



ALL MICRO



NEWS



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## **EDITORIAL**

A brief input this time! Summer is close at hand and you can't get Lemmings on Albert! nothing new and too much to do! I'm sure Vic Reeves could Boost a solution! (Answers to this riddle win a page in the next issue).

## **POST BAG**

**Dear AMN,**

Do you still use an Einstein or know anyone who does? I have for sale a TC01 twin drive plus 80 column card, external 5.25" disk, DOS80, 12" amber monitor, all leads and manuals, Tasord, Infostar and magazines. Any offers to;

M. D. Ware, 21 Church Mews,  
Spondon, Derby, DE21 7NQ.  
Tel; 0332 385789 (day)  
0332 671206 (evening)

**For Sale;** TC01, twin drive, 256k silicon disk, 80 column card, TM80 mono monitor, TP80 printer, Speech Synth, manuals, 40 various disks including Wordstar/Infostar, Hisoft Pascal, Zen, WDPRO, Cracker - £150. Also Microfocus CIS Cobol £50. N. H. Rock, 12 Malborough Park, Havant, hants, P09 2PP. Tel; 0705 482694.

**Dear AMN,**

Could you ask if anyone has the manual for GRAPHDRAW version 1. I have been in touch with Surrey Software but they only have the version 2. If anyone could help please get in touch, Stan Gibbs, 31 Roebuck Lane, West Bromwich, West Midlands, B20 6QP. Tel; 021 5535093.

**Dear AMN,**

If I submit articles, I understand you prefer them on disk, plus a hard copy. Please could you confirm what format you can accept.  
Tony Adams.

**Ed ..** We prefer ASCII files, either IBM or Einstein. They can be on any format disk, i.e. 3", 3.5", 5.25" and any density, 188k, 360k, 720k, 1.44M. In fact these days I would be happy with anything!!

**For Sale;** TC01, single drive complete with colour monitor. All manuals and various disks including Tasword etc Derek White, post Office Stores, Castle Acre, Kings Lynn, Norfolk, PE32 2AE. Tel; 0760 755239.

# Graphically Speaking

*Another super article from Dave Arts, that interfaces the Amiga mouse to Albert and expands on how to make extended use of the rodent.*

## INTRODUCTION

This series of articles has been produced in order to make the average Einstein User aware of the tremendous versatility of the machine when used in conjunction with certain Graphics Tools.

One which readily springs to mind is the MOUSE, which although not primarily a tool for drawing, (it's main use is in indicating and editing), has become just that.

The first chapter deals with the Amiga Mouse which can be picked up very cheaply, and can be readily integrated with Albert. We will see how the mouse works. How we can connect it to Albert and how the software is developed.

After the first chapter we will be able to create designs on screen, and save these designs to disc. At any time we'll be able to call them back to the screen to view or modify them.

Chapter 2 introduces us to a Graphics dump routine which will enable us to obtain a "HARD COPY". Although intended primarily for the Brother HR5 Dot Matrix Printer, details are given with regard to the Image Bit Setting mode, to allow similar printers to be likewise configured. Also in this chapter are details of PLOTFILE creation and why we need one!

Anyone who regularly uses a mouse will realise it's limitations. One of the greatest limitations is that you cannot create a map on the screen by allowing the mouse to follow round an outline. To do this at all requires that the mouse be kept oriented in one direction and the results obtained are extremely poor. One way around this is to use a Digitising Tablet, where the map is taped onto the tablet base, and a pointer rather like a pencil is traced around it. The results from this arrangement are good, but I've never seen one exclusively for the Einstein and those which are available for other machines cost upwards of 200 pounds - expensive even if there are no modifications (which is unlikely).

Chapter 3 then is devoted to the construction and calibration of a Digitising Arm. The Arm itself can be built for just a few pounds, and if sufficient care is taken on construction and in the setting up, then you will be assured of good results.

Finally in Chapter 4 we will integrate the Mouse and Arm together and see how they can complement one another – I use the Graphic Arm for the main picture, using the mouse to modify or edit the screen---Have Fun!!

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### **CHAPTER 1** **THE AMIGA MOUSE**

#### **INTRODUCTION**

The last All Micro Show at Stafford provided me with the opportunity of purchasing an Amiga Mouse for just 10 pounds - now that's what I call a bargain!! When I returned home, I took it to pieces to see what type it was-I was greatly relieved when I discovered that it was TTL compatible and that meant it could be integrated with Albert. Over the next few months I experimented with the mouse and explored it's possibilities. In this Chapter I will describe the function of the mouse, and how it operates, how we can draw simple designs on the screen and save them to Disc as a Screen File. In the next chapter I'll explain how we can create a Plotfile from the Screenfile and then dump this to a Dot matrix printer. The graphic dump routine works which is more than I can say for some routines I've stumbled across!! We will connect the Mouse to our trusty USER PORT as this is the PORT most people seem to prefer.

