COLOVR ETCHING

A PRACTICAL TREATISE BY HUGH PATON, A.R.E.

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COLOUR ETCHING.

A PRACTICAL TREATISE

BY

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PREFACE.

THIS chapter on "Colour Etching" has been written as a supplement to the larger work, "Etching, Drypoint, Mezzotint," of the second edition of which it forms the chief feature. But it has been suggested from many quarters that it might, with advantage, be published separately, in view of the interest which has been manifested in this particular branch of etching in the last few years. In adopting the suggestion, I do so the more readily that, as far as I have been able to trace, there is no complete practical information on the subject to be found anywhere. The encyclopædias are silent, and such scraps of information of a practical kind as I have been able to pick up have been culled from many sources, and have never amounted to more than a general hint at any time. There is an interesting chapter in Singer and Strang's book, "Etching, Engraving, and the other methods of printing pictures" (surely a curious title), and in Mr. Hind's book, "A Short History of Engraving and Etching," there are some interesting references to the whole subject. In both cases the matter is interesting from the historical point of view, but hardly from the practical.

In these circumstances it is hoped that the present little volume will prove of practical service to the etcher who desires information on the subject of "Colour Etching." The circumstance of separate publication explains the references in the text to what has been done before, and the absence of minor details, with which the reader of the larger work would be already familiar. Any reader desiring further information on methods of procedure not explained here is referred to the second edition of the larger volume.

I feel constrained to add a word here with regard to the illustrations. The plates have been steel-faced, of necessity, with the result that the proofs are distinctly harsher when compared with the earlier ones. The grain is more apparent and aggressive, and there is a distinct loss of quality. The reader is requested to allow for this. When printing from the copper, he will find the result much superior.

Manchester,
September, 1909.

The Colour Etching.

The Colour Etching.

Has the colour etching come to stay? Has it only such qualities as will assure it a cheap and ephemeral popularity, or has it in it something which will survive the early enthusiasm of the collector, and make it a delight to linger over, a thing of beauty to put upon our walls and live with?

The subject has come to the front since this volume was first published, especially in the last few years, and, in a practical work which professes to guide the student of etching, some reference to it is necessary, if only for completeness' sake. It may be well, therefore, to inquire into the principles upon which the colour etching, as we have seen it of recent years, is executed, how far these are sound or otherwise, and to suggest to the reader the direction in which his experiments may be made with advantage. For it must be acknowledged that colour has its fascinations, and, provided a plate be executed on right principles, I see no reason why the colour etching should not form a part, and an interesting part, of every etcher's experience.

A doubtful welcome.

There is no doubt that some authorities, both practical etchers and writers on etching, have hesitated to give the colour etching a cordial welcome, and this is not to be wondered at, for undoubtedly much of the work which has been shown in the dealers' windows, and in exhibitions, has had nothing in it to attract beyond mere

novelty. It is only in the last two or three years that we have had full opportunity, in the provinces at any rate, of forming a clear idea of what has been accomplished in this direction, and of its claim to consideration. My first visit to a collection of colour etchings, as such, was a great disappointment, and subsequent visits only confirmed the original impression.

As it is.

What struck one most was, not merely the large size of the plates used, but especially the empty character of the result. Plates of twenty-four to thirty inches were the rule rather than the exception, and, as might almost have been expected—for large plates are most unsatisfactory, as a rule—the majority of the prints were thin and poor, often crude, and entirely wanting in quality. The reason for this was not far to seek, and it lies at the root, I have no doubt, of the dissatisfaction felt by so many etchers. The plates were executed in etched line chiefly, but the fundamental mistake was made of leaving large spaces untouched by the needle and the acid, amounting to three-fourths of the whole, perhaps, often more. These included the sky, foregrounds of water, and other light spaces, and the attempt was made to print from them sufficient colour for the end in view. But the polished surface of a copper plate does not naturally hold colour; it can only be made to do so by clever "faking" on the part of the printer, and it is in this attempt to achieve the impossible, by making the plate yield colour which it does not naturally carry, that the mistake lies; it is to this that the thin washy result, of which one complains, is due. This must be avoided by the student at all hazards.

As it should be.

