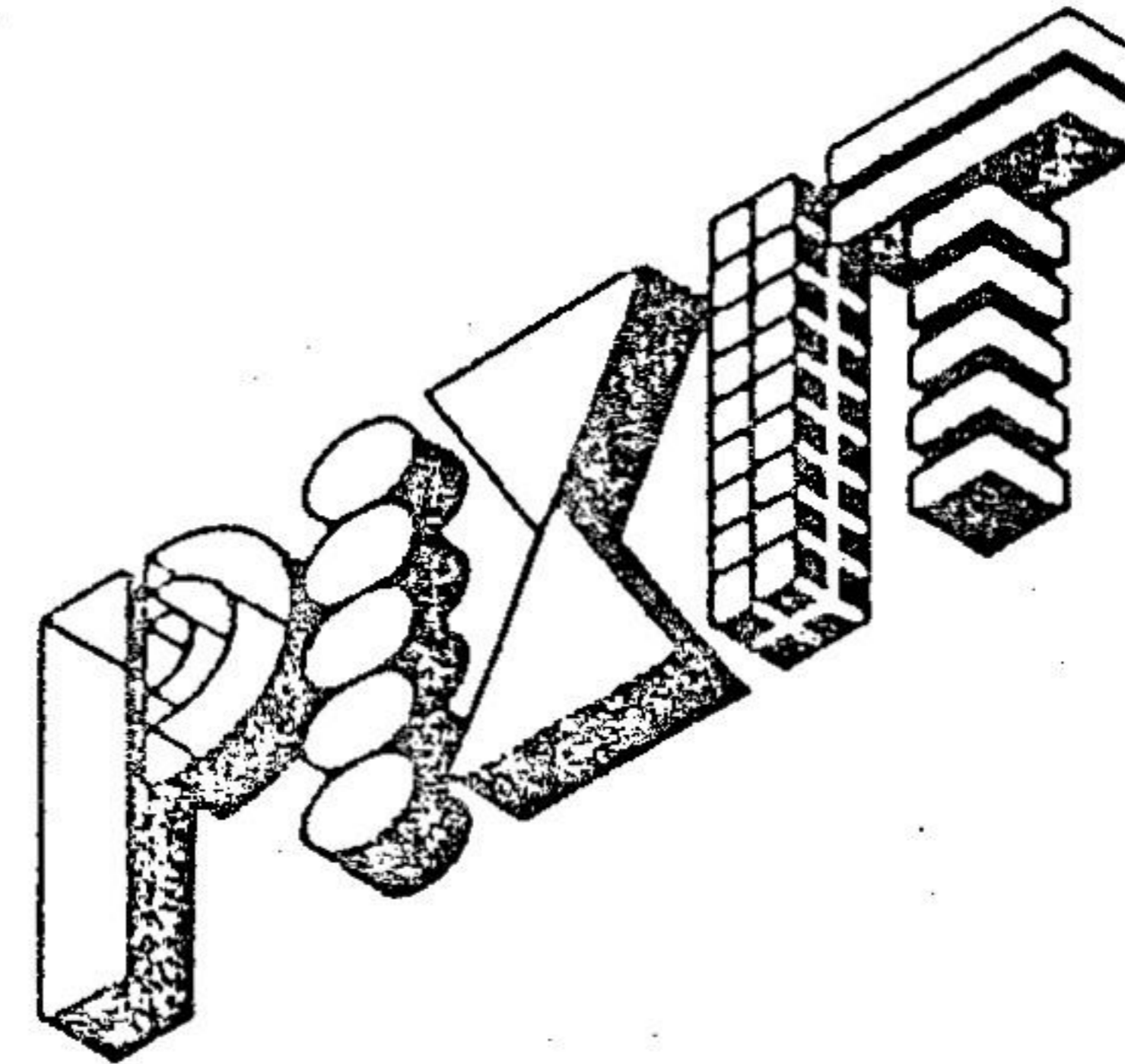


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GRAPHICS PROCESSOR

AUTHOR

MICHAEL DAROOG

ASSISTING PROGRAMMERS

EDWARD MC CULLOUGH

KIMBERLY EVANS

ASSISTING ARTISTS

KATIE RALSTON

ROBERT GLASSER

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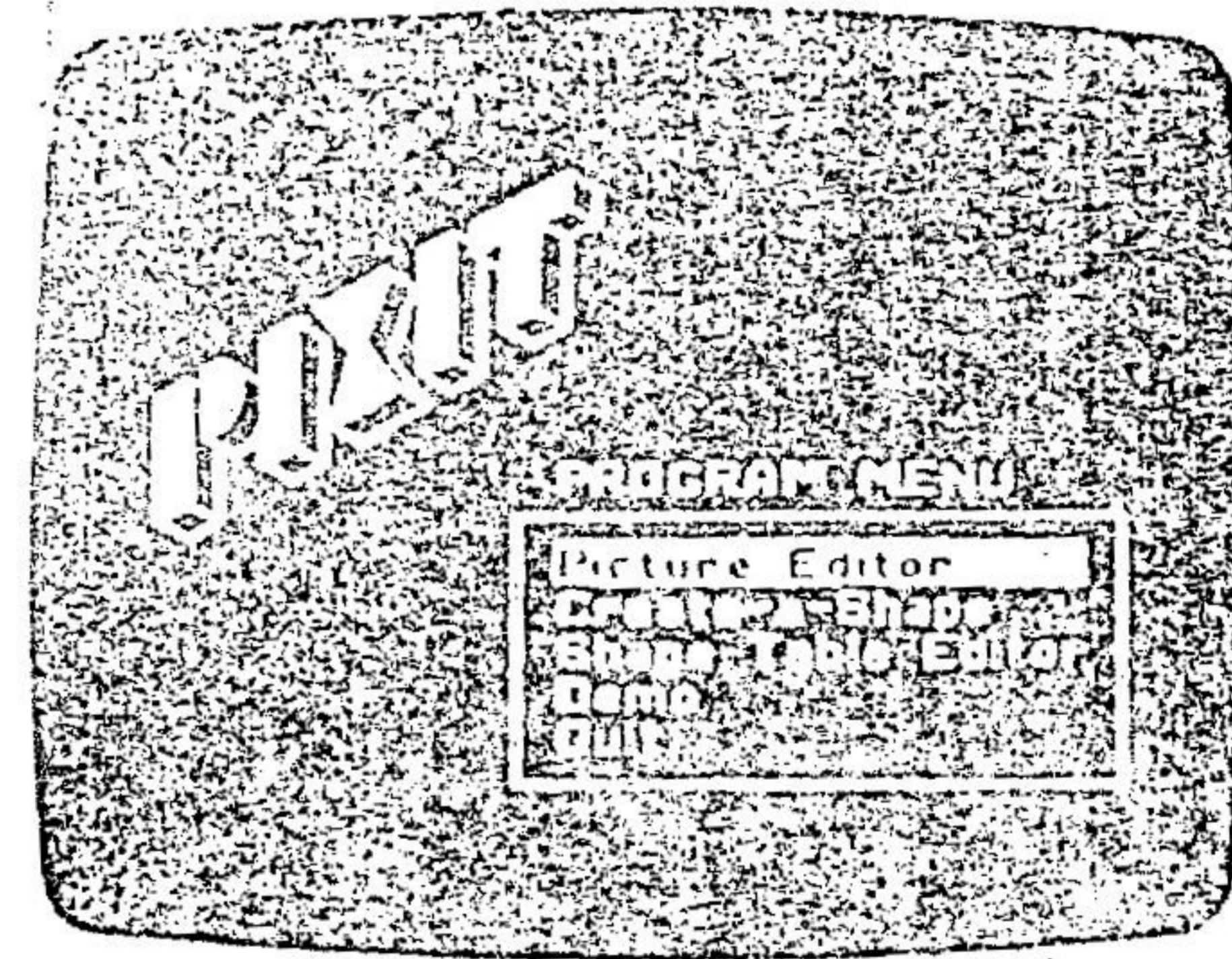
To save a file, you must have an initialized data diskette (see the DOS manual on how to initialize a disk). When you select a SAVE option from the menu, you will be prompted to type a filename. Any typeable character (except a comma) may be used in filenames. Always be careful when choosing a filename during a save. If you pick a name of a file that already exists on the disk, the existing file will be written over. You can use the CATALOG option to check the files on a disk before saving.

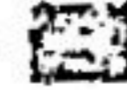


If you have two disk drives, always keep the PIXIT program disk in drive 1 and use drive 2 for your data diskette.



