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PixelPaint

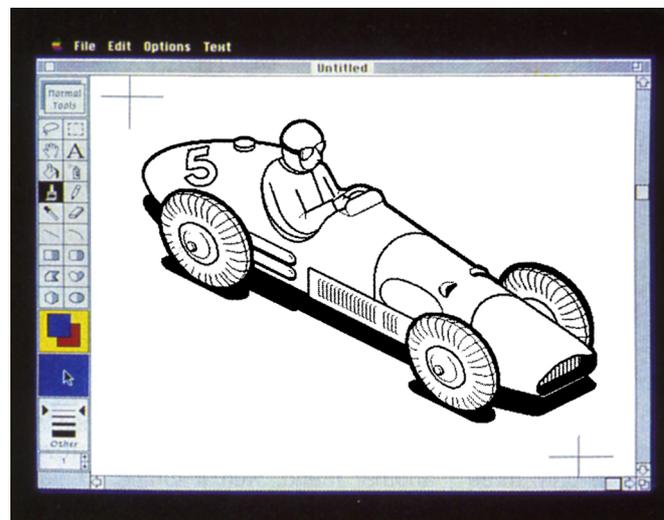
Ian McKinnell tries on the Mac's coat of many colours - 16 million at the last count - feels the quality and finds himself wishing it weren't quite so expensive.

In the Macintosh community, each new machine is eagerly anticipated. For months before the strenuously-denied launch, rumours abound: the intimate details of the new machine (which change every week) are discussed in the minutest detail. Until now, the biggest question has been: is this finally going to be the colour Mac?

This time it was. There was colour and lots of it, as demonstrated by the hackneyed images of 'balls in space' used in all the early photographs of the ugly new machine. No longer did Macintosh owners have to salivate over an Amiga, salvation was here - if (a very big if) you could afford it.

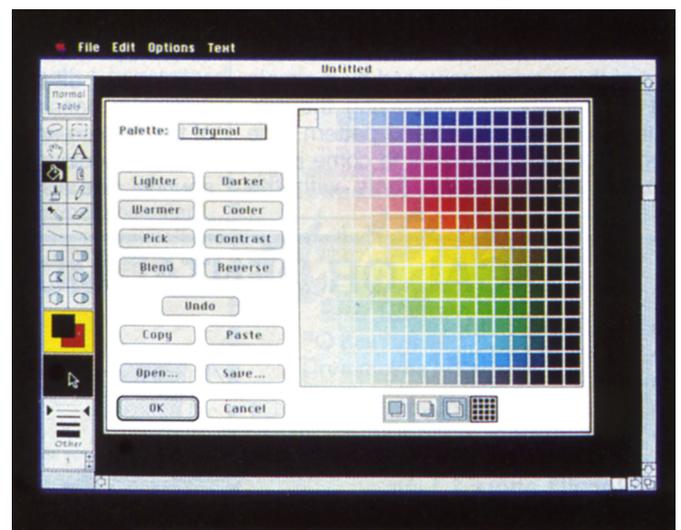
I was fortunate in having a Macintosh II in my studio not long after the machine was launched. It was both an exciting and desperately frustrating experience. There was the Apple in the top left corner of the screen, resplendent in its coat of many colours - but initially that was about the only evidence I had that this was a colour machine. Only two programs worked in colour (CricketDraw and Graphicworks), but they used only a miserable total of eight colours and made a Sinclair Spectrum's use of colour look positively sophisticated. It was like having the first 128 Macintosh all over again. Here was an incredibly sophisticated colour machine with only black and white software.

It took a long time for the first program to appear which started to take advantage of the Macintosh II's potential: that program was an early beta release version of what was then 'SuperMacPaint' (every new beta-release had another new name). Even now, when the program, now christened PixelPaint, is finally released, it's still virtually the only kid on the block, though there's a positive stampede of colour programs just



PixelPaint not only looks like the original MacPaint - in most cases it works like MacPaint too, so most Macintosh users will feel immediately at home

PixelPaint uses all of the 256 colours available with an 8-bit video board. The heart of PixelPaint is its system of palettes, where colours can be mixed and altered almost ad infinitum



around the corner. As the first major colour program, PixelPaint, made by SuperMac and distributed by InfoMagic, has a lot weighing on its

shoulders for there is no precedent as far as the Macintosh is concerned, and SuperMac is having to draw its own guidelines.

