

ETCHING.

DRYPOINT.

MÉZOTINT.

à la

noyau

à l'eau

of the

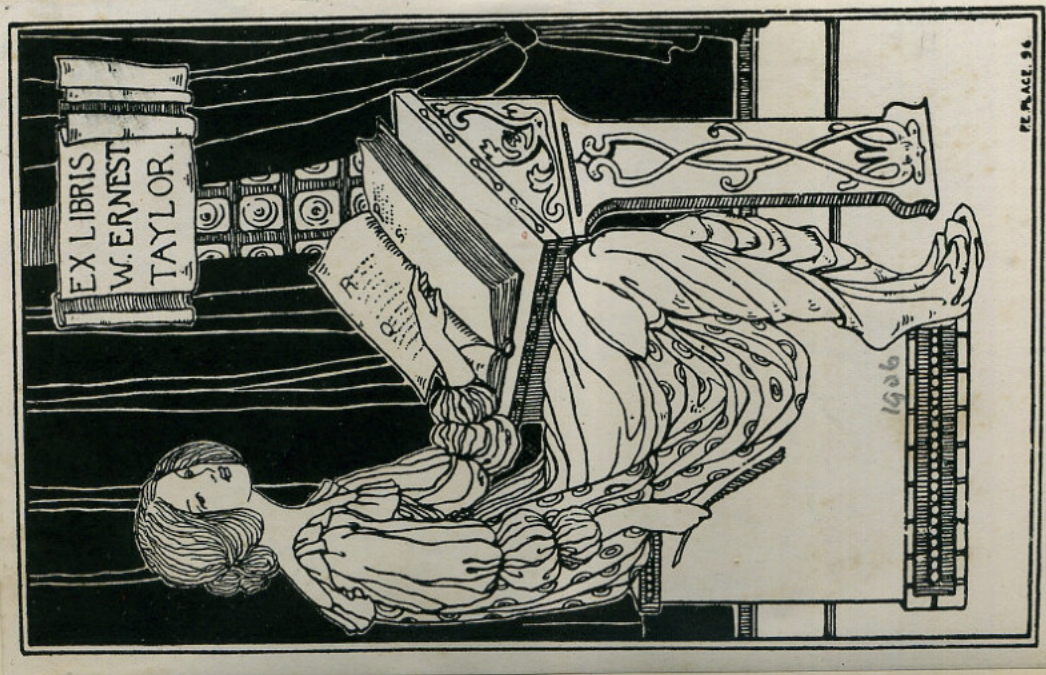
Painter -

Etcher.

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Stamps



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HYPONITRIZOTINT

THE PAINTER-ETCHER

ICAL TREATISE

BRONZURE

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ETCHING,  
DRYPOINT, MEZZOTINT.

THE WHOLE ART OF THE PAINTER-ETCHER.

A PRACTICAL TREATISE

BY

HUGH PATON,

Associate of the Royal Society of Painter-Etchers.

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## PREFACE.

THE following papers, originally issued in serial form, are now issued in a volume, with some amount of diffidence on the author's part, and yet in the hope that they may minister to, and help to emphasise, the present day revival in the popular estimation, as well as in the practical pursuit, of the art of the painter-etcher. They are entirely the work—as the hobby which has given rise to them has been the occupation—of the leisure hours of a business man, whose ordinary time is fully occupied with the more prosaic necessity of making bread and butter. The making of etchings is by way of the change of occupation, which, to a busy man, is recreation and rest. The following pages, therefore, are not intended to appeal so much to the experienced etcher, although even such may find in them a hint or two, as to the beginner in the practice of the art of engraving upon copper with acid, and it is hoped that the latter will find in them all that is required for his purpose.

Every practical etcher owes much to those who have gone before him, and every writer on the subject is only repeating much that has been already said. To two

authorities, the late M. Lalanne, and the late Mr. Hamerton (alas! that of both should have to be said "the late"), in common with every etcher of to-day, I owe much, I can hardly say to which of them more, and I am glad of the opportunity to acknowledge my indebtedness. It is a world, anyhow, of give and take, especially take perhaps, and these two authorities would, I am sure, be the first, if they were still with us, to find gratification in the fact that their writings had been of practical use to others.

The scope and arrangement of the present work have been suggested to me by my experience of the two authorities named: M. Lalanne, whose "Treatise on Etching" has always seemed to me to be the simplest and clearest of the manuals extant, as to *process*; and Mr. Hamerton, whose painstaking and endless experiments in the immediately practical department of *paraphernalia*, (acids, tools, grounds, etc.), have laid every practical etcher under great obligation. The work of M. Lalanne is characterised by a singular want, in that the latter department is entirely ignored, but this has been so thoroughly supplied by Mr. Hamerton, that the etcher has, in the two authorities, all the information that he can possibly require, as a foundation for practical work.

Taking the hint from the position just indicated, then, I have divided the whole subject into two parts in the following pages, confining myself, in the first, to a description, as simple as I could make it, of a method of working that will suffice as a foundation for after

practice, in whatever direction, and, in the second, giving as full an account as possible, not merely of the necessary tools, but of the different acids and their peculiarities, of grounds and varnishes, their composition, how to make, etc., as well as of many other of the less important articles, which can be made at home. I have endeavoured to keep the two departments logically separate, paying at the same time special attention in an index to the necessity of giving references to corresponding paragraphs; *e.g.*, the use of the roller at page 53, and a description of the same, and where to procure it or how to make it, at page 164. By these means the reader will find, I hope, that there is a gain in clearness, without any loss in facility of reference.

I am glad of the opportunity to acknowledge my indebtedness further to three friends: to Mr. E. Stamp for the plate which forms the frontispiece, and for the design on the cover of this book; to Mr. H. C. D. Chorlton for the head and tail pieces which begin and end the text; and to Mr. F. W. Goolden for the clearly drawn plans which illustrate Part II. All these add welcome variety to the plates which form the illustrations of process. For the latter I acknowledge myself entirely responsible.

Since the papers originally appeared, the whole of the text has been revised and largely added to, and all the plates re-executed. The first chapter is purely introductory to the general subject; it may serve the same good purpose, in the case of some of my readers, that the writing of it served in my own, that, namely, of

iv.

*Preface.*

clearing up ideas previously somewhat crude as to the different kinds of engraving.

The plates have been printed by the Messrs. Porcabeuf (Maison Salmon), of Paris, to whom I am indebted for the careful manner in which they have carried out my instructions regarding them.

Finally, it only remains for me to express the hope that the reader will find in the following pages all that is necessary to make him practically acquainted with the art of the etcher. To the reader who will point out any omissions he may come across, or any practical difficulty that is not provided for, I shall be grateful. I have done my best for him, and in that way he will be doing his best for me.

8 Fetter Lane,  
Manchester,  
November, 1895.

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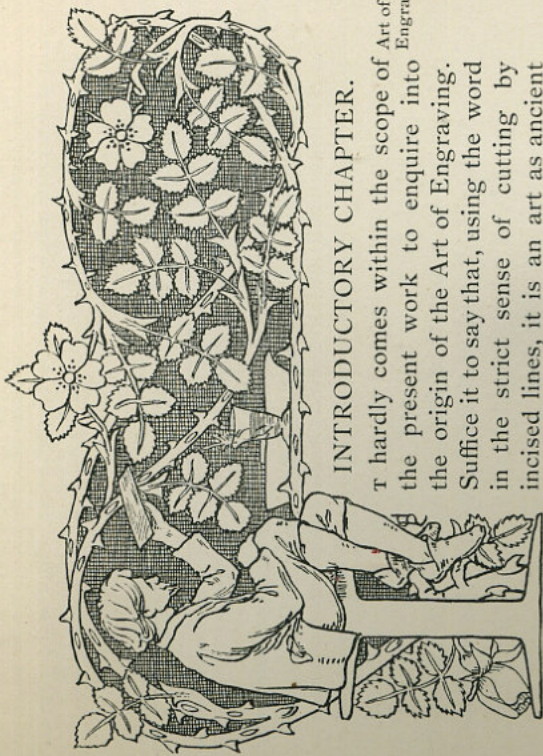
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ETCHING,  
DRYPOINT, MEZZOTINT.

—  
PART I.  
—

PROCESS.



### INTRODUCTORY CHAPTER.

It hardly comes within the scope of <sup>Art of</sup> Engraving, the present work to enquire into the origin of the Art of Engraving.

Suffice it to say that, using the word in the strict sense of cutting by incised lines, it is an art as ancient as civilisation itself. Man's first business was the necessity of living, but, that provided for, his first instinct was adornment—at first of his person, and afterwards of exterior objects, such as the house he dwelt in, and the temple in which he set up his gods. Mr. Hamerton points out in his book on "Drawing and Engraving" \* that the oldest drawings we have are engravings in the strictest sense of the word, being designs scratched upon bone or horn, each scratch being an engraved line. These, he adds, were "executed by pre-historic man at a period of time so remote from us that it cannot be fixed in a date, even approximately." For our present purpose, therefore, I take the word in the sense of its modern developments as applied in art processes.

\* Adam and Chas. Black, London and Edinburgh, 1892.

Four kinds.

The whole Art of Engraving, then, divides itself into four general branches: engraving on wood; line engraving on metal; etching and drypoint; mezzotint. Notice that engraving on wood comes first. This is quite in accordance with the evolution of things. The art of engraving designs upon wood is older than the other arts of engraving upon metal, which latter arose more or less simultaneously with the invention of the art of printing in the early half of the fifteenth century. It was about the year 1440 that moveable metal types were first used, and the way paved for printing being set upon an established basis. But this was only the crystallisation of earlier and simpler ideas into a concrete and practical form, and was a development from the older art. As a matter of fact, we have to go a good way further back, and to the far East, for the earliest attempts at cutting designs in relief upon wood. Well authenticated instances of this can be traced among the Chinese of the sixth century, but it is not until some centuries later, not, indeed, until the close of the thirteenth century, that the art of wood-cutting can be distinctly traced in Europe. For a century after that it appears to have been mainly employed for the production of playing cards, chiefly, I believe, by the Germans, but upon the introduction of the art of printing it developed rapidly. The printing of books naturally led to the ornamentation of them with figures cut in wood, and the art made rapid progress with the opportunity of dissemination on a scale formerly impossible. It is not so much, however, with this, as with the essential character of the art that we have to do, and with its bearing upon the more modern forms of engraving. It is, however, an interesting question how far the art of printing from types may have been suggested by the

Wood  
Engraving:

earlier art of cutting designs in relief upon wood. It is also interesting to note that the later arts of engraving upon metals arose about the same time as that of printing from types, yet independently of it.

Now, the essential character of a *type*, whether cut in wood or metal, is that the impression is obtained from a raised design, the wood-engraver cutting down the general surface of his block, and leaving the letter or design *in relief*. But in the other forms of engraving the method is followed of cutting the design *into*, or *below*, the general surface of the metal. The principle is vitally different, and this form of engraving was, so to speak, an accidental discovery. It arose in the early part of the fifteenth century, in connection with the art of the silversmith, who was accustomed to engrave designs upon silver, for decorative purposes, by means of *incised lines*. He cut his design into the metal, and there arose a method of giving effect to it by filling the lines with a mixture of silver and lead, which was of a blackish hue, and so gave effect to the brightness of the silver. Such an early "arrangement in black and white" was called a *niello*, from the Latin word *nigellum*, a diminutive of *niger*, black. Now it happened, naturally, that the workman would frequently desire to see how his work progressed, but the means of doing so were not very obvious until Maso Finiguerra, an Italian silversmith, or rather, artist in silver, invented a method of taking a proof. He would make an impression of the silverwork in fine earth, and would take from this a cast, which he obtained by pouring liquid sulphur on the impression. Rubbing lamp-black mixed with oil, printer's ink in fact, into this cast, he obtained a kind of copy of the original, and he was able to foresee approximately what his work would be like when the

Its origin.

Its origin in  
the *niello*.

lines were filled in with the lead mixture, and the *niello* completed. His object was, of course, to avoid the necessity of filling in the darks with the solid lead until the engraved work was completed to his satisfaction. But presently he went a step further, and discovered that he could also obtain a proof by filling in the work on the silver itself with the printer's ink, and taking an impression upon a sheet of damp paper. This was a very simple and obvious development of the print from the cast, but it was fraught with great results, for the ability to obtain, in a simple way, a proof that was a faithful reproduction of the engraved work upon the silver, naturally suggested the means of doing so from other metal surfaces, and further developments of the idea soon followed.

#### Line Engraving.

Such was the simple beginning of the art of engraving upon metals for printing purposes, and the art of line engraving, which was a tool process, arising as it did out of that of the silversmith, naturally developed first, and was an established art about the middle of the fifteenth century. Besides, the "manner" which was natural to the line engraver was more in accordance with the spirit of those early times in art matters. The day of the impressionist was not yet. At what period, however, *acqua fortis* was first adapted to the engraver's purpose seems to be a matter of doubt, but it was certainly a later development. X

#### Invention of the press.

For a long time the engraver laboured under great disadvantages, because the only method of obtaining a proof was by means of hand pressure—at first by simple pressure, and afterwards by means of the hand-roller—but neither method gave satisfactory results. For it must be pointed out here that, just as the two kinds of engraving were essentially different, being on the one

hand a method of leaving the design in relief, and on the other a method of obtaining the design by incised lines, so the methods of printing were essentially different. In the former case, the design was printed from the raised level surface, with uniform, and comparatively light, pressure; in the other, the design was printed from incised lines of varying width and depth, which required heavy pressure. In the former case, the ink was applied to the raised design only, and did not touch the general surface; in the latter, the general surface had to be inked with the rest and cleaned off, the ink being left in the incised lines. This, as can easily be understood, was a less simple process, and consequently a later development, and it was only upon the invention of the roller-press, with its long powerful arms, that sufficient pressure was obtained to drive the paper into the finest lines, and so obtain a satisfactory proof. But the invention of the press marked a great advance and severed the already strained connection between the new art of line engraving and the older one of the silversmith, and engraving soon became technically a perfect art.

X It has been pointed out that there was an essential difference between the earlier method of cutting designs in relief, and the later process of cutting designs into the metal, and I wish here to point out a very vital difference in the expression of the two kinds of engraving when printed. In the woodcut, the only method of obtaining *value*—that is to say, the strength of the foreground on the one hand, and the delicacy of the sky and distance on the other, with all the intermediary values—was by using thick or thin lines to express them. Now it will easily be understood that this was a comparatively imperfect method, because whatever difference

there might be in the thickness of the lines, the ink was always of the same density, and a thin line, however thin, was always of the same tone, of the same blackness, as the thick one. This is necessarily the case with surface printing. But in an engraving, or etching, we go a step further, and this further step makes all the difference in the world. A finely engraved line is not only thin, but it is shallow, and it holds a thread of ink so thin as to be semi-transparent. On the other hand, a heavy line is deep as well as broad, and it holds a correspondingly solid body of ink. In the print, the thin line from the engraved plate is much more delicate than that from the woodcut, and no heavy line in woodcut does, or can, print with the rich blackness of the strongly engraved or bitten line. The range of value is very much greater, and it is herein that engraving upon metal is so much more complete an art than the earlier and simpler one.

Line engraving  
and etching  
compared.

Again, it may be advisable to point out the essential difference between engraving and etching. The art of "line engraving," to make the common distinction, is the art of engraving upon, or rather into, a metal surface by means of a cutting tool. The burin, as the line engraver's tool is called, cuts a clean, sharp line into the copper, or other metal, while in the art of etching the acid eats a more or less rough line, which is altogether different in character and expression. The former is cold, classical, proper; the latter is free and unrestrained, Bohemian if you like, but living, warm-hearted, passionate; and the difference in the expression of the line lies in the nature of the process. In engraving proper, the line, on account of the resistance of the metal, is cut by a slow, laborious process, which is entirely opposed to that free play of the artistic spirit

under which the best work in art is done. It is laboured, not spontaneous. On the other hand, in etching, the needle glides over the copper and cuts the wax surface without resistance; it is as free, in fact, as the pencil, upon paper, freer than the pen, and the result is a vivacity of line and force of expression which the colder art knows not. Bearing in mind this difference, it is easy to understand how the former process has come in modern times to be applied mainly to reproductive work. In the early days, men like Dürer, Van Leyden, Mantegna, and others, engraved and etched their own designs, and translated their own ideas in their own way—they were painter-engravers; but in course of time line engraving has gradually, but inevitably, been applied entirely, or almost so, to the reproduction of the works of the painter, and the line-engraver is no longer an original artist, but a copyist. His whole time and attention are directed to the production, laboriously and exactly, of every tone in the work before him. The qualities required in him are essentially of the technical kind, and he has ceased to be a creative artist. This is all right and proper, for while we have, perhaps, lost the original work of many a good engraver, we have gained a knowledge of the works of the great masters, which would otherwise have come to us more slowly, or not at all. But this has had an unfortunate effect upon modern etching, for since its revival in the popular estimation, the windows of our art dealers have been flooded with so-called "etchings" which are essentially engravings in character, but spurious at that, and which have no claim to the title of "etchings" except in the bare fact that they have been engraved with an acid instead of with the engraver's tool. They are not executed in the spirit of the etcher's art, which is to

The old  
masters:  
painter-etchers.

translate, rather than imitate, nature. They would be better done by the older process, but unfortunately the question of cost steps in here, as it does in so many other things, and the result is that an art, which is beautiful when kept within its natural limits, is almost dead, while the sister art of etching is degraded by the introduction of a "manner" which is foreign to its nature.

It may be mentioned, in passing, that the line engraver frequently uses the acid in two ways. Some engravers employ it to engrave their work partly, the lines being subsequently deepened by the burin, and so attaining the character of the pure burin line. In this case the use of the acid is merely a labour-saving appliance, and has nothing to do with the character of the final result. The lines, though drawn with a free instrument, the needle, are done in the stiff formal manner of the line engraver, with a careful eye to the end in view. Again, many line engravers make free use of the pure acid line in the foreground of their plates, especially for the representation of rugged and picturesque surfaces, to which the acid line is suited, but even here the etched line is used in the engraver's manner, and in keeping with the work on the rest of the plate, and, though actually bitten with the acid, it is essentially an engraver's line, applied in the engraver's manner, and for the engraver's purpose.

Let me here say that in these pages I use the word "engraver" in the sense of copyist line-engraver, and the word "etcher" in the sense of painter-etcher, the original etcher, who does his own work in the free method of the original artist, who translates nature direct, or carries out his own conceptions, rather than imitates the work of other men. It is my endeavour also to write and speak, as far as in me lies, from the

Engraver's use  
of the acid.

Engraver and  
etcher:  
distinction.

point of view of the latter, rather than the former. No good original work can be done in art, or in anything else, without that enthusiasm which comes from love of it, and the engraver's method, the result of natural conditions, effectually kills all that in the average man.

I hope I shall not be misunderstood as intending to decry the engraver's art. Quite the contrary; it has its proper sphere, and much beautiful work has been done in it. In the work of the best men there is much ingenuity, nay originality, but these are displayed rather in their methods of adapting the clean-cut line to the imitation of the tone and colour, the texture, etc., of a picture; their qualities are of a technical kind. But, to give the etcher his due, it is necessary to insist on the distinction that the engraver's art is imitative, not creative, and that is all I mean to say. The essential nature of the process is opposed to the free execution of original work, and the engraver becomes a "copyist-engraver," as Mr. Haden calls him, and not an original engraver.

This is always, and always will be, a vital point of difference between the two kinds of engravers. It is

best to recognise at once the fact underlying this difference of opinion, namely, that the two kinds of work are the result of two types of mind, the photographic and the impressionist. These are the two best words I can find, and I put the photographic first, because the impressionist is a later development, and the result of a higher civilisation. To use a common phrase, the two are as different as chalk and cheese, and since they can never in the nature of the case agree, they had better, perhaps, agree to differ.

Of drypoint, which, though not an acid process, naturally belongs to the department of etching, and

Drypoint and  
mezzotint.

of mezzotint, it is unnecessary to say anything here, except that these are by common consent regarded as part of the art of the etcher. They were both later developments, the former arising naturally out of the etcher's method; the latter being the result of an accident—a very happy one for the artist. Both are treated fully in the following pages.

Modern revival  
of etching.

Before passing from this part of the subject, the reader may be reminded here with advantage, not only that the ancient art of etching, which has been much neglected for a long time, has been greatly revived in modern times, but that all forms of original engraving, as opposed to reproductive work, are steadily receiving more and more recognition from year to year. One important result of this revival and recognition is that,

Painter-Etchers'  
Society; its  
formation:

in the year 1880, was formed the Society of Painter-Etchers, its object being to encourage all forms of original, as opposed to reproductive, engraving; "not merely the restoration of original etching, but the re-infusion into all forms of engraver's work of those personal qualities which, in the hands of the great masters of painting, made engraving a fine art." I am not quite sure if I am right in saying that the foundation of the Painter-Etchers' Society is altogether the result of this revival; for there is no doubt that the influence of the Society from its foundation, and indeed of some of its members long before, has had much to do with the increased importance attached to original work on metal. But it may safely be said that the formation of the Society was, in part at least, the result of the general revival of interest in etching during the last generation or so, while, on the other hand, the Society, since its formation, has reacted to an important extent upon the public taste, and has helped to educate it in the right

direction. What was at first an effect, or partly so, has become in turn a cause, acting and reacting with and upon this renewed interest in the too much neglected art of original engraving upon metal with acid.

The Society includes in its list of members nearly all the leading etchers of the day. Here is a short extract from the presidential address for 1890, delivered to the Society by Francis Seymour Haden,\* one of the greatest etchers of our time. He says:—"We all know what an ordinary engraving is, and associate it quite correctly with a reproduction—more or less able but by means more or less mechanical—of a picture or design, in the painting or inception of which the engraver has had no share; but very few of us, I imagine, are aware that up to the date of Vandyk, it was the painter himself who was his own engraver, and that the class of engraver as we now know him had no existence—that he is in fact but a product of that degradation of all the arts which followed the execution of Charles the First, and from which, as to engraving at least, they cannot even yet be said to have wholly recovered. ↓ Well, it is on the revival of this great-master engraving, this original engraving, this painter-engraving—or, as it is more commonly called from the process usually employed in its production, this painter-etching—that the foundations of this Society are laid; a revival which should interest, we think, every true artist. We wished, indeed, in the first instance, that the Royal Academy should have the credit of this revival, and, at all events, hoped that we might look to that body for help to bring it about. We did not obtain it. For twenty years we sent in to the Academy original etchings which have since obtained a European reputation, and which, only the other day,

\* Now Sir Francis Seymour Haden.

obtained at the hands of an international jury sitting in Paris the highest honours which they had in their power to award. In the Royal Academy they met with no encouragement whatever. When a vacancy occurred among the members, it was supplied by the election of the copyist engraver, and never by the original engraver; so that at last, worn out by the unequal struggle, we abandoned further efforts and formed the present Society.\* I may just add that the Society is the leading Society of Etchers in the kingdom, and had conferred upon it recently\* the style and title of "The Royal Society of Painter-Etchers;" a sort of retributive justice, for the Royal Academy, in its treatment of etchers and etchings, was only consistent with that conservative policy which has made it a by-word in the world of art. The Royal Academy, as is well known, is a close corporation, with, so to speak, vested interests, and does not, like the Paris Salon, encourage art from a national and international point of view, as from its prominent position one would naturally expect that august body to do.

\* Its recognition.

\* In 1891.

## CHAPTER I.

### ETCHING.

Etching is the art of engraving upon a metal <sup>What is an etching?</sup> with an acid. The word "etch" is derived from the Dutch word *etsen*, and means "to eat." The French explain this better by their use of the phrase "la gravure à l'eau forte," as distinct from "la gravure au burin." To etch is to eat, or bite, a design in metal by means of an acid that will corrode it. This cannot be too often insisted upon. Mr. Hamerton says somewhere that to speak of etching in a drawing-room a generation ago was to be misunderstood; but even to-day the chances are at least equal, when one speaks of it in ordinary company, that one shall be misunderstood to mean pen and ink drawing. This ignorance of the subject is, however, fast disappearing, but it is not difficult to understand why it should prevail. Etching has been for a long time a neglected and little understood art, and ignorance has applied the word to pen and ink drawing, for the simple reason that there is a certain superficial likeness between the two arts. But, except that they are both methods of working in line, and so, at a glance, similar in appearance, there is nothing in common between them. The process of etching is briefly this:—A sheet of polished copper, after being thoroughly cleaned, is covered with a thin ground of wax and other ingredients, calculated to resist acid. This is smoked until quite black, to enable the etcher to see clearly the progress of his work.



Upon this ground the design is drawn with a steel or other smooth hard point, which cuts the wax and bares the copper, the colour of the latter shewing clearly against the black ground. The acid is then poured upon the plate and allowed to bite, to eat into, the lines drawn in the ground, for the length of time required. The result is that the design is bitten into the metal to a greater or less depth, according to the length of the time of biting. From the plate so engraved a proof is taken upon damp paper. The plate is inked all over, and then cleaned off in such manner as to leave the surface clean and the lines filled with ink. The paper is then laid upon the plate, backed by a blanket to make the pressure uniform, and the whole is passed through a roller press. The proof so obtained is called an "etching."

Before proceeding to describe in detail the actual process, it may be well to explain that I have judged it advisable, for clearness' sake, to divide these papers into two parts, which I may describe as "Process" and "Paraphernalia." It is my intention to give full technical information upon all points, but to stop here and do that first, as far as materials are concerned, would only lead to confusion on the reader's part. After just indicating those materials that are necessary to enable the beginner to set to work, it is my purpose to give a straightforward description of the process which experience suggests as the simplest and most direct. The reader need not, therefore, in the meantime, concern himself with anything further than is here described; but in the second part the fullest possible information on all technical points as to acids, grounds, etc., will be given. Indeed, the latter would not be of practical use to him now, for the proper appreciation of it depends upon some previous knowledge of the processes and

Plan of this work.

their difficulties. This plan is suggested to me by my own experience, as I have taken the opportunity to explain in the preface.

Copper plates.	Bottle of liquid ground.	List of materials.
Hand-vice, with wooden handle.	Nitric acid in stoppered bottle.	The common quality known as "Commercial" is better than "Pure."
Etching needles.	Turpentine.	A dabber. Kid is better than silk.
Scraper and burnisher.	A dabber.	
Porcelain bath, say 14 x 10 in.		
Etching board and hand-rest (from local joiner).		
Ball of etching ground.		
Small camel-hair brushes.	Glass funnel.	Sundries.
Wax tapers.	Small pipette.	
Blotting paper.	Magnifying glass.	
Willow charcoal (a thick stick).	Pocket spirit level.	
Tripoli powder.	Some small wedges of wood.	
Fine emery cloth or sandpaper.	Oil sharpening stone.	
Some feathers.		

All the above are necessary for the beginner, and should not cost more than twenty-five shillings, including two or three small plates.

All the materials can be obtained direct from Messrs. B. Winstone & Sons, Shoe Lane, E.C.; or from Messrs. Hughes & Kimber, Limited, West Harding Street, E.C.; or from Messrs. Winsor & Newton, Roberson & Sons, &c., through the art material shops.

A special needle of solid steel, which I recommend, is obtainable from Mr. E. Crossland, 23 Trinity Street, Huddersfield; also the other tools.

I have obtained excellent plates locally from Mr. J. Robinson, Eastnor Street, City Road, Manchester.

Such items as the acid, porcelain bath, etc., are best obtained from the nearest dealer in chemical apparatus.

I recommend the two burnishers known as Mr. Whistler's, obtainable from Mr. Rhind, 69 Gloucester Road, Regent's Park, N.W.

Write to these parties for price lists, and select according to requirements. Reference may be made, with advantage, to the information given in Part II. of this volume, regarding some of the materials, before ordering. The index will assist the reader in this.

The illustrations are inserted as being strictly interpretative of the text, and are chosen for their technical, rather than their artistic, qualities. No apology is made for the fact that they are not in some respects as perfect, technically, as they might be, the object being rather "to point a moral" than "adorn a tale." They are strictly illustrative of the processes described, and their faults

are such as shew the technical errors into which the beginner is liable to fall, and are intended to put him on his guard. The attentive reader will, it is hoped, have no difficulty in following the text with the plates for reference. A few explanatory remarks will accompany each plate for his guidance.

In the studio. At last, then, my practical reader, we are in the studio, and the door is shut, for interruption is fatal to the temper, and the success of the experiment. All the necessary materials and tools are beside us. An old suit of clothes, or an apron with a bib to cover the breast, is advisable. These strong yellow and crimson spots on my coat are due to unguarded drops of nitric. Your joiner has made you a sketching board—a small drawing board with a well sunk in it three-sixteenths of an inch, and large enough to leave a margin all round your plate. If you have two made of the same outside size, you can carry two prepared plates, face to face, and fastened down with drawing pins, for out-door work. You have two needles, one sharp and fine, the other moderately coarse, and an old point for occasional use in the acid. The hand-rest is a tough piece of wood, two to three inches wide, the length of your board, and just stout enough not to bend under the weight of the hand. This can be moved about, and enables you to work all over the plate without any danger of injuring the ground.

Preparation of the plate.

Here is a sheet of polished copper, 3 x 4 inches, which will do for our first experiment. The first thing to be done is to clean it thoroughly with turpentine and a rag, and then with a touch of whiting, all this to ensure the surface being quite free from grease. Be sure that none of the whiting remains about the plate. The next thing to be done is to ground the plate so that it will

withstand the acid. The best method of doing this is to use the liquid ground, but, as the method of the old etchers is frequently useful, we shall adopt it for a start. Fasten the plate in the hand-vice by one corner, putting a piece of stout paper between its jaws, in order not to mark the copper. Here is a ball of etching ground, which has been well wrapped up to keep it from dust. <sup>Grounding the plate:</sup> Hold it with one hand over the plate, and heat the latter gently over a spirit lamp, or the gas turned half down. The plate should not be heated too rapidly, or too much. As soon as the ground begins to melt, rub the ball all over the plate until you have covered every part of the <sup>With the ball.</sup> surface. Keep the plate just warm enough to melt the ground, but no more; if burned it is ruined. Do not let the ground gather thickly at any part; keep it as thin as possible. Now take the dabber and gently dab the ground all over, until it is evenly distributed. If the ground be rather thick—and it should be as thin as you can get it—it can be removed by the dabber. What is superfluous can be dabbed on to another plate, which should be kept hot, so that it takes it from the dabber easily. Do not neglect to put the ball away as soon as done with, well wrapped up.

I ought, however, to point out that the great objection to this method is that it is difficult, if not impossible, to prevent the incorporation of dust in the ground, especially during the dabbing process. The liquid form of ground has, in my practice, superseded the ball, except for very occasional use. It is strongly to be advised, as it is safer and much less troublesome. To use it, take the bottle in one hand, and, holding the plate level in the other, pour upon it sufficient of the liquid to run freely to all the corners. Immediately pour back the surplus, and lay the plate flat to dry.

After getting the liquid down your sleeve a time or two, you will manage this without any difficulty. If you feel a sensation of cold down your wrist, there has been an overflow. It is advisable at the last moment, before pouring on the liquid, to blow away any dust that may have settled on the plate. Dust in the ground is the *bête noire* of the etcher. A speck of dust in the ground means a spot on the plate and in the proof, where no spot should be. Do not forget to replace the stopper in the bottle at once. The solvent evaporates rapidly, and the ground becomes thick. The plate will be surface dry in a minute or two, and it is then ready for smoking.

Smoking the ground.

