The Black and White Printing Darkroom

Learning Goal: The layout, equipment, chemicals and safety precautions in a printing darkroom

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Panchromatic and Orthochromatic Photographic Materials

Panchromatic film is a type of **black and white photographic film** that is sensitive to all wavelengths of **visible light**. A **panchromatic film** therefore produces a realistic image of a scene. Almost all modern photographic film is panchromatic, but some types are **orthochromatic.**

Orthochromatic films (and printing papers) are sensitive to the spectral range from **blue** to **green** were introduced in 1879. This type was dominant until the mid-1920s, when **panchromatic film** which is sensitive to the entire visual spectrum became standard. All of these films were used to produce black and white images, regardless of spectral sensitivity.

The Darkroom:
How Dark is Dark Enough?

Ideally, a darkroom must be pitch black when the doors are closed and all lights have been turned off. This means it is is so dark **you can't see your hand in front of your face**.

This rule is true for rooms/spaces for **film loading and unloading** (when it is being prepared to be processed), and **colour printing** but not black and white printing when red safelights can be used.

If these rules are not followed, the film and/or photographic paper will **fog** and be ruined

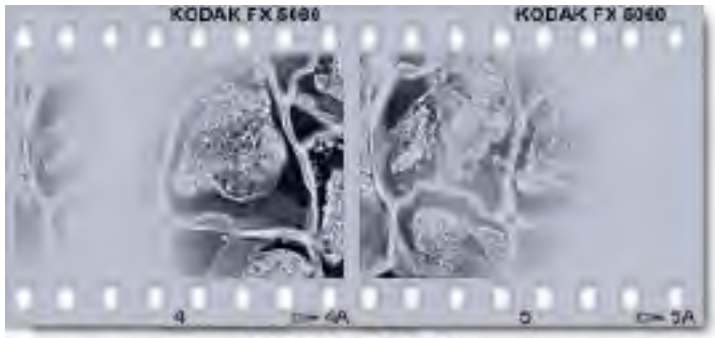
Fogging

Unprocessed film (or unprocessed photographic paper that has been exposed to unwanted light (causing it to darken in those areas) is **fogged**. Most of the time, this permanently ruins the image on the film or photographic paper.

Underexposure

Overexposure

Fog on film will look clear, and print as black



Bands of Fog

Film End

If light will fog (and ruin) color and panchromatic b&w film, and all photographic paper, why do we have red/orange **safelights** in black and white <u>printing darkrooms</u>?

The Printing Darkroom Layout

Every printing darkroom has two sides:

a dry side **a wet side**

The Dry Side

lens

filters

enlarger

negative holder

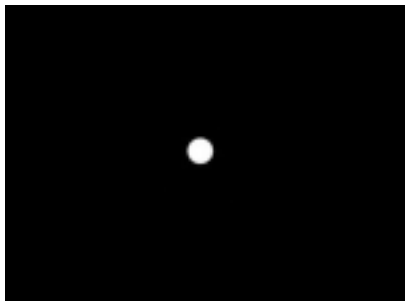
The Dry Side

Easel

Grain focuser

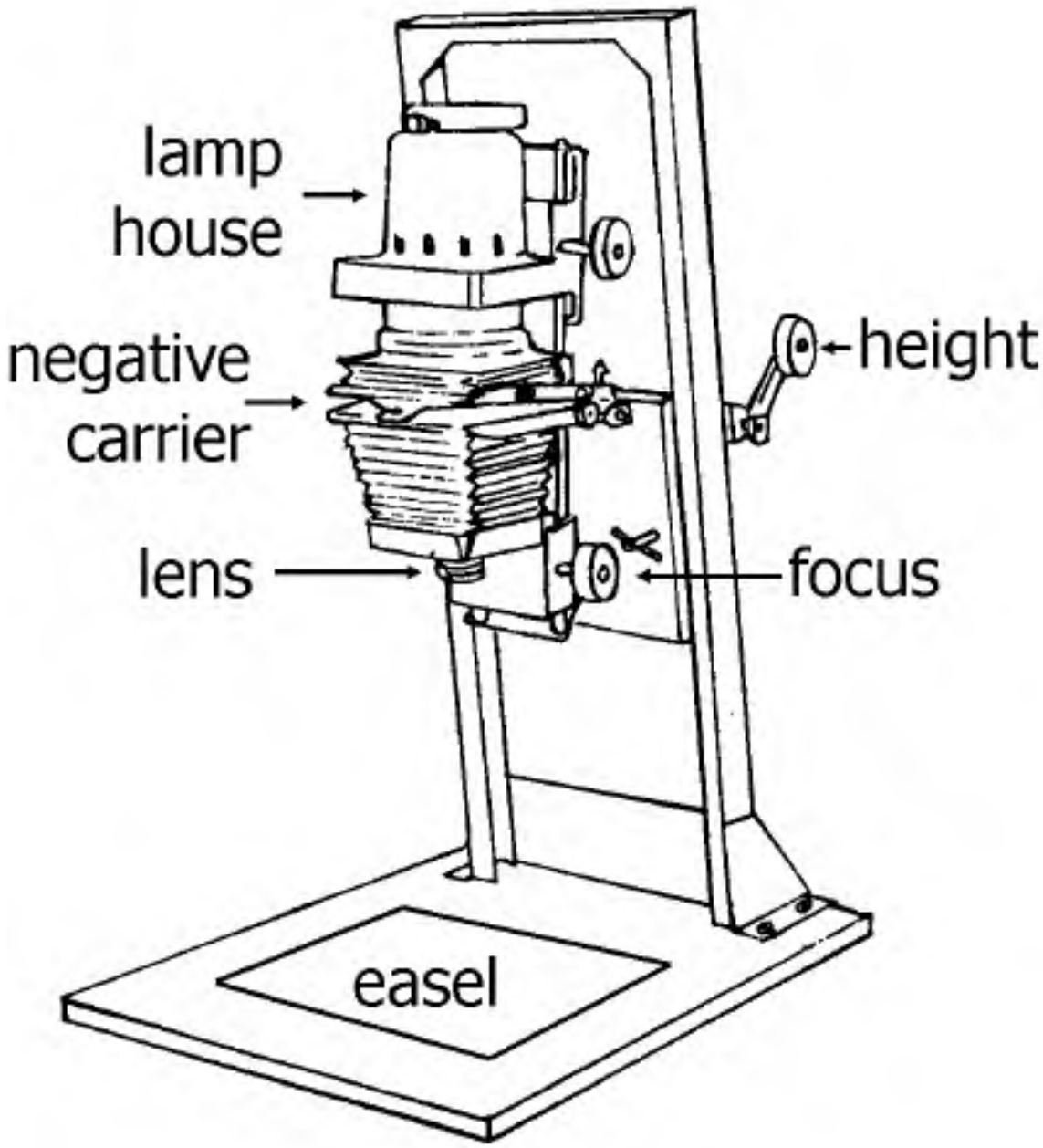
Contact printer

Timer



Burner

dodgers



The Enlarger

The Wet Side (Printing)

RC paper dryer

graduated cylinder

Tongs

sink

Light tight chemical storage bottle AND photographic chemicals

chemistry trays

Safety Precautions

Safelight - necessary for safe movement in/around the darkroom

Ventilation - minimum 10 air changes per hour to remove toxic photographic chemical fumes (more details on this on next slide)

Toxic chemicals - all chemicals in the darkroom should be treated with care - do not allow them to touch your hands or clothes (the will often stain). The most toxic is **fixer** when it is close to **exhaustion**. Fixer removes unused silver on exposed, developed photographic paper.

Chemical disposal - NEVER EVER pour used chemicals down the sink. Pour them into the disposal bottles instead **marked for the type of chemical being disposed** - DO NOT MIX CHEMICALS!!!

Contact Lenses - avoid wearing contact lenses in the darkroom because of the possibility of trapping foreign materials against the cornea and their difficulty to remove in case of a splash

Safety Precautions

Photographic paper is made of an emulsion of silver suspended in bromide. Here is why it's CRUCIAL to have proper ventillation in a darkroom:

Silver: This is what tarnishes on the paper, turning black when exposed to light. Silver compounds can cause some areas of the skin to turn blue-gray. This affliction, argyria, can occur in people who eat or breathe in silver compounds for several months to many years. Exposure to dust containing relatively high levels of silver compounds may cause breathing problems, lung and throatirritation and stomach pain. Skin contact with silver compounds has been found to cause mild allergic reactions, such as rash, swelling, and inflammation.

Bromide - Bromide, too, breaks down to bromine during the developing process and can also evaporate into the air if left standing long in the fixer. It is highly toxic by skin contact, inhalation and ingestion and is a severe irritant to the skin, eyes, mucous membranes and lungs. Acute inhalation or ingestions can result in symptoms of poisoning such as dizziness, headache, nosebleeds, cough, abdominal pain, diarrhea and measles-like contusions on the face, trunk and extremities.

Safety Precautions

Darkroom Musts

1. Avoid wearing contact lenses in the darkroom

2. NEVER touch chemistry with your bare hands - use tongs

3. Clean up spills immediately

4. Clean up after you work

5. Cover solutions when not in use

6. Use the built-in ventilator at all times

7. No food or drink in the darkroom area

8. Label chemicals

9. Wear old clothes or a smock (because you are going to risk staining your clothes)