CHECKOUT

Big numbers

Being able to use PixelPaint involves a very heavy financial commitment. PixelPaint will run only on a Macintosh II - and it has to be a Macintosh II with an expanded (8-bit) video card. It will run with 2Mbyte of memory - just, but in reality 2Mbytes is a minimum, and the amount of memory available determines not only the speed of the program, but also the size of a document. With 1 Mbyte it's possible to have a window of just 512x512 pixels (approximately 19cm x 19cm or 7.5in square). With 2Mbytes that can be extended to 720x576 pixels - about the size of a normal MacPaint page. With 5Mbytes on board and a big monitor it's possible to go to a maximum of 1024x1024 pixels - approximately 38cms (15ins) square.

It may be possible to run PixelPaint without a hard disk, but as the program itself is 438k, and a complex drawing could easily exceed 300k, I wouldn't like to try it. For the same amount of money you could buy a decent family car and we haven't talked about output devices yet.

PixelPaint is a bitmapped, or paint, program, just like the original MacPaint of four years ago, but in colour. Despite that major difference, there are a surprising number of similarities between the two programs, and the screen of PixelPaint will be immediately familiar: all of MacPaint's tools are here and all work in exactly the same way, with only three new icons - eye-dropper, arc and regular polygon, and a new line choice, 'other' (it's now possible to select any line width, up to 100 pixels). Gone, however, is the patterns box at the bottom of the window, replaced by a simple set of four squares displaying the currently selected colours and pattern. The biggest portent of what is to come is the box at the top of the tools with the legend 'Normal

Tools'. Click on this box and it changes to read 'Special Effects'. Houston, we have lift off.

The simplicity of this interface is a great testament to its originator, Bill Atkinson, and it presents a very friendly face to any Macintosh user. It's a wise choice, for it means that PixelPaint can be used instantly: I had been using the program (in various beta test forms) for a number of months before I finally saw the manual, and there was little I hadn't managed to discover, although PixelPaint is perhaps

'... it's still virtually the only kid on the block, though there's a positive stampede of colour programs just around the corner.'

the most complex and powerful program I have ever used on a Macintosh.

Most of PixelPaint's power lurks beneath the surface, and a brief glance at the menu options reveals an intimidating number of choices - particularly as many of the menus are hierarchical, or nested (as indicated by an arrow which sits to the right of an item).

For example, passing the mouse over 'Visual Effects' in the Edit menu reveals another menu, with a further 21 items. The jack-in-the-box effect abounds in PixelPaint: many items simply reveal yet more choices. To change the foreground colour, you click on the foreground colour box in the tool box which reveals a palette of all the 256 colours currently available: passing the mouse over one of the colours; and then releasing selects that new colour. It's far simpler than it sounds, and a much, much quicker and more intu-

itive system than using an endless array of dialog boxes, a clumsy approach taken by programs such as CricketDraw.

An innovative aspect of PixelPaint is its pop-up menus in the special effects mode, where pressing the command key and the mouse button instantly brings up a menu below the cursor, wherever it is on the screen, making selections simple and very fast. A lot of thought has obviously gone into PixelPaint, and this shows in features which, although small in themselves, can save a great deal of work.