#### **THE MOUSE**

The Amiga Mouse (fig.1) works on the principle that the movement of a rolling ball can be converted to X,Y, co-ordinates, this movement being picked up by 2 rollers and fed to 2 slotted encoding wheels (fig.2). It is a 2 button mouse and at this point let me dispel any misconceptions people may have about mice. A 2 button mouse is no less powerful than a 3 or 4 button mouse. The apparent power of a mouse is SOLELY dependent on the Software that drives it. Take a look at my Burglar Alarm ( E.M.vol 1,12) which gave a simple switch 3 distinct functions dependent on the software's

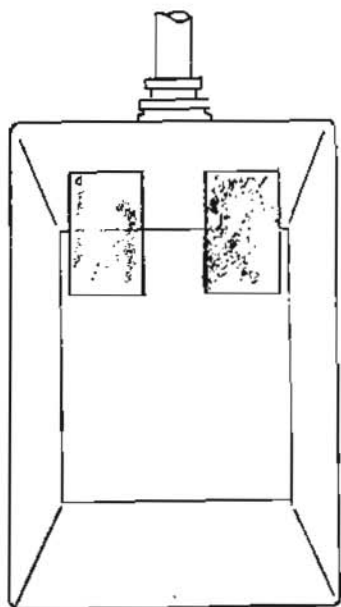


FIG 1

AMIGA MOUSE

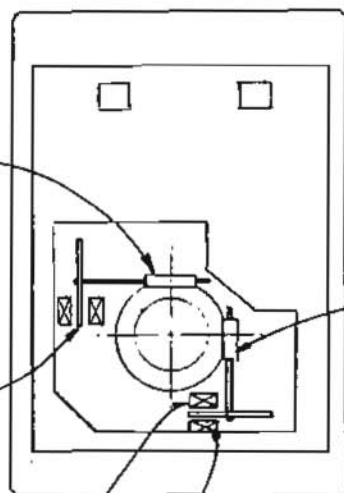


FIG 2

MECHANICAL ARRANGEMENT.

up-down  
roller

left-right  
roller.

slotted  
wheel

infra-red  
Transmitter  
(L.E.D.)

infra-red receivers  
(two phototransceivers  
mounted one above  
the other.)