Light a wax taper, and, holding the plate face downwards, pass the flame back and forward and across in every direction. Pay rather more attention to the edges, or they will only be half smoked. The smoke tends to accumulate in the centre, and if you take care of the edges the centre will take care of itself. The flame may touch the ground, but it must not linger. The wick of the taper must not touch the ground by any chance, or it is ruined. At first the ground is dull; but as the plate heats it melts, becoming smooth and shiny, and the smoke is thoroughly incorporated with it. Sometimes it will be found advisable to heat the plate gently from the back before smoking; some grounds of the harder sort take the smoke better if melted first. A good ground does not require this. As soon as the colour of the copper is lost, and the ground is uniformly black, lay the plate aside for five minutes to cool. Properly smoked, it should be of a slightly dull black, but perfectly even and smooth. If there be any parts which shew the raw smoke, and if these remain on being further heated, the ground has been burned, and it must be cleaned off with turpentine, and done again.

Never be content with a plate that is not uniformly smooth and perfectly black, or the result will be disaster when the acid is put upon it. Also if the ground shew distinctly iridescent, it has been burned, though apparently perfect.

Adapt the light to the size of the plate. A single <sup>The taper.</sup> taper is sufficient for a small plate, and two for medium and larger ones. A frequent cause of burned ground is over-heating in smoking. To prevent this, hold the taper away from under the plate at occasional intervals, especially towards the end of the process, when the plate has become hot. To pass the flame continuously over the plate, until the ground is quite black, may make it too hot. This is especially the case when the flame is too large for the size of the plate.

The plate is now ready for the work with the needle. Place it in the well of the drawing board, and fasten down with drawing pins. With the hand-rest upon the board, you can move about over it with perfect freedom and safety. The ground will bear slight touches with the finger, but it is better not to touch it at all, as it is easily injured.

Now we are ready to proceed with our drawing.

But, you say, what about the tracing? Well, let me <sup>The tracing</sup> say, once for all, that etching is an original artist's process, and you must try to dispense with everything that suggests the line engraver. Shew me your sketch book. Here are some drawings of boats, which will suit our purpose excellently well. These are drawn correctly and freely, and without any sign of alterations. Why not draw them direct upon the copper in the same way? I must insist upon it that there is no more inherent difficulty in drawing upon the prepared copper than in drawing upon a sheet of paper, and you must

make a practice of so doing. However, since it is your first attempt, we shall make a tracing, in order to avoid hesitation and uncertainty. The method may be useful, too, for special occasions. Also, in order to your complete instruction, we shall make the drawing *in reverse*, so that it will come out right in the print. In this drawing, for example, the stem of the vessel faces to the right. If you were to draw that straight upon the plate, it would face to the left in the proof. For a simple composition of this kind, it is a matter of indifference which way it faces, inasmuch as the composition, light and shade, etc., are not affected in the least degree; it is as much a picture the one way as the other. But if you were making a direct drawing of, for example, a friend taking a sketch, as I once did, he would come out in the proof left-handed, and might have something to say to the artist not entirely of a complimentary character. (For simplicity's sake I have described in the text the illustration as it appears in the proof, but the reader will remember that, with the plate before him from which this proof is taken, he would have to read right for left, and *vice versa*. It is manifest that if a sheet of paper be placed *face downwards* upon an inked plate, and passed through the press, the proof will shew the design in reverse as far as right and left are concerned. The picture, however, does *not* stand on its head on the plate!) Here, therefore, is the method of reversing your drawing, and transferring it to the plate at the same time. Cover the original with a sheet of transparent tracing paper, on which you have previously marked the size of your plate, and make an outline drawing sufficient to be a guide for your work afterwards. If you are altering the size of the original, you must sketch on the tracing paper to the scale required. Use

Reversal of the drawing.

Chalk tracing.

a hard pencil, or, better still, a fine pen, so that the lines will shew through distinctly. Rub the *face* of this drawing with chalk, red or white, and place the plate upon it face downwards. Fold over the edges, and fasten them to the back of the plate. Go over the tracing with a hard pencil or blunt needle point, pressing firmly but not too hard, lest you injure the ground, and the outline will be found transferred distinctly to the black surface of the plate. Cultivate, however, as much as possible, the habit of direct work upon the plate. It will have a good effect in two ways: first, by giving you confidence, which is everything in original work; and secondly, by making you consider every line before you draw it. Every line upon an etched plate should tell, and not a single line should be drawn that is superfluous. In etching you must not scribble, or your work will be a reproach to you ever afterwards.

The chalk tracing is rather rough and ready, though sufficient for ordinary occasions. For specially fine

Black-lead tracing.

work, when perhaps it may be desired to trace clearly a fine drawing, gelatine tracing paper should be used. Scratch the drawing into the gelatine with a needle point, and rub the face of it with a soft black-lead pencil. Place this face downwards upon the plate, and rub the back with the burnisher, firmly but not roughly. This gives a clean grey line which shows clearly on the smoked ground, and is of much finer quality than the chalk one. This method was followed by Mr. Stamp in the preparation of the plate which forms the front-piece, with advantage, because it was desirable to retain the careful drawing of the head, hands, etc. For ordinary landscape, however, when more freedom is allowable, perhaps desirable, the former method is quite sufficient, and often more convenient. If, as may easily

happen, the gelatine be not available, any semi-transparent tissue paper will do; and chalk can be had anywhere.

For direct work it may be useful sometimes to make a preliminary sketch upon the grounded plate, by way of seeing first how the composition looks. This may be done by drawing upon it lightly with a fine brush and gamboge, or other light pigment, as prepared for ordinary water-colour painting. The colour does not take very kindly to the ground; but if you dip the brush in saliva, the difficulty disappears to some extent. With the brush not too full, and the colour not too thick, the main masses may be sketched in with sufficient clearness. The gamboge, however, disappears under the acid, and the first sketch cannot be relied upon after the first biting, though it can be renewed as required. The same remark applies, by the way, to the chalk tracing. It will be found, however, that the most important masses are usually indicated previous to the first biting, and the disturbance to the tracing caused by the acid is not, therefore, so serious as it might appear.

The plate is now ready for the needle work, and may be fixed down in the well of the drawing board. Draw in now only the strong work of the foreground, that is to say, the hull, spars, ropes, etc., of the vessel, and the markings of the small boat in front. You may draw also the outline of the sails for your guidance, but do not shade them in, for they are not intended to be quite as strongly bitten as the rest. And here it is necessary to point out a fact of importance. The lines widen, as well as deepen, under the action of the acid, and you must therefore draw them rather openly in the foreground, otherwise they will melt into one another as they widen, and so destroy the white spaces between,

Preliminary  
sketch.

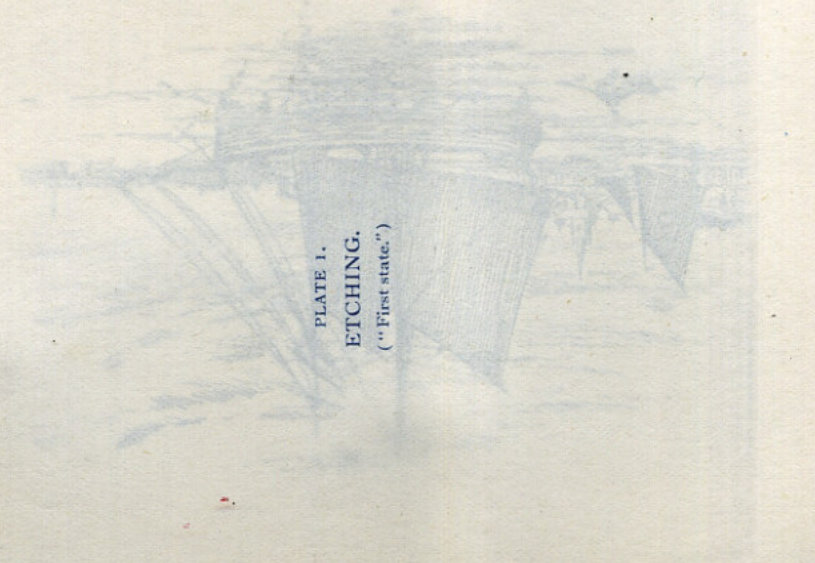
First drawing.

Effect of acid  
on the line.

PLATE I.

ETCHING.

("First state.")



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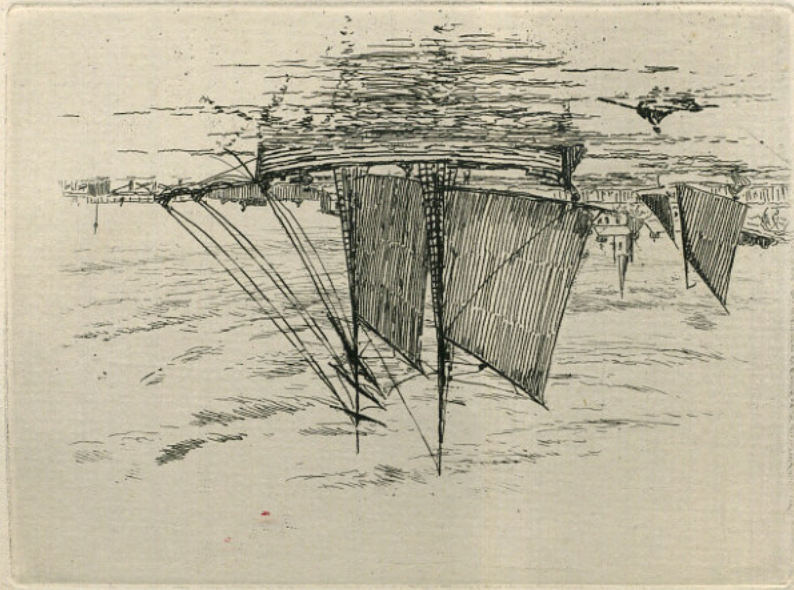
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Preliminary sketch.

First drawing.

Effect of acid on the lines.



and the consequent freshness and brilliancy in the proof. In shading, you may cross the lines frankly; but avoid running them into one another at an acute angle, like the lines of a fan, because the acid attacks the copper quickest where there is most surface exposed, and while each line remained distinct, there would be an ugly blot at the junction out of keeping with the rest.

“Is it necessary to use much pressure with the needle? <sup>Pressure in drawing on the plate.</sup> I find that the point scratches a little in some directions, but not in others.”

That shows that the point is not evenly sharpened. <sup>The needle.</sup>

Look at it with a magnifying glass, and see that it is thoroughly round; and then, with the point upon any hard surface, whirl it firmly between the fingers until it will glide evenly on the thumb nail. It is not necessary to use more pressure than is enough to secure that the wax is cut through. Sometimes it appears to be so when you have, in reality, only removed the smoked surface. This remark applies especially to grounds in which the harder ingredients predominate. Therefore, cultivate the habit of drawing with just that amount of firmness that will secure the effectual removal of the ground, but without scratching the copper strongly. You can hardly avoid scratching it to some extent, but let the pressure be uniform. <sup>Uniform pressure essential.</sup> Wherever the needle disturbs the polished surface, the acid attacks it more quickly, and the result in the proof would otherwise be unevenness of work. But get rid of the habit of drawing light and heavy, as with a pen and pencil. Leave it to the acid to give the differences of value required. A slightly bitten line, however clumsy it looks when drawn with the needle, will be fine and delicate, and a strongly bitten one as strong as you could possibly wish, in the proof. It is your business to draw the line; it is

that of the acid to determine its value in the proof. It may be borne in mind, at the same time, that a little extra pressure in the drawing will secure a more vigorous biting in any required spot. The few touches of the small boat, for example, may be drawn with extra vigour, but very slightly extra, because, being isolated from the other work on the plate, they may not bite so quickly. You must bear in mind what I have said above, that the acid attacks the copper quickest where there is most surface exposed, and in this subject you may expect the work about the vessel to bite rather more rapidly than the isolated work on the small boat. It is only necessary to know this peculiarity of the nitric acid, in order to make judicious use of it.

Stopping-out a wrong line.

I need not point out to you here that you must try to get the utmost expression possible into the lines of your drawing. Every rope in the rigging of the vessel has a bend in it that has a meaning, and these must be carefully rendered. The etching needle renders the expression of the lines of a vessel's rigging in a way that makes the painter despair. You have drawn the main halyard—that line coming from the top of the main-mast to the yard of the sail—rather clumsily, and you must do it again. Take this bottle of special stopping-out varnish, and carefully paint the line out with a fine camel-hair brush. It will dry in a moment, and you may draw it again.

First biting.

The plate is now ready for the first biting. Before submitting it to the acid, you must carefully paint over with the stopping-out varnish the mark of the hand-vice at the corner, and any bits about the edge of the plate, such as the marks of the drawing pins, which show the colour of the copper. Use the strong stopping-out varnish for this, as you have not to go over these parts

again with the needle. If you neglect this, the acid will attack the exposed parts, and the result will be a series of ugly blots at the edge of the plate mark in the proof. You had better, also, stop out two wrong lines—that one above the main yard, and the upper one of the two anchor ropes, which does not seem to hit the water at the right level. (The reader will find both these in the first state of plate 1.) Now is the time for any remedial measures of this kind; for, once the plate has been submitted to the acid, a badly drawn line is bitten in, and cannot be erased without much trouble.

The bath.

It is customary to plunge the plate bodily into the porcelain bath, and, for your complete instruction, we shall do so for the first biting; but I shall show you presently a rough and ready method of biting, which will dispense with the trouble attending the use of the bath. Before placing the plate in the acid bodily, it is evident that the back of it must be protected, and you must therefore give it a coating of stopping-out varnish. If you intend using the bath, it is well to do this beforehand, as it takes some little time to dry. We shall suppose this done, and the plate lying in the bottom of the bath. This is a stoppered bottle, containing common nitric acid and water, in about equal parts. The room is fairly warm, and rather less acid than water—say two parts in five—will be found strong enough.

Effect of temperature.

In a cooler atmosphere, about half and half would be advisable, because the temperature affects the rate of biting very considerably. With a moderately strong acid the biting would be about twice as rapid in a temperature of 65° Fahr. as in one of 50°. Our bottle has been mixed beforehand, and the slight blue colour is due to the presence of a little copper. Mixed fresh, the acid is apt to be rather raw in its action; but



mixed beforehand, and with the addition of the copper, it works more sweetly. We shall save some of this acid for our next plate, so as to supply the necessary modicum of copper; but this time we have put into it a morsel of copper wire, and it is in good working order. Now pour carefully into the bath enough of the acid to cover the plate one-sixteenth of an inch or so, and wait results. Almost immediately you will notice that the lines are frosted over with a light grey tint, which presently turns to light blue. This shews that the acid is at work at about the right speed. The tint is due to a series of tiny bubbles which make their appearance all along the lines. You will notice that the bubbling is more active along the hull of the vessel, especially about the upper edge, and about the masts and bowsprit, wherever, in fact, there is a considerable number of lines close together. The other lines are attacked more slowly, being more isolated; but the small boat is going briskly, owing to the greater pressure used in drawing it with the needle. Continue to remove the bubbles with the point of a feather, so as to let the acid get freely at the lines.

Acid fumes.

"The fumes from the acid are rather strong." Yes, I notice that they catch your throat. Do not stoop too closely over the bath. The nitric fumes are bad for the throat; I once felt their effects for several days, but that was after biting a large plate in a close room, and without due precaution. A small plate like this can do no harm. I never notice it in the ordinary way. Use a little care, however, and work in a room that is well ventilated.

Length of time of biting.  
 "How long must this be bitten?" About ten minutes will be sufficient. The strongest work takes about half an hour, but we have the middle distance and distance

to attend to yet. As the time is up, out with the plate, and wash it well in water. You may fish it out with an old needle, but you need not fear touching the acid with your fingers, provided you put them immediately in water. Beware, however, of it touching any wound. Finger stalls are recommended by some, but I prefer to dispense with them; one's fingers are all thumbs with them on! The only bad result I have experienced from touching the acid has been a few yellow spots about the fingers next day, but these are slight and disappear in gaslight, and you need have no anxiety on the subject. Now wash the plate well, so that the acid may be thoroughly removed from the lines, and lay it between sheets of blotting paper. Dry by passing the hand gently but firmly over it, avoiding friction, and then replace it in the drawing board.

You may now proceed to draw in the smaller vessel and the lines upon the water of the foreground. Shade the sails also of the larger vessel, and draw in any of the light ropes; execute, in short, all the work of the second value. Shade the foresail rather more closely than the mainsail of the large vessel, in order to obtain a difference of tone. That will not take you very long, but bear in mind that any approach to solid colour must be drawn with the lines closer together than in the foreground, inasmuch as they will not be bitten so strongly. The sails of the small vessel tell dark against the light distance, and the shading should be closer than in the sails of the nearer vessel, for the lines will not be so wide when bitten.

Second drawing.

Now I hope you are good at figures. It is true it is only a case of simple addition, but without a little care, for a reason which I shall describe presently, you may find that two and two make five! In etching, you must

It is true it is biting by stages.

see the end from the beginning. We have bitten the foreground ten minutes, and we have still a good quarter of an hour for the rest. This must be distributed judiciously. The smaller vessel and the lines on the water should be bitten for the whole of that time, but the distance for not more than half of that. Therefore you have now drawn in these only, and must submit the plate to the acid in the same manner as before, for, say, ten minutes. That done, it is evident that the larger vessel has been bitten twenty minutes, and the smaller one ten. You have still, therefore, a good five minutes to spare, which will suffice for the distance and the sky.

Second biting.

Colour of the acid.

Here you may take the opportunity to restore the acid to the bottle, as we shall not require the bath again. The colour of it is still a light blue, and it is good for further work. As soon as the colour tends to a strong green—which shows that it is becoming overcharged with copper, when it will cease to work—it is better to throw a portion away, keeping the remainder, for the sake of the copper in it, to mix with fresh. Place the glass funnel in the bottle and pour back the acid, holding the whole over the basin of water, in case of a spill. Always have a basin of water beside you, or the result will be fingers in a chronic state of jaundice. Dip your fingers therein every time they touch the acid.

Third drawing.

Now draw in the whole of the distance. The dark side of the tower may be shaded with still closer lines than you used in the middle distance. Use parallel lines only. If you cross your lines you will get a dark that is too strong and quite destructive of atmosphere. As the land is in light, use open lines, except in the extreme distance across the vessel's bows, where it comes more in tone against the sky. There you may shade more closely still.

I had intended at this stage that you should draw in Third biting. and bite the sky, as well as the distant land, but it will be better to leave the former over in the meantime, for two reasons. One is that the biting of the sky involves a method of working to which a little special attention will be advisable, and it will simplify the third biting if we leave that over. But another reason is that the foreground is getting to be nearly strong enough, certainly it will be so by the time the distance is bitten in, and by confining ourselves to that now, there will be less danger of the foreground being over-bitten. Remember always one of Mr. Hamerton's *dicta* that "etching is always a chemical experiment." Owing to changes of temperature, acid of a given strength will bite at varying rates, and you must not cling too much to theory, but watch each plate closely, and act according to circumstances. We have, therefore, only drawn in the distant land this time, and added a few touches here and there to the work already on the plate.

Disuse of the bath.

Now here I wish you to notice that the land recedes slightly to the right, and that there is a consequent difference of value between the work on the two sides of the vessel. This difference we shall manage in the biting. It is one that cannot be managed in the bath without a good deal of trouble in stopping-out by short stages. But by the rough and ready method I have referred to, a graduated biting can be obtained with great ease. Here is our basin of water, and with these two slips of wood placed across it a few inches apart, we can dispose of the plate over the basin, so as to proceed with the third biting without danger to the furniture. A small dish, such as a saucer, placed bottom upwards inside the empty bath, will do as well. It is necessary, however, that the plate should be quite

level, and with two or three small wedges of wood and a pocket spirit level, we can adjust it so that the acid will lie upon it without running over.

Had we not been seeking gradation, it would have sufficed simply to pour upon the plate sufficient of the acid to cover the whole of the work upon it; but in the present case, we must use a little precaution. As we require the acid upon the whole of the lower part of the plate, you may pour upon it enough to cover that portion of it. It will not run over unless you pour out too much. What will lie on the plate without running over is quite sufficient for the purpose. You will notice that the acid does not take kindly to the surface of the ground. The latter seems to repel it, and it tends to run in any direction but the right one, and very often overboard. To obviate this difficulty, put upon the plate in one or two places a little saliva, and with a feather dipped in it you can run the acid exactly where you please. This is not very nice, but it is very practical. Now guide the acid over the whole of the foreground and distance to the left of the larger vessel; the rest of the distance can wait for a couple of minutes. You may also carry it with the feather over the vessel, but take care not to encroach upon any of the distance to the right. You will notice that the distance on the left does not begin to bite for a minute or two, though the former work is going briskly in a few seconds.

Use of saliva.

There is no harm in this, as we want the foreground to be fairly strong. I have already hinted to you that the acid attacks the copper quickest where there is most of the surface exposed—a peculiarity that creates no difficulty, provided you are aware of and provide for it in your calculations of time. But it has another peculiarity, which is that it attacks at once the line which is

Graduated biting.

already partly bitten, while it takes a minute or so to get fairly to work upon the fresh lines, owing to the polished surface being harder than the rest of the copper just below it. If you disregard this, you will probably find your distance under-bitten, and a consequent disturbance of relative value. It is easier to remedy a distance that is over-bitten, rather than under-bitten; therefore, bear in mind rather to under-bite in the first biting, as the foreground lines will be in full work at the second biting for a minute or so before the secondary work has fairly started. And both the foreground and middle distance will take a start of the distance in the third biting. The time is not long, but in a final biting of five or six minutes it is enough to make a considerable difference. Keep yourself well in hand, therefore, in the earlier bitings, in order that you may not require to curtail the biting of your distance, from fear of the foreground being overdone.

But now that the acid has fairly taken hold of the distance on the left, pass it over the distance to the right, adding a little acid to that already on the plate, if required. Leave it for four or five minutes more, and the biting of the plate is finished. I always incline in the last biting to linger for a minute or so longer than the time calculated, because it is easier to reduce a distance that is slightly over-bitten than to strengthen it when under-bitten, though there is not the same difficulty with the foreground. Until you can quite trust yourself, let the distance be bitten quite enough, and the foreground, if anything, under-bitten. The former can be reduced, and the latter strengthened by re-biting, more easily than when the faults are the other way. But, of course, get the plate as nearly right as possible before cleaning it off.

Irregular attack by the acid.

The account.

Now, how does the account stand? We started with the idea of biting the foreground half an hour, or thereby, the middle distance a quarter of an hour, or perhaps fully that, and the distance five minutes or so. Disregarding the sky for a moment, the result is as follows:

	First biting.	Second biting.	Third biting.	Total.
Large vessel	10	10	8	28
Small vessel	—	10	8	18
Distance to right	—	—	8	8
Distance to left	—	—	5	5

This is very nearly as we intended, and for a first attempt at simple addition, which is not so simple as it looks, it comes out about right.

"Then, am I to understand that half an hour is the length of time for the longest biting, and five minutes for the shortest?" Yes, and no. Much may depend upon the nature of the subject. You would not treat a study of delicate roses with the same rugged force as a group of oak trees. But for a small plate, such as our illustration, in which delicate distance is opposed to a strong foreground, that would be about right, provided that the acid is of the right strength, say two parts in five, and working steadily, but without violence. But for a large plate, with very strong markings, a longer time might be necessary; or for a small plate and a subject requiring delicate treatment, twenty, or even fifteen, minutes might be more than enough. Then again, the action of the acid is so much affected by temperature that time alone cannot be taken as a sure guide. It is the result of my experience that you must rather take into account the rapidity of the action of the acid as shewn by the ebullition, and supplement that by a good look at the plate between the bitings, or even in the middle of one, in order to judge how the work is

Duration of the biting.

Effect of temperature.

progressing. One of the most difficult things in etching, as in other things, is to know just when to stop. By far the best test of progress I know is to hold the plate up to the light, nearly level with the eye, so as to get the reflection of the light on the untouched surface, and see the shadows in the lines. With a little practice, turning the plate about so as to look across the lines of any part of the work, this gives a wonderfully correct idea of what the strength of the work on the plate will be when printed. You actually see the design in black on white. The method is suggested in the action of the figure in Mr. Chorlton's head-piece to the Introductory Chapter, to which the reader may refer.

Test this with the plate we have bitten. If you hold it up in the right way, you see quite distinctly the strong lines of the vessel's hull, as well as those on the water; also those of the middle distance, not so strongly marked. The distance is delicate, but quite distinct. The shading of the sails of the large vessel is not too strong, because you are looking along the lines instead of across them, and do not see the shadows. Turn the plate, therefore, so as to look across the lines, and the sails shew fairly strong and black, though they look as if there is hardly colour enough upon them. We shall see that better, however, in the proof.

"You said just now that the distance should rather be over- than under-bitten, but that the foreground should err, if anything, on the other side. What is the reason of that?"

Because it is much easier to reduce the distance than to strengthen it, and it is much easier to strengthen the work of the foreground than to reduce it. Let us suppose that this distance had been over-bitten; we should have proceeded to polish down the whole surface with

Reduction of over-bitten work.

a stick of charcoal and oil. That would have reduced it soon to the strength required. On the other hand, if the foreground had been weak, we should have regrounded the plate without filling the bitten lines, by a method to be presently described, and carried the biting further. Of course, the foreground, if over-bitten, could be reduced with charcoal in the same manner as the distance, but when the work is so much stronger this is a matter of considerable labour. Another method of reducing over-bitten work is to use the burnisher freely. The pressure tends to crush in the edges of the line, so that it holds a smaller volume of ink. The reduction by this method, however, is not very great in strong work, though it is generally sufficient for the distance. This would probably have been the simpler method in the case of so small a plate as this, but it has the disadvantage, by crushing in the edges of the line, of destroying its purity of expression. For these reasons, it is better to keep the biting of the foreground well within bounds, while the distance is firmly bitten; but, I need not repeat, aim at getting your plate as right as possible at first. To reduce an over-bitten passage, it is better to polish down the portion of the plate with pumice, followed by snakestone, charcoal and water, and finally charcoal and oil. The work need not necessarily be polished out altogether, but it should be sufficiently reduced. It can be touched up again with the acid if required. I shall refer further to this subject when I come to speak of the method of re-biting.

Now let us see how all this will apply to the subject of our illustration.

The plate is now ready to be tested, so clean off the ground with turpentine, and take a good look at it.

Now that the ground is removed, you can form a much better idea of how it will print than it was possible to do beforehand. It is in knowing just when to clean off the ground that the real difficulty lies.

Now, in the first place, you will notice that the proof has a bare, cold, hard look. Mr. Menpes speaks of the little shock of disappointment that always waits the enthusiastic etcher at the sight of the first proof of every plate.

There is always more white paper than you have reckoned upon, and a good deal of work remaining to be done. This is the universal experience, and is due to the fact that the line drawn in the ground by the needle point looks thicker than it really is. In all the finer work it prints thinner than it looked when drawn. The feeling of disappointment will, however, disappear to some extent when we see the full proof, but meantime we must examine the plate in detail. The large vessel and the markings on the water show strong, but not too strong, against the distance, and stand well into the foreground. The smaller vessel and the more distant lines on the water go well away from the eye, and the distance is delicate, though quite distinct. The last is rather bare of colour, especially to the right, and we must see to this. The larger vessel appears almost too strongly bitten, especially in some of the organic lines; but when some colour has been added to the plate, this may not be so distinctly felt. The smaller vessel is wanting in colour; it is too bare of needle work. The same remark applies to the sails of the larger vessel; they do not suggest the colour of cloth against the sky. Nor does the vessel's hull appear as solid against the distance as it would in nature. Then, as to minor details, the lines of the larger vessel's rigging are too much of one strength; some of them are wanting in the delicacy that is characteristic of them in nature. The shrouds and stays which form, so to speak, the skeleton of the vessel's rigging, should be stout and business-like, but the rest should be light

## CHAPTER II.

### THE PROOF:

#### REMEDIAL MEASURES.

The method of printing must form the subject of another lesson. It is a department by itself, and has its own difficulties; so much so, that many etchers leave it alone, and send their plates to the professional printer. But you must not be content with that, for experiment with the printing press is one of the greatest elements in the etcher's delight in his art. For the moment, however, we shall suppose that our plate has been to the printer, and that the proof lies before us. [See plate 1, first state, facing page 22, and bear in mind that it is a "clean" proof, designed to shew exactly what is on the plate.] And here I take the opportunity to say frankly, before proceeding to criticise the proof, that this is the subject of an early plate, and is used for illustration, not because of any technical perfection, but because it illustrates the errors into which the beginner is liable to fall. It has also been chosen, partly, because it illustrates the method of biting with three simple values, free from complication. The beginner is strongly advised not to attempt too much gradation of value, until, at least, he has acquired some technical skill, and knows, more or less, what he is about. A simple scheme of biting, like a simple theme for a subject, is much the best, and is more likely to be attended with success in one's early attempts.

The first state.

Wanting in colour.

and delicate. We have failed to make sufficient distinction. Some of these should have been stopped out sooner, or drawn in later, in order to preserve the difference of value. There are also one or two thin places in the jib-stays and halyards, those lines above the bowsprit. These are due to our having stopped out some lines in the lower sky, and neglected to re-draw those portions of the ropes already partly bitten, so as to bring them out of uniform value throughout their length. We should have run the needle through them afterwards, and this will require our attention. Just above the yard of the mainsail is a faint line due to bad drawing, and there is another stretching out from the vessel's bow—the upper anchor rope—due to the same cause. These have not been bitten, but are drypoint scratches made by the needle in drawing lines which we stopped out before biting.

How are these defects to be remedied?

First, then, as to the larger vessel. We can reduce the strength of some of the lines of the rigging with the aid of the burnisher. With a drop or two of oil and a little elbow grease, this tool will reduce them to a more delicate value. Here we must be careful to pass over the thin places I have just referred to, so that the whole line will be uniform. The two drypoint lines may also be removed in the same way; but first the edge of the scraper may be passed over them very lightly, in order to remove the slight edge of copper, called the "burr," which the needle has thrown up. The small boat wants solidity, and you may add a few light lines with the point of your needle on the bare copper, using a fair amount of pressure. We could remedy the bareness of the needle work in the smaller vessel by grounding the plate again and adding work

Remedial  
measures.

Drypoint  
additions;

to it; indeed, we shall have to do so presently, for there is work to be added on the sails of the larger vessel. But here a better result will be obtained by a judicious combination of drypoint with etched work. Get your plate in a good light, and draw some drypoint lines very carefully between the etched lines of the sail. The side of the vessel is also rather flat, and you may put a few touches of the same sort at both bow and stern, to give them form. The want of colour in the distant pier may be remedied in the same way—that is to say, by the use of drypoint lines between the etched lines. The former might, of course, be thrown across the latter; but in the present case, I think the result is better by putting the drypoint *between* the etched lines. In all these cases, apply only a moderate amount of pressure to the needle.

Some of the slight alterations I have just indicated might have been effected by adding etched work to that already on the plate by the method about to be described.

They have been done, however, in a manner that is customary where slight additions of colour are required, partly because the result in the present instance is, I think, better, but mainly for your instruction; for it is the practice of most etchers to combine drypoint with etching in this way. I may remark, however, that the use of drypoint for the finishing touches of an etched plate should be confined to the lighter passages of middle distance and distance, for the strong drypoint line does not harmonise with the strongly-bitten line. I have sometimes seen them combined in the work of good men, but not always with a pleasant effect. To add work by way of adding colour to foreground objects, such as our larger vessel, it is necessary to re-ground the plate and proceed as before, adding needle work

To add bitten  
work.

from stage to stage, and biting for the length of time required. You may make up your mind that practically every plate will require to be treated in this way. It requires a vast amount of experience to enable the etcher to put upon a plate the full amount of work required previous to the first cleaning off. Indeed, I would recommend, as the result of my own experience, that the work during the first putting through of a plate should be kept within safe limits, for any attempt to make it complete from the beginning is apt to lead to the etcher losing grasp of his first intention. The consequence of this is a loss of freshness and brilliancy, which can never be remedied. Leave all your high lights frankly white, and confine yourself to what may be termed the essential features of the subject. You can then, with a proof before you, judge much better what is required to put your plate in a satisfactory condition, and a very little pulling together is often all that is necessary. It is manifestly easy to add a little work here and there by way of pulling a plate together; while it would be impossible, in the great majority of cases, to remove work already done, without at least a quite disproportionate amount of labour. Besides, a reticent treatment of your subject is more in accordance with the spirit of the etcher's art.

