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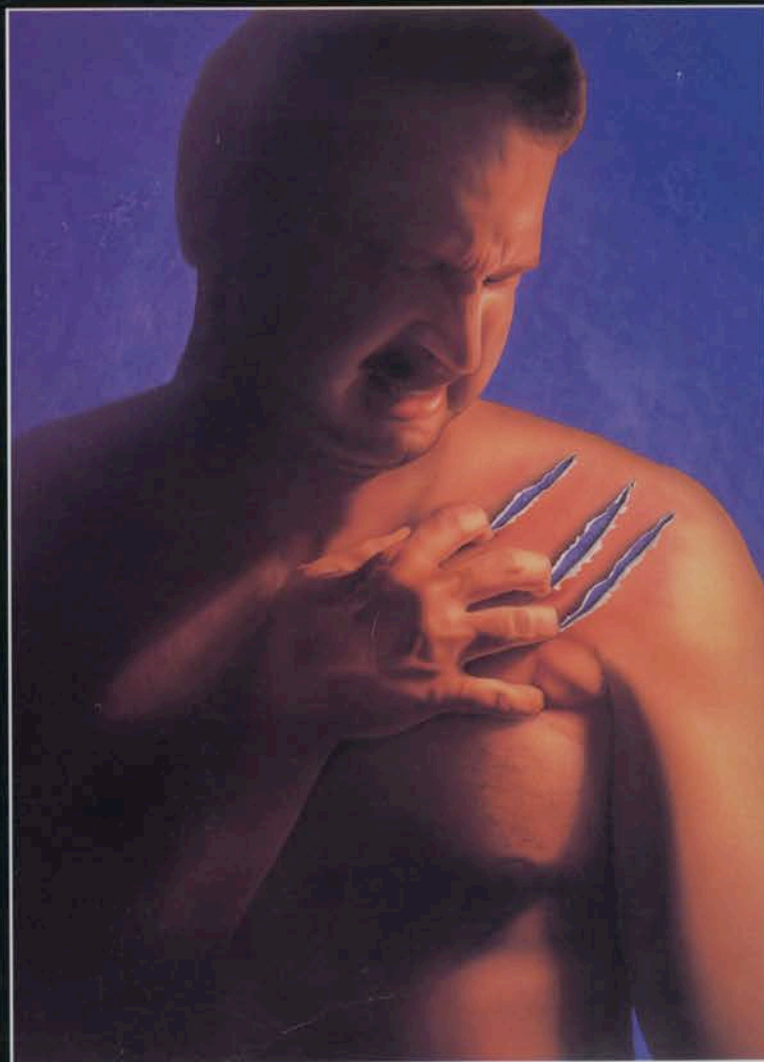
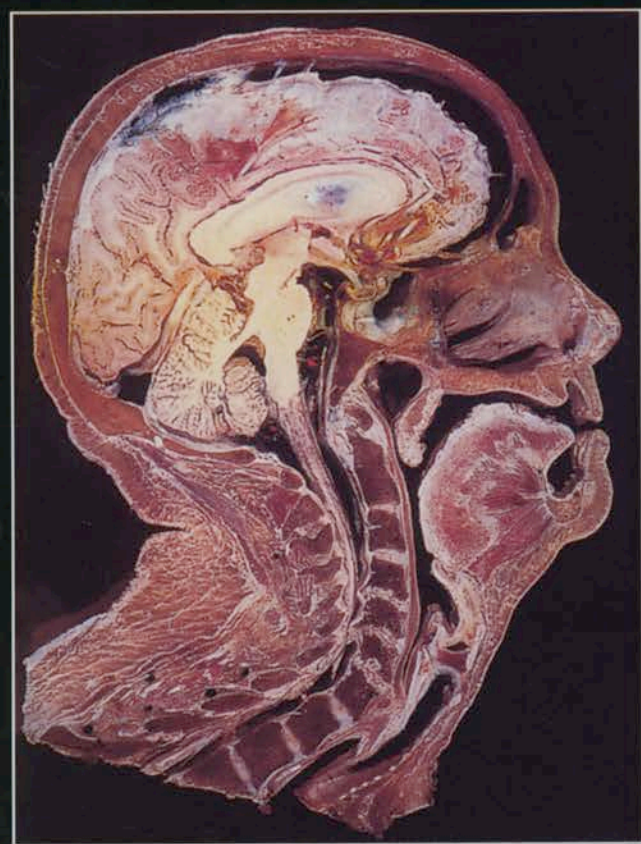
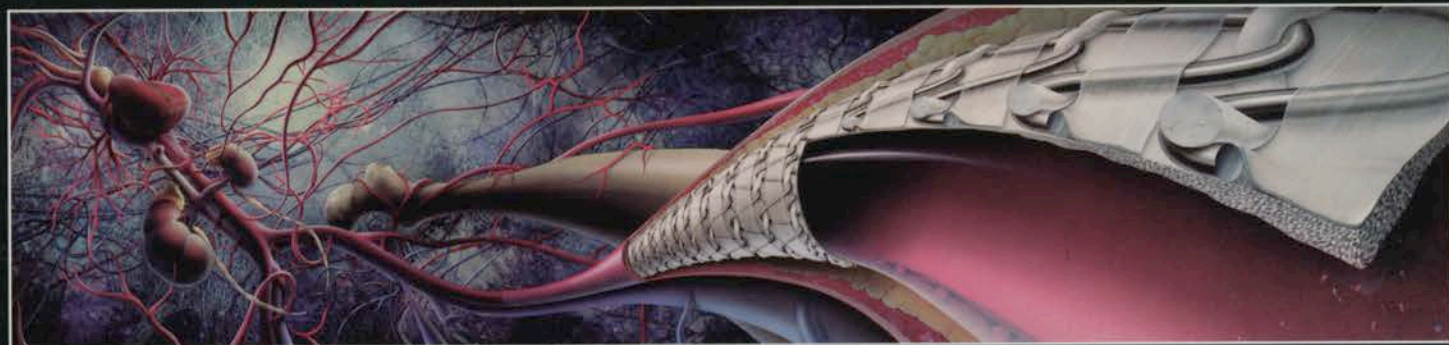
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A "Clean" Background Technique for High-magnification Applications

