

## CHAPTER IV

### AFTER-TREATMENT OF THE FINISHED PRINT

THE film of ink on the dried bromoil print after the completion of the brush work is as a rule not very tender, except where much soft ink lies on the surface. It is not advisable, however, to put the print under pressure, as for instance in a printing frame, for under strong pressure the ink may still partially offset on the adjacent paper, so that the image is damaged. No pressure should be applied until after the removal of the fatty medium, which is described later.

When the brush work is completed, the whole surface of the bromoil print shows a slight gloss, caused by the fatty medium of the ink. The shadows show a stronger sheen, especially in those places where there is more soft ink, for soft inks contain more medium. The surface of the print, so far as the gloss is concerned, is like that of a finished gum print. But with the latter the gloss cannot be removed; when it is desired to get rid of the unpleasant property of gum prints, that the shadows are more glossy than the rest of the print, it is necessary to make the whole print glossy by painting it with a solution of gum. This is also the case with the carbon process.

*With the bromoil process, on the other hand, it is easily possible to remove the gloss entirely.* The shininess of a finished bromoil print is especially unpleasant

when seen sideways, but, in certain cases, it imparts depth to the picture and may be made fairly inoffensive by glazing the print. Prints which are to keep their gloss must be exposed to the air for some days, protected from dust, until the ink has completely hardened. Until this has happened, the surface of the picture, especially where the ink is soft, is sensitive and ought not to be touched.

**DEFATTING THE INK FILM.** — Before removal of the fatty medium from the ink, *the print must be absolutely dried out*. It must be so dry that it rings sharply when the finger is snapped against it. Also, the dish in which the defatting is to be carried out must not contain the slightest trace of moisture, otherwise trouble will be caused.

An easily volatile solvent of the fat, such as benzol, trichlorethylene, carbon tetrachloride, etc., should be poured into the dish, and the print immersed in the liquid and allowed to remain for some minutes with constant rocking. On account of the danger of fire from the vapors of benzol, no naked flame should be allowed in the room. Carbon tetrachloride (carbona), on the other hand, is non-inflammable; its solvent action, and that of the trichlorethylene, on fats, is much more rapid than that of benzol.

The film of ink is, as a rule, not damaged by the solvent, though care should be taken with prints which have been executed wholly or mostly in soft ink. With such prints it may happen that the ink is entirely dissolved in parts, or that irregular sharp lines and streaks are suddenly formed. Soft ink prints should, therefore, be allowed to dry for several days before they are defatted. By the use of very energetic solvents, such, for instance,

as trichlorethylene and carbon tetrachloride, soft ink prints, as a rule, are completely dissolved. *Benzol is, therefore, to be preferred in all cases.*

The print should be removed from the liquid without touching the ink film, softened by the solvent. This evaporates fairly quickly, and *now the bromoil print has an absolutely matt surface of great beauty.* It is here naturally assumed that the fatty medium of the ink is soluble in benzol, which is usually the case.

*The solution of the medium from the fatty ink, besides the removal of the gloss, has also the effect of fixing the surface of the picture and making it more resistant.* While the film of ink before the defatting is fairly tender, it afterwards has a stability at least equal to that of a pencil drawing. The surface of the finished bromoil print is generally at least as little liable to damage as the film of prints prepared by other photographic methods. It seems as if the very minute grains of pigment contained in the fatty ink are made firmly adherent by the drying of the somewhat tacky gelatine film and therefore remain fixed even after the removal of the fatty medium. It is only from places in which a specially thick layer of soft ink was deposited, that a trifle of pigment dust can sometimes be removed by light friction.

*The defatting is therefore a procedure which is advisable in most cases and only after this is the bromoil print actually complete.* After it has been carried out, the image consists of pure mineral pigment adhering firmly to the gelatine. It is self-evident that a print treated in such a way is absolutely permanent, provided that the inks used are non-fading, which is almost always the case. One can also subsequently moisten or

soak the print without any danger if, for example, it is to be mounted on cardboard.

RETOUCHING THE PRINT. — The defatted bromoil print is susceptible to the most far-reaching mechanical modification. The picture now consists, as already mentioned, entirely of extremely fine particles of pigment adhering to the film about as strongly as the lines of a pencil drawing. *This pigment can also now be treated with rubber exactly like a pencil drawing. The ink, as far as it was put on by degrees, can also be removed by degrees from any desired place by proper measures.*

In the finished bromoil print the deepest shadows are formed by a comparatively thick layer of pigment, while the lights have only a very delicate coating of ink. We are consequently able to diminish the thickness of the film by proper treatment, removing it layer by layer, so that the shadows become more transparent, or the film of ink may be entirely removed, so that the gelatine base is laid bare.

