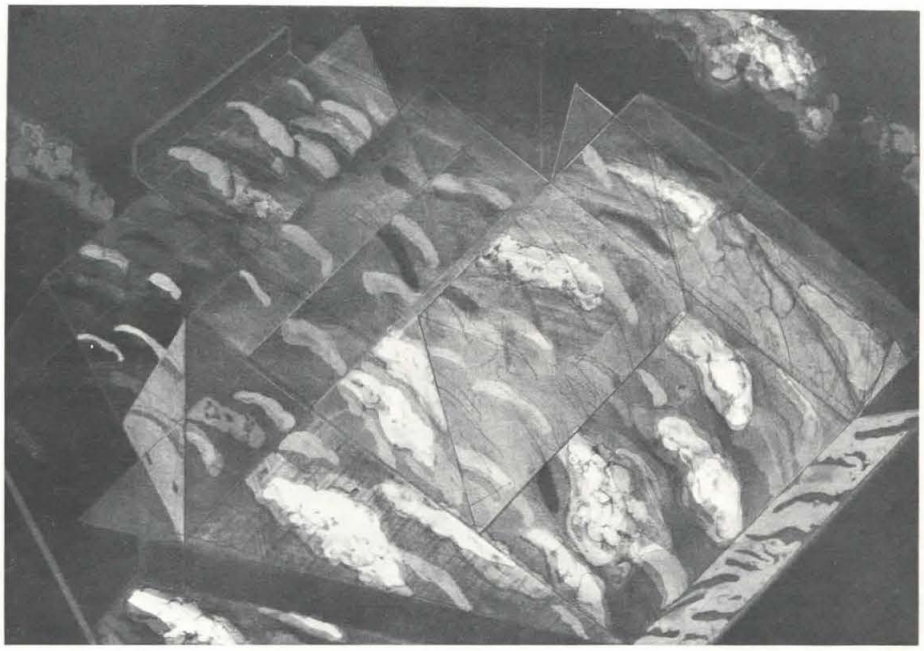
Tamarind Technical Papers

Tamarind Institute, 108 Cornell Avenue, S.E. Albuquerque, New Mexico 87131 (505) 277-3901

Number 6 / January 1977



Ray George. September 76. VII. Image: 35.3 x 51.3 cm. Printed by **Glenn Brill** at Tamarind Institute (T76-647).

DRAWING WITH GRAPHITE ON STONE
A Conversation with Ray George
by Clinton Adams

Ray George, long an active printmaker, principally in intaglio, is professor of art at Illinois State University in Normal. As a part of Tamarind's continuing technical exploration, George was invited to Albuquerque in September 1976 to share with our staff his successful use of graphite as a drawing material on stone. Later, while visiting in Normal, I talked with George about his work.

Tell me, Ray, how did your recent lithographs begin?

Although I am actually an intaglio printmaker, I have always wanted to make lithographs. I felt lithography could provide a way to extend drawing ideas. My interest was more in that than in the technical processes. The work with graphite started in 1974 at Edwardsville, in Jim Butler's shop, with the assistance of several very good graduate students. We began to experiment and to develop the idea of direct drawing on the surface of the stone with all kinds of graphite materials. We had a number of questions to answer. How do you etch the stone? How do you process it for printing? I must admit that I had to leave the technical matters in the hands of the knowledgeable people with whom I was working. After the work at Edwardsville I continued experimentation here at the university. Then I received a small university grant to go to Stone Roller Press in Chicago where I printed six black and white editions, further experimenting with graphite. More recently came the fine collaboration and enjoyable work at Tamarind, resulting in a three-color print.

When you began working with graphite was it your intention to achieve in lithography something comparable to the qualities of aquatint?

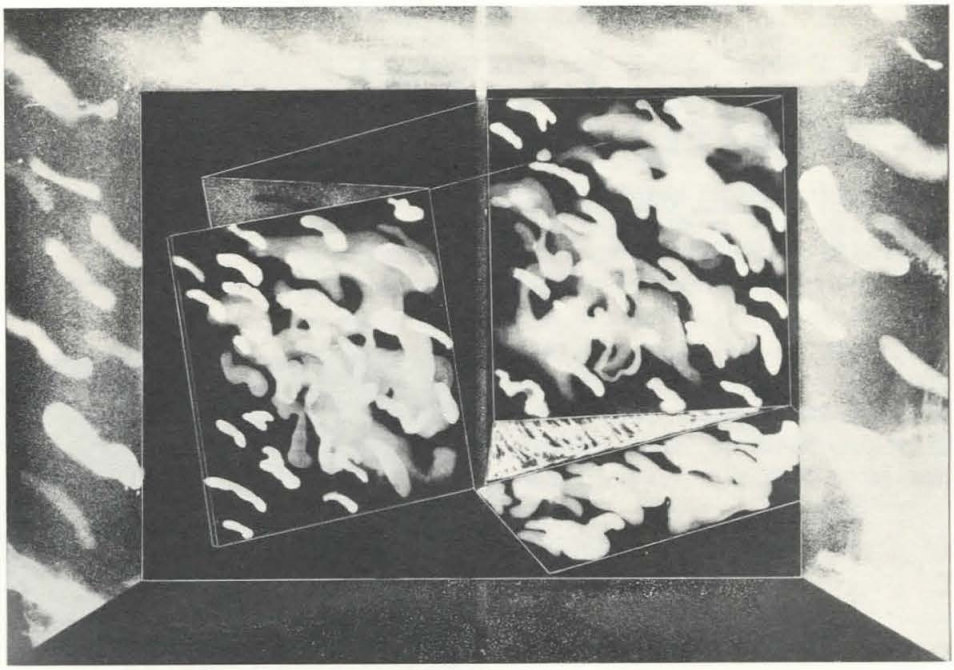
Yes, I think so, although the immediate impulse came from my drawings. The graphite process was very fluid for me . . .

You had been using graphite in drawing, then, before you began to use it on stone?

Yes, with a lot of in-and-out work. A lot of reduction and taking away. I wanted to make lithographs, being basically a printmaker, but at least for me the traditional, greasy lithographic materials were quite clumsy. I couldn't manipulate them with the ease and immediacy I sought.

You have been using powdered graphite?

Yes, mostly. I usually begin my drawings with a base of powdered graphite packed into the paper, just as I now attempt to pack it into the stone.



Ray George. September 76. III. Image: 27.9 x 40.6 cm. Printed by **Ron Wyffels** at Stone Roller, Chicago.

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Editor: Clinton Adams
Contributing Editor: John Sommers

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References to TBL in articles and footnotes are to *The Tamarind Book of Lithography: Art and Techniques* by Garo Antreasian and Clinton Adams (New York, Abrams, 1971).

Then you work by erasing?

Erasing, obliteration, reduction, taking away and adding. I also use turpentine washes with graphite on paper. On stone I use lithotine or mineral spirits.

Do you also use stick graphite?

Yes, and all kinds of pencils. The range of pencils that can be used is all but unlimited, all the way from 9B to 9H. They all seem to work, each doing its particular job.

When you began your work in lithography, did you find that some kinds of graphite worked better than others?

I experimented with industrial graphite but found that it doesn't work very well. Perhaps it doesn't have sufficient grease. Koh-i-noor works best. I use the sticks and grind them up to make a powder. It works very well.

In working on stone, what kinds of application procedures do you use?

I usually use Webril wipes to rub the graphite into the stone, packing it in . . .

Much as you would use lithographic rubbing crayon?

Somewhat, but rubbing even harder. That is very important. Let me give you an example of what can happen if the graphite isn't adequately rubbed in. On one stone I was trying to develop a very light tone, so I put on a light dusting of powdered graphite. Then, as I usually do, I began to remove some areas with an eraser. When we rolled up, much to my surprise, it turned out to be an absolute reversal. Everything I had intended to be light was dark, and vice versa. The dark lines drawn with pencils stayed dark, but the erased areas went dark as well. This was because I hadn't packed the graphite in . . .

So when you erased you were actually pushing the graphite in, not removing it . . . creating a dark, not a light.

That's right. I suppose it would be a usable process, if you could control it. It would be possible to draw over a lightly powdered surface with any kind of a tool, pushing the graphite into the stone to make lines or shapes.

So then, in your usual working manner, when you want a light tone you use less graphite but still rub it in?

Yes. And now in some work I am doing with Jim Butler, we are using controlled spray-etches as a means of lightening tones.

That is basic to the process: the use of spray-etches. How did you first come to try them?