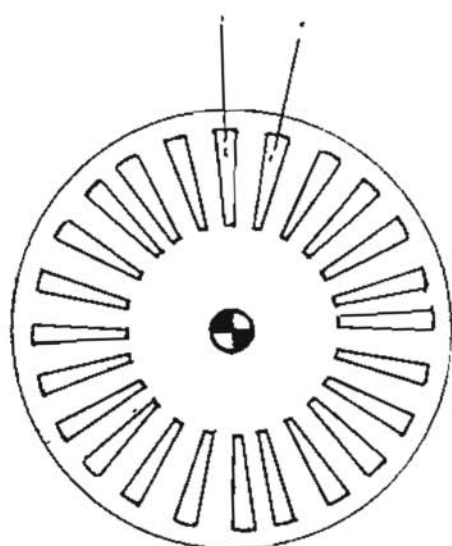


FIG 3  
SLOTTED WHEEL



FIG 3a

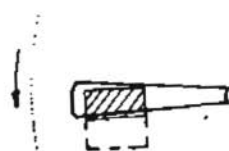


FIG 3b

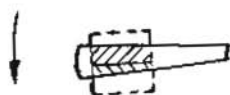
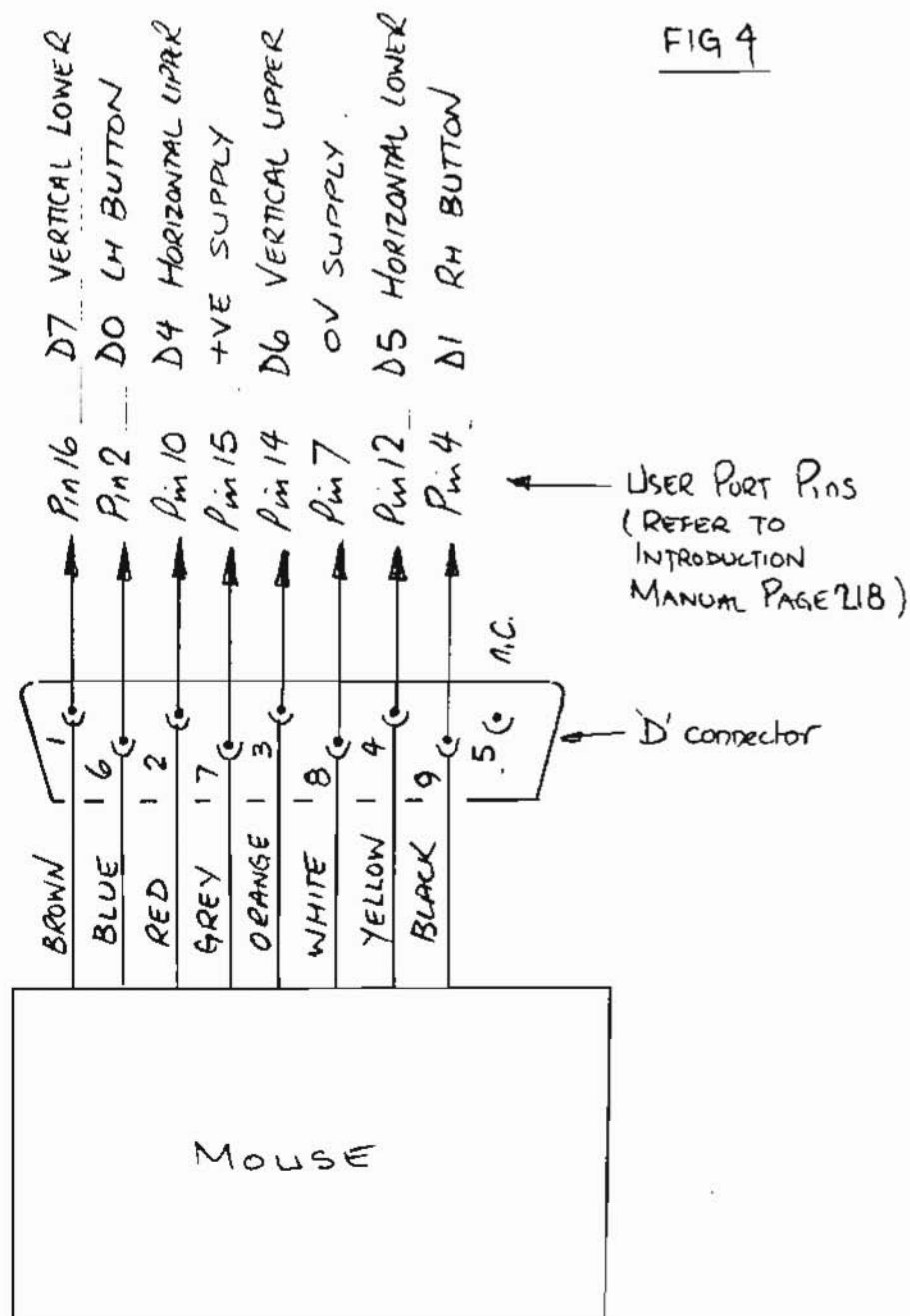


FIG 3c



FIG 3d

FIG 4





interpretation at 3 different parts of the programme! Now back to the mouse and we shall see how the encoder wheel allows Infra-Red from a transmitter LED to strike TWO receptors each mounted one above the other and each being on or off dependant on the position of the slot.

In fig.3a, one of the slots is above the two receptors and so both are off, (LOGIC 0). As the mouse moves in the upward direction so the wheel rotates anti-clockwise, the slot moves over the top and it's output goes to LOGIC 1 fig.3b. As the wheel rotates further (fig.3c) both receptors outputs go to LOGIC 1, and ultimately the lower receptor goes to LOGIC 1 as the wheel moves even further. This cycle is repeated as long as the wheel is moving in this given direction. If we connect the output of the UPPER receptor in the Vertical Axis to D6 and the LOWER receptor in the Vertical Axis to D7 the readings will be:

D7	D6		
0	0	FIG 3a	&00
0	1	FIG 3b	&40
1	1	FIG 3c	&C0
1	0	FIG 3d	&80

We can enter this series of codes in memory and this will act as a Data base to determine in which direction the mouse is moving; if we start with both receptors at LOGIC 1 the sequence will be:

FFC0800040 C0800040 C0800040 C0800040C0FF

>>>>>>>>>MOUSE MOVING UP>>>>>>>>>

<<<<<<<<<<MOUSE MOVING DOWN<<<<<<<<<<

Notice the sequence is delimited by &FF at both extremities, this is because we haven't got unlimited memory space. In our programme we will have a register pair acting as a pointer to this part of memory and when a delimiter is detected we will determine in which direction we are moving and then adjust the pointer with respect to the other delimiter at the other end of the table.

The mechanics are the same for the left-right movement, only this time the UPPER receptor is connected to D4 and the LOWER receptor to D5 giving the following sequence for the mouse going from left to right:

D5 D4

0	0	&00
0	1	&10
1	1	&30
1	0	&20

Again we will store this sequence in memory:

FF30200010 30200010 30200010 302001030FF

>>>>>>>>MOUSE MOVING RIGHT>>>>>>>>

<<<<<<<<<MOUSE MOVING LEFT<<<<<<<<<

So the principle will be that we will have those two tables in memory with a Data pointer pointing to the positions in the tables that correspond to the information the mouse feeds back to the User Port. When the mouse moves position we will determine in which direction it has moved by reference to the tables and then we will call a plot routine to update the position.

