

**METHOD FOR TRANSFERRING A CHART PICTURE
ENGRAVED ON A COPPER PLATE
TO A PLASTIC FILM AS AN ORIGINAL
FOR PLATEMAKING FOR OFFSET PRINTING**

by the Swedish Hydrographic Office

The Swedish Hydrographic Department was occupied, in the years 1955 and 1956, with the task of transferring chart pictures on their *copper* printing plates to *zinc* plates using plastic sheeting.

The method of printing used up to 1953 was entirely based on copper plates, but in that year a flat-bed Offset press was purchased followed by a second one in 1957, when the last chart printed from a copper plate was issued. New printing plates had to be produced and, as a result, the chart-image had to be transferred from one medium (copper plate) to another (plastic sheet). This was accomplished in the manner described below.

1. The copper plate should be carefully cleaned and all old ink removed.

2. A special ink is used to colour the plate. The colouring should be applied with a rather soft spatula e.g. one made of plastic, 4-5 mm thick. The colouring must be made very carefully to make sure that all the engraved parts are filled with ink. After colouring, the parts of the plate not used for engraving may be covered with a thin layer of ink. This ink dries quickly and the drying should not require more than 10-15 minutes. It dries even more quickly with the aid of a hot air fan (as used by hair-dressers).

3. The thin layer of superfluous ink on the parts of the plate not used for engraving is removed by hand because, when dry, the ink is like powder. When doing this, care must be taken that the ink is not removed from the engraved parts, particularly if the plate is worn down and the engraving has become shallow. The time required for colouring a plate of ordinary size (80 × 110 cm) is about half an hour including drying, and preparation for spraying, but not examination.

4. After assuring oneself that all engraved parts are filled with ink, scotch-tape is fastened along the edges of the plate to simplify the removal of the plastic film and to strengthen the film at the edges.

5. A plastic solution, which should be diluted with thinning, is sprayed over the plate with a spray-gun after all dust has been removed from the plate by means of a blast of air. The plastic solution should be

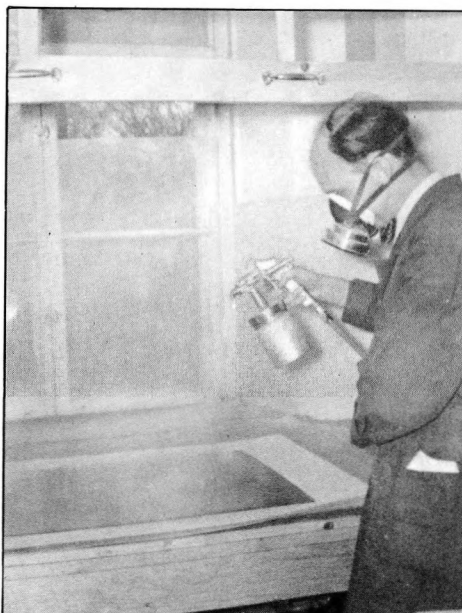


FIG. 1. — The operation when the copper plate lying in the closed hood is sprayed with a plastic solution. The operator must wear an air breather apparatus as a protection against the gas from the solution, which is sucked out by a fan in the closed hood.

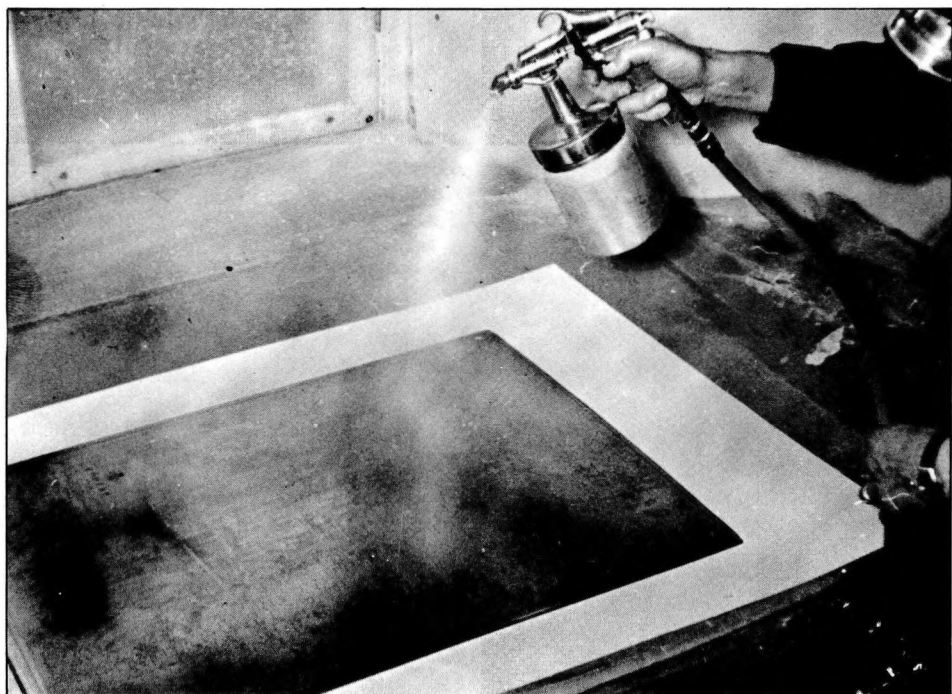


FIG. 2. — A close-up of the spray-gun.