It was a spur of the moment discovery. I was working with Fred Gude at Edwardsville. We lost our first stone completely; we washed it out in the usual way, and the image simply floated off. It was Fred's suggestion that we might try spraying an etch on the stone. And from that point on, that has been the method we have used. Since then several people have suggested ways to circumvent the spray-etch procedure—but they just don't work.

Do you use an ordinary airbrush?

Yes.

And a relatively weak etch? Equal parts gum and water, with six to eight drops of nitric acid?

Yes, about like that. But the etch can be varied. As you learn more about the way etches affect various kinds of drawings you can drop the etch back or intensify it. Or you can spot etch.

As you suggested a moment ago, by masking areas with stencils and then spray-etching to lighten some tones. In essence, by doing this you would be drawing with the etch.

Yes, I think of it that way, as "spray-etch drawing."

But you can't safely spot etch with a brush?

Not really, although you can deliberately alter the drawing by dropping water or a solvent into the image, allowing the graphite to move or flow on the stone. The graphite then becomes stabilized in a somewhat different and random pattern. One of the things that excites me about the process is its fluidity: the way it lends itself to manipulation. And of course when the image has been rolled up in ink, after the first spray-etch, it can then be handled as any other image can be, using standard procedures.

After the initial spray-etch, do you wash the stone out in the usual manner?

No, the gum is washed off very quickly, using a minimum of water. You wind up rolling ink directly into a pretty sloppy stone. The ink is important too. At Tamarind, while working with Glenn Brill, I found it better to use a mixture of Noir Monter and Senefelder black for the roll up. It worked much better than using straight Noir Monter.

Noir Monter is quite soft and greasy for use as a roll up ink.

Yes, but one problem we had early on was that we weren't getting a strong enough image. Now we are backing off. It takes a little more time for the roll up, using a stiffer ink, sometimes as much as twenty minutes, sometimes dry rolling, then stripping ink off again.

But you can't do a washout, as you would with a crayon stone, without disturbing the graphite.

No, we have to get some ink on the image very quickly.

Returning to the spray-etch for a moment, are there some specific techniques or patterns of application that work better than others?

You need to cover the surface of the stone until it takes on a glaze-like quality. After spraying on the etch you can touch the surface very gently with the heel of your hand to see if graphite lifts off. If only a little comes off, you are ready for the roll up. I have found in applying the etch that a simple pattern works well, first spraying across both diagonals, then horizontally and vertically. Four times will take care of it.

You spray first from one side of the stone, then from the other?

Right. We use a very fine spray, usually up to sixty pounds pressure, and hit all sides of the grain.

Yes, that would be important. If you were to spray only from one side of the stone, you would leave an unetched "shadow" side.

It is also important to avoid "spitting" by the airbrush. Large drops of etch immediately create white spots or areas. You need a fine, even spray with the airbrush held at least eighteen inches away from the stone.

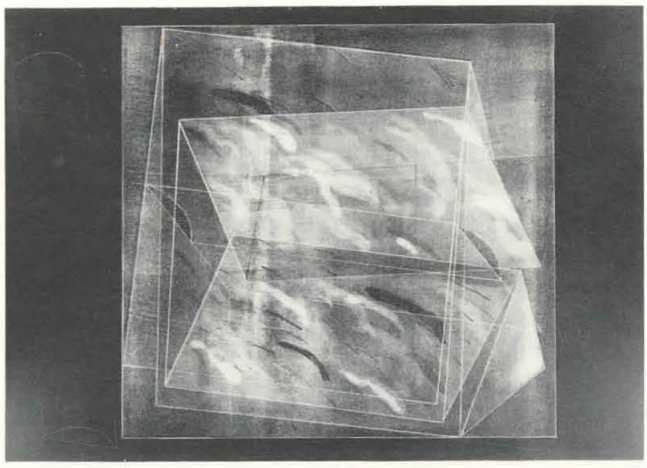
If you were to want a coarser grain you wouldn't try to get it by spattering etch, I gather. You'd use a more coarsely grained stone instead.

Yes, I'd go to a 100 grain stone. Only if I wanted a very coarse quality would I think of using spatter. That would give an effect somewhat like the spatter used by Toulouse-Lautrec, a very obvious quality rather than a continuous tone. In *September 1976, I,* the first of the prints I did at Stone Roller, we did a lot of that. The stone was a smooth 220 grain and we did a lot of "spitting" on purpose. It made a kind of double-dot pattern, with some dots falling over others, creating two kinds of greys. It was an accident stemming from experimentation, but like lots of accidents it can be controlled and used. I am quite pleased with what happened.

After establishing a basic image with graphite, do you every try, after counteretching, to come back with other materials in a second stage of development?

Yes, after processing you can come back with greasy materials, particularly to reinforce linear elements. I find that number three and four crayons are very close in quality to what I get from a 2B pencil. There is a lot of difference, though, between the character of rubbed grease and graphite tones.

I agree with you. They look very different both on the print and on the stone. Partly, of course, this is because the graphite lends itself to an evenness of tone, whereas



Ray George. September 76. III. Image: 27.9 x 40.6 cm. Printed by **Ron Wyffels** at Stone Roller, Chicago.

even with great skill it is almost impossible to develop an even tone with rubbing crayon. It tends to become patchy or spotty.

You can achieve very subtle modulations with graphite. The trick, then, is to hold these subtleties during processing. I have been very interested, too, in the differences between smoothly and coarsely grained stones.

In the print you made at Tamarind you did use differently grained stones.

Yes, there were three stones, grained at 100, 120 and 180. They were then printed in relatively close colors, so that the final print doesn't really permit identification of the separate stones. They merge together.

Was this your first color print using the graphite process?

There had been some earlier attempts in use of color, but they weren't successful. I think they were premature.

You mentioned your work at Stone Roller in Chicago. Those were all black and white prints?

Yes. Ron Wyffels did a very good job with those prints and I was very grateful for the opportunity to work with him. The only problem was the lack of an adequate spray facility. It is a shame that Stone Roller is no longer in business.

In the Stone Roller prints as well as in the color print made at Tamarind there is a good bit of linear development. Some dark lines against light, some light lines against dark. How did these come about?

My initial drawing on stone, just as on paper, is very direct and structural. I draw with pencils, usually something between a 2H and a 4B.

What causes the light lines? Are they scratched in the stone?

Some of the lines in the Stone Roller group were incised. Usually, however, they are drawn with the sharp edge of a plastic eraser. It is possible to create a quite thin and delicate line that way.

Did you use any kind of frisket material to mask out areas?

Yes, on the second and third stones of the Tamarind print I used Misket [a Grumbacher product] which can be put down over an area and later pulled off. As you pull it off you remove about one-third of any underlying tone, which can be desirable. If too much graphite is removed, more can be added.

Have you also used contact paper?

Yes, contact paper is better than frisket for protecting a white area. Because hard rubbing is required to put down a graphite tone, frisket is easily disturbed and rubbed away. Contact paper holds far more securely. Masking tape can be used as a drawing material too. It lifts the graphite off in an interesting texture—a texture that can be rolled up and printed very well. These techniques sound like tricks and devices, but in the hands of artists who know what they want to do wtih them, they can become very useful.

Do you sometimes go into a graphite area with a swab and solvent?

Usually with something like Hancolite or lacquer thinner. Strong solvents will clean off the graphite right down to the stone but leave a nice, soft edge. You can modulate the edge with a Q-tip and brushes.

You haven't used graphite for a purely linear drawing without tonal passages?

No, but that is purely a matter of personal intention. I suspect that even if I started out to do a linear drawing, I would wind up using tone. That is the way I see things.

But if an artist were to do a purely linear drawing, it would still be necessary to use the spray-etch technique for processing?

Yes, to avoid disturbing the graphite.

A lot of people have tried over the years to do linear pencil drawings on stone but have had unsuccessful results. I suspect the answer may be that when they etched their drawings in the conventional manner they destroyed the fragile graphite images.

They were weakening their lines at least by half. I risk being contradicted, but the spray-etch now appears to be the only solution. I have had people ask whether we might not be able to tilt the stone at a sixty degree angle and flood the etch across it, but that doesn't work. The etch creates striations in the graphite as it flows across the stone.

We touched very briefly on corrections after etching. I assume that a second etch is applied in the traditional manner, depending upon the character of the image, and that after etching it is possible to make deletions or to counteretch for additions, but that any additions would be made with greasy, lithographic materials, not with graphite.

