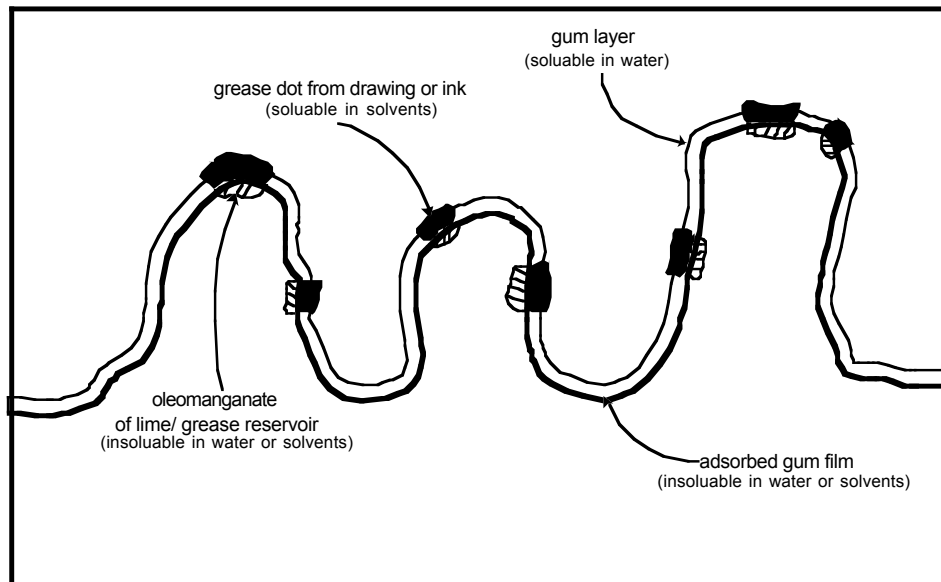


STONE LITHOGRAPHY

Basic Chemistry

Traditionally, the material used to hold a lithographic drawing is a special limestone from Bavaria. In color they vary from creamy buff (soft) to steely blue-grey (harder and denser). Most lithographers prefer the grey stones for their stability, especially for long press runs. The stone slab is prepared so as to have a slight tooth (texture) which is good for both printing and drawing. A greasy drawing tool is used to draw on the surface of the stone, which is then chemically processed. Limestone is a receptive medium, when combined with a thin layer of gum arabic, the tooth of the stone helps to keep the non-image areas damp and clean by increasing the stone's ability to hold water in a thin film. This thin layer of gum arabic is called the **adsorbed gum layer**, as it sits just on top of the stone like a skin. At the same time, in the places where the greasy drawing is etched with a mixture of nitric acid and gum arabic, applied to the entire surface, the stone's surface forms a grease reservoir directly below these areas. The chemical product of the combined grease, acid, and limestone is called **oleomanganate of lime** and serves as the stone's memory of the drawing, so that during processing, the image is always there though not always visible. This oleomanganate of lime is a subdermal layer (just below the surface of the stone). Zinc or aluminum can also be used, they are cheaper and more portable, but chemically different. After letting each etch dry, the drawing materials are removed with a solvent, the surface is washed clean with water, and a greasy ink is applied with a roller. The grease of the ink is attracted to those areas where the drawing was made and is repelled by the water which clings to the open (negative) areas. This whole process is repeated for stability.

Stone Lithography Chemistry Close-Up



Printing

At this point, the stone is ready for printing. The stone is placed on a press and all materials necessary for printing are prepared. The image is first washed out with solvent, after which water is wiped over the entire surface. When a roller covered with greasy ink is rolled over the surface, the ink adheres to the greasy drawn areas but is rejected by the damp areas of the stone. Once the image is fully inked, paper is laid over the image and the pressure of the press transfers the image onto the paper. This can be repeated many times.

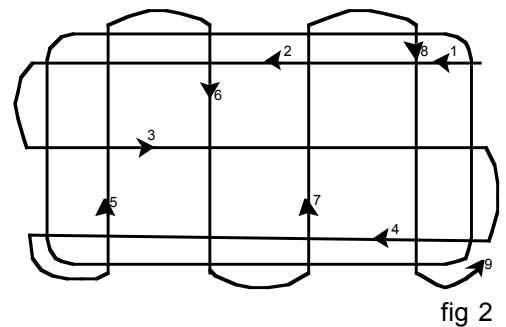
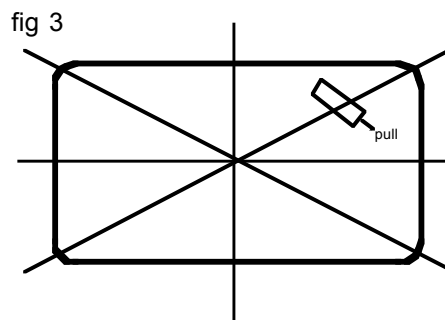
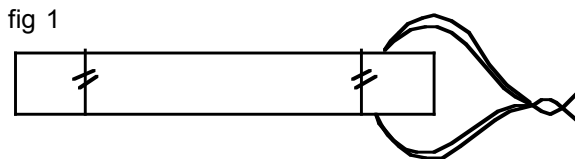
Graining a Stone