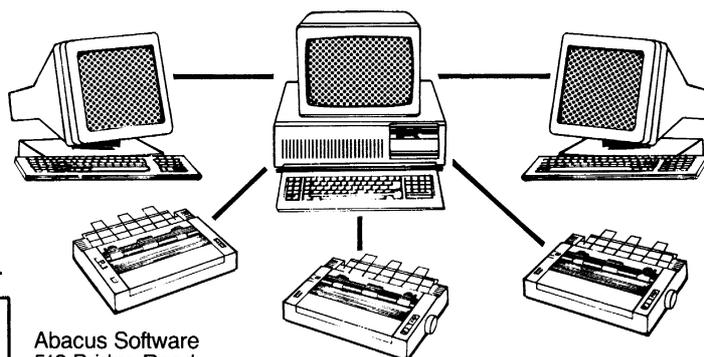
For example, clicking with the lasso tool while the command key is held down will automatically select all the contiguous area of the colour connected to the pixel you clicked on. So if you command-click on a text character, it will instantly be selected, an example that I hope other programmers will follow. PixelPaint offers perhaps more choices than any other Macintosh program, yet due to its design it remains fairly easy and logical to use.

Like most programs, many of the actions of the tools are modified when combined with the keyboard functions 'tab', 'shift', 'option', 'command' and 'escape' (being used for the first time on a Macintosh, perhaps) - it's just more complicated because there are lots more of them. Where there is a precedent (such as 'shift' constraining ovals to circles and rectangles to squares) this has been followed, simplifying matters greatly, though there has been one glaring omission. It's now the norm in graphics programs for the space bar to change whatever tool is currently selected into the grabber, so that moving around a page is quick and simple. It's so useful that using the space bar is now a habit - one that has to be unlearned in PixelPaint, for this feature is noticeably absent and sorely missed.

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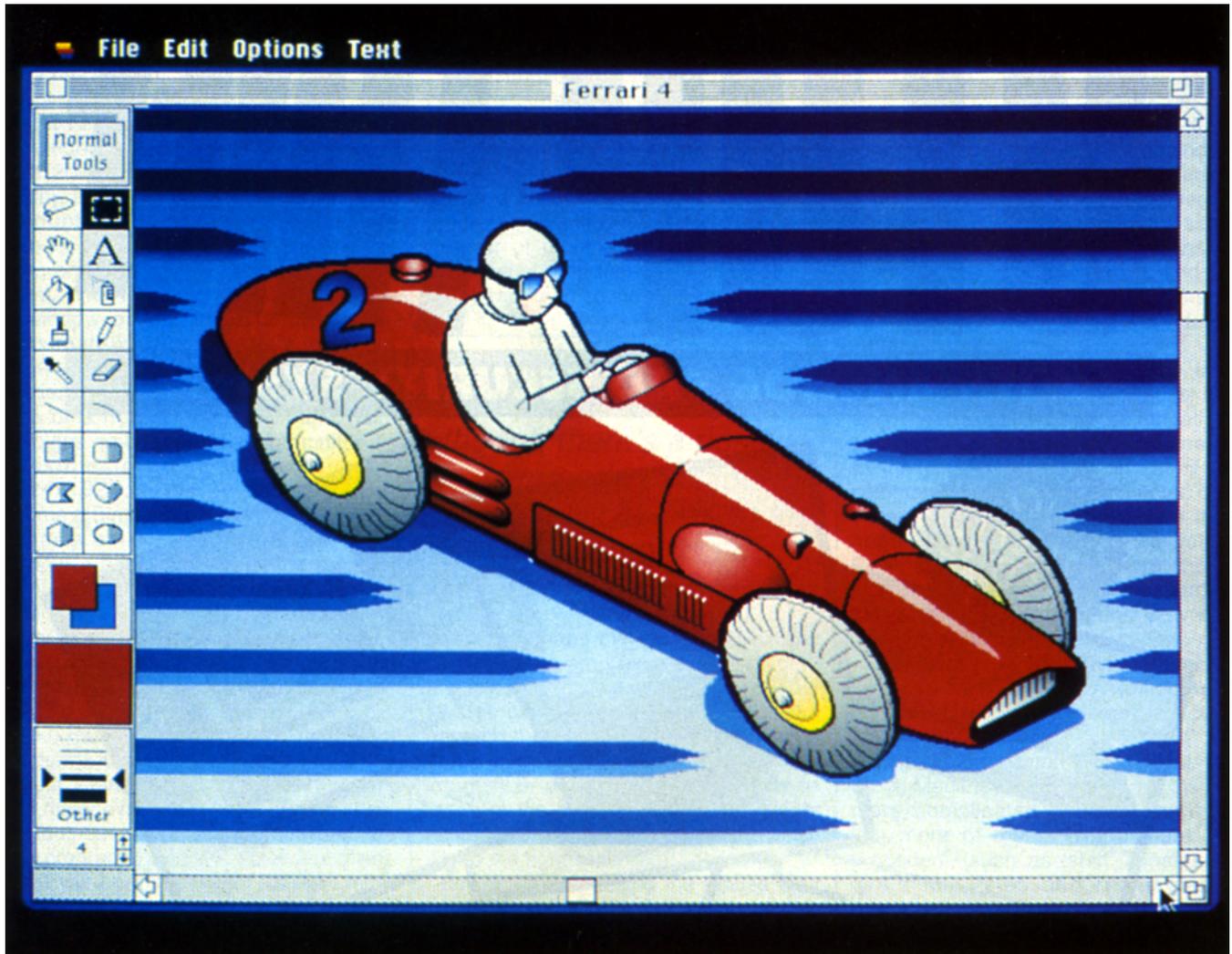
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PixelPaint has a wide range of tools, presenting almost unlimited potential, and must be the most exciting Mac program ever