Re-grounding  
to add work.

The essential thing to be done, when re-grounding a plate to add work, is to secure that that already bitten is thoroughly protected from the acid. This can only be effected, of course, by securing that the lines already bitten are filled with the ground. Various methods are adopted by various etchers, and each is probably the result of the circumstances, or perhaps also of the idiosyncrasy, of the individual. The method I have found at once the simplest and most effective is as follows :—

After you have thoroughly cleaned the plate with turpentine, avoiding this time the use of whiting, lest it remain in the lines, lay it upon the heater, which must be kept at a low heat. Warm it gently until the ball of ground just melts sufficiently to spread easily on the plate. *Do not allow it to get any hotter.* This is important, for the ground is very apt to burn if the plate get too hot, in which case it will chip off under the acid. Rub the ball all over the plate, taking special care that it is well rubbed into the lines already bitten. Give all strongly bitten lines your special attention, and see that the ball does not glide over without filling them. Then with the roller—an instrument of the greatest value, which I shall describe presently—remove the superfluous ground, of which there is sometimes a good deal, by passing it once or twice over the plate, and then over a spare plate on the other end of the heating plate. This being hot takes the ground at once, and the latter can be wiped off with a rag as required. In this way you get a perfectly even film on the surface of the plate, while the lines remain filled with ground. Lay the plate aside for a few minutes to cool. Do not smoke, or you will not see the work already on the plate. The accumulation of ground in the lines will enable you to see them distinctly. The ground on the surface is now apparently transparent; but, as a matter of fact, it is slightly, though not much, darker than the copper, and if you work in a good light you will be able to see what you are doing, and add the needle work required without difficulty.

“Could we not have used the liquid ground for this purpose?”

No. To re-ground a plate with the liquid ground, <sup>Liquid ground</sup> <sub>unsafe;</sub> for the purpose of adding bitten work, is not effective.



The liquid both fills the lines and leaves a perfect film on the plate; but it shrinks as the solvent evaporates, and leaves the edges of all the more strongly bitten lines exposed to the acid. These would be at once attacked, and the former work seriously injured, if not destroyed. The method just described has not this disadvantage. The one danger to be guarded against is that of the ground being burned by the plate being allowed to become too hot. But by the proper manipulation of the heater, which I shall explain in due course, this danger can be avoided with comparatively little difficulty.

Except for delicate work.

All strongly or even moderately bitten work must be treated in the manner just described. For a delicately bitten plate, however, I have found it sufficient to pour upon it rather more of the liquid ground than is required to merely cover it, and allowing it to dry with the plate in a horizontal position. The ground runs into the lines, and fills them sufficiently to protect them afterwards without exposing the edges. But the protection afforded is not sufficient if the work already on the plate be at all strongly bitten. Should the ground so applied be rather thick when dry, the plate may be warmed and treated carefully with the roller as described above, or with the dabber if more convenient.

The additional needle work.

Now pin your plate down in the drawing board, and dispose yourself towards the light, so that you can see distinctly what you are doing. I would suggest that you should shade carefully between the lines already bitten on the mainsail; but on the foresail, which is already shaded more closely, cross shading will give variety and avoid flatness. Then shade the hull of the vessel with perpendicular lines, and add one or two touches about the water if you think it advisable, and

the plate is again ready for the acid. Had we not touched up the other parts of the plate with drypoint, we could have added work there with the needle, biting and needling in stages as before. Or, we could have added all the needle work at once, and stopped out by stages, as I shall describe in a subsequent paragraph. Either method would have been equally effective; it is entirely a matter of convenience which of the two methods you will prefer to follow at this stage. In the present case, however, we have only the foreground to attend to, and one brisk biting of ten minutes will effect all that is required. Perch the plate therefore over the bath as already described, touch the vessel here and there with the feather dipped in saliva, and pour on sufficient acid to cover the new needle work. It is necessary at this stage to watch the biting carefully; for, should the acid be a little more brisk than before, our allowance of ten minutes may be too much, or, should it bite very quietly, fifteen may be required. Watch the bubbling therefore, and be guided by that.

Caution in biting added work.

When adding work to a plate that has been already bitten, the etcher must be on his guard against the danger of over-biting. It is always rather a difficult thing to bite added work to just the right degree of strength, so that it may harmonise with what is already on the plate. There is especially a great temptation, when the amount of added work is small, to hasten the biting and get it done with. This tendency must be resisted, or the result will be a spoiled plate. A line that is bitten quietly in half an hour, compared with another that is bitten rapidly in half the time with stronger acid, though to the same strength, is very different in character; the latter is inharmonious in the proof. To hasten the biting with the nitric mordant is

to make the line more ragged. The quietly-bitten nitric line, though rough compared with the Dutch line, is clean and smooth enough for all ordinary purposes, but the hastily-bitten line is not merely ragged, it is harsh, and destructive of all quality. Never allow yourself to be hurried in biting the finishing touches to the work on a plate.

Biting in the same.

"How am I to manage the biting of the small steamer at the pier?"

Oh, I had forgotten that. You have drawn this in at the same time as the work on the large vessel. Pour the acid on in sufficient quantity to cover the latter only, and give it, say, five minutes to get well going. Then with the feather sweep it over to the edge of the plate, so as to cover the steamer, and in five or six minutes more the whole biting is finished. If the acid refuse to remain over the steamer, dip the feather in saliva, and try again, when you will find that it goes as you wish. Always use the saliva when you wish to guide the acid, or confine its action to any given spot. It will not go beyond the limits indicated in this way, unless there be too much on the plate, and it will flow freely as far as required if there be enough.

The finished proof.

Now we must turn to the finished proof for results. [See plate 1, finished state, facing this page.]

Full of colour.

You will notice at once that the "finished" proof is stronger and richer than the first "clean" proof. It has not the bare look that we remarked before. This difference is partly owing to the method of printing, which will be explained in due course, but is mainly due to the added needle work. The large vessel, we now see, comes well towards us. The organic lines, which we feared were rather overdone, now keep their place. The addition of so much colour to the

PLATE 1.

ETCHING.

("Finished state.")



to make the line more rapid. The quietly-bitten nitric line, though rough compared with the Dutch line, is clean and smooth enough for all ordinary purposes, but the hastily-bitten line is not merely ragged, it is harsh, and destructive of all quality. Never allow yourself to be hurried in biting the finishing touches to the work on a plate.

"How am I to manage the biting of the small steamer at the pier?"

Oh, I had forgotten that. You have drawn this in at the same time as the work on the large vessel. Pour the acid on in sufficient quantity to cover the latter only, and give it, say, five minutes to get well going. Then with the feather sweep it over to the edge of the plate, so as to cover the steamer, and in five or six minutes more the whole biting is finished. If the acid refuse to remain over the steamer, ~~brush it~~ <sup>brush it</sup> together in a bowl, and try again, when you will find that it goes as well. Always use the saliva when you wish to guide the acid, or confine its action to any given spot. It will not go beyond the limits indicated in this way, unless there be too much on the plate, and it will flow freely as far as required if there be enough.

Now we must turn to the finished proof for results.

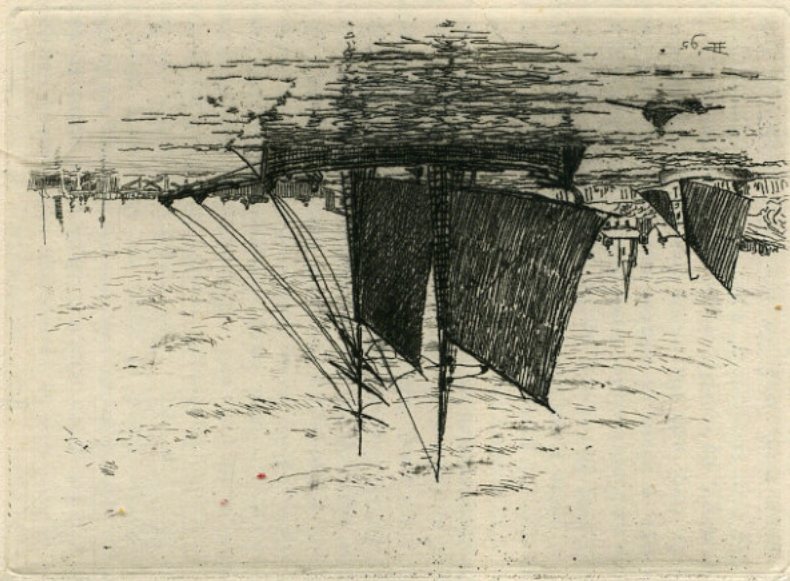
[See plate 1, finished state, facing this page.]

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Biting in the same.

The finished proof.

Full of colour.



hull and sails supports these, so that they cease to be obtrusive. The smaller vessel is now full of colour, and comes better away from the distance, without coming too near. This combination of the drypoint with the etched line is sometimes very useful, though that is a point upon which I shall have more to say presently. The distance also has more body, while still preserving the feeling of light, and the pier is more in tone against the sky. The drypoint touches on the small boat and the distant vessel's hull have given the additional colour required. The two drypoint scratches about the larger vessel have disappeared, and the lines of the rigging show more variety of value. The strong line on the water below the boat was over-bitten; this has been reduced by the burnisher, and still further toned down by the addition of a line or two of drypoint.

And here I must take the reader into my confidence <sup>Plate 1:</sup> in regard to plate 1, if only lest he should find me out! <sub>an explanation.</sub>

For the convenience of printing the plates all at once, I found it necessary to execute *two* plates of this subject. As a matter of fact, the "first state" and "finished state" of plate 1 are shewn by two plates. To secure, however, that the result, as far as possible, should be the same as if both states were printed from one and the same plate, a plate of double size was taken, divided exactly in two, and the work executed on both parts, at each stage, as exactly as possible line for line. By biting the two sections of what was actually one plate at the same time, and for the same length of time, I secured that in the result the two, when printed for the first stage, were practically the same. No difference could have been detected without close examination. One of the two was then kept untouched, to illustrate the "first state"; and the other was carried forward,

as already explained, to show the "finished state." This is of no practical importance, as far as the foregoing paragraphs are concerned. I only mention it now because there is a defect in the sky of the latter, which I am glad of the opportunity to point out, by way of explaining how it arose, and suggesting a remedy.

Burned ground. I have explained that there is great danger of the ground being burned when the plate is re-grounded to add work, and this is what has happened in the sky of the "finished state" of plate 1. As explained, it was found advisable to leave over the execution of the sky until the two plates were cleaned off and proofs taken. The plates were then re-grounded, and the work of the sky executed on both at the same time, in the same manner as before. During the biting, however—a graduated one, of which more presently—while the ground on the greater part of the plates remained intact, it chipped off in one or two places in the work of the sky, in the lower half only of the double plate; a proof that it had been burned there. The mischief was kept at a minimum by stopping out the bright spots on the copper every minute or two as they appeared, and the slight blots that were found when a proof was taken were removed, or partially so, by the burnisher. The use of the tool, however, led to a reduction or partial removal of some of the line work. Instead of attempting to retrieve this, which would not have been difficult, the plate was left untouched further, in order to point out the defect. The remedy would have been either to re-ground again, and add a little needle work, biting carefully to the strength required, or to have added a little drypoint. The latter would usually be quite sufficient for the purpose. The observant reader,

who may have discovered the differences in the sky, or in the plate otherwise, will please accept this explanation, without which he would have been at a loss perhaps to account for them.

more serious matter. Imagine the labour of stopping out, say, a delicate sky or distance between the intricate branches of a tree! I believe the old etchers had a rule-of-thumb something to this effect, "one hour with the brush is worth five with the needle." But there is no inherent difficulty in drawing only the strong work at first, leaving the rest to be filled in by stages. It is only a matter of a little care in placing the foreground objects right; the rest will all fall into place without difficulty. Therefore such an expenditure of time and labour in stopping out plates upon which the whole of the work has been drawn from the beginning would seem to be quite unnecessary. (I speak here of working direct from nature. When drawing from a prepared sketch and using a tracing there is, of course, no difficulty whatever, as you can trace in only the strong work previous to the first biting, and the remainder follows as required at each stage.) But you will do well to bear in mind both methods of working, for, as a matter of fact, most plates are put through by a judicious combination of the two.

Combination  
of both.

In general practice you will follow mainly the process I have described, but will adopt the method of stopping out when it suits you to complete the drawing of several values before the first biting, in order to pull the subject together, stopping these out as they are sufficiently bitten; or when, as often happens, you find that some portions of the first work are already strong enough, while others still require additional time under the acid, you can stop such out as required. I must point out to you that the method of working by stages enables you to throw light shading across strong work in the foreground with the greatest ease. Such a super-position of light work on strong could not be managed by the

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### CHAPTER III.

#### METHODS OF WORKING:

##### FURTHER REMEDIAL MEASURES.

The method of doing the work piece by piece, and biting by stages, is a modern one. The old etchers would have drawn in the whole of the work, and obtained their values by stopping out between the bitings. For example, after the whole work had been drawn upon this plate, they would have subjected it to a biting of perhaps five minutes, and would then have painted out the sky and distance. After a second biting of, say, seven to ten minutes, the distant vessel and the lines on the water, also the more delicate of the ropes of the larger vessel, would have been likewise disposed of, and the remainder of the work exposed to the acid for a further ten or fifteen minutes. This would have left the account much the same, and in a simple subject of this sort, in which the values do not, so to speak, overlap one another, the time spent upon the whole of the work would have been about the same, though the gradation of the sky would not have been managed with the same ease. It would have required, too, a considerable amount of care to stop out the distance in our plate, and especially the sky, so as to have left the lines of the vessel's rigging untouched in places by the varnish, while the fainter work was completely protected. But after all, on so small a plate, this would have been only a matter of a few minutes' careful manipulation. On a large and elaborate plate, however, it would be a

Working by  
stages,

Stopping out.

stopping-out process, and could only be done by re-grounding and adding the light work, after the strong work has been completed, and the plate cleaned off. In some classes of subject you will add work to the foreground at every stage. Take, for example, the trunk of a rugged tree in sunlight. For the first biting the rugged markings would all be drawn in; for the second, the general colour of the side that is in shadow, as well as the strong shadows under the prominences, all middle values being drawn then also. Any further colouring on the light side of the tree would be added previous to the last biting, at the same time as the work of the distance. Sometimes the *outline* on the light side could be stopped out with advantage after the first biting, in a case where the subject required it, as it is manifestly easier to draw both sides of a trunk and branches at the beginning, than to leave one side undrawn till a later stage. A reference to plate 4 will illustrate this. Although this subject was not drawn in sunlight, work has been added to the chief tree trunk at every stage, as will be explained when I come to speak of that plate presently.

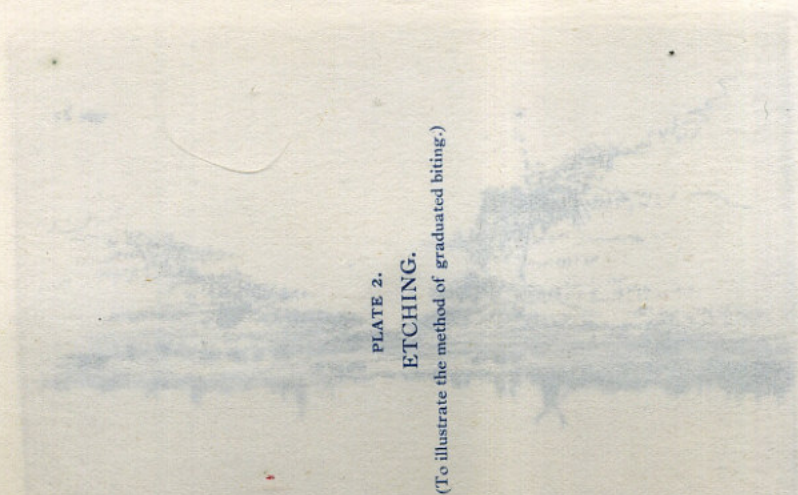
Dis-use of  
the bath.

Before leaving the question of the method of biting, let me say that the rough and ready method I have explained (I mean that of pouring the acid over the plate instead of plunging it bodily into the bath), though not the ordinary one, has several important advantages, and is at the same time sufficient for all practical purposes. I have not used the bath in the orthodox way for many years. A great advantage of the method is that it obviates the necessity of painting the back of the plate beforehand and waiting for the varnish to dry, though this perhaps is only a matter of a little trouble and patience. It also saves a good deal of washing and

PLATE 2.

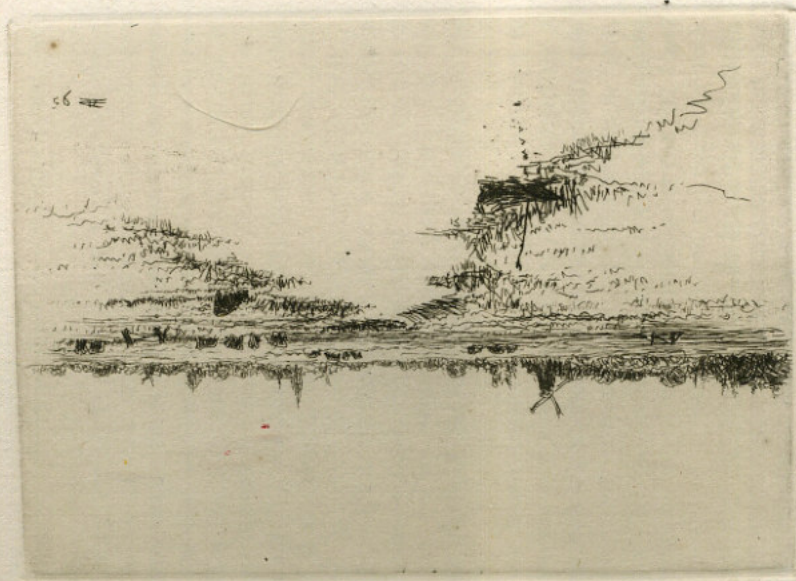
ETCHING.

(To illustrate the method of graduated biting.)



grounding and shading process, and work on the strong work has been done. For the first biting the trunk and branches are drawn in; for the second, the shadows under the prominences, all the hollows being drawn then also. Any further colouring on the light side of the tree would be added previous to the last biting, at the same time as the work of the distance. Sometimes the *outline* on the light side could be stopped out with advantage after the first biting, in a case where the subject required it, as it is manifestly easier to draw both sides of a trunk and branches at the beginning. ~~When~~ leave one side un- drawn till a later stage. ~~When~~ to plate 4 will illustrate this. ~~(Should be left to be drawn in)~~ In sunlight, work has been added to the chief tree trunk at every stage, as will be explained when I come to speak of that plate presently.

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the bath.



drying of the plate every time it is taken out of the bath, and there is little or no need to touch the acid with the fingers. The acid in fact is simply poured on to the plate from the bottle and tilted into the bath when done with; it need never be touched by the fingers, and that is difficult to avoid by the old method.

But a very important point is that a graduated biting <sup>Graduated</sup> can be obtained with great nicety, such as can be got <sup>biting.</sup> in no other way. It is especially useful for the gradation of the sky, and such parts of the landscape as run away from the eye, such as a hedgerow, or a row of buildings receding into distance. Indeed, once you fairly grasp this method of working you will find that you use it on almost any plate, with sometimes great effect. It is therefore worth a little attention at first.

To this end I have thought it worth while to execute <sup>Plate 2.</sup> a small plate entirely by a graduated biting, by way of illustration. [See plate 2, facing page 50.] In this plate the whole of the needlework was executed at the beginning. A small quantity of acid was then placed across the lower portion of the plate, and allowed to bite there for five minutes, before it was edged up a little way with the feather. It was carried gradually forward every two minutes or so, a little bit at a time, until the cattle and the two gates in the middle distance were covered. Then it was carried over the left-hand part of the distance, and, after it had got fairly to work there, as shewn by the ebullition, as far as the windmill, the rest of the distance below the horizon line being also covered by this time. In a couple of minutes more the feather was swept up over the distance to the right, a little further on from the left towards the centre, and finally, in two minutes more, over the remainder of the distance in the centre of the plate. In two or three

minutes more the biting of the plate was finished. I think the time was about twenty-five minutes, the acid having been at work quietly, not quite so briskly as in the case of plate 1.

Added work.

The plate was then cleaned off and a proof taken. The middle distance was found to be rather bare of colour, and the punt in front wanted a few decided touches. The plate was then regrounded (with the ball, as already described), the few necessary touches added to the punt, and a few lines thrown across the meadows in the middle distance. Once more the acid was applied to the foot of the plate, being allowed to bite for ten to fifteen minutes. It was then swept up over the meadows with the feather, and in five minutes more, or thereabouts, the plate was finished. It has remained untouched since.

This plate will give point to what has been said above with regard to the ease with which a graduated biting is obtained. It will be worth while executing a subject (one suitable for this method of treatment, of course), in order to grasp the principle of working, for, once understood, you will apply it, more or less habitually, and to a greater or less degree, on almost every plate.

Re-biting.

In a former paragraph I spoke of the methods available for the reduction of work that is over-bitten. The methods available for the strengthening of work that is under-bitten are, of course, quite different, but of equal, if not greater, importance; greater, perhaps, because of the more delicate manipulation required in the preparation of the plate. When small quantities of work require to be bitten up, the usual plan to follow is to re-ground the plate in the manner formerly described, with the lines filled with ground, as well as the surface covered. The needle is then run along the lines requiring

to be re-bitten, so as to clear out the ground. The plate is then submitted to the acid for the extra time required to bring them up to the strength desired. This is generally brief, a few minutes at most. Only those lines from which the ground has been removed are exposed to the acid, the rest, of course, being perfectly protected. Should different values require strengthening to different degrees, the plan may be followed of clearing out the lines in stages and biting as required. Should there be, for example, two values requiring an additional six and three minutes under the acid respectively, the former might be cleared out with the needle and bitten for three minutes, the latter being then cleared out in like manner, and the whole submitted to the acid for another three minutes.

The roller.

The above method, however, only applies in cases where the amount of work requiring to be re-bitten is small, and that because it would be a very tedious process to clear out a large amount of needle work. In cases where there is a large amount of work requiring to be re-bitten, it is manifest that a more effective method would be to cover the surface only of the plate in such manner as to leave the lines exposed. This, as can easily be imagined, would be a somewhat difficult thing to accomplish, especially with the dabber, which was the only instrument the old etchers had for the purpose. But, happily, we have a most useful, indeed indispensable, instrument for this purpose in the roller. This is a cylinder of wood some three inches long, covered with fine leather, and set in a handle by means of which it can be passed over the surface of the plate with great ease. I can best illustrate the use of this instrument by applying it to one of the illustrations. Let us suppose that the large vessel in plate 1 had been

insufficiently bitten, so that in the proof it did not stand out sufficiently from the rest of the work on the plate. The method to be followed would be this. The plate, thoroughly cleaned, would be laid upon the heating plate, as formerly described, with a spare plate beside it, or, better still, two spare plates of suitable size. The heater should be kept at a low heat, sufficient to melt the ground, but not enough to burn it. Then the ball is rubbed over one of the spare plates in sufficient quantity, and the roller is evenly charged by being passed over it in many directions, many times, until the evenness of the film upon the plate argues an equally even film upon the roller. Should the film be judged too thick it can be reduced by passing the roller over the second spare plate. The roller is then passed over the plate to be re-grounded in various directions, three or four times perhaps, but not more than half a dozen times over any given part, great care being exercised that it takes the surface of the plate evenly and lightly. Without care, it might be found that the lines were partly filled with ground and would bite unevenly. Rightly done, the surface of the plate is effectively covered, while the lines remain exposed to the further action of the acid. As soon as the plate is cool it is ready for further biting. It should not be smoked. The sky and distance of our plate would then be stopped out in the usual way, leaving the whole of the larger vessel untouched, with, perhaps, the exception of any lighter lines of the rigging which might be already strong enough. The acid would then be poured over the plate in the usual way, and an additional biting given of whatever time might be judged necessary, three or four minutes perhaps. Should the re-grounding have been properly done, it would be seen by the

Re-grounding  
to re-bite.

ebullition that the acid was attacking all the lines equally.

There is no great difficulty in applying this method to work that is already bitten to a moderate degree. It is only a matter of having a suitable roller, and applying an even film with a light hand. It is also important that the heater can be regulated so as to give the low heat required. It remains to be said, however, that it is difficult to apply a perfect ground to extreme distance and sky. There, the lines are usually so fine that it requires great skill to succeed in grounding the plate's surface without partially filling them with ground. This is the reason why I insisted, in a previous paragraph, upon the advisability of biting distance firmly, for it is much easier to reduce it slightly by the use of the bur-nisher, than to re-ground it with the roller so that it will re-bite evenly. Indeed, in such cases, it is advisable to adopt the method formerly described of filling the lines with ground and running the needle through them. But, for all but the finest work, the roller will accomplish what is required with an ease that is surprising, and if everything be in good working order the re-biting will be quite regular.

As it happens that re-biting has to be done after the plate has been proved, it may be worth while remarking here that the plate should be perfectly flat. If, as often happens, it has curled slightly under the pressure of the printing press, see that this is corrected by passing it through the press face downwards with such pressure as will put it right again. Otherwise it will not take the ground from the roller evenly.

The remedial measures which I have already explained are such as plate 1 required, and they include the chief measures generally found necessary for the completion

Plate must  
be flat.

of a plate; for you must make up your mind that no plate that is in the least degree complicated—hardly even the simplest indeed—is completed without a resort to re-grounding, whether for re-biting or for adding work, or both, and the use of the scraper and burnisher. The former I have fully described, but a few words on the use of the two tools may be useful.

The bayonet-shaped tool called the scraper, which should be kept bright and sharp, may be used in two or three different ways. It may be used very lightly to remove the slight burr of the drypoint lines so often utilised to finish the sky and distance, or, indeed, such as may have been used on any part of the plate, the proof of the drypoint line, with the burr retained, not being in harmony with that of the etched line. It is used again with more force to reduce parts that are too strongly bitten, and require greater reduction than mere polishing would accomplish. The surface of the copper should be lowered as evenly as possible until the work is reduced nearly to the strength desired. If the tool be used carelessly, the surface of the metal will shew numerous corrugated hollows that have an ugly look in the proof. And further, this tool may be used to remove altogether portions of the work that it may be necessary to do again. This applies specially to small portions of the plate. Larger erasures may be better treated in a manner to be explained presently.

The burnisher, a tapered piece of polished steel, which must also be kept bright, follows upon the use of the scraper, and is always needed when it is desired to polish any part of the surface on which the scraper has been used. It must be used vigorously with oil, and followed with a stick of charcoal, in order to get the surface back to its original condition. Always finish with the charcoal,

The scraper  
and its uses.

The burnisher  
and its uses.

especially when cleaning up a smooth part of the copper; the burnisher leaves the surface smoother than the rest of the plate, which has been finished with charcoal by the planisher, and such parts would shew white marks in the proof if finished with the burnisher alone. This tool may be used also to reduce the strength of bitten work where only a slight reduction is required. The scraper, which interferes more seriously with the surface of the copper, should only be resorted to when necessary, and in strong work, on account of the labour involved in repolishing. Distance that is slightly over-bitten can generally be reduced by the burnisher without resort to more violent measures. This tool should never be used to remove the burr of drypoint, because it crushes the particles of copper into the lines, and so destroys their purity. If the scraper be kept bright and keen, and used with a light hand, it will do the work properly without scratching the surface.

I may add here, on the authority of Mr. Frank Short, <sup>Intentional</sup> <sup>over-biting</sup> that some etchers make a practice of over-biting the distance, with the intention of using the burnisher afterwards. A greater amount of modelling is sometimes obtained in this way, but it requires a considerable experience, both in the use of the acid and that of the tool, to be able to do this well. The student will be wise to rely upon the acid for as much of the work as possible, and only to resort to the burnisher when necessary.

When it is required to erase work from any considerable portion of the plate, it is better to do it in a different way. Proceed, first, to rub down with finest sandstone or pumice, until the work is removed. Then polish by the use of snakestone, followed by charcoal and water. Use plenty of water and do not spare the elbow-grease.

Finish with charcoal and oil. This is rather laborious work, and the plate, as a rule, is best sent to the polisher, but occasionally an hour so spent will save you vexation and delay. Keep, therefore, one or two pieces of the necessary materials beside you.

It will usually be found that the reduction in the thickness of the copper, following upon the erasure of work, is very slight, so slight that no difference is perceptible in the proof, the use of the blanket in the press serving to equalise the pressure. But, should the new work on such portion of the plate prove weak in the print, and this is mainly the case when the erasure has been small, the defect may be remedied by pasting on the back of the plate a piece of paper of the thickness required. It should be cut to the shape of the portion erased, pasted on at the right place, and the edges scraped down so as to taper off. The copper is so sensitive that the surface will shew the shape of the piece of paper, after it has been passed through the press, if this latter point be not attended to. This method of backing up applies specially to the thinner kind of plate, such as the ordinary card plate.

When any narrow and deep reduction of surface has to be brought up to the level, such as might be occasioned by the removal of an isolated deeply-bitten line, or of a "blot," where perhaps a few short lines close together have run into one another in the biting, so as to shew a black smudge in the print, the copper must be hammered up from the back. Mark the place carefully with a pair of callipers, and use a light hammer and a small steel punch. I keep two or three of these beside me, with points of various shapes, for the purpose. They are obtainable at any tool shop for a few pence. The face of the copper should be laid upon a polished steel anvil,

Backing the  
plate.

Hammering up.

or similar smooth surface, protected by a thickness or two of tissue paper. Use the hammer carefully and lightly, as it is difficult to get the surface just right. Any over-raising of the surface can be put right by the use of a hammer with a round head, lightly used. A hammer well suited for all these purposes can be got at any good tool shop. The head is of the ordinary shape, except that the small end is round and polished, like that of a button mushroom. When necessary, the surface can be finished off by polishing with charcoal, but the slight mark of the hammer will not shew in the proof unless the tool has been carelessly used.

The very greatest element of uncertainty in the biting <sup>The tell-tale.</sup> of a plate lies in the effect of temperature on the rapidity of the acid's action. A mixture of, say, two parts of acid to three of water, which to-day works sweetly and steadily, may to-morrow act hardly at all, or may attack violently, according as the weather is cold or hot. Ten degrees higher or lower in the temperature will make quite a disproportionate difference in the rate of biting, and upset all your calculations. A simple way of reducing this uncertainty to a minimum is to hang in the bottle of acid a tell-tale, in the form of a piece of copper wire. I use a strip cut from a plate, which, perhaps, is better, as it is more or less of the same density as the plate upon which the acid is to be used. The copper wire might be softer, and therefore not so sure a guide. The action of your mixture upon the strip will tell you in a few seconds whether it be in right working condition or not. It should attack steadily but without violence. Violence is to be avoided, as the line that is forced in the biting is raw in the proof. Add a little acid or water when necessary, until the action on the strip is as you want it. Although it is desirable that the acid be mixed

sometime before using, the addition of a little acid or water at the moment will not affect the action appreciably, but see that the bottle is well shaken before using its contents. The adoption of this plan will save much uncertainty, and enable you to bite a plate at different times with comparatively sure results.

