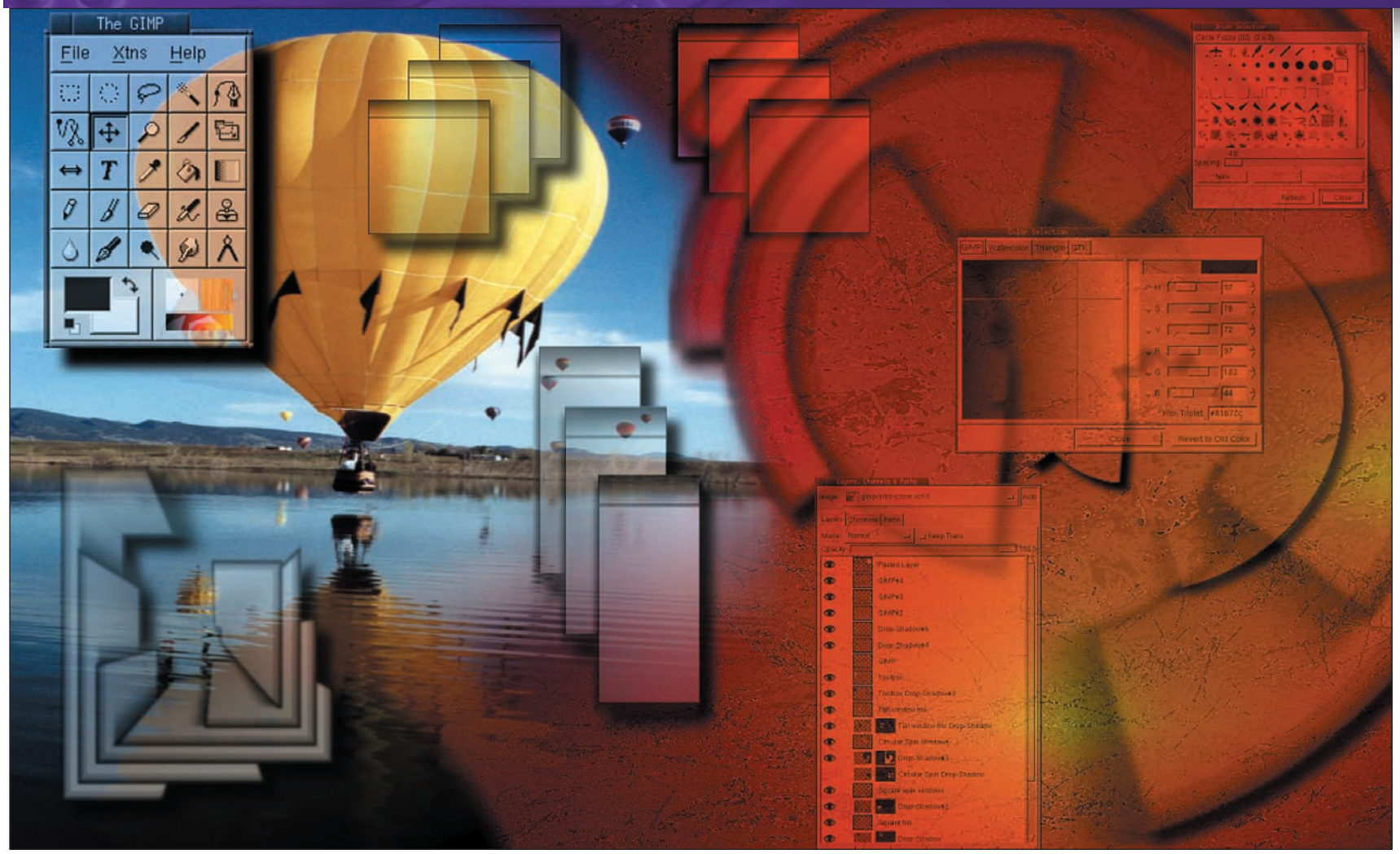


NON-DESTRUCTIVE EDITING

The GIMP Layer Masks

PART 3 Layer masks allow you to undo changes made to previously saved work because they don't remove any content. Michael J Hammel shows us how to use them to overcome common compositing problems.