One of the problems that occurs, for me, stems from the

difficulty of re-drawing over a graphite image, once it is in ink. As I have already said, linear additions aren't a particular problem, but newly added tones just don't have the same character as those drawn originally.

What that suggests is that you have to try to get the image you want on a single shot, and that while it is perfectly possible to come back and add a line or two, you wouldn't want to make substantive changes over large areas.

No, major changes tend to be spotty and obvious. But some of the lines in *September 1976, VII* were in fact added after the roll up. Glenn Brill counteretched the stones for me and I went back to add a few darks—just a few spots that needed picking up, here and there.

The graphite process, as you have developed it, is one that people have been seeking for years. I know that over a long time lithographers have been fascinated with the idea of an even grey tone. Particularly with the thought of the kinds of tones that can be laid down in aquatint. The acid tint process that Kenneth Tyler developed at Tamarind/Los Angeles was an effort to find a way to do this, but it had its limitations as well as its beauties. It makes possible a beautiful grey in a small area, but to put down an even acid tint over a large area is an extremely difficult task. And while it is perfectly possible to put down an even tone with a pointed crayon, cross-hatching to build up the tone—and ultimately, with skill, to do it beautifully—that requires an extraordinary amount of time. So what you are finding is a solution to a long-standing problem in lithography.

I think so, and I am very pleased with it. But I should again say that I am not really research-oriented. That takes away from my work as an artist—but when research is personal and related directly to the ideas of my drawing, then it is well worth the time it takes. Two or three years have been spent on this. I have been very fortunate to have such skillful people around me, Jim Butler has helped immensely. Now maybe I am about to the point where art can happen.

Let's talk about the ideas, Ray. The combination of geometric shapes and cloud-like forms. How has that kind of imagery evolved in your work?

I think my drawings come about from a concern for what space does and what I can make it do. The forms become devices in the best sense of the word, to force space to do things. The planes are always ambiguous in nature; they don't define and they aren't intended to define "box" or "container." Ambiguity is essential for me, but within a structural context.

But you are concerned that people should be able to read the forms as shapes moving back or forward—or in some cases as forms having indeterminate positions?

The indeterminate quality is to me the more exciting.

Have you tended for that reason to favor a kind of elusive color?

Yes, although another reason is that my drawings have always been within a modified grey-black-white range, sometimes using tones of brown or blue.

Please turn to page 79

REUSING THE "THROW-AWAY"

by Anthony C. Stoeveken

My research into the reuse of the "throw-away" aluminum plate was stimulated by an economic premise. As I saw the cost of the single-use plate rise from $1.76 to $3.29 over a six-year period, I realized that the cost factor was having a detrimental effect upon the ability of students to experience plate lithography and that continuing increases in prices could only intensify the problem. My research and its anticipated beneficial results are primarily oriented toward the university studio or the private artist's workshop.[1] Ateliers operating within the free enterprise system have demands and responsibilities that differ from those in the universities.

While the situation at the University of Wisconsin-Milwaukee is surely not unique, certain procedures that are a part of our shop methodology have influenced the direction of my research. In our studio all plate lithography is done on R.B.P. 25 by 36 inch, aquagrained, .012 gauge "throw-away" plates. We do not have a regraining machine, nor do we anticipate that it will become possible to purchase one in the near future. As we have only a limited number of stones from which images 20 by 26 inches or larger can be printed, many students work on plates. Our program is sufficiently advanced so that much of the work executed on plates utilizes the full plate and is multi-color in nature, averaging four or five colors. For the printmaking student with an emphasis in lithography, such work entails a considerable financial investment in plates alone. Two other factors that influenced our research were the regularity with which our students printed from a vinyl lacquer base and the frequency with which photo-lithography was used as a technical process.

Any attempt at reuse of the "throw-away" plate must depend either upon a physical or a chemical removal of the initial image. In discussions with the plate manufacturers it was suggested that images or partial images might be removed through use of an air brush and an abrasive such as fine sand.[2] While the materials needed for this kind of image-removal are not expensive, our studio is limited in space. The possibility of finding an area in which such an operation could take place was not feasible, given the amount of traffic it would have to bear. We were thus left to search for a method of chemical image-removal which would be safe and easy to work with, and which would fit into our present operations. It would have to be reliable regardless of the technique that had been used to achieve the previous image, i.e., whether a vinyl lacquer

base, a photo-lithographic base, or no base at all had been used.

For purely experimental purposes I did subject one of my test plates to sand-blasting (using equipment in our sculpture studio), a rather free adaptation of the air brush technique. The sand-blasting effectively removed the previous (photo-litho) image, but the sheer force of it bowed the plate and the resulting grain was quite coarse. Not deterred, I placed a second photo image on the plate. It rolled up well after processing, although the coarseness of the grain caused some major problems. The plate was then subjected to a chemical removal process, and a third photo image was placed on it. This also rolled up well. As the sand-blasting had been done only for experimental purposes, I did not carry it further. I was by this time convinced that chemical image-removal was the best route for our shop to take.

THE MATERIALS AND PROCEDURES that I have found to be most consistent and reliable in reuse of the "throw-away" plate are as follows:

1. After removing the ink and gum coating from the previous printing, pour on a generous amount of amyl acetate[3] and scrub the entire surface of the plate vigorously using a soft-bristle brush. Add more amyl acetate if needed, then pour a half ounce of Western Lithplate Cleaner on to the solvent-dampened plate. Again use the scrub brush to work the entire surface. If the previous image made use either of a photo-litho or vinyl lacquer base it is crucial that the cleaning be thorough. I have at times repeated this step to assure the thoroughness of the cleaning.[4] Complete the image removal step by washing the plate and drying it.

2. Before placing new work on the plate, it must be counter-etched. As oxidation is a problem on reused plates it is best to counter-etch immediately before use, either for a drawing or in the photo process. To counter-etch a plate I use a commercial product, Aluminum Counteretch (manufactured by R.B.P.), which I have found to be effective. As the directions call for the mixing of four ounces of this solution with a gallon of water it is quite inexpensive. When counter-etching, pre-dampen the plate and pour on two ounces of the *diluted* solution and scrub the entire surface with a soft bristle brush. Rinse the plate with clean water and dry. As the image-removal and counter-etching procedures are messy, I perform the entire procedure at the graining sink. To make the surface workable, I use a one-quarter inch peg board placed over the slats of the graining table. It is important to have a firm surface to work on when scrubbing the plate. Vigorous scrubbing has sometimes caused scratching of the plates, but this has not interfered with their reuse. I have also found it advantageous to have a small fan mounted above the sink to improve ventilation.[5]

Successful reuse of "throw-away" plates has an important additional benefit beyond the considerable one of cost saving. Ghosts of previous images remain throughout image-removals and counter-etchings,[6] and this fact, along with the reuse of earlier registration marks, makes the printing of multi-color images both faster and more accurate.

On the negative side, extra care must be taken when an edition is pulled from these plates to assure that the water-holding capacity of the plates is functioning properly. Such troubles as I have encountered have centered around this problem. Constant vigilance is required. Even so, I am confident that the benefits to the university workshop in terms of cost-savings to students far outweigh the difficulties. Learning to control problems of water-holding capacity can in the long run be beneficial to students, in that by so doing they will increase their overall understanding and technique in plate lithography.[7]

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1. My research was partially supported through a grant from the Wisconsin Arts Council.

2. Deletions using an air brush and carborundum are discussed by Julio Juristo in TTP 4, "Precision Deletions on Lithography Plates," pp. 44-45.

3. Several lacquer thinners were tried, including Hancolite, but none proved to be as effective as amyl acetate.

Editor's note: In a recent conversation with the author it was learned that a typical plate cleaning would make use of about four ounces of amyl acetate. Mr. Stoeveken obtains amyl acetate through the UW-M purchasing agency for $6.74 a gallon. It is Amyl Acetate SC 10668-1GL, Technical, produced by Sargent-Welch, 7300 N. Linder Avenue, Skokie, IL 60076. The cost per four-ounce use would thus be 21 cents. He uses about two gallons during a typical semester. Amyl acetate may be hard to obtain in smaller cities. In Albuquerque, as example, there are but two sources, one of which sells primary grade but only in 400 pound drums. The second source will make sales in more practicable quantities, but stocks only the reagent grade at $15.00 a gallon.——J. S.

4. Fumes created at this time are strong and should be considered potentially dangerous. Adequate ventilation is necessary.

