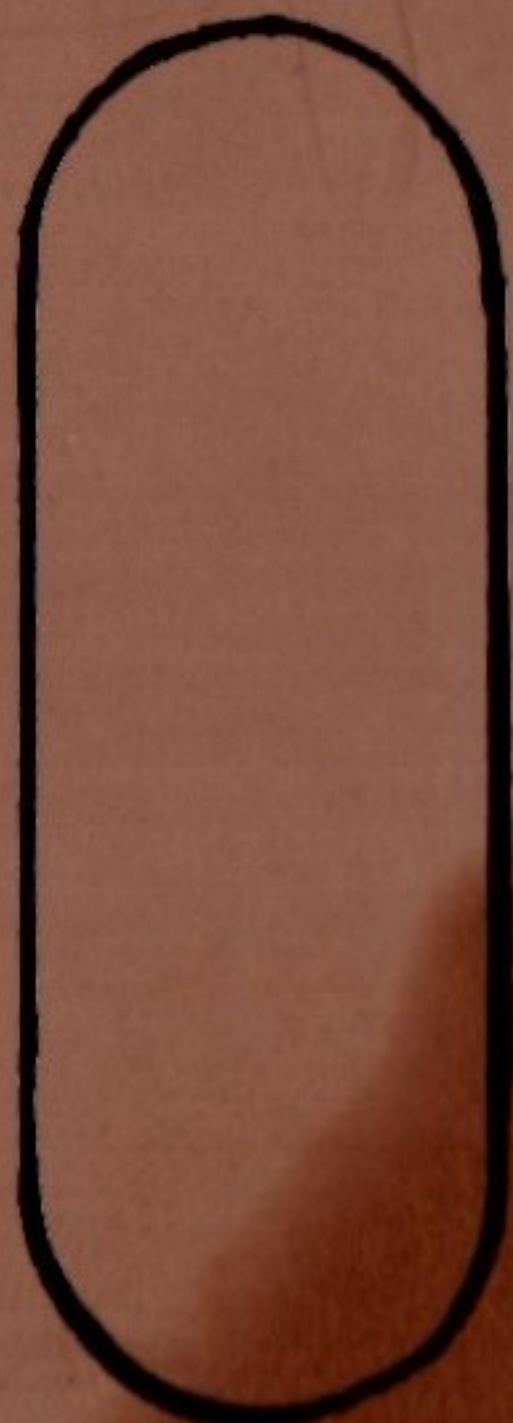
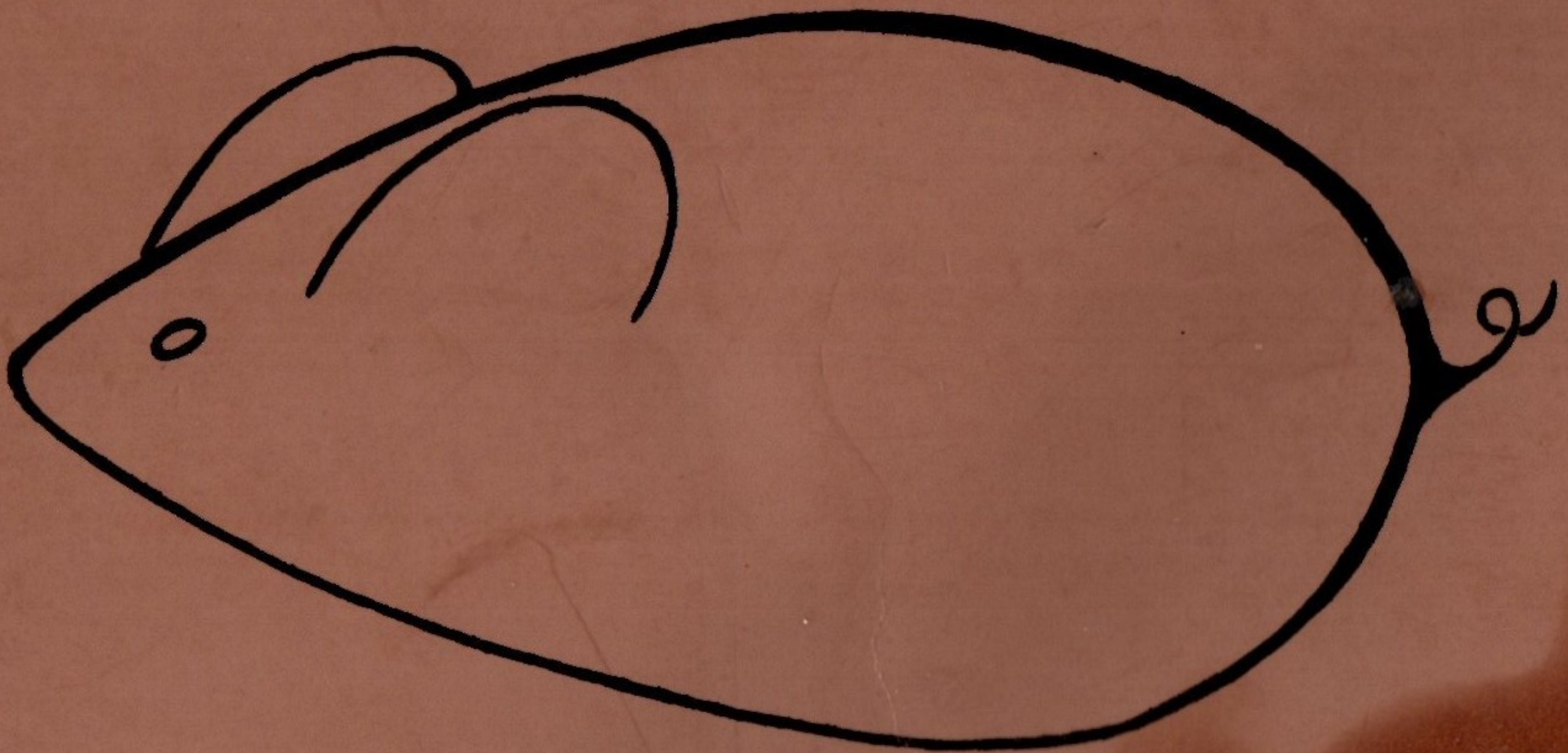