Any colour ...

The most important element of PixelPaint is, of course, colour. Using an 8-bit video board restricts the Macintosh II to using just 256 colours on screen at any one time, from a choice of a (theoretical) 16 million. A total of 256 may seem a lot but, as soon as you begin using PixelPaint it can rapidly seem very little. PixelPaint uses a system of 'palettes' which, like a conventional painter's palette, is where colours are mixed, altered, and created.

PixelPaint has 14 different palettes built in, including a greyscale palette. There are palettes restricted to 8, 16 or 32 hues, each ranging from dark to light, as well as more bizarre palettes, and one called 'system'. Any or almost all of the colours in a palette can be changed at any time, and any number of new palettes can be created and saved independently.

In all palettes, the top right corner is reserved for white, the bottom left for black - these can't be altered as the system

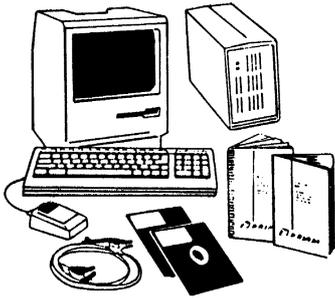
needs them to draw its menus. Any of the other colours can be edited by a number of methods. The 'colour' dialog box shows all the 256 colours available. These can be changed by using one of the buttons in the window (lighter, warmer, and so on).

Dragging the mouse selects a number of colours, and if 'blend' is clicked afterwards these are transformed into a range of colours equally shaded between the first and last colours selected. The more squares selected, the smoother is the transition - it looks much more magical than it sounds. Choosing 'pick' brings up the (now) standard system colour wheel, offering a number of other ways of changing a colour. Clicking on the up and down arrows at the right hand side changes the brightness of a colour. Moving the pointer anywhere in the wheel automatically 'picks up' that colour. Alternatively, the colours can be altered by changing the numbers in the red/green/blue (RGB) and /or Hue Saturation and Brightness boxes to the left (red has a Hue value of 0, green is 21,845, blue is 43,690).

PixelPaint deals with light so colours are 'additive': that is, mixing colours together makes them brighter, the opposite of mixing real paint. Colour introduces a whole new layer of decisionmaking to Macintosh graphics: in other words, it takes even longer because, as anybody who has tried to decide what colour to paint their bedroom will testify, making decisions about colour can be far from easy and having a choice of 16 million does not simplify matters. Alternatives are easily tried, however, for the colours in an existing image are easily changed, either 'wholesale', by selecting a new palette, or one colour at a time.