The first step in making an image is preparing the stone. Graining a stone serves 3 purposes:

1. It removes the grease of the previous drawings, dirt, and foreign matter and renders the surface clean and sensitive by removing the adsorbed gum layer.
2. It levels the stone, which is essential in ensuring even pressure while printing and evenly inked images.
3. It creates a tooth (texture) to the stone. This tooth provides both a slightly textured drawing surface (as compared to drawing on glass) as well as the providing tiny reservoirs to catch and hold the water in an even film during printing.

Before you grain:

Make sure the stone is the same thickness all the way through using calipers. (fig 1)
If the stone is uneven, you will experience printing difficulties.



The stone is progressively grained with finer and finer grit (**Carborundum**) and water. Start with the coarsest grit (lowest number) keeping the stone wet at all times.

The first (#100) grit should be applied as many times as necessary to erase the image- if the image is still visible, keep graining. Depending on the previous image, this could take as few as 3 cycles or as many as 10. Spin the **levigator** in an even pattern back and forth and up and down across the entire surface of the stone (fig 2). The levigator should hang over the edge of the stone while graining to keep the edges of the stone the same level. Start at a different corner each time to avoid over-graining one corner. As the grit is used up (becomes paste-like and harder to grain) rinse the grit from your stone and levigator and repeat with fresh grit of the same number. *Do not continue to grain or you could scratch the stone.* Periodically check that your stone is level. This is done with a straight edge and thin strips of newsprint. If the strip of newsprint can be pulled out from under the straight edge, you have a low spot there and need to compensate in your graining. Check at least 3 spots in each direction. (fig 3)

Always watch out for scratches. These usually appear in an arc shape (levigator pattern). These are often visible to the eye and will show up in your image. These scratches can be caused by foreign bodies or different sized grits on your stone. These scratches will have to be grained out and can be frustrating so wash your stone, levigator, hands and surrounding area in the graining sink very well as you proceed to the next grit.

Once you are sure that your stone is level and image free, proceed to the next grit (#180). Make sure you keep the stone wet and rinse well between grits. The finer grit will give you a finer drawing, but your stone will also dry faster because the reservoirs are smaller. Two passes with each of the higher # grits (180, 220) should be sufficient for dry materials. If you will be using liquid materials such as tusche, you may want to stop after 180 grit so there is a little more tooth to the stone to hold the texture of the washes.

After you are done graining and have rinsed the stone and levigator, use a file (above the sink) to file the edges of your stone. You want a rounded edge (rather than a sharp 45° bevel) so that water can pass over the edge of the stone rather than puddling at the edge during printing. This will help keep your edges clean while printing. Finish off by smoothing edges with a small piece of stone or a pumice stone, squeegee the excess water, and fan dry.

Cover, name, and store your dry stone when you are done.

Drawing on Stone

Now you are ready to draw, but be careful because your newly grained stone is susceptible to all traces of grease, including that in your fingers. *Do not touch the drawing areas of the stone with your bare hands* (wear gloves or you can lay down newsprint or a bridge while drawing).

Leave at least a 2" margin around all the edges of the stone. This will aid in the printing process.

To keep the borders of the stone clean you can brush on a thin, even layer of gum arabic (acidified is best) with your flat watercolor brush. Let dry. This will act as a barrier between dirt and the newly grained, pristine edges of your stone and keep your borders clean while printing (if you choose to have borders around the image).

The drawing can be made with the following materials (this is just a general overview):

Dry Drawing Materials

Litho Crayons and Pencils
Rubbing Ink

Range from soft/greasy (#00) to hard (#5).
Thicker, come in soft, medium and hard.

Liquid Drawing Materials

Cake Tusche

Can be mixed with water or solvents to produce various types of washes. Comes in a can.

Liquid Tusche

Greasy liquid that produces a good solid black when used straight out of the bottle or washes when diluted with water.

Autographic Ink/ Zincographic Ink	Thin liquid that can be used in crow quill and rapidograph pens or brushes. Good for producing very fine lines.
Gum Arabic	Can be used as a resist, these areas will not print.

The drawing materials produced for lithography are made of grease (usually animal fat), soap (to prevent coagulating), and lamp black pigment (so you can see it). Any greasy material will work (facial grease, axle grease...) but may require some experimentation to determine proper etching strengths.

You can sketch your image on the stone first VERY LIGHTLY with a greaseless drawing materials (such as red iron oxide conté crayon, white chalk, or a very hard (6H) drawn lightly. This will not print. Dust off any residue before drawing.