GETTING STARTED: A TUTORIAL

The best way to get acquainted with PIXIT is to take a quick run through the PICTURE EDITOR. In this tutorial you will learn about the PIXIT menus, and create a hi-res picture using just a few of the PICTURE EDITOR features. To get started, turn off the Apple, place the PIXIT diskette in drive 1 (label facing up), and turn the Apple on. When the drive stops you should see the following display on the monitor screen:

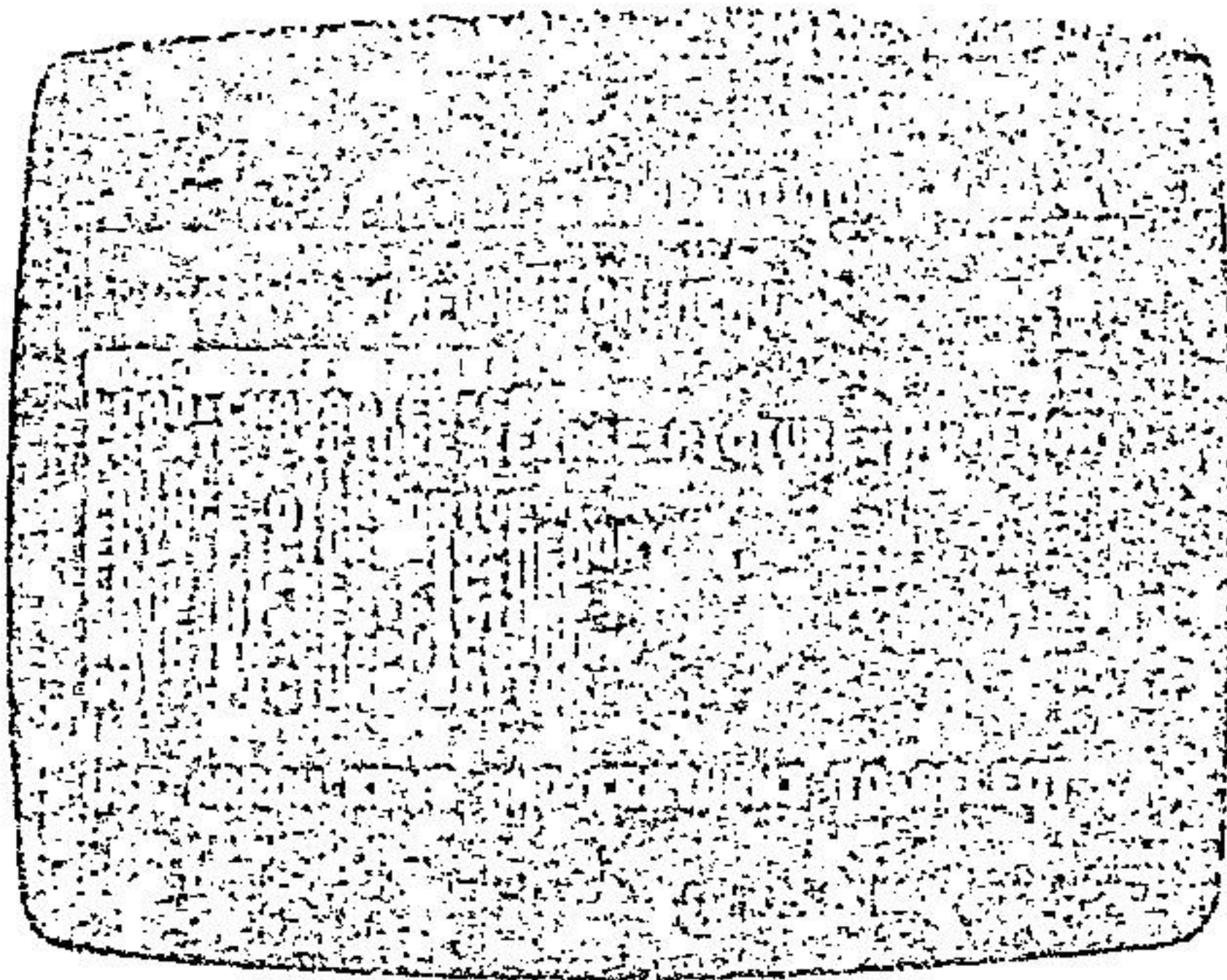


This is a menu of the programs available on PIXIT. The left and right arrows are used to choose a selection from the menu. Press the right arrow  key to highlight the next selection on the menu. Press the left arrow  key to move backward through the menu. Try these keys a few times to see how this feature works. Now, press  until PICTURE EDITOR is displayed in inverse and then press **RETURN** to run the program.

PICTURE EDITOR

After selecting the PICTURE EDITOR from the program menu, the

disk will run for a few moments and then a new menu will appear on the screen:



This is the PICTURE EDITOR FUNCTION MENU. As with the previous menu, the `↑` and `↓` keys are used to select the desired function. In order to create a new picture using the PICTURE EDITOR, we must first load the SHAPE TABLE and CHARACTER SET from the disk so that we have some tools to work with.

LOADING THE SHAPES

Select the LOAD SHAPE TABLE option on the menu. The disk will run for about three seconds and some new information will appear at the bottom of the screen:

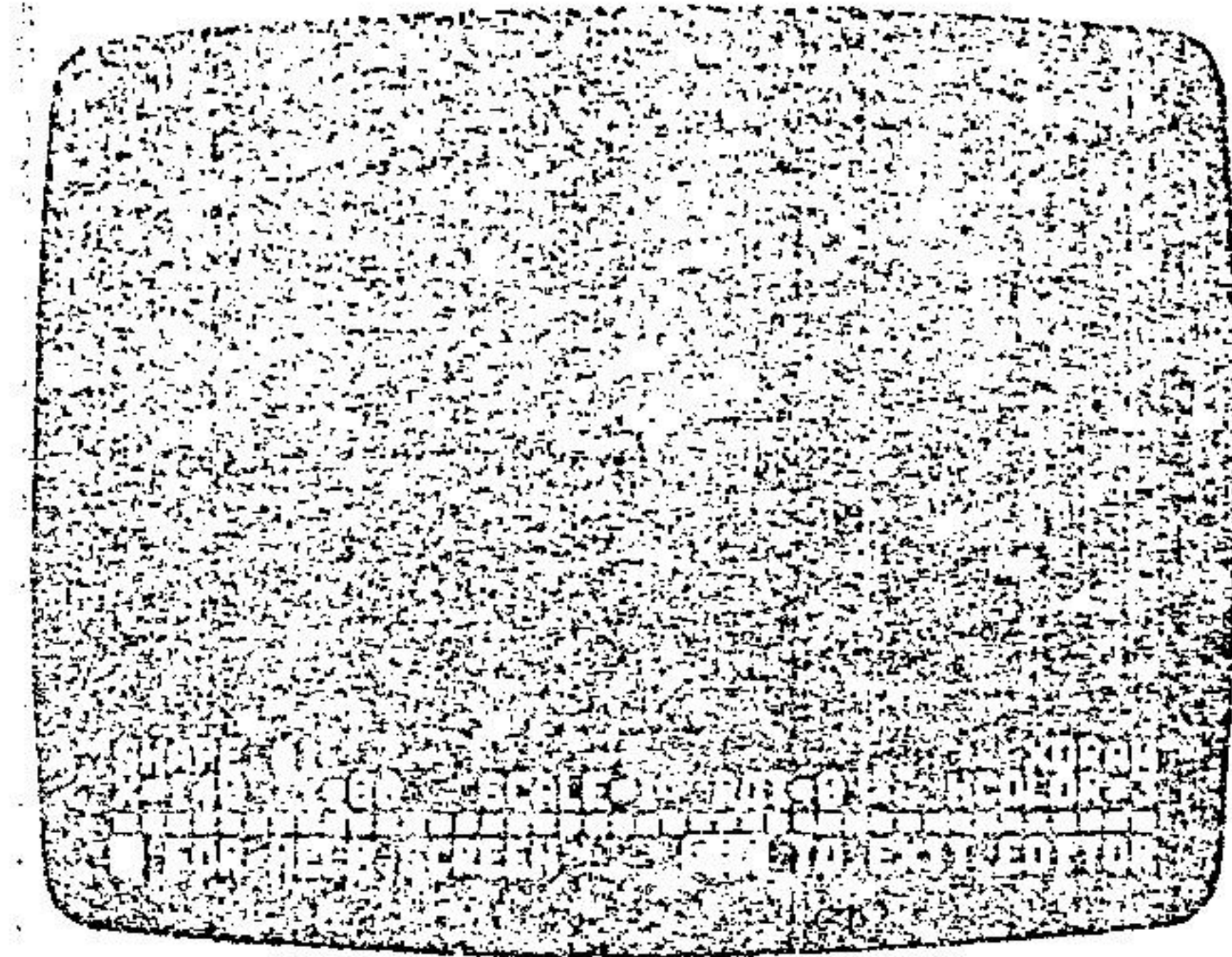
```
LOAD SHAPE TABLE: TUTORIAL SHAPES
                    ANIMALS
                    GEOMETRICS
```

This is a scrolling list of all of the shape tables available on this disk. Use the `↑` and `↓` keys to scroll through the list until the desired selection is highlighted. Try pressing the arrow keys to view all of the names on the list. We are going to use the "TUTORIAL SHAPES" in our first picture. Select this name, then press `RETURN`. After the shape table is loaded from the disk, the LOAD CHARACTER SET option will be highlighted on the function menu. You will be adding text to the picture, so press `RETURN` to select this function. When the disk stops, a list of the available character sets

(or text fonts) will appear at the bottom of the screen. Select the "BOLD10" set from this list.