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The creation of a micro shadow box can eliminate unwanted shadows and background textures from photomicrographs and photomacrographs.

In the fall of 1995, one of my students at RIT was doing an extended work study block at the Monroe County Crime Lab. In the course of her work, she was asked to create a "better" systematized approach to taking photomacro/micrographs of small opaque evidence such as paint chips and fibers, using a stereo photomicroscope. The basic imaging problem was the inability to eliminate the texture from the surface of the background materials they used as well as the variability of the colors produced when using a white card as a background color.

In analyzing a number of possible solutions, one very simple approach, and the one that was the most promising, was one used in several other techniques in medical photography. This involved making a "near" shadow box using a clean, unused microscope slide, the bottom of which would be spray painted black or white. We suspected that the very shallow depth of field traditionally associated with this magnification range would work to our advantage allowing all unwanted information from the texture of any background to be eliminated. This, in turn, would allow the sharpest focus to be used effectively on the sample surface with no competing information. By painting the bottom of the slide, the texture from the paint would be out of focus and any shadows created from the texture lighting would be absorbed in these shadows in the same way the shadow box works for gross specimen stands. Additionally, the smooth surface of the glass would serve as a very clean surface producing few, if any, artifacts. We chose a matte paint which was also durable; obviously the "bargain basement" varieties have little if any value for such work. Our goal, then, was to isolate the samples by removing any of

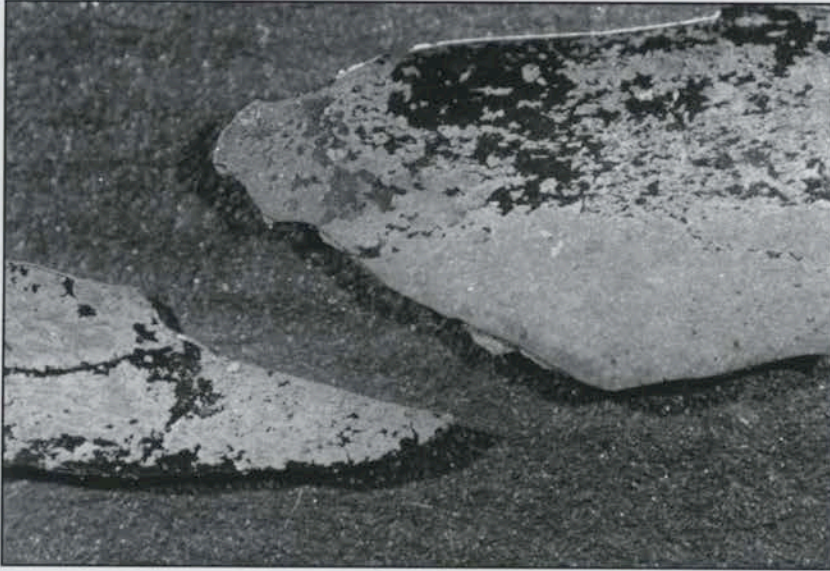
the image data produced either from the texture of surface of the background, or shadows produced from the sample being cast onto the background.

As can be seen from the illustrations, the technique works quite well. Cleaning is easily accomplished with a staticmaster brush. The glass surface, however, is prone to scratches so several should be made as they will break easily or scratch.

The photographs of the black paint chips collected from a hypothetical hit-and-run accident scene were made using a Nikon F3 with a 40 mm Zeiss Luminar lens at approximately f5.6. The film magnification was approximately x4.



A) This photograph was made directly on the camera stand stage. The wear on the stage is a major element of this picture because of the strong contrast and frequency of the lines and artifacts.



B) In this photograph, the subject was placed on a piece of black mounting board. This particular board was chosen because of its smooth surface when used in more traditional applications. At this magnification, nothing appears "smooth" and the background competes for the viewer's attention with the sample.

C) This photograph was made using the method described in the text. In comparison with the other two photos, the subject has now been isolated from the background. It should be noted that care must be taken to use a "very clean" glass prior to painting. Minute particles that remain on the glass will require extensive retouching later.



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