

Illustrator

BLAZING PADDLES™

BAUDVILLE 

™

BLAZING PADDLES™

ILLUSTRATOR

Author

MICHAEL DAROOG

Programmers

EDWARD MC CULLOUGH

DAVID WALKER

Artists

ROBERT GLASSER

KATIE RALSTON



1001 MEDICAL PARK DRIVE S.E., GRAND RAPIDS, MICHIGAN 49506
(616) 957-3036

TABLE OF CONTENTS

TOPIC

Introduction	4
Getting Started	5
Main Menu	8
Color Selection	10
Drawing Routines	11
Text	14
Window	15
Shapes	17
Zoom	19
Spray	20
Fill	20
Disk Utilities	21
What's in a File Name	23
Printing Your Pictures	25
Apple Hi-Res Color Primer	26
Using A Light Pen	28

REGISTRATION BENEFITS

A Warranty Registration Card is enclosed in this package. Please complete and return the Card to BAUDVILLE within thirty (30) days. The postage is paid for your convenience. Registering your product entitles you to the following services:

- You may obtain a back-up copy of the disk for \$5.00.
- Allows you to replace defective products after warranty expires, for a nominal charge.
- In the event Baudville releases new versions of the product, you will be contacted by mail and may be eligible to obtain the new version at a discount.

LIMITED WARRANTY

BAUDVILLE warrants to the original purchaser only that the diskette on which the program is recorded will be free of defects under normal use for a period of ninety (90) days following date of purchase. If a defect occurs in the diskette during this period, BAUDVILLE will replace the diskette without charge providing you sent in the Warranty Registration card within thirty (30) days of purchase, or send a dated proof of purchase with the diskette.

The software program and the instructional and reference materials are sold "AS IS" without warranty, either express or implied, including, but not limited to the implied warranties of merchantability. The entire risk as to the results and performance of this software program is assumed by you.

Some states do not allow the exclusion of implied warranties, so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state. BAUDVILLE'S liability shall not in any case exceed the purchase price for the software claimed to be defective.

COPYRIGHT NOTICE

© Copyright 1984 BAUDVILLE
All Rights Reserved

The software program, package design, and instructional material are reserved by BAUDVILLE. These items are intended for use by the original owner only. Except for personal use, they may not be reproduced in any medium, or for any other application, without the prior written permission of BAUDVILLE.

Commercial applications involving interstate trade require the purchase of a license.

WARNING: THIS SOFTWARE PROGRAM AND MANUAL ARE BOTH PROTECTED BY U.S. COPYRIGHT LAW. UNAUTHORIZED REPRODUCTION AND/OR SALES MAY RESULT IN CRIMINAL PENALTIES. COPYRIGHT INFRINGERS MAY ALSO BE SUBJECT TO CIVIL LIABILITY.

- Apple, Applesoft, Apple Mouse, & Apple Graphics Tablet are registered trademarks of Apple Computers, Inc.
- Scribe is a registered trademark licensed to Apple Computer, Inc.
- KoalaPad is a registered trademark of Koala Technologies Corporation.
- All trademarks for printer & interface card manufacturers listed in the programs print configuration are acknowledged.

INTRODUCTION

WHAT IS BLAZING PADDLES?

BLAZING PADDLES is a very powerful and easy to use drawing program. It allows you to use almost any input device to create drawings, diagrams, and text. It is easy enough for young children to use like a coloring book, yet sophisticated features are included for the serious computer artist.

EQUIPMENT REQUIREMENTS

- An Apple IIc, IIe, II+, II or compatible computer with 48K minimum and Applesoft.
- One or two disk drives.
- A color monitor or TV is preferred, but a monochrome monitor will work fine.
- One of the following input devices (properly connected):
 - (1) Mouse
 - (2) Graphics Tablet
 - (3) Touchpad (KoalaPad or equivalent)
 - (4) Joystick, trackball, or similar paddle port device
 - (5) Light pen
- A printer is optional. You can get a printout of your picture with most types of printers.