CREATE A PICTURE

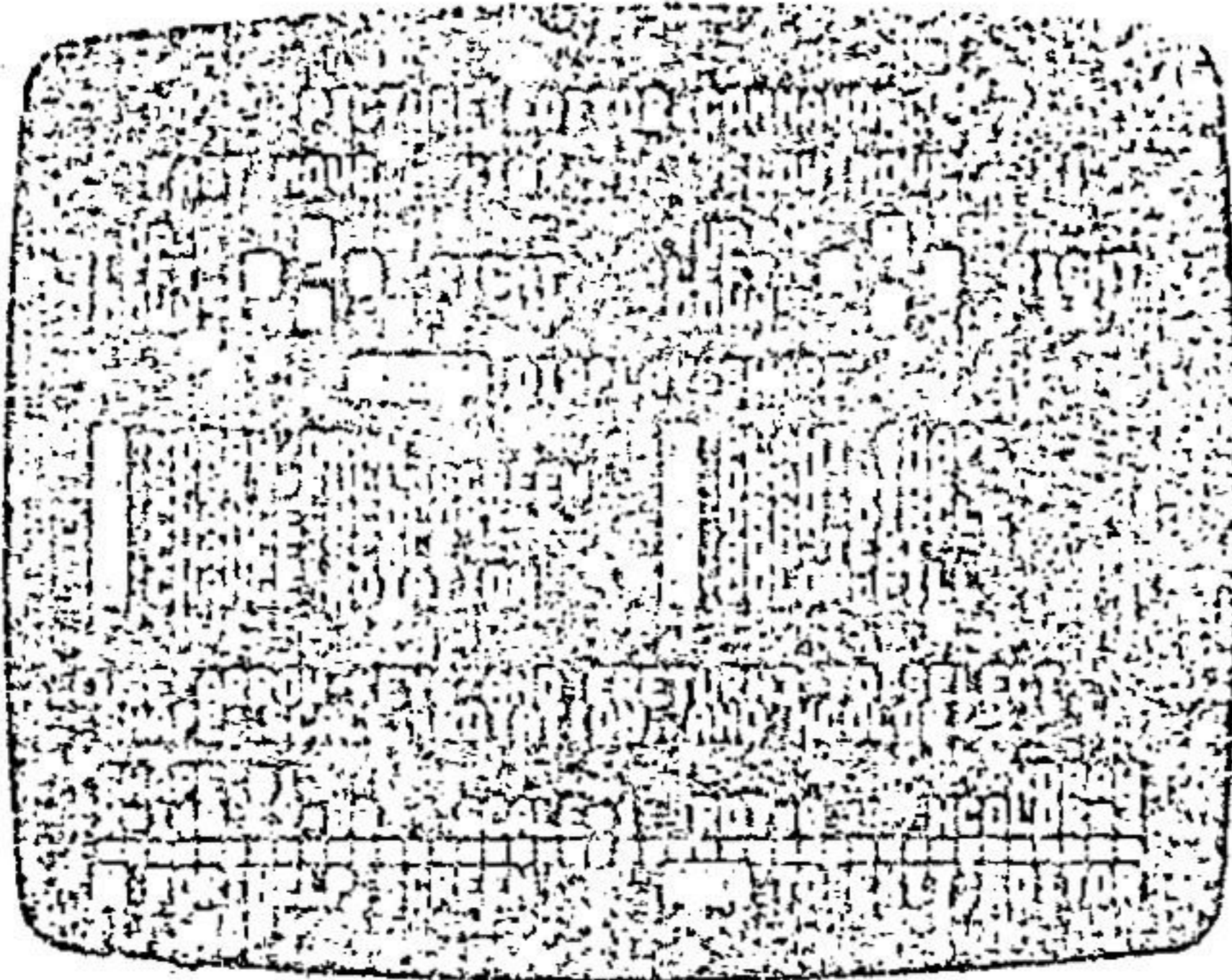
Now that the shape table and character set are loaded, you are almost ready to draw. Select the CREATE PICTURE function with the arrow keys and press `RETURN`. This will bring you to the picture editing screen:




The flashing cross in the center of the screen is the cursor (to help you locate your position on the screen). Near the bottom of the screen are two lines of information that give the current status of the screen. X and Y tell you the location of the cursor on the screen. If you are already familiar with Applesoft Basic, you should recognize XDRAW, HCOLOR, ROT, etc., as standard Applesoft words. The values shown on the status display are identical to those used in Applesoft hi-res graphics commands. If you have not used Applesoft, the status display and editor commands may be more difficult to master at first. Despair not, however, help is only a keystroke away!







THE HELP SCREEN

The very bottom line of the screen tells you what to do if you need help. Press the  key once. The flashing in-res cursor will be replaced by a list of the editor commands:



Rather than try to learn all of the commands at once, you will be using just a few of them to create your first picture. Press the  key again to get back to the picture editing screen.

THE MOVE COMMANDS


There are two sets of keys that move the cursor (or a shape) around the screen. They are the , , ,  keys and the ,  keys:







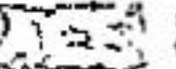
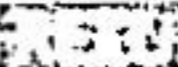
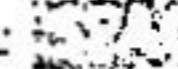

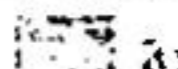
These keys move the cursor 10 pixels (or dots) in the direction of the arrow



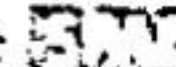
These keys move the cursor 1 pixel (or dot) in the direction of the arrow

Try pressing each of these keys a few times and watch what happens to the cursor. Now press the  key repeatedly until the cursor disappears off the right hand side of the screen. Notice that it reappears on the left side of the screen. This feature is called "wrap-around" and it also works in the vertical direction. Note that the values of "X" and "Y" in the status display change with each move of the cursor. X is the horizontal screen coordinate: X=0 is the extreme left and X=279 is the extreme right edge. Y is the vertical screen coordinate: Y=0 is the top and Y=191 is the bottom of the screen. Try using the "move" keys to locate the cursor at X=140 and Y=80.

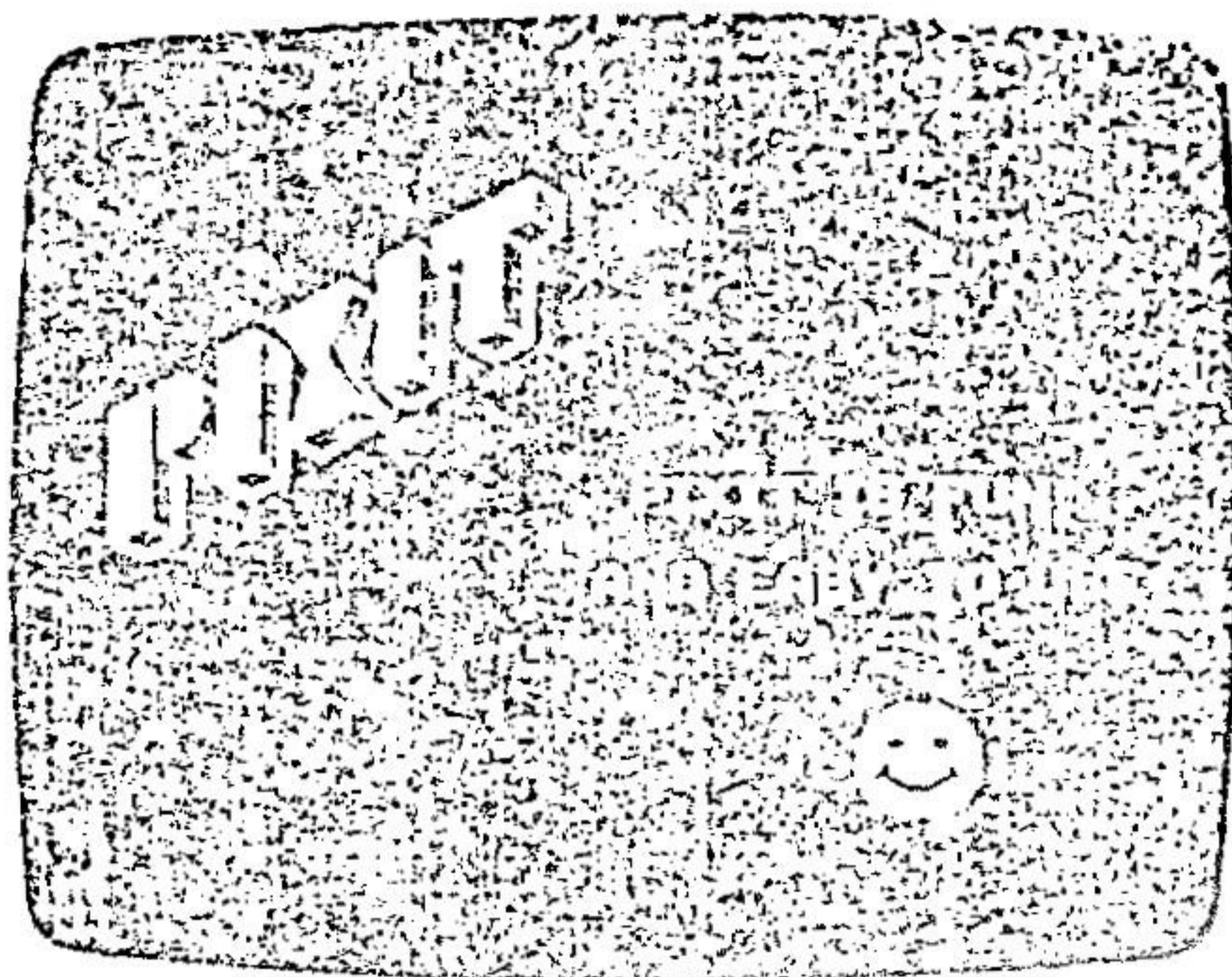
So far, the bottom four lines of the screen have been displaying the current screen status (unless you accidentally hit the  key). Go ahead and press the  key now. The "status window" will disappear and the entire screen will become available for you to use for drawing. To get the status window back, press the  key again. The  key is the command to switch back and forth between the "split-screen" and "full-screen" modes.