The best tool for this is a piece of a hard rubber eraser sharpened to a fine point with sandpaper or a file. It is also advisable to use a very soft sharpened eraser for treating very light places.

Every part of the print which is to be lightened should now be gone over with the point of the rubber in fine lines very close together. The ink powder, which is taken up by the rubber, must be removed from time to time by rubbing the rubber on the sandpaper, or it will be left on the print again in the form of dark lines. If gentle rubbing with the eraser does not have the desired effect, it should be used more energetically. Sometimes the ink adheres so firmly that the rubber must be used quite vigorously in order to remove it. On the other

hand, where soft ink has been applied, one must work very lightly, or more ink may be removed than is desired.

*Important details of the picture may be completely taken out with the rubber* without getting down to the paper, if the work is done carefully. Thus, for instance, unsharp figures in the foreground of a street scene, disturbing details in the background of a portrait, undesirable details of a landscape, such as telegraph wires, ugly poles, trees, etc., may be removed almost without leaving a trace behind. If this treatment does leave visible marks, they can be easily made to disappear with brush and ink.

For removing or lightening tiny spots or lines, or for removing brush hairs and similar imperfections left during the inking, one may use a sharp *lancet or penknife*, or a steel needle set in a handle. Yet in the use of these sharp instruments one must be careful to scrape the surface very gently and carefully, or the gelatine film may be cut, which leaves noticeable marks.

The possibility of removing the ink from the finished print in layers by the use of an eraser, without leaving any trace, gives the bromoil printer another means for modifying the tone values of the print at will. If preconceived ideas were not fully carried out in the application of the ink, because tiny places could not be properly worked out with the brush, or because they were overlooked, the desired change of tone values can now be effected; with the aid of the rubber, also, *especially effective lights* may be added to the picture.

*If, in the application of the ink, large areas were not quite uniformly treated, they can be corrected now without trouble. Dark spots of ink can be easily removed*

*with the rubber, and it is often easier to even out a rather broken surface with the eraser than with the oil-printing brush.*

Bare spots, white points, and other defects of the image, or places from which too much ink has been removed with the eraser or penknife, are best spotted with *water-color* of proper shade, or in the case of brownish-black prints, even with charcoal. The defatted film takes the water-color easily and places treated with it remain perfectly matt; on the other hand, *retouching with lead pencil should be avoided whenever possible*, as this always produces a certain shininess, which is rendered particularly prominent by the dull surface of the rest of the print. A bromoil print which has not been defatted may also be retouched in the same way, but the parts worked up with the rubber are then noticeable. Filling up spots on such prints is best effected with oil-printing ink, applied with a water-color brush dipped in heavy benzol so as to dilute it.

It is thus possible in the bromoil process to produce very comprehensive changes with rubber, needle and ink, without destroying the character of the picture. With some experience this work is done so quickly and easily that it is not necessary to retouch the negative at all, even with portraits. The removal of imperfections in the complexion or the softening of too sharp features can be effected much more quickly and with more certainty as to the effect on the finished bromoil print than on the negative, especially as retouching on the negative shows up unpleasantly in enlarging.

The possibilities of after-treatment of a bromoil print are manifold. Thus, for instance, by means of the eraser very natural appearing clouds can be rubbed into

the cloudless sky of a landscape not taken with an orthochromatic plate, if in inking the sky is properly darkened. In the background and subordinate planes of a portrait, a certain draughtsmanlike character can be attained by suitable delicate strokes with the rubber. Ugly lines of the hair or clothing which could not be suitably dealt with in the inking-up, can now be altered with a little skill. A dull landscape may be made more lively by picking out a few lights.

Finally, it may be mentioned that it is also possible *to change the color of the paper base of the print*, though this is best done before the application of the ink. Commercial bromide papers as a rule are only obtainable in white or yellowish tints. Another tone may be imparted to the paper, for instance reddish or bluish for certain effects; this is effected by swelling the bleached and fixed bromoil print in a dye solution which has been found suitable by preliminary trial with white paper. The paper fibers and the gelatine assume the desired color and the print after soaking is removed and worked up as usual; this staining may also be done with finished prints.

**REFATTING OF THE PRINT.** — As already mentioned, the finished bromoil print shows on its surface places with different degrees of gloss, since the parts of the picture which took a good deal of ink, as for instance the shadows, are more shiny than the rest. In order to remove these sometimes unpleasant effects, the finished bromoil print can be immersed in a fat solvent, which completely removes the glossy medium from the ink film. After the evaporation of the solvent the bromoil print has a perfectly matt surface.