Two of the most frustrating issues that digital artists face in their day-to-day work are the need to undo changes made to previously saved work; and the desire to modify colour content with simple brush strokes. For the former, artists turn to the *GIMP*'s layer masks to generate non-destructive changes to layers. For the latter, they look to *GIMP*'s blend modes, which we'll peek at today and cover with a more in-depth tutorial in next month's *Linux Format*.

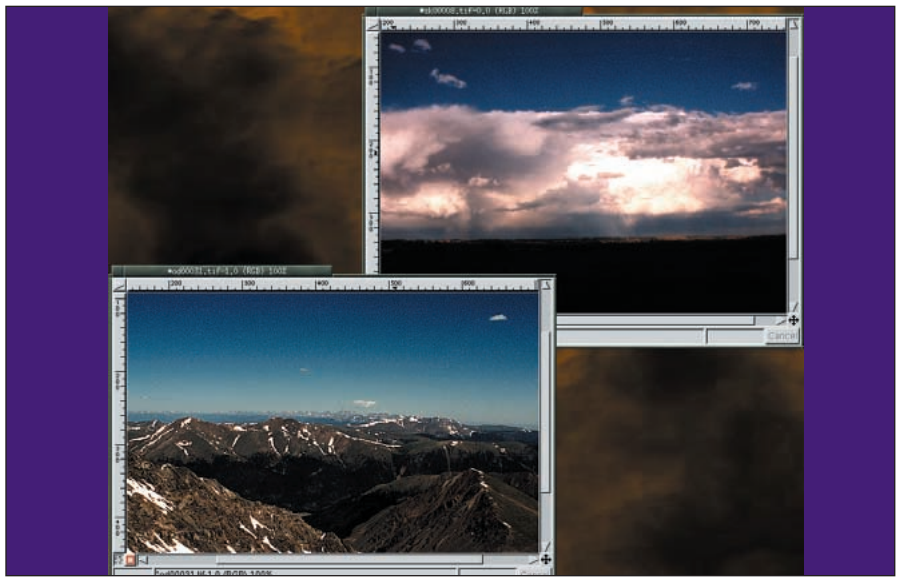
Layer masks provide a simple method of removing pixels in a layer from the composited image displayed in the Canvas window – without actually removing the pixel content! The mask is a grayscale image that shows as a thumbnail to the right of the layer thumbnail in the Layers, Channels and Paths window. Black pixels in the mask block the relative pixels in the layer from being used in the composite image. White pixels in the mask allow layer pixels to be used. Grey pixels in the mask provide transparency to their relative cousins in the layer – the darker grey the pixel in the mask, the more transparent the pixel in the layer. By using layer masks you can modify a layer without removing content, thereby allowing you to return to your layered artwork at a later time and, with a modification to the mask, retrieve portions of a layer currently unused. The use of layer masks is known as non-destructive editing because you don't actually remove pixel data from the layer. The pixel data is still there, which can be returned to later if necessary; the mask just specifies if it will be used and, if used, how transparent it will be.

Blend modes are available in many tools, and in the case of the layer blend modes, can also be used for non-destructive editing. A blend mode is a method describing how a pixel will change when composited with another pixel. In the case of layers, blend modes define how a higher level layer will be combined with the next layer down.