Look at the first line of the status display where it says "SHAPE # 1". To put shape # 1 on the screen, press the  bar. The cursor will be replaced by a square block. This is shape # 1. Now use the "move" keys to move the shape around the screen in the same way you moved the cursor. Press  and the shape disappears. Press the  bar once again to get the shape back in view and then press the right arrow  key once. The square is replaced by a smiling face and the status display now shows "SHAPE # 2". This is the next shape of the shape table called "TUTORIAL SHAPES" that you loaded from the disk. Press  again to see the third shape, the PIXIT logo. Now use the arrow keys to scroll through the three shapes in the shape table.

"PLANTING" THE SHAPES

We have seen how to get a shape on the screen with the  bar, move it with the "move" keys, and scroll through the shapes with the arrow keys. Next we are going to "plant" the shapes on

the screen and add some text to create the following picture:



Get the PIXIT logo (shape #3) on the screen. Then use the "move" keys to position it near the upper left corner of the screen. Now press the **ESC** key and then **ENTER**. This will make the shape a permanent feature of the screen. The flashing cursor will reappear to let you know that the shape has been "planted" and no longer under control of the "move" keys. NOTE: You must type **ESC** followed by **ENTER** to "plant" the shape. If you do not press **ENTER**, the **ESC** command will be ignored. This two keystroke sequence is required to prevent planting a shape by accidentally hitting the **ESC** key. Erasing a shape that has been planted is a little more difficult than setting it there (more about this later). Now use the same procedure to plant the smiling face (shape #2) near the bottom right corner. Your screen should be looking more like the picture above.

ADDING TEXT TO YOUR PICTURE

Now we are going to add some text to the picture. Press **RETURN** to get the cursor back on the screen. Move the cursor to approximately the center of the screen and press the **ESC** key to enter the text mode. "ADD TEXT" will appear in the status window and the flashing cursor will be replaced by a flashing » (this is the text cursor). You are now ready to type a line of text directly from the keyboard. Type "PIXIT IS FUN" (if you make a mistake, press **ESC** and the entire line will be erased; then press **ESC** to get back into the text mode to retype the line). When you have correctly typed the line of text, press **RETURN** to make it a permanent part of the picture. The original hi-res cursor will reappear, ready for the next command. Move the cursor down 16 dots, then use the **ESC** key to

enter the text mode and type the line "AND EASY TO USE". When you are finished, press **RETURN**.

NOTE: If you type a line of text beyond the right edge of the screen, it will wrap around to the left edge.

ALSO NOTE: Once you press **RETURN** in the text mode, the **ESC** key will not erase the text. You will find options for erasing on page 21.

BACK TO THE FUNCTION MENU

If you have been following directions carefully, your screen should look like the example picture. Congratulations! You have just made your first PIXIT hi-res picture. Of course, there are many other features in the PICTURE EDITOR to learn but these will be covered in detail in the PICTURE EDITOR chapter.

When you have finished, press **ESC** to return to the FUNCTION MENU. There will be a brief pause to give you one last look at the picture and then the menu will reappear. At this point you may want to save your picture to disk. If so, place an initialized data disk in the drive, select the SAVE HI-RES PICTURE option, type a name for the picture, and press **RETURN**. Always be careful to save any work that you don't want to lose before starting a new picture! To get back to the hi-res screen without erasing your picture, select the EDIT PICTURE IN MEMORY option. To retrieve a hi-res picture from the disk, select the LOAD HI-RES PICTURE option. This is just like loading a shape table or character set. To start a new picture, select the CREATE PICTURE option. The previous picture will be erased and a blank editing screen will appear. If you have the proper printer connected to your Apple, you can get a hard-copy printout of your picture by selecting the PRINTER GRAPHICS DUMP option. Make sure the printer is on-line before selecting this option.

When you are finished with the PICTURE EDITOR program, make sure that the PIXIT program diskette is in drive 1 and select the QUIT PICTURE EDITOR option. This will get you back to the main PIXIT program menu.

WHERE DO WE GO FROM HERE?

Mastering all of the features and tricks of PIXIT graphics processing will take some time and a little practice. Read through the entire manual, then "play" with the various PIXIT programs. Try anything that comes to mind. Sometimes the most creative results come from "accidents". Experimenting with different shapes and colors will teach you a lot about what an Apple can and cannot do.

Let's get back to the electronic billboard analogy for a moment. If you wanted to put a colored image on the billboard, you would place colored lamps in the appropriate places. The Apple hi-res screen displays colors in much the same manner. Each pixel or dot that is lit has a color, but there are restrictions on which color a particular dot may display. There are actually only four colors available: purple, green, blue, and orange. All of the other colors on the Apple are produced by combining these four. Each individual dot can be displayed in two colors. Odd numbered dots on a line may be either green or orange. Even numbered dots may be either purple or blue. When two or more adjacent dots on a line are lit, the colors blend to form white. Thus, to get a blue horizontal line you would turn on the even numbered dots, and leave the odd numbered dots off.

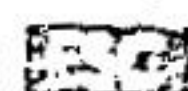
There is another peculiarity about Apple colors. Purple and green form one color group. Blue and orange form another color group. Due to the way the colors are mapped on the hi-res screen, plotting a dot from one color group may cause nearby dots of the opposite color group to change color. This property is called "clashing" and it is one of the unavoidable realities of Apple graphics. There are times, however, when color clashing will actually enhance a picture by making certain features stand out.

All of this may sound somewhat complicated, but it will become second nature as you practice with the PIXIT programs. There is no better teacher than seeing it "live".



THE PICTURE EDITOR

The PICTURE EDITOR can be used to draw a full-screen hi-res picture using shape tables, hi-res text, lines, circles, and colorfill. It can also be used to edit an existing hi-res picture. Shapes can be displayed in different colors, scaled, rotated, and moved anywhere on the screen.

At each step of the picture drawing process, you will see the result before making that step a permanent part of the picture. For example, suppose you choose to fill an area of the picture with the colorfill routine. Then, if you decide that you don't like the color, you can press the  key to back out of the routine before the color fill becomes permanent.

It is assumed that you have been through the Tutorial and read the chapter on Apple hi-res graphics. Some of the PICTURE EDITOR features were discussed in the Tutorial. Now we will examine all of the options in detail.

PICTURE EDITOR FUNCTION MENU

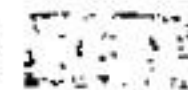
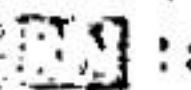
You should already be familiar with the PICTURE EDITOR function menu. Here is a summary of the available functions:

LOAD SHAPE TABLE Load a shape table from the PIXIT Shape Library or from your own data diskette.

LOAD CHARACTER SET Load a character set from the PIXIT Font Library.

CREATE PICTURE Display blank hi-res picture editing screen with flashing cursor and screen status window. This function will erase any hi-res picture already in memory.

CATALOG DISK Will display a catalog listing of the files on the disk drive selected.

CHANGE DISK DRIVE If you have two disk drives, select this option and press   to change from one drive to the other.

EDIT PICTURE IN MEMORY Display hi-res editing screen without erasing the current picture in memory. Use this function when you have loaded a hi-res picture from disk to be edited.

LOAD HI-RES PICTURE Load a hi-res picture from your data diskette for further editing.

SAVE HI-RES PICTURE Save a hi-res picture to your data disk.

PRINTER PICTURE DUMP Send hi-res picture currently in memory to printer for hard copy. Make sure printer is turned on and ready to print.

QUIT PICTURE EDITOR Return to the PIXIT program menu. PIXIT program diskette must be in disk drive 1.

THE STATUS WINDOW

You can get to the hi-res picture editing screen using either the **CREATE PICTURE** or **EDIT PICTURE IN MEMORY** options. In either case you will see a flashing cursor at the center of the screen and a text window at the bottom of the screen that shows the current status of the screen. The parameters displayed in this status window are identical to those used in Applesoft Basic. Let's take a look at each of these parameters and see what they mean:

SHAPE # This is the number of the shape being displayed from the shape table in memory. If no shape table was loaded, **SHAPE # 0** will be shown.

X The current horizontal position of the cursor.

Y The current vertical position of the cursor.

SCALE Indicates the relative size of the shape. Shapes can be displayed up to 5 times the original size.

ROT Indicates the rotation factor of the shape. Values range from 0 to 33. **ROT = 0** draws a shape in its original orientation. **ROT = 16** draws the shape 90 degrees clockwise. **ROT = 32** draws the shape upside down. The possible values for **ROT** increase as the **SCALE** is increased.

HCOLOR This determines the color that a shape, line, or circle is drawn to the screen. The colors available on the Apple are:

0 = BLACK1
1 = GREEN
2 = PURPLE
3 = WHITE1

4 = BLACK2
5 = ORANGE
6 = BLUE
7 = WHITE2

NOTE: Using different values of **HCOLOR** can occasionally produce quite unexpected results. This is because the Apple will plot a given color only at certain dot positions. **HCOLOR** values of 1, 2, 5, and 6 may cause lines and parts of shapes to disappear completely depending on the screen location. **HCOLOR = 0** and **HCOLOR = 4** can be especially confusing unless there are some background colors to draw against. There is also the possibility of "clashing" when you try to place colors 0 through 3 close to colors 4 through 7.