The emptiness of which I have spoken characterized quite three-fourths, nay more, of the work shown, but I

am glad to be able to add that there were a few exceptions. In marked contrast to the great bulk of the work was that of certain men, of whom I recall the late Fritz Thaulow, F. J. Luigini, and Manuel Robbe. These men, it appeared to me, worked on the legitimate and only possible principle of putting into the plate all that they wished to get out of it, of biting, that is to say, definite tones for all the colour they desired in the proof. All large, empty spaces were avoided, and only in the case of pure white, such as ducks in a pond, or the wall of a whitewashed cottage, were spaces of the polished copper preserved, and then always in small proportion to the rest of the plate. They were not intended to be coaxed into holding colour, but were meant to be wiped clean, and to print white. This, of course, is the process of aquatint.

Now this leads to a point, the consideration of which will enable us to arrive at an answer to the question with which we started, viz.: whether the colour etching is of lasting quality? And here, perhaps, it will be better if we define our terms. By a "colour etching" we mean, of course, the print from a plate, or series of plates, intended to be printed in colour, instead of monochrome, and executed to that end. But, if we are to arrive at a clear answer to the question, we must dismiss from our mind the somewhat restricted meaning which many have learned to attach to the word "etching," that of a print from a plate executed in *line*, be it the etched or the dry-point line. It is noticeable to what an extent in recent years intelligent writers have used the word in this sense. But the line etching, which retains, and rightly so, considerable spaces of the copper plate untouched—for all high lights in fact—is not adapted for printing in colour, as already shown. We are therefore driven to the

Definition of the term.

conclusion that the colour etching should be executed in tone, and not in line; it belongs to the department of the "*colour print*."

Biting in tones.

This principle accepted, confusion of thought is at an end, and we arrive, as it seems to me, at the only possible answer to our question, namely, that, so far as the colour etching is printed from plates executed in bitten, or other suitable, *tones*, the work is executed on sound principles, and the result satisfactory. There always remains, of course, the question of colour, for a good plate may be badly printed; but this is not the place to enter upon that. When I speak of the result as "satisfactory," I mean a print from a rightly executed plate, of solid quality, good colour being taken for granted. Most etchers work in colour as well as in monochrome—otherwise than on copper, I mean—and the right printing of a plate may be safely left to the colour sense of the "painter-etcher" who executes it.

Aquatint is best.

There are, of course, other tones than that of aquatint, the only etched or bitten tone: there is that of mezzotint, which, as we know from the old colour prints from the worn mezzotint plates of the ante-steel-facing days, was much used for the purpose of printing in colour. The glasspaper ground, too, which I have recommended in previous pages as a useful substitute for the mezzotint ground, for the purposes of the student, might be usefully experimented with. But it seems to me that aquatint offers the tone most suitable, and I recommend it to my reader as that best adapted to his purpose for experiment in colour printing. For one thing, it is easy to produce; no expensive tool is required, and no laborious rocking of the plate. It is essentially, too, a method of etching, an etcher's process more strictly speaking than is mezzotint.

PLATE I. "NIGHT."

My own working out of the problem has been in this direction, and the method has been used for the production of the plates which form my two illustrations.

Plate I. "Night."

The ground.

Now let me describe, as clearly as possible, how the plate for the first illustration was produced. We may consider afterwards any points arising out of the method used, and enlarge upon them, with greater advantage because with some knowledge. The plate used was of polished copper, the same in every way as that used for etching in line. It must be cleaned with turpentine and a rag just before using, and be free from dust. To make the ground, powder a couple of ounces of black resin, and pass it through a small fine sieve, such as house-wives use sometimes for pouring the tea through. Either white or black resin will do, though some authorities claim that black is better. Put aside the coarser residue in a little heap, and powder again until all has been through the sieve. It is then ready for use. Now take a wooden box of suitable size, say eight or nine inches deep, and large enough both ways to leave plenty of margin all round the plate, knock the bottom out of it, and tack over the top a piece of fine close muslin, such as a good linen handkerchief, the finest you can get. Spread the powder over this in a thin layer, so as to cover a space greater than the size of the plate, and, placing the latter on a clean sheet of cardboard or stout paper underneath the box, play over the powder with the tips of the fingers as equally as possible in every direction for a few minutes. From three to five minutes will suffice. The plate will then be found covered thickly and evenly with a white