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One of the most important palettes is 'system', the standard Apple colours; a seemingly random mess of various colours with some obvious deficiencies (a decent orange, for example). It is important to use this palette (unedited) if any drawings are to be exported to other applications, for although the system will attempt to 'remap' the colours, to replace a nonstandard colour in the original palette with the nearest one it can find in the system palette, an image can still arrive in very weird shape. If necessary, it is possible to edit the system palette (more properly called the CLUT (Colour Lookup Table) using a desk accessory, 'Klutz', although this should be a last resort.

The palettes are best exploited using one of PixelPaint's most powerful and attractive features, 'Fill Effects'. When normal tools are activated, clicking the paint bucket in an area causes it to be filled with the currently selected foreground colour. Using 'Special Effects' however, it is possible to fill an area with a blend of any or all of the colours from a palette, the range of this blend being determined by the foreground colour and the blend colour selected. This could be a subtle gradation from black to dark blue, a rainbow, or a psychedelic riot. There are many ways in which the blend can be applied: left to right; top to bottom; in a sunburst pattern emanating from the point the mouse is clicked; 'shape-burst' where the blend follows the contours of an area to be filled; or any direction of your choosing. The blend can be a simple transition of one colour to another - it can also be mirrored or repeated. Using Fill Effects it is simple and quick to give impressive three-dimensionality and depth to an illustration in a sophisticated fashion that would be virtually impossible - or at least hugely time-consuming - if attempted any other way.

It would have been very easy for Fill Effects to have been a mere gimmick instead, it is a tool so controllable and versatile that it is impossible to consider the future life of an illustrator without it. Fill Effects is also far quicker than it would be reasonable to have expected - it's almost instantaneous.

Blends can also be used in other ways - for example, the paintbrush can cycle through the colours in the palettes as the line is drawn. It can even be used with the airbrush, producing a multicoloured splatter that will doubtless prove to be the background for many an image. It is also possible to produce instant drop-shadows or blended shadows for any object. If the Macintosh II and PixelPaint had been invented in the Sixties their inventor would have been a millionaire overnight.

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Groovy, mind-blowing effects can be easily achieved in seconds, and PixelPaint's trick (to be used sparingly) of cycling every colour on the screen through every colour of the palette is a convincing substitute for LSD.

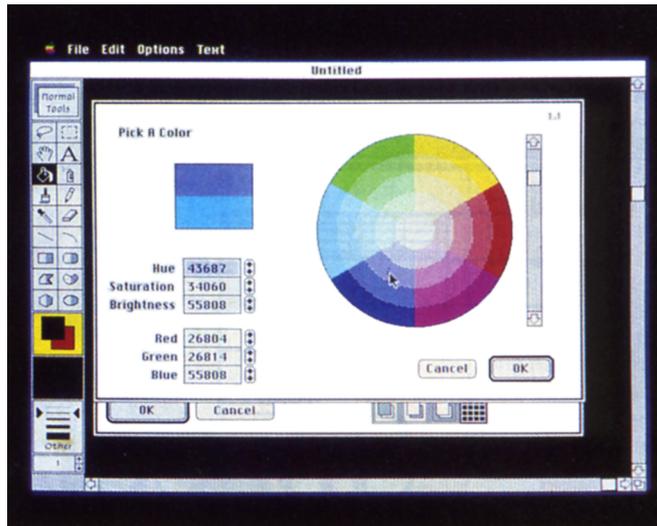
There are 132 patterns available in PixelPaint (chosen, of course, from a pop-up menu), and any or all of the existing patterns can be modified to your own needs. The patterns use the currently selected background and foreground colours, although pressing the command key reverses this combination and pressing the option key makes the background colour transparent.

Patterns are a vital part of a black and white graphics program, but their value in PixelPaint is very limited as tone can be applied in much more subtle and fascinating ways. Much more interesting patterns can be achieved - and in full colour, using PixelPaint's 'tile' facility - whereby an image from the clipboard can be repeated ad infinitum, producing rich and complex patterns. The image repeats every 16, 32, 64 or 128 pixels, and the image can be taken from any part of the clipboard image. Fabric designers would, I'm sure, gladly kill for a facility such as this.