5. *Editor's note:* Acetate esters are discussed in *Work Is Dangerous to Your Health: a Handbook of Health Hazards in the Workplace and What You Can Do about Them* by Jeanne M. Stellman, PhD, and Susan M. Daum, MD. New York, Vintage Books, Random House, 1973. "The acetate esters as a whole exhibit anesthetic effects which increase and decrease with the solubility of the acetates in water. That is, amyl and butyl acetate are less soluble and have larger molecules than methyl and ethyl acetate and their toxic effects are greater." Specific comment is made that amyl acetate is "irritating to the eyes, nose and mucous membranes. Chronic exposure can lead to liver damage and anemia."

Tamarind Institute has become increasingly aware of respiratory hazards in recent years as aluminum plate and photo chemicals have entered common use. We strongly recommend that exhaust vents be provided in each working area where solvents are used. Tamarind provides individual respirators for each person in the pressroom. We are using the Willson 1210 Respirator for dusts and mists, each with two R21 cartridges for organic vapors.——J. S.

6. Although I limited my testing to reuse of a plate four times, some enterprising students have gone as high as six or seven reusages.

7. See also INFORMATION EXCHANGE: "An Alternative Method for Reuse of Aluminum Plates," p. 80.

Anthony C. Stoeveken completed the Tamarind printer-training program in Los Angeles, receiving the T.M.P. certificate in 1968. He served as Technical Director at GRAPHICSTUDIO in Tampa, Florida, before joining the faculty of the University of Wisconsin, Milwaukee.

Photo Credits:
Lawrence Ivy, page 74 (right).
Bob Reck, page 65.
Nelson R. Smith, pages 66, 68.
Dick Spas, pages 77, 78.

INSTRUCTION IN LITHOGRAPHY
A Survey of Art Schools and Universities

The past sixteen years have seen a rapid increase in the number of art schools and university art departments offering instruction in lithography, and the quality of many programs today is far higher than all but a few of those existing before 1960.

In an effort to gather information about current programs in lithography, TTP circulated a questionnaire to schools and colleges listed in the *American Art Directory.* Replies were received from 136 institutions that offer instruction in lithography. While we regret the omission of some schools and colleges that did not reply, we believe the information compiled below will be of value to students and artists in our field. The survey will be repeated at intervals——C. A.

LEGEND:

Two or more courses	+	yes
	o	no
Work on metal offered	+	both metals
	A1	aluminum only
	Zn	zinc only
	o	none
Number of presses	n/a	information not provided
	*	five or more presses
Undergraduate major	+	yes
Graduate major	*	concentration in lithography or major in printmaking
	o	no

Institution	*Principal instructor in lithography*	*Two or more courses offered*	*Work in metal offered*	*Number of presses*	*Under-grad major*	*Grad major*
ALABAMA						
Auburn U	Maltby Sykes	+	+	n/a	+	+
U of Alabama	Richard Zoellner	+	o	2	*	+
ARKANSAS						
U of Arkansas	Edward C. Bernstein	+	A1	1	o	o
CALIFORNIA						
C Col Ats & Cft	Gill/Ford/Bechtle	+	A1	4	*	*
Cal Inst Arts	Erika Beckmann	o	+	1	o	o
Cal St Long Bch	Cynthia Osborne	+	+	4	*	+
Cal St Northrdg	W. Gabrielson	+	A1	2	*	*
Chico St Col	Paul A. Feldhaus	+	A1	4	*	+
L A St U	Robert A. Fiedler	o	o	1	*	+
San Diego St U	Marcia A. Durrant	+	†	*	+	+
San Jose St U	Geoffrey Bowman	o	A1	4	*	*
Scripps Col	Paul Darrow	o	o	2	+	+
Stanford U	n/a	+	(a)	4	*	+
Stanislaus St	Martin Camarata	+	A1	*	*	+
U of Cal						
Davis	Roy de Forest	o	A1	2	*	+
Los Angeles	Ray Brown	o	A1	2	o	+
Riverside	Connor Everts	o	+	2	*	o
U of Redlands	John R. Nava	+	o	1	+	o
U of So Cal	R. Weisberg/R. Anderson	+	A1	2	o	*
COLORADO						
Mesa Col	Douglas DeVinney	o	A1	1	o	o
U of Denver	Gordon Mansell	+	A1	2	*	*
CONNECTICUT						
Silvermine Sch	Charles De Long	o	A1	n/a	*	+
U of Brdgprt	James O. Jackson	+	Zn	1	*	o
U of CT Storrs	Gus Mazzocca	+	A1	*	*	o
Yale U	n/a	+	+	2	o	*

Left: Jeanneatte Haberman rolls up a stone in the studio at Carnegie-Mellon University.

On facing page: Irwin Hollander with students in the lithography workshop at Wayne State University.

On page 74, left: Dale Kohlstedt assists **Armando Villasenior** at the University of Wisconsin, Milwaukee. **Right:** The new lithography workshop at the University of Texas, Austin.

Institution	*Principal instructor in lithography*	*Two or more courses offered*	*Work in metal offered*	*Number of presses*	*Under-grad major*	*Grad major*
FLORIDA						
Florida St U	William Walmsley	+	A1	n/a	+	+
U of Florida	Kenneth Kerslake	+	o	2	*	*
GEORGIA						
U of Georgia	Charles Morgan	+	A1	4	+	+
HAWAII						
U of Hawaii	n/a	+	+	4	+	+
ILLINOIS						
Evnstn Art Ctr	Johnnie Johnson	+	A1	2	o	o
Monmouth Col	n/a	o	o	o	o	o
NE Ill U	Russell Roller	o	A1	2	*	o
No Ill U	Robert Bornhuetter	+	A1	*	+	+
Northwestern U	Tim Ade	o	o	1	*	*
Rockford Col	Philip Dedrick	+	o	2	+	o
So Ill U, Carbondale	J. Link/J. Feldman	+	A1	3	+	+
U of Ill	Dan Socha	+	A1	3	+	+
INDIANA						
U of Indiana	Rudy Pozzatti	+	+	*	+	+
U of Notre Dame	Don Vogl	o	+	2	*	+
IOWA						
Coe Col	Charles Stroh	+	A1	1	o	o
Drake U	Richard Black	+	A1	2	*	+
U of No Iowa	n/a	+	A1	4	*	+
KANSAS						
KS St, Ft Hays	Frank Nichols	+	o	1	+	+
U of Kansas	Michael Sims	+	A1	2	+	o
KENTUCKY						
E Kentucky U	n/a	+	o	3	*	o
LOUISIANA						
NE LA St Col	Edward E. Schutz	+	o	3	+	o
Tulane U		o	o	2	*	o
MARYLAND						
Maryland Inst	John Sparks	+	A1	4	*	*
Mntgmy Col	Joyce J. Brunner	o	A1	1	o	o
MASSACHUSETTS						
Mass Inst Tech	Ronald MacNeil	+	A1	2	*	o
Mt Hlyke Col	Barry Seace	o	A1	2	o	o
Smith Col	Gary Niswonger	+	A1	1	o	*
Westfield St	Pat Conant	o	+	1	*	o
MICHIGAN						
Albion Col	Richard Brunkus	o	+	2	o	o
Ctr Creativ Stud	James Poole	+	A1	3	+	o
Central MI U	Earl Nitschke	o	o	2	+	+
No Mich U	John Hubbards	o	A1	1	+	(b)
W Mich U	C. Rhodes	o	A1	4	+	+
Wayne St U	Irwin Hollander	+	+	4	*	+
U of Mich	Paul Stewart	+	A1	*	+	*
MINNESOTA						
Macalester Col	Jerry Rudquist	o	o	1	o	o
M Col At & Dsgn	Terry Tolman	+	A1	3	+	o
MISSOURI						
K C Art Inst	Bill McKim	+	o	3	*	o
U of MO, K C	n/a	o	A1	2	*	*