The Amiga Mouse comes wired to a 9-pin "D" socket (see fig.4) This should be disconnected or if preferred a 9-pin mating plug can be connected and wired to the User Port as shown. The main body of the programme is stored at &9000 to &916F, briefly the mouse will plot on the screen starting at the ORIGIN 0,0; Pressing the LH button will UNplot or ERASE. Pressing the RH button will allow a return to BASIC. From there the programme stores the screen contents at &B000 to &C7FF by calling the SCREENP.OBJ routine (&8000 to &804F) The main programme Flowchart is shown in fig.5 and the total code in fig.6.

### ENTERING THE CODE

From XBAS type MOS and enter SCREENP.OBJ &8000-&804F saving this as an object file. Then enter MOUSE.OBJ at &9000-&916F whilst still in MOS enter the data DATH.OBJ at &A100-&A124 saving these in turn.

i.e. Type in the code as per the print out using the M command from MOS, for the first program SCREEN you would type ;

MOS<enter>

M8000<enter>

now enter the code, you can just enter one long string of numbers but most people find it easier to enter blocks of eight, finish with a full stop.

people find it easier to enter blocks of eight, finish with a full stop.  
Then do a CTRL+BREAK to get back to DOS and type GO to get to XBAS,  
then type:

```
SAVE "SCREEN.OBJ", &8000,&804F
```

The same principle applies to the other machine code.

Next enter the Basic extension I've called "RATP". To do this type "Y"  
<enter> and get back into basic. Once entered save this to the same side of  
the disc as the machine code routines and <NEW>.

Finally enter the loader programme I've called "MOUSEP" save as above to  
the same side of the disc and <NEW>. Now by typing RUN "MOUSEP" the  
loader will run and execute placing all the machine code routines where they  
should be and then overwrite itself with the basic extension RATP.  
Running this extension, (just type RUN ), will clear the screen to a blue  
back-drop. Moving the mouse will now trace a line on the screen which is  
similar to the child's toy "etch a sketch". Pressing the RH button as  
mentioned before saves the work to High memory as a screen file. This will  
be there of course only until we overwrite it with another "creation", or switch  
the machine off. In order to preserve our creation we must save it to  
disc. I've done this as an OBJECT File (any name will do)

```
SAVE "CREATION.OBJ", &B000, &C7FF.
```

At any time you can bring back the screenfile to the screen by typing;  
CALL &8025.

Next month I'll demonstrate how we can create a PLOT FILE from this and  
dump it to a printer so giving us a hard copy.

**NOTE;** When we first tried the mouse, the program was very unstable  
dropping into XBAS and not plotting smoothly, this was cured by putting two  
pull up resistors (1k) between Pin 15, +ve supply and the two mouse button  
inputs, pins 2 and 4. It would seem that Daves Einstein did not need this  
mod but ours did. This was due to the User Port outputs 'floating' high and  
being interpreted as a button being pushed down.

An adapter lead is available from Sharward Services for £9.95 inclusive and  
an Amiga mouse for £15 inc. The software is available on PD disk number  
342.

```

>T9000 916F      MOUSE.OBJ
9000 3E CF D3 31 3E 00 D3 31 >DS1>.S1
9008 3E CF D3 33 3E FF D3 33 >DS3>.S3
9010 DD 21 00 00 FD 21 00 00 ]1..)1..
9018 3E 00 32 04 A2 21 18 A1 >.2."1.1
9020 DB 32 E6 C0 47 0E 04 0D [2f0G...
9028 23 7E 90 20 FA 7D 32 00 E~. z)2.
9030 A2 7C 32 01 A2 21 09 A1 "12."1.1
9038 DB 32 E6 30 47 0E 04 0D [2f0G...
9040 23 7E 90 20 FA CD 4D 91 E~. zMM.
9048 00 00 00 00 00 3A 00 A2 .....:."
9050 6F 3A 01 A2 67 DB 32 E6 o:."g[2f
9058 C0 47 7E 90 28 4A 2B 7E @G~.(J+~
9060 D6 FF 20 1F 0E 10 23 0D V. ...E.
9068 20 FC FD 22 FE A0 3A FE 1)"~ :~
9070 A0 06 00 90 28 32 00 00 ...<2..
9078 00 00 FD 2B DB 32 CB 4F ..)+[2K0
9080 C8 18 25 7E 90 28 E3 23 H.%~.(cE
9088 23 7E D6 FF 20 06 0E 10 E~V. ...
9090 2B 0D 20 FC FD 22 FE A0 +. 1)"~
9098 3A FE A0 06 BF 90 28 08 :~ .?.(.
90A0 00 00 00 00 FD 23 18 D4 ....)E.T
90A8 CD 5A 91 00 00 00 00 00 M2.....
90B0 3A 02 A2 6F 3A 03 A2 67 :."o:."g
90B8 DB 32 E6 30 47 7E 90 28 [2f0G~.(
90C0 1F 2B 7E D6 FF 20 2A 0E .+~V. *.
90C8 10 23 0D 20 FC DD 22 FE .E. 1)"~
90D0 A0 3A FE A0 06 00 90 CA :~ ...J
90D8 45 90 00 00 00 00 DD 2B E.....]+
90E0 DB 32 CB 47 CA 17 91 C3 [2KGJ..C
90E8 3D 91 3E 01 CF C4 C3 67 =.>.ODCg
90F0 91 7E 90 28 DB 23 23 7E .~.(XEE~
90F8 D6 FF 20 06 0E 10 2B 0D V. ...+.
9100 20 FC DD 22 FE A0 3A FE 1)"~ :~
9108 A0 06 FF 90 CA 45 90 00 ...JE..
9110 00 00 00 DD 23 18 C9 3A ...}E.I:
9118 04 A2 D6 00 20 08 3E 01 ."V. >.
9120 32 04 A2 C3 EA 90 DD E5 2."Cj.Je
9128 FD E5 FD 2A 05 A2 DD 2A )e)*."}*
9130 07 A2 3E 00 CF C4 FD E1 .">.OD)a
9138 DD E1 C3 EA 90 3A 04 A2 ]aCj.:."
9140 D6 00 CA EA 90 3E 00 32 V.Jj.>.2
9148 04 A2 C3 EC 90 7D 32 02 ."Cl.)2.
9150 A2 7C 32 03 A2 FD 22 05 "12.")".
9158 A2 C9 7D 32 00 A2 7C 32 "I)2."12
9160 01 A2 DD 22 07 A2 C9 DB ."})". "I[
9168 32 CB 4F C8 C3 45 90 FF 2KOHCE..