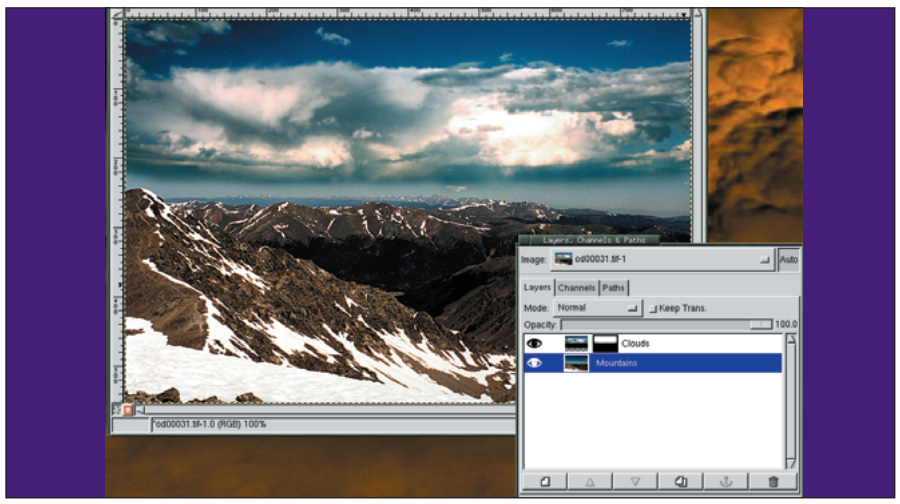
One use of layer blend modes is to produce a colour negative from an image by placing a white layer on top of the image and setting the white layer's blend mode to Difference. The colour negative can then be desaturated and used to create a complex selection or Layer mask. We'll start this month's tutorial by showing how to use Layer masks to perform simple merges of two layers and more complex shape masking.

MERGING TWO LAYERS

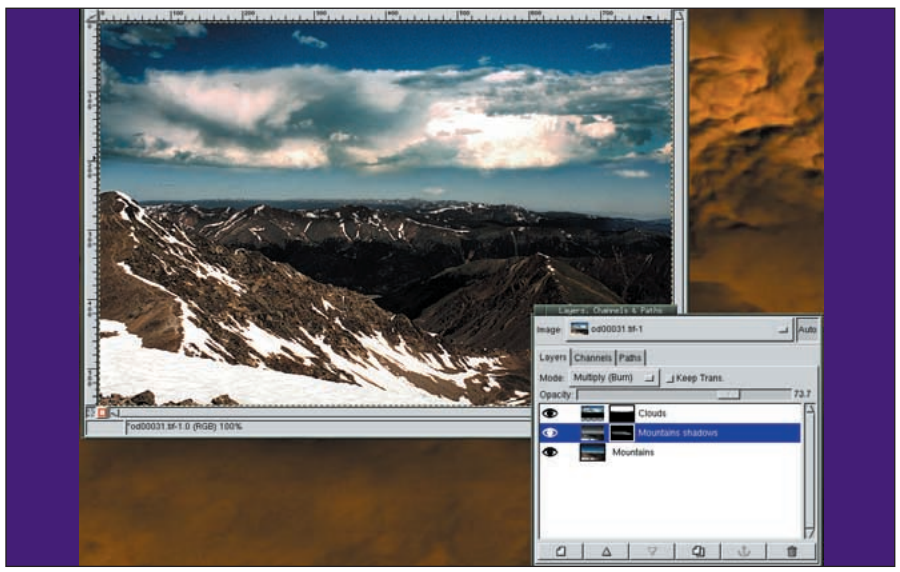
A common use for layer masks is to seamlessly merge two layers. The effect allows you to apply part of the top layer as a replacement for a portion of the bottom. In this example, we'll be adding a cloud filled sky to a skyless mountain range.



1 Our two images for this example: The first is a photo of a beautiful Colorado mountain range with a clear blue sky; but that sky is a little boring. Our other image shows an interesting cloud pattern over a dull, nearly dark earth. We'll take the clouds from the latter and place them over the empty sky in the former. Use **CTRL-A** to select the entire cloud image, then **CTRL-C** to make a copy of it. Move to the mountain image and use **CTRL-V** to paste the cloud image into it.



2 Move the opacity slider to the left so we can see the tops of the mountain range better. The clouds are a little low compared to the top of the mountain ranges so we've moved them up a little using the **Move** tool. We've made a freehand selection around the cloud, selecting everything above the clouds and just a little below them. Note that you can click and drag within the image and, with the mouse button still held down, drag outside of the window, around the top and back into the window on the other side. When you release the mouse button, a straight line is drawn to connect the start and end points of the selection. Add a layer mask to the cloud layer that is completely white. Make sure the mask is active by clicking on it (its thumbnail in the Layers dialog should be enclosed in a white border). The selection is then inverted, heavily feathered, and filled with black. Finally, the opacity slider is returned to its rightmost position.