Frequently, however, this complete dullness of the

surface does not please the worker, because, especially with soft ink prints, it causes a marked *loss of brilliancy*. It is thus necessary to choose between a brilliant surface with unequally glossy places, or a uniform matt surface. I have undertaken experiments to place in the hands of the bromoil printer a means of imparting to his prints any desired degree of gloss, after removal of the unpleasant uneven shininess. Attempts to obtain brilliancy by the use of ordinary varnishes failed. Whether the varnish was sprayed on or the print was immersed, there was always a certain damage to the surface, since the ink film, which lies rather loosely in the form of powder on the defatted soft ink prints, combined irregularly with the varnish and caused some trouble. I was finally successful with the following plan, which is a logical consequence of the nature of the bromoil print and the varnish inks used in making it.

Dissolve from 5 to 10 ccm of linseed oil varnish in 500 ccm of benzol (77 to 154 minims to 16 oz.). Then the defatted and perfectly flat print is completely immersed in this solution for one minute and hung up to dry. Perfect flatness of the print is necessary, otherwise troublesome markings are formed in drying, which, however, may be removed without difficulty by repeating the process. Irregularities may also be caused by supporting the print by the fingers on the back before hanging it up; the warmth of the fingers evaporates the solvent more quickly, so that spots are caused. The print should only be handled by the edges until it is dry.

After the evaporation of the solvent, the linseed oil varnish dissolved therein is very evenly distributed throughout the whole film of ink; this restores to the ink a part of its varnish which was removed in the de-

fatting, but more evenly distributed, so that now the whole print shows a gloss, which is hardly noticeable, but which considerably increases the brilliancy. If this gloss is not sufficient, more varnish should be added to the bath; if it is too strong, more of the solvent is added. In this way any degree of gloss desired can be obtained. If it is too strong, it can be removed again with benzol. When the bromoil print is to be retouched it should be defatted before retouching and afterward treated as just described, so that the varnish bath may also act on the retouched places.

If no retouching is required, then the defatting can be effected in the varnish bath, which then effects a kind of equalization, since the shadows rich in varnish give up the medium, while the other parts of the picture take it up.

By the use of weak varnish baths for after treatment of defatted bromoil prints, surfaces of velvety appearance may be obtained.

APPLICATION OF INK TO DRY PRINTS.—When the gelatine film has been swollen to the highest possible relief even the very soft inks take only with difficulty and in consequence frequently irregularly. Sometimes the formation of such places is unavoidable, especially when prints with very great contrasts have to be used. We are then forced to choose a relief which permits the inking of the darkest parts of the print. The warm water, or ammonia, bath requisite for this acts so strongly on the slightly tanned or untanned parts, that an excessive relief is obtained, and then the ink takes with difficulty or not at all. This most frequently happens with skies which are very dense in the negative.

Such parts of the print, resistant while it is wet, can,

however, be inked up without difficulty after the print has been allowed to dry. Then they are inked up with a brush, using an ink of the same tint and consistency as was used in making the bromoil print itself. The dry gelatine takes the ink quite evenly, and in this way any desired tone from the most delicate to the darkest may be obtained. By omitting to ink in suitable places, clouds may be imitated, and if necessary these may be worked up by retouching.

With polychrome bromoils, when the skies are too swollen, one should carefully remove all areas of ink which project from the landscape into the sky, and this is also advisable in monochrome work. The best thing to use for this, especially with complicated outlines, is a water-color brush dipped in two per cent solution of ammonia, which easily removes the obtrusive ink from the gelatine. Larger areas should be carefully rubbed with a point of wet linen or with the finger tip wrapped in a wet cloth. In this way the highly swollen parts of the gelatine are completely freed from ink; then the print should be dried and the sky inked up as desired in the manner described above.

The method of applying the ink to the dry film is valuable for obtaining other effects, as is more fully described in the next chapter, on bromoil transfer.

In bromoil, photographic printing has been enriched by a process that can fulfil every wish of the photographer who is striving for artistic results. It combines in itself all the advantages of previously known processes, but surpasses them all in the possibility of general and local control, and especially in the fact that control can be effected at will at any desired step of the process from the beginning to the end, that it need not

extend over the whole print but may be limited to particular parts, and that the results of the control are visible immediately, during the work. Not the least important, however, is the fact that the flexibility of the process enables one to immediately repair any error without impairment of the print. When it is further considered that the bromoil process is independent of the size of the negative, that it permits the operator to use any support, any structure, any grain and any color, we should be warranted in saying that the bromoil process is the process of the future for amateurs striving for artistic results.