EMSOFT

80 Dales Road
Ipswich
Suffolk
IP1 4JR

SUPPORT FOR THE EINSTEIN TEL: 0473 49507



MOUSE ART

Since the printing of this manual Mouse Art has been upgraded to include several new features. The following files give information relating to the new options. To view these files use the following commands;

DISP	READ.ME<E>
DISP	MOUSE.INS<E>
DISP	MSEINSL.DOC<E>

CTRL+S will start and stop the display or the BREAK key can be held down to stop the scrolling.

There is one known bug at present - when saving a file under a name that already exists you must use the ESCAPE key not the N if you do not want to overwrite the existing file.

Also included on the master disc are some demonstration pictures.

THE EINSTEIN MOUSE

Congratulations on your purchase of MOUSE ART, please read this page before using this excellent input device.

It is intended that this software will be supported, to be eligible for future upgrades and use of the picture library you must compete and return the registration form.

* * * GETTING STARTED * * *

- 1) Turn off the power to the computer.
- 2) Connect the adapter lead to the 'USER PORT' on the rear of the Einstein, the lead has a key to ensure it goes in the right way.
- 3) Connect the mouse to the adapter lead.
- 4) Remove the small sponge from the underside of the mouse.

IMPORTANT

- 5) Hold the left hand mouse button down as you power on the computer.
- 6) Insert your MOUSE ART disc into drive 0 and press CTRL-BREAK.

You are now ready to use the package.

Whenever you power on the Einstein you must hold down the left hand mouse button to ensure the mouse will function correctly. Once the mouse has been set in this mode it will stay so until power is removed from the machine.

We recommend the use of a mouse mat so as to give good friction to the rolling ball in the mouse and also help reduce the pick up of dirt and dust within the mouse. Excess dirt and dust should be removed by first switching off the power to the computer, turning the mouse upside down and releasing the rolling ball. Blow out any dirt and dust and refit the ball - DO NOT USE ALCOHOL TYPE BASED SPRAYS.