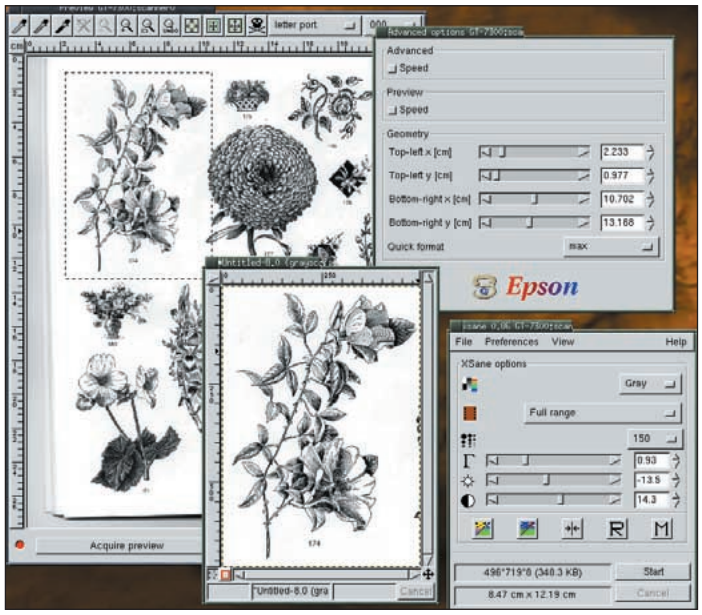


3 The layer mask has allowed us to easily merge the two images without modifying either layer directly. The mask isn't perfect, however. We still need to touch up the mask on the bottom side of the clouds to remove the dark edges. We can do this by zooming in and using a soft edged brush and the **Paintbrush** or **Airbrush** tools. Also, the cloud layer may need to be colour adjusted so it looks like it came from the same lighting as the mountain range. In our example, we've removed much of the red, magenta and yellow from the image using the **Image>Colors>Colour Balance** tool. The two small lower clouds in the mountain image were selected using the **Elliptical Selection**, feathered lightly and blurred with a **Gaussian Blur** so the appeared more distant and at the same focal depth as the new clouds. Finally, a desaturated version of the mountains, with a mask of the background mountains only, was used to add some shadows where the clouds were added.

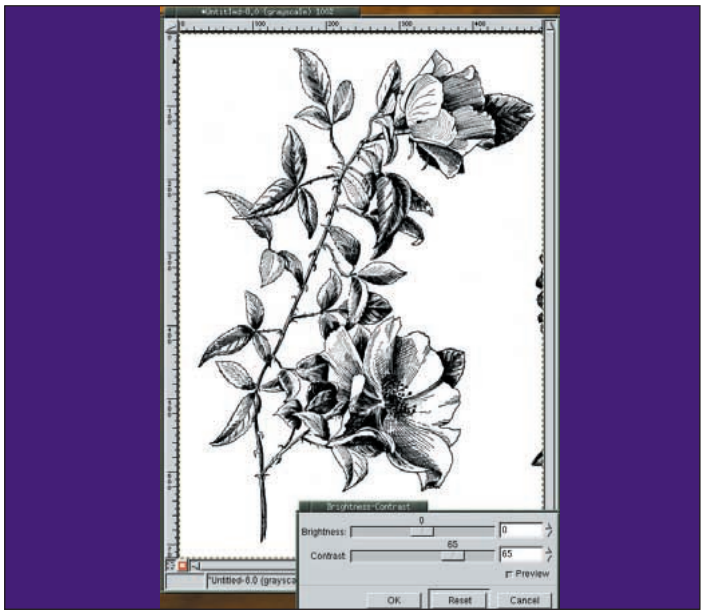
ISOLATING COMPLEX SHAPES

A common question from *GIMP* users is how to make selections of complex shapes in order to paste them into another image. The trick isn't to try and use the generalized selection tools like the Freehand or Bezier tools, but to use a mask to grab the shape's intricate details. In this example we'll take an image of a flower and stem from a book of clipart and scan it, place it over a solid background and colorize it.