Institution	*Principal instructor in lithography*	*Two or more courses offered*	*Work in metal offered*	*Number of presses*	*Under-grad major*	*Grad major*
MONTANA						
Col of Grt Falls	Jack Franjevic	+	o	1	o	o
E Mont Col	John Pollock	+	+	1	o	o
Mont St U	Francis Noel	+	+	3	+	+
U of Mont	Donald Bunse	o	A1	2	+	+
NEBRASKA						
Creighton U	Randall Hall	+	A1	3	*	o
U of Neb Lncln	Michael Nushawg	o	A1	3	o	o
U of Neb Omaha	Thomas Majeski	+	+	2	+	o
NEW JERSEY						
Glassboro St	Norma Pittard	o	o	1	o	o
Kean Col of NJ	Michael Metzger	o	o	2	*	*
Montclair St	R. A. Vernacchia	+	Zn	1	*	*
NEW MEXICO						
Highlands U	Elmer Schooley	+	A1	3	*	+
U of NM	Garo Antreasian	+	A1	4	+	+
Tamarind Inst	John Sommers	(c)	+	*	(c)	(c)
NEW YORK						
Daemen Coll	Lawrence Gold	+	+	1	*	o
NY St U Col Buf	P. Sowiski/P. Martin	+	A1	3	*	o
Pratt Inst	M. Knigin/J. Stone	+	A1	*	+	*
Roch Inst Tech	Lawrence M. Williams	o	A1	4	*	*
Skidmore	Richard Upton	+	A1	2	*	o
SUNY						
Albany	Thom O'Connor	+	A1	*	+	+
Binghamton	Don Demauro	+	o	1	+	o
Buffalo	John McIvor	+	A1	2	+	+
Potsdam	Joseph Hildreth	+	A1	2	*	o
Syracuse U	Bruce Manwaring	+	+	3	+	*
NORTH CAROLINA						
Appalachian St	Judy Humphrey	o	A1	1	*	*
OHIO						
Baldwin-Wall	T. P. Speer	o	+	2	o	o
Bowling Gr St U	n/a	o	A1	2	*	*
Miami U	Robert Wolfe	o	A1	2	*	+
Oberlin Col	Paul B. Arnold	o	o	1	o	o
Ohio St U	Char. Massey, Jr.	+	+	3	*	*
OKLAHOMA						
U of Okla	n/a	+	o	3	+	o
U of Tulsa	Kandy Radzinski	+	A1	2	+	+
OREGON						
So Oreg St Col	B. Laduke/L. Matoush	+	A1	2	*	+
PENNSYLVANIA						
Carnegie-Mell	Robert Gardner	+	+	4	*	*
Lehigh U	Richard Viera	n/a	+	n/a	n/a	o
Millersvle St	Sol Kent Carson	+	A1	2	*	(b)
Penn St U	Bruce Shobaken	o	o	3	*	*
Phil Col of Art	Jerome Kaplan	+	+	3	*	o
Whgton & Jf Col	Paul Edwards	+	Zn	1	o	o
RHODE ISLAND						
RI Col of Desgn	John Muench	+	+	3	+	+
U of RI	Christopher Cordes	o	A1	2	o	o
SOUTH CAROLINA						
U of SC	Boyd Saunders	+	+	2	*	+

Institution	*Principal instructor in lithography*	*Two or more courses offered*	*Work in metal offered*	*Number of presses*	*Under-grad major*	*Grad major*
SOUTH DAKOTA						
U of SD	Lloyd Menard	+	+	2	*	o
TENNESSEE						
E Tenn St U	John M. Steele	+	+	2	*	*
TEXAS						
Baylor U	Barry J. Klingman	o	A1	2	*	o
Rice U	Dadi Wirz	o	o	1	*	o
TX Chrstn U	David Conn	o	o	3	*	+
U of Dallas	Jürgen Strunck	o	A1	1	*	*
U of TX						
Austin	Kenneth J. Hale	+	+	4	*	*
El Paso	Loren Janzen	+	A1	2	*	+
San Antonio	Wayne Kimball	+	+	3	+	+
UTAH						
Brghm Yng U	Wulf Barsch	+	+	2	*	*
U of Utah	Robert Kleinschmidt	+	+	3	+	*
Utah St U	Harrison Grontage	o	o	2	*	*
VERMONT						
U of Vermont	William Davison	+	A1	2	o	o
VIRGINIA						
Col of Wm & My	Paul Helfrich	o	A1(d)	1	o	o
Longwood Col	Barbara L. Bishop	o	+	1	o	o
Madison Col	Jerry Coulter	o	o	1	o	*
Roanoke Col	n/a	+	A1	1	o	o
VA Cmnwlth U	Gerald Donato	+	A1	4	+	+
WASHINGTON						
Cen Wash St Col	George Stillman	o	A1	1	*	+
Gonzaga U	J. Scott Patnode	+	A1	1	*	o
U of Wash	Glen Alps	+	A1	*	*	*
W Wash St Col	Tom Johnston	o	A1	1	*	*
WEST VIRGINIA						
W Liberty St Col	Bernie K. Peace	o	Zn	1	o	o
West VA U	Will Petersen	+	A1	3	+	+
WISCONSIN						
Lawrence U	Arthur Thrall	o	o	1	o	o
U of WI Mlwke	Anthony Stoeveken	+	A1	4	*	+
WYOMING						
U of Wyoming	Richard Evans	+	+	2	*	*
CANADA						
Nova Scotia Col	Robert Rogers	+	A1	3	*	+
Toronto U	Ed Zingraff	+	Zn	1	o	o
U of Alberta	Lyndal Osborne	+	+	4	*	+
U of Windsor	Daniel Dingler	+	A1	2	+	o
York U	K. Hayano	+	A1	4	*	+

NOTES:

(a) In cooperation with California State University, Hayward.
(b) Only in relation to a M.Ed. degree.
(c) Tamarind Institute is separate from the UNM Art Department. No courses are offered; 2-year professional printer-training program.
(d) No work on stone.

CAVEAT EMPTOR:
The Lithographic Stone Market
by John Sommers

In the decade of the sixties stories were often told about the discovery of a cache of beautiful old stones which some early printing establishment had placed in basement storage upon the advent of metal plates and offset lithography. It was not unusual to hear that someone had found useful stones in a junkyard, a backyard, or patio. Even today one occasionally hears of the uncommon, chance acquisition of a stone or group of stones from someone who does not know (or care) that they have increased in value and are in great demand within the field of artists' lithography. Such an acquisition depends upon luck or chance. More commonly, those of us who are interested in acquiring lithoraphic stones today will find ourselves responding to advertisements or examining lists published by suppliers of new and used stones.

Some of these suppliers are only marginally aware of the specific qualities of the various lithograph stones they sell, and seldom to the degree that a lithographer is aware of them. Wide variation is found to exist in catalog descriptions of stones for sale. Guarantees are seldom available. Because of varying descriptions, a clear differentiation between white, yellow, hard yellow, grey, and blue-grey stones has all but ceased to exist. White stone is sold for yellow, and hard yellow for grey.[1] Given the lack of knowledge and precise information that is displayed, it is easy to acquire a disappointing stone if one has not examined it personally prior to purchase. *Buyer beware* has become the rule.

TABLE 1. Percent increase in price of yellow stone since 1960

Size	Cubic Inches	Weight in Lbs.	1976 Price per Lb.	Increase since 1960
18 x 24 x 3.5	1512	137	$ .75	67%
24 x 30 x 3.5	2520	229	1.14	73%
24 x 36 x 3.5	3024	274	1.44	78%

As seen in the table, the price of yellow lithoraph stone has increased substantially since 1960, more so in the larger sizes than in the smaller ones.[2] The current price of new and used stone has made the purchase of stones a major investment: one of concern to the artist, the school or university, and the atelier.

Comparison of some current price lists published by four major suppliers (referred to as suppliers A, B, C and D in Table 2 below) reveals some startling differences. Three of the suppliers price yellow stones (24 x 36 x 3.5) quite competitively; one sets a price which is nearly twice that of the others.

TABLE 2. Prices of yellow stone: quotations from four suppliers

Size	Cubic Inches	Price quotations from suppliers A	B	C	D
18 x 24 x 3.5	1512	$125	*	$123	$275
20 x 26 x 3.5	1820	*	*	171	415
22 x 28 x 3.5	1960	*	282	236	540
24 x 30 x 3.5	2520	*	335	270	595
24 x 36 x 3.5	3024	475	480	401	800

For a 24 x 36 inch yellow stone with an average thickness of 3.5 inches, Company A asks 16 cents per cubic inch; Company B, 17 cents; Company C, 13 cents; and Company D, a bulging 26 cents. The wide variation in price among the four suppliers is not explained by the quality of the stones, nor is there consistency in pricing among stone sizes. There is no general agreement as to how much the price of stone (per cubic inch) should increase or decrease as the size of the stone increases. Variations in price may in some part be related to the availability of stone to that supplier.[3] Whatever may be the causes, the figures in Table 2 conclusively demonstrate that the wise buyer will carefully study and compare the price structures of the various suppliers before making a purchase.