GETTING STARTED

Before running the program, make sure your input device is properly connected. Carefully follow the installation directions supplied with the device. Make sure the power is OFF before connecting anything to your computer.

Next place the BLAZING PADDLES disk in drive 1 (label facing up), and turn the computer on. When the drive stops spinning, you will see the following display on your monitor screen:



At the bottom of the screen is a menu of the various input devices. The left and right arrow keys are used to make a choice from this 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. When the device you are using is highlighted, press  to run the program.

The disk will run for a few moments and then the main menu will appear. Since each input device is operated differently, you will have to learn the following techniques for your device:

- How to move the "cursor" around the screen.

- How to draw and select menu items using the "ACTION BUTTON."
- How to delete actions using the "UNDO BUTTON."

Note: Light pens require special techniques. If you are using a light pen, refer to the chapter on LIGHT PENS.

MOVING THE CURSOR

The cursor is a small flashing marker that indicates your position on the screen.

- **MOUSE**—Move mouse to position cursor on the screen. Cursor can be moved off the screen by moving the mouse until the cursor disappears.
 - **TOUCHPAD**—Place stylus or finger on the pad to position cursor on the screen. Lift stylus off pad to take cursor off the screen.
 - **GRAPHICS TABLET**—The "screen" area is the lower 2/3 of the tablet. Touch the pen lightly on the surface of the tablet to position the cursor on the screen. Place the pen near the top of the tablet to move cursor off the screen.
 - **JOYSTICK** and other paddle port devices—Move joystick to position cursor. Move to the upper left corner to move cursor off the screen.
-

ACTION BUTTON

The ACTION BUTTON is used when you want to make a menu selection or draw something on the picture:

- **MOUSE**—The mouse button is the ACTION BUTTON.
 - **TOUCHPAD**—There are two buttons on the touchpad. The left button is the ACTION BUTTON.
 - **GRAPHICS TABLET**—The ACTION BUTTON is the point of the pen. When you press down on the pen so that the point retracts, you activate the ACTION BUTTON.
 - **JOYSTICK** or paddle port device—There are two buttons. The left button (or button 0) is normally the ACTION BUTTON. Some joysticks may have a different layout so you may have to experiment to find out which button to press.
-

UNDO BUTTON

The UNDO BUTTON is used to remove the last item placed on the picture. This allows you to try things out before they become a permanent part of the picture. The **[ESC]** key on the keyboard is used for the UNDO BUTTON. If you are using a device with two buttons (touchpad, joystick, etc.), the second button becomes the UNDO BUTTON.

Note: The "undo" feature will work only on the very last thing drawn on the screen.

THE MAIN MENU

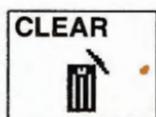


The Main Menu contains each of the program functions shown as a square with a title and an icon that symbolizes the function. To choose the menu item you want, simply move the cursor to the desired icon and press the ACTION BUTTON.

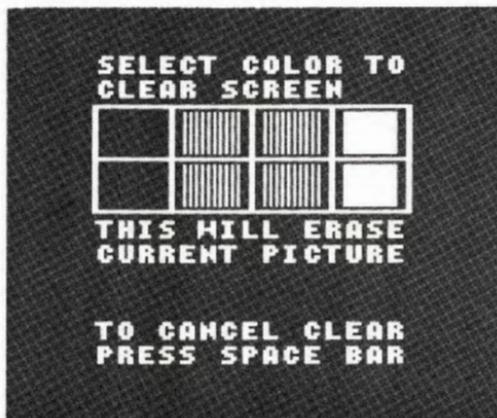
Once you have selected one of the drawing routines, you can get back to the Main Menu at any time by pressing the **(SPACE)** bar on the keyboard. You can also move the cursor off the drawing screen (see MOVING THE CURSOR) and then press the ACTION BUTTON to return to the Main Menu.

In the center of the Main Menu is a window that shows part of the current picture while you are making a menu selection.

CLEARING THE SCREEN



Move the cursor to the CLEAR icon and press the ACTION BUTTON. A menu of background colors will appear in the center of the screen:



Select a color from the menu by moving the cursor inside one of the colored squares and press the button. This will erase the current picture.