```

## SCREENP.OBJ

T8000 8047

```
8000 21 00 B0 22 00 D0 3E 00 t.O".P>.
8008 D3 09 3E 00 E6 3F D3 09 S.>.f?S.
8010 06 18 C5 06 00 DB 08 2A ..E..[.*
8018 00 D0 77 23 22 00 D0 10 .Pw£".P.
8020 F4 C1 10 EE C9 11 00 B0 tA.nI..O
8028 21 00 00 06 18 C5 06 00 t....E..
8030 E5 D5 7D D3 09 7C F6 40 eU)S.lv@
8038 D3 09 D1 1A D3 08 E1 23 S.Q.S.æ£
8040 13 10 ED C1 10 E7 C9 00 ..mA.gI.
```

## DATH.OBJ

>TA100 A123

```
A100 FF 30 20 00 10 30 20 00 .0 ..0 .
A108 10 30 20 00 10 30 20 00 .0 ..0 .
A110 10 30 FF C0 80 00 40 C0 .0.@..@@
A118 80 00 40 C0 80 00 40 C0 ..@@..@@
A120 80 00 40 C0 ..@@
```

## XBAS LOADER PROGRAMS;

```
1 REM RATP
5 CLS
10 GCOL1,7
20 BCOL7
30 TCOL1,7
50 CALL&9000
60 CALL&8000
70 CLS:INPUT"FILENAME PLEASE? ";Is
80 SAVE Is,&B000,&C7FF
90 END
```

```
5 REM MOUSEP
10 CLEAR&8000:LOAD"SCREENP.OBJ"
20 CLEAR&9000:LOAD"MOUSE.OBJ"
30 CLEAR&A100:LOAD"DATH.OBJ"
50 LOAD"RATP"
```

FIG 5.  
(i)