Similar problems exist when buying used stones, either from suppliers or private advertisers. The latter often know only two facts: that stone is scarce and that there is a market for it. Sellers often do not know how to judge the quality of stone, i.e., the hardness of stone by color, infusions of calcareous materials or mineral deposits, hair-line cracks, etc. Conditions resulting from previous storage are generally not known, or considered, despite the fact that outside storage in freezing climates may result in crazing from frozen moisture and a resultant inability to withstand printing pressures. If, on the other hand, a stone has been stored in a dry place with even temperature, its condition may be excellent.

The useful life that remains in a stone is often not considered in pricing. A yellow stone two inches thick does not have 50% of its useful life remaining. Because a blue-grey stone is more capable of withstanding printing pressures than is a softer stone, a thin, hard stone can be backed with slate and its life thus preserved. Even with luck and the skillful backing of a two-inch yellow stone, it may prove impossible to use as much as an inch of its thickness before it breaks in the press. Despite these facts, one finds in the marketplace stones of 2 and 2.5 inch thickness that are priced as if they were new.

How can prospective purchasers of stone protect themselves, given these conditions? I suggest the following guidelines:

1. Learn the properties of lithographic limestone.[4]
2. Know your supplier so that you may discuss a stone completely before making a commitment to purchase it.
3. Try to obtain an agreement as to replacement or refund if the quality of the stone is not as represented in your discussions with the supplier.
3. Make use of the advice of experts; if you know someone who has expert knowledge of lithographic stones, pay that person to examine your intended purchase.
5. Study the new and used stone market when considering a purchase; compare stone prices (including analysis in terms of the cost per cubic inch of stone); ask for complete descriptions.
6. Evaluate used stones carefully and make offers based upon your knowledge of current prices for new stone; take into account intended use, potential costs of backing and repair, and shipping charges.
7. Do not be so eager to buy that you ignore alternatives.

In short, to be informed about stone, the stone-market, and alternatives to stone is a necessary condition to wise investment. Only through such wise investment can solvency be assured and disappointment be spared.

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1. See TBL, Section 9.6, pages 262-7.
2. Compare with 1961 prices per pound, TBL, page 263.
3. *Editor's note:* As noted in TBL, pages 262-3, the information then supplied to the authors indicated that stocks of "fine quality lithograph stone in large sizes have been nearly exhausted" in the Solnhofen quarries. More recent information indicates that this is not the case. See "The Solnhofen Quarries" by Vernon A. Clark, TTP Number 4, pages 37-40.——C. A.
4. See TBL, Section 9.6, pages 262-7.

CARRARA MARBLE:
An Alternative to Limestone
by John Sommers

The high cost of lithograph stone, as discussed in the preceding article, gives reason to consider alternatives. Recent issues of TTP have discussed the use of Pedrara onyx, aluminum blocks, mounted aluminum plates, and zinc etching plates.[1] Robert Evermon, who conducted early research into the use of onyx while a printer-fellow at Tamarind/Los Angeles, has now become a supplier of Carrara marble, a stone tested by Aloys Senefelder in the early days of lithography. Tamarind Institute last year obtained a sample of this stone from Evermon, and John Sommers now reports upon the drawing, processing, proofing and printing of experimental lithographs from marble.

RESULTS OF TAMARIND TESTS indicate that Carrara marble is an acceptable substitute for Bavarian limestone as a lithographic printing element. Indications are that although one is still dealing with calcium carbonate, the compound that forms lithographic limestone, the fact that marble is crystalline in form causes significant differences in graining, in drawing, processing and printing, and in the appearance of proofs and impressions.

One's initial impression upon examining a lithograph pulled from marble is that of an overall softness of the image (see illustrations). Tusche washes on Carrara marble have a very different pattern of reticulation, a unique continuous tone with a soft, smoky quality quite unlike typical wash-patterns on grey Bavarian limestone (figure 3). Wash-reticulation on marble is always finer in its pattern (figure 1), and a greater variety is possible in tonal rendition. Washes on limestone, however, achieve a brilliance and an interior glow that is not attained on marble. Crayon drawing on marble reveals the crystalline structure of the stone, and thus has less of a "random" look than is seen in drawings on limestone. Impressions from crayon drawings have the soft, smoky look of tusche washes on marble. The character of drawings on marble, although quite different from the use of similar techniques on Bavarian limestone, is equally acceptable. The difference in visual quality may in many circumstances be highly desirable.

The freshly grained surface of a block of Grade A Carrara marble is a pure translucent white. In comparison with Bavarian limestone the fresh surface is slightly

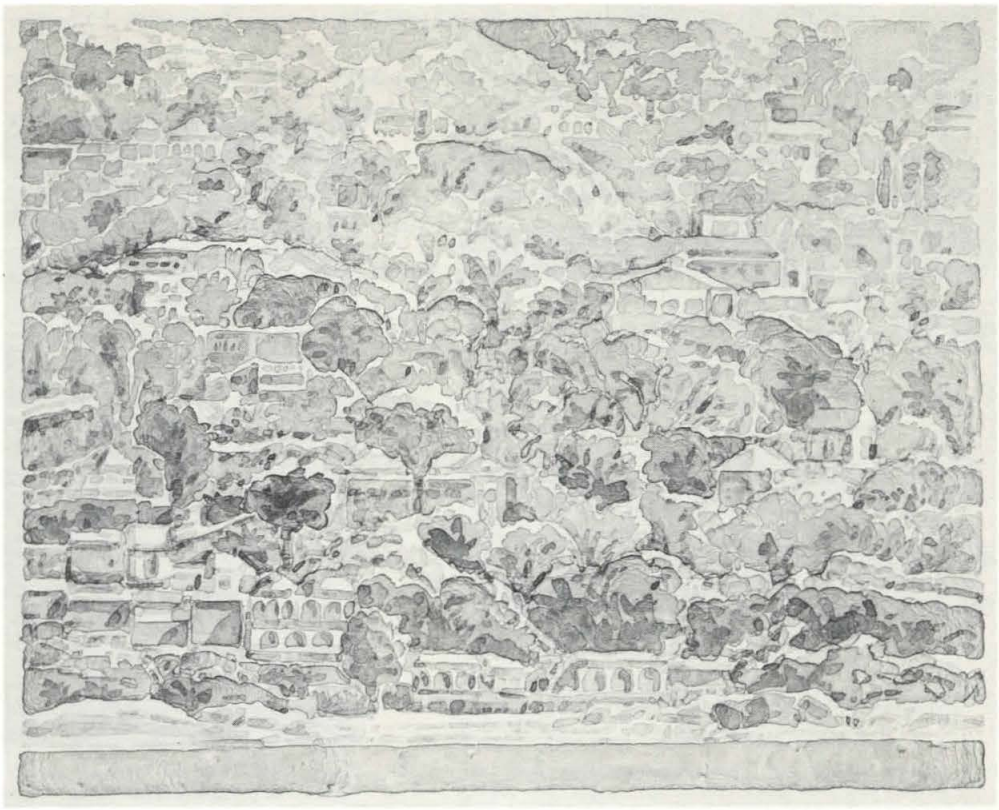

Figure 1. **Leonard Lehrer.** Puerto Vallarta. 1976. Image: 21.3 x 26.4 cm. Drawn on Carrara Marble and printed by **Wayne Kimball** in San Antonio.

waxy in appearance. It conveys this waxy feel to the touch and in the way it receives crayon or washes. Visually, an image drawn on its surface seems to float above it. The finished grain, usually at 240 grit, was taken to fine polishing with pumice in tests conducted at Tamarind. Even after such polishing, the crystalline structure of the marble was perceptible to the naked eye and apparent under a glass. In application of crayon one quickly becomes aware of this crystalline surface. The hardness of the surface causes pointed crayons rapidly to wear away; it tends to clog when number two (or softer) crayons are used.