If you wish to exit the CLEAR menu without erasing the picture, move the cursor off the screen and press the ACTION BUTTON, or press the SPACE bar on the keyboard.

THE BRUSH SET

At the bottom of the Main Menu are the seven different brush strokes used in the draw routines:



The current brush selected is highlighted with a heavy purple border. To change brushes, move the cursor to the desired brush and press the ACTION BUTTON. The extra-fine (single dot) brush works best with white on a black background or black on a white background.

COLOR SELECTION



Over 200 colors and textured hues are available with the unique color mixing palette. The current color selected appears inside the COLOR icon square.

- To change color, move the cursor to the COLOR icon and press the ACTION BUTTON. The color menu will appear with eight primary colors (the standard Apple colors) and six textured hues:



- Primary colors or textured hues are selected by moving the cursor to the desired color and pressing the button.
- For each primary color selected, a new set of textured hues will appear in various shades of the primary color.
- Any two primary colors can be mixed by moving the cursor to the MIX box at the bottom right corner of the menu and pressing the button. You will be prompted to select two primary colors. When this is done, a mixture of these colors will appear in the COLOR icon, and six new textured hues in different shades of the mixed color will be available.

When desired color is in the COLOR icon, move the cursor to the COLOR icon and press ACTION BUTTON to get back to Main Menu.

Note: Some peculiar things happen when certain colors are placed next to each other. See the Apple Hi-res Color Primer in this manual for more details.

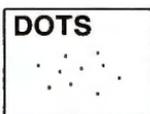
THE DRAWING ROUTINES IN DETAIL

Once you have cleared the screen and selected a brush color, you are ready to start drawing. To get to the drawing screen, choose one of the draw icons from the Main Menu. The menu will disappear leaving the entire screen available for drawing.



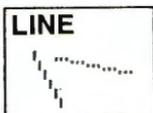
This is the freehand draw mode.

- Place cursor where you want to start drawing. Hold down the ACTION BUTTON and draw. Release button to stop drawing.
- To undo last line drawn, move cursor off screen and press UNDO BUTTON before starting another line.
- To return to the Main Menu, move cursor off screen and press ACTION BUTTON.



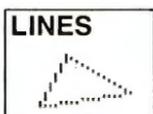
Draw single dots.

- Position cursor and press ACTION BUTTON. A dot will appear shaped like the currently selected brush.
- To undo last dot drawn, move cursor off screen and press UNDO BUTTON.
- To return to menu, move cursor off screen and press ACTION BUTTON.



Draw individual straight lines.

- Position cursor at one end of line to be drawn, then press ACTION BUTTON and release.
- As you move around the screen, a flashing line (like a stretched rubber band) will reach from the starting point and follow the movement.
- Press ACTION BUTTON again to "plant" the line. The cursor will reappear.
- To "unhook" the flashing line without planting it, move off screen and press ACTION BUTTON once.
- To undo last line drawn, move cursor off screen and press UNDO BUTTON.
- To return to menu, move cursor off screen and press ACTION BUTTON twice.



Draw connected straight lines.

- Position cursor at end of first line to be drawn, then press ACTION BUTTON and release.
- A rubberband line will follow your movement as in the LINE routine.
- Press ACTION BUTTON again to plant the line. A new rubberband line will stretch from the end of the last line drawn. Press ACTION BUTTON again to plant the second line, etc.
- To unhook the rubberband line, move off screen and press ACTION BUTTON once. The cursor will reappear.
- To undo the last line, move cursor off screen and press UNDO BUTTON.

- To return to menu, move cursor off screen and press ACTION BUTTON twice.

OVAL

Draw outline circles and ellipses.

- Place the cursor at the center of the circle or ellipse to be drawn, then press ACTION BUTTON and release.
- Now when you move around the screen, a flashing ellipse will follow the movement instead of the cursor. As you move up or down, the ellipses will be tall and narrow. Moving sideways will make short and wide ellipses. To get circles, move diagonally from the starting point.
- When you get the ellipse the size and shape you want, press the ACTION BUTTON again to plant it on the screen.
- To undo the last ellipse drawn, move off the screen and press the UNDO BUTTON.
- To unhook the flashing ellipse, move off screen and press ACTION BUTTON once.
- To return to menu, move off screen and press ACTION BUTTON twice.