This package is a sophisticated, yet easy to use, tool not only for drawing pictures but also for producing a greetings card type of display. Ideal for designing advertising material or producing screens for use in 'games' programming. It is recommended that you save your picture screens to disk regularly (as is recommended for text screens when using a word processor). Picture files are compatible with Screenplus.

N.B. THERE IS A HELP FILE INCLUDED (if you don't like to read the manual). WHEN IN SELECT MODE (diamond cursor showing) MOVE THE CURSOR TO THE BOTTOM OF THE SCREEN AND PRESS THE L.H. BUTTON (or ENTER key). WAIT FOR A SECOND AND THE HELP MENU IS DISPLAYED. (If there is a picture on the screen it WILL be restored on exit).

THROUGHOUT THESE INSTRUCTIONS THE WORD 'BUTTON' REFERS TO THE LEFT HAND BUTTON ON THE MOUSE. THE RIGHT HAND BUTTON IS PRESSED ONLY WHEN A COLOUR CHANGE IS REQUIRED.

INSTRUCTIONS.

There are two versions of the program.

1) KMOUSE ART .. is for use without the actual mouse, the cursor control keys are used instead. All the mouse operations are available but it is much slower to move in directions other than horizontally or vertically. In the following description remember that the mouse button is simulated by hitting the ENTER key. The right hand button is simulated by pressing the H (hue) button when a colour change is required.

2) MOUSE ART .. is for use in conjunction with the mouse. Before running this program please ensure that the MOUSE is plugged into the USER port.

Some keyboard keys are also used along with the four cursor control keys, useful, even if you have the mouse, for single pixel moves and for drawing horizontal and vertical lines.

The Q key is used to quit the current process.

The R key is used to rubout the last operation (when possible)

The P key (for plot) is used, for example to increase the size of a circle or diamond that has just been drawn.

More details on the use of the keys is given in the relevant sections.

OPENING SCREEN:

The cursor in the centre of the screen is a diamond shape which indicates that the mode is Select (see the square in the bottom right hand corner of the screen.)

The screen displayed has three borders:

AT THE TOP

To select an option move the cursor (diamond shape) hard against the option and press the button:

FILES

Used either to save a screen picture to disk or to load a picture file from disk and display it on the screen. The file can be on any drive, which can be specified as 0,1,2 or 3 or as A,B,C or D. Note that the full file name must be given e.g. C:ADVERT1.PIC (except that the drive name can be omitted if it is the currently logged in drive).

TEXT

The cursor is now a chevron (>), situated near the top on the extreme left (actually in an icon). Enter any alpha-numeric keys in upper or lower case. A simple full screen editing facility is available. Use the grey arrow keys for horizontal or vertical movement. The DEL key is used to delete text to the left of the cursor. There is no 'insert' facility. Characters may be in any colour and on any background. Use the right hand button to get the colour change options.

PRINT

This is used to print the existing screen. It is printed with a 4 to 3 aspect ratio so that circles on the screen will appear as circles on the paper. The circles are the best possible shape with the limitation of the relatively low resolution of the Einstein screen (big circles look better than small circles).

DIR

A prompt is given asking for the drive (0,1,2 or 3) and a directory display is produced. On completion the picture is restored. This will produce a correct directory for any combination of 40/80 track single or double sided drives.

QUIT

Used when the MOUSE session is over. You are asked to confirm before the return to DOS (in case you made a mistake).

CLS

Provides a quick rubout of the screen and replaces it with a 'clean' screen. In order to avoid possible accidents you are asked to confirm that this is what you want to do.

TO AVOID REPETITION IN WHAT FOLLOWS, PLEASE NOTE THAT WHEN YOU HAVE FINISHED USING ONE MODE THEN PRESS THE Q KEY. THIS WILL RESTORE THE DIAMOND CURSOR AND REMIND YOU THAT YOU ARE IN 'SELECT' MODE

On the right hand side are the action icons. As always, to make a selection move the diamond cursor hard against the required icon and press the button.

REMEMBER THAT A COLOUR CHANGE CAN BE MADE AT ANY TIME BY PRESSING THE RIGHT HAND MOUSE BUTTON (OR THE H (hue) KEY).