In fact, every paint facility you could imagine is to be found in PixelPaint somewhere, plus some you never thought of (such as a facility for drawing random lines). There are also many new tools which could never have existed before, such as 'smooth', which helps disguise the jagged lines around an object and 'char-coal', 'watercolour' and 'smear'.

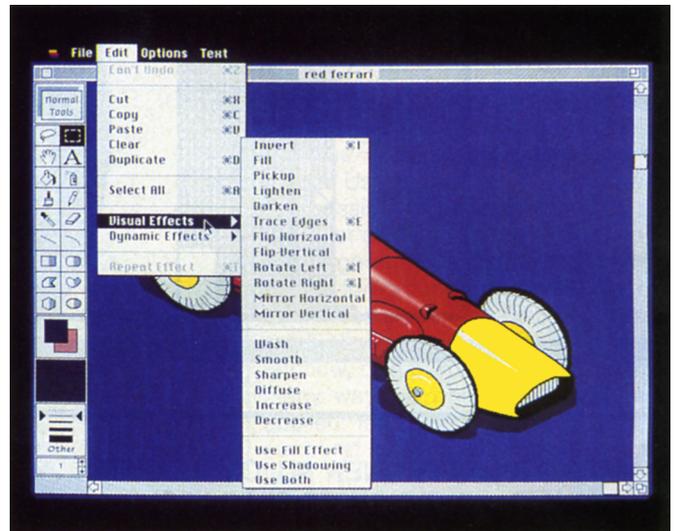
Unfortunately there is no room here even to mention all of these features, let alone cover them in any detail. However, there is one vital facility missing - a draw layer, such as that found in SuperPaint. The only way around the problem is to create the basic outlines of a drawing in another program, such as MacDraw, and carry it over to PixelPaint for colouring; or to use the desk accessory version of Canvas from within PixelPaint.

PixelPaint can open existing documents created by a number of programs, provided they are stored in MacPaint format: PICT (used by most draw programs), the new PICT2 format, Encapsulated PostScript (EPSF) documents, such as those created by Illustrator, Colour Startupscreen documents (which replace the 'Welcome to Macintosh' screen), and finally, 9f course, PixelPaint's own document format. PixelPaint can also save a



The colour wheel is now a part of the Macintosh II system. Using it gives access to a potential 16 million colours, but only 256 can be displayed at any one time

Much of the power of PixelPaint lurks beneath the menus, many of which are now 'hierarchical', where one menu choice brings up another. If you find decisionmaking difficult, PixelPaint is definitely a program to avoid



document in any of these formats, thus working as a document translator.

The speed of PixelPaint depends entirely on what it is doing. Using the paint brush, pencil or most of the tools, the effect is instantaneous.

Some of the more complex special effects, however, particularly the dynamic effects, such as free rotate, are painfully slow thankfully they can be stopped by pressing command period. Opening or saving a drawing, even from a hard disk, can take up to 30 seconds. Generally though, PixelPaint is as fast in most cases, and sometimes faster, than its black and white predecessors working on an old Macintosh, a tribute both to the programmers of PixelPaint and to the processing power of the Macintosh

There are a number of sample images included with the package, unusual in that some of them, particularly the images of a frog and another of a tropical fish, are of an incredibly high quality. The manual is com-

prehensive and fairly easy to follow, but the most interesting aspect of PixelPaint's manual is that it is entirely in black and white, with most of the screen shots being muddy black and white photographs.

... as long as it's black

That the manual should be presented in this way highlights the major, overriding, virtually crippling problem with colour programs in general, and PixelPaint in particular - getting the images out. PixelPaint does have some print facilities - it can print to the LaserWriter for example, although the results are translated into shades of grey and look, well, awful - but it claims to be ready to use colour PostScript when the machines become available.