OVAL 2

Draw solid color filled circles and ellipses.

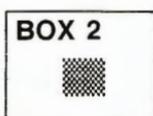
- Follow directions for OVAL.

BOX

Draw rectangular and square box outlines.

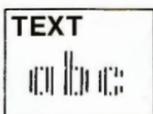
- Position cursor at one corner of box, then press ACTION BUTTON and release.

- When you move around the screen, a flashing rectangle will follow the movement.
 - Press ACTION BUTTON again to plant the box on the screen.
 - To undo last box drawn, move cursor off screen and press UNDO BUTTON.
 - To unhook flashing rectangle, move off screen and press ACTION BUTTON once.
 - To return to menu, move cursor off screen and press ACTION BUTTON twice.
-



Draw solid color filled boxes. This routine is handy for erasing large areas of the screen.

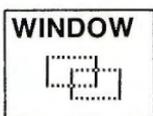
- Follow directions for BOX.
-



Add text to the picture. The style of text can be changed by loading a different Character Set from the disk.

- Place the cursor where you wish the line of text to begin and press ACTION BUTTON. A flashing text prompt will replace the cursor.
- Type the line of text directly from the keyboard.
- Release the caps-lock key on the APPLE IIc and IIe to get lower case text. On the APPLE II+ and II, the right-arrow  key is used as a caps-lock. Press the  key once for lower case (a smaller flashing text prompt will indicate lower case). Press the  key again to return to upper case.
- Use the left-arrow  key as a backspace to delete unwanted characters. Press the  key when the text line is complete.

- This line of text may be repositioned by moving the cursor to a new location and pressing the UNDO BUTTON. This must be done immediately after placing the line of text on the screen. When using a touch tablet or graphics tablet, the stylus must be on the pad to reposition the text.
- To undo the last line of text, move cursor off the screen and press the UNDO BUTTON.
- To return to menu, move cursor off the screen and press ACTION BUTTON.



This is the Cut and Paste feature. It is very handy for moving a part of the picture or copying it like a rubber stamp. When you select the WINDOW icon from the main menu, the CUT and PASTE options will appear in the center of the screen. Here is how they work:



CUT—This is used to clip a portion of your picture by placing a frame around the area you want. The contents of this frame is called a “Window” and is stored in a separate part of memory. Once a window has been clipped, it can be moved around the screen, copied repeatedly, or even saved to disk and “pasted” later to a different picture. Note: The largest Window that may be clipped at one time is approximately 1/4 of the total screen area.

- Select the CUT option from the WINDOW menu.
- Move the cursor to one corner of the area you want to clip and press the ACTION BUTTON and release.

- As you move around the screen, a “shimmering” rectangle will follow the movement. This is the Window box.
- Position the Window box so that it completely frames the area you want to cut and press the ACTION BUTTON and release. The shimmering Window box will stay on the screen to show that the clipped area has been stored in memory. The window will remain in memory (even if the screen is cleared) until a new window is clipped or loaded from the disk.
- When the window has been cut you will automatically be in the PASTE mode. Now you can either copy the window to another part of the picture, or return to the main menu and use the window later.

PASTE—This is used to copy or duplicate the image in the Window buffer.

- In the Paste mode, the cursor becomes a pointing hand.
- Place the pointer to the place where you want to copy the window and then hold down the ACTION BUTTON. The window will appear at the end of the hand and can be moved around the screen as long as the button is held down.
- When the window is where you want it, release the button to paste it to the picture.
- The last window pasted to the screen can be repositioned by moving the pointer to the new location and pressing the UNDO BUTTON. When using a touch tablet or graphics tablet, the stylus must be on the pad to reposition the window.
- To undo the last paste, move cursor off the screen and press the UNDO BUTTON.
- To return to the menu, move cursor off screen and press ACTION BUTTON.