*If you are unhappy with an image you have drawn, and it has not yet been processed, you can grain the drawing away with a single application of #220 grit. If the image is stubborn or especially greasy you can use water and soft scrub to clean the image away first, then grain, dry, and reapply gum borders (if necessary).

After the image is drawn, let it dry (one hour for dry materials, overnight for liquid materials).

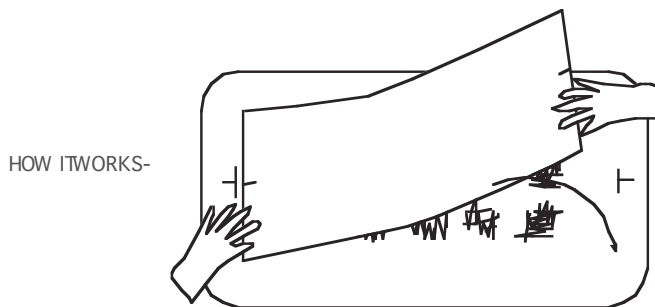
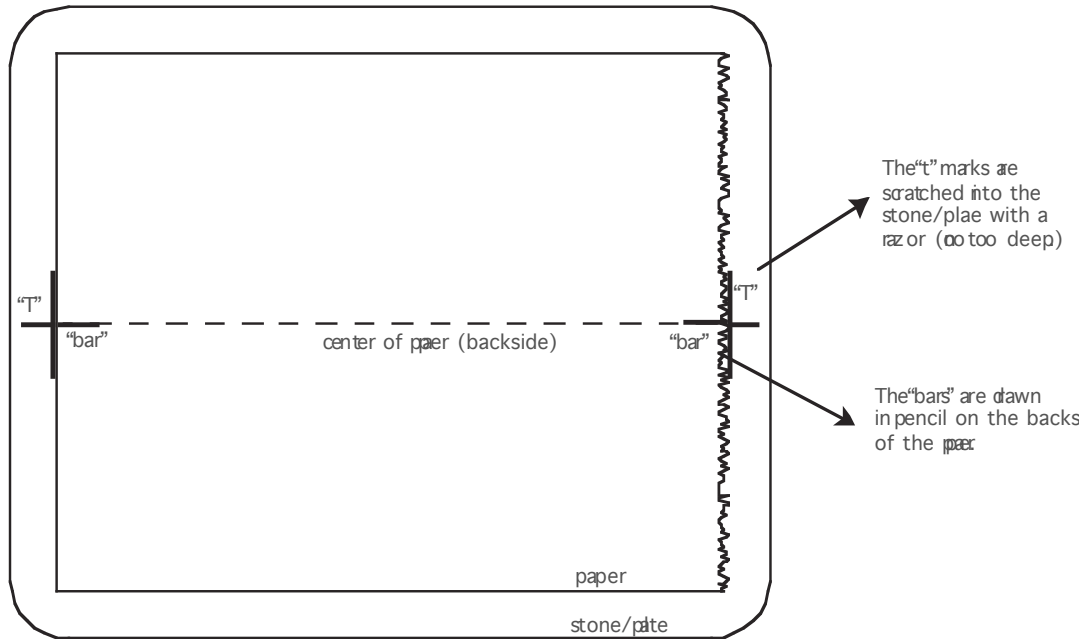
Registration

You will be using a system called **T and Bar Registration**. It is simple and allows for fairly accurate registration. Remember: your paper must be smaller (at least 1/2") than your stone or plate.

**It is easiest to determine registration before drawing an image but it can be done at a later stage.*

1. Decide on the size of your paper and image, consider the size of the stone or plate.
2. Cut a piece of newsprint the same size as the paper you plan to print on (this includes borders if your image has one. **Bleed prints** do not have borders).
3. Make your "bar" marks on the center of each (short) end of the newsprint.
4. Lay the newsprint centered on the stone/plate so that your bars are visible/ face up and scratch in the "t" marks lightly with a razor using the "bars" on the newsprint as a guide.
 - * at this point you can also trace the edges of the newsprint with conte crayon or chalk to use as a guide while drawing on your stone/plate. If your image will be printed with borders, you can draw these in with the conte now as well to remind you what part of your plate the image will be drawn on.

5. Tear your printing paper to size (the same size as the newsprint). Tear the paper front side down. If the paper has a **watermark**, use it to determine the front side of the paper (it will be in the “right reading” orientation). Mark the backside of each piece with the “bars” (centered on each short end of the paper in pencil).



Processing a Stone

Evaluating the Drawing

Before etching, it is important to look at the image. What drawing tools were used? How thick is the application of drawing materials? Are there several layers or just one? Lightest areas need the least acid, darkest areas (unless they are intended to be a solid black) will need the most. If you keep a thumbnail sketch of what materials and how much you used drawing the image, it will help you process well.

Preliminaries

Stones should be processed on the wood or metal tables. Lay two pieces of wood on the table to support the stone. Before processing, make sure you have a brush, your mixed etches, and a couple of well wadded up cheesecloths.