The differences between limestone and marble are again seen during processing. Marble reacts slowly to acids. When a tusche wash on grey limestone is etched at 12 drops of nitric acid (pH 1.5 to 1.2) a slow effervescent reaction occurs, much like the bubbles in ginger ale. An equivalent visible reaction on Carrara marble would require a 20 drop etch (pH 0.9 to 0.6), given a wash of similar character. This difference is caused by the far greater density and hardness of the marble.[2]

In the swatch tests (figure 2) the superior openness of washes, combined with simultaneous maintenance of a continuity of tone, results from etch strengths that vary from 8 drops of nitric acid per ounce of gum arabic (pH 2.3 to 1.8) to 20 drops. When etching heavily applied lithotine tusche, a 30 drop etch (pH 0.4) provided the most open and glowing wash-scumble. Application of such hot etch to a comparable drawing on limestone would cause a "burned" look. Additionally, it may be noted that number 5 crayon, rubbing crayon, Negro pencil number 3, and other materials were maintained with varying degrees of openness and without burning, at all etch strengths ranging from pure gum arabic to 30 drops of acid per ounce. Amazingly enough, there appears to be little difference in results when crayon work is etched at strengths ranging from pure gum to 15 drops. It should be remembered, however, that these are tests and that in such circumstances the application and processing of materials tend to be more informal than in actual image-making situations.

It may be concluded that the hardness of Carrara marble permits great latitude in etch-strength, with a resultant reduction in risk of loss. Generally stronger etches are required in order to assure complete chemical reactions (conversion of grease) within the drawing. One must remember, however, that the optimum adsorption of gum arabic, which provides the adsorbed gum film in negative areas, occurs at pH 2.8, i.e., in the 5 to 6 drop range. If a general etch of approximately this strength is not provided, the surface begins slowly to accumulate a very fine scum which, because of the sensitivity of marble to grease, rapidly becomes established and cannot then be removed. When in printing one edition from marble such as scum began to form, normal attempts to snap-roll and clean with gum failed to improve the situation. As a last resort, a wet wash and remedial etch was tried; although the image then rolled up well, the unwanted scum was no more than weakened. It was necessary to continue gum-cleaning and a series of weak etches in order to prevent the scum from returning to full strength.

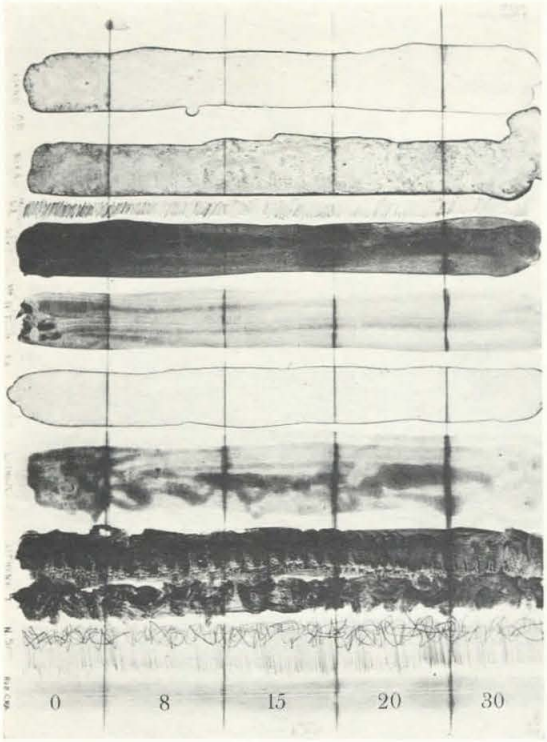

Figure 2. **Wash and crayon tests on Carrara Marble.** As noted in the text, a 30 drop etch (far right) is best for rich washes. Note French tusche, third band from top, and lithotine tusche, above crayon tests at bottom. Korn's tusche, first and second bands at top, shows a characteristic burning-out of grey tones.

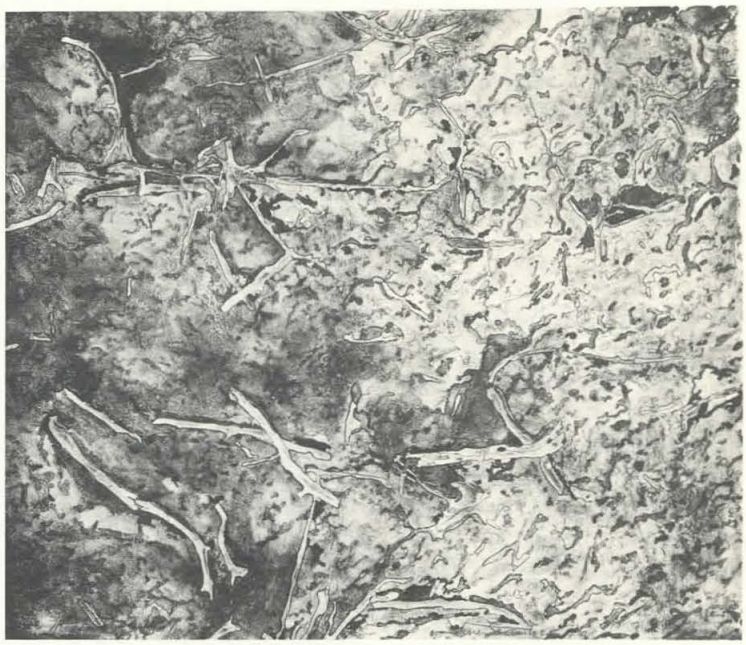

Figure 3. **John Sommers.** Message, State II, 1976. Image: 38.5 x 44.9 cm. Drawn on Carrara Marble and printed by the artist.

The density of Carrara marble suggests that the established image is a shallow one, with limited penetration into the stone by the grease reservoirs, and indeed this is the case. To test this theory the following test was conducted: A drawing with solvent tusche was removed by graining with silicon carbide, using a hand levigator. Six passes were applied at 100 grit, three at 180, and three at 240. Subsequently, a water-wash drawing was placed over the highly visible ghost of the former image. The new image was processed with a two-stage etch before proofing. The marble was then resensitized, using a citric acid counteretch, and additional washes were added.[3] A two-stage etch was again used in reprocessing, after which the modified image was re-proofed and an edition of ten impressions was printed. At no time during this process did the ghost image reappear. It may thus be concluded that the grease reservoirs of the original image had been grained away in a few brief passes, even though the ghost image remained.[4] Such stains, which are a characteristic reaction of marble to many materials, may interfere *visually* with images later superimposed on them, but they do not interfere lithographically. Whether such stains will continue to accumulate in the marble is not known at this writing.

The price (plus shipping) of Carrara marble is competitive with Bavarian limestone of high quality.[5] The marble is available in a three-inch thickness at various sizes and in two grades. Grade A is clean, clear, and white. Grade B has some colorations and irregularities which make it less desirable, although at the same time less expensive. Use of marble in a school situation should provide students with a printing element which can withstand the haphazard approaches characteristic of the learning process. The fact that Carrara marble can in many uses substitute for Bavarian limestone is of value to artists' ateliers and can bring about a significant reduction in capital outlay. While marble cannot replace limestone for use in all techniques, it is capable of producing fine images either with crayon or tusche: images which are esthetically desirable and lithographically dependable.

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1. See "Pedrara Onyx: Its Use in Lithography," TTP, Number 4, pages 41-2 + ; "Zinc Etching Plates as Printing Elements for Lithography," TTP, Number 4, page 43; "Permanent Aluminum Lithograph Plates," TTP, Number 5, pages 61-2; and "Laminated Backing Elements for Metal Plates," TTP, Number 5, page 62.

2. In a recent letter Robert Evermon writes that the marble stones "are harder than a blue-grey stone and more stable. The stone is so hard it [the etch] will not undercut the very fine dots in washes."

3. Citric acid counteretch must be freshly made each time it is used. The formula is one-quarter teaspoon of citric acid monohydrate crystals to ten ounces of distilled or tap water. It is applied three times, one minute at a time, while moving it gently over the surface of the stone with a sponge or brush. Each application of the counteretch is removed with a sponge and clear water before the next application. Finally, the surface is bathed with clean water and dried.

4. "Marble, even the most expensive grades, when placed in an exposed position, soon loses its polish, and becomes stained and streaked with rust, ink, smoke and grease. Once stained, the porous nature of marble causes the discoloration to spread throughout, and it is a well known fact that stains on marble cannot be eradicated." The quotation is from a pamphlet by F. J. Lea, former President of the Southwest Marble and Onyx Company, published c. 1910.

The stone used at Tamarind arrived from Canada bearing an image in ink. It was washed out with lacquer thinner before graining. Even so, an image was still visible after 18 applications of 100 grit. This initial graining was followed by three passes at 180, three at 240, and three more each with medium and fine pumice. The resulting surface was waxy and smooth, but despite such extensive graining the former image was still visible in the form of tan and deep tan stains.

5. For information on prices and availability of marble, write Robert Evermon, 249 Dunsmuir Street, Vancouver, British Columbia (Canada) V6B1X2. Evermon Lithographic Stones are priced at approximately eleven cents per cubic inch (compare this with an average of seventeen cents per cubic inch for Bavarian limestone).