XDRAW and **DRAW** You may have noticed that the shapes sometimes cancel each other as you move them around the screen. This cancellation is a property of the **XDRAW** mode. When you switch to the **DRAW** mode, there are no more cancellations.

XDRAW will place a shape on the screen in the inverse color of the background.

DRAW will place a shape on the screen regardless of the color of the background.

When you press a command key to change one of the screen parameters, that parameter will be highlighted until you have completed the command by pressing **RETURN** or another command key. The status window will also indicate if you are in the **DRAW LINE**, **DRAW CIRCLE**, **ADD TEXT**, or **COLOR FILL** modes.

PICTURE EDITOR COMMANDS

There are several command keys used in the **PICTURE EDITOR**. When you are working on a picture you can press **?** or **?** to display a help screen which lists the commands. Then press **?** or **?** again to return to the picture editing screen.

Pressing the **ESC** key will display the entire hi-res screen for a moment and then return you to the function menu. There you can load a different shape table or character set if you like, or save your hi-res picture to your data disk. By the way, it is a good idea to save your picture at various stages of completion just in case there is an "accident" (like a power outage or you select **CREATE PICTURE** when you meant to **EDIT PICTURE IN MEMORY**)!

The **ESC** key is also used to back out of the **DRAW LINE**, **DRAW CIRCLE**, **ADD TEXT**, and **COLOR FILL** modes and restore the picture to its condition before the command was selected. **NOTE:** This only works if you press **ESC** before completing the command with **RETURN**.

Here is a description of the available commands:



Move the cursor or shape 10 pixels (or dots) in the direction of the arrow.



Move the cursor or shape one pixel (or dot) in the direction of the arrow.

TRACE Display the shape. Use the **←** and **→** keys to scroll through the shape table. This command will work only if you have loaded a shape table.

↔ Pressing the **↔** key will switch back and forth between the XDRAW and DRAW modes. XDRAW will always draw the shapes in the inverse of the background.

⏏ Pressing the **⏏** key will switch back and forth between the SPLIT SCREEN and FULL SCREEN modes.

HC Change the current HCOLOR. Use the **↑** and **↓** keys to select the HCOLOR value. HCOLOR will not affect shapes in the XDRAW mode.

SC Change the SCALE of the shape. Use the **↑** and **↓** keys to select the SCALE value between 1 and 5 times actual size.

ROT Change the rotation of the shape. Use the **↑** and **↓** keys to select the ROT value. NOTE: If the SCALE is changed, the rotation will revert back to ROT = 0.

PL Press the **PL** key and then **RETURN** to "plant" the shape. The shape will become a permanent part of the picture.

DL This is the DRAW LINE command. To add a straight line to your picture, move the cursor to the point where you want the line to start and press **DL**. Use the "move" keys to locate the point where you want the line to end. The line will always follow the cursor as if it were being stretched between the two points. When you get the line the way you want it, press **RETURN** to "plant" the line. **ESC** can be used to back out of this mode and return the cursor to its starting position.

DC This is the DRAW CIRCLE command. Move the cursor to the point where you want the center of the circle and press **DC** (not zero). Then type a radius value from 1 to 99 and press **RETURN**. After the circle is drawn, press **RETURN** again to "plant" the circle. **ESC** can be used to back out of this mode.

AT This is the ADD TEXT command. This command will work only if you have loaded a character set from the disk. To add a line of text to your picture, move the cursor to the point where you want the text to start and press **AT** to get the flashing text cursor. Then type the line of text directly from the keyboard. To get lower case on the Apple II+ press the **⇧** key before typing the characters. Press the **⇧** key to return to upper case mode. When you have finished (with no mistakes), press **RETURN** to "plant" the text. **ESC** can be used to exit this mode without planting the text; the entire line will disappear and the cursor will return to its starting location. NOTE: If you type beyond the right edge of the screen, the text will wrap-around to the left edge. XDRAW/DRAW will affect this mode.

CF This is the COLOR FILL command. Press the **CF** key to fill an enclosed area around the cursor with color. The editing screen will be replaced by a menu of colors and patterns. Use the **↑** and **↓** keys to select one of the colors and then press **RETURN**. The picture will reappear and the enclosed area will be filled. Press **RETURN** again to "plant" the color or **ESC** to erase it and restore the picture to its original condition.

ERASING SHAPES AND TEXT

Once a shape has been "planted" to the background there are several methods to erase it. You can use the cancellation property of XDRAW to erase a shape. Just XDRAW an identical shape directly over the one to be erased, and then use **PL** and **RETURN** to make the cancellation permanent.

Another technique is to plant a black shape (the same shape you are trying to erase) directly over the shape. In other words, get the DRAW mode with the **↔** key, put a shape identical to the one you want to erase on the screen and place it directly over the planted shape, use the **HC** key to set HCOLOR = 0 or 4, and then press **PL** and **RETURN** to permanently erase the shape.

A similar method (which can also be used to erase part of a shape or any other detail in the picture) is to get a shape that is about the

COMPILE SHAPE TABLE Change vector move file into Applesoft shape table, display shape, and save shape to disk.

REVIEW & EDIT SHAPE IN MEMORY Display hi-res shape plotting screen and draw shape file in memory.

CATALOG DISK Will display a catalog listing of the files on the disk drive selected.

CHANGE DISK DRIVE If you have two disk drives, select this option and press **RETURN** to change from one drive to the other.

SHAPE SOURCEROR Will prompt you to load a shape table from the disk and then select a shape from the table for editing.

QUIT CREATE-A-SHAPE Return to PIXIT program menu. PIXIT program disk must be in drive 1.

CREATING A NEW SHAPE

Select the CREATE NEW SHAPE function to draw a shape. The first thing you will see is a prompt to choose a drawing scale:

DRAWING SCALE 3 TIMES ACTUAL SIZE

The drawing screen will be magnified by whatever scale you select here. The choices range from 1 to 7 times actual size. Use the **↑** and **↓** keys to select a scale and then press **RETURN**. It is usually best to start with a larger value for the drawing scale so that the details of the shape will be easier to see. You can always go back and change the scale whenever your shape gets too large for the screen.

If you have selected a drawing scale of 3 or greater, you will be given the option of using a grid as a drawing aid:

GRID OPTIONS: **WITH GRID**
WITHOUT GRID

In most cases, a grid is desired. Again, use the arrow keys and **RETURN** to make your choice.

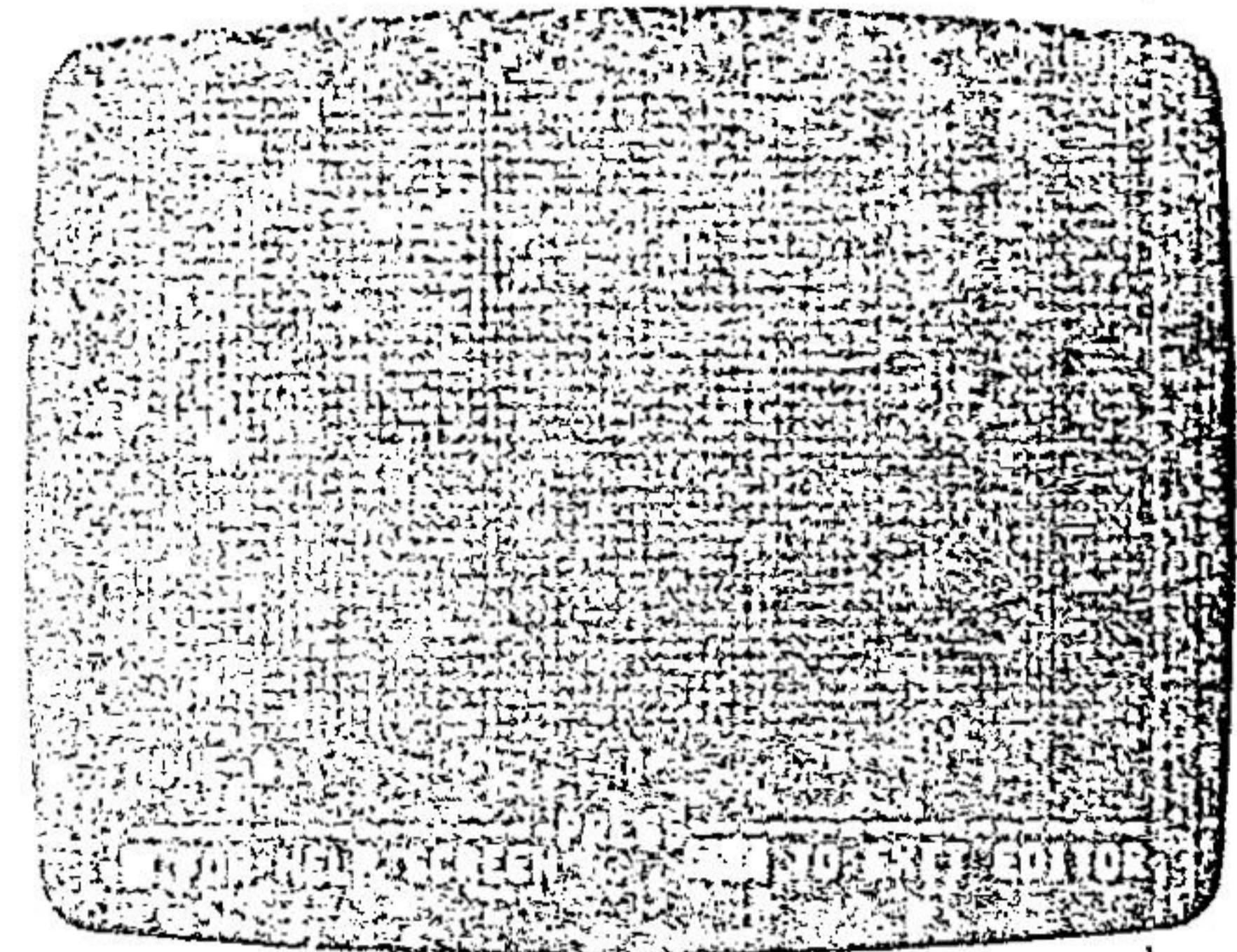
Finally, you must select the position on the screen where you will begin plotting the shape:

STARTING LOCATION ON SCREEN:

TOP LEFT
TOP CENTER
BOTTOM LEFT
CENTER

The best starting position will depend a lot on how and where the shape will be used. As you experiment with shapes and shape tables you will get to know which choice is best for your own application. The shapes in the PIXIT shape library are usually drawn from LEFT CENTER or BOTTOM LEFT.

After you have selected the scale, grid, and starting location options, the plotting screen will appear:



The grid dots will appear only if you have selected the grid option. There will be a flashing cursor waiting for you to make the first move. Right below the plotting screen will be "MOVE # 1". Since shapes are defined by a series of vector moves, the current move number is displayed here. The maximum number of moves allowed in one shape is approximately 8,000 (you will probably never draw a shape with this many moves). At the very bottom of the screen you are reminded that you can press **↑** or **↓** for a help screen or **ESC** to get back to the function menu. If you do press **ESC** to exit, the shape that you are working on will remain in memory. You can get back to the editing screen without losing your shape by selecting the REVIEW & EDIT SHAPE IN MEMORY function.

THE MOVE COMMANDS

There are two sets of keys that move the cursor and plot the shape. The **↑**, **↓**, **←**, and **→** keys will plot the square at the cursor and then move the cursor one square. The **↑**, **↓**, **←**, and **→** keys will

move the cursor one square without plotting:



These keys move the cursor one square in the direction of the arrow without plotting.



These keys plot the square at the cursor and move the cursor in the direction of the arrow.

Each time you press one of the "move" keys you are adding one vector move to the shape and the move is placed in a "file" of moves in the computer memory. Since every move is added to the file (whether plotting or non-plotting), you should try to plot your shape using the fewest number of vector moves to conserve memory.

THE EDITING COMMANDS

The editing commands allow you to go back into the middle of your shape to make changes. Editing a file of vector moves can be tricky because each vector is dependent on all of the vector moves that preceded it. If you change the direction of a vector in the middle of a file, all of the moves that follow will be shifted in the same direction. With a little practice, however, you should find the editing commands quite useful. The control key is required to prevent you from accidentally hitting an editing command while you are plotting the shape. Here is a description of the commands:

Each time you press the left arrow key, the cursor will move one step backward through the file in memory. It does not delete any move from the file, it just steps the cursor back, retracting the previous moves. When you accidentally make a wrong move, you can back up using the key and correct the move.

The right arrow key will step the cursor forward one move, tracing the file in memory. When you get to the last move of the file, an "END OF FILE" message will appear.

This will move the cursor all the way back to the beginning of the move file. It will clear the plotting screen but does not erase the file in memory. Use either the or commands to trace forward through the file and replot the shape.

If the cursor is at the beginning or middle of a file, you can press to trace forward (replotting the shape) all the way to the end of the file in memory. This automatic trace feature can be stopped at any point in the file by pressing the bar.

This will let you change the drawing scale, grid option, or starting location at any time without disturbing the file in memory. When you have finished making these changes, the plotting screen will reappear and the shape will be retraced in the new scale.

This will mark the current cursor position as the last move of the shape and erase all moves that follow. It is used to delete unwanted moves from the end of the file in memory.

When you get to the edge of the plotting screen and attempt a move that would put the cursor off the screen, a "SCREEN BOUNDARY" message will appear at the bottom of the screen. If you run into a screen boundary while plotting your shape, use the command to select a smaller drawing scale.

SOME HELPFUL HINTS

You should spend some time practicing and getting to know the various commands before you attempt any serious shape plotting. Start with simple shapes like squares and rectangles and work your way up to more complex shapes.

When you want to change one of the moves in the middle of the file from plot to no-plot (or vice-versa), be careful to make the change in the same direction as the original move. For example, if you want to change a "plot up" vector to a non-plotting move, make sure you use the "no-plot up" command when making the change.

Lines that cross over each other can be confusing. If you should happen to PLOT over a square that has been previously plotted, you will UN-PLOT that square. The solution to this problem is to use a no-plot move to cross over an already plotted point. Whenever possible, try to plan ahead and avoid crossovers in your shape.

After editing a shape (especially one that has lines that cross over), it is a good idea to use the **QUIT** and **QUIT** sequence to review the shape before compiling the shape table.

COMPILING THE SHAPE TABLE

When you are finished plotting your shape, press **ESC** to get back to the function menu. Then select the **COMPILE SHAPE TABLE** option to change the file of vector moves into standard Applesoft shape table. The shape will be drawn in actual size on the hi-res screen with the starting address and length in bytes displayed below. If you are satisfied with the shape and wish to save it, type a name for the shape, place your data disk in the drive and press **RETURN**. Otherwise, press **ESC** to return to the function menu.

SHAPE SOURCEROR

The **SHAPE SOURCEROR** option will let you load a shape table and then analyze or modify any of the shapes in the table. This can be a great way to learn how the PIXIT Shape Library shapes were drawn. Insert a disk containing the shape table that you wish to use and select the **SHAPE SOURCEROR** function. You will be prompted to load one of the shape tables from the disk. Make your selection and press **RETURN**. If there is more than one shape in the table, Shape # 1 will be displayed on the hi-res screen. You can use the arrow keys to scroll through the shapes in the table and then press **RETURN** to select one of them. An optimum drawing scale and starting location will be automatically determined and the shape will be plotted on the editing screen. The editing and move commands work just as if you had plotted the shape yourself. You can modify the shape and save it to disk if you like.

PRE-COLORED SHAPES

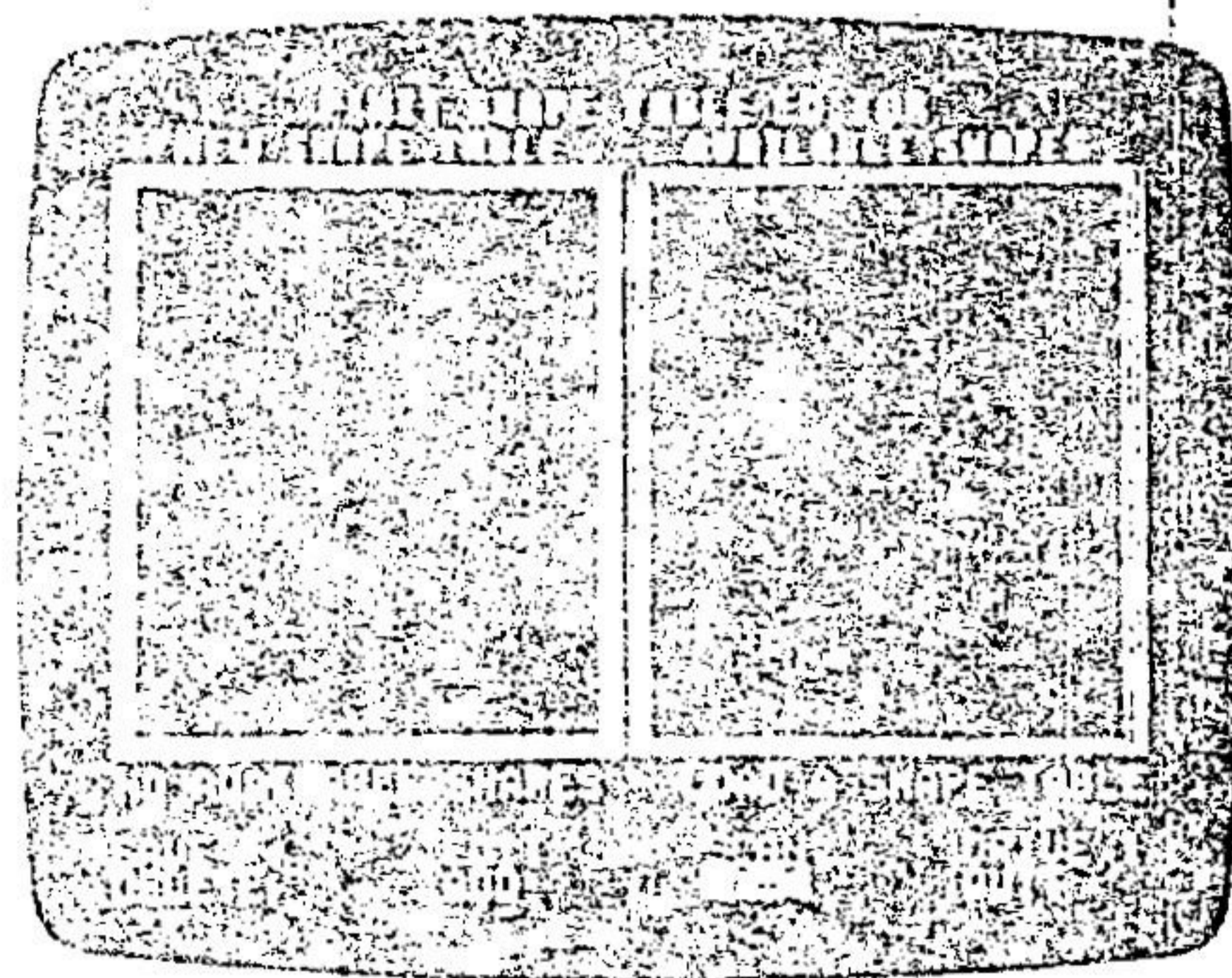
You may have noticed that many of the shapes in the PIXIT Shape Library have built-in colors, even when they are drawn on the screen with **HCOLOR = 3** (white). The secret is to plot the shapes with patterns that force colors in certain areas. You should use the **SHAPE SOURCEROR** to analyze these shapes and find out how to use this technique in your own shapes.