Before etching, it is important to rosin and then talc the image. *Always Rosin first and Talc second.* Apply each with a soft brush or webril pad, shaking a small amount onto the stone, patting it in gently first, and then rubbing in a circular motion.

-**Rosin** is a yellow powder with acid resistant properties which serves to dry the drawing material and resist slightly the corrosive effect of the etch on lighter grease deposits. It basically strengthens the image.

-**Talc** is a fine white powder which further dries the drawing material and temporarily suspends the phenomenon of grease repelling the water based etch.

Etching

After the drawing is completed, the stone must be prepared with a chemical "etch" to ensure the stability of the image while printing. The etch does not actually eat away any of the stone, but desensitizes the stone chemically so that the negative (non-image) areas of the stone do not attract grease, but when kept wet, actively repel it. Etches are a combination of gum Arabic and measured drops of nitric acid (you can also use a mixture of nitric and phosphoric acid).

Start by consulting the stone etch chart in this packet. Knowing how strong an etch should be will come with experience. Remember the quantity or thickness of etch applied affects the strength of an etch. A very fat glob is much stronger than a thin one. The color of the stone can also affect the etch, a darker/greyer stone can take a slightly stronger etch than a yellow stone. It is a good idea to make a plan: Start with the lightest areas (to protect them) and work from there. I suggest etching through a thin pure gum film (can be applied with a sponge) to reduce the risk of burning the image, but it does not prevent it. You may want to etch very light areas with gum only, as it is naturally slightly acidic. Moving the etch solution around keeps it active. Using your brush, spot etch darker areas of the image, using progressively hotter (stronger) etches. Be careful not to drag hot etches over light areas. Etch the borders with a very hot etch to keep them clean during printing.

When you are done applying the etches, pour a second thin pure gum film over the entire stone and rub it in with your fingers or a sponge. The thinner the film, the easier it will be for you to buff your stone.

Buff and Wait

Using a soft, wadded cheesecloth (crusty bits will scratch your image), buff gently but firmly, until the gum film is even, thin, and streak-free. Uneven gum will cause problems during wash out. It is normal while buffing for the drawing to smear slightly and come off onto the cheesecloth. This will not affect the image. Let this sit for a couple of hours, or at least half a day for liquid materials. Cover your stone and put it away.

First Roll-Up

Return your stone to a wood or metal table using 2x4 under stone. Gloves and an apron are a good idea here. Get paper towels, mineral spirits, and asphaltum out and make sure the roll-up station has an inked slab and a roller available. Prepare a bowl of distilled water, an empty bowl, and sponges.

Start by washing out your image with **mineral spirits** and paper towels (you can add a dab of asphaltum to work as a mild abrasive). Make sure all the drawing materials are thoroughly removed, using lacquer thinner if necessary. The image will leave a stain on the stone that need not be removed (it is the oleomanganate of lime). Next, with paper towels, buff down a thin, even layer of **asphaltum**. Use your dirty sponge and water to gently but quickly wash off the gum film and extra asphaltum. Make sure the water doesn't stay long or in puddles on the image, it can eventually burn it.

With your clean sponge and water, **wash off** the stone once and then begin to **roll-up** the stone. The viscosity (how sticky/stiff or loose/runny) of the roll-up ink is important. A very soft ink can cause your image to fill in (get dark and loose detail). A hard ink will make it roll up too slowly and can cause burn out from the water. Roll in a regular pattern in different directions, making sure that the stone is evenly covered. Sponge with water between each set of passes. Do not let the stone dry. Roll until the image is full, it should have just enough ink, but not over inked. The asphaltum should just be barely covered. Rosin and talc your rolled up image. Make corrections/ deletions if desired (before the second etch).

Second Etch

With the first etch, you are establishing an initial image on the stone. You are also etching the drawing material that is much more easily burnt out than the ink layer that you etch during the second etch. For these reasons, *the first etch is more critical and delicate than the second*. The second etch is applied for 2 reasons: It reinforces the chemistry, which preserves the image (which should ideally remain unchanged during printing), and it can be used to adjust the image if necessary. If the image appears just as you expected it to look, then repeat your etches from the first etch after rosin and talcing the image and applying a thin gum layer. If some of the areas rolled up too fast or look too dark, then etch these areas with a hotter etch. When your are done etching, pure a thin layer of gum over the stone, buff it down and put your stone away. Let it rest a day before printing.

Rule of Thumb: For a Black and white image, **etch your stone at least two times**. For a color image, etch it at least 3 times. The first etch establishes the drawing (positive image) while subsequent etches reinforce the negative areas. So the more etches the better, to stabilize the image, especially if it is a very dark image- it can tend to fill in with only 2 etches.