PixelPaint can also output its images to the few available, incredibly expensive, colour printers - an example of a page printed on a 300 dpi Tektronix 469D Colour Image Printer is included with the package. The example looks very like a good colour

CHECKOUT

photocopy: good enough for internal use, but not good enough for publication. There is no facility for PixelPaint to produce colour separations - that is, to print the image out in black and white, either in process colours (yellow, magenta, cyan and black) or as solid, spot colours.

Another method of reproducing PixelPaint images is through photography. The crudest method, used for the screenshots illustrating this article, is simply to photograph the monitor; though the results, no matter how much care is taken over them, cannot begin to match the intensity and contrast of the colours as they appear on screen.

A much more sophisticated version of this method is using a film-recorder. Essentially these are black boxes containing very special black and white monitors which are photographed on to 35mm (5in x

4in) photographic film through a series of colour filters. This film can then be reproduced conventionally, as with any other photograph. The results can be outstanding, but the machines are expensive - \$8000 to \$20,000 or more, depending on the resolution. There are a number of such film recorders made specifically for the Macintosh II in the pipeline, so someone could well be setting up a bureau service with one soon. One problem with the photographic approach is that, surprisingly, PixelPaint has no facility for filling the screen with an image - even if sufficient memory is available, so all photographs of the screen will still have menus and scroll bars visible, which will make any presentations very confusing.

A third alternative is to output images as video, and there are already a number of boards being developed that will produce a broadcast quality video output from the

Macintosh II. Television graphics is a big and a very rich industry, where there is a huge market for the Macintosh II if its output is of a sufficiently high quality. These television video boards will doubtless be 24-bit, however, capable of handling far more than PixelPaint's current 256 colours, and PixelPaint will obviously need some adaptation to be really useful in this environment.

The manual claims that 'PixelPaint's design anticipates direct video output devices'. We'll have to wait and see. At the moment, as far as output is concerned, PixelPaint is ahead of its time, and it is very frustrating to produce images that look great displayed on the monitor ...

Conclusion

So who is likely to use PixelPaint?