GEORGE continued from page 69.

It would be quite foreign to you to inject a spot of bright red?

Until now. But in a recent collaboration with Jim Butler, he has suggested that he would like to see what I might do with red, yellow and blue. I told him alright, but that I suspected it would take more than three stones. And it did. It took five. I felt uneasy because the strong color set itself up in space, outside of the spatial confines I had intended. But I think you learn things by forcing yourself into unfamiliar situations, so I went along with Jim. I enjoyed reading a quite good article in a recent issue of *The Print Collector's Newsletter,* an interview with Jim Dine. It struck a sympathetic chord. Dine was talking about his shift to new drawings from the figure. He depends to a great extent upon an underdrawing. He says that it is the excitement of drawing—putting things down and removing them. That approach to drawing is almost like painting: putting down grounds, removing grounds.

It takes an experienced artist to know that subtraction is as important as addition. Too often beginning art students haven't discovered that.

I teach only drawing, and I see that in my classes. Students usually *fill* a drawing. They begin a drawing, and when it is full it is finished. Consequently the give and take—and the joy—that should be there is missing. The excitement of change is lacking where drawing is no more than an additive process.

Then you would agree with Picasso that a picture is a sum of destructions.

Exactly. I am sure I don't put it that well to my students, but that is my meaning.

EXCHANGE continued from page 80.

Aluminum Plate Conditioner

An update that will be of interest to individuals who have participated in the Tamarind/UNM aluminum plate workshops:

Richgraphic Plate Conditioner 0322 is again available. Out of production during the past two years, it has not been available from Richardson Graphics suppliers. In a recent telephone conversation with a technical sales representative at The Richardson Company, Lithoplate, Inc., in Orland Park, IL 60460, it was learned that some plate conditioner is still in stock, and that the company will make more if they receive a sufficient number of requests. It may be ordered directly from the address given.

An Aid to Crayon Drawing

Elmer Schooley, Professor of Art at New Mexico Highlands University in Las Vegas, has added to the repertory of techniques useful in application of crayon to stone and plate.

Schooley recommends use of *tracing gelatin,* available in sheets at nominal cost from the Cronite Company, Hudson Blvd. at 88th Street, North Bergen, NJ 07047. In a recent letter Schooley writes:

> The procedure is simply to lay it [the gelatin] on the stone and draw on the sheet over the tone to be removed. It works well. (1) It works best over relatively hard crayon. Soft crayon tends to be pushed down into the grain of the stone. (2) It works imperfectly over rubbing ink and tusche. Very nice "crumby" effects may be gained in this way through partial removal. (3) Stubborn tones will sometimes yield if the area is first warmed by holding the mouth dangerously close to the stone and blowing before using gelatin. The heat and humidity softens it enough to make removal easier. No saliva, of course.

In his use of the material at Tamarind, Schooley applied the gelatin as he suggests and rubbed or drew on the back of it with a pencil or blunt-pointed stylus. The crayon adhered to the gelatin in the areas that were rubbed, directly in proportion to the pressure that was applied. It is effective in taking back a value or in altering or creating a texture. It is harmless in its affect upon stone or aluminum. In use with crayon and other drawing materials, one might try Schooley's heat and humidity trick on the gelatin itself rather than on the stone or plate.

Roller Cleaner for Textured Rollers

Printer Richard Newlin suggests Wash V-120, a clear yellow solvent made by Sinclair & Valentine, for use in cleaning Mercury KU and Ideal Rodel rollers. It may be used on other composition rollers as well. Newlin also recommends Roll-o-Paste from Felix Bottcher.

Permanently Installed Tympan

The material used in the permanently installed tympan illustrated in the article on the Takach-Garfield Lithograph Press (TTP Number 5, pages 57-9) may be purchased from the Transilwrap Company of Missouri, Inc., 5720 Brighton, Kansas City, MO 64130. This lightweight, translucent, flexible plastic is called *press packing.* Available in various sizes and quantities, a 40 inch by 50 foot roll at .014 thickness is priced at $50.00. The complete tympan assembly is available from the Takach-Garfield Press Company, 3207 Morningside Drive NE, Albuquerque, NM 87110.

INFORMATION EXCHANGE
a column for discussion of questions
and suggestions from readers
by John Sommers

Aluminum Plate Curl

Rod Ragsdale of San Jose, California, writes that he has had problems with aluminum plates lifting and curling away from the plate support during long runs at the press.

This usually happens when a thin aluminum plate (less than gauge .015) has not been firmly anchored. Aluminum plates tend to stretch and expand in prolonged printing. The scraper bar presses the plate from end to end in its traverse through the press and causes a stress in the metal in the area of contact. Outside this perimeter the metal is not affected, hence counterforces are set up within the plate causing it to curl away from the support. The stretch is rarely, if ever, great enough to be significant in image registration.

Several things may be done to keep the plate flat and attached to the support during printing, despite such stress as may occur. Important when printing from metal plates is use of the longest possible scraper bar: one almost as wide as the plate. The bar should fully traverse the plate from end to end, but without going past the ends. This will put even stress upon the plate surface. The plate may be attached to the support using plastic tape and/or a rubber cement spray. Rubber cement should not be used on a fibrous support unless it has been adequately sealed with epoxy. Rubber cement is applied to a three-inch zone around the edges of the plate-back and to an equivalent area on the support. When both surfaces are tacky to the touch, the plate is put in place and pressed down firmly around all edges. Taping the lead and trailing ends will prevent water and solvent from causing the cement to release prematurely.

To remove the plate, simply slide a knife under the plate around all edges. Lacquer thinner will remove the residual cement; poured beside the plate it will help in release from the support.

Alternatively, one may tape the plate to the support when clean and dry, either along all four edges or just at the ends, depending upon the roller and roller pattern to be used. The best tape for this application is tan, two-inch, poly-vinyl packing tape, which resists water and solvents. PV tape is available in quantity from International Data Specialties, 4510 W. Jefferson Blvd., Los Angeles, CA 90016. Attention: Bill Ames. Fifty-five foot rolls, ordered in lots of twenty-four, cost approximately $1.50 each. Individual rolls are usually available at hardware and builders' supply stores at about the same price.

An Aid to Visualization

A material known as *prepared acetate* is useful in visualizing a color or wash effect. It is a transparent and colorless acetate which has a surface coating that will allow application of water-base materials (such as tusche or watercolor). Because of the prepared surface, water is not repelled nor does it bead up. When completed, the acetate-with-drawing may be laid over a proof, as is done with an impression printed on Mylar, to aid in visualization of added drawing or color. The prepared acetate will also receive an ink impression well, or it may be used in the making of a drawn negative (using tusche or other materials) for exposure against a photo-sensitive plate. Prepared acetate is available in many sheet sizes and rolls. A 30 by 40 inch sheet, 3 to 5 mil, is priced at $4.70 and is available from Bee Paper Company, 100 Eighth Street, Passaic, NJ 07055.

An Alternative Method for Reuse of Aluminum Plates

Paul Stewart, Professor of Art at the University of Michigan, Ann Arbor, offers another method for reuse of aluminum plates. He tells us that his students get several uses out of each plate at a minimal investment of studio materials.

When the printing of an image is completed, it is washed out thoroughly through the gum film with lacquer thinner. Then, using gloves, the image is burned with full strength Pro Sol etch, into which Boraxo is poured, and the plate is then scrubbed with a soft bristle brush. The plate is then rinsed, scrubbed again with Boraxo and water, and again rinsed. The image area is burned for a second time, now using full strength *Fine Etch*, a product made by the Alco Ink Company of Detroit. Stewart indicates that this process renders the plate sensitive and that no counteretch is needed before drawing. The small scratches that result from scrubbing are of no consequence to his students.

Because the process causes the plate to become super-sensitive, students find it more difficult to stabilize the plate after re-drawing and processing. A tendency to fill in can be controlled by avoidance of overly greasy drawing and by very careful judgment of etching strengths. At Michigan no attempt is made at reuse of photographic plates. Stewart feels that the ability to reuse an aluminum plate assists students to gain a freedom of approach to lithography——a freedom difficult to obtain when they are faced with a one-time commitment to an expensive material.

If *Fine Etch* cannot be obtained, one might try as an alternative a second burn etch consisting of plate etch, gum arabic, and phosphoric acid, at pH 1.7, after which the plate would be rinsed and counteretched in the usual manner prior to redrawing.

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