PIXIT SHAPE TABLE EDITOR

THE **SHAPE TABLE EDITOR** is used to build shape tables of up to 128 shapes. These shapes can be from the **PIXIT CREATE-A-SHAPE** program or any other standard Applesoft shape table, including any of those from the PIXIT shape library. The editing is done graphically so you can see each shape as it is added to the table. Shapes may be added (or deleted) anywhere in the table at any time. Several smaller shape tables can be spliced together to make one large table.

When you run the **SHAPE TABLE EDITOR** from the main program menu, the following screen will appear:

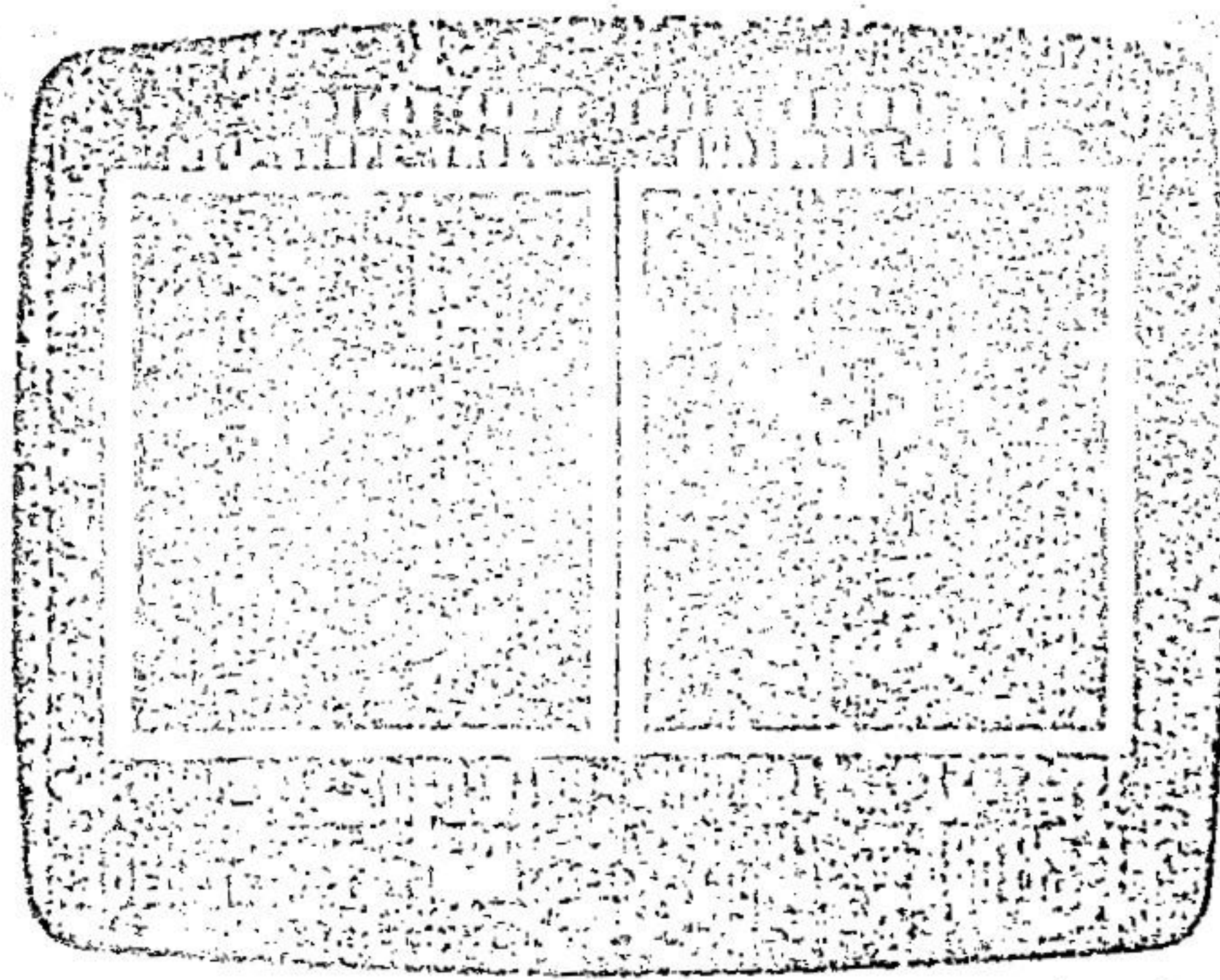


This is the only screen used in the **SHAPE TABLE EDITOR**. Since there are no additional commands, there is no help screen. All of the functions are displayed at the bottom of the screen. The **ESC** and **ESC** keys are used to scroll through the menu and the **RETURN** key will select the desired option. You can use the **ESC** key to back out of **LOAD** and **SAVE** options.

There are two large boxes or "windows" labeled **NEW SHAPE TABLE** and **AVAILABLE SHAPES**. The object is to load a shape table

from the disk into the AVAILABLE SHAPES box, and then move shapes from this box over to the NEW SHAPE TABLE box to build up your shape table. A different shape table can be loaded into the AVAILABLE SHAPES box at any time without disturbing the NEW SHAPE TABLE. These shapes can be added to the NEW SHAPE TABLE in any order and at any position in the new table.

Notice the message below the boxes: "NO AVAILABLE SHAPES -- LOAD A SHAPE TABLE". Nothing can be done with this program until a shape table has been loaded in. Place a disk containing the shapes that you want to load in the drive. This can be the PIXIT diskette if you want to use some of the PIXIT pre-drawn shapes in your new shape table. The load routine works the same as the other programs. When the shape table is loaded, the menu will reappear with some new screen information under the boxes:



The NEW SHAPE TABLE box will be blank with "SHAPE #1" beneath it. This tells you that there is no shape in position #1 of the new shape table. Also under the NEW SHAPE TABLE box is "MEM.168". This tells you that there are approximately 168K bytes of free memory in the NEW SHAPE TABLE. As shapes are added to the table this figure will decrease until the free memory is used up.

The AVAILABLE SHAPES box should now have a shape showing and "SHAPE #1" below the box. This tells you that the shape shown is the first shape in the box of AVAILABLE SHAPES. At the bottom right of this box you will see "SIZE:" followed by some number. This is the size (in bytes) of the shape visible in the AVAILABLE SHAPES box.

SHAPE TABLE EDITOR FUNCTIONS

Once the shapes are loaded into the AVAILABLE SHAPES box, you are ready to start building your NEW SHAPE TABLE. Let's take a look at the function options and how they are used:

Select this option to load a shape table from the PIXIT Shape Library or your own data disk. The **ESC** key can be used to back out of this routine.

SCAN

The SCAN function is used to select a different shape in the AVAILABLE SHAPES box. This allows you to add shapes to your NEW SHAPE TABLE in any order. Select the SCAN function on the menu and press **RETURN**. The "SHAPE #" beneath the AVAILABLE SHAPES box will be highlighted to indicate the SCAN mode. Then use the **UP** and **DOWN** keys to "scan" through the AVAILABLE SHAPES until the desired shape appears in the AVAILABLE SHAPES box and press **RETURN** again to get back to the function menu. Note that the SCAN function does nothing when there is only one shape in the AVAILABLE SHAPES box.

ADD

This function moves the shape that is currently visible in the AVAILABLE SHAPES box over to the NEW SHAPE TABLE box. Select the ADD function and press **RETURN**. The shape will appear briefly in the NEW SHAPE TABLE box to let you know that the shape has been added to the table. It will then disappear as the SHAPE # is incremented in preparation for the next shape to be added to the table.

If there was only one shape in the AVAILABLE SHAPES box you will be prompted to load another shape table. Otherwise, the next available shape will appear in the AVAILABLE SHAPES box.