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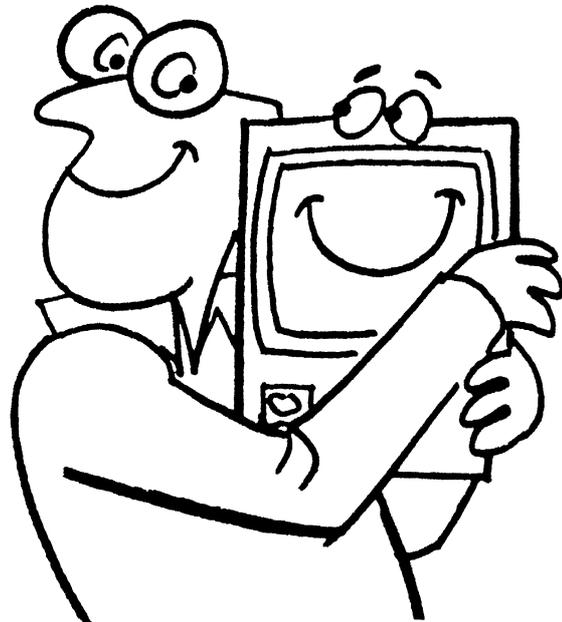
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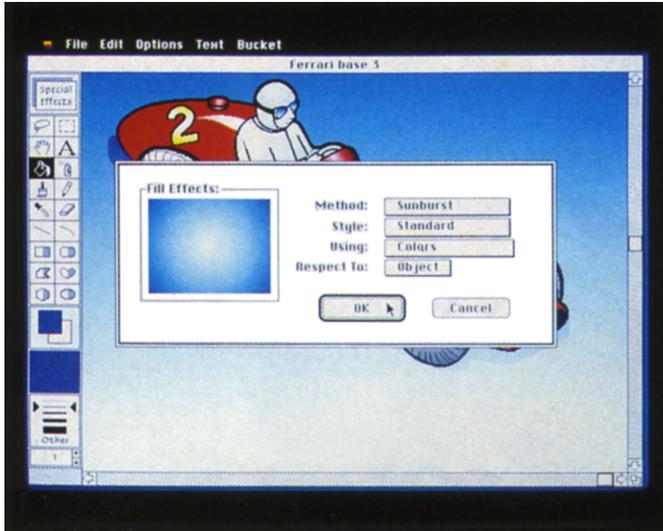
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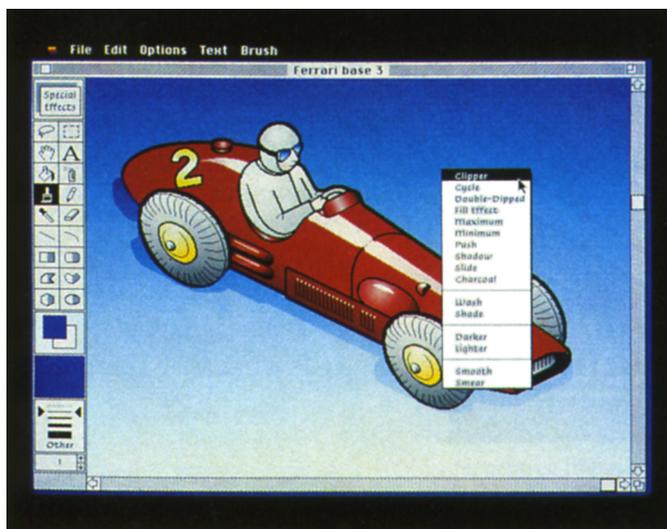
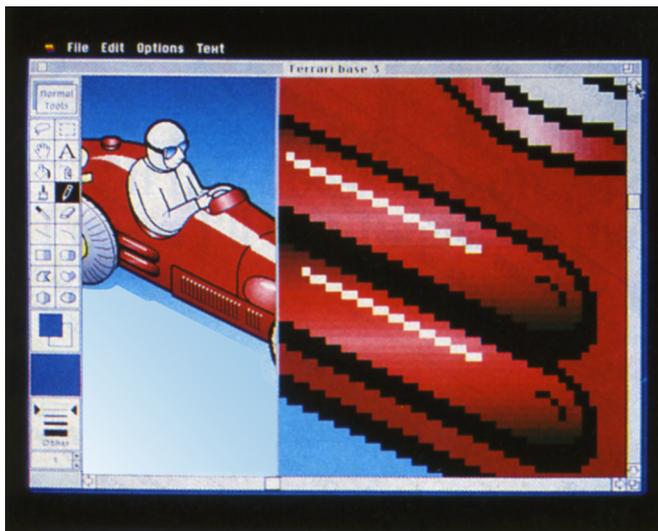
Well, if the price had been around that of conventional paint programs (about \$300), everybody with a Macintosh II would doubtless have bought it just for the way it shows

off the machine, if nothing else. After all, people in their tens of thousands have bought existing programs such as MacPaint and SuperPaint. However, at a



PixelPaint's most powerful, useful and fascinating facility is that it can not only create a smooth transition from one colour to another, but can also apply the blends with great versatility

No paint program would be complete without 'FatBits'. This closeup view also shows the subtle effects that can be created using the blend facility



PixelPaint uses 'pop-up' menus extensively. In this case, when using any of the special effects tools, pressing the command key and the mouse together brings up menus beneath the cursor, making choices simple and quick

price in the region of \$1000, PixelPaint is far more expensive and thus limited to a more specialised audience. That audience is further limited by the lack of output devices available: there is little value in including full colour artwork in a presentation on screen if it cannot be printed.

PixelPaint will be of great value in producing presentation artwork, however - in packaging design, for example, it would be possible to produce a package in a wide range of experimental colourways far more cheaply than by any other means. It will also make a great teaching tool. In the long term, as the possibilities of outputting the images increase, so will PixelPaint's potential value.

Despite these serious problems, however, and despite any cynicism that inevitably may have crept into this article, my ultimate conclusion is that PixelPaint is simply wonderful.

END

PixelPaint is distributed by InfoMagic, tel: (02) 975 1044. Its recommended retail price is \$998.



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