HANDLING HINTS

BEFORE EXPOSURE:

The film is not very sensitive to light, so it may be handled under a safelight. Follow the manufacturer's recommendations as to what color and strength is necessary.*

Because the gelatin coating is soft and susceptible to physical damage, handle the film or plate by the edges. The next trick is to find the emulsion side of the film. Moisten your lips and place a tiny bit of the corner of the film between them. The side of the film that sticks to them is the emulsion. Generally, the emulsion side goes toward the object beam.

Plates can be inserted into holders as they are. Film must be sandwiched between two pieces of flat glass to hold it flat. Make sure that the glass is clean. Put a heavy weight like a brick on top of the film sandwich to squeeze out all of the air, because air pockets will allow the film to "pop" during the exposure, blurring the interference fringe either locally or all over the film. Small areas of movement cause dead spots on the hologram that cannot be seen through but can be seen around. Total movement ruins the hologram completely.

EXPOSURE:

Relaxation of the table prior to exposure cannot be stressed enough. Imperceptible movements of the components can ruin the hologram. Pieces of metal components can resonate long after they have been touched. Some counterweighted equipment set ups will have a diving board effect. Even just picking up the shutter card off the table can introduce movement into the system. So just be patient -- wait a minute or two after putting the film into position to pick up the

* CHECKING A SAFELIGHT: In total darkness place a piece of material on the working area, covering half of it with an opaque object. Turn on the safelight for the amount of time you would normally be working under it. Then develop and fix the film in total darkness and examine it under room light. If the exposed side is noticeably darker than the side that had been covered, there is a problem. The safelight should then have a smaller bulb put into it or moved further away from the working areas and be retested.

shutter card off the table, and hold it in the air while still blocking the beam another ½ minute or so before removing it completely. Gently replace it after exposure. It is better to take the time prior to exposure and processing to ensure results rather than to have to do it all over again. After removing the exposed film from the set up, double check the set up for any component drift that may have occurred before or after the exposure.

PROCESSING:

Details of processes appear elsewhere, so here are some general recommendations. Because of the latent image decay, process immediately after exposure. For consistent results, keep processing solutions at approximately the same temperature throughout the process and whenever you use the process again. Radical temperature changes will damage the emulsion by swelling it or shrinking it, which can introduce noise by introducing surface relief patterns.

Slide the film or plate into the solutions. Dropping the film into the trays traps air bubbles under it, which prevents the chemistry from reaching all the surface of the film. It helps to keep the emulsion side up. Agitate the tray as directed in all the steps. This replaces the chemicals that have done their jobs with fresh ones in the solution. Developers and bleaches usually require continuous agitation, fixing baths only intermittent agitation. Washes should provide a complete change of water every five minutes. Thorough washing removes all the chemicals and makes the holograms last longer.

The gelatin is extremely soft while it is wet so avoid touching it until it is dry. There are many opinions as to the best method of drying. One school of thought says to soak the washed hologram for ½-1 minute in a wetting agent like Kodak Photo-Flo 200 which prevents the formation of water spots, and then either air dry the hologram naturally or blow dry it with hot air. An alternate method is to avoid the wetting agent and bathe the washed hologram in a solution of 75% methanol (methyl alcohol) which squeezes out the water in the emulsion, leaving the alcohol in the gelatin which air dries much more quickly in air without heat. A transmission hologram can be viewed while damp; reflection holograms cannot be reconstructed while wet because the water droplets stuck between the intergerence fringes do not let the light travel back in the reflected wavefront.

I. BEFORE EXPOSURE

A. Check set up for component drift

B. Find emulsion side by taste test

C. Place plate in holder emulsion side toward object

1. For film - place it between 2 pieces of glass

2. Squeeze out air by placing brick on top of film shadow

3. Place film sandwich in holder, emulsion toward object

II. EXPOSURE

A. Relax table 1 - 2 minutes

B. Lift shutter card off table while still blocking beam, and let table relax another ½ minute more

C. Lift card completely

D. Replace card after exposure

III. PROCESSING (Follow processing procedures found elsewhere)

A. Always slide film into solutions

B. Agitate as recommended

C. Wash well

D. Dry using one of these methods:

1. Bathe in Photo-flo for ½ minute, then air or blow dry

2. Bathe in 75% methanol, then air dry