Laying it.

frosty deposit of resin dust. It can be examined at any moment by lifting the box aside; gently, so as not to disturb the ground, but make a practice of working in a place free from draught. When the plate is sufficiently covered—and the dust should be thick enough to destroy the colour of the copper—remove the plate carefully, and place it upon the heater. This should be ready heated to a degree greater than is required for printing, considerably hotter than the hand could bear to touch. In a few minutes the white frosty appearance goes off, and the whole is of the colour of copper. The plate, however, should not be removed yet, or it will be found that the ground comes off readily in the biting: the resin is not yet hot enough to stick. The plate should remain as long again perhaps. Watch it in a good light until the particles glisten like dew. This indicates that the resin is thoroughly melted, but you may linger for another minute to be on the safe side. If it be left too long, the resin runs, and becomes a varnish when dry, through which the acid cannot penetrate. You may require to make two or three attempts before it is just right; the above is as near a rule of thumb as can be given. Wait for the glistening of the particles of resin, using a magnifier if necessary. Then remove the plate and allow to cool. It is now ready for use.

Fixing it.

Take a sufficient quantity of the acid you use habitually for etching, and add a little water. It should not be quite so strong as usual, as there is more copper exposed, and it bites more quickly. Besides, it is desirable not to bite too rapidly, or the ground may come off in places. If you add about a third of its bulk to the etching acid, it should be just right. If you are making it fresh, take one part of acid to two of water, or to three of water if the weather be hot.

The acid.

Had it been necessary to preserve any sharp whites, these would have been stopped out before the first biting. But it was judged advisable in the case of this plate to leave the moon, the only high light, till afterwards, as a stopped-out light is very hard, and this it was desirable to avoid. A band of acid, perhaps an inch wide, was first placed along the top of the plate, with the aid of a little saliva and a feather, and edged down with the feather a quarter of an inch at a time, every half minute or so. When the lower part of the sky was reached, in about a couple of minutes, the acid was swept over the rest of the plate, as there was no need to preserve any high-lights in the foreground. It was then allowed to bite for some three to four minutes, when it was tipped off into the bath, and the plate washed in water and dried with blotting paper. The acid begins to show a light blue-grey tone in about half a minute, if in right working order. This should be frequently removed with the feather, to keep the biting even.

The first biting.

After the first biting, the general outline of the trees, hedge, cottage, and bushes on the right, was lightly sketched in pencil on the plate. A soft pencil must be used, for a hard one would scratch the ground. The whole of the sky was then stopped out, also one or two lights in the mass of trees. Then the whole lower portion of the plate was bitten for three or four minutes, after which the lighter edges of the tree masses and the railing were painted out, and a third biting of the same length as the second was given. Toward the end of the third biting, light spaces began to show in some parts of the plate among the darks of the trees and hedge. This was due to the ground giving way in small patches, but by this time the tones were well advanced, and a little irregularity

Sketch outline.

Further bitings.

in the darks would be an advantage rather than otherwise. After this third biting, all the remaining work on the plate was stopped out, with the exception of the strongest darks along the hedge, and under the mass of trees. They were then submitted to a fourth, and final, biting of the same length of time, and the plate was completed. The ground and varnish were now cleaned off with turpentine, and the plate was ready for a trial proof in black. The resin ground is more tenacious than that used for etching, and if necessary the plate may be warmed on the heater for a minute or two, in order to remove it entirely. The whole biting covered from fifteen to eighteen minutes.

Cleaning off.

Plate II. "The Tramp."

Differently executed.

The second illustration has been executed, as far as possible, by means different from the first; not as to the biting, which was much the same, but on other points of detail. The ground used was the liquid one, (of which more presently), the material of the composition was more precise in character, requiring more time and care in stopping out, and the scraper and burnisher were used, the latter freely, to reduce over-bitten passages. In all these points it is different from Plate I. The method of printing was also different, to suit the circumstances of the plate.

The acid.