SPRAY GUN

The cursor has changed to an arrow and the icons have been replaced by a set of six boxes which represent the choice of action for the spray-gun. The bottom right hand square is now displaying a big S, inviting you to select a spray pattern. The first three are dot patterns showing three different intensities. The following three boxes represent 'solid spray' patterns. The first is like an air brush (twice as thick as a pencil). The next one is wider, and the last one is the widest spray, (8 pixels wide). Move the arrow cursor to the required pattern and press the button. The cursor is now a spray-gun and the bottom right hand box displays a big M, showing that the spray-gun can be moved without spraying. Press the button when ready to spray. As the mouse is moved the spray action will be seen. The bottom right hand box shows a big P to remind you that the Plot (spray) is active. Use the Q key to abandon the spraying mode and enter the SELECT mode.

ROLLER

This is used to roll out a pattern. The patterns are displayed on the left hand side of the screen. The roller icon is automatically placed at the left side of the screen. Move the roller cursor hard against the pattern which you want to paint. When you have selected a pattern, a white M will appear at the bottom right hand corner of the screen. This is indicating that you can Move the roller to the required position. When you press the button the pattern will be rolled out beneath the roller. The 'rolling' out of a pattern can only be done vertically downwards. (refer to the technical section for an explanation). The roller is also very effective ERASER. Press the R key and an area of the same size as the pattern icon will be erased, regardless whether or not the area concerned was 'drawn' by the roller. (For some high speed 'rollering' try the -> key to the left of ENTER.)

PEN

This is used for 'freehand drawing' in the current colour. Note that the pen can be used to draw in a new colour, on top of another colour (which can be different from the colour of the canvas). e.g. if you have a green canvas and have filled a circle with red, you can draw in the red circle with any selected colour (or even several colours). However colour interference will occur if different colour lines are in close proximity. (Please refer to the technical section for details). If a colour was not selected prior to selecting this icon then the pen will draw in black. A white M in a blue square is displayed at the bottom right hand corner, meaning that you can Move the pen anywhere on the screen without drawing. Press the button to start drawing and a P will appear at the bottom right hand corner. Lines will be drawn as the pen is moved. To stop drawing simply press the button (the M will re-appear in the bottom right hand corner). If the R key is pressed then the pen becomes an eraser which can be used to erase any part of a picture (regardless of how it was drawn). The erasing is done on a single pixel basis (as is the pen drawing) and so extremely fine adjustments can be made. Many people have found that the cursor control keys provide a more convenient way of controlling the pen for the detailed drawing.

N.B. THE RUB-OUT ACTION WILL ONLY RUB-OUT THE SELECTED COLOUR. THIS FEATURE IS INVALUABLE WHEN MAKING CHANGES TO A PICTURE.

RUBBER BAND

Used to draw lines as if a rubber band was stretched round a pair of pins. When selected the white M appears at the bottom right hand corner so the cursor which is now a + can be moved to the required position. If the button is pressed a single pixel beneath the cursor is illuminated and a white P appears at the bottom right hand corner. Move the cursor to the end of the line which is to be drawn and press the button. The best possible straight line will be drawn between the start position and the end position. (The low resolution of the Einstein screen will result in diagonal lines showing as a jagged line. This effect varies according to the angle of the line to the horizontal. (This fact can be used to advantage). Pressing the R key will erase the last line drawn. Please note that when a line has been drawn the M appears in the bottom corner, so if you want to continue to draw, starting at the end point of the last line drawn then you must press the button. The bottom right hand corner will remind you.

FILL

Used to fill an enclosed area with a colour. Press the right hand button for the colour change options. Set the foreground colour. Just move the + cursor inside the completely enclosed area and press the button and the area will be filled with the selected colour. If there is even a single pixel gap then the colour will 'leak out' and make a mess of your picture. If this happens then simply press the R key to restore the picture to what it was before the last 'fill'. Do this before you return to Select mode.

