE ;old text end
1420 ADD HL,DE ;= new textend
1430 R21 LD (TXTEND),HL ;reset textend pointer
1440 R22 LD HL,(TXTSRT) ;textfile start
1450 AND A
1460 SBC HL,DE ;de = old textend value
1470 RET Z ;if old end= start then no old text
1480 R23 LD IX,IXVAL ;else renumber all textfile
1490 R24 JP RENUM ;with step interval 1
1500
1530 ORG #71C9 ;overwrite "output" code
1540 CAT LD A,(NUM1) ;drive number
1550 CP 1
1560 JR Z,CAT1
1570 LD A,2 ;default to drive 2
1580 CAT1 LD (SCREEN),A ;use the screen as a temp. store
1590 LD HL,1
1600 LD (#5C42),HL ;return to line 1
1610 LD A,4
1620 LD (#5C44),A ;and statement 4
1630 R25 JP BASIC ;return to basic for "cat"
1650
1660 ORG #855B
1670 DEFW CAT-DK ;"c" = cat command
1680
1690 ORG #71C6
1700 DEFW OUT-DK ;alter "o" command call point
1710
1730 ORG #71C2
1740 DEFB "-" ;alter tape/disk choice value
1750 ORG #71F3
1760 DEFB "-" ;to a minus sign for easier
1770 ORG #7368
1780 DEFB "-" ;keyboard input (on mine anyway)
1810
1820 NUM1 EQU #85FA-DK ;start line value
1830 NUM2 EQU #85FC-DK ;end line value
1840 BUFFER EQU #85CD-DK ;u.f.i.a. buffer
1850 PNTMES EQU #6C30-DK ;print from "hl" to chr$ 0
1860 TXTSRT EQU 34316-DK ;start of textfile pointer
1870 TXTEND EQU 27054-DK ;end of textfile pointer
1880 IXVAL EQU #8604-DK ;"ix" used as variable for some
routines
1890 RENUM EQU #73E8-DK ;textfile renumber routine
1900 BASIC EQU #69A1-DK ;return to basic
1910 SCREEN EQU #4000
1920

```

```

1940 ;jump table with gens loaded at 27000
1950 ;use "dk1" for 3 byte length instructions,
1960 ;e.g. ld hl,12345
1970 ;use "dk2" for 4 byte length instructions,
1980 ;e.g. ld de,(12345)
2000
2010 ORG #894E ;overwrite assembler jump table
2020 DEFW PUT-DK1
2030 DEFW OUT-DK1
2040 DEFW R3-DK1
2050 DEFW OUT3-DK2
2060 DEFW SAVEA-DK1
2070 DEFW R6-DK2
2080 DEFW R7-DK1
2090 DEFW R8-DK1
2100 DEFW ERASE-DK1
2110 DEFW ERASE1-DK1
2120
2130 ORG #896C
2140 DEFW R11-DK1
2150
2160 ORG #8970
2170 DEFW GET-DK1
2180 DEFW R13-DK1
2190
2200 ORG #898A
2210 DEFW R14-DK1
2220 DEFW R15-DK1
2230 DEFW R16-DK1
2240
2250 ORG #89B8
2260 DEFW R17-DK1
2270 DEFW R18-DK1
2280 DEFW R19-DK1
2290 DEFW R20-DK2
2300 DEFW R21-DK1
2310 DEFW R22-DK1
2320 DEFW R23-DK2
2330
2340 ORG #8AF4
2350 DEFW R24-DK1
2360 DEFW CAT-DK1
2370
2380 ORG 36154 ;extend gens jump table
2390 DEFW R25-DK1
2400 DEFW 0 ;new table end marker

```

The final lines from 2010 will overwrite and extend the relocation table stored at the end of the GENS code, this is overwritten by any entered textfile so does not add to GENS length. Save the new code 27000,9157 before calling it. This code can then be loaded anywhere in memory and called in the usual way at the load address or re-entered at load address+61.

Next month I will carry on with details of the new features and get started with the source code.

More next month.

# INCREMENTAL BACKUP UTILITY

By: Nev Young.

Here is the missing bit from last months article. A small Basic program to poke in the machine code and save it to disc.