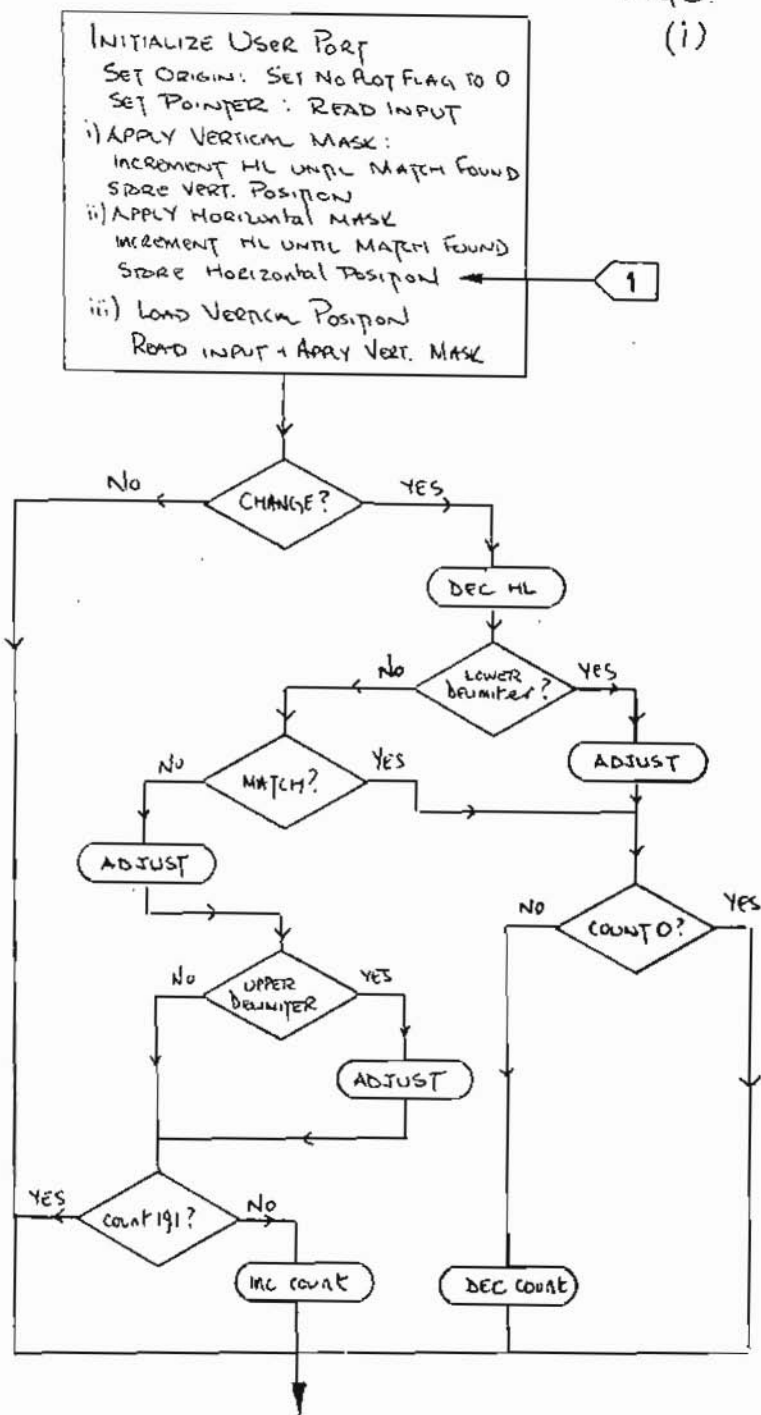




FIG 5  
(ii).