CIRCLE

This is a very versatile icon. Used to draw circles, ellipses, squares, rectangles and octagons. It is also possible to rotate all of these shapes although rotation of the ellipse does NOT rotate the axes. These actions require the use of several keys on the keyboard:

- S - to change to drawing Squares.
- O - to change to draw Octagons.
- X - to increase the X co-ordinate (makes circle into ellipse and square into rectangle.)
- Y - to increase the Y co-ordinate, as for X but in the vertical direction. T to rotate one of the shapes WITHOUT rubbing out - forms pretty patterns. (Try drawing a diamond, then move the cursor and press T, move the cursor and repeat.
- > - to rotate a pattern with rubout (this is the key to the left of the grey cursor (arrow) keys.)

The cursor becomes a +. Move the cursor to the selected position and press the button and a small circle will appear with the + as centre. Use any of the keys detailed above at any time. Press the P key and the original shape is rubbed out and a slightly bigger shape will appear. This can be repeated until the shape is the required size. Press R to rubout the last shape drawn. Some interesting effects can be achieved by drawing a circle and then move the cursor a few pixels and draw another etc. If the periphery of the shape makes a mess of the icon area do not worry since this will be restored when you Quit from this icon. This has been done deliberately to allow for shapes to be drawn so that only part of the shape is in the drawing area. This restoration process is somewhat similar to the case when a 'FILL' leaks and upsets the screen layout.

DIAGONAL LINE

This is used when a straight line at exactly 45 degrees to the horizontal is required. Position the cursor at the start point and the diagonal line is drawn going upwards. It is only a short line but by pressing the P key the line is extended. Some spectacular effects can be produced by drawing a diagonal line and then move the cursor to a new position and hold down the P key. Experiment with this by siting the original line in various positions and then moving the cursor to a variety of different positions. Very effective if colour changes are made as well.

RUB

This is another method of erasing parts of the picture. The cursor has changed to an arrow and the icons have been replaced by three boxes. (The same as the last three shown when in spray mode). These boxes represent the width of the rubber and correspond approximately to the three solid spray patterns. From this point the operation follows in the style of the spray mode. This rubout is not colour selective, but will leave a 'clean' area.

C for COPY

The cursor changes to a square, move the square over an area to be copied and press the button. Then move the square to the area to receive the copy and press the button and the copy is produced. N.B. This copy facility is restricted to an area of the same size as the cursor and alignment to an 8*8 pixel square takes place. This restriction is imposed so that the copy process will not interfere with the surrounding picture.

Z for ZOOM

The cursor changes to a square. Move the square to the part of the picture where it is required to make detailed changes, on a pixel by pixel basis, and press the button. A magnified picture of the selected area will now appear at the top of the screen and on the opposite side from where the cursor was when the button was pressed. The cursor is now a cross hair, move this to the position on the magnified picture and press the button to turn a pixel on or the R key to turn a pixel off. Remember that 4 pixels in the zoom picture correspond to one pixel in the normal display. Changes in the zoom picture (4 pixels) are displayed on the normal picture, where only one pixel is affected. The bottom right hand corner will display a big White Z when the cursor is in the zoom area which signifies that Editing is now possible. N.B. The phrase turning a pixel on (or off) can be confusing when an area of the screen contains more than two colours. When only two colours are involved (e.g. the backdrop and a single graphics colour such as black ink on the white screen) then the 'turning on/off' of a pixel is obvious. However if an 8 pixel row contains two colours which are different from the backdrop then one colour corresponds to the 'pixel off' state and the other to the pixel on state. Thus turning on a pixel that is off will change its colour. Turning on a pixel that is already on will have no effect. The opposite effect occurs when a pixel is turned off.

This is very useful to perform detailed plotting in the zoom area when the cursor is in an area showing the backdrop colour. However, if the cursor is in an area which is displaying any other colour you must remember that an 8 pixel row can only have 2 colours. (see the technical section at the end). Press the Q key to return to the SELECT mode and the zoom display disappears, the original display beneath the zoom is restored.

N.B The rubout feature is colour selective and will only rub out the colour currently set as foreground.

Right hand button (or H key) pressed.