SHAPES



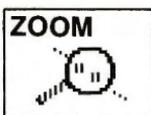
BLAZING PADDLES comes with a library of pre-drawn shapes which can be added to your picture. The selection of shapes can be changed by loading a different shape table from the disk. When the SHAPES icon is selected from the main menu, the Shape Options menu will appear in its place:



The upper area of this screen shows the current shape and the bottom part of the screen has several options to change or modify the shape.

- To scan through the available shapes, move the cursor to the SHAPE NUMBER box and press the ACTION BUTTON. The next shape in the table will appear above. The  and  keys can also be used to scan backward or forward through the shape table.
- To rotate the shape, move the cursor to the ROTATE box and press either button. The ACTION BUTTON will rotate clockwise and the UNDO BUTTON will rotate counterclockwise.
- To change a shape to its mirror image, move the cursor to FLIP and press the ACTION BUTTON.

- XDRAW and DRAW—When you add shapes to the picture, you will find that sometimes the background cancels part of the shape. This is a property of the XDRAW mode. When you change to the DRAW mode, there are no more cancellations. To switch back and forth between DRAW and XDRAW, move the cursor to XDRAW and press the ACTION BUTTON.
- A shape can be drawn in the standard Apple colors shown. The current color selection is indicated by a number in one of the colored squares. To change shape color, move the cursor to the desired color and press the ACTION BUTTON. Color selected will not affect shapes in the XDRAW mode.
- When you are ready to add the shape to your picture, select PICTURE from the menu options.
- Place the cursor where you want to draw the shape and then hold down the ACTION BUTTON. The shape will appear on the screen and be moved around as long as the button is held down.
- When the shape is where you want it, release the button to plant it to the screen.
- The shape can be repositioned by moving the cursor to the new location and pressing the UNDO BUTTON with the stylus on the pad. When using a touch tablet or graphics tablet, the stylus must be on the pad to reposition the shape.
- To undo the last shape, move cursor off the screen and press UNDO BUTTON.
- To return to the shape options menu, move the cursor off screen and press ACTION BUTTON.
- To return to the main menu, select MENU from the shapes options menu.



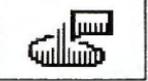
This gives you a magnified view of a small area of the picture and allows you to edit fine details. When you select ZOOM from the main menu your picture will appear with a large box at one side of the screen. This is the ZOOM lens. When the cursor is placed on the screen, a smaller flashing rectangle will appear on your picture. Each dot or pixel inside the small rectangle is magnified in the ZOOM lens.

- As the stylus or mouse is moved around, a cursor will follow inside the ZOOM lens.
- When you move the cursor to the edge of the ZOOM lens, a message will appear at that edge—MOVE UP, MOVE DOWN, MOVE LEFT, or MOVE RIGHT.
- To turn individual pixels on or off, move the cursor to the desired pixel inside the ZOOM lens and press the ACTION BUTTON.
- To change the color of a pixel, move the cursor to that pixel and press the UNDO BUTTON. Note that nearby pixels may also change color. This is due to the way Apple colors are mapped on the screen.
- To move the small box to a different part of the screen, move the cursor toward the edge of the ZOOM lens in the direction you wish to move. When the message appears at the edge of the ZOOM lens, press the ACTION BUTTON and the small box will move. There are two move speeds. The slowest is when the cursor is just over the edge of the ZOOM lens.
- To return to menu, move cursor off screen and press ACTION BUTTON.

SPRAY

Creates an airbrush effect by "spraying" color onto the screen. This is used for shading and blending one color into another.

- Follow directions for SKETCH. As you go over the same spot, the color becomes thicker.

FILL

Colorfill an enclosed area of the picture. Any area that is already filled with a primary color can be refilled with another color (including black). The fill may leak out of an area that is not completely enclosed. Areas that are colored with textured hues will not always accept colorfill.

- Position cursor inside of area to be filled and press ACTION BUTTON.
- To undo last colorfill, move cursor off screen and press UNDO BUTTON.
- To return to menu, move cursor off screen and press ACTION BUTTON.