I find that in the earlier stages I omitted to say anything as to the number of points to be used. This is a matter as to which the practice of etchers differs, and may depend upon the nature of the ground they use. Most of the grounds supplied by the dealers are harder than that which I shall recommend to you presently, and give way less readily under the ebullition of the acid, hence three points may be necessary in such cases. In my own practice I find two as a rule quite enough. I used both in plates 1, 3, and 4; plate 2 was entirely executed with one point, the finer one, as too much vigour was not desirable. It is only where extra vigour is required that a coarser needle than ordinary need be used. Let the point for ordinary use be fairly fine and leave the acid to do the rest, but carry with you a second needle with a coarser point, for occasional use when the subject requires it. Some etchers may prefer to use two or three different points, and not to bite for quite so long a time. The result is, in the strong work of the foreground, a broader and at the same time shallower line. This line prints with a greyer quality than the line done with a fine point and bitten longer. The etcher will therefore do well to make one or two experiments in this direction, and adapt his method of using one or more points to the requirements of any particular plate. This, however, is a matter with regard to which the beginner should not trouble himself until he has had some experience. It would only lead to confusion and

Variety of  
points.

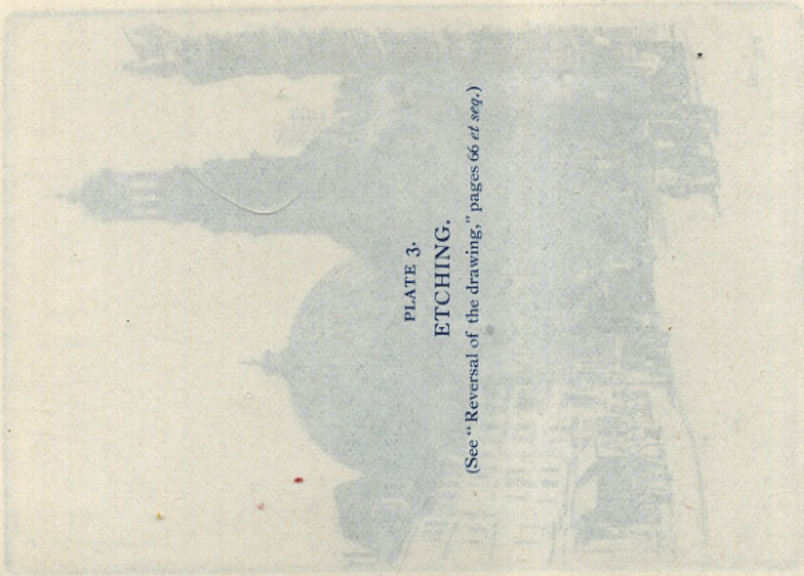


PLATE 3.

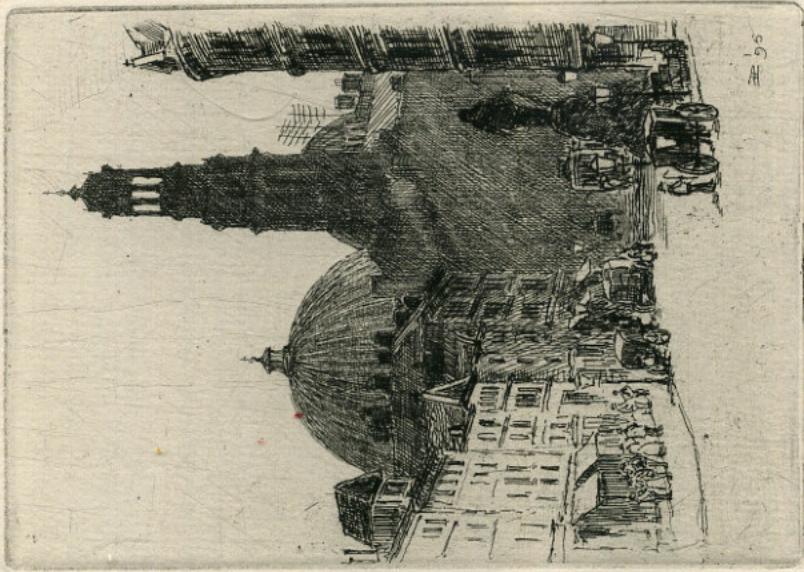
ETCHING.

(See "Reversal of the drawing," pages 66 *et seq.*)

...the addition of a little acid or ... the action appreciably ... well shaken before using ... this plan will save much ... to bite a plate at different ...

I find that in the earlier stages I omitted to say anything as to the number of points to be used. This is a matter in which the practice of etchers differs, and one might guess the nature of the ground they use. Some of the grounds supplied by the dealers are harder than others, and I shall recommend to you presently, and give you less readily under the ebullition of the acid, some more points may be necessary in such cases. In my own practice I find two as a rule quite enough. I used both in plates 1, 3, and 4, and plate 2 was entirely associated with one point, **ETCHING**, as too much vigour was not desirable. It is only where **EXTRA** vigour is required that a coarse needle than ordinary need be used.

Let the point for ordinary use be fairly fine and leave the acid to do the rest, but carry with you a second needle with a coarser point, for occasional use when the subject requires it. Some etchers may prefer to use two or three different points, and not to let the plate be long a time. The result is, in the strong work of the lamp-  
ground, a broader and at the same time shallower line. This line prints with a greayer quality than the line done with a fine point and bitten longer. The etcher will therefore do well to make one or two experiments in this direction, and adapt his method of using one or more points to the requirements of any particular plate. This, however, is a matter with regard to which the beginner should not trouble himself until he has had some experience. It would only lead to confusion and



disappointment to attempt to master a detail of this sort in his early practice. I may, perhaps, add, that the ground, which I shall presently recommend the reader to make for himself, is softer than those usually sold, and enlarges steadily under the ebullition of the acid; hence, one point is sufficient for ordinary occasions, a coarser one being necessary only when extra vigour is desired.

Before passing from the subject of "Etching," it will be of service to call your attention to what I have already hinted at, namely, the practical bearing of the nature of the process on the use of the line in making your drawing. It must always be kept in mind that the action of the acid widens the line at the same time that it deepens it, as the biting proceeds. At first the acid can only work downwards, as the ground effectually protects the surface of the copper immediately on either side of the line which the needle has bared. But as it gets below the surface it begins to work laterally as well, and so undermines the ground to some extent. Therefore, the longer the biting the wider, as well as deeper, the line becomes. This must be kept steadily in view, especially with reference to shade or solid work in any part of the plate. It was for this reason that I instructed you, to refer again to plate 1 for illustration, to shade the sails of the larger vessel rather openly, and those of the further one more closely. If you examine the hull of the larger vessel, you will see that here and there the lines have run into one another. That is due to the fact that, as they widened, the surface between them was destroyed, wherever they approached too near to one another, and, though not lowered equally with the lines on either side, became a ragged edge that holds ink. The result in the proof is a solid blot. This blot is not



always an objection, and may be used with great advantage where emphasis is required. But that depends entirely on what you are doing. Here it is rather an advantage than otherwise, especially where the upper part of the vessel's hull shows solid black against the light of the distance, but in the sails such would have been disastrous, and altogether destructive of the idea of texture. In other words, the accidental blot may be useful in rugged work of any sort, but must be carefully avoided in anything approaching tone. Therefore, when representing, let us suppose, a strong shadow in three distinct values, draw it by regular lines pretty open in the foreground, moderately so in the middle distance, and close in the distance. Compare the sails of the larger vessel with those of the more distant one, and those again with the close shading of the distant pier, and this will be made clear. Therefore adopt it as an axiom, "the longer the biting the more open the lines," and, *per contra*, "the shorter the biting the closer the lines" of your drawing.

Another thing that may be pointed out in this connection is, that tone may be obtained in two ways, either by shading very finely and giving a slight biting, or by shading less finely and biting more decidedly. The total amount of black may be the same in both cases, but the expression is different. As to which of these methods must be used in any particular case will depend upon the nature of the subject, and perhaps upon the idiosyncrasy of the artist, so may be left to his discretion. Compare, however, the two bits of distance in plate 1, and the buildings in plate 3 for variety of treatment in the rendering of tonic values.

I take the opportunity to refer here to plate 3 (facing page 60), which was not, like the first two, executed to

The blot.

Plate 3.

illustrate any particular method of working, but rather perhaps a combination of methods in a less simple form. It was carried through on the principles already explained in connection with plates 1 and 2. The main markings of the building to the right, with the incidents of the foreground, were drawn first and bitten for a good ten minutes. Then the main drawing of the receding buildings on the left was executed, also the statue and tramway, and the shading thrown over the building on the right. In the second biting the acid was placed over the previous work to the right, the statue, etc., and was then carried with the feather up the left hand side of the plate, and gradually forward over the receding buildings, on the principle of graduated biting. When the latter had been bitten from about eight minutes on the extreme left to, say, six in the distance, with the acid working briskly, the plate was dried, and the needle work on the buildings in the background executed, in perpendicular lines only, as well as the colour added to the mass of buildings on the left. A final biting of some seven minutes completed the first state of the plate. On cleaning off and taking a proof, the building in the background was found to be weak and wanting in tone, so the plate was re-grounded and the cross shading added, as well as some colour in the dome. The new work was then bitten for about seven minutes, and the plate was finished.

This plate gives me the opportunity to remark that it is extremely difficult to bite a piece of flat tone to just <sup>The biting of</sup> tone. It would be more safely done with the Dutch mordant, or the perchloride of iron, of which more in the proper place. It was not intended here that the tone should be quite so strong, in the lower part of the building at

any rate, and in trying to reduce it by burnishing there is a loss of quality due to the fact that the perpendicular and cross shading, executed at different times, were not bitten to just the same depth. A close examination shows the lines of both directions to be about the same in the tower, but in the lower part it will be seen that the perpendicular lines have been reduced to a much greater extent than the others. The latter assert themselves too much for the result to be quite satisfactory. Theoretically, the two lines were bitten to the same depth, and the action of the burnisher should have reduced both to the same extent. It is evident, however, that the perpendicular lines have not been bitten to the same depth as the others, for the apparent reduction in them is much greater. It is worth while understanding the cause of this. It is probable that the acid in the biting of the cross shading has been working more quickly, or has been applied for a minute or so longer, than in the case of the first needle work. If we suppose the depth of the perpendicular lines to be represented by five and of the others by seven, which would very nearly be the times of biting in minutes, allowing for a little difference in the action of the acid, the difference in the two would not be very great in the proof. But if we reduce both of these by two, which would represent approximately the reduction in value by the burnisher, making the result *three* and *five* respectively, the proportional difference is greater, and would shew proportionally greater in the proof. And if we were to continue the reduction of surface the perpendicular lines would presently disappear altogether, while the cross lines still remained, though getting faint.

Etching,  
a limited art.

This is one of the niceties of biting that will not, however, trouble you very much, unless you make a practice

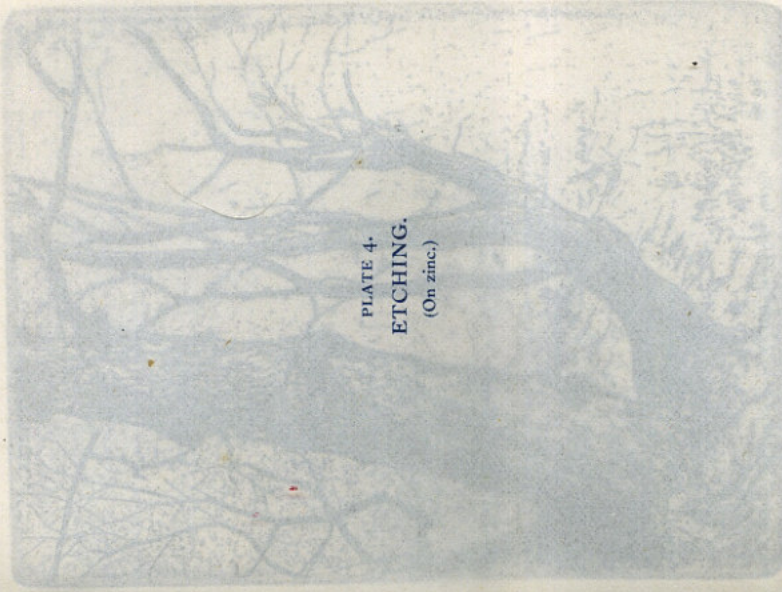


PLATE 4.  
ETCHING.  
(On zinc.)

any rate, and in trying to reduce it by burnishing there is a loss of quality due to the fact that the perpendicular and cross shading, executed at different times, were not bitten to just the same depth. A close examination shows the lines of both directions to be about the same in the tower, but in the lower part it will be seen that the perpendicular lines have been reduced to a much greater extent than the others. The latter assert themselves too much for the result to be quite satisfactory. Theoretically, the two lines need biting to the same depth, and the action of the burr should have reduced both to the same extent. It is probable, however, that the perpendicular lines have not been bitten to the same depth as the others, for the apparent reduction in them is much greater. It is probable that the acid in the biting of the cross shading has been working more quickly, or has been applied for a minute or so longer, than in the case of the first needle work. If we suppose the depth of the perpendicular lines to be represented by five and of the others by seven, which would very nearly be the times of biting in minutes, showing for a little difference in the action of the acid, the difference in the two would not be very great in the proof. But if we reduce both of these by two, which would represent approximately the reduction in value by the burrisher, making the result three and five respectively, the proportional difference is greater, and would show proportionally greater in the proof. And if we were to continue the reduction of surface the perpendicular lines would presently disappear altogether, while the cross lines still remained, though getting faint.

This is one of the niceties of biting that will not, however, trouble you very much, unless you make a practice



of searching for delicate tone. And this gives me the opportunity of saying that, while the aim of the etcher may be largely the result of individual taste and skill, the tradition of the art is opposed to the idea that the search for tone comes within its sphere. The art of the etcher is a line process, and it is at its best when kept easily within its natural limits; tone lying more properly within the range of the painter's art. Etching is a summary process, a sketcher's art, and anything suggesting the aims of the line engraver should be excluded from the etcher's intention. It is for this reason that, while this plate may serve as an example, and perhaps a warning, it will never be quite satisfactory to me. Here I would contrast it with plate 4, facing page 64, Plate 4, which, though executed for an entirely different purpose, may be pointed to as illustrating the comparatively narrow limits within which the work of the needle is safe and satisfactory. (It is true that a suggestion of distance might have been added to this plate without any harm being done; in its present state it is rather a study than a picture. And perhaps the real reason why this was not done lies in the fact that the drawing of this subject was done from nature, in two short sittings of half an hour, with the ground deep in snow, under circumstances which did not conduce to a disposition to linger over the work!) At any rate, I may add, speaking of the best men, that the first state of any plate should be carried through on reticent principles, anything approaching colour, and especially tone, being added cautiously after a proof has been taken, and the condition of the plate, along with the work to be added, carefully considered.

In the execution of plate 4 I had two objects in view, <sup>The zinc line.</sup> the illustration of the rugged, and richer, character of

the line bitten in *zinc*, and an experiment with regard to steel facing, to which I shall refer in the proper place. With regard to the former of these, the reader may have remarked that I have spoken hitherto of copper only, and it ought to be said that that is especially *the* metal for the etcher. But for occasional purposes zinc may be useful, although its liability to destruction by rust renders it an undesirable metal for general use, on the score of the difficulty there is in preserving it. To this I shall refer fully in its due place. Meantime, the reader may compare this plate with the three preceding ones, in order to note the rougher, but richer, character of the zinc line.

Etching on zinc.

The acid should only be one part in ten of water. The ebullition is much the same as on copper, but white in colour. It shows distinctly on the smoked ground, and must be removed with the feather in the usual way. The plate was executed in three bitings, the main markings of the larger tree trunk, and some of the outline of the smaller tree, being drawn previous to the first biting, which lasted some eight or ten minutes. At the second drawing, the smaller tree was completed and some of the colour added to the main trunk. After the second biting, of some eight minutes, a little shading was added here and there, and a final five to seven minutes under the acid completed the plate. Except a little cleaning up with the burnisher, it has remained untouched since.

Pitting in the ground.

This plate gives me the opportunity of pointing to a defect, which in the present case is not serious, but in other circumstances might have been disastrous; I refer to the pitting of the ground as shewn by the numerous pin points in the proof. This is usually due to the presence of dust in the ground. It is quite a common thing in the work of those who use the ground in the ball form,

and especially when the ball is wrapped in silk, the fluff from the silk being really accountable for much of the so-called "dust." Since adopting the liquid form of ground, however, I have found such pitting practically non-existent. Sometimes, too, it is caused by inadvertent touches of the finger during the execution of the drawing, which have weakened the ground and laid it open to attack. In the present instance, however, it may have been due to the fact that the ground was getting foul and wanted filtering, but I am rather inclined now, speaking from memory, to ascribe it to the fact that the plate, which had been lying aside for a while, had been slightly injured by rust, and it is probable that in the re-polishing the pitting due to this cause had not been entirely removed. Properly polished, even a zinc plate is perfectly protected by the liquid ground, in spite of its rougher grain. It remains to be said that in the present instance, where there is a suggestion of a good many small twigs, this pitting has done no harm, but rather bears out the original intention, and I have been at no pains to remove the traces. Besides, it was desirable for the reader's sake that the danger should be pointed out, by way of warning. For landscape and similar work, a little of this may be of great effect *in the right place*. When, however, minute points of copper appear on untouched parts of the ground during the progress of a biting, they should be stopped out immediately, in all high lights especially. If stopped out early, the points they show in the proof are shallow, and can be removed by the scraper and burnisher without difficulty.

Judging from the number of questions put to me, there is a good deal of misapprehension existing in the minds of many on the subject of the reversal of the drawing. I have already pointed out that the subject

Reversal of the drawing.

on the plate is reversed in the proof, those objects which are to the right on the plate appearing to the left in the print, and *vice versa*. From the point of view of the amateur who does most of his work direct from nature, it is a matter of indifference which way the subject appears. The composition is surely of the same interest the one way as the other. Is it to be supposed for a single moment that the great master, Rembrandt, troubled his head in the least degree on a point of this sort when executing the landscape known as "The Bridge of Six," (indeed, according to the story, that might have depended upon how long it took to fetch the mustard!), or one of his numerous "beggars," or even the delightful head of his mother with which Mr. Hamerton, in "Etching and Etchers," has made us familiar? The beginner is only creating an unnecessary difficulty for himself in imagining that he need take this into consideration at all. He may safely dismiss the question from his mind as far as ordinary landscape is concerned, and draw the subject on the plate, without the least regard to the effect in the proof as far as right and left are concerned. If the work on the plate be right, the proof may be left to take care of itself. But there are one or two exceptions to this rule which it may be necessary to bear in mind, when the etcher has got through his earlier practice, and comes to do more serious work. If he were etching any known subject, such as Windsor Castle from any particular spot, with a view to publication, it would be advisable to make a preliminary outline drawing and trace it on to the plate *in reverse*, for the reason that, apart from the artistic merit of the proof, many more copies would in all probability be sold if the view in the proof were recognisable, than would otherwise be the case. Then it becomes a

When it is  
desirable;

commercial question, for a large section of the buying public is always influenced in favour of what it recognises; that portion of it which buys from the purely artistic point of view is comparatively small. And though some etchers affect to disregard anything and everything that suggests the merely commercial point of view, it is surely not *infra dig.* to bear in mind a point that may affect the commercial success of a plate, while it does not in any degree detract from the artistic merit of the production! Apart, however, from this consideration, there is one point of view from which this question must not be overlooked, and that is the treatment of the human figure, especially where the hands are concerned. I have an old edition of Thackeray's "Pendennis" (Bradbury & Evans, London, 1850), in which the author's original plates have been used. In one of these, entitled "A Visitor at Shepherd's Inn" (page 94, vol. II.), Pendennis is shewn in the act of shaking hands with Fanny Bolton, *but both are using the left hand!* Whether the great novelist overlooked, or was simply indifferent to, the result—and the latter is quite as likely—does not much matter, but it certainly has an odd look in the illustration. Whether made from models or not, the drawing was done direct upon the plate with this result. Therefore the etcher must be on his guard when dealing with the human figure, especially where the hands come into play. Another curious instance of oversight occurred quite lately in a quarter in which it was least to be expected. In Mr. Hamerton's interesting volume on "Drawing and Engraving," published quite recently,\* the author makes use of a plate to illustrate engraving with the burin, which shows a small head in three stages of progress. They are arranged on the page in pyramid form, but

\* In 1892.

instead of reading, as one would expect, in the order  $2^1_3$ , the two lower ones are in the reverse order, thus  $3^1_2$ ! We are so accustomed to read from left to right that this looks extremely odd. It is no doubt due to oversight on the part of the engraver, who has executed the three heads in the natural order on the plate, with this result in the proof.

Again, in the frontispiece accompanying these papers, which was especially executed for me by my friend, Mr. Stamp, and in which the writer played the entire secondary rôle of model, the artist first made a direct outline sketch of the composition, which was then traced on gelatine, and transferred face downwards to the prepared plate. Then he turned his back upon the subject, and executed the drawing by the aid of a hand mirror, which of course shewed everything in reverse, with the result that it has come out right in the proof. Of course, in a larger sense, it is really a matter of indifference whether a figure use the right hand or the left—the artistic merit of the proof is not influenced in any way; but it is nevertheless desirable to avoid anything *bizarre* in artistic work. The mind of the spectator should be quite undisturbed by anything but the artistic expression of the work before him.

It may give point to the above if I add here that, in the case of plate 3, and in that case only, the trouble was taken to reverse the subject in drawing it on the plate. The view being that of a well-known street in Manchester, it was desirable to execute the subject in a recognisable form. At the same time, the street being a busy one, it was not convenient to execute the plate upon the spot, but a somewhat careful outline drawing was made upon a half sheet of semi-transparent note paper. This was subsequently traced upon the back,

Illustration  
from  
frontispiece.

Illustration  
from plate 3.

by turning the sheet face against the window, so that the original drawing could be seen, and going over the outline with pencil. The *face* of the drawing was then rubbed with chalk, and the subject traced upon the plate by going over the reversed outline with a blunt needle, or sharp pencil, in the usual way. I may add too, that, once the outline is drawn upon the plate, no difficulty whatever will be experienced in filling in the detail and colouring of the subject. The mental difficulty in seeing the detail or shading of an object in reverse, especially when one has the outline before him, is really very slight, and even the difficulty of drawing a subject direct from nature, reversing it in the act of drawing, will be found much less than one would expect. Here, however, I speak only of comparatively simple subjects, such as a landscape or a street scene. In the case of figure work, few I imagine could draw direct in reverse, and the plan followed in the case of the frontispiece of this book, as explained in the previous paragraph, would probably be the best in such circumstances.

Now, my reader, I hope you have enough information and instruction to enable you to set to work and make some satisfactory progress. At a later stage I shall furnish you with additional information upon many points that may, in the interval, have cropped up in your early practice, but a little experience will be required first, in order that such may be of practical service to you. Do not be timid, but spoil a few coppers cheerfully, for in so doing you will learn much. If you have followed me carefully, you should have no great difficulty in the technical part of your work. The artist in you must supply the rest.

speak, filling the dry ditch just below it, and thinning off on the level of the road. This line prints with a peculiarly rich quality, which is altogether different from that of the comparatively clean-cut etched line. It can best be described by the word "velvety." It is not so clear as the etched line, but it is softer, richer, more seductive. It approaches more nearly to the mystery of nature in its comparative indefiniteness. It appeals less to the trained side of the artistic temperament, schooled into self control by severe labour, but rather to the passionate side, to the artistic temperament in its holiday mood. For some classes of subject it may be better adapted to the end in view than the etched line. It is especially suitable for the treatment of the human figure, owing to its extreme delicacy, and to the fact that it can be modulated in the act of drawing, which is impossible with the etched line. All this, however, is matter of taste, and the choice between the two may be decided by the temperament of the artist, or even by the passing mood. But it may be said that all etchers are bitten by the drypoint fever, at some time or other.

Whether the practice of drypoint generally follows upon that of etching because of its tendency to grow, accidentally so to speak, out of the latter, does not come within my province to determine. The use of drypoint for the finishing of an etched plate is naturally suggested to the etcher by the slight scratches found upon it in certain circumstances, as, for example, where a line has been drawn but not bitten in, having been stopped out before the acid is applied. (There are two such lines in plate 1, first state: one under the vessel's bows, and the other just above the yard of the mainsail, both being removed in the finished state. These were referred to

## CHAPTER IV.

### DRYPOINT.

Drypoint is the art of engraving direct upon the metal with the needle point. To this extent it is the same as the art of line engraving, but the line made is purely a scratch, and, therefore, altogether different in character from the deliberately cut line of the burin. It is similar to the furrow of a ploughed field; the needle cuts more or less into the surface of the copper, but in addition to that it throws up a rough edge, technically called the "burr." This can be removed or preserved at will. As a matter of fact it is generally removed in all fine distance and shading, but largely preserved in foreground and middle distance; in short, in all the vigorous work on the plate. The depth of the line, and the strength of the burr, depend not merely upon the pressure used, but also, and if anything more so as to the burr, upon the angle at which the needle is held in relation to the surface of the copper. The line made with the needle held upright is shallow, and can hardly be said to have any burr at all, though, in fact, it has a little on both sides, due to the displacement of the copper in the line. This prints slightly, and may better be removed in the finest work, such as that of the sky. On the other hand, with the needle held at a slope, the line made is much deeper, and the burr thrown up, this time on one side only, is decidedly heavy. Under this the ink lies exactly like the drifted snow in a country lane. It piles itself up under the lee of the wall, so to

The drypoint line.

The burr:

Evolution of drypoint.



at the time.) From that it is a short step to the execution of the whole plate in drypoint; the evolution is natural, perhaps inevitable. I cannot help, however, quoting a suggestive passage from Mr. Haden's address to the Painter-Etchers' Society in 1890, in which year it had made a special collection of the etched work of Rembrandt. Speaking of the etched and the drypoint lines, Mr. Haden says: "One of these lines again, the first or the bitten one, lends itself to sharp definition; the other, the drypoint line, to what an artist would call 'colour.' Now, when we hung up in the Burlington Fine Arts Club the whole engraved work of Rembrandt, as we did in the year 1877, we made a singular discovery, and that was, that for the first ten years out of the thirty which composed his practice of etching he used exclusively the bitten process; for the second ten years the bitten and the drypoint process combined; and for the last ten years, having acquired apparently sufficient command of the instrument for the purpose, the drypoint process alone. A further acquaintance, even with the portion of Rembrandt's work which hangs here, will enable you to trace these differences of practice in it." This passage has always appeared to me to be very suggestive of a mental evolution in the artist, bearing in mind the nature of the two lines, that may be altogether distinct from the mere natural growth of the one process out of the other, for in his earlier days the artist, whatever his temperament, is restrained by the severity of his training. He is preoccupied with the necessity of obtaining the mastery in technique; he is learning to express himself. But a little later, when he has obtained the necessary facility in the means of expression, the mind is free to follow its own bent, and certain temperaments will inevitably react somewhat from the rigidity

The work of  
Rembrandt.

of the schools, while retaining the skill acquired therein. In such a case it is natural that, after the uncomprising clearness and decision of the etched line, the drypoint will exercise a fascination difficult to resist. It may have been so with the great master. This, however, is merely a suggestion in passing, which may be left to the consideration of those more able to form a competent opinion. However all this may be, the quality of drypoint is very fascinating, and the etcher will find great delight in it. Its practice will serve, if nothing else, to cultivate and keep alive in his work that indefinite quality called "feeling," so easy to speak of but so difficult to define. "Science is definite, but what is art?" Ay, there's the rub! "The things men spy with half-shut eye" may be felt, and seen, perhaps, but not described. It is the measure of success achieved in retaining this indefinite quality that makes the poet or the artist. As one of our most eminent actors said lately: "Art is good and successful just in proportion as it gives play for the imagination to clothe and supplement the conception suggested."

While drypoint is a line process in common with etching, it has one great advantage over the latter, in that a proof may be taken at any stage to shew progress. The etcher is always working in the dark, more or less, (Mr. Hamerton says justly that "etching is always a chemical experiment"), but a drypoint plate can be proved at any moment, and this is not merely an advantage, but often a necessity. The burr is so treacherous, often not so great as expected, or *vixte versá*, that it cannot be reckoned upon with the same certainty as the etched line, and one or two proofs during the progress of the plate are practically necessary. It is always advisable, however, to avoid proving oftener than is really required,

The proof.

because the burr wears rapidly under the process of cleaning off the plate for printing, and under the pressure of the press, perhaps the former as much as the latter, and it is desirable to conserve it as much as possible. When the plate is completed it may be steel faced, but this only affords partial protection, especially to the strong burr of the foreground, and a drypoint plate can never be reckoned upon for so large an edition as an etched one can.

Freedom of  
the line.

It must, of course, be kept in mind that the drypoint line is not so free as the etched one, the needle having to overcome the resistance of the copper. This, however, is not so great a difficulty in actual practice as might be supposed. With the point in good order, a steady hand will accomplish what is desired after a little practice, the resistance of the metal even lending itself to steadiness of drawing.

Method of  
working.

When working from nature, say at a landscape subject, the needle should be used much as the pencil would be upon paper, pressure being applied according to the strength required, and slope according to the weight of burr. The artist, too, is able to work upon any part of the plate without regard to the necessity of obtaining his relative values by stages, by which he is very much restricted in etching; indeed, in this respect there is the most perfect liberty. For portraiture, and the same would apply more or less to any kind of subject, Mr. Menpes recommends that all the broad masses of dark should be laid in at first in open and not too heavy lines, and the slighter markings indicated broadly but lightly. After that the plate should be proved, and the further work added with the proof before you. The amount of work that can be added at each stage, and the number of proofs required before the plate is completed, is very

much a matter of experience, though it may also depend partly upon the nature of the subject. The best advice that can be given is to carry the work as far as possible at every stage, and take as few proofs as possible.

Preparation of  
the plate.

The drypoint line does not show well on the bare copper, as the metal reflects light in a very confusing way; and it will be found useful, in fact necessary, to ground and smoke the plate as for etching. The needle cuts the surface of the plate quite as freely through the ground as if there were none, and the first work on the plate can be carried to a fairly advanced stage by this means, before a proof is taken. The work of the needle shews, of course, as in etching, with perfect distinctness against the black ground. Afterwards, when the ground has been removed and the first proof taken, a mixture of lampblack and tallow, or anything else suitable, can be rubbed in with the finger, as the work progresses. A tube of ordinary black or dark brown oil paint from the colour box I have found as handy as anything. A very small quantity is sufficient, and can be placed ready to hand on a corner of the plate, and rubbed in at any moment. The surface should be polished by the ball part of the thumb, so as to leave the paint in the lines, as in cleaning off the plate for printing. By this method the work is distinctly seen, and its strength can be judged of approximately, the black paint shewing distinctly in the lines. To this extent drypoint is a positive process, shewing black upon copper colour, and the artist can judge much more nearly the real state of his plate than he ever could in etching. In this respect, and in the freedom with which the whole plate can be brought forward at once, drypoint is in marked contrast to the wet process.

The point.

For the lighter work the ordinary etching point may be used, but it must be of the solid kind, made fairly sharp and quite round. The ordinary stout sewing needle, set in a wooden handle, sometimes used in etching, is of no use; the tool must be solid. For the stronger work, and especially when a heavy burr is required, a stronger point is necessary. It may be made by sharpening the end of an ordinary solid etching needle in two flat sections, somewhat like a miniature chisel. With this a very strong burr may be obtained. Indeed, all except the lightest work on the plate can be done by this point with much less labour than by the ordinary round needle. The tool, however, must be used somewhat carefully. Naturally it will only cut in the direction of its own edge, and it has a trick of going off at a tangent with a jerk, if carelessly handled. But, rightly used, it is a powerful tool, and in competent hands is capable of very beautiful and powerful results.