```

5 CLEAR 64999
10 LET t=0
20 FOR a=65000 TO 65180 READ b: LET t=t+b: POKE a,b: NEXT a
30 FOR a=65500 TO 65522: READ b: LET t=t+b: POKE a,b: NEXT a
100 IF t<23776 THEN PRINT "Error in DATA": STOP
110 PRINT "SAVING code.": SAVE d1"IBU_C"CODE 65000,535: STOP
200 DATA 0,0,0,0,0,42,234,253,237,91,232,253,237,82,68,77,42
205 DATA 232,253,84,93,19,58,236,253,119,237,176,201
210 DATA 0,0,0,0,0,221,229,42,5,254,221,42,7,254,1,9,254,126
215 DATA 221,174,0,32,5,35,221,35,16,245,79,221,225,201
220 DATA 0,0,0,0,221,229,42,38,254,221,42,40,254,6,0,221,126
225 DATA 0,182,221,119,0,221,35,35,16,244,221,225,201
230 DATA 1,39,0,17,15,0,42,40,254,25,17,195,0
235 DATA 3,203,70,40,3,203,134,201
240 DATA 3,203,78,40,3,203,142,201
245 DATA 3,203,86,40,3,203,150,201
250 DATA 3,203,94,40,3,203,158,201
255 DATA 3,203,102,40,3,203,166,201
260 DATA 3,203,110,40,3,203,174,201
265 DATA 3,203,118,40,3,203,182,201
270 DATA 3,203,126,40,3,203,190,201
275 DATA 35,27,122,179,32,186,1,255,255,201
280 DATA 0,0,232,253,232,253,234,253,237,253,5,254,7,254,11
285 DATA 254,38,254,40,254,42,254,68,254
270 DATA 0,0

```

\* - \* - \* - \*



Don't worry. When Bruce finishes the  
ULA it should be a bit smaller.

20



"Men used to trade little black books.  
Now they trade data base systems."

# NO SNAP GAMES

Thanks to all who responded to my request, in the January issue, for lists of games which would not work or would not snapshot on the DISCIPLE / PLUS D.

Some programs which can be loaded on the DISCIPLE, because it has an inhibit button, will not work on the PLUS D. Tests on the DISCIPLE / PLUS D show their is only one difference between the two snapshot routines. On the DISCIPLE the alternate AF register is not saved (an EXX instruction is issued but no EX AF,AF) but I have yet to find a game where this makes any difference.

For the information of our readers, and in the hope that some hard working hacker out there has a solution to a few of these snapshot blues, I give below a list of some of the most reported games.

GAME	PUBLISHER	MODE (48/128)
MATCH DAY II	OCEAN	48K & 128K
NEVER ENDING STORY	OCEAN	128K
TAI-PAN	OCEAN	128K
NINJA HAMPSTER	CRL	128K
WAR CARS	FIREBIRD	48K
4TH PROTOCOL	CENTURY	48K
REBELSTAR RAIDERS	RED SHIFT	?
CHEQUERED FLAG	PSION	48K
STARSTRIKE	REALTIME	?
BATTLECARS	GAMES WORKSHOP	48K
DIMENSION DESTRUCTORS	ARTIC	48K
VALHALLA	MOVISOFT	48K
DELTA WING	CREATIVE SPARKS	48K
BLACK HAWK	CREATIVE SPARKS	48K
DOOMDARKS REVENGE	BEYOND	48K
LORDS OF MIDNIGHT	BEYOND	48K
SHADOW FIRE	BEYOND	48K
STRANGELOOP	VIRGIN	48K
STARGLIDER	RAINBIRD	48K & 128K

Most of these crash or freeze on re-loading the Snapshot copy. However one or two will not load even from tape with the DISCIPLE / PLUS D attached i.e. TAI-PAN.

I look forward to hearing from anyone who has worked out how to snap any of these programs. If there are any programs not on this list that are giving you problems then drop INDUG a line and we will try to get them listed in a future issue.

21

# THE HELP PAGE

Problems with your DISCIPLE, PLUS D or Spectrum. Dont worry, let the HELP PAGE sort them out. Note: One question per letter please, and remember that Stamped Addressed Envelope if you want a reply.