My first experiments with the liquid ground resulted in the ground being all bitten away: it seems to be somewhat less resistant than the dry ground. The acid was therefore weakened somewhat, say to about one part in four, and longer bitings given, of about ten minutes each. It is unnecessary, perhaps, to describe the execution of Plate II in detail as fully as before, but I may summarize it as follows:

The bitings.

First Biting: The whole plate bitten for ten minutes; the sky and water were then stopped out, the reflections being preserved.

Second Biting: A graduated biting given, from ten minutes on the left to five on the right; after which the distant buildings were stopped out, also the lighter reflections.

Third Biting: This was the same as the first, in order to bring out the bridge from the distant buildings; after this all but the steamer and the barges painted over with the varnish.

Fourth Biting: Ten minutes, or perhaps a little more, in order to bring the steamer and barges well out from the background.

Re-grounding.

When a proof was taken, the hull was found to be rather wanting in body, so the plate was re-grounded, and all but the strongest darks stopped out again, as for the fourth biting. A brisk biting of perhaps twenty minutes was then given, and the plate was finished. When grounding for the second time, the plate should be tilted so as to run off the surplus ground in a direction crossing that of the first grounding. The effect of the second ground over the first may be seen by examining the illustration with a magnifier.

The graduating of the third biting secured the receding of the warehouses on shore, also of the hull of the steamer, which otherwise would have been flat. The cordage of the rigging was touched in with drypoint, the high light on the captain's bridge obtained by burnishing, and some cleaning up of the edges of the masses done by the same means. The spout of steam was stopped out after the first biting, and finished with the burnisher.

The tracing.

A tracing was used for this plate, as the subject required some precision of treatment, a sketch outline

being made on tissue paper, and the back rubbed with chalk. The outline was traced on the plate previous to each biting, except the first. The tracing must be used every time, except possibly before the last biting, as the masses do not show clearly until they are strongly bitten, and the chalk outline is necessary for guidance in stopping out.

PRINTING.

Printing the plates.

Now our plates are ready for printing. It facilitates matters if two or three small dabbers be made, say an inch and a half or a couple of inches across, to be used one for each colour. A supply of paper stumps will also be required. A further useful idea is to make a tracing on a piece of thin cardboard, such as thin Bristol board, a little larger than the plate, of the outline round the mass

Plate I.

of trees in Plate I, the foot of the hedge, and the bushes on the right. The trial proof may be used for this purpose. Then with a sharp penknife cut through the cardboard, following the outline. This gives two pieces of board with which each part of the plate can be covered while the other is being inked. Then cover the lower half of the plate with its corresponding piece,

Application of the colour.

adjusting it carefully to its position, and proceed to cover the sky with the blue, which is ready mixed on the ink slab, using one of the dabbers in the usual way. Keep this cardboard and this dabber for the blue. The thickness of the board prevents the dabber carrying the ink quite up to the outline, so, still holding the card in place, take a paper stump with some colour on it, and run it round the edge of the cardboard. The colour must be rubbed *into* the plate, otherwise it only skims the surface, and a white mark would show in the print. Sometimes

this may be managed better by placing the cardboard a little within the edges of the masses to be protected by it, but only when the outline runs more or less in one direction. Now remove the card, and rough-clean the sky with a piece of the stiff printing muslin; do not at this stage finish it off ready for printing. Instead, turn

Cleaning off.

down the upper piece of card over the sky, and proceed in the same manner to ink with the olive the lower half of the plate. Here again a stump must be used to bring the olive up to the blue. The two colours should touch, and may even overlap a trifle, without any harm being done. If they do not quite meet an irregular whitish streak will show along the outline, and the proof be spoiled. Then rough-clean the olive, as you have done with the blue. This time keep the card in place while you do this; it prevents any of the olive being carried into the sky by the muslin. Then proceed to the final polish. I was told recently by a well-known painter-etcher of very large experience that each colour should be separately applied and cleaned off "hard," no retroussage to be used. It is possible that with very stiff inks the advice is good, but my experience does not quite bear this out. With retroussage I find that the difference of values in the olive is to some extent lost; on the other hand, by cleaning off roughly first with the stiff muslin, and finishing with the hand, as is usually recommended for aquatint, the proof gives a somewhat hard, dry result, in which the grain is prominent, and the whole wanting in quality. I have found it best to finish off by polishing the plate with a circular movement, using a small ball of the stiff muslin for each colour, and treating the edges carefully. This preserves the difference of values in any given colour, and avoids the harshness of the hand-finished

Printing.

proof. The plate is now passed through the press in the usual way, using the paper damped as for an ordinary etching, and proceeding in every other respect as usual.