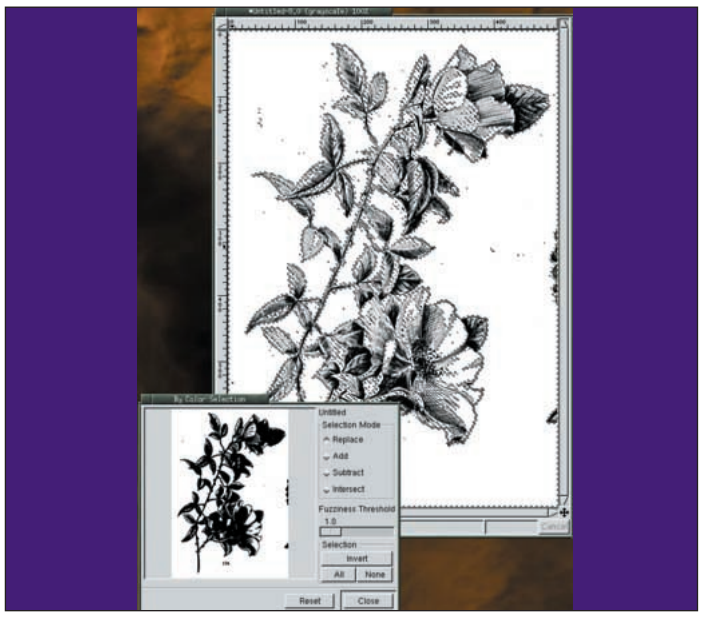
We create an image large enough to hold our flower and fill it with a colourful background. Put this image aside for now. We won't be using it until our last step.



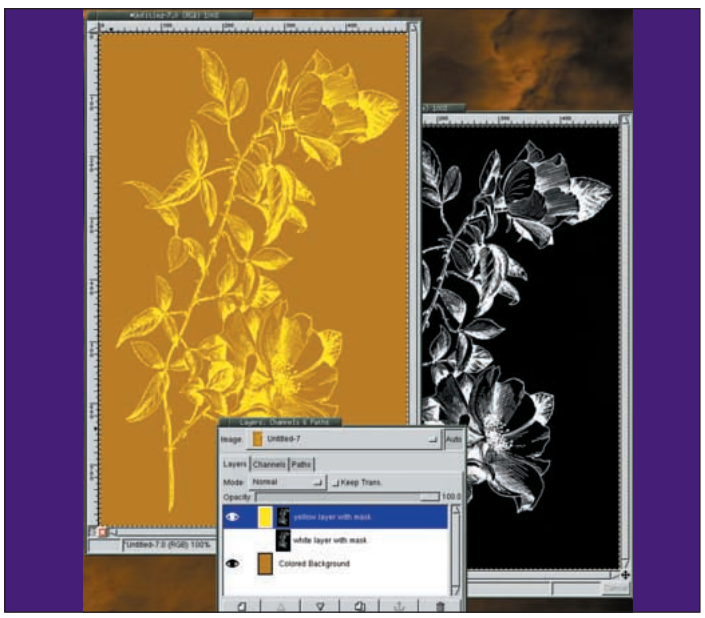
1 We start with a scanned version of some clipart. We're using the **KOWA** Epson backend driver to XSane and **SANE** with an Epson Perfection 1260 here. The scanning software allows us to select a section of the page, but we can't completely isolate the flower we want. We'll have to remove the extra bits using the *GIMP* – this is a technique used every day by professional digital artists. We've scanned the image in grayscale. We could scan in black and white only, but the would remove much of the detail in the flower.



2 The scanned image of this complex shape is not completely black and white. We first run **Image>Colors>Levels** and select **Auto** to make sure we get a full range from absolute white to absolute black. But we still have some non-white pixels (though we probably can't visually see them) in the area surrounding the flower. We'll use **Image>Colors> Brightness Contrast** to get rid of most of these by increasing the contrast a bit. Too much contrast change will cause us to start losing details in the flower, however.