Combination  
with etching.

I have pointed-out how the drypoint line can be used with excellent effect for the distance and sky of an etched plate; indeed, the faintest drypoint line is much more delicate than the finest bitten one. Light shading also may be thrown over strongly bitten work, with great ease and advantage, by means of drypoint. But it is necessary to bear in mind that the drypoint line harmonises with the etched line in the lighter work only, and then only when the burr is removed. Some etchers use the strong drypoint line, with the burr retained, to add work in the foreground of an etched plate, but the result is not harmonious. The soft broad shallow line of strong drypoint is not at all in keeping with the strongly bitten line in the proof. Even the strong drypoint with the burr removed does not harmonise with the etched line; it is too shallow, and looks weak in the



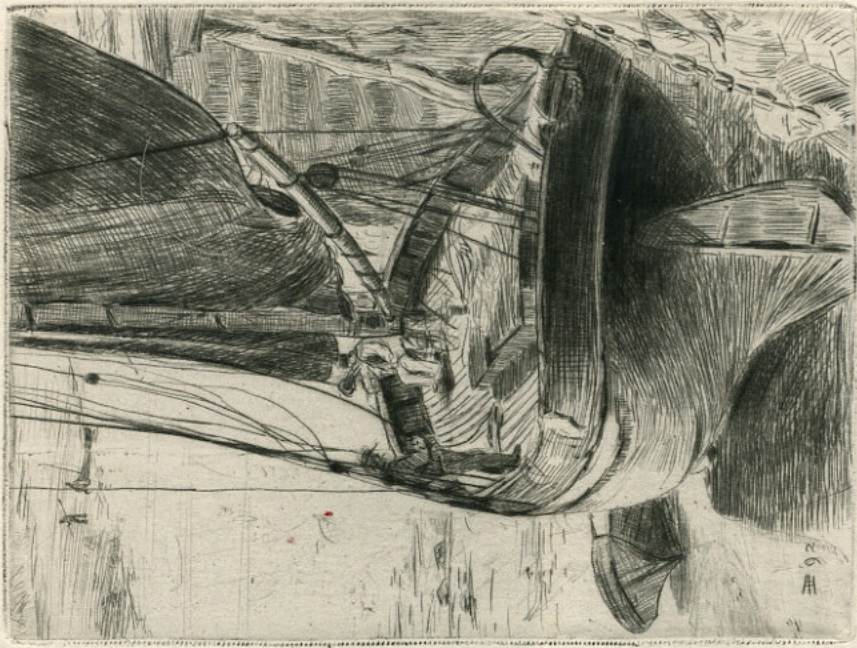
PLATE 5.  
DRYPOINT.

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proof. It may, therefore, be laid down as a general rule that only light drypoint work, with little or no burr, should be used on an etched plate.

I repeat here a remark made in the paragraph on the <sup>Removal of the</sup> use of the scraper and burnisher: the burnisher should <sup>burr.</sup> never be used to remove the burr of drypoint, as it crushes the particles of copper into the lines, and so destroys their purity. Keep the scraper bright and keen, and you can remove the burr with it to any extent desired.

The erasure of drypoint is comparatively easy. The <sup>Erasure.</sup> line is shallow, and the labour of altogether removing it not nearly so great as in etching. On the other hand, burr that is wearing out can be renewed to some extent, but it may depend on the nature of the subject whether this can be done with advantage or not. It is comparatively easy on a plate that has plenty of colour, but where the work is composed of few lines this naturally presents more difficulty, as purity is apt to be lost. It is better not to reckon upon a large number of proofs. In the illustration, for example, a few strong lines could be added anywhere in the deep shadow, under the vessel's stern, without any harm being done. (See plate 5, facing page 78.) There the nature of the subject allows it, but in a subject of slight and delicate treatment, such as that of the human figure, great care would need to be exercised not to overdo it, and so spoil the plate.

themselves upon the reproduction of the works of Sir Joshua alone. Again, at a later period, Turner made use of it for the famous *Liber Studiorum* plates, but in this case for the light and shade only; he supplemented the tone process with strongly etched organic lines, with what powerful effect the student of the famous plates well knows.

Mezzotint is the art of engraving upon metal in tone. Preparation of the plate. This definition, however, like that which I gave of the drypoint, is incomplete, inasmuch as there are other methods of engraving in tone, as, for example, aquatint, whereas use and wont have applied the name "mezzo" (or "middle") tint to one particular method. The method of grounding, or toning, the plate for mezzotint is as follows. A tool is used called a "rocker" or "cradle," the end of it being exactly like the rocker of a child's cradle in shape. Imagine a short chisel, two and a half inches wide, the end of which is rounded to about the same extent as a two and a half inch section of an ordinary breakfast plate. This tool is sharpened on one side exactly like an ordinary joiner's chisel. On the back it is serrated with engraved parallel lines, running lengthwise. These may be forty or upwards to the inch, a good size for ordinary use being sixty; they are made up to 1.20. With a back of this nature, it is manifest that, sharpened in the manner of an ordinary chisel, the end does not present the usual smooth cutting edge, but a row of tiny teeth. These, as they wear, can be renewed by sharpening in the usual way. This rocker is set in a stumpy wooden handle of a size to suit the hand. The plate is grounded by working the tool over it with a rocking motion, each stroke progressing slightly upon the previous one, and making its hundred and odd indentations. The plate has to be

## CHAPTER V.

### MEZZOTINT.

Its invention. The art of engraving in mezzotint was discovered, or rather invented, about the year 1611, and was suggested by the corrosion of metal on the stock of a gun. The discovery is attributed by authorities both to Prince Rupert and to Louis Siegen, a lieutenant in his service. If I remember rightly, Mr. Fagan, of the Print Room of the British Museum, when lecturing on the subject in Manchester, about April, 1893, attributed it to Siegen without any qualification. It is likely enough that the idea was suggested to one, perhaps to Siegen, and that experiments were made by both in co-operation. However this may be, the art had many fascinating qualities, and it soon established itself as a means of expression in the hands of the artist engraver. It filled a gap in the engraver's art by supplying a means of engraving in *tone*; and just as, towards the end of the seventeenth and in the beginning of the eighteenth centuries, the art of etching received a powerful impetus, owing to the fact that it was peculiarly adapted for the reproduction of the style of the painters of that period, so mezzotint engraving has owed much to its adaptability to the reproduction of the works of Sir Joshua Reynolds and Gainsborough. The art has been chiefly associated in this country with these two names, and attained its full maturity at, and shortly after, their time. Mr. Hamerton states that over a hundred mezzotint engravers have employed

gone over many times, first along, then across, then diagonally, and so on; Mr. Hamerton estimates that it has to be covered some eighty times, in order to give a good rich ground. The nature of the indentation made by each tooth is that of a slight hollow with a burr on its edge, like the shallow miniature crater of a volcano. This process, when carried to a sufficient extent—that is until all sign of the original polished surface is lost—gives a surface of uniform roughness, somewhat like that of a piece of fine sandstone. This holds ink well, and when printed gives a rich, deep, even black.

In order to work out his design, the artist proceeds to remove the ground by means of scrapers. These are of two kinds—the bayonet-shaped scraper already mentioned, and the other a flat-shaped strip of steel, some six inches long and half an inch wide, one end of which is shaped something like a willow leaf, and sharpened on both edges. With these tools kept sharp and in good order, the roughened surface of the copper can be removed to any extent desired. The greater the amount of burr removed, the lighter the tone in the proof. This reduction of the prepared surface must be done carefully, for it is easy to remove too much, and not easy to renew it when overdone. The highest lights are got by polishing with the burnisher after the scraper has been used, as far as it can be to advantage, on those parts of the copper desired to print white. The artist begins by scraping away the ground immediately around such parts as he desires to keep perfectly black, being of course careful not to remove it too much for the tone of the objects immediately behind. Theoretically, he reduces the whole plate, except the strongest darks, to the next degree lighter, and then

Execution of  
the design.

again to the next lighter than that, reserving in turn all half darks, and so he proceeds by degrees to the lightest stages which the scraper will give him. But in actual practice he will scrape lightly or heavily as the need of the moment requires, always on negative principles, feeling his way to the general effect. With the willow-leaf tool in good order, a surface can be obtained that prints almost pure white, and requires less of the burnisher than might be supposed. By saying that the artist works on negative principles, I mean that he works on the principle of removing colour from the plate, instead of, as in etching and drypoint, adding it with every line he draws.

Mezzotint, in common with drypoint, enjoys the advantage that a proof can be taken during progress to shew results, and several are usually found to be necessary. But, inasmuch as the richness of the black in the proof is obtained from the burr, it is advisable to avoid taking more proofs than are really necessary, for the burr wears with surprising rapidity. The same advice that applies in drypoint applies here; carry the work on the plate as far as you can at each stage, and take as few proofs as possible. The method also of rubbing a little printer's ink, or black paint, into the surface of the plate as you go along enables you, as when working in drypoint, to keep in touch with the progress you are making. You see the result to a certain extent, and soon learn to judge very nearly the actual state of the plate. When the plate is completed it may be steel-faced. This affords partial protection to the burr. Without it, it may not be possible to get more than twenty-five or thirty good proofs before the plate shews perceptible deterioration. For the purposes of an edition, steeling may protect the burr in drypoint and

The proof.

mezzotint, on the authority of Mr. Goulding, up to a thousand proofs; sometimes, however, not so much. It can never protect it to the same extent as it can an etched plate, where there is no burr to wear down.

From the foregoing it will be manifest that the essential thing about the process is to obtain a ground that will print a rich, even black, and which can at the same time be removed as required, with a reasonable expenditure of labour in scraping and burnishing. Now, one or two things remain to be said about this method of grounding the plate, which are usually ignored in manuals on the subject. The process of grounding by hand is very laborious; it is a matter of a good few hours to ground even a small plate, and of days to ground a larger one; and besides the time the tax on the muscles is considerable. One wants to change hands every few minutes, in half an hour one wants a rest, and in an hour one delegates the work to someone else! I know men who confess to having grounded one plate, but who vow they will never ground another. They prefer to send their plates to the professional layers of mezzotint ground. These lighten the labour by mechanical means, as, for example, fixing the tool to the end of a pole several feet long, the other end being fastened to the work table, and the whole so arranged that the rocking of the tool on the plate can be done with greater regularity and precision than by hand unaided. Regularity in the ground is essential. This process, however, if a saving of labour to the artist, involves an expense that is considerable. The cost of grounding the plate in this way is fourpence per square inch. Now, the little plate that furnishes my illustration is only three by four inches, but it has a surface of twelve square inches, and would cost four shillings, besides the

Cost of the  
ground,

In labour:

In cash.

PLATE 6.  
MEZZOTINT.



... by Mr. Goulding, so to a  
sometimes, however, not so much  
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Cost of the  
ground.



original cost of the plate and postage. Or a plate six by eight inches, which is not by any means a large one, has a surface of forty-eight square inches, and costs sixteen shillings, say about six times the original cost of the copper. This is a large sum to pay, especially with the possibility in view, not to say probability, of the plate being spoiled at the finish! Now, while this to the professional artist, who has an important plate to execute, is a matter of small moment, it is sufficiently serious an expense to stand in the way of freedom of experiment in ordinary hands. I have no doubt whatever that this cause has operated in numberless instances against tentative effort in this most fascinating branch of the etcher's art. It is much as if charcoal were an expensive article, and its use denied to all except the very few among art students on the score of expense; for, while the etching needle may be compared with the pen or the pencil, mezzotint may be regarded as the equivalent upon metal of charcoal upon ordinary paper. It has all the fascinating qualities of charcoal, while it has, in addition, the same superiority in richness and force over the charcoal, that the etched line has over the pen or pencil one.

The grounding tool costs about thirty shillings, a sum sufficiently large to make one hesitate to spend it unless satisfied that it will repay. The reader, who may wish to experiment in this direction, would be well advised to send a small plate to be grounded by one of the gentlemen whose names, by the kindness of Mr. Goulding, I am able to append to the foot of this chapter. After a preliminary trial, he can then judge whether it is worth while to spend the money upon so expensive a tool. Were only the old method of hand-rocking available, it would not be so to the great majority. The labour is

both exhausting and difficult. But by the modern process of pole-rocking it is neither, slightly tedious at the worst, and beyond the first cost of the tool a shilling or two is all the expense involved. A light wooden pole from three and a half to four feet long, which any joiner can make, is required. It should be, say, an inch and three-quarters thick at one end, tapering to an inch and a quarter at the other. A small brass cap, with a screw to hold the shank of the tool, may be made to fit the thicker end (any brass worker would make it for a few shillings), but for the casual purpose of the amateur this is not necessary. As a matter of fact, the plate for my illustration was grounded, pending the execution of the order to the joiner, with the tool fastened to the end of an old broom handle by a couple of screw nails, the heads of which gripped the shank and held it in place! The other end of the pole was simply passed between two stout nails driven into the work table, at such a distance from one another as allowed the pole to move easily between them without wobbling. The tool is fastened at right angles to the thick end, and with its edge resting on the plate, is made to rock by the action of the hand resting lightly on the pole. The work is not exhausting, as by the hand-rocking method, and the tool, whether owing to the peculiar shape of its teeth or to its rounded section I am unable to determine, travels at every stroke slightly in the direction of the smaller end of the pole. The simple rocking motion is all that the hand requires to give it, and the work is light.

Mr. Hamerton states that about eighty is the number of times the surface of the plate should be traversed by the rocking tool. It is quite possible that for portraiture or special purposes, and especially when using a very fine tool, some such large number of times may be

The pole.

Number of ways.

necessary. But in the plate for my illustration, using a tool with sixty teeth to the inch (a good useful number for ordinary purposes), I find that the colour of the original polished surface of the copper disappears in just over twenty times. This plate, as a matter of fact, is rocked twenty-four times, at a different angle every time, and the black obtained is apparently rich enough for all ordinary requirements. The angle at which the rocking is done should be changed every time. A good plan is to lay the plate in the centre of a sheet of cardboard, to be kept for the purpose, and fastened down with drawing pins when in use. Draw on this a large circle and divide it into any convenient number of equal sections, say twelve sections of thirty degrees, by drawing the requisite number of straight lines through the centre. Set a given end of the plate parallel with each line in turn until it has been rocked the twelve times round. Then it may be set at half the angle the thirteenth time, and carried round the circle a second time, always at intervals of thirty degrees. This will ensure, as far as possible, that the rocking is evenly distributed. Of course, one half of these ways repeats the other half, but the subdivision of the angles could hardly be carried much further with advantage. My little plate took just two hours to ground, about five minutes each way, and the work was easy.

Those who may wish to carry out the grounding of plates for mezzotint to any extent, or for plates of any size, would be well advised to furnish themselves with a strip of hard wood with a groove or slot in it, by means of which the pole could be made to travel steadily in the same direction for a sufficient distance. The thin end of the pole should have a button-headed nail screwed into it, which runs in the groove, and the whole should

Complete apparatus.

work easily. If the slip be three feet long, that should be large enough for the purposes of even the professional mezzotinter. If too long to be fastened solidly down on the table, it could be made to fasten at the edge by a small hinge, being supported at the far end by a leg of wood, sufficiently strong to keep the whole firm. This could easily be made so as to fasten in place or remove in a couple of minutes; or, better still, it might be so arranged as to hang down by the side of the table when not in use, the wooden leg doubling under it so that the whole is out of the way. For plates of small size, however, the rough and ready method I have described is quite sufficient.

The glasspaper ground:

It is not, perhaps, to be wondered at that experiments have been made with the view of obtaining a satisfactory ground by simpler means. There is a method, attributed, I believe, to Professor Legros, which consists in grounding the plate as for etching, and passing it through the press a few times, with a sheet of glasspaper turned down upon it. The particles of crushed glass with which the paper is prepared penetrate the wax ground, and if acid be then applied, a ground can be bitten in the same manner as in etching. I am not able to report from actual experience whether this ground is satisfactory or not. I find some difficulty in getting a tone that is black enough in the proof: the spots are not close enough and the white paper shews between. Besides, as such a ground would be composed of solid copper, pitted with numerous small holes, but with no burr, it would be much more difficult to remove with the scraper. On the other hand it would wear well. My own experiments have been made in the simpler direction of passing the plate through the press with the glasspaper upon the bare surface, allowing the particles of glass to penetrate

the copper direct. The two finest qualities usually sold in the shops are the most suitable for this purpose. Cut the sheets into pieces the size of your plate, and pass each piece through the press with the plate under it several times. In this way, at the cost of two or three sheets of the glasspaper and a quarter of an hour's labour at the press, a very fair substitute for the rockered ground may be obtained. It is not so rich, not so <sup>its</sup> quality, "velvety" in quality, but it gives a good strong black, and that is the first essential. As compared with the rockered ground, its defects are that there is little or no burr, and a corresponding want of richness; also a greater difficulty in getting down to the lighter tones. Indeed, the main defect of the process is the difficulty of getting down to pure lights. The particles of glass make deep and sharp, rather than open and shallow, indentations in the copper, and it is difficult to get entirely rid of these. On the other hand, seeing that the ground has little or no burr, being rather formed by the number and closeness of the indentations in the surface of the metal, it is less liable to wear in printing, and would probably yield a greater quantity of good proofs. This ground is fairly regular in quality, though it has not the evenness of the rockered ground; on the other hand, an artist friend said to me that he preferred it to the rockered ground, because "it is not so tight." It is sufficiently even for the purpose of ordinary landscape, indeed, I prefer its quality for this purpose to that of the rockered ground; but for portraiture it might not be considered sufficiently even in tone. I do not know whether this ground could be laid on plates of large size, but I have grounded up to six by eight inches with perfect success. With the qualification that the ground obtained in this way is not all that might be desired for

portraiture or such special purposes, where perfect evenness of quality is required, the glasspaper ground will be found a very fair and cheap substitute for the more expensive rockered ground for all general purposes—landscapes, interiors, and such like.

The art of etching is that of pure line; that of drypoint, line with burr; while the art of mezzotint may be described as that of burr only, or at any rate dot with burr, the dots being so numerous and so closely crowded together as to give a purely tonic result. It might be thought, therefore, that of the two line processes drypoint might better be used in combination with mezzotint; but both are equally suitable, though they must be used in different ways. I have already referred to the *Liber Studiorum* plates of Turner, a few of which were executed by Turner himself, the remainder under his personal direction. These are generally accessible at some of the art galleries or free libraries in the provinces, not to speak, of course, of the National Gallery and the British Museum. There is a complete collection of the seventy-one plates in the Art Museum at Oldham, for example. In these, the combination of the strongly etched line with the mezzotint ground is powerful to a degree; the reader cannot do better than seek an opportunity to study them. An hour of study will teach more than pages of writing. It will be easy to understand that only the *strong* etched line is of practical use, as the lightly-bitten line would be overwhelmed in laying the mezzotint ground. The etched line, too, must be bitten before the plate is grounded for the mezzotint. After this is laid it is quite impossible to protect it with the etching ground so as to get a clear line in the biting. The acid would play havoc with the rough surface immediately on either side of the line

Combinations  
with mezzotint.

Etching.

drawn with the needle. Therefore, etch your organic lines first, and confine yourself to strongly-bitten ones.

Drypoint, on the other hand, being a process of line <sup>Drypoint.</sup> with burr, must be added after the ground has been laid and the design to a large extent completed. The drypoint line is not strong enough to stand the mezzotinting; it is too shallow. It would disappear entirely under the work of the rocker. In connection with mezzotint, drypoint is mainly useful for the addition of finishing touches: to strengthen, for example, small portions that have been over-reduced in the scraping process, and especially to give precision of detail. The point should not be too sharp, otherwise the line is apt to print too sharply black for its surroundings, especially in the middle and lighter tones. A somewhat dull point gives a more harmonious result.

I may add here that when a portion of a mezzotint <sup>Over-scraping.</sup> plate has been over-reduced by the scraper, it will suffice to pass the rocker over such part of the plate two or three ways. This will put it in condition for further work. Two or three ways will suffice to make it print quite black again. There is a smaller tool, about an inch wide only, which is useful for this purpose. The reader will find two places in my illustration (see plate 6, facing page 84) where the lights have been over-scraped—in the light on the distant water to the left, and on the small boat in the foreground. He will be able to trace, especially in the case of the latter, the markings of the teeth of the tool. This was purposely locked in the direction of the planking, with an accidental quality in the result that is rather happy than otherwise.

All I need add here to the references already made to <sup>Plate 6.</sup> plate 6 is that, as the effect sought was that of late

twilight, the lights have not been carried very far, and it is not, perhaps, a good illustration of these. It shews, however, the rich, velvety quality of the black, and may suffice for the reader's purpose. A careful study, on the other hand, of the first good mezzotint he comes across will amply repay the time spent over it, and he may pay special attention to the lights with advantage, because in these he may often discover the action of the rocker in grounding the plate, as well as the action of the scraper in removing the ground. I refer here, more particularly, to old mezzotints, the plates for which were grounded by hand. Pole rocking has changed all that in modern work.

Plate 7.

With regard to plate 7 I need not say much, except that it illustrates the kind of quality that is obtainable by the glasspaper method of grounding. It is not so easy to get down to clear high lights, for the reason already suggested, viz.: that the ground is mainly, if not altogether, formed by the number of indentations in the solid copper rather than by the presence of burr. The surface is more solid, and therefore not so easily removable. It is, however, an excellent medium for effects to which the mezzotint process lends itself, and even for portraiture it might be very effective in capable hands.

Layers of  
mezzotint  
ground.

The following gentlemen ground plates for mezzotint:—Mr. A. C. Alais, 24 Avenue-road, Hammer-smith, W.; Mr. J. B. Pratt, Dartmouth Park Avenue, N.; Mr. F. G. Stevenson, 31 Claremont-road, W., Kilburn, N.W.

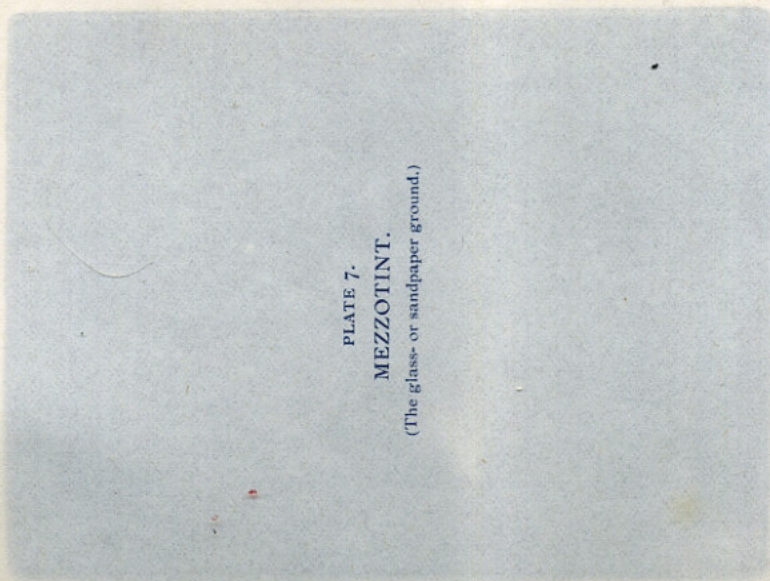


PLATE 7.  
MEZZOTINT.

(The glass- or sandpaper ground.)

The quality of the ground is very important. It is a great desideratum to have a great quantity of these. It is not necessary to have the best quality of the black, but it is necessary to have the best quality of the white. A careful selection of the first good mezzotint he meets with will repay the time spent over it, and he may pay special attention to the lights with advantage, because he may often discover the origin of the defect in grinding the plate, as well as the value of the engine in removing the ground. I have seen many mezzotints, to old mezzotints, the plates of which were ground by hand. Pole rocking has disappeared in modern work.

With regard to plate 7 I need not say much, except that it illustrates the kind of quality that is obtainable by the glasspaper method of engraving. It is not so easy to get down to clear highlights for the reason already suggested, viz. the difficulty of obtaining a surface, formed by the number of indentations in the solid copper rather than by the presence of burr. The surface is more solid, and therefore not so easily removable. It is, however, an excellent medium for effects to which the mezzotint process lends itself, and even for portraiture it might be very effective in capable hands.

The following gentlemen ground plates for mezzotint:—Mr. A. C. Alder, 54 Avenue-road, Hammersmith, W.; Mr. J. B. Pratt, Dartmouth Park Avenue, N.; Mr. F. G. Stevenson, 31 Claremont-road, W., Kilburn, N.W.



## CHAPTER VI.

### OTHER PROCESSES.

Before passing from the question of processes, it may <sup>Other processes.</sup> serve some good purpose to describe one or two allied methods of working upon metal, which may be occasionally useful to the etcher, and are certainly always interesting. And I do so, much less from the point of view of their importance than for the sake of completeness, being desirous that these papers should be, as far as possible, a complete *résumé* of the etcher's art. My experience of these processes is not so great, and I take my information, to some extent, from the best authorities, of whom Mr. Hamerton is perhaps the chief, merely adding such few comments as a slight experience suggests.

Soft-ground etching is a method of engraving upon <sup>Soft-ground</sup> copper in imitation of pencil drawing, which is occa- <sup>etching.</sup> sionally practised. It has, as Mr. Hamerton points out, the disadvantage of accomplishing only what can be done as well by lithography. On the other hand, the etcher has always the materials beside him, which he has not for experiment on the lithographic stone, and the black obtained by the use of the printing press is richer than that from the lithographic stone. Besides, it is the privilege of the amateur to experiment with processes from the artistic, rather than the utilitarian, point of view. It is only by experiment, too, that one finds one's *metier*, so to speak, the direction in which one's talent best expresses itself, and I may, therefore,



perhaps, be pardoned for illustrating what is, after all, a comparatively unimportant process, but which is interesting, nevertheless.

The method of working is to ground the plate with a mixture of ordinary etching ground and tallow, half and half. Apply in the ball form, and smoke in the usual way. Upon this is stretched a sheet of tissue paper with a decided grain in it. The ordinary thin, white, semi-transparent paper, commonly called "tissue," is usually quite suitable. It should be damped and fastened down at the back, so that when dry it presents a tight surface. Upon this the drawing is made with pencil, with varying pressure in the ordinary way. When the paper is removed it brings the ground away with it under the pencil lines, and the design is then bitten as in etching, the faintest work being stopped out when sufficiently bitten, and so on by stages to the darkest. This process gives good results in printing.

The biting.

Theoretically, the stopping out is done in stages in the same way as in etching, the faintest work being stopped out after a short biting, and the various values in turn previous to the third and remaining bitings. But in practice it will be necessary to watch closely the progress of the bitings as shewn by the ebullition, for the varying pressure of the pencil in the execution of the drawing leads to greater or less removal of the ground, and consequently to varying rates of biting. The faintest work will generally be found to bite at a much slower rate than the strongest work, in which, owing to the vigour in the drawing, the copper has been more thoroughly bared, and is consequently attacked more quickly. This peculiarity presents naturally a certain amount of difficulty, but by carefully watching the plate, and stopping out in accordance with the rate

Grounding the plate.



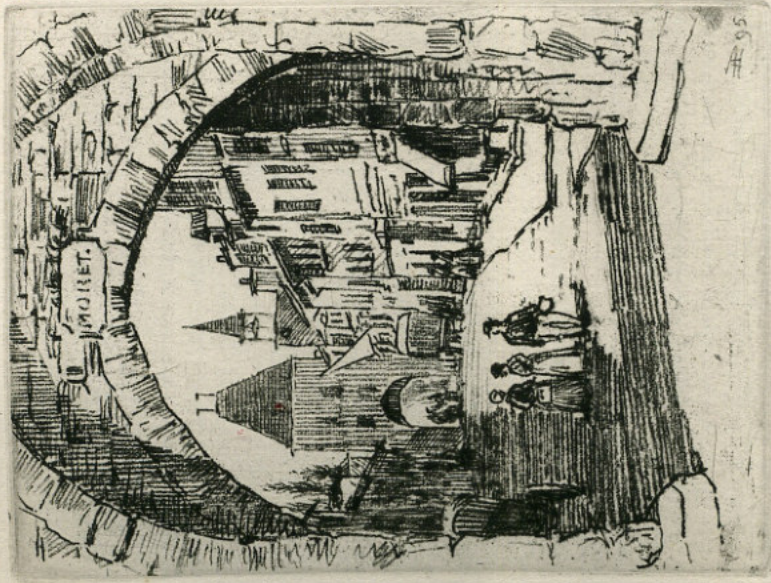
PLATE 8.

SOFT-GROUND ETCHING.

perhaps be preferred for illustrating what is, after all, a comparatively unimportant process, but which is interesting, nevertheless.

The method of working is to ground the plate with a mixture of ordinary tallow, pressed and tallow, half and half. Apply in the hot form, and smoke in the usual way. Upon this is stretched a sheet of tissue paper with a decided grain to it. The ordinary "firm, white, semi-transparent paper, commonly called "tissue," is usually used for this purpose. It should be stamped and fastened to the back, so that when dry it presents a regular surface. Upon this the drawing is made with pencil, with varying pressure in the ordinary way. When the paper is removed it brings the ground away with it under the pencil lines, and the design is then bitten as in etching, the fainter work being stopped out when sufficient ground has been removed to the darkest. This process gives good results in printing.

Theoretically, the stopping out is done in stages in the same way as in etching, the faintest work being stopped out after a short biting, and the various values in turn previous to the third and remaining bitings. But in practice it will be necessary to watch closely the progress of the biting, and to stop out by the cessation of the varying ground to be printed in the description of the drawing, and consequently to varying rates of biting. The faintest work will generally be found to bite at a much slower rate than the strongest work, in which, owing to the vigour in the drawing, the copper has been more thoroughly bared, and is consequently attacked more quickly. This peculiarity presents naturally a certain amount of difficulty, but by carefully watching the plate, and stopping out in accordance with the rate



of biting as shewn by the ebullition, the difficulty may be overcome and a fairly good result arrived at.

It is worth taking the trouble to mark carefully the <sup>Plate 8.</sup> places for the four corners of the plate upon the sheet of tissue, before removing the latter after the first drawing. I found it quite possible to add bitten work to the plate from which my illustration is printed, after it was first cleaned off and a proof taken. All that was necessary was to reground the plate, and, after smoking, turn it down upon the original sheet of tissue, setting it carefully by the corner marks, and fixing the paper afresh at the back. This gives the original drawing super-posed exactly upon the corresponding bitten work, and, with the aid of a proof of the first state of the plate, pencil-work was added as required without the least difficulty.

The illustration is of course blacker, and richer, than the original pencil drawing, but it has been printed with very slight *retoussage*, in order to keep as near to the original as possible. It perfectly preserves, however, the character of the pencil line. The "clean" proof was, in fact, nearer to the original in value, but it was wanting in colour and warmth.

Aquatint is the art of engraving upon metal in tones <sup>Aquatint.</sup> bitten by acid,—of etching in tones, in short. It is so called because of the strong resemblance it bears in the proof to the art of water-colour, an aquatint printed in black or brown looking remarkably like a wash drawing in Indian ink or sepia. The peculiarity of tone is obtained by covering the clean copper plate with resin in fine dust, which is made to adhere to the surface by heat, the acid biting the copper where it is exposed between the particles of resin. Mr. Hamerton aptly compares the surface of the prepared plate to a lot of

little islands, closely crowded together, with narrow channels between. The acid attacks the copper exposed between the islands, and the tone so produced has a delicate quality quite its own. Variety of tone is obtained, partly by different times of biting, and partly by the use of different sizes of grain, the very finest dust for the sky and distance, and a slightly coarser grain for the foreground.

Preparation of  
the plate.