Treatment of small lights.

In the stopping-out of a few small lights in the mass of trees, I had in view the printing of these in blue, so as to carry the sky colour through, but on so small a scale this was found to be impossible. The cleaning off of one colour, however carefully applied, drags it across the other, entirely overwhelming it, and such small spaces cannot be preserved in a colour different from that which surrounds them. But on a large scale this would be quite possible, and would be assisted by cutting such small spaces out of the lower piece of card, stencil fashion. It is probable that almost any plate, however intricate, could be managed, as to the printing, by a combination of the cardboard outline and the stencil principle, though it is quite possible, with very large plates, and large spaces to deal with, that the method would not be necessary, for in such case the colour might be applied direct, without any need for a stencil. For plates of moderate size, however, it effects a saving of time, and is less tedious than the careful application of colours with the stump or the finger, which would be otherwise necessary.

Plate II.

In the printing of Plate II, the problem was somewhat different. Instead of separate considerable spaces for each colour, there were two small spaces of red to insert in the grey. This it was found could be managed in either of two ways, the former of these being the better for a small plate, such as this. The plate was first inked all over with the grey, and roughly cleaned off with stiff muslin. Then the colour from the funnel and the lower part of the hull was removed with the point of a clean paper stump, and the red applied by the same means. It

is not easy to remove the first colour entirely, though, as happens in the present case, the presence of a little of the grey underlying the red prevents crudeness, and there is no harm done.

The stencil.

The alternative method is as follows. Trace on a bit of cardboard, the size of the plate, the two spaces of red, and cut these out so as to make a stencil. Make a second tracing the same as the first, and cut away the card except the two red spaces, joined by a strip of the card, so as to make one piece. Then, placing the latter over the parts to be reserved for the red, proceed to ink the plate with the grey, running the stump round the edges of the card, as before described. Next remove the card, and carry the grey with the stump over the hull where it had been protected. This is quickly done. Proceed to roughly clean off the grey before applying the red. After that, using the stencil, apply the red with a stump to the two parts reserved for it, and proceed to finish off with the muslin. Some care is required to avoid carrying the red into the grey. By this method the red is preserved in a purer condition.

It only remains to be added that, on so small a plate as has been used here, it is difficult to avoid some mixing of the colours, but on a larger scale the method would be quite effective.

Colours required

The materials required for printing in colour are the same as for monochrome, with the addition of some dry colour, obtainable from the local colourman. Not many colours are required. Theoretically, of course, a good blue, yellow, and red should suffice, but in practice they are not enough. Experience will probably show that two blues are necessary, say cobalt or ultramarine and Antwerp blue, two yellows, such as lemon yellow and

raw sienna, vermilion for the red, and a good dark brown, say burnt umber. The last is probably in stock already, and is required to give body to the darks. It may be used in all *warm* dark tones; the Antwerp blue may be trusted to account for the cool ones. The usual Frankfort black may also be used on occasion with advantage. A limited, but sufficient, range of colour inks, ready mixed in tubes, is supplied by the dealer in etching materials, and these are certainly useful. But make a practice of mixing your own inks as required. They should be made fresh every time, using the same thin burned oil as for black. In other respects, as to the rags to be used, for example, the damp paper &c., proceed just as usual.

Paper.

A toned paper is, as a rule, better than a white. For general purposes a toned Dutch hand-made paper is good. I have used Van Gelder paper habitually for some years, and find it excellent. It is of similar character to the "Arches" paper, formerly recommended. Some of the toned O.W. papers also are good, and may be more easily obtained perhaps.

* * * * *

The stopping-out varnish.

Having now disposed of our plates, one or two points may be touched upon with advantage, as they are of general application, and may usefully be kept before him by the colour etcher.