Processing Step-by-Step

****Black & White Images require 2 etches, Color images require 3 etches!**

1. Rosin then Talc the image.
2. Apply etch (through gum film- DO NOT BUFF). Work from mildest etch to strongest etch.
3. Blot up excess etch mixtures.
4. Add fresh gum and buff to a thin, streakless film with a cheesecloth.
5. Let image rest. 2 hours for dry materials, half a day for liquid materials.
6. Wash out the image with mineral spirits (follow with lacquer thinner for stubborn areas).
7. Buff down a thin, even layer of asphaltum.
8. Let dry.
9. Wash off the stone with water and a dirty sponge. Follow with a clean sponge and keep damp.
10. Roll-up the image in roll-up ink until "up" (no asphaltum is visible).
11. Rosin and Talc image. Make corrections/deletions if desired.
12. Apply second etch (steps 2-4). *This can be done immediately after roll up in ink with 2nd & 3rd etches.*
13. Let image sit at least 24 hours before printing.

***For 3 etches:**

14. After step 12, wash out image with mineral spirits, rub up with asphaltum, sponge, roll up in ink, rosin and talc, apply 3rd etch, buff down final gum layer. Wait 24 hours before printing.

At the Press:

16. Wash out image with mineral spirits.
17. Buff down a thin, even layer of asphaltum.
18. Let dry.
19. Wash off the stone with water and a dirty sponge. Follow with your clean sponge and keep damp.
20. Roll-up the image in printing ink until "up" (no asphaltum is visible).
21. Proof image on newsprint until 'full' and then proceed to print onto good paper.

When Finished:

If you will not be printing image again:

1. Wet wash the image with water and mineral spirits until all ink is gone.
2. Let dry.
3. Put away.

If you will be printing image again soon (within 8 weeks):

1. Ink image up full as though you are about print.
2. Rosin and Talc image.
3. Buff down a thin, streakless layer of gum.
4. Cover stone and put away.

If you will NOT be printing soon (long-term storage):

1. Ink image up full as though you are about print.
2. Rosin and Talc image.
3. Buff down a thin, streakless layer of gum.
4. Wash out image with mineral spirits.

5. Buff down a thin, even layer of asphaltum.
6. Let dry.
7. Cover stone and put away.

STONE ETCH CHART

DRAWING MATERIALS	White / Yellow Stone				Yellow / Gray Stone				Dark Gray/ Blue Stone			
	delicate	light	medium	heavy	delicate	light	medium	heavy	delicate	light	medium	heavy
Crayons & Pencils #5	GA	2	4	6-8	GA	2	5	8	GA-2	4	6	8-10
#4	GA	2	4	6-8	GA	2	5	8	GA-2	4	6	8-10
#3	GA	2	6-8	8-10	1	3	7	10-12	2-4	4-5	10	12-15
#2	GA	3	6-8	10	1	3	8	10-12	2-4	4-5	10	12-15
#1	1	3	8-10	10-12	2	4	10	12-16	5	6	12-14	15-20
#00	2	4	8-10	10-12	2	4	10	12-16	5	6	12-14	15-20
Water Tusche	GA	4-6	10-12	14-16	5-8	8-12	12-15	18	8-10	10-12	18-20	20-25
Solvent Tusche (mineral spirits)	5	8	12-14	18-20	8	12-14	18	22-24	10	18	25	30
Solvent Tusche (acetone)	3	6	10-12	16	5	6-8	8-10	16-18	6	10	18	22
Rubbing Crayon	2	2-5	8-10	12-15	4	5-8	15	20	5-7	8-10	15-20	25
Autographic Ink	GA				GA				GA			

*The numbers in the chart above refer to the number of drop of NITRIC ACID per ounce of gum.

*Always add acid to gum, NEVER acid first.

Additions and Deletions

**If you are going to do both additions and deletions on the same stone, I would recommend doing the deletions first.*

Deletions:

There are two ways of deleting:

1. *YOU CAN PHYSICALLY REMOVE, OR ABRADE THE IMAGE.*

This involves solvents or scraping and scratching through the ink. Anything that will remove the ink will work, i.e. a needle, razor, hone, snakeslip, mineral spirits, steel wool, sandpaper... This type of removal will create a variety of marks and can remove parts of the image, or lighten areas, by scratching through the dark and leaving some behind. The most important thing is not to gouge the stone. If you gouge into the stone, the deep scratches will hold ink (like an intaglio), thereby defeating your goal of removing the image. It will also take much longer to grain out the scratches when you reuse the stone.

Deletions should be done after the image has been rolled up in ink (so after the first or second etch). Rosin and talc the wet ink before deleting so things are less messy. It is important to give these deleted areas as strong of an etch as possible (without burning the image) to keep them open. This varies depending on the sort of image around it.

2. *YOU CAN REMOVE IMAGE AREAS BY DOING A GUM DELETION.*

This is used to completely remove an image without making any scratches. Again, the image must be in ink so this can be done after the first or second etch (gum layer has been buffed down). You must first wash out the image with mineral spirits as though you were processing. In this case it is very important to remove all traces of grease. Some people even finish cleaning the stone with acetone to ensure the total removal of grease since mineral spirits has a significant grease content.