There are two methods of grounding plates for aquatint usually recommended. One is to apply the best white resin, as already indicated, in the form of dust. In order to ensure its even distribution, the plate is placed in the bottom of a box made for the purpose. Inside is a sort of fan arrangement which can be worked from the outside. When the plate is in position, and a supply of the resin in finest powder placed inside, the box is closed, and the fan is vigorously whirled round until the resin dust is flying about, more or less in a state of suspension. It is then allowed to settle, and the plate on being removed is found covered with the dust, in a perfectly even film. The plate is then warmed until the resin sticks to it, which stage is indicated by the disappearance of the white frosty look which characterises the powder. The plate, as soon as cool, is ready for the application of the acid.

The liquid  
ground.

The other method usually recommended is to apply the resin in the form of a solution, made by dissolving it in spirits of wine. If a strong solution be made and divided between three or four bottles, filling up the same with varying quantities of the spirit, a variety of solutions is obtained, which give different sizes of grain. The solution is poured on and poured off in the same manner as the liquid ground, and the film of liquid left to evaporate. Now, in theory, this method is far

superior to the other; it is simpler, and a variety of grain can be obtained with the greatest ease. But in practice it does not work satisfactorily. The solution insists on gathering in greater quantities about the corners and edges of the plate, leading to irregularity in drying and in the size of the grain, which would interfere seriously with evenness of tone in the biting. And again, even on such portions of the plate as are free from the irregularity just indicated, the evaporation takes place irregularly, some portions of the plate shewing a fine even grain, and others a blotchy surface of irregular spots, which would be destructive of all quality in the result. At first I thought it possible that this result might be due to the use of the methylated spirit, which I had tried at first instead of the pure, but on making a solution with the pure spirit of wine, I found the result to be just the same. I therefore turned again to experiment with the dust, and after a few trials (not having a proper box, and not knowing enough of its construction to attempt to make one), I hit upon the following simple, but perfectly efficient, method of preparing the plate. A piece of the finest muslin procurable <sup>The dust</sup> was tacked tightly across a wooden box, from which <sup>ground.</sup> the bottom had been knocked out. A half ounce or so of the finest white resin was ground as finely as possible, and spread over the muslin. A portion of the work table was then dusted clean and the plate placed upon it. The box was then placed carefully over it, and one or two sharp knocks given it at intervals of a few seconds. On removing the box, the plate was found covered with a perfectly even film of fine dust. On warming, as before described, until the white colour of the resin disappeared, and allowing it to cool, the plate was ready for the acid. In order to obtain a sufficiently

fine grain, the finest muslin procurable must be obtained (mine is of the kind which a draper calls "Victoria Lawn"); perhaps a silk gauze might be obtainable that would be finer still, and this might be kept for the finer work of sky and distance, while the "lawn" would do for the coarser work of the foreground.

This method will be found quite sufficient for the purpose of the amateur. It is sometimes recommended to place the resin dust in a bag of fine muslin, and to distribute it by knocking the bag against some hard object, such as a ruler. The one difficulty I found in this method was that of distributing the dust evenly; it is affected by the slightest draught, and it is hardly possible to get it decently regular. The box stops all draught, of course, and if the resin be well spread on the muslin so as to more than cover the surface of the plate, it will be found to deposit without disturbance. The size of the box may have to be determined by the size of plate to be prepared; possibly one a foot square and six inches deep will be found large enough for most requirements, and it can be kept for the purpose.

The stopping  
out method.

When the plate is prepared, the method of working usually followed is to stop out all the pure lights, and to bite the rest of the plate to the depth of the lightest tone desired. Then the lightest tone is stopped out in turn, and the plate bitten to the required point for the next stronger tone, which is again stopped out, and so on to the finish. On elaborate plates, when working with two or more sizes of grain, the plate should be grounded first with the finest dust, which is cleaned off after the lightest tones of sky and distance have been bitten in. The plate is then grounded with the next coarser grain, and the next values bitten in in like

PLATE 9.  
AQUATINT.

the effect of the most beautiful possible must be obtained. When the plate is taken from a wrapper such as "Victoria" it is necessary to use gloves, which might be obtainable from a chemist or a druggist, and they should be kept for the purpose of sky and landscape, while the "lawn" would be the most useful work of the foreground.

This method will be found quite sufficient for the purpose of the present. It is sometimes recommended to place the resin box in a bag of fine muslin, and to shake it to break the bag against some hard object such as a ruler. The one difficulty I found in this method was that of distributing the dust evenly; it is affected by the slightest draught, and it is hardly possible to get it decently regular. The box stops all draught, of course, and if the resin be well spread on the muslin so as to more than cover the surface of the plate, it will be found to prevent without disturbance. The size of the box may have to be determined by the size of plate to be prepared; possibly one a foot square and six inches deep will be found large enough for most requirements, and it can be kept for the purpose.

When the plate is prepared, the method of working usually followed is to stop out all the pure lights, and to line the rest of the plate to the depth of the lightest tone desired. Then the lightest tone is stopped out in turn, and the plate bitten to the required point for the next stronger tone, which is again stopped out, and so on to the finish. On elaborate plates, when working with two or more sizes of grain, the plate should be grounded first with the finest dust, which is cleaned off after the lightest tones of sky and distance have been bitten in. The plate is then grounded with the next coarser grain, and the next values bitten in in like



manner, all the lightest tones being, of course, stopped out before biting. And so with the third size of grain. It is only, however, on large and elaborate plates that so much difference of value is likely to be required. My illustration was obtained with one grain only, although the same grain was applied twice or three times. The differences of value were obtained entirely by the differences in the times of biting.

The tones obtained by this method, when the stopping-<sup>The brush</sup> process is followed, are quite flat; they are characterised by extreme hardness at the edges, and resort must be had to the scraper and burnisher to obtain modulation. My own inclination with the aquatint process is to avoid stopping-out as much as possible, and to paint the acid on to the plate, so to speak, with a brush, biting any portion briefly, and repeating the application with the brush a good many times, biting in *briefly* after every separate application. One would thus carry forward the plate much in the same way as the water-colourist carries through his work, by a succession of slight washes. This method has the advantage of avoiding hard edges, and preserving a looseness of handling such as characterises the work of the water-colourist of the best type. I have endeavoured in plate 9 (see page 98) to carry out the illustration on this principle, but on so small a scale I have found it impossible to dispense altogether with stopping-out. The near and distant barges, and some of the work about the windmill, as well as the punt in the foreground, have been defined by this means. Apart from these, the main work on this plate was executed in the manner suggested. The acid will not lie upon the ground in very small or sharply defined spaces; it tends to run into masses, or blots, and the ebullition

prevents a sharply defined edge; hence some amount of definition is found necessary, and a little stopping-out may be advisable in the later stages of the work, after the main work has been done in the looser manner, and a proof taken to shew exact state of the plate. The hull, boom, and mast of the barge, for example, were stopped-out, the varnish being painted *round* the forms, and these bitten in. But, in dealing with the body, and even the sails, of the windmill, the brush process was sufficient, only a little cleaning up with the burnisher about the edges of the masses having been found necessary afterwards. The ropes of the barge were put in with drypoint, and a few touches added in one or two other places by the same means.

It is quite conceivable that, on a larger size of plate, the whole of the work could be executed by the brush process, and as the plate need not go bodily into the bath, the acid can be manipulated on the principle of graduated biting, so as to avoid the hard edges which characterise work by the stopping-out process. After drying off a wash of acid, which can easily be done, as to small portions of the plate, with a scrap of blotting paper, care must be had to see that the plate is quite dry, before another wash is placed where a previous one has been. Without this precaution, the acid will run wherever it has been before, which may not be desired. But if the plate be quite dry, the acid will lie more or less as placed by the brush. Dry by fanning, after pressing the plate firmly between blotting paper. The same remark applies to any stopping-out requiring to be done. The varnish will not take properly to the ground, and will give way immediately the acid is applied again, if the plate be not quite dry before the stopping-out is done.

Plate must be dry.

The acid used should be quite as strong as in etching; if feeble, it will attack the plate unevenly, and it should, therefore, be strong enough to ensure an almost immediate attack. Each biting should be short, and repeated once or twice, and a quarter of an hour will probably be found amply sufficient for the strongest work. There is a greater amount of copper surface exposed than is usually the case when etching a line drawing, and the biting proceeds more rapidly, therefore, than one's experience in etching would lead one to expect.

It is sometimes recommended, in order to ensure accuracy in stopping-out, that the outline of the whole subject should be etched; slightly, in order not to be obtrusive, but with sufficient distinctness to be easily seen. And it must be acknowledged that, where anything like precision is desired, some such method may be necessary. For ordinary purposes, it is possible that the chalk tracing would be a sufficient guide, but, owing to the nature of the ground, the tracing would be very rough. I am unable from experience to give precise instructions, my illustration having been composed from sketches as I went along, but I would suggest that if the outline were bitten with Dutch mordant, *until it shewed black*, the line would still be too slight to print, and its dark nature would enable it to be seen after the aquatint ground was laid. In cleaning off, after biting with the Dutch mordant, (see Part II.) care would be necessary, of course, not to clean off too vigorously, in case of destroying the blackness of the line.

On examining some old aquatints in my possession, Old methods of eight in all, executed by F. Jukes towards the end of last century, I find that the method of biting in the working.



outlines of the subjects has been followed in six out of the eight plates. In some of them the result has a singular resemblance, speaking in broad terms, to some of the *Liber Studiorum* plates of Turner, in which the etched line supports tone executed in mezzotint. In the case of the remaining two plates, however, the acid has apparently been applied entirely by the brush. Each tone has been obtained in one biting, and the edges of the masses are clean, and have not the looseness that characterises the method of working already suggested. On the other hand, they do not shew the extreme hardness on the edges of the masses that is characteristic of plates executed by the stopping-out process. I do not think that stopping-out has been resorted to at all. Variety of tone, say in the masses of a tree, has been obtained by biting the broad mass first, and then, on the top of that, and, as far as I can judge, apparently with the same ground, the darker broken masses, which represent the shaded portions. The darker touches, suggesting the branches, have been carried further by themselves afterwards.

*In combination.* Aquatint is sometimes used in combination with etching, with good effect. I have seen it used to obtain the delicate tones of a sky on plates on which all the rest of the work was etched in line, with very harmonious result.

Aquatint has one good point about it: it wears well in the printing, owing to the absence of burr. The art was much practised toward the end of last century, and in the early part of this, but has largely fallen into disuse in our time.

*Sulphur-tint.* A method of tinting a delicate tone upon the plate, which may be useful in certain cases, is as follows:— Mix flowers of sulphur with olive oil into a thin paste,

and paint this on the parts of the plate on which a tone is desired. The sulphur bites the copper gently, and a few minutes are sufficient in warm weather to produce a decided tone. In colder weather a little longer time may be allowed, the action of the sulphur being influenced by temperature in just the same way as that of the acid. In other words, the chemical action is more rapid in a warm than in a cold atmosphere. The method is only useful, however, for comparatively slight tones. The etching is shallow and can easily be reduced by the burnisher. The method is not one to be recommended for general use: it is simply one of those slight outside processes which the great majority of etchers will never touch, but which may, nevertheless, be useful on occasion for some special purpose.

The foregoing are all methods of engraving, whether by Monotype, acid or by tool only, and include those processes that comprise the whole art of the painter-etcher. Before passing from this part of the subject, however, I am anxious to call the reader's attention to a process which may be described as incidental to the practice of painter-etching: I refer to the process known as "Monotype." It is the result of a method of playing himself sometimes indulged in by the etcher. A monotype is a species of picture made upon the plate with printing ink, though the method may be said to be rather negative than positive, as in the case of mezzotint. The plan generally followed is to take a clean plate of convenient size, and to cover the whole surface with printing ink, and then to fashion the picture by wiping off the ink with the finger wrapped in a bit of rag, a stump of wood, brushes, etc. The method is one of getting broad strong simple effects, and is occasionally useful, and always interesting. The ink should be thinner than for

ordinary printing, so that it may work easily, and the proof is taken in the ordinary way, but with slight pressure, otherwise the ink is apt to run into a blot in the heaviest blacks. The black obtained by this method is very rich—stronger, in fact, than any other.

I came across this method of working on copper in Florence, in the year 1882, where it was practised by some young American etchers, Munich students (by the little group, in fact, known as the "Duveneck Boys," Mr. Frank Duveneck being the leading spirit). It was practised by them, however, rather by way of pastime, than as a serious form of art. As far as I know, Mr. Herkomer has been the first to illustrate this process in his recent book on "Etching and Mezzotint Engraving,"\* and he has carried the method further, with the aid of various brushes, than I have seen elsewhere. A reference to his book will shew of what the process is capable in competent hands, though in my own practice I prefer to use it in the simplest way. My illustration was cleaned off entirely with the rag, some of the touches of light on the water being got with the stump of a wooden match.

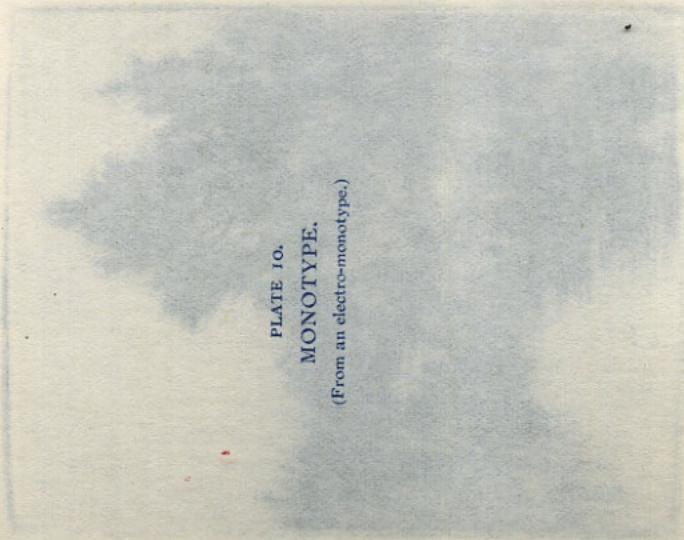
The name.

The name "Monotype" is due to the fact that there is only the one impression to be got of each picture. Seeing that the plate is not engraved in any way, the picture being obtained entirely by the manipulation of the ink upon its surface, it is manifest that only one proof of each picture is possible. Mr. Herkomer has invented and patented a method of stereotyping the original monotype, by dusting it over with a prepared metallic powder, which hardens upon the surface of the ink so as to form a matrix. Upon this a film of copper of any required thickness is deposited by the ordinary methods

\* 1892.—London and New York: Macmillan & Co.

PLATE 10.  
MONOTYPE.

(From an electro-monotype.)





of the electrotyper, and from the plate so made proofs can be printed in the ordinary way. It was my intention to have taken frank advantage of Mr. Herkomer's permission, given in his book, "to all to use and improve upon" his method of using the matrix powder, but I was fortunate to discover in time that the permission so given has been withdrawn. I have, therefore, in order to be able to illustrate the process here, adopted the simpler and older method, one which has been practised by electrotypers ever since electrotypy became an applied art—that, namely, of brushing the subject of my illustration, when dry, with ordinary plumbago, or black lead, in powder. The film of black lead forms a good conducting surface, and has long been used by electrotypers for the preparation of various surfaces for the reception of a copper deposit by electricity. The plate from which my illustration was printed was made in this way, and has not been touched since, except that a few lines have been added in drypoint. The result, I think, is not quite so good as by Mr. Herkomer's process, but it was the best available, and the reader will be able to judge from it, more or less, as to the capabilities of the process.

The plate made in the manner described above may be properly, and quite correctly, called an "electro-monotype," being, as it is, an electro-plate made from a monotype. The proof taken from it, on the other hand, is not strictly speaking a "monotype," owing to the multiplication of copies, but, as my object is merely to illustrate the result of this method of working, the name may be allowed to stand, as but serving the end in view.

I must not forget to add that the electrotyper cannot deposit copper upon copper, because wherever the old

copper is exposed, as in the high lights of the monotype, the new copper deposits in a solid form; that is to say, it is not a film which can be lifted again, but it becomes solid with the original plate, and cannot be removed. To obviate this difficulty, a plate of stereotype metal was used. This was supplied by the electrotyper. It is composed mainly of lead, with the addition, I believe, of a little antimony, and it takes copper in such a way that the deposit can be removed readily afterwards. It has also the advantage of being whitish in colour, so that the picture during its manipulation can be seen at least as clearly as upon copper.

As I have hinted, the practice of "monotype" is rather to be regarded as a pastime, than as a serious form of art; but to the etcher who has a press beside him it will prove a very fascinating method of trying broad strong effects in an impressionist way. When carried out in too much detail, much of the effect is lost.

## CHAPTER VIII.

### PRINTING.

Printing is, of course, common to all the methods of engraving described in previous chapters. No matter how your plate has been engraved, it remains to be printed from before you can see the result, whether good, bad, or indifferent. Every etcher should be his own printer. You must not be content to send your plate to the professional printer. The delay is intolerable, not to say destructive of good work, for the inspiration, if I may use so high a word, under which most good work is done, will not last. While the plate is on its way to the printer, the spirit has fled. No, you must learn to print your own plate; it is a part of the artistic process. The plate may even be etched with a view to the manner of printing; but, whether or not, the artist's work is not done until the proof made by his own hand lies before him. Besides, there is in the printing of a plate the same fascination, the same trembling between hope and fear, the same exasperation I might almost say, in the effort to get a good proof, that there is in the effort to get a good plate, and the same satisfaction in achieving it; for it is easy to print a good plate badly—it is difficult to print it well.

The method of printing is briefly this. The plate is inked all over freely with plate ink, care being taken to drive it well into all the lines. The superfluous ink is then cleaned off from the surface with suitable rags, in

such manner as to leave the lines full of ink, while the surface is practically clean. The plate is then passed through the printing press with a sheet of damp paper upon it, backed by a double thickness of printer's blanket to equalise the pressure. The result of the "squeeze" in the press is to drive the damp paper into all the lines, even the most delicate, so as to bring away the ink, and when the sheet is lifted from the plate, the proof of your work lies before you.

Simple as this reads, and simple as it looks to see it for the first time, it is really a matter of great nicety. It is essential that the ink be of good materials and of the right consistency, that the paper be of the right sort and rightly damped, that the pressure of the press be equal and considerable, and, above all, that the plate be cleaned off in just the right way.

Materials  
required.

Best Frankfort black, say  $\frac{1}{2}$ -lb.  
 Best burnt umber, in powder, say  $\frac{1}{2}$ -lb.  
 Burned linseed oil, 1 pint, *thin*.  
 Ink-slab, muller, and dabber.  
 Palette knife.  
 Printing paper.  
 Plate paper.  
 Heating box and adjustable light.  
 Stiff muslin, coarse and open.  
 Fine soft muslin.  
 Printing press, with double thickness of blanket.

All these can be obtained from Messrs. Winstone & Son, or Messrs. Hughes and Kimber (see list of etching materials on page 15). Papers of various kinds from Messrs. Roberson & Co., Long Acre, W.C., and other dealers.

The ink should be fresh made. It can be obtained ready-made, but it is said to lose colour with keeping. It is much better made by yourself as required. Crush the required quantity of Frankfort black to powder upon the ink slab with the muller, and add the burnt oil, mixing with the palette knife. Then grind with the muller until quite smooth and free from lumps. Not much grinding is necessary, but enough to secure that

The ink.

it is free from grit. If overground, as the ready-made ink usually is, it is too smooth and wants character. The ink should be rather stiff; if too thin, it will come out of the lines too readily when cleaning off with the rag. On the other hand, if too stiff, it will not work readily on the plate, or come away easily in the proof. The burnt oil is prepared in three degrees of stiffness; strong, medium, and thin. The last is best for your purpose. The medium may occasionally be of use, but the strong is very objectionable. It requires too great an amount of heat to make it workable, the wear and tear on the plate in applying it and cleaning off is considerable, and the result in the proof is the very opposite of that *mat* tone which is so desirable. Use, therefore, the thinnest quality; it works sweetly, and gives a delicate proof. When a brown ink is desired, use burnt umber, adding a little black if required to tone it slightly. This is the only brown I have found satisfactory. Raw umber is too weak, and the siennas, especially burnt sienna, raw and hot. On the other hand, burnt umber is rich and at the same time delicate; I find that it answers all requirements. I get it from the local oil and colour man. The black from the same source, known as "drop black," in powder, is also very good, but the Frankfort black is richer. The latter may be bought in the lump, as it crushes easily; the burnt umber should be got in powder, as it is harder and troublesome to grind.

The subject of papers that are suitable for the print-<sup>Papers.</sup>ing of etchings is one of profound interest to the etcher. Manifestly, certain qualities are required that are not found in ordinary papers. All hard and glazed papers are inadmissible; the former because they will not *soak*, and the latter because anything in the nature of a gloss

in the proof is inartistic, and opposed to the *mat* tone which characterises a good print. On the other hand, papers that are too soft and flimsy are undesirable, because they will not stand the necessary handling. A paper of medium weight, either white or of a slight cream or old-gold tone, especially the latter, is the best for all-round purposes. The kinds chiefly used are Van Gelder's Dutch papers, the Japanese papers, and the "Real India" (so called, I presume, because it is made in Canton! At least, the wrapping upon my bundle of this paper bore that legend.) All these are hand-made, the first being of the firm kind desirable; the latter two are of the softer kind, but have some desirable qualities. These are of a soft, spongy nature, taking damp well and quickly, while the Dutch papers are harder, and require steeping for some hours before using. There are also one or two modern papers of a warm tone and slight grain much used in the art magazines for the plate illustrations, which are useful for general purposes. The French paper known as "Arches" is of this character. It has been used for the printing of my illustrations, and is excellent for general purposes. I ought to add that some of the Japanese papers are exceedingly objectionable. They are much affected by the dealers for the publication of etchings, but have a smooth surface that is inartistic to a degree, and the tone is of a "greenery-gallery" straw colour that makes one ill. All the kinds can be obtained from Messrs. Roberson & Co., Long Acre, at prices ranging from threepence per sheet upwards.

Old paper.

It may be added in general terms that most *old* papers, except the very hardest kinds, are much valued by etchers for printing purposes, mainly on account of the faded, old-gold tone which comes of age. The only

modern paper I know which imitates this tone well is the "real India." Some of the cream-toned papers are too obviously new to give a really artistic proof. Old paper, kind for kind, is better than new, because the decay of the size used in manufacture, which causes the faded tone so much valued, also tends to reduce the hardness. Most old papers of the right kind are therefore much to be desired, and it is perhaps not surprising that stocks, of old Dutch hand-made papers especially, have almost disappeared from the market of late years, and fetch big prices when they do turn up. A publisher told me a couple of years ago that he had had great difficulty in getting together a sufficient supply of *fly-leaves of old books* to get up a small show of etchings, consisting only of fifty plates!

Of all the modern papers I know, the Dutch hand-made, the "Arches," and the "Real India" are the best. The Dutch paper, and the "Arches," are stout enough to stand reasonable handling. Cut in sheets to suit the size of your plate, they may be placed bodily in water for a few hours, and then laid in single sheets between blotting paper. Or, if not to be used immediately, the sheets, when taken out of the water, may be placed on one another, and left under a heavy sheet of cardboard, with weights upon it to drive out the superfluous moisture. Remove the surface wet by placing between blotting paper for a few minutes before printing. Superposed in this way, the sheets will keep in good condition for forty-eight hours, but they should not be kept longer, or fungus growth may set in. The "Real India" is too flimsy to be put in water; it should be laid upon the blotting paper and damped with a sponge. Make it thoroughly wet with perpendicular dabs of the sponge, avoiding friction, and

leave the blotting paper to take out the superfluous water. The paper, of whatever kind, should be thoroughly limp when it goes into the press, but free from surface wet. It is an objection to the "Real India" paper that it is so flimsy, and difficult to handle when wet, but it gives very delicate results for an etching or drypoint, and for my own part I should be loth to discard it. It is entirely unsuitable for a mezzotint, however. I have adhered to the name "Real India," because there is a paper much affected by the dealers known as "India" ("Artist-proof on India paper" and so forth. The reader will be familiar with the phrase). This should be discarded without hesitation. It is a thin paper which, on close examination, proves to be a machine-made article of the commonest type, and the tone is an ordinary cream. The "Real India" is of a peculiar lustrous texture, and a hand-made article, shewing plainly the marks of the brush with which it has been manipulated while in the pulp state. The tone, too, is quite peculiar, like that of genuine old paper, such as we find in the fly-leaves of old books. Unhappily, it is too flimsy for general purposes, but it gives exceedingly delicate results, and, for proofs that are to be mounted and kept in a folio, no modern paper is so good for tenderly bitten plates.

#### Brushing.

Before damping, brush with a soft brush to remove loose particles. The "Real India" is especially liable to have sand and other foreign matters partially embedded in its surface. It should be examined in a good light before damping, and all such impurities removed. The harder paper should be brushed with a harder brush, just before printing, in order to slightly raise the surface fibre as well as remove loose particles. This gives a

richer effect in the proof, but it should not be overdone. A flat brush of the hat-brush type is suitable for this purpose, but it should not be too hard in the fibre. Needless to say it should be kept clean.

In addition to a supply of these kinds, a stock of the <sup>Plate paper.</sup> so-called "plate paper" should be laid in. It is of a soft spongy nature, and wets through at once. It is used as backing to the sheet which takes the proof. It should never be used to print upon. It is damped in the same manner, either by sponging or dipping bodily in water for a few minutes, and then laying between blotting paper. The thinner papers, such as the "Real India," *must* be backed with this when going through the press; the thicker kinds do not require it. This paper is entirely unsuitable for printing upon, but it may be used to make a trial proof of a *mezzotint* plate, when such is wanted in a hurry, and especially when only a small press is available. Owing to its softness it gives a better result when there is not time to prepare other paper. The harder kinds of paper owe some of their hardness to the size used in manufacture. This can be obviated to some extent by putting the sheets into water that is *warm* to start with, and leaving them to steep overnight.

The reader cannot do better than obtain a few sheets of the various kinds and make experiments with them, as the individual taste of the etcher may determine the kinds to be used. After experiment, a stock of the most suitable kinds may be laid in for regular use.

At a future time it is my purpose to give some further practical details with regard to some of the materials—how to make a dabber, for example—and also to give a plan for a simple form of hand-press, such as might be made by oneself at a moderate cost, with the aid of



a local smith and joiner. Meantime, with the general information given above, we may now proceed to make our first proof.

Pressure.

Now we are ready to prove our first plate. We have passed it through the press with a dry sheet of plate paper upon it, and carefully examined the plate-mark to see that the pressure is equal, on all sides of the plate, and sufficient to ensure a good proof. I think it is possible sometimes to have too much pressure, but the probability is the other way. The pressure should be sufficient to emboss the paper with the more strongly bitten lines, and yet the plate should go through the press without any feeling of undue strain. Use a common, thin, white paper for this purpose, such as that of an ordinary newspaper. This is soft enough to shew the embossing of the stronger lines; a harder paper is not so good for the purpose. Below the plate there should be a clean sheet of ordinary white paper, cut rather larger than that upon which you are going to print. This enables you, after laying the plate square in the centre, to place the sheet for the proof over it, so that the margin will be even. The paper for the proof is damped and ready for use, and the ink is ready mixed on the slab. A loose bunch of the stiff muslin, also a second piece folded evenly into a pad, and a further pad of the soft muslin, are laid ready to hand, with one or two other bits of fine rag. The spirit lamp, or gas jet, has been lit for a little while, so that the plate of the heating box is fairly warm. The jigger, a wooden box about the size of the heater, is conveniently arranged close to the latter, and all in a good light to work by.

Inking the plate.

Now lay the plate on the heater until it is just warm enough to be handled with comfort, remove it to the

jigger, and proceed to ink it all over with the dabber. Use the dabber with a rocking motion, so as to avoid risk of scratching the plate. The least bit of grit in the ink will scratch if you rub the plate with the dabber, and friction should be avoided as far as possible. The heat should be such as to soften the oil, and make the ink work smoothly. If the plate cool to the stiffening point of the ink, put it on the heater again for a minute. Do the inking systematically, so as to ensure that every part of the plate is covered, and the ink thoroughly worked into the lines. Carelessly done, the ink may only cover the surface without getting into the lines, and the result will be rottenness in the proof. Now, with the plate on the jigger, remove the surface ink with the loose bunch of stiff muslin, as the plate begins to cool, but without hard rubbing, in case of dragging the ink out of the lines. Then, as the plate gets cool enough to be taken into one hand, proceed to wipe it evenly clean with the pad of stiff muslin, holding the latter somewhat tightly, so that the under surface is firm and regular. Polish the plate lightly with a circular motion, until it is apparently uniformly clean. There is still a slight tone upon it, which can only be removed by special means, but this it is desirable to retain. As a rule, however, it should only be slight. Now clean up the edges with a fine bit of rag, and the plate is ready to give what is known as a "clean" proof. One of these should be taken from every plate, in order that its exact condition may be seen.

Cleaning off.

But in order to get an "artistic" proof, the plate must be submitted to a further process. It is laid again upon the heater until fairly warm, the whole surface being then played over lightly with the loose pad of soft muslin. The pad should not be dragged across the

Retrousage.

plate, but played lightly over it with a hovering motion, a bit at a time, until the whole surface has been treated. The effect of this is to tease out the ink in the lines, and care should be taken that it is not overdone. In the "clean" proof, the lines are bare and cold, and have a starved look, but in the proof treated in this way they shew full and rich. It is only necessary to compare the two proofs to realise the artistic value of *retroussage*. There appears to be no English word to take the place of this, though I have heard some American etchers, in the direct, but not always classical, language of their countrymen, call it the "pumping process." Perhaps the nearest term in English would be the "teasing process."

The practice of *retroussage* is often objected to by the engraver of the mechanical type, whose ideas are founded upon the method of printing steel engravings. But it seems to me idle to discuss the question. One might as well object to the use of glazing in oil painting, or of Chinese white in water colour. If it be the case, as I insist, that the printing of a plate is part of the artistic process, and should be done by the etcher himself, then the means which he may adopt to obtain the effect he desires may safely be left to himself. *Retroussage* is regarded by all painter-etchers as an important part of the art of printing. It is the abuse, not the use, of it that may justly be condemned. The beginner must be on his guard not to overdo, either the teasing process, or the amount of tone left upon the plate.

Use of the  
hand.

Sometimes it will be found an advantage to finish the cleaning off with the hand, after the use of the stiff muslin, but before *retroussage*. By drawing the under edge of the palm sharply across the surface of the plate,

the lines are left so filled with ink that they print rather more sharply, and clearly, than when the cleaning off is done entirely with the muslin. The action of the hand seems to have the effect of sweeping the ink from off the surface, and into the lines, as the action of the wind sweeps the snow off the edges of the furrows in a ploughed field, and into the hollows between. The surface of the plate is barer, and the hollows fuller, and the lines when printed are blacker by contrast. Instead of the outer edge of the palm, the ball part of the thumb may be used with a circular motion, the effect being much the same, although I think that the tone is more even by this method. The careless use of the palm may leave the tone somewhat streaky in places. It may depend upon the plate whether the hand should be used in finishing off the cleaning or not. A delicate plate, of which the biting is slight and shallow, may be best finished with the hand, as the method leaves the line rather fuller of ink, and the proof is clearer. On the other hand, one in which the biting is decided, and especially when the ground has been of the harder kind, so that the line has bitten deeply without enlarging much, may better be finished with the muslin, as it tends to reduce slightly the amount of ink, and prevent any tendency to extreme blackness in the strongest work. Only experience, however, will enable the etcher to determine when to use one method, and when the other.

When it is desired to get entirely rid of the slight tone that still clings to the surface of the plate, the hand should be lightly charged with printing ink, and then passed over a lump of whiting, the loose whiting being brushed off, and the remainder lightly rubbed into the ink, before the hand is applied to the plate.