The stopping-out varnish used was the same as I have recommended for ordinary etching, namely, that made from liquid etching ground, with a few drops of japan varnish added. It is usually recommended to use japan varnish thinned with turpentine, and sometimes this may be advisable. But it will be seen that the softer varnish has its uses, when I add that the whole of the work of

Plate I, the grounding and fixing of the ground, the four bitings with three times of stopping out, and the taking of a trial proof, was completed within a couple of hours. On the other hand, the japan varnish requires about an hour to dry, while that used dries at once, and can be submitted to the acid in a minute or two, and had the former been used here the execution of the plate would have required five hours instead of two! Of course, in a plate which required much stopping out of intricate detail, a proportionately longer time would have been necessary. Such was the case with Plate II, which required more precision.

There is another consideration which may usefully be borne in mind, namely, that the softer character of the etching ground varnish possibly allows a slight giving way under the action of the acid on the edges of the masses, with the result that these are less hard than if the japan varnish were used. I have not worked in the aquatint process sufficiently to say with authority that such is the case, but certainly a comparison of these plates with that already used to illustrate "aquatint" shows that the edges here are not so sharp as the stopped-out edges in the former plate. It is only right to add, however, that quite possibly this is due to the ground in these plates being of a coarser grain than that used in the other case.

Scraping and burnishing.

After Plate I was completed and a proof taken, the moon was introduced by means of the scraper and burnisher. Both these tools must be used cautiously, the former especially, for the grain in the plate is not strong, and is soon removed. In this case the result is better than if the moon had been stopped out from the beginning; the edges are less hard. With this exception the plate

has not been touched in any way. It is true that some modulation of the tones might have been introduced by means of the scraper and the burnisher, but, as long as the plate was fairly satisfactory as it stood, I thought it better to use it just as it was; it makes a better object lesson. It may be said here, however, that with the aid of the two tools some improvement might be effected, some light showing under the trees for example, and perhaps a little lightening of the ground in front. But, to have carried the blue of the sky through under the trees might have led to difficulty in printing, and I was hampered by one or two considerations; the small size of the plate made simplicity of treatment desirable, while simplicity of colour effect was equally desirable from the point of view of economy; the cost of printing a complicated plate, even had such been possible on so small a scale, might have made it impossible for the present purpose. I aimed, therefore, at a broad effect for printing in two colours, capable of the simplest treatment, and, with this in view, Plate I was left untouched by the tools named above.

In Plate II, on the other hand, the material dealt with was more precise in character, and the use of the scraper and burnisher, the latter especially, was to some extent necessary. A fair amount of pressure may be used with the burnisher when it is desirable to reduce a tone, but when cleaning up the edge of a mass it must be used with the greatest care; not so much in the reduction of an over-bitten part, but lest a neighbouring light tone be reduced to white, when such is not desired. For example, on the edge of the roof of the principal warehouse, and on one side of the distant chimney, this tool was used; to correct the level in the former case, and to remove a

PLATE II. "THE TRAMP."

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PLATE II. "THE TRAMP."

slight irregularity, due to careless stopping out, in the latter. The over-bitten parts were reduced easily enough, but at the expense of the light sky tone in the immediate neighbourhood, which showed white patches where such were not wanted. These were corrected with some difficulty, by the use of the needle point, used like a stippling tool. The point makes small holes in the copper, the burr of which must be removed in the lighter tones; in the stronger ones it may be retained sometimes. This process is most useful for the correcting of small portions of the plate, especially on the edge of a mass or tone; it was used, for example, on the mast of the steamer, and on the sail of the largest barge, as well as on the sky at the two points already indicated. It might also have been used to correct the damage in the ground at the bottom left-hand corner of the plate, but that has been retained for a purpose, to be mentioned presently.

Stippling.

The burnisher was also used to sharpen the white streaks on the steamer's hull, and down the bow, these having been imperfectly stopped out.

The scraper was used to reduce the tone of the funnel, which was a little over-bitten. The tool was used very lightly.