NOTE: Because of very tight memory allocation, the image stored in the window buffer may be destroyed when you load a very large shape table and vice versa. Normally this will not occur using shape tables from the Baudville Shape libraries.

THE DISK STORAGE ROUTINES

When you select DISK from the main menu, the DISK UTILITY MENU will appear. This is where you load and save files to the disk. If you have a 48k Apple, the program disk must be in disk drive 1 to access the DISK UTILITY MENU.



To make a selection from the menu, simply press the **←** or **→** keys until the desired option is highlighted and then press **[RETURN]**. If you accidentally select the wrong menu option or decide not to load a file from the disk, you can press the **[ESC]** key to safely back out of a menu selection.

SAVING A PICTURE—You must have a formatted data disk to save your picture. If you do not have one, follow directions for **FORMAT DATA DISK**. Always be careful to save any work that you don't want to lose before starting a new picture.

- If you are using a single disk drive, remove the program disk and insert your data disk.

- If you are using two drives, leave the program disk in Drive 1 and insert your data disk in Drive 2.
- If your data disk is in Drive 2, use the arrow keys to select CHANGE DISK DRIVE and press **(RETURN)**.
- Move the inverse selection bar to SAVE PICTURE and press **(RETURN)**.
- Type a name (up to 20 characters) for the picture and press **(RETURN)**.

LOADING FILES FROM THE DISK—The procedure for loading Pictures, Character Sets (fonts), Shape Tables, and Windows is the same. A convenient load routine automatically searches the disk and displays a list of available files. You never have to type a filename when loading files from the disk.

- When you select one of the LOAD options from the menu, the program will scan the disk and then display a list of filenames at the bottom of the screen.
- Use the arrow keys to “scroll” through the list until the desired name is highlighted and then press **(RETURN)** to load that file.

NOTE: You can load pictures and shape tables from other graphics programs by simply adding a prefix to the filename. See WHAT'S IN A FILE-NAME for the details.

SAVING A WINDOW—If you have clipped a Window from your picture, it can be saved for later use by selecting the SAVE WINDOW option and following directions for saving pictures.

CATALOG—This option will display a catalog listing of all the files on a disk.

FORMAT DATA DISK—Before any files can be saved to a new disk, it must be formatted.

- Remove the program disk.
- Insert the new data disk to be formatted.
- Select the FORMAT DATA DISK option.
- Just to be sure, you will be asked if you really want to format. Press the key for yes. The disk will spin for a few moments while formatting.

WARNING: Formatting a disk will destroy any files that were previously on it. Make sure you don't accidentally format a valuable data disk or the program disk.

RETURN TO PICTURE—When you are finished with the disk utilities, select this option to get back to the main menu. If you have a 48k Apple, the program disk must be in Drive 1.

WHAT'S IN A FILENAME—When you save a picture to the disk, a prefix is automatically added to the filename you type. This is done so that BLAZING PADDLES can identify the different types of files. Do a catalog listing of the BLAZING PADDLES program disk to see how this works. The following convention is used for filename prefixes:

PI. Hi-res picture
ST. Shape table
CS. Character set
WI. Window

If you want to load a picture from another program, you must first rename the picture file to include the "PI." prefix. For example, if you have a picture called

“HOUSE” from another program, you would have to rename it “PI.HOUSE” to use it in BLAZING PADDLES. Shape tables must have the “ST.” prefix before they can be loaded.

PRINTING YOUR PICTURES

The printer routine will produce a full-page printout with a choice of black dots on a white background or white dots on a black background. Most of the popular printers and interface cards are supported. The printer interface card must be in Slot 1.

When you select PRINTER from the main menu, the PRINTER GRAPHICS DUMP menu will appear.

```
PRINTER GRAPHICS DUMP (C) 1984 BAUDVILLE
-----
PRINTER: IMAGEWRITER
INTERFACE CARD: APPLE SUPER SERIAL

IS THIS CORRECT (Y/N)?

-----
PRESS [ESC] TO RETURN TO MENU
```

If the printer and interface match your system, press **(Y)** for "yes." If they are not correct, press **(N)** for "no" and a PRINTER SELECTION menu will appear. Select your printer and interface card from this menu. This configuration will remain in memory until you quit the program.