Five options are displayed:-

- 1: CURSOR - to enable the cursor colour to be changed - very useful if the cursor 'disappears' in a picture colour.
- 2: FORE - to enable the current drawing colour to be changed.
- 3: BACK - (NOT NORMALLY USED), it enables the current background colour to be changed. Remember to set it back to the canvas colour after experimenting.
- 4: CANVAS - Used to change the colour of the canvas. This can be used when there is a picture on the screen. The canvas colour will change but the detail already drawn will not change. This is a feature of the MOUSE software and may not produce the desired effect with pictures produced by other software. However the mouse software does incorporate routines which attempt to find out the original fore/background colours of such pictures and it is often successful.
- 5: INVERS - Used to produce a colour negative of the picture. Colour selection is of no consequence. It actually exchanges the fore/background colours of the picture. Use it twice to restore the picture. It may be useful in cases where there is a lot of colour on the screen but otherwise a dark picture results.

INFORMATION

MOUSE ART LIBRARY

It is intended to set up a picture library, the pictures from the library will be available to all registered owners of MOUSE ART. Just send a 3" disc/s and a return address label and postage to

EMSOFT,
80 Dales Road,
Ipswich,
Suffolk,
IP1 4JR.

and we will copy whatever is available. Of course we also require pictures to build up the library - as usual this service will only be as good as YOU make it!

We would like to know what you think of MOUSE ART and what features could perhaps be added or altered. If you have found a different way of doing things let us know and we will build up a fact sheet to be included with any upgrades and sent out with library discs.

TECHNICAL DETAILS.

The MOUSE software uses the VDP chip in mode 2, which is the compatible with basic and other picture drawing software. This helps to ensure compatibility.

In mode 2 the screen is considered as being made up of 24 rows of 32 columns. Each column in a row consists of an 8*8 pixel square. In any one row of this 8*8 pixel square there can only be 2 colours. Pixels which are 'set' (logic 1) are displayed in the foreground colour and pixels which are 're-set' (logic 0) are displayed in the background colour.

When the screen is cleared all the pixels are re-set (0) and are displayed in the background colour (canvas). Drawing in a single colour will not produce any unusual effects. However if a red line exists and it is attempted to draw a blue line across the red line then a problem arises because there are now 3 colours (canvas, blue and red). Since only 2 colours can exist on an 8 pixel row a conflict occurs which will result in a blemish around the point where the 3 colours exist. However with care this limitation of the VDP chip can be avoided (or even used to advantage).

In the situation where, say, a blue line is drawn in a red circle with a yellow canvas the software has arranged that the blue line exists in the background colour (a 3 colour conflict would occur if any attempt was made to use the foreground colour). Hence it is quite possible for a blue area to be displayed in the background colour in one area of the screen and for another blue area to be displayed which is in the foreground colour. Thus it is wise to save your picture before changing the BACKground colour. (Although some interesting effects can be achieved by using this feature).

N.B successive rows of an 8*8 pixel square CAN use an entirely different pair of colours from the adjacent row, this does not cause a colour conflict.

Finally it is intended that this mouse software will be supported, if a sufficient number of people support the package. It is hoped to widen the scope of this software and these extensions will be available at a reasonable price.

Furthermore, if there is sufficient interest, we intend to publish the actual assembler source code which is well commented and consists of over 90 kilobytes (assembly code and comments).

Together with this, a description of the action of the various routines will be given by the author. This, we believe, will provide a very unusual and extremely valuable way of learning how to handle the video chip on the Einstein. The program is written according to the rules of structured programming and contains a wide variety of mechanisms (tricks) for avoiding the use of arithmetic packages. These mechanisms are essential for assembly language programmers. Price is expected to be in the region of £25.

INTERFACING THE MOUSE TO BASIC

MSEDRV.XBS

This is a basic program which contains the mouse driver software as a set of DATA statements which are poked into memory. The program has been designed to produce an ideal skeleton for anyone who wants to make use of the mouse signals in their own BASIC program. This feature has been achieved by converting the mouse signals into values that enable a BASIC command:

ON M% GOSUB

to be used. All the subroutines are in existence. For the skeleton, each subroutine simply identifies the direction of the MOUSE movement. The user will simply replace the print statements by their own code.

When a mouse button is pressed, control is only returned to BASIC when the button has been released. This feature has been incorporated to save the user from doing this chore (or perhaps more importantly to protect the user from the consequences of failing to make this check).