sprayed freely to make it absorb the ink. Occasionally bubbles form, but they disappear in the intervals between spraying, which should not be recommenced until the bubbles have disappeared. When spraying, the spray-gun should be kept at a distance of 10-15 cm from the plate and moved evenly backwards and forwards across the plate first between the long sides, then between the short, then again between the long sides and finally again between the short (see figs 1 and 2). The plate is left to dry (in a ventilated closed hood) for about 15 minutes. This procedure is again repeated twice.

6. After spraying, the plate should first be allowed to dry in the air for about one hour and then in heat, e.g. from a non-radiant electric radiator, at a temperature not exceeding 60° C, until the following day. Heat should be used to make the plastic solution dry more quickly, as the film will then shrink less when pulled off the plate than if it is allowed to dry slowly in the air; in the latter case, it must be allowed to dry for several days before the film is pulled off.

7. If the plastic film has been dried with heat, the plate must cool off slowly before the film is pulled off, and the scotch-tape on the edges should be carefully loosened with the aid of a knife. The pulling off is then started carefully from one of the corners, then from the next corner etc. until only a square in the centre remains. The remaining part is pulled off by pulling evenly at one of the short edges of the plastic film (see figs 3 and 4). The film should always be pulled upwards and inwards.

8. After being pulled off, the film should be copied as soon as possible, as it has a tendency to shrink. The film is copied on a previously prepared

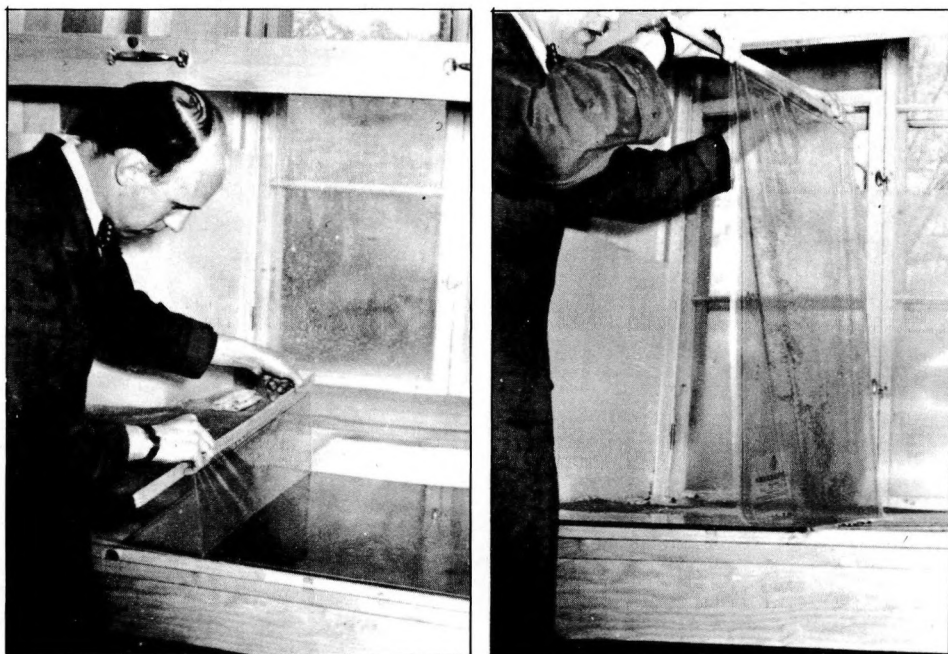


FIG. 3 and 4. — Different stages of the operation when pulling off the plastic film from the copper plate.

plastic sheet on which the necessary printer's corrections are made. The Swedish Hydrographic Department used Astrafoil for this purpose.

The necessary equipment consisted of :

- a) an air compressor
- b) an air cleaner with pressure reducing valve
- c) a spray-gun with angled jet
- d) a compressed air breather apparatus
- e) a closed hood
- f) a non-radiant electric radiator.

The total expenses amount to about 2 000 Swedish Crowns. The cost of the special ink as well as the plastic solution is trifling. Two to three copper plates could be manipulated in a day. This process is of a definite character. The plastic sheet with the black pull may be duplicated without limit whenever desired without any loss of value. Our copper plates are stored in reserve with the surface covered with asphalt enamel.