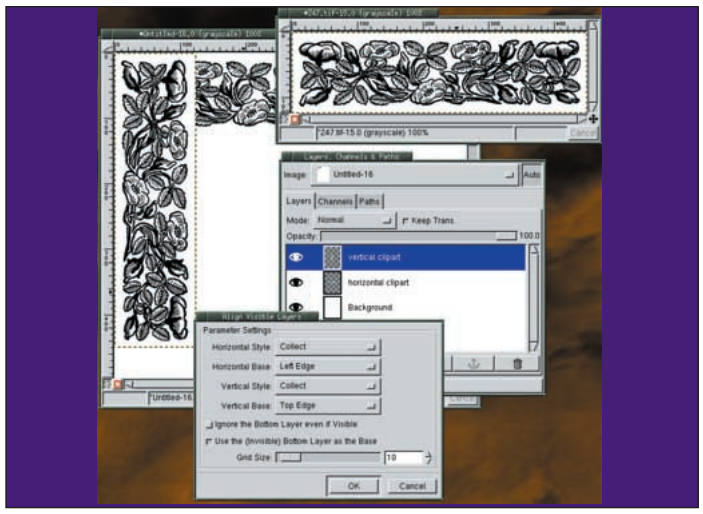
3 To rid any non-white artifacts from the area around the flower, we'll use Select by Colour (**Select>By Colour...**) with a 1 pixel Fuzziness threshold and clicking on the white are of the image. This shows us small regions of non-white pixels, including the area on the right that came from another flower in our scan. We invert the selection and paint over those areas with white. Deselect the image and repeat the **Select By Color**/paint process until we're satisfied.



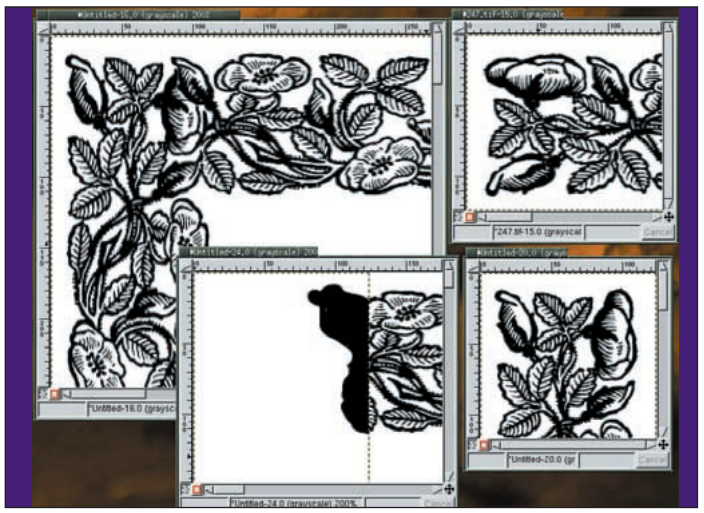
4 Invert the image (**Image>Colors>Invert**). Add a white layer to the coloured image. Create a white mask for the white layer. Copy the flower image and paste it into the mask of the white layer. If the flower doesn't fill that layer, all that you need to do is scale up the floating selection until it does. The complex shape is now a white image over your coloured background. We can fill the white layer with any colour to change the colour of the flower.