Once the image is thoroughly removed, mix up a hot etch (about 25 drops). Very carefully paint over just the areas that you want to delete. The hot etch burns through the oleomanganate of lime reservoir, removing the image, and it creates a stencil when you later rub up with asphaltum. Any image area where you paint on the hot etch will be gone. Keep the gum film very thin, as a thick film will crack, allowing greasy asphaltum through and creating an image (visible cracks) and it will also be hard to lift up.

When the etch is thoroughly dry, rub up the image with asphaltum and proceed as usual by

sponging the stone and rolling it up in ink. At this point, rosin and talc the image and apply your next etch (if deletion was done after the first etch).

Additions:

In order to add to your image, you must first re-sensitize it. When a stone is etched, the gum protects the open areas and keeps further image from establishing itself there. If you draw over your gum film, nothing will happen as the gum creates a barrier between the grease and stone.

To re-sensitize your stone to take new imagery you must counter etch it. Do this only after your first etch, when your stone is in ink since your initial drawing materials are not strong, and many are water based and can be dissolved by the counter-etch. It is important at this stage that your image is well etched, as it can sometimes darken during the counter etch process.

Rosin and talc any wet ink before counter etching.

Counter etch using a solution of citric acid (1/4 tsp of citric acid powder dissolved in 10 oz of distilled water). Apply at least three times, with a webril pad, washing off with clean water between applications. There is a chance of the very delicate areas of the image being burnt out by the citric acid.

You will need to etch your stone at least 2 times after counter etching so that the newly added materials receive 2 etches.

Printing Stones

Before you set up to print:

**This should be done PRIOR to your day at the press.*

1. Cut your printing paper to size and mark your registration bars on the backside.
A good rule of thumb is **5 good prints = 10 sheets good paper + 20 newsprint**
2. Cut your newsprint to size, it should be larger than your paper. I find it easiest to make it the same size as the stone. Again, make sure you have enough for proofing and slip sheeting.

Setting up the press:

Bring the following to the press:

2 bowls (one empty, one with distilled water)
2 sponges
paper towels
long spatula (to scrape the leather roller before printing)
gloves and apron
printing paper
newsprint
ink (Shop Mix Black)
ink spatula
tympa (larger than printing paper)
plastic scraper bar (larger than image but smaller than plate)

Printing Step by Step:

1. **REMOVE PLATE BACKER FROM PRESS!**
2. Insert scraper bar. *Scraper bar should be just larger than width of image but smaller than width of stone. Make sure turn key is tight.*
3. Place stone in center of press bed. Back stone with several 2x4's to keep stone from sliding on press bed.
4. Roll press bed through to make sure scraper bar is in correct position for printing the stone.
5. Set your starting and stopping marks by rolling the press bed through and marking where the scraper bar should come down at the lead/front end of the stone and the end of the stone. *The scraper bar should remain on the stone at all times when it is printing.*
6. Make a 'print sandwich' by placing a piece of your printing paper on the stone, followed by one piece of newsprint and then the tympan. *The newsprint and tympan should be larger than your printing paper.*
7. Roll the press bed so that the scraper bar is centered on your 'sandwich' and bring the pressure bar all the way down. You may need to loosen the pressure crank at the top of the press to do this.
8. With the pressure bar down, turn the pressure crank until it is tight. Lift the pressure bar up and give the pressure crank a ½ turn.
9. Continue to adjust the pressure using the pressure crank until there is moderate printing pressure when you bring the pressure bar down on your 'print sandwich'.
10. Wash out the image with mineral spirits and roll it up with asphaltum.
11. Sponge it with water (dirty sponge first, then clean) and roll it up in ink until the brown of the asphaltum is no longer visible. Take your first proof.
12. Once your image is 'up' fully on newsprint, begin printing on good paper.

Clean Up:

This is a communal shop so when you use any materials in the shop, it is important to clean up when you have finished.

When you are done printing:

If you are done with the image and will not be printing it again:

Wet wash the image. This involves washing the image simultaneously with water and mineral spirits. The water keeps the negative areas clean and the

solvent removes the grease/ink. Let the stone dry and put it away or take it to the graining sink.

If you plan to print the image again:

Roll-up the image as though you are going to print it, **rosin and talc** it, and then buff down a gum coat. Let it dry, and put your stone away.

If you will not be printing for a long time (months):

Roll up the image in ink, rosin and talc, buff down a gum coat, washout image with mineral spirits, rub up with asphaltum, let it dry, and put it away. Asphaltum is always resolvable while ink is not once it dries.)

-Clean press bed with Soft Scrub and rinse well with water. Be sure all handles, etc are clean.

-Clean tympan, spatulas, ink cans, and glass scrapers with Soy Solv followed by Simple Green and put back in their proper places.