NOTE:- the machine code is completely relocatable so that the user can poke it wherever it is required. However it is essential not to change the PEEK(&0FFH) unless the machine code is also changed to be compatible.

A listing of MSEDRV.XBS appears on the following page.

```
1010 STOP
1000 PRINT "ESC key hit. Just stop"
990 RETURN
980 PRINT "Mouse RIGHT button"
970 RETURN
960 PRINT "Mouse LEFT button"
950 RETURN
940 PRINT "Mouse right and down"
930 RETURN
920 PRINT "Mouse right and up"
910 RETURN
900 PRINT "Mouse left and down"
890 RETURN
880 PRINT "Mouse left and up"
870 RETURN
860 RETURN
850 PRINT "Mouse right"
840 RETURN
830 PRINT "Mouse left"
820 RETURN
810 PRINT "Mouse down"
800 RETURN
790 PRINT "Mouse up"
780 RETURN
770 GOTO 110
760 END
```


MSEDRV.XBS

```
10 REM routine to drive mouse
20 A=&A000
30 CLEAR A-1
40 A=&A000:B=A
45 REM m/c for mouse response - relocatable
50 DATA CF,B5,FE,1B,3E,00,28,12,DB,32,CB,67,28,1A
60 DATA CB,6F,28,0C,FE,3F,28,EA,EE,0F,E6,0F,32,FF,00,C9,DB,32,E6,20
70 DATA 28,FA,3E,0C,18,F2,DB,32,E6,10,28,FA,3E,0B,18,E8,11
75 REM next 2 statements initialise mouse
80 OUT &33,&CF
90 OUT &33,&3F
95 REM poke in m/c
100 READ A$
110 REM PRINTA$;A;
120 IF A$="11" GOTO 170
130 POKE A,VAL("&" + A$): A=A+1
140 GOTO 100
150 REM now a routine to use the mouse
160 REM set usrloc
170 PTR 9,B
220 X=CALL(B)
240 M%=PEEK(&00FF)
250 PRINT"M% = ";M%
260 IF M% = 0 THEN 1000
270 ON M% GOSUB 330,350,365,370,390,410,425,430,450,470,490,510
280 REM 0,UP,DWN,LFT,LFT&UP,LFT&DWN,RGT,RGT&UP,RGT&DWN,LFTBUT.RGTBUT
290 IF KBD$ <> "" GOTO 220
300 END
310 PRINT"No mouse input"
320 GOTO 220
330 PRINT"Mouse up"
340 RETURN
350 PRINT"Mouse down"
360 RETURN
365 RETURN:REM must be included to handle spurious values.
370 PRINT"Mouse left"
380 RETURN
390 PRINT"Mouse left and up"
400 RETURN
410 PRINT"Mouse left and down"
420 RETURN
425 RETURN:REM must be included to handle spurious values.
430 PRINT"Mouse right"
440 RETURN
450 PRINT"Mouse right and up"
460 RETURN
470 PRINT"Mouse right and down"
480 RETURN
490 PRINT"Mouse LEFT button"
500 RETURN
510 PRINT"Mouse RIGHT button"
520 RETURN
1000 PRINT"ESC key hit. Just stop"
1010 STOP
```

LOADING COMPLETED MOUSE ARTWORK TO A BASIC PROGRAM

Once you have created a screen using 'MOUSE ART' and saved the results to disc you can then reload the screen from XBAS for your own use. If you intend to do this ensure that you use the '.OBJ' extension when saving a screen.

```
10 REM SCREEN LOAD
20 RST
30 CLEAR &8000
40 LOAD "filename.OBJ"
50 C=0
60 FOR A=&8000 TO &97FF
70 B=VPEEK(A)
80 VPOKE C,B
90 C=C+1
100 NEXT A
```

To achieve a near instantaneous screen change, a small machine code routine, which is on your disc as MSELOAD.OBJ is called from an XBAS program such as the one below.

```
10 REM MSELOAD M/C
20 RST
30 CLEAR&A000
40 LOAD"MSELOAD.OBJ"
50 CLEAR&AFFF
60 LOAD "filename.OBJ"
70 CALL&A000
```

NOTE:- where 'filename' appears in the above listings you use the filename of the 'MOUSE ART' screen you require to load.