Before departing from this part of the subject I may point out that the plates have been executed entirely by stopping-out. I formerly advocated the application of the acid to the plate with a brush as the method which personally appealed to me; the application of the acid by that means, in a succession of short bitings, somewhat after the manner of the water-colourist, gives, I think, a more artistic result; there are no hard edges, it is less tight and proper, so to speak. But it must be remembered that here we have been working with a different end in

Stopping-out *v.* brush-work

view. According to the principle we laid down that tones should be bitten for all the colour required, it was necessary that the plates should be bitten all over; there were no large spaces of white to be left as in the former case. For this reason partly, and partly on account of the small size of the plates, the stopping-out method was certainly the better for the end in view.

The tones for light colours.

In the biting of an aquatint plate for printing in colour, a consideration steps in which requires attention, and that is the difference in the density of the pigments which are to be used. In the etching of an ordinary plate for printing in monochrome, the white paper suffices for all high lights, it is part of the "arrangement in black and white," but, for colour printing, even high lights must be bitten with a strength of tone sufficient to hold the colour required. When trial proofs of the plates for the illustrations were taken in black, they were found to be of much too heavy a tone in the sky, but, when printed in the grey-blue required in either case, they proved to be of the right strength.

To make this point clear, let me suppose that we are searching for the effect of a lighted lamp at night, such as Whistler in his etching, the "Street at Saverne," rendered with the full range of colour, from the white of the paper to the strongest black. We should render this in colour, let us say, with a brilliant yellow for the light of the lamp, down to a deep neutral grey. But, if we stopped out the high lights, as for monochrome, the result in the proof would be *white*, not yellow. Therefore, in treating yellow and other light tones, allowance must be made for the amount and density of the colour required. All dark tones must be bitten as strongly as for monochrome, and all light tones a tone or two darker. I use

the word "density" here, not so much in the sense of degree of *opacity*, as degree of *darkness*. Blue is denser, or darker, than yellow, but not so dense as black. The tone of the skies in both plates has been more strongly bitten than it would have been for black, but the red of Plate II has been bitten more strongly still, otherwise the amount of colour held by the plate would have given a feeble result.

The use of several plates.

A careful examination of the plate marks, at an exhibition of colour etchings, shows that most of them, nearly all in fact, have been printed at one impression; a very few show traces of more than one printing. Most of the plates being, as I have already said, very large, there is no inherent difficulty in this. But it remains to be said that the use of several plates, one for each colour, has some advantages. For one thing, the result is more certain; each plate is bitten for its own colour only, and there is no accidental carrying of any colour beyond its proper boundary. The cleaning off must be done so that no colour is left on the untouched spaces of copper. For some purposes—such as publication, in which case a large edition is required, and it is desirable to send the work to a printer—a uniform result is obtained better in this way. It is conceivable, too, that some kinds of effect could be obtained better by the use of two plates, such, for example, as a pattern of dark tree trunks and branches against an evening sky. The sky, being a case of biting in light tones, might be carried over the one plate, to be used for that alone, without the necessity of stopping-out the tree masses, while the strong dark tones of the trees, executed upon another plate, would overwhelm the lighter ones of the sky. This would thus be made to show through in a way difficult, if not impossible, to obtain with one plate only.

Registration.

The plates must be of exactly the same size, and the "registration"—the correct placing of the paper on the plate for the second printing—must be carefully attended to. This is best done by marking the position of the paper on the underlying sheet of cardboard upon which the plate is placed for printing, before it is lifted from the first plate, but after it has been passed through the press. This is important, for the damp paper stretches quite perceptibly in passing under the roller. I have tried the plan of using a sheet twice as large as necessary, and stopping the press as soon as the first plate was through. The paper is held immovable while the plates are changed, and on reversing the press for the second plate, the second print was expected to correspond exactly with the first. But it did not; as a matter of fact, there was a quite perceptible difference of a sixteenth of an inch, on a plate of five or six inches long only. I am told that on a plate of twenty-four or thirty inches the paper will stretch a quarter of an inch.

But, quite apart from the difficulty in obtaining good registration, the printing of a second plate over the proof of a first, while it is still wet, never gives a good result; the friction rubs the damp ink of the first printing, and is destructive of all quality. It is a serious disadvantage attending the use of several plates that the paper must be dried and re-damped before each successive printing. This involves an expenditure of time and trouble quite out of proportion to the result, always excepting the printing of a large quantity at the hands of a professional printer. *He* can find the time and patience required, for he is paid for them. It is the poor, and often unpaid, artist who finds life too short! For my reader's purpose, therefore, I recommend the use of one plate, inked *à la poupée*, and printed at one impression. There is great delight in experiment with a colour plate, and accidental results are sometimes unexpectedly good!

