

SCRIBING CONTOURS WITH " SCRIBE COAT "

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"Scribe Coat" is a sheet of mylar plastic with certain coatings, including a red-brown waxy substance. It is rather pleasant material to look at and work with. Using Scribe Coat has been found superior to ink drafting-pen contouring techniques for speed of production combined with quality of finished product.

"Scribing" is the systematic removal of the wax coating material which, once removed, admits light. Scribe Coat material is well suited for contouring work published by photographic techniques.

A skilled scribe-tool operator can scribe circles around the best ink-pen enthusiast! The latter need not feel all is lost by such a revelation, as his skills can be readily transferred to this new discipline — there's plenty of room in scribing for former ink-pen draftsmen.

Under the magnifying lens the scribed product looks better than the inked product. The line edges are sharper and the line width is more uniform. Dimensional stability is also better as it is plastic rather than paper.

"Scribe Coat" as presented here is catalogued by its maker as Stabilene Film, pre-sensitized, scribe coat surface, .007" thick, rust, 36" x 48", No. 453607. It is distributed by Keuffel & Esser, 20 Whippany Road, Morristown, New Jersey 07960. It is quite expensive, costing more than \$ 15.00 U.S. per sheet. The photo-sensitive feature allows the lines intended for scribing to be portrayed on the surface. This feature offers the option of doing away with overlays and light table. The light table can indeed be used; however, it is perhaps easier to photographically expose the sheet and by this means have the lines imprinted on that sheet. The cartographer can then follow the imprinted lines with his hand tool, without having to look through the sheet at something else underneath. In this situation the cartographer would use ambient available room light and wouldn't use the light of the light table.

The photo-sensitive feature is a very good one to have because back-lighted Scribe Coat can be very rough on the eyes. The crystal clear transparent areas freshly bared by removal of the coating by the scribe tool will admit light at just about the same intensity as that of the light bulbs themselves. Meanwhile the eyes are trying to peer through the relative gloom

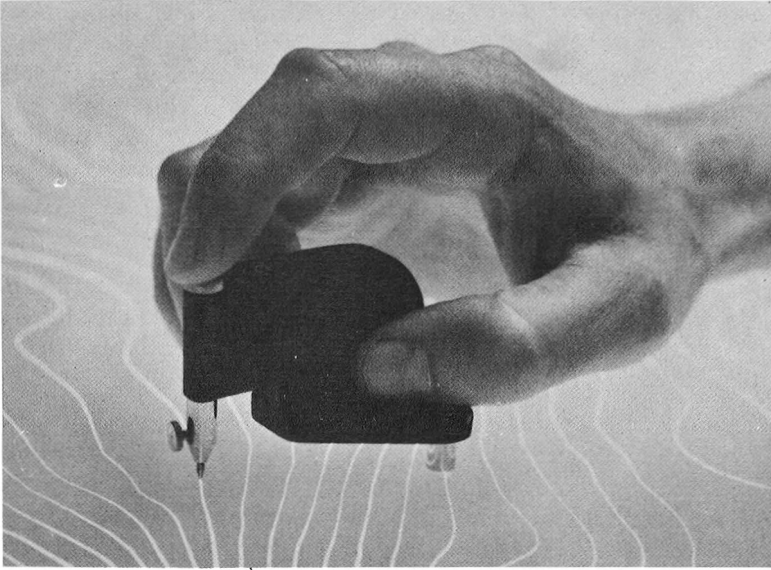
of the undisturbed areas to ascertain what to scribe next. The eyes are vainly trying to adjust to dimly lit areas while being bombarded with bright light through the scribed areas. Some compromise can be accomplished by covering all scribed work except that which is being presently worked on. Another helpful tip is wearing an inexpensive visor cap.

The principle of scribing is quite simple. There is a special tool that cuts and removes a small percentage of the surface coating. It is a three-legged instrument with one leg comprising a cutting point resembling an antique phonograph needle. The business end of this point is a precision-ground truncated cone. There are various size points, each one identified by annular ring and paint mark as to how many thousandths of an inch it is ground to. One groove and a black paint dab for example is .010" plus .004" (or .014"). The tool and points are manufactured by Roto Instrument Company, 67 Barrymore Road, Scarborough, Ontario, Canada. The tool rides on the flat of the truncated cone on the point; the sides of the cone do the cutting. Under ideal conditions the tool glides on its cutting tip at a rapid speed and at the same time puts out work of highest quality.

There is one feature of Scribe Coat which demands considerable skill. Under the wax there is a transparent intermediate layer which is soft and tears easily. When it gets torn, the line takes a ragged edge at reduced dimension. Additionally, the rough edges, charged with static electricity, attract the powder of scribing cuttings. The ragged material, moreover, has some bits of unscribed coating clinging to it. The result is a condition requiring further attention.