Once you have selected the proper printer and interface you will be asked 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 printout has started, you can press the **(ESC)** key to stop the printout.

APPLE HI-RES COLOR PRIMER

You may have noticed some peculiar things happen to colors when drawing on the Apple hi-res screen. For example, when you try to draw a thin green diagonal line on a red background, you wind up with a line of green blocks across the screen. Or you might select a tree from the shape library and find that the leaves come out green or purple depending on where you place it on the screen. These peculiarities are a result of the Apple color mapping system. Understanding this system will help you get the most out of **BLAZING PADDLES**.

The high-resolution (or hi-res) graphics screen consists of 192 horizontal lines, each of which may contain up to 280 distinct dots. These dots are also called "pixels." Pictures or images are formed by lighting up certain pixels on the screen. One way of visualizing this is to think of the hi-res screen as an electronic billboard made up of a grid or matrix of tiny lights. Placing an image on the billboard is simply a matter of turning on the right lights. If you wanted the image in color, 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. These are the primary colors. 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. This is why the leaves on the tree shapes come out green or purple (depending on whether the lit pixels are on odd or even dots).

When two or more adjacent dots on a line are lit, the colors blend to form whites or pastels. If you use ZOOM to examine different colors, you will see how over 200 hues can be obtained by using textured patterns of the original four pixel colors. What appears to be solid blue on the screen turns out to be alternating pixels of blue and black when magnified.

The primary colors are arranged in two color groups. Purple and green form one group. Blue and orange form another 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.

It is possible, however, to minimize color clashing by carefully selecting colors. The COLOR menu is arranged so that one group of primary colors is on the top row and the other group is on the bottom row. Colors and textured hues from the same group will not clash. If you get clashing with mixed colors from opposite color groups, try mixing the colors in the opposite order.

If this all sounds a bit complicated, don't worry about it too much. The best way to learn is through practice and experimentation. You can always "undo" things that you don't like. Accidents often turn out to be better than intentions. There are even times when color clashing will actually enhance a picture by making certain features stand out.

USING A LIGHT PEN

After you select the LIGHT PEN option from the device menu, you will have to tell the program which slot the light pen card is in. Use the  or  keys to set the slot number and press .

Next you will have to "calibrate" the pen. A vertical line will appear near the left edge of the screen. Place the pen left of this line (at the extreme edge of the screen) and move it slowly to the right (toward the line). When you reach the line you will hear a click and the line will disappear. A new line will appear near the top of the screen. Place the pen above this line and move it slowly downward. When you reach the line you will hear a second click and the main menu will appear.

It is recommended that you always start with a white background when using the light pen. The reason is that the light pen requires light on the screen to read its position.

The cursor for the light pen covers the full height and width of the screen. The current cursor location is the point where the two cursor lines meet. The cursor cannot be moved off the screen as with the other devices. When you pull the pen away from the screen the cursor will remain stationary.

- The ACTION BUTTON for the light pen is the  key. In the SKETCH and SPRAY routines, press the  key once to start drawing. The drawing will continue until you press  again.
- The UNDO BUTTON is the  key.
- To return to the main menu from the drawing routines, press the  key.
- To "unhook" rubberband lines, boxes, ovals, etc., press the  key.

The ZOOM feature works differently with the light pen. When you select ZOOM from the main menu, the picture will appear. Move the cursor to the location you want to magnify and press the **(SPACE)** bar. The area around the cursor will appear on the screen magnified so that each pixel is a small rectangle. •

- To turn individual pixels on or off, move the cursor to the desired pixel and press the **(SPACE)** bar.
- To change the color of a pixel, move the cursor to that pixel and press the **(ESC)** key.
- To return to the unmagnified picture, press the **(RETURN)** key.
- To reposition text, shapes and windows, press **(R)**.



**Baudville, 1001 Medical Park Dr. S.E.,
Grand Rapids, Michigan, 49506 (616) 957-3036.**