The dust ground.

The method followed for laying a dust ground of the finest kind is to place a quantity of finely powdered resin in a special box, which, for large plates, should be two and a half feet high, and wide enough both ways easily to take in the plate. This box is fitted with an arrangement of fans attached to a shank, round which a cord can be wound, and passed out through a hole in the side, in such manner that the fans can be made to revolve and stir up the dust ready placed in the box. Then the plate is inserted by a slit near the foot, and left for half an hour for the dust to settle, when it is found to be covered with a very fine ground; this should be fixed as already described. The objection that I have personally to the fine grounds is that they are too tight in the result; I prefer the coarser grains.

The liquid ground.

There is a method of depositing the ground in liquid form, which should be experimented with, though it is somewhat difficult to manage well. It is especially useful in the case of large plates, when variety in the size of grain may be desirable: a fine one for the sky, and medium and coarse grains for the middle distance and foreground respectively. I have used this ground on Plate II for instruction's sake. To make it, place an ounce of resin in a half-pint of pure spirit of wine, shake it until dissolved, and allow to settle. This is too strong for general use, so place a portion of it in a fresh bottle and add an equal quantity of the spirit. Then to a second portion add twice its bulk of spirit, and to a third portion three times. (The second strength was used for Plate II.) These will give grains of three distinct sizes;

the greater the proportion of the resin the coarser the grain. The very finest grounds can be obtained in this way, also exceptionally coarse ones, which are useful on occasion. A portion of the original solution may be retained to experiment with in this direction. The

Its application.

liquid ground may be applied to the plate held at a slight slant, with its lower edge over a dish to receive the surplus, from which it can be poured back into the bottle. The drops should be continuously wiped away until they cease. It is usually recommended that a small trough of tin be made and kept for the purpose of receiving the surplus ground, and some such method would certainly be advisable for large plates. As the spirit evaporates from the plate, the resin settles in a grain which is more or less round, (indeed its shape can be made to vary by the amount of slope at which the plate is held), and is of fine quality in the print. One trouble attends this method, namely, that the granu-

Irregular granulation.

lation is apt to be irregular near the edge of the plate, and it is advisable to use one somewhat larger than is required for the subject, for it will be found necessary to stop out quarter or half an inch all round the edges, in order to get rid of this. There is no particular objection to doing so, perhaps, rather the contrary, for a margin round the plate helps to set it off. But the irregularity of granulation takes two forms; there is usually a narrow zone of it close along the edges of the plate, which can easily be disposed of by stopping-out, and a more serious one is a wave-like mark, which sweeps round the plate at some distance from the edges. When this appears, clean off the ground and try again. Near the bottom left-hand corner of Plate II a portion of such a mark is shown, and has been retained in order to

point out the nature of the danger. It will be observed that the thick edge of the wave prevents the formation of the grain; the ground here has become a varnish, and the acid cannot penetrate it. It is to avoid this that the method of holding the plate at a slant, when applying the ground, is recommended. The liquid runs quickly and evenly across the plate. When it is applied in the same manner as the liquid etching ground, it must be run smartly to the four corners and poured off quickly. This was done for our illustration.

No heating is required for the liquid ground; the evaporation leaves the resin firmly adhering to the plate, which must be left for at least an hour to dry. I prefer to lay the plate aside for several hours, or, better still, over night. The ground may be tested by scraping it at the edge of the plate with the finger nail; if it give a crisp dry powder, it is ready for use.

From all the foregoing it will be seen that the production of a colour etching is a combination of the work of the etcher and that of the painter. I am told that a large, elaborate plate may take so much time for the inking that only three or four proofs are obtained in a day's work. On the other hand, I obtained four or five proofs of my little plates in the hour. My advice to the reader would be to devote his attention to simple colour effects at first, using only two colours and choosing simple compositions of loose material, as in Plate I, which do not require any intricacy in treatment. In this way he will get a thorough hold of the method before attempting the more difficult problems.