The use of  
whiting.

Personally, I consider that the use of the whitening requires very great discrimination. It is responsible for the staring commercial look, which characterises so many of the etchings shewn in the dealer's windows. But its use may be beneficial when extra clearness of tone or sharpness of line is desired. My advice is, however, to use it with caution.

Warmth of the plate.

The plate should be warm, but not hot, when passed through the press. If too hot, it is apt partially to dry the paper before it can be passed through, the result being a bad proof, dry and harsh in places. The whole object of the heater and jigger, taken together, is to get and keep the plate just as hot as wished at any moment. It should be fairly warm while inking, in order to soften the ink and make it workable, slightly cooler as you begin to clean off the loose ink, and cool enough to be taken in the hand as you finish the cleaning; the stiffening of the ink, as the plate cools, prevents its being dragged out of the lines too much by the muslin. A small plate may be inked as it heats up on the heating box, and cleaned off nicely on the jigger in the time it takes to cool; but a larger plate may require to be passed back and forward a time or two. What is essential is to adapt the amount of heat to the need of the moment, bearing in mind its effect upon the workableness of the ink. Some etchers lay the pad of stiff muslin on the heater for a moment to warm it, previous to the final polishing. This facilitates the cleaning of the surface of the plate, while the ink is left in the lines almost undisturbed.

I find that the whole difficulty of getting a good proof lies in little points of this sort. With paper and press in good order, what is necessary is a little judgment in adapting the particular method to the plate to be printed

Printing a delicate operation.

from; for two plates may have to be treated quite differently. The plate that is strongly bitten may be printed without much difficulty, because any reduction of ink in the lines, due to the action of the muslin, is an advantage rather than otherwise, as it tends to reduce the blackness in the proof. On the other hand, the printing of a delicately bitten plate is really a difficult matter. The secret of this lies in the tendency of the muslin to remove too much of the ink from lines that are rather shallow; and it is here that a light hand in using the muslin, and a little skill in applying the hand in the final cleaning off, combined always with the judicious heating of the plate as required, will overcome the difficulty.

I have hinted already that the amount of what I may call "natural" tone, the tone that is left on the plate after cleaning off with stiff muslin, or with the hand, and which can only be removed by the aid of the whitening, should only be slight. There is a tendency on the part of the beginner to make undue use of this tone, by leaving it heavy in places and light in others. This is a temptation which should be resisted. The best etchers are agreed, I think, that the more straightforwardly a plate is printed, and the less it is "cooked" in the wiping off, the better. The leaving of a heavy tone is destructive of brilliancy in the proof; and though there are exceptional cases in which it may be retained with advantage, as in the dark background of a portrait, it should be used with the greatest reserve, and only after considerable experience. The beginner will do well to make a practice of cleaning his plates down to the point of the "natural tone," and of not depending upon anything more, except *retroussage*, which of course affects the lines, rather than the tone of the surface.

Damages.

Keep a good look-out for drypoint scratches as you finish cleaning off the plate. They are apt to make an appearance rather frequently. However well you grind the ink, and however clean you keep the ink slab, bits of grit will get in now and again. But although they look rather formidable, the scratches are only slight, and are easily removed by the scraper and burnisher. It is not even necessary to re-ink the plate. A touch from the finger slightly charged with ink, and a final polish with the stiff muslin, will effectually remove all trace of the repair, and the proof will not suffer.

Taking the proof.

The plate, cleaned off and teased as described, is now ready to be passed through the press, and should be placed square in the centre of the under sheet of paper. It is always advisable that the length of the plate should be laid *across* the travelling board, so that the roller of the press has to traverse the width, rather than the length, of the plate. The reason for this lies in the fact that, owing to the limp condition of the paper, it is apt to stretch, to squeeze out, so to speak, under the extreme pressure, and this leads to indistinctness towards the edge of the proof. This danger is practically non-existent in small plates; it is greatest in the case of large plates. But in all cases, by presenting the longer edge of the plate to the grip of the roller, the shorter length of the paper is submitted to the squeeze, and the danger is minimised. Make a practice, therefore, of laying the plate across, rather than along, the travelling board, wherever the size of the press allows. A trial proof may, of course, be taken of an occasional larger plate, with the plate laid along the travelling board, but the best results are never obtained in this way.

Backing.

If the paper for the proof be of the substantial kind, such as the Dutch, no backing may be necessary; but

if it be a thin paper, such as the "Real India," it must have a sheet of stout plate paper, also dampened, placed over it. These should be laid square with the under sheet, and the double thickness of printers' blanket laid over them carefully, so as not to disturb their position. Now pass the plate *once* through the press, remove the blanket, and lift the proof carefully. Use a paper clip to prevent finger marks.

This is the time when, as Mr. Menpes describes it, your work is "being born." The first feeling will probably be one of disappointment that there is so much white paper; the proof seems bare of work. This is the universal experience. Somehow, the lines seem thicker on the plate when you are making your drawing, especially those to be slightly bitten, and there is a want of colour in the proof. Only experience, however, will enable you to foresee the exact result. If the proof be satisfactory as to the drawing and the strength of biting, even if some parts be under-bitten, the plate is in good condition for further work. Your main anxiety should be that there is nothing to reproach you in the drawing, and that there is nothing seriously over-bitten. If that be so, the rest is comparatively easy.

Proofs should not be dried under heavy pressure. The experienced amateur always examines an etching in a side light, and looks to the shadow of the heavy

Drying the proof.

lines, which are actually so many ridges, to enhance their richness. For the pressure in the press not merely causes the paper to take up the ink, but it forces it into the lines, especially the strongly bitten ones; a good proof shews these distinctly embossed on the paper. The wet proofs should be hung to dry over cords stretched across the studio, sufficiently overhead to be out of the way. When thoroughly dry, they may be

damped lightly with a sponge, and then placed between the hard-glazed brown boards used by printers for the purpose, and left under heavy pressure. In the first drying the ink becomes hard and set, and the plate mark and other wrinkles may be taken out in the second drying, without damage to the richness of the proof.

By way of illustrating the foregoing, I may refer the reader to plate 1, which has been shewn in two "states," not merely for the purpose of illustrating the actual condition of the plate at two stages, but also the "clean" and the "teased" proof. The first state of this plate has been printed clean, with little or no tone, and no *retroussage*; the "finished state" shews a little of both. The remaining etched plates have also been printed with *retroussage*, and all illustrate the method usually followed by the printer of etchings. Plate 5, the drypoint, has been printed clean, the comparatively shallow nature of this line not always lending itself to *retroussage*; specially so on a plate which has none of the heavy burr of which drypoint is capable. Plates 6, 7, 8, and 10, the four, in short, which illustrate tone processes, have been printed clean, these tending, from the nature of their surfaces, to become heavy, and to lose character, when teased. The remaining plate, which illustrates soft ground etching, has been *lightly* teased. Printed clean, it is rather bare and cold, though in that state it more nearly approaches the actual tone of pencil work. Heavily teased it is much too black.

Reference to  
illustrations:  
how printed.

## CHAPTER VIII.

### PAINTER-ETCHING.

We have now arrived at the end of Part I., which has <sup>Painter-etching.</sup> been devoted to a practical description of the art of etching, and its allied processes. All authorities are agreed in considering that, although etching and aquatint (soft-ground etching may be included with the former, and sulphur tint with the latter) are the only two that are strictly *etching*, in the sense of *eating* or *biting* designs upon metal, the allied processes of Drypoint and Mezzotint are strictly etchers' processes, and fall to be included in the term "Etching," in the larger sense of the word. Before proceeding to the practical details relating to acids, tools, and the paraphernalia generally of the etcher, I should like to put in a plea for the free and artistic, as distinct from the reproductive, use of the art. All the processes described are equally available for the use of the painter-etcher and the reproductive etcher; the difference between the two lies in the *men*, and not in their *art*. So far as process and tools are concerned, these are the same, whether used for the slightest sketch, or for the most elaborate reproduction of a picture in full tone. Anyone wishing to make use of the art from the point of view of the engraver-etcher, will find here, I venture to think, all the information required to set him going. But I am wishful to insist upon the distinction which should be drawn between the

two kinds of etching, a distinction which is not always kept in mind. Indeed, I have often met with the idea that etching is a purely reproductive art, an art used only for the copying of pictures, and in no wise adapted to the work of the original artist, and especially to outdoor work direct from nature, in the same way as painting in oil or water-colour. As a matter of fact, for one etcher whom you will find at work, with his plate before him and his bottle of acid in his pocket, you will find a thousand painters. But why this should be I do not know. There is no more inherent difficulty in drawing correctly upon the smoked copper plate, than upon a sheet of paper, and the whole apparatus for outdoor work goes into the same bulk as that of the water colourist (much less than that of the oil painter), and is only, perhaps, a trifle heavier, to the extent of the weight of a couple of plates. A pair of drawing boards of a convenient size, each with a shallow well, in which two or three plates, ready ground and smoked, may be fastened down with drawing pins, are carried with perfect safety, face to face. The only care required is that they should not be jolted about, for fear of the plates coming loose. For larger plates it may be well to fasten them down with one or two small screw nails, but plates up to (say) seven by ten inches can be made quite secure with a few good drawing pins. In addition to these, a flat bottle, of the pocket-pistol type, with a glass stopper, will carry acid enough for a day's outing. Or an ordinary cork, the bottom of which has been covered with stopping-out varnish, will stand the acid for a day or two, and it can be replaced as required. I have found it convenient and safe to carry this in a small ordinary schoolboy's leather bag, which should be securely sewn to the pair of straps which carry your boards—straps of

Working from nature.

The outfit.

the kind used for carrying a travelling rug. Inside the bag a flap of leather should be sewn to the inner side, so as to form three pockets, the centre one of which should take the bottle of acid and keep it upright. The two outside sections will carry a flat pencil case, containing two or three needles and some small brushes for stopping out, at one end, and a small bottle of stopping-out varnish in a wooden case at the other. A small pocket spirit level may also be accommodated in the bag. This is advisable to enable you to get your plate level when you want to do a biting, and so avoid the risk of the acid being wasted, by running overboard before its work is done. The plate may be placed on the ground, on a wall, anywhere, in fact, that is convenient. The acid may be mixed beforehand with a view to probable temperature; it should be a little on the strong side, since water can be obtained anywhere, but acid cannot. If thought advisable, a small supply of the pure acid from the stock bottle can be taken, in any small stoppered bottle convenient to accommodate in the bag. For the stopping-out varnish I use the small narrow-necked bottle in which the homœopathic tinctures are sold, the smallest size, and carry it in one of the little wooden cylinder boxes in which drapers sell pennyworths of hairpins. You can buy one anywhere, and give away the hairpins! In the body of the bag, outside\* the pockets, a sketch book and any other sundries can be accommodated comfortably. The bag should be so fastened to the straps, that, when the latter are in place round the drawing boards, it sits flat against them face outwards, so that the acid bottle can be put in after the boards are packed together. After that, all that is required is a little care to keep the whole thing right side up. It is apt to be awkward if the acid get loose!

Never carry the acid bottle in your pocket. Although it may not escape, the fumes do, and these will rot the cloth in a day or two. The hand-rest should be of the same length as the drawing boards, and may be slipped inside the straps. These, with a sheet of blotting paper placed between the boards, with which to dry your plate after a biting, complete the equipment, which does not weigh more than a few pounds, plates included. With this in one hand, and sketching stool in the other, you can wander at ease in search of your subject, and sit down and get to work at a minute's notice.

A day's outing.

Thus prepared, one can easily put through a small plate, including several bitings, in a single afternoon, and take a proof on getting home at night! There is no difficulty about it whatever, no more than there is in making a water-colour sketch, and less than there is in making an oil one, for there is no bulky wet canvas to carry home. If I seem to insist too much on the detail of the necessary materials, it is only that I may shew how little difficulty there is about it, and help the beginner to make a habit of working direct from nature upon the plate. A little extra care in placing your first main lines is all that is necessary to make the rest of the drawing comparatively easy; the amount of courage required to work in this way is soon acquired.

A longer holiday.

The apparatus just described is sufficient for a day's, or even a couple of days', outing, the bottle of acid sufficing usually for half a dozen bitings on a plate of ordinary size. With one or two trifling additions, the same is ample for an etching trip of ten days or a fortnight, or even for a few weeks. The main addition required is a parcel of plates sufficient for probable requirements. This, being flat, can be strapped alongside the boards, the only inconvenience involved being

the additional weight when travelling. On reaching one's destination, the bulk of the plates can, of course, be left indoors, the day's supply being carried pinned down in the boards, as usual. Inside the bag there is generally room for a bottle of liquid etching ground, turpentine, the hand-vice, and a few tapers. If the bottle of ground be well wrapped in a spare rag, the danger of breakage is very small, especially if the package receive ordinary care from its owner. Do not leave it to the mercy of the railway porter! But, in any case, the contingency of breakage is provided for, if a ball of ground and a small dabber be added to the contents of the bag. Acid can be obtained anywhere, and kept in any sort of bottle. (My last supply on a trip of the sort was stowed in a beer bottle, which was thrown into the river, still half full, when the day of departure came!) From this stock the flat bottle can be supplied, and filled up with water from day to day as required.

If there be any truth in the general experience of the <sup>Inspiration.</sup> artist, that a sketch made direct from nature has a freshness and vigour which are usually wanting in the finished work done in the studio, how much more especially so should it be in the work on a copper plate. The polished surface is so delightfully smooth to work upon, the point of the tool, the finest the artist has at his command, glides freely in any direction, the ground cuts cleanly and is keenly sensitive. On the other hand, the air and the sunlight, the wind-driven cloud, the fleeting expression on an old man's face, all that tends to inspire the artist is there. And what wonder is it that the message is flashed along the line to the sensitive needle, with all the verve of the original inspiration? This, then, is the sphere of the painter-etcher, the true

sphere of his art. The man who takes his work direct to nature, will put what she tells him into it. For "out of the abundance of the heart the mouth speaketh," and, as the brain is fired, so the tool trembles to the slightest touch.

ETCHING,  
DRYPOINT, MEZZOTINT.

—  
PART II.  
—

PARAPHERNALIA.



## CHAPTER IX.

### THE MORDANT.

Practically, there are only two mordants with which <sup>The Dutch,</sup> the etcher need concern himself, the Dutch—so called, I believe, because largely used by the old Dutch etchers—and the nitric. The Dutch mordant is composed as follows:—

Hydrochloric acid (pure) .. .. .	10 parts, by weight.
Chlorate of potash .. .. .	2 " "
Water .. .. .	88 " "

These quantities in ounces will do for a beginning.

First dissolve the potash thoroughly in the water, which may be heated to facilitate the operation, and when cold add the acid. The nitric mordant is <sup>The nitric,</sup> composed simply of nitrous acid and water, or the ordinary "commercial" quality of nitric acid, which owes its yellowness to the nitrous acid used in its manufacture. Mix the acid with water in the proportion of two parts acid to three of water. The proportion of acid may be slightly increased in cold weather. It is generally recommended to use it in equal quantity with the water, but I have found that proportion rather strong in practice. Formerly, I always used the "pure commercial" quality of nitric (sp. gr. 1.420), with the idea of getting uniformity as far as possible in the biting. But the activity of the acid is so seriously affected by slight differences of temperature, that it is wise to put all such ideas aside, and depend entirely upon the "tell-tale" to guide you. Since using this I

have found the nitrous preferable, as it seems to attack the copper somewhat more regularly than the pure nitric. The "tell-tale" enables you to get the acid in right working order, without the necessity of studying so variable a quantity as temperature.

Both the mordants will be found to act more freely, and evenly, if there be a little copper already in them, so, when starting with fresh acid, hang a bit of copper wire in the bottle for a few minutes, until it turns the contents slightly blue. When used too long on the plate, the acid becomes overcharged with copper, and ceases to work satisfactorily, hence a portion of the old mixture should be thrown away, and new added from time to time as required. When it becomes a strong green it is getting overcharged. If kept at a light blue it is in good working order. The mordant is better mixed some hours before using, otherwise it is raw and uneven in its work. The last remark applies to the nitric mordant. It requires no preparation, because a little acid or water, or both, can be added to the stock bottle at any moment. If you make a practice of filling up the bottle after using a portion of its contents, and shaking it before putting it away, it is in good order for next time. On the other hand, it is customary to prepare a considerable quantity of the Dutch mordant at a time, owing to its special nature, and a large bottle should be kept for the purpose, and filled at every "brewing." This mordant, it is said, loses its strength in time, but it remains good, I believe, for a few weeks, or even a month or two.

The fumes from the Dutch bath are slight, and not injurious, but those from the nitric bath, when strong, are bad for the throat, and, especially when working indoors, a little care should be exercised not to stoop

Its colour.

Acid fumes.

too closely over it, and to work in a well-ventilated room. No real inconvenience will be experienced, however, when working on small plates, and a little ordinary care is all that is necessary.

Perchloride of iron is a steady, regular mordant, which is sometimes recommended. It is non-odorous, and non-ebullient, and bites a clean line like the Dutch in a reasonable time, under an hour. Mr. Hamerton recommends it for the purposes of aquatint, especially for applying to the plate with a brush; but, for general use, it has the disadvantage of being more or less opaque; it is, in fact, dark yellow in colour, and tends to black as the biting proceeds. Besides, as there is no ebullition, the progress of a biting cannot be followed easily. This is rather a serious objection. Inasmuch as, in the Dutch and nitric mordants, the etcher has all that he requires, my advice to the beginner is not to concern himself with more than these, for the present, at any rate. I use the word "nitric" here in the larger sense, including nitrous, the two acids being nearly related to one another. Nitrous is said to attack the copper rather more evenly, but there is really not very much difference. The common or "commercial" nitric, as usually sold, contains a proportion of nitrous, as shewn by its yellow colour; the "pure" nitric is white. The former is cheaper, and better for the etcher's purpose.

It is essential that the etcher should be able to make the acid do on the copper just what he wishes, and a thorough understanding of the peculiarities of each of the two mordants is necessary. It is largely a matter of individual idiosyncrasy as to which the etcher will prefer for general use, but the other may be useful on occasion.

The Dutch mordant takes about six hours to bite the strongest lines on an ordinary plate, in an average

The Dutch mordant:

temperature. It can be used with a stronger proportion of acid, or, when working indoors, the bath can be heated, so as to perform the work more quickly. For the plates in "Etching and Etchers" (second edition),\* Mr. Hamerton heated his bath of Dutch mordant always to 90° Fahr., and the strongest lines were bitten in from fifty to seventy minutes, according to the subject, and the strength of line required. On the other hand, Mr. Seymour Haden, who worked direct from nature, invented the method of working *in the bath*, using this mordant, and the six hours or so at his disposal enabled him to execute the plate in a sitting or two, beginning with the strongest work and proceeding gradually to the finest. In this way he obtained perfect gradation of value. For those who wish to work in this manner the Dutch mordant is the best, but the method, I think, recommends itself to few. A special tripod or table has to be provided, on which to set the drawing board. It must be perfectly level, and strong enough to bear some of the weight of the body. Few can work comfortably, if at all, without leaning more or less upon the drawing board, and for this reason I do not recommend this method of work to the beginner. The board for this process is of the kind formerly described, but stouter. It should be, say, an inch and a half thick, with the well an inch deep, the latter being protected with five or six coats of Japan varnish. The plate can be fixed to the bottom of the well with sealing wax. The hand-rest must be used, and care taken that the coat-sleeve be kept out of the acid! Keep a needle for the purpose; the action of the acid keeps it sharp. The ground known as Bosse's, to which I shall refer presently, is used with this bath. Being soft, it allows the line to

\* London: Macmillan & Co. 1876.

widen with the length of biting, and the whole work is executed with one point.

The Dutch mordant darkens the copper which is <sup>Darkens the</sup> exposed to its action, and is therefore unsuitable for use <sup>copper.</sup> with the ordinary smoked ground. The line disappears almost entirely in a few seconds, by turning nearly as black as the ground, and this is a very serious inconvenience. It is almost impossible to see the work, unless in an exceptionally good light, and even then the strain on the eyes is uncomfortable, not to say injurious.

The nitric mordant, on the other hand, does in half <sup>The nitric</sup> an hour the work which the Dutch requires six hours to <sup>mordant:</sup> do, in an ordinary temperature. This is in many ways a very great advantage, combined with the equally important one that the line remains bright, and can be <sup>Leaves it</sup> distinctly seen at any stage. Still another point is that <sup>bright.</sup> the nitric causes ebullition in a form that can be seen.

The acid bubbles all along the line, and with a little experience one can judge very nearly how the work progresses. This helps to obviate the one great difficulty in etching, that of being able to gauge rightly the progress of the biting. If the bubbling be of a light grey colour, and very gentle—not to say slow—in action, the acid is weak. On the other hand, if it bubble violently, and turn to a deep blue, and soon to a strong green, it is too strong. The bubbling should be brisk without violence, and of a moderately light blue colour. This will be found the best working rule for general practice. When testing the acid with the "tell-tale" before pouring it on the plate, the strip of copper should be frosted with light grey in five or six seconds, give off light blue bubbles in ten or twelve, and be biting briskly in fifteen to twenty. This is a rule of thumb as near as can be given.

With either acid the work can be done leisurely, as described in former chapters, and the plate submitted to short bitings, as required, from stage to stage. Needless to say, the Dutch mordant cannot be poured upon the plate for a short biting, without the need of putting it in a bath, as the nitric can. The quantity would not be sufficient for a biting of an hour or more at a time, as is often necessary; the acid would become overcharged with copper and cease to work, and, as there is no ebullition, there is no means of knowing when this is the case. On the other hand, I have never found this to be the case with the nitric. There is always sufficient activity in the small quantity that will lie on the surface of the plate to complete a biting, and I have not found the use of the bath at all necessary. But with the Dutch mordant it would always be necessary, as also the attendant trouble of painting the back of the plate with stopping-out varnish.

The two mordants differently affect the colour of the copper. Under the nitric acid the line remains bright, and the plate can be carried through to the finish, without any inconvenience whatever. On the other hand, under the Dutch mordant the line disappears almost entirely, by turning nearly as black as the smoked ground itself. It might be thought, perhaps, that the darkening of the line under the Dutch mordant would enable it to be seen clearly, if the ground were left unsmoked; and so it would, but this arrangement, while allowing the line that has been bitten to show distinctly enough, makes no provision for the easy execution of the needle work, and the latter is of more importance. The object of smoking the ground is, of course, to enable the etcher to see plainly what he is doing in the execution of the needle work. This on the smoked ground is easy, but

The positive process.

on the unsmoked ground is too severe a strain upon the eyes.

By way of endeavouring to remedy this inconvenience, Mr. Hamerton's method. Mr. Hamerton has invented a method of working, which he calls "the positive process"; with justice, because the work, when bitten, shews black upon a white ground. He claims, however, that the line shews black *immediately* it is drawn. And it may be so when working in a Dutch bath heated up to 90° Fahr., but in ordinary practice, in the cold bath, there is a quite perceptible lapse of time before the darkening takes place. It is only slight, however, and might not disturb a phlegmatic worker. Mr. Hamerton's method is as follows:—He first prepares the plate with silver cream (*crème d'argent*, or cyanide of silver). I have used Goddard's silvering solution, which is obtainable from any chemist. This is apparently the same thing, when mixed with ordinary plate powder to the consistency of cream. After the plate is thoroughly cleaned, the cream is applied with a camel-hair brush, and, when surface dry, rubbed gently with a clean rag. The plate is then found coated with silver. Next, ground it with a simple saturated solution of white wax in ether, which is to be applied in the same way as the ordinary liquid ground, by simply pouring on and pouring off, so as to leave a thin even film all over. Allow this ground to dry for three days, and then ground a second time. After the plate has dried again for three or four days it is ready for use, the ground being now a dead white. A very little wax is required to make the saturated solution, (a bit the size of a marble is quite enough for four ounces of the ether) and it is made by dissolving the wax in the ether, and leaving it to settle for a few days. Throw away the white sediment; the clear solution is what is required, and is pure wax.

Mr. Herkomer's method.

Mr. Herkomer is also the inventor of a positive process, which is as follows:—He first grounds the plate with ordinary etching ground, but leaves it unsmoked. Then he gives it a coat of white grease paint, of the kind used by the theatrical artist for making-up the face of a player. A stick costs a shilling, and can be obtained, generally at a barber's or wig-maker's shop, in the neighbourhood of any theatre. Mr. Herkomer heats the stick slightly, and dabs the paint on to the plate with his finger, lightly, so as not to injure the ground. Over this he dusts the finest zinc white in powder, the result being a perfectly white surface. The process is similar to that of Mr. Hamerton's. The surface is perhaps whiter, though it loses its whiteness as soon as it is placed in the acid, and turns cream colour. The ground is also very thick, and clings unpleasantly to the point of the needle.

Advantages and disadvantages.

These processes have the great advantage that the line darkens quickly under the action of the Dutch mordant, and the work is seen approximately as it will appear in the proof, not merely in black lines upon a white ground, but in lines that shew, proportionately, somewhat as they will print. For working at leisure in the studio, or for special occasions, this method may be serviceable. For my own part, however, I am inclined to think that the disadvantages far outweigh this one advantage. The process has the objections already stated against the method of working in the bath, and in addition the preparation of the plate is tedious, and the ground so soft as to be injured by the slightest touch. The difficulty, too, of executing the drawing, whether working in, or out of, the bath, is very great. As a matter of fact, the desirability of seeing the work in black upon a white ground is more imaginary than real.

It will be found in practice that the negative appearance of the drawing in copper colour against a black ground presents no real difficulty. What is vital is that the drawing, both before and after biting, should be *distinctly seen*. The continual necessity of guarding against contact with the ground, or with the acid, according to one's way of working, while the mind is intent upon the work with the needle, is an objection that overrides all the advantages, especially for outdoor work. In the studio, where the board can be placed upon a firm table, and the work done under comfortable conditions, and where the plate can be placed in the bath for the various bitings, without the necessity of stooping over the acid all the time, the objections are not so serious, and the methods may be tried with advantage.

The Dutch mordant works quietly without ebullition, and the progress of the biting can only be gauged, approximately, by time. (I am speaking here of working with an ordinary ground. The positive ground does allow of one being able to judge fairly well of the progress made.) The ebullition of the nitric, on the other hand, enables the rate of biting to be gauged very nearly by the rapidity of the bubbling, apart from the question of temperature, inasmuch as one weakens or strengthens the acid to the right working point.

But the ebullition has another important bearing upon the line as to its width. The Dutch mordant bites downwards and afterwards sideways, the result being a line somewhat like a half circle in section when slightly bitten, and like an inverted Moorish arch when carried further. Beyond that point the ground gives way as it becomes undermined, the arch form being maintained. On the other hand, the ebullition of the nitric tends to wear away the ground, and the result is a line which is wider, and more

Effect on the line:

Of the Dutch,

open, in proportion to its depth. This on the whole is not an objection, however; rather the contrary, as it keeps the width and depth of the line in better relation to one another. Sometimes the Dutch bitten line does not quite retain its value. Mr. Hamerton relates an instance in which two distinct times of biting—viz., twenty and thirty minutes respectively—printed exactly the same, but, on reducing the whole surface slightly with charcoal, he arrived at the desired difference of value. This was probably due to the fact that one line had been bitten to the half-circle stage, and the other one to that of the arch. On reducing both a little, the former became rather less than the half circle, and the latter was reduced to it, the opening of the former being slightly reduced, and that of the latter slightly increased. The nitric acid never plays this trick, for the reason given above. In printing, the paper not merely takes the ink from the surface of the line, but it is more or less forced into it. In the case of the Dutch line it can not always get to the bottom because of its shape. In the case of the nitric line it always does, because it is more open, and the paper can withdraw all the ink.

The attack.

The one objection to the nitric acid, which is in any degree serious, is that it attacks the copper somewhat unequally. The Dutch mordant attacks all the lines bared on the plate with the strictest impartiality. But the nitric, for reasons best known to itself, acts upon wholesale principles, and first attacks those parts where most copper is laid bare, leaving the isolated lines for after consideration; or rather, it would be more nearly correct to say that the action of the acid is more rapid where much copper is exposed to it, and slower where less is exposed. This, however, is not so serious an objection as it appears to be, since the acid can be

applied longer to such of the work as requires it. It will be found in practical experience that a knowledge of the defect is all that is necessary to counteract it. It is, indeed, an advantage sometimes, rather than otherwise. As a matter of fact, it is just on those parts of the plate where there is most needle work that emphasis is usually desired. This peculiarity must, however, be attended to, or the result may be undue strength in the crowded parts of the work, and weakness in the more open parts.

Before passing from the question of the acid to be used, it may be desirable to point out a difference in the artistic value of the line bitten by the two mordants, although the difference is such as requires some experience to detect and appreciate. The Dutch line, being excavated quietly, is characterised, when examined under a magnifier, by smooth, straight edges; it prints cleanly and smoothly. The nitric line, on the other hand, is open and rugged, owing to the ebullition; it prints with a rougher and richer quality than the other. The etcher will prefer the one or the other according to his individual bent towards the severe and classical, on the one hand, or the picturesque (shall I say Bohemian?), on the other. The engraver will prefer the Dutch line; the painter-etcher the nitric. It is right, perhaps, to add that these qualities of the two lines could be corrected if desired, to some extent at least. The Dutch-bitten line could be made to print with a richer quality by the use of an extra soft ground in the preparation of the plate (perhaps it does so in Mr. Hamerton's positive process). On the other hand, by increasing the hardening and clinging qualities in the ground, so that the ebullition would affect it to a less degree, the nitric line might be made to print more cleanly. So that the etcher

can reconcile his taste, if need be, with the acid that suits him best. All this, however, is a rather fine distinction, which will appeal only to those who have had considerable experience, and it may safely be left over, by the learner, for after consideration.

I may just add here that, for the purpose of the reproductive etcher, the Dutch will often be found the more suitable mordant, as it is easier to gauge exactly a half-hour's biting, say, with a slow mordant, than rightly to estimate the value of a five-minutes' biting with the nitric. The greater length of time over which the biting of a given value extends reduces the tendency to error, and for the purposes of reproduction, when it is often important to get a certain tone just right, the slower bath may be the better. Speaking, however, from the point of view of the painter-etcher, I certainly prefer the nitric line; to me it is more artistic.

## CHAPTER X.

### GROUNDS AND VARNISHES.

The essential qualities of a good ground are three-<sup>The ground: its essential qualities.</sup> First, of course, it should perfectly protect the copper from the acid; secondly, it should be soft enough to admit of the point cutting the line freely without any danger of its not getting through to the surface of the plate, a danger which is great with the harder grounds; and thirdly, it should be hard enough, and tenacious enough, to resist the ebullition of the acid, and the necessary wear and tear attendant upon the execution of the work. If the ground be too hard, it is apt to chip up under the action of the point, or give way under the acid, and if it be too tenacious, the point is apt to remove only the smoked surface without getting down to the plate, while it appears to do so, with the consequence that the work is totally unbitten in places. On the other hand, the ground should not be too soft, for it is easily injured, or it gives way too easily under the action of the mordant, and sometimes it clings unpleasantly to the point of the needle. Theoretically, a simple coating of wax would be sufficient to resist the acid; I have known plates grounded with mutton fat, and such a ground acts well, provided that it be not touched at all, and that a non-ebullient mordant, such as the Dutch, be used. But there is a certain amount of wear and tear inevitably attendant upon the execution of a plate, from touches of the finger, drying with

blotting paper after a biting, and so on, and it is well to be free from anxiety on the subject.