The best thing for tears is not to let them happen. The most likely moment of occurrence is immediately on commencing a line while attempting to get the point through the waxy coating. Tearing takes place when the pressure on the point, required to put it through the wax layer, is enough to put it through the soft intermediate layer also. Getting through is easier if there is some linear distance involved. Careful exertion of pressure over a reasonable distance works best. Making a mark in the surface comprises enough pressure. The tool operator can hope the point will progressively work its way through. If practical from other standpoints, going fast is better than going slow. Sometimes, while operating at a given pressure, the point makes a nice mark but doesn't go through. A very slight additional pressure, momentarily exerted and immediately released, may put it through. Slight additional pressure maintained steadily can easily result in ripping through both layers at once. At any rate, scribing requires less pressure than that required for breaking through the surface coating. Once the tool has penetrated the surface layer successfully, it is easy to backtrack to where the point had been marking the surface but not quite breaking through.

When tears occur despite all reasonable effort to prevent them, their damage can be kept to a minimum by a few simple steps. First, do not attempt to continue; stop immediately. Stopping is important because the tool by nature does not work its way out of a tear; it will only propagate the tear. Pick another sector of the line, start afresh, and work back toward the tear. At this moment the cartographer may be frustrated because he's



sincerely trying to do a good job. In this frame of mind he could easily rip through again. Patience is the only answer. Sometimes there is good luck, and the imminence of a tear gives some sort of warning—the tool may stop abruptly. If this happens, do not push the tool in an attempt to keep it going. Remove it and examine the affected area by running the fingers over it. If there is any roughness that resists prodding by a fingernail, a tear has already started. Do not continue from that spot. Go further down the line, start anew, work back to the stoppage, and join into it. Hopefully there will only be an almost imperceptible tick where otherwise it would have been an ugly tear.

Abrupt stoppage can be caused by a foreign particle, such as an eraser tailing, under the sheet. Sweep away any such particles, look for others, then examine for a tear.

Tears in short lines and closures are more difficult. In conditions of little adjacent space to run the scribe point, the best thing to do is make several repetitive short moves to take off the waxy coating a little at a time.

The cartographer may find himself ripping through more often than he thinks he should. This could be the case if the scribe point is out of vertical or not quite at a perfect right angle to the tabletop. Outage of .005" is enough to be a problem. The scribe tool manufacturer includes in his packaging a little nickel-plated metal block for establishing proper point adjustment. Simply loosen the thumbscrew and allow the point to slide out a little. Put the tool on the block and retighten. The tool then may or may not be in a state of optimum adjustment. This is easy to ascertain. Take a scrap piece of Scribe Coat and scribe spirals. While spiralling, deliberately increase pressure until it digs in. If the dig is at random in the circle of rotation, the tool is as well adjusted as it can be. If however it digs the same way each time, we must conclude the block

did not give optimum adjustment. Try to visualize what portion of the point is doing the digging. The legs too are adjustable; however it is well to exhaust all other alternatives first before disturbing the legs. It is possible for example that the point is dull; and a dull point can offer symptoms similar to those of a tilted point. Sometimes the addition of a layer of film to the block or to the legs is a sufficient corrective measure.

A dull point is indicated if extra pressure is required to start a scribe run; or by frequent digging, or sliding out of the desired course. Replacement is the only solution for a dull point.

There comes the moment when the mark of the good scribe operator is how well he can erase. A mistake can be "erased" by adding a thin layer of opaqueing fluid available for that express purpose. Care must be exercised not to put it on too thick as it can develop stress cracks and flake off. The use of wax crayon has been tried, and discarded as unsatisfactory because it can soften and smear under the heat and pressure of photographic exposure in a vacuum frame.

There are some operating procedures that are conducive to good scribing. The forearm flesh is a good pivot for smooth tool movements. But if the operator's shirt sleeve slips, the tool may also slip. Use of both hands instead of just one hand is often better. One hand would hold the tool while one or two fingers of the other hand would guide the point. The hand holding the tool is better located when it is close to the point rather than back toward the legs. Pressure control is easier to maintain this way. But holding in such a forward position does require extra care against tilting the tool.

Editor's notes :

- a) The author has offered to supply reprints of the above paper (English version) free of charge to anyone requiring a personal copy. Write to him at 3319 Navy Day Drive, Suitland, Md. 20023, USA.
- b) Previous *I.H. Review* papers on scribing techniques were :
Fostercote, a drafting medium on plastic. *Aeronautical Chart and Information Center, St. Louis, USA. Int. Hydrog. Review*, Vol. XXX (2), November 1953, pp. 49-54.
Plastic scribing. J.J. STREIFLER (U.S. Coast & Geodetic Survey). *Int. Hydrog. Review*, Vol. XXXV (1), May 1958, pp. 25-30.