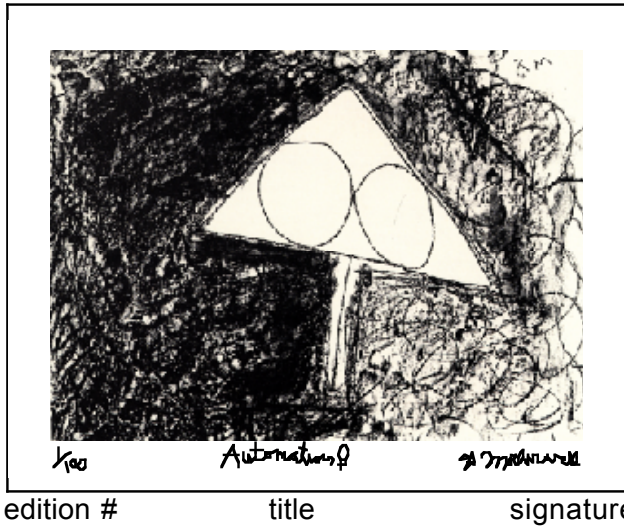
-Leather rollers are never cleaned with solvents. They must be scraped before using and left in ink when finished.

-Clean the ink slab with Soy Solv followed by Simple Green. Unused ink can be stored in aluminum foil.

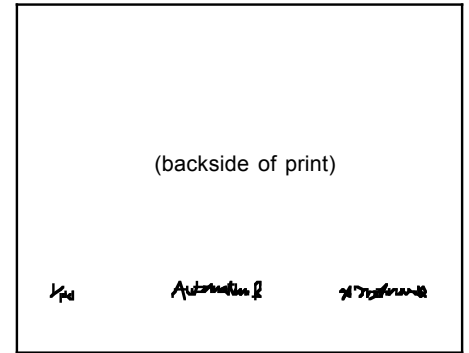
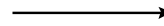
EDITIONING

Edition- The total number of prints pulled from one image. The prints within the edition should be identical to each other. These prints are consecutively numbered to show that the edition is limited by the publisher or artist. The number below the line designates the total size of the edition, the upper number refers to the specific print from the total edition, i.e. 2/100, the second print pulled from an edition of 100.

How To Sign Your Prints:



OR, if you have a 'Bleed Print' (i.e. no borders around the image)



Trial Proof A proof that varies from the edition either in color, size, drawing, printing order, etc. These proofs are usually pulled before the artist has arrived at the final decision for the edition. These prints are usually unique impressions which may be retained by the artist and are not numbered in any manner.

Bon a Tirer A literal translation from the French meaning "good to pull" and refers to the first print the artist decides to use for editioning. This print is then used as a guide for printer of the edition. This print is annotated Bon a Tirer, B.A.T. or R.T.P. (Right to Print), and is outside the edition.

Artist's Proof Artist's Proof should be exactly the same as the edition in quality and image though they are outside the numbered edition. They are identified with "A.P." or "Artist's Proof" on the impression. They are often retained by the artist or publisher.

Cancellation Proof A proof pulled from defaced plate, screen or block, to guarantee that no other prints may be made from that edition, thus insuring a limited edition.

Printer's Proof This impression is exactly like the edition and is the property of the printers responsible for pulling the edition.

Variable Edition An edition in which some element (color, image, paper, etc) differs within each print. They are identified with "V.E. 1/5, V.E. 2/5....".

TROUBLESHOOTING STONES

*Remember, it will usually be necessary to do some troubleshooting and adjusting at the press. It is unlikely that you will be able to print without having to figure out some problem or another. This is part of lithography. Being able to successfully maintain an image at the press will produce a consistent edition.

This is a guide to some of the most common problems encountered in lithography. It is by no means every problem or solution. If you encounter a situation that dumbfounds you, find me or put your stone away (if possible) so that you can get help later.

What Do I Do If?....

GRAINING

There are lines on my stone that look like cracks?

-See if there is an actual physical crack by rubbing it with your fingernail or using a lupe. Most likely it is not and will not affect your image. If it is a crack, let me know immediately and do not use the stone.

I am getting arc shaped scratches in my stone as I grain?

-You probably have grit contamination from a prior coarser grit. Rinse everything (stone, levigator, your hands) very well and continue graining with the current grit until scratches disappear. If they are very deep you may need to go back to a coarser grit to remove them and continue from there.

DRAWING

I drew too thickly with Conté crayon or chalk?

-Smear the drawing or lines with a soft, dry paper towel to thin them out or remove them all together with a sponge and start over. Too thick of a layer may cause your drawing not to take ink in those areas.

I don't like my drawing and want to remove it from the stone completely?

-You can gently wipe the stone with a sponge and soft scrub to remove the drawing materials, then grain is twice with 220 grit.

I drew my image too lightly or darkly?

-Remove completely and redraw.
-Or use a stronger or weaker etch than recommended for the first etch to try to lighten or darken the image. This is less predictable.