## MODEM PROBLEM

I have been using the Miracle Technology WS2000 modem for some time. It worked very well with the DISCIPLE when I used version 2c of GDOS, however since upgrading to V3b I am unable to Log-On if I load the WS2000 software from disc. What is going wrong? and is there a cure?

Andy Dunn. Southampton.

It took some time to track down the fault, but I think I've found the answer for you. First I tried the WS2000 on the PLUS D and found it worked fine (unlike the VTX5000), then I confirmed your problem with the DISCIPLE 3b ROM. It turns out that the fault lies in the interrupt handling routine in 3b, this is longer than the one in either 2c or the PLUS D, as it contains a bit of code to read a Mouse (which MGT were going to produce but haven't yet). Enter the line `FOR I=99 TO 101: POKE @ I,0: NEXT I` then save your system file in the normal way. This wipes out the call to the extended routine.

## ALL BLACK

Why do normal size screen dumps (SCREEN\$ 1) sometimes come out as a solid black mess?

Steve Anderson. London.

The SCREEN\$ 1 dump (or snapshot 1) looks at the Colour Attributes as it prints out the screen. If the pixels colour is Black, Blue, Red or Magenta then it prints a dot on the printer. If the pixel is Green, Cyan, Yellow or White it does not print. If therefore your screen has, say, red ink on black paper then every pixel gets set and you get a black dump (if you think about it the reverse can also happen). A cure? well yes but for DISCIPLE owners only. Enter the following pokes :-

`POKE @5322,241: POKE @5323,62: POKE @5324,56`

These pokes bypass the attribute routine and enter the print routine with Paper=7 Ink=0, they do not affect the attributes on the screen.

## LINE ALIGNMENT

When I use the DISCIPLE to print I sometimes get odd characters printed on a line on their own (sample enclosed). What causes this and how do I stop it from happening.

James Willsher. Northwich.

If you have an 80 column printer, and you set the line length to 80 character in your System File then normal printing is fine. However, if you also save yes to printing the \$,# ans copyright symbols as graphic or your print contains UDG characters then things can go wrong.

When your printer tries to print off the end of a line it will automatically insert a <CR> carriage return and <LF> line feed so as to start printing on the next line. The DISCIPLE / PLUS D will also send a <CR> when it detects the end of a line (using the line length variable) so normally this <CR> gets there before the printer is forced to do its own <CR>.

Now this is OK if 80 normal characters are sent but Graphic characters are printed as an 8x8 matrix of dots. Most printer characters are only 6 or 7 dots wide so a Graphic character is going to take up more space, hence the printer detects the end of a line before the DISCIPLE / PLUS D system does. The problem is that GDOS goes on to send its own <CR> when it gets to the 80th character so you get one (or more) characters printed as a short line.

OK, with me so far? So how do you get round it. Well if you set the line length variable (POKE @5) to a lower value the problem will not appear so often. If the length is set to 255 the problem will be very rare as few lines will be as long as 255 characters. Alas graphics can still upset the alignment of characters within a line so ragged right hand margins are the norm when Bit Image Graphics are printed.

## OMNICALC-2

In an early issue of FORMAT you reported OMNICALC-2 as tested and working. I am unable to get my tape copy of the program to load or save files to the DISCIPLE. It says it works with Microdrives but if I try to use any Microdrive commands with the DISCIPLE all I get is 'Interface One Not Connected'. Can it be POKED?

Francis Miles. Welwyn.

There are several versions of Omnicalc floating around. Older versions had a section of Basic which controlled the program (just like Tasword 2) but later versions did not. If you have the older version then just MERGE the Basic part and amend the LOAD/SAVE commands to disc. The later versions will need modifications to the machine code. I understand a copy of the latest version, ready modified, is available on disc from TRANSFORM Ltd, 24 West Oak, Beckenham, Kent. Tel: 01 658 6350.

## ALPHACOM-32

A WORD OF WARNING. I have had several letters about the Alphacom-32 printer (Timex 2400 in some countries). Although nearly compatible for the old ZX Printer it uses slightly different addresses and will not work with the DISCIPLE or PLUS D. The ZX Printer will also not work with the PLUS D due to a last minit change in its design (after its manual went to press).

More from the HELP PAGE next month..