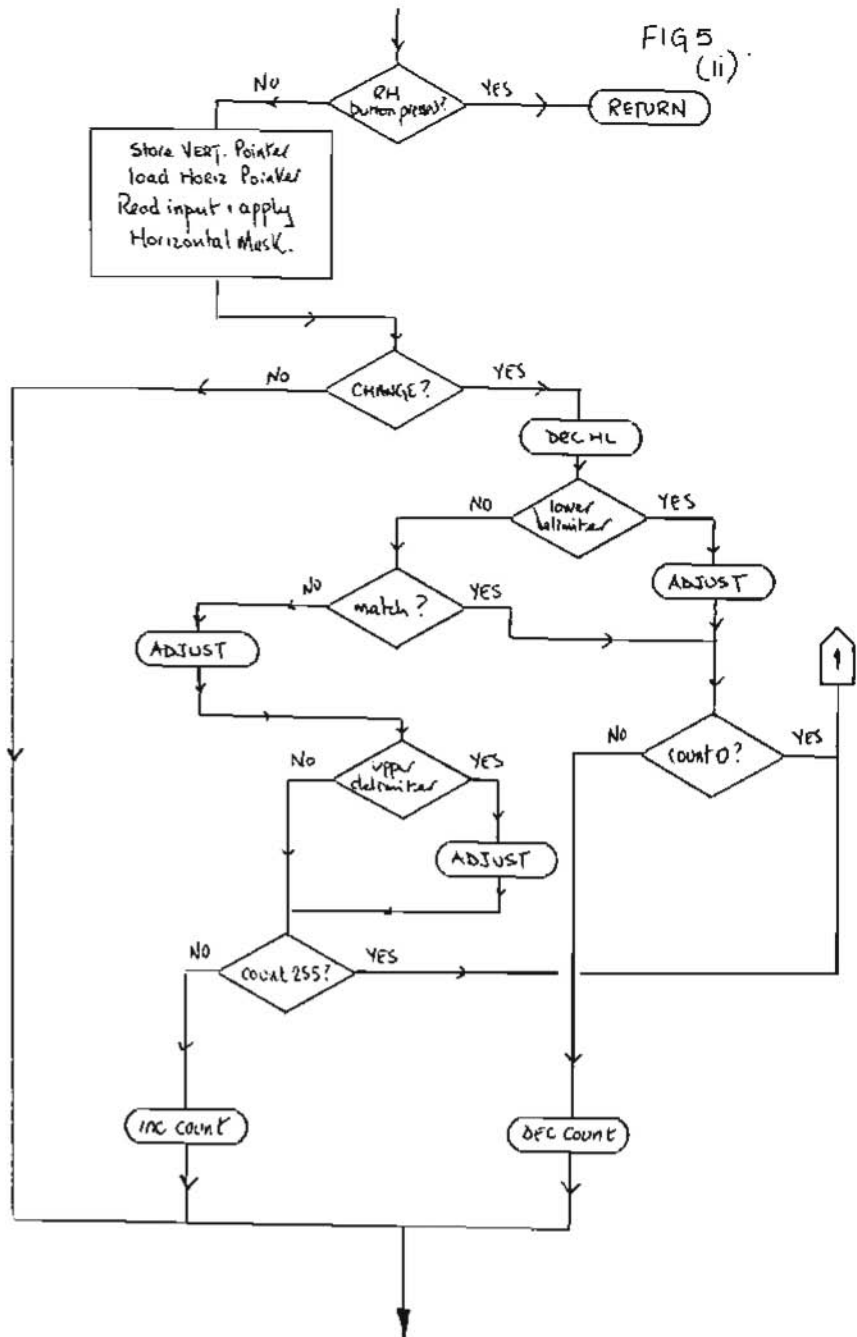
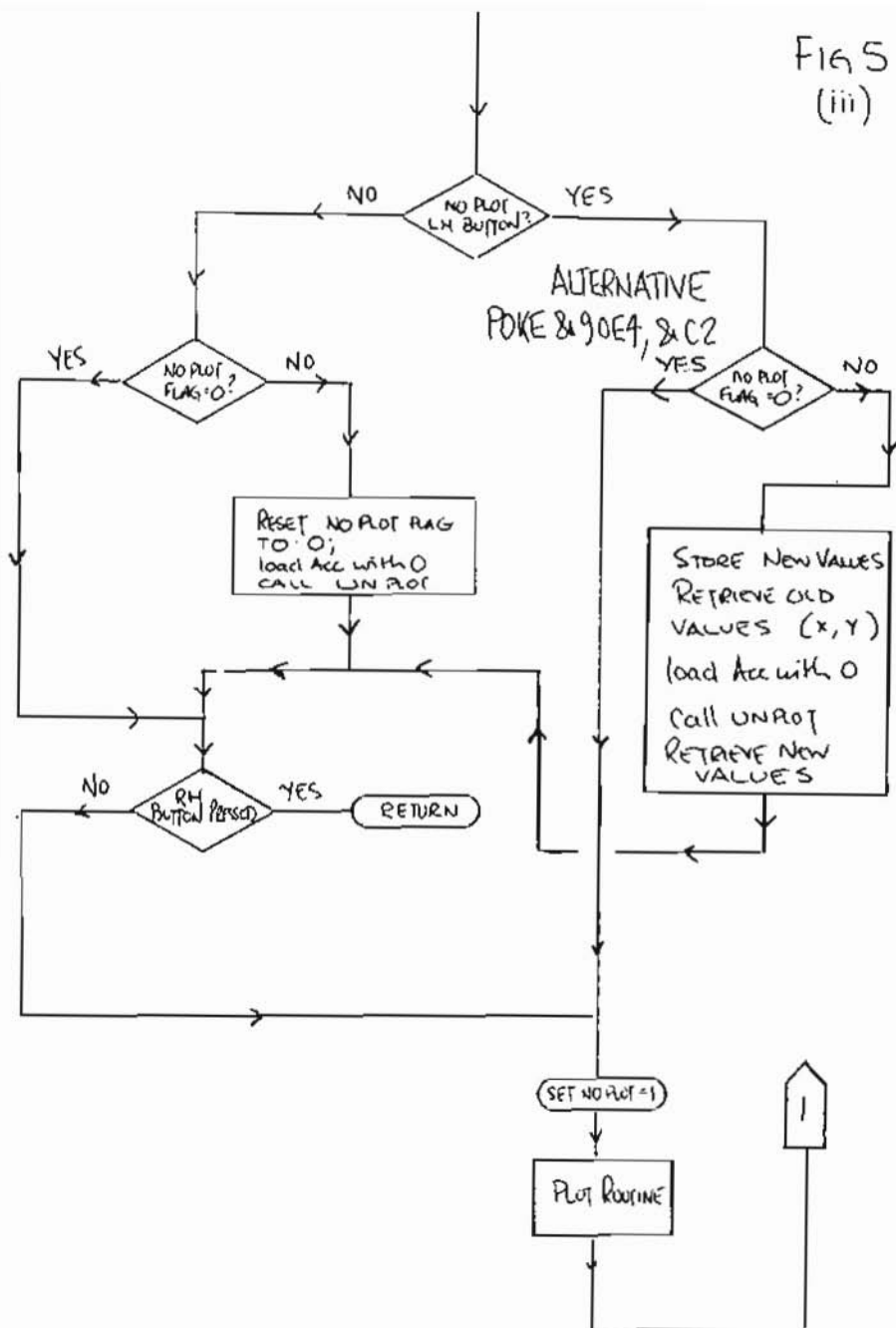


FIG 5  
(iii)



# Joystick Conversions

I have recently bought an Einstein TC01 secondhand, and while looking for a joystick I was dismayed by the lack of choice in quality joysticks for Albert. It could be argued that an adapter could be used, however this would add around £10 to the cost of the joystick.