EDIT

The EDIT function works exactly like the SCAN function except that it affects the NEW SHAPE TABLE box. Use EDIT when you want to delete or insert a shape at the middle of the NEW SHAPE TABLE. Select EDIT on the function menu and press **RETURN**. The "SHAPE #" beneath the NEW SHAPE TABLE box will be highlighted to indicate EDIT mode. Use the **UP** and **DOWN** keys to scroll through the NEW SHAPE TABLE until you have found the shape you wish to delete, or the place where you wish to add a shape, then



PROGRAM NOTES

WHAT'S IN A FILENAME?

When you save a shape table or hi-res picture to the disk, a prefix is automatically added to the filename you supply. This is done so that PIXIT can identify the different types of files. Do a catalog listing of the PIXIT disk to see how this works. The following convention is used for filename prefixes:

- ST. Shape Table
- CS. Character set
- PI. Hi-res picture

If you want to use a shape table from another program in the PIXIT program, you must first rename the shape table file to include the "ST." prefix and save it to a directory called "SHAPES" from another program. If you want to rename it "TESTSHAPES" to use it in PIXIT, files from other programs must have the "PI" prefix before they can be loaded into the PICTURE EDITOR.


MEMORIES ARE MADE OF THIS

The PIXIT programs reserve specific memory locations for each of the file types. This is of special interest to programmers:

Hi-res pictures are standard 34 sector disk files and are loaded at Hi-res page 2, address 16384 (hex \$4000).

Shape tables start at address 24576 (hex \$6000).


Character sets start at address 32768 (hex \$8000).

NOTE: Because of the tight memory requirements of the PICTURE EDITOR, the colorfill routine may be written over by a very large shape table. When this happens, and you press the  (colorfill) command, PIXIT will reload the colorfill routine before displaying the color selection menu. If the PIXIT disk is not in drive I, you will be prompted to insert it. Normally, this will not occur using shape tables from the PIXIT Shape Library.

HOW TO MAKE A BACK-UP COPY OF PIXIT

For your convenience and maximum utility, PIXIT programs can be listed and even modified to suit your own needs. In order that we may continue to provide high-quality unlocked software at a reasonable price, we request that you make back-up copies for your personal use only.

PIXIT uses a non-standard fast loading boot program, so the usual disk copy programs will not work. Use the following procedure to make a working back-up copy of PIXIT:

- (1) Boot the PIXIT program diskette. When the PROGRAM MENU appears, select the QUIT option.
- (2) When the  prompt appears, type: LOAD MENU
- (3) Remove the PIXIT diskette and insert your blank backup diskette.
- (4) Type: INIT MENU
- (5) Use the FID program from the DOS system master (or any other file copy program) to copy all of the files from the PIXIT diskette to your backup diskette.



RECOMMENDED READING

There are a number of books and magazines available that cover various aspects of Apple graphics. Here are a few selected titles.

BOOKS:

Apple II Basic Programming Manual,
Apple Computer Inc., Cupertino, CA.

Apple II User's Guide, by Lon Poole,
Osborne/McGraw-Hill, Berkeley, CA.

Apple II Computer Graphics, by Ken Williams,
Robert J. Brady Co., Bowie, MD.

Apple Graphics & Arcade Game Design,
by Jeffrey Stanton, The Book Co., L.A., CA.

MAGAZINES:

Softalk

Softside

Call-A-APPLE

Micro

Apple Orchard



SCREEN MESSAGES

The PIXIT programs keep you informed when there is a problem. This section lists and describes the messages that you may encounter. The most common problems occur while loading or saving to the disk:

OOFS! DISK PROBLEM

This indicates an unsuccessful attempt to load or save. Check your disk drive. Some possible causes are: The disk drive door is open, no disk is in the drive, the disk is not initialized, or the disk is defective.

WRITE PROTECTED

You have tried to save to a write protected disk.

DISK FULL

There is no more room to store files on the disk.

FILE LOCKED

You have attempted to save using the name of an existing locked file on the disk.

THERE ARE NO SHAPE TABLES ON THIS DISK

There are no shape tables with the "ST." prefix on the disk. A similar message is used for hi-res pictures and character sets.

INSERT PIXIT PROGRAM DISKETTE IN DRIVE 1 AND PRESS RETURN

The PIXIT disk must be in drive 1 when attempting to return to the main program menu. May occur during PICTURE EDITOR colorfill routine, see the Program Notes for explanation.

The CREATE-A-SHAPE program messages:

SCREEN BOUNDARY

You have attempted to move beyond the edge of the plotting screen. Select a smaller drawing scale.

FILE BUFFER FULL

You have reached the maximum number of moves allowed

END OF FILE

You have reached the last move of the current file.

PIXIT, VERSION 3.2

IMPORTANT ADDITIONS TO THE USER MANUAL

PIXIT, VERSION 3.2, contains several added features that are not covered in the user manual (although they do appear on the program help screens). Please read carefully so that you do not overlook these useful features.

HOW TO USE THE PRINTER GRAPHICS DUMP

The PRINTER GRAPHICS DUMP routine in the Picture Editor will produce a full-page printout with a choice of black dots on a white background or white dots on a black background. When you select this option from the function menu, you will be prompted to choose BLACK DOTS or WHITE DOTS. Make sure your printer is turned on and ready to print or the program will hang with a "TURN PRINTER ON" message. Once the printer has started, you can press the [ESC] key to stop the printout.

The routine is configured for the EPSON W/GRAFTRAX, GEMINI, and PANASONIC printers with an EPSON APL (or equivalent) parallel interface card. Some other brands of printers and interface cards that have an Epson emulation mode may also work without reconfiguring the Picture Editor. DIP switches on the printer or card may have to be reset for satisfactory results, check your printer manual.

PIXIT also supports many of the other popular printers and interface cards, but you will have to take the following steps to reconfigure the Picture Editor to work properly with your setup: First, boot the PIXIT program disk (not your backup copy) and press the [P] key when the PIXIT logo first appears on the screen. This will bring up a PIXIT PRINTER CONFIGURE menu instead of the main program menu. Follow the prompts to select your printer and interface card from the menu. When you have completed the selection, remove the write-protect tab from the disk to be reconfigured (either the PIXIT program disk or your backup copy), insert it in drive 1, and press [RETURN]. When you are finished, be sure to replace the write-protect tab. Once the disk is configured for your setup, you will not have to change it again.

We have attempted to support the widest number of Apple users with this selection of printers and interface cards. If your printer/interface setup is not supported, there are several good graphics printing programs available. Zoom Graphix, by Phoenix Software, is highly recommended. If you have an interface card with built-in graphics commands (like the Grappler), you can BLOAD your hi-res picture from Basic (don't forget the PI. prefix) and follow the directions for printing hi-res page 2 for your particular card.

The PIXIT SLIDESHOW

There is an Applesoft program on your PIXIT disk called "PIXIT SLIDESHOW" that will display your hi-res pictures like a slide projector. To run this program, select QUIT from the PROGRAM MENU. When the] prompt appears, type: RUN PIXIT SLIDESHOW and press [RETURN]. The program will ask you to type in the names of up to 10 hi-res pictures. Insert your data disk containing the pictures. Then press a number key corresponding to the picture you wish to display. Pictures may be displayed in any order.

KOALA PAD (TM) Input to the PICTURE EDITOR

If you have a Koala Pad (or other input device such as Joystick, trackball, etc.) connected to the game controller port, you can use it to draw freehand lines in the Picture Editor. When you are creating a hi-res picture and wish to use the Koala Pad, press the [G] key (for graphics pad). The status window will disappear and the entire hi-res screen will become visible. The cursor will reappear only when you touch the stylus to the pad. Use the stylus to move the cursor to the point where you wish to draw. Then press the left button on the pad and start drawing. As long as the left button is held down, the path you trace will appear on the screen. The color of the line will be the same as HCOLOR. Release the left button to stop drawing.

To draw a straight line, move the cursor to the point where you want the line to start and press the left button briefly to plot a single dot. Then move the cursor to the point where you want the line to end and press the right button. A straight line will be drawn between the two points. Each time you press the right button, a straight line is drawn from the last plotted point to the cursor position.

When you are finished drawing lines with the pad, press [RETURN] to "plant" the lines to the background. The [ESC] key can be used to back out of the graphics pad mode and restore the picture to it's condition before the [G] key was pressed. The graphics pad mode can also be used to erase portions of the picture by setting HCOLOR = 0 or 4 (black) before pressing the [G] key.

MIRROR IMAGE SHAPES in the PICTURE EDITOR

Before a shape is planted to the background, it can be flipped to face the opposite direction by pressing the [B] key (for backwards shape). The shape will remain that way until the [B] key is pressed again. This feature doubles the usefulness of the shapes in the Shape Library.

EDITING MOVES in CREATE-A-SHAPE

Here is a handy addition to the editing commands in Create-a-Shape. When you want to change a move in the middle of a shape file from plot to no-plot (or vice-versa), use the [←] or [→] keys to step through the file until you locate the move you want to change. Press [CTRL-F] to change the vector under the cursor. The cursor will then step forward to the next move in the file.

NOTES ON MAKING A BACK-UP COPY OF PIXIT

When transferring files from the PIXIT program diskette to your back-up diskette (see p.35 of the User Manual), it is not necessary to copy the following files: START, DEMO1, PC, and FCM. These files are not used on the back-up copy, and because of the non-standard DOS, some file copy programs may not be able to properly read these files.