I want to add to my image but I already etched it?

-see "Additions"

I want to remove a portion of the image I've drawn and etched?

- see "Deletions"

PROCESSING

I forgot to rosin and/or talc my image before etching?

-If this is just before the second etch, you are most likely ok, proceed with the second etch. If this is before the first etch, your image may roll up light. Roll it up slowly and use a looser ink if it does roll up light. You may need to counter-etch and add information.

I didn't buff down my gum layer after etching and the gum dried thickly?

-Before washing out the image with solvents, apply a fresh layer of pure gum, rub it into the dried gum, blot up the excess gum and buff down a thin film. Allow gum to dry (10-15 minutes) and proceed as normal.

I rubbed on too thick of a layer of asphaltum over my image?

-Wash off asphaltum with mineral spirits and paper towels and apply new THIN layer.

My asphaltum layer will not wash out easily?

-You may have applied it too thickly. If available, use very warm distilled water to encourage the asphaltum to release. Otherwise proceed to roll up- snap roll. The friction from the leather roller will remove any remaining asphaltum .

There are specks in the border or small bits of image I want to remove?

-Use the snakeslip, with water, to remove the areas. This should be done before etching (with the image rosin and talced) or once the image is in ink (after a roll-up in ink, with the image rosin and talced, but before applying the etch).

My image rolls up too dark/fills in after the first etch?

-Your ink may be too thick on the slab or too loose. Be sure to use Shop Mix Black and remove excess ink from the slab and roller.

-Or you did not scrape the roller first and a looser or too thick layer of ink is on the roller. Scrape roller and ink slab add new ink.

My image rolls up patchy and uneven or lighter than I expected after the first etch?

-Your first etch may have been too strong. Try rolling up image with a looser ink. Otherwise you can counter-etch your stone to add information or re-grain and start all over.

I washed out my image with mineral spirits when there wasn't a gum stencil in the negative area?

-This is not good. If you have applied at least one etch you can try sponging the stone with water and rolling up the image in a very loose ink. If this works, rosin and talc the image and proceed with the second etch. If it does not work, re-grain your stone and start over.

PRINTING**I am getting speckles of ink in the negative image areas/ borders?**

-Your ink is probably too thick on the ink slab or too loose. Modify ink as needed, rinse sponges well, change sponge water. Continue. You can rub out existing speckles with finger or use a snakeslip stick with water.

I am getting dryroll (negative areas taking ink)?

-Make sure you sponge the stone surface. Sponge and continue rolling to pick up the errant ink. Do not try to remove the dryroll with your fingertips. You may need to decrease your number of passes per set so water doesn't dry.

-You can add a few drops of glycerin to your sponge water to slow the drying time of the water.

An area of my image prints lighter than the rest of the image?

-Make sure the roller is evenly coated with ink, no built up areas (especially around edges).

-Or your stone may be unevenly grained and there is little to do except trying slightly increasing the pressure.

I am getting roller marks on my prints (dark bands)?

-Roll in a fan pattern, alternate directions of the roller when rolling.

The press bed will not advance when I try to crank it through?

-Add more tympan grease to the tympan where the scraper bar first makes contact.

My image is printing too lightly?

-Add ink to slab or make more passes with roller (easier to add rolls to a set than add sets).

-Pressure is too light, tighten.

- Loosen ink (Litho Black Ink is very loose, add 25% to Shop Mix Black).
- You are sponging with too much water, use less, just a thin film.
- Your etch was too strong and you are losing detail, you can try simply loosening the ink and continuing to print or you can roll up image in looser ink, talc, buff down a gum layer, let the stone rest a few hours, come back wash out/asphaltum/rinse and continue printing.

My image is printing too darkly/filling in?

- Less ink on slab or fewer passes with roller.
- Loosen pressure on press.
- If just beginning, stiffen ink (Senefelder's is very stiff, add 25% to Shop Mix Black) and continue.
- If image has filled in significantly, wet wash the image (water and mineral spirits together on image, keep wet, roll up with a stiffer ink and continue printing).
- Etch was too weak. Roll up image in stiffer ink, apply a stronger etch, buff down. Wait 15 minutes, washout with mineral spirits, rub up with asphaltum, ink, and continue printing.

The pressure on the press seems to change, doesn't remain consistent?

- Use the lock located on the pressure crank at the top of the Brand Presses. There is no lock for the Griffen press.

I am getting inky fingerprints all over my prints?

- Clean your hands, roller handles, sponges, and spatula handles thoroughly. Continue printing carefully.

I am seeing water streak/droplets on my print?

- You are sponging the image after the last pass with the roller, don't.
- Alternate directions when sponging, horizontal, vertical and diagonal across the image.

My image is just not printing well, I've tried several things and I don't know what to do?

- Ink the image up as though you will take an impression. Rosin and talc the image and buff down a gum layer. Put the stone away, come talk to me and plan to print another day.