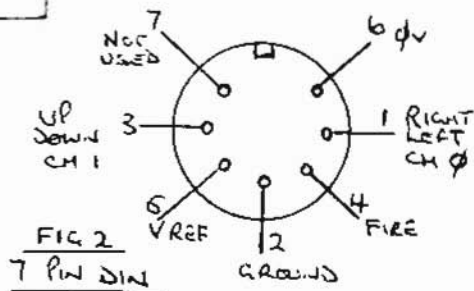
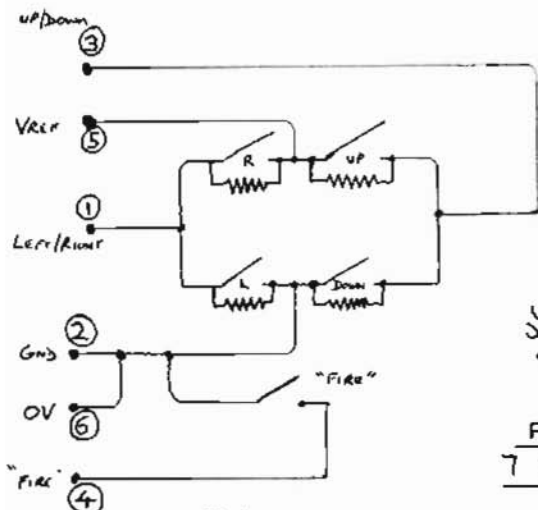
Most good quality joysticks use micro-switches and provided this is the case they can be converted to work with the Einstein for a little over a pound and fifteen minutes work. Joysticks such as the Powerplay Crusier and Competition Pro are suitable for this conversion.

All that you will need are 4 \* 100 ohm resistors, any tolerance and a low wattage, (so as fitting them inside the case is not a problem), and a 7 pin din plug.

Remove the 9 pin plug from the joystick and strip back the cables ready to solder to the din plug. Open up the joystick and rewire as per the diagram.

As a novice to Albert, but having experience with other micros, I would be interested in contacting other users in my area, (Glasgow), and would be pleased to answer questions on joystick conversions.

Stuart Wilson, 124 Collessie Drive, Craigend, Glasgow, G33 5QB.  
Tel: 041 7740607.



# Competition Time

The caption competition seemed quite a success with numerous entries, perhaps it was not too brain aching!!

Below are a few of the entries;

E.T. or not? If you can't cook the books you're going back home.

Look son, PCs come home.

Now, now, lads, one at a time I'm a very personal computer!

but the winner is; Two's company, three's a network.

Sent in by L. Stanley, of Moreton -in- Marsh, who wins a voucher for 5 PD/Shareware disks.



John Briggs has sent in this editions competition using a batch file on the PC, unfortunately there is no easy way to create this type of file on the Einstein, (unless you know different!?), which is a pity as batch files are a very powerful tool on the PC. Basically a batch file is lines of text which equate to commands as you would type them at the DOS prompt. By using this technique you can automate procedures, especially repetitive ones, with ease.

@echo off

cls

echo

echo

echo

echo

echo

echo

echo"

John Briggs

44 Glebe Close

Maids Moreton

Buckingham

MK18 1RW

Tel. (0280) 815029

echo Below is a word puzzle with 18 words to identify. The words run in

echo all different directions including diagonally and back to front.

echo you can make it a bit more difficult

echo by leaving off the list of words and referring readers to AMN Vol. 1/1

echo January 1993 as all the words appear in Further OS Mysteries.

The rest of Johns batch file used the ECHO command to draw the grid with the words, as below, and the PRINT command to send a copy of the grid to the printer.

R	E	G	I	S	T	E	R	U	E	L
O	P	E	R	A	T	I	N	G	N	A
U	E	T	X	E	N	D	E	O	O	C
T	R	E	V	A	S	N	I	U	I	M
I	H	X	V	U	I	T	T	S	N	K
N	S	A	N	H	C	P	A	A	P	A
E	S	D	C	N	A	B	X	R	U	E
A	O	A	U	U	L	L	A	U	T	R
S	M	F	M	R	L	R	T	C	S	B

BASIC BREAK CALL CTRL  
DOS FUNCTION HEX INPUT  
MACHINE MCAL MOS NEXT  
OPERATING REGISTER  
RESTART ROUTINE RUN  
SAVE

Again the prize is 5 PD/Shareware disks, from the AMN library via Jim. Don't forget we still want competitions and you do receive the same prize for sending any in that are used.

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AMN volume 1, issues 1,2,3,4,5,6,7,8,9,10,11

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