CREATING A BORDER FROM CLIPART

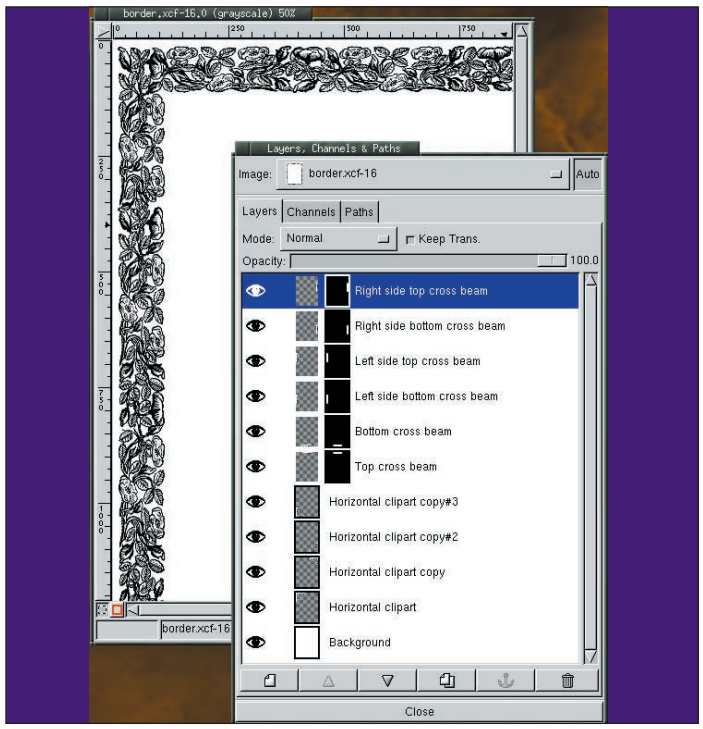
In this third tutorial we'll be painting inside our masks to meld two complex patterns together to create a border around an 8.5 x 11 inch page.
The process is simple but requires some close up work using soft and hard edged brushes to make the merging appear seamless. We start with a white image sized to fit a standard 8.5 x 11 page (the actual size doesn't matter – make it any standard size used for printing at home). The white background is used because our source clipart has a white background as well. If the clipart background is not exactly white, this doesn't present too much of a problem.. Simply use the steps in the previous *Isolating Complex Shapes* tutorial to adjust the image colours.



1 With the clipart sized appropriately to work as a border on the page, copy the clipart (CTRL-C) into image (CTRL-V). Convert the floating selection to a new layer. Duplicate the layer and rotate the duplicate 90 degrees. Use Layers>Align Visible Layers to align both copies of the clipart to the upper left corner. Set the Horizontal Style to Collect, the Horizontal base to Left Edge, the Vertical Style to Collect and the Vertical Base to Left Edge. Disable the Ignore Bottom Layer button (the button should appear raised).
Enable the Use Bottom Layer button (it should appear depressed). The setting for Grid size is irrelevant for this example. Finally, zoom in on the upper left corner.



2 Turn off the background layer visibility. Add a white layer mask to the top layer. Select a brush that has a hard edge to it, make sure the foreground colour is black and start to paint in the layer mask. What you're looking for is a form that merges the two layers cleanly. Click on the layer mask while holding the ALT key (Shift-Alt may be necessary depending on your desktop configuration) to view just the layer mask. Use the Opacity slider to see through the top layer to what you might want to show through the mask. Turn the top layer visibility on and off quickly to view what is showing and what could be showing from the other layer. All the while, paint in black in the layer mask to remove parts of the top layer, and paint in white to bring parts back. There is no special trick here except patience and various brush sizes to merge the two pieces together. When you've got the mask set so the two layers composite nicely, merge the visible layers to make a corner piece for your border.



3 Duplicate the corner piece three times, aligning each copy to one of the other corners of the image, rotating the copy as needed. With the background layer active, copy and paste the clipart again. The floating layer should be centered in the background. Make it a new layer and align it with the top of the background only (set the Horizontal Style to None in the Align Layers dialog). Create a mask on this new layer and paint it like you did in the previous step to merge it with the corner pieces.
Note that if the clipart is not long enough to fill the space between the corner pieces you might need to scale the clipart before you start all this. Alternatively you can paste and align multiple cliparts between the corners and merge them using layer masks. Repeat the process for the other three sides of the image. LXF

NEXT MONTH

Blend modes can lighten dark areas, add colour to lifeless images, or produce unusual affects, all without actually modifying the image. Well-lit images can be enhanced with Multiply and Divide, but what if you have an underexposed or poorly lit image? We'll show you what to do. Next month we'll also cover Screen, Overlay, Behind, Darken, Lighten, Value, Colour, Hue and Saturation