From what has been said with regard to the peculiarities of the Dutch and nitric mordants, it will be evident that some consideration must be had to these, when preparing the ground. A ground, which will perfectly resist the quiet, non-ebullient, Dutch mordant, is not necessarily strong enough to resist the ebullition of the nitric, and a ground, which is perfectly suited to the nitric, may be too tenacious for the Dutch. For it is desirable, as already indicated, that in both cases the line should widen, as well as deepen, with length of biting. Mr. Hamerton, who has experimented much with the making of grounds, considers that known as "Bosse's" the best for use in the Dutch mordant, and there can, I think, be no doubt that such is the case. It cuts with a peculiar cleanness under the point, without clinging to it, and it resists well. The drawing is done with perfect ease and certainty, without the special effort to cut through to the copper, which a hard ground requires. Here is the composition of it:—

BOSSE'S GROUND.

Pure white wax	5-oz.
Gum mastic	3-oz.
Bitumen (in powder)	1½-oz.

This ground is so absolutely perfect for the Dutch mordant that none better can be desired; but it has one weak point, it is not strong enough for the nitric mordant. In passages of close cross-shading, or at a point where several lines converge, the ebullition of the nitric is too much for it, and it gives way. Its other qualities, however, are so good that I have been experimenting lately, (for your benefit, my reader, as well as my own,) with the view of getting a ground as like this as possible, but strong enough to stand the ebullition of the

Bosse's; for Dutch mordant.

Bosse's modified; for nitric mordant.

nitric acid. Not one of the grounds usually recommended—and I have tried, as it happens, a good many—at all approaches Bosse's in the sweetness with which it cuts under the point, and the certainty with which the tool reaches the surface of the plate without effort. To preserve these qualities, I adhered mainly to the materials and proportions given for Bosse's ground, but, in order to increase the clinging quality, I substituted half the mastic with Burgundy pitch, which is peculiarly tenacious. This was subjected to severe tests of close cross shading and strong acid, with perfect success. It has since been tried by various etching friends at my special request, and all speak of it in the highest terms. It resists perfectly. At the same time it cuts without effort, and works with perfect sweetness under the needle. Every line is clearly bitten, shewing that the ground has been perfectly cut through, and the plates on which it has been used are peculiarly free from that unevenness of biting which characterises work done on hard grounds. There is no sign of the ground having given way anywhere, even in the closest work. Simplifying the proportions slightly, the figures are as follow:—

A NITRIC GROUND (Bosse's modified).

Bees' wax	3
Gum mastic	1
Burgundy pitch	1
Bitumen (in powder)	1

These quantities in ounces will make enough to last for years, and some to give away to your friends as well.

With regard to the bitumen a word of caution is necessary. It should be the "best Egyptian," and in the words of the advertisements, *see that you get it*. It is not kept by all chemists, and I get mine specially from a firm who supply materials to the engravers of rollers

Quality of the bitumen.



for calico printing.\* The ordinary "best" bitumen has one fatal defect, it will not melt; it remains in a sticky mass, and does not amalgamate with the other materials, and if you do not get the right thing, you may spend time in making several batches of ground, only to find at the finish that you have wasted precious time and good materials. Bees' wax has been substituted in the above for "pure white" on the ground that the latter is sometimes adulterated with foreign matter, which helps the bleaching, but does not improve the character of the wax. The natural article, one would think, should be quite suitable for the purpose, and the colour is of no consequence.

Making the ground.

The real difficulty in making the ground consists in the fact that the bitumen melts at a much higher temperature than the other ingredients. This leads to the danger, either of burning the mixture, or of fusing it insufficiently. It is important that the materials be thoroughly incorporated. Make in the ordinary double glue kettle sold by any ironmonger, or an ordinary jam pot placed in a larger iron pot will do as well. Use the ring Bunsen burner, with which you warm the heater, (I shall describe these presently). Mr. Hamerton's method of putting water in the outer pot, and making over a slow fire, I have not found satisfactory; the water does not give heat enough over the Bunsen, and it is desirable to use a Bunsen, because the heat can be better regulated; besides, it is uncomfortable to stoop over a fire so long. Therefore put *sand* in the outer pot, sufficient to cover the inner one to half or two-thirds its height when bedded in the sand. This gives a much greater heat, and leaves ample in reserve. Heat the sand-bath gradually, with the Bunsen turned less than half up,

\* Mr. Griffiths Hughes, Victoria Street, Manchester.

until the wax melts, then add the mastic and the pitch, a little at a time. If the mastic remain in a half-melted, sticky lump, the heat is insufficient, and must be increased gradually. But if it melt after remaining in the sticky stage for half a minute, the heat is sufficient. If it melt *immediately*, the heat is too great. Then add the bitumen, which must have been ready ground into fine powder, a little at a time, stirring with a rod sufficiently long to avoid risk of burning the fingers. The heat should be increased at this point, but gradually. The mixture, which is now a black liquid rather stiffer than cream, should *flow* quietly when left to itself for a minute: *it should not boil*. Beware of it boiling up, which it is apt to do suddenly, and run over. If it reach that stage the ground is spoiled, and there is besides danger of a conflagration. Keep it at the "flow" point for an hour, but two hours are better, stirring frequently. At this point it gives off a slight pungent smoke, which is disagreeable, so see that the studio door is shut and the window open!

It is not necessary, as usually recommended, to scrape down the wax, and crush the mastic and pitch. These may be put into the pot in the lump, a bit at a time. The bitumen, however, should be pounded with a flat-iron into a fine powder. Pounding in a mortar is not very satisfactory; the friction makes it sticky.

When the mixture is thoroughly homogeneous, pour it into a basin of warm water, and splash some water over the top before touching it. The mass partially congeals at once, and may then be rolled into balls or sticks of convenient size between the palms. A few balls the size of a walnut should be made, and the remainder rolled into sticks the thickness of the little finger, and of any convenient length. The former are wanted to

reground the plate for adding work; the latter are more convenient for breaking up into pieces. Put away in a glass jar, corked to keep out the dust, and do not forget to label it with particulars of the composition, in case you desire to modify them in any way next time. Keep in a cool, dry place, and it is good for years.

To test the ground, break a stick when it is quite cold. When right, it breaks with a slight spring and a clear snap. Mr. Hamerton describes it as of a dull black, "rather brighter in the breakage." I am inclined, however, to think that this description only applies correctly to ground of the harder kind, in which the harder materials are in greater proportion than in Bosse's. The proportion of wax is so great in the latter that, as a matter of fact, I find the ground duller in the breakage. It is also of a slightly rusty black, owing perhaps to the strong yellow colour of the bees' wax. What is essential is that the materials be thoroughly incorporated, and if, when examined under a magnifier, the ground be found to resemble a piece of gingerbread, fine in grain and of a dark brownish black, free from any half-melted bits of bitumen, it has been well made. It may be tested by warming the corner of a plate until the ground melts, but do not let the plate get hot. Rub a little on the plate, smooth with the dabber or the ball of the thumb, smoke, and when quite cold try with the needle and a little strong acid. If it chip under the needle, it is too hard (bitumen); if it cling unpleasantly to the point, it is too tenacious (pitch); if it give way under the acid, it is too soft (wax); and the ingredients indicated must be reduced accordingly. But the proportions given will be found nearly right; they may be modified a little, as experience or the temperament of the individual dictates.

To test it.

For general use, the liquid form of ground will be found by far the best. Break into small pieces enough of the stick to make the bulk of a pigeon's egg, and put into an ordinary six ounce bottle. This will give enough to last for a good while, for ordinary sizes of plates at any rate. Fill up with the best quality of methylated ether (sp. gr. 720), shake vigorously several times a day for several days, and allow to settle for a day or two. The result is a clear red liquid, like port wine, with a sediment below. Pour off the clear liquid into a clean bottle, and allow to settle again for a week. Any slight sediment again resulting may be thrown away, and the clear liquid is ready for use. Apply to the plate as instructed in an early chapter.

Pure ether is sometimes recommended, but the expense is unnecessary. The best quality of methylated ether will be found free from impurity; lower qualities are apt to have a proportion of water in them, the result being spots on the grounded plate, which shell off at once under the acid.

Chloroform, the best methylated also, has some advantages over ether, and some may prefer it. It dissolves the ground rapidly, and a supply may be made in an hour or two. The sp. gr. is nearly double that of ether, and the ground floats on the surface. Dissolve as much as the chloroform will take up without shewing any waxy film on the surface or on the side of the bottle. This solvent dissolves all the ground, and leaves no sediment. Chloroform has one slight disadvantage, in that it does not evaporate so quickly as the ether. On the other hand, the ether has one weakness, in that it does not always take up quite enough of the ground, the resulting liquid being too thin. But I have generally succeeded in rectifying this

by putting in a fresh supply of ground, and shaking up as before. To be right, the liquid should be quite as dark as port wine. The liquid made with chloroform is rather thicker and non-transparent; the cost is about double, owing to the greater sp. gr.

Filtering.

If the ground become foul with dust, which shews in little specks when it is poured upon the plate, pour it backwards and forwards a few times between two bottles through a glass funnel, into which you have put a small piece of fine sponge, or a few thicknesses of fine muslin. The clear solution, as just described, should be of the right degree of fluidity, but if at any time it become rather thick, a little of the ether or chloroform may be added. Keep it always in a *corked* bottle; a glass stopper is apt to stick fast in the neck, owing to the film of ground left every time the bottle is used, and it is difficult to remove.

In a former chapter I described the method of grounding the plate with the roller, for the purpose of re-biting etched work. That involved the use of heat, and the ability to keep the plate at a low heat, as required, with the aid of the heater. The heater, however, belongs to the department of printing, which many etchers do not find it convenient to include in their practice, and to such the more customary method of applying the ground, cold, in the form of a paste, may be more convenient.

To make paste ground for use with the roller, melt a couple of balls (over a low heat to avoid burning them), and add sufficient spike oil of lavender to leave the mixture, when cool, of the consistency of honey in winter. About once and a half to twice the bulk of the ground will be sufficient of the spike oil. Place in a wide-mouthed glass jar, and keep well corked. A cork is

The paste  
ground.

better than a glass stopper, for reasons given above. A little of the oil placed on the top of the ground before corking will keep it from getting too dry and stiff. My reasons for preferring the method previously described to the use of the cold paste ground, I shall give in a subsequent paragraph upon the heater, with which the use of the paste form of ground is intimately connected.

For stopping out portions of work that are sufficiently <sup>Stopping-out</sup> varnished, or for the edges and back of the plate, if you wish to put it in the bath, ordinary Japan black thinned down with turpentine will do very well. It requires a little time to dry.

But a much more important thing is a stopping-out Special do. varnish that will dry immediately, and which can be worked over afterwards with the needle. This is indispensable, to allow of correcting errors in drawing, and of erasing any wrong lines before biting. Mr. Hamerton solved the problem by making a saturated solution of white wax in ether, and adding to this about one-sixth its volume of Japan varnish. I find that the same result is arrived at more simply by putting the small quantity of Japan black into a bottle, and filling up with the ordinary liquid ground. Shake well, and it is ready for use at once. For this purpose the ground made with ether is, on the whole, superior, as it dries at once, while the chloroform ground requires a minute or so. This delay is not serious, but see that the varnish is dry before the acid is applied. Use a small camel-hair brush, and touch over lightly, with the point of the brush, any of the work requiring to be erased. Use it lightly and cleanly, for the solvent is apt to disturb the original ground. This varnish dries immediately, and can be worked over again with the needle. The only objection to it is that it is not very

strong under the acid; but if lightly used for the erasure of single lines, such as errors in the first drawing, it will be found fairly satisfactory. It is the best, as far as I know, that is available for the purpose, and it is satisfactory, unless used to stop out *masses* of needle-work. Then it is too weak; in such cases the stronger varnish should be used, and the work added to the plate afterwards.

This varnish should be used, as far as possible, soon after being applied. If allowed to remain more than a few days, it becomes hard and brittle, and cracks off under the acid.

For many years, taking the suggestion from Mr. Hamerton, I used ether in preference to chloroform, for the making of liquid ground and stopping-out varnish. Of late, however, I have used the latter, and consider it preferable on the whole. It is a better solvent, taking up more of the solid ground. The liquid ground, too, is quickly made, and though the chloroform does not evaporate so quickly as the ether, the delay is too trifling to be of any consequence. But it is especially when used to make the stopping-out varnish that the chloroform is to be preferred. The varnish is thicker and resists the acid better, and does not disturb the ground on the plate so much as that made with ether. The stopping-out varnish made with ether is thinner, and does not resist so well; besides, it disturbs the smoked ground more. On the whole, I think chloroform the more satisfactory solvent, though there is not much to choose between them.

Some etchers recommend a transparent etching ground for certain purposes, and alter the composition of their ordinary ground, so as to leave out the bitumen, the ingredient which gives it its dark colour. I confess,

however, that I have never been able to see the <sup>Transparent</sup> ground. It is true that the ordinary ground is darker than the copper, *in bulk*, but the film upon the grounded plate is so thin that it is transparent to all intents and purposes. The purpose for which a transparent ground is occasionally desirable, is that of adding etched work to a bitten plate, and the ground is left unsmoked, so that the work already on the plate may be clearly seen.

But a transparent ground is not so suitable for this purpose as the ordinary ground left unsmoked, because the slightly darker tone of the latter causes it to shew when it accumulates in the lines. A transparent ground would not shew at all. Whenever a transparent ground is wanted, therefore, it is sufficient to apply the ordinary ground in the usual way, and *leave it unsmoked!*

again. It must be laid upon a steel surface. Then cut along the line with a cold steel chisel and a hammer, giving a smart blow at each stroke. Hold the chisel firmly down upon the plate, or it will jump, and leave a mark that will shew near the edge of your proof. Once along the line, or twice if the plate be a thick one, will half cut the copper through, and it may then be easily bent off. The edges are smoothed and polished with a couple of files, one moderately coarse and one fine, followed by fine glass-paper, or emery-cloth. Finish with the shank of the burnisher. The same means may be used to bevel the edges of the plate. Plates, especially of the thicker kind, should be ordered with bevelled edges, or bevelled with file and burnisher, otherwise the edge is apt to cut the paper when taking the proof, and so the margin is spoiled. Plates of the thinner kind, like the ordinary small card plate, do not usually require this.

The cost of copper plates is about three shillings and sixpence per pound; small plates rather more in proportion. A thin plate, seven by ten inches, weighs about a pound. It is a good plan to order a sheet of copper at a time. It measures sixteen by twenty-four inches, and you can have it cut in a variety of sizes to suit probable requirements. One is then sure of having a plate ready for almost any kind of subject. I get my plates from Mr. Robinson, Manchester (see list of materials in chapter I.), a sheet at a time, cut as required, and find the cost considerably less. He prepares them himself, and I find that I can depend on them.

Spoiled coppers, of which every etcher accumulates a pile, the monument of the mistakes by which he gains experience, should be kept and re-planed. The cost of doing this is about half the original cost of the copper. Anything under about five by seven inches should not,

## CHAPTER XI.

### THE PLATE.

The metal used by the etcher is commonly copper, and it is the metal most to be recommended. It is soft and fine grained, as metals go, and it works sweetly. It has also the very great advantage of not being liable to rust, and is easily kept in good condition. In the old days the etcher had his coppers specially prepared, indeed, he very often prepared them himself; but in these days the labour would seem to be unnecessary. Good plates, as prepared for engraving purposes, can be obtained through the artists' colourmen, and plates grounded, smoked, and ready for working upon, from Mr. Rhind (see list of materials on page 15). What is advisable about the plate is that it should have been well hammered before being polished, so that the grain is fine and even. This secures that the acid acts equally all over it. But I fear that few modern plates are hammered; they are rolled, under enormous pressure, and are usually quite reliable. For large and important plates, it might be advisable to order them to be hammered specially; the extra cost would in such a case be worth while.

It is advisable to order the plates of the size required, as it saves trouble, but there need be no difficulty in cutting them when desired. Rule a line on the plate with an old needle, or any point that will scratch, and lay it upon a steel anvil. Do not lay it upon the work table or any wooden surface, or the result will be a warped plate that is exceedingly difficult to put right

The plate,  
copper.

Cutting.

however, be sent out, as the cost of polishing small plates is greater in proportion, and it is better to order new ones at once. A few small plates may be kept, however, because they are useful for occasional experiments—testing ground, etc. The remainder may be allowed to go as "old copper," and can be generally disposed of through the man from whom you get your plates.

Before proceeding to ground a plate, it is advisable to see that its surface is in proper condition. If only slightly stained, say by the paper in which it has been wrapped, the ordinary cleaning with turpentine will be sufficient; but if the plate be badly weather-stained, or touched with spots of damp, as happens occasionally, it must be polished before it is grounded. Without this precaution it may be found that the ground does not take properly to the stained parts of the surface, or that the acid does not attack them as vigorously as the rest, and the result will be spoiled work. In such case, polish the plate vigorously with the oil rubber, and a paste made by scraping down some of your charcoal stick, and adding some sweet oil. A few minutes' vigorous application of this will renew the surface of the plate entirely. A somewhat more troublesome, but thoroughly effective, method, which it may be advisable to adopt in the case of large and important plates, is recommended by Mr. Hamerton, as follows:—

"1. Bathe the plate in the Dutch mordant for five minutes, or till it is all stained dark.

"2. Wash it well in clean water.

"3. Bathe it in a mixture of equal parts of liquid ammonia and water till the copper shows red all over.

"4. Wash it well in clean water and leave it in the water for half-an-hour."

After this treatment, dry the plate by heating it, and do not touch the surface again. Remove dust with a

camel hair brush just before applying the ground. The surface so prepared is *new copper*, and entirely free from grain or other impurity.

Zinc is sometimes used for the purposes of the etcher, Zinc, but on the whole it is not to be recommended. It is a coarser metal than copper, and the acid bites a rougher line. It is very suitable in this respect for landscape work; it is richer in a certain way than the line bitten in copper. [See plate 4.] This metal is also considerably cheaper than copper—about one-third the price. It has, however, one very serious objection; it is easily destroyed by rust. It can only be preserved by the exercise of very great care, and it requires to be examined frequently. The plan usually adopted is to cover it with etching ground, and wrap it away in many thicknesses of paper; the paper must be thoroughly dry, and, of course, the plate must be kept in a dry place. But, with all one's care, one is never sure that the plate is beyond danger. I am the fortunate owner of a very fine proof from a zinc plate, which was completely destroyed in this way. The proof, of course, is all the more valuable; but there speaks the *connaisseur*, not the *amateur*. To the etcher the loss of the plate was serious, for no etcher executes a plate, into which he puts some of his best, without learning to love it.

Steel is likewise objectionable on the score of rust, Steel, and, unlike zinc, it has no redeeming quality. It is a very hard metal, and unsympathetic. It prints a hard, dry line, for which the etcher, as distinct from the engraver, has no affinity. In addition to that, the modern method of steel-facing a copper plate has obviated all necessity of working direct upon a metal that will stand the wear and tear of an edition.

Care of the plates.

It is worth while taking care of your plates, but a little is all that is required when they are of copper. After printing, clean well with turpentine and a soft rag, back and front, and put away in an envelope of thick brown paper. A spoiled proof, or a portion of one sufficient to enable you to identify the plate, may be pasted on the envelope. After this, if the plates be kept in a dry place, they need give you no further concern. It will suffice to examine them occasionally, to see that no damp is getting in about the corners. On the other hand, with steel or zinc plates there is always cause for anxiety, as it is not always possible to avoid a little damp, and a very little will attack these metals when it will not affect copper.

Before putting the plates away, be careful to see that the ink is thoroughly cleaned out of the lines. Sprinkle the turpentine on the plate, and rub all over with the finger, then let it soak for a few seconds before cleaning it off with the rag. Neglect of this will result in the ink drying hard in the lines, and it is then exceedingly difficult to remove. In a few weeks it becomes so hard that it can only be removed by treating with a very strong solution of soda, (red American potash is good for the purpose). If the plates have been lying for a year or two, or even some months, it may be necessary to boil them in the soda before the ink can be got rid of. But in ordinary cases it will suffice to soak the plate for a short time in the solution (cold), and then rub into the lines with an old tooth brush. A little ordinary care, however, in cleaning properly after printing, will obviate all danger of this.

For the purposes of an edition, copper plates can be steel-faced by electricity, so finely, it is said, that there is no perceptible difference in the proof of the faintest

line. Some etchers have an objection to the steel-faced plate, thinking the proof harder than that from the pure copper, and there is undoubtedly room for the objection. I can testify to both these points, after a careful examination of proofs of all my illustrations, taken before and after steel-facing. The fineness of the line does not suffer, but the *quality* of the proof does, quite perceptibly, owing to the hard unsympathetic nature of the metal. But when an edition is required, numbering perhaps hundreds or even thousands of proofs, this protection of the plate would seem to be necessary. The pure copper will only give a limited edition of from fifty to a hundred good proofs, the number varying somewhat, perhaps owing to varying density of different plates, and perhaps also to the nature of the work upon the plate, and the method required to be followed in printing it. On the other hand, the steel-facing can be renewed as required, so that an endless edition is possible with proper care. This is the method followed in connection with the publication of many popular plates, the plate, as the steel face shews signs of wear, being de-steeled and re-steeled, as often as required.

Zinc cannot be steel-plated—another serious objection, one would think, when an edition is required. It can be copper-plated first, however, and then steel-plated. I have had this done in the case of plate 4, for the express purpose of testing the process. One would think that the double plating would be destructive of quality in the finer work on the plate, but I can see no deterioration in the size of the line, although there is the same perceptible deterioration in the *quality* of the proof as in the case of the other plates. On the whole, zinc plates are to be avoided.

Steel facing.

## CHAPTER XII.

### TOOLS AND OTHER MATERIALS.

Any hard smooth point will do for the etching needle, all that is required being to cut the wax and bare the copper, without scratching it, more than slightly at any rate. Turner, it is said, drew some of his plates with the prong of a steel fork! A common sewing needle set in a wooden handle is often used. Wooden handles are also made, somewhat like a pencil-case, with a screw arrangement, by means of which different points can be set in them as required. One of these, with two or three darning needles of varying degrees of sharpness, will give the etcher all that is required. I would, however, recommend strongly the use of the solid steel point (plan I., fig. a, facing this page). It is free from the danger of working loose, to which all the others are subject, while its weight helps to cut the wax without effort; and it is important that one should be free from pre-occupation with regard to any other matter than that of attending to the drawing. I have not found the solid needles usually sold quite satisfactory; some are top-heavy, and some too small. Mr. Crosland, of Huddersfield (see list of materials in chapter I.), made me a needle to my own design a few years ago, which has been tried by several etching friends and found satisfactory. (A well-known artist writes to me: "Two years ago I used your needle, since when I have used no other.") It is designed exactly like an ordinary pen-holder, of a suitable thickness at the fingers and

The needle.

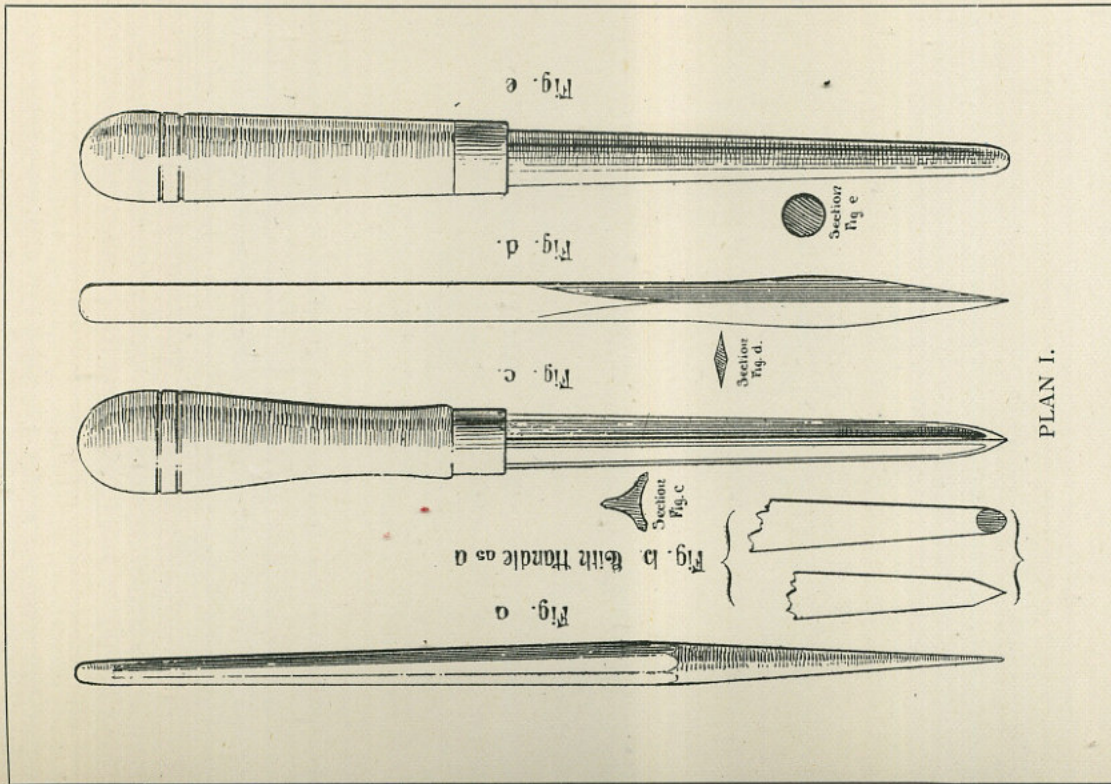






Fig. k

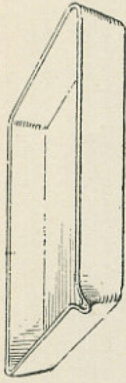


Fig. s

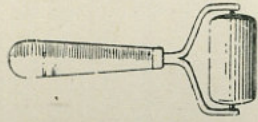


Fig. l

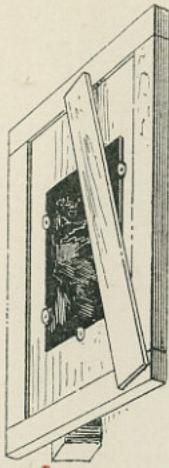


Fig. 9

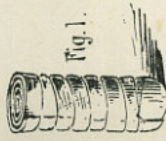


Fig. i

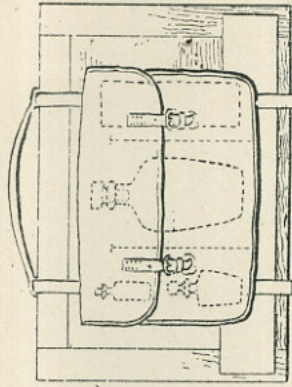


Fig. m

PLAN II.

tapering to the top, with a point long enough to allow of the work being clearly seen. This concentrates the weight low down, and gives a good balance. Two should be kept in the needle-case, one with a finer point than the other, also a third, or an old point of some sort, for occasional use in the acid.

It is worth while taking an odd hour to sharpen the <sup>To sharpen.</sup> needles carefully, for once in good order they require little or no attention. Sharpen upon an oil stone to the fineness required, rolling the needle between the palms of the hands, with the point nearly flat upon the stone. One should be as fine as a moderately sharp darning needle, the other somewhat coarser. Examine under a magnifier, and get the point *quite round*. Then polish it on a sheet of cardboard by drawing round and round in circles, large at first, and getting gradually smaller, until it is smooth enough to glide on the thumbnail without scratching. Once in good order, keep the points in a piece of cork, when not in use, and do not touch the acid with them. Keep an old point religiously for this purpose. *Never* leave your points lying about in the studio ; rust is the inevitable result, and there is a tendency to say things !

The two etching needles will do for the lighter work <sup>The drypoint.</sup> in drypoint, but for the stronger work on a drypoint plate a special point is required. Snip a little piece off the point of an ordinary needle, and sharpen in two flat sections to a cutting edge, something like the end of a chisel in miniature (fig. *b*). This will cut deeper and with greater ease, throwing up the heavy burr required in drypoint work as no round point could do.

The scraper (fig. *c*) is a bayonet-shaped steel tool set <sup>The scraper.</sup> in a wooden handle. The three edges should be kept sharp and free from rust. Sharpen by laying two edges

at a time upon the sharpening stone, and keep well wrapped up when not in use. This tool is used for reducing surface, removing burr, and effecting other repairs upon the plate. Another kind of scraper which is useful, especially for mezzotint, is shaped rather like a willow leaf (fig. *d*). Indeed, it is very like the eraser found on every book-keeper's desk, except that it is narrower. Deeply bitten lines can be taken out with it, and it should be kept among the other tools. This is the tool specially affected by the mezzotint engraver. It is supplied by Messrs. Sellars & Sons, Arundel Street, Sheffield. Two or three, of various sizes, should be laid in; they cost sevenpence each.

The burnisher.

The burnisher (fig. *e*) is a polished bar of steel, usually fixed in a wooden handle, and is a very necessary tool. It should be kept bright and free from rust. Polish it when required in a groove of wood, with oil and Tripoli, or other fine powder. This is used on the plate to polish out the marks left by the scraper, or other slight scratches. Finish, when necessary after using the burnisher, with charcoal and oil. Sometimes this tool is made of solid steel with double ends. The best double burnishers I know are the two known as Mr. Whistler's. They are obtainable from Mr. Rhind (see list of materials in chapter I.) They cost three shillings the pair, and with them the etcher has all he requires in this direction. The four ends are all different, and they are delightful to work with. I find the best way to keep tools free from rust is to wrap them well in tissue paper, which, of course, must be thoroughly dry, and put away in a box or drawer in a dry place. *Never* leave the tools lying about; the result is vexation of spirit.

The bath.

The bath (plan 2, fig. *f*) may be obtained at any chemist's, and is best in porcelain. One large enough

to accommodate any size of plate is all that is really necessary. Perch your plate upon some smaller dish, such as a saucer, inside the bath, and pour on the acid as previously instructed. The acid can be tilted into the bath as required when a biting is over, and afterwards poured back into the bottle. I find it a very good plan, however, to keep two baths for regular use, one measuring say ten inches by fourteen, and a larger one of about fourteen inches by eighteen. The smaller one is large enough for general use; the larger one serves for an occasional large plate, but is constantly useful for the purpose of steeping paper for printing. The larger size was rather expensive, costing about nine shillings. A much cheaper form of bath might be made of wood, well varnished over. This is non-breakable, light, and pleasant to work with.

The etching board.

The etching board (fig. *g*) has been already described, but I wish to suggest suitable dimensions. A convenient size, outside measurement, is twelve inches by sixteen; it should not be less than half an inch thick, and it is better made with cross pieces at the ends, like a drawing board. This prevents it warping. The well may be eight inches by twelve, and three-sixteenths deep. This allows a plate up to seven by eleven inches, about half an inch of margin being required to allow of the fastening down with drawing pins. A pair of boards this size will be found convenient for outdoor work, and ordinary work in the studio; for anything larger, a special board could be made. Order them of a light wood.

The hand rest.

The hand rest, of a light tough wood, should be as long as the board, say sixteen inches by three wide, and stout enough not to bend under the weight of the hand. Get an extra one made when you are at it; a

spare one is very useful. Any joiner will make all these for a few shillings.

The shade.

If you find any difficulty in seeing the work on the plate, when working in the studio, make a shade of white tissue paper mounted on any light frame of wood or wire. This, placed between your work and the light, and adjusted at a suitable angle, diffuses the light so that the difficulty is removed. For outdoor work it is neither convenient nor necessary. A shade of this sort is shewn in the frontispiece.

The roller.

The form of roller most to be recommended is shown in plan 2 (fig. 2). Mine was supplied by Messrs. Cornelissen & Son, 22 Great Queen Street, W.C., and cost five shillings and sixpence. The cylinder is under three inches in length, and it can be handled with great lightness and nicety. It has the advantage over the larger roller recommended by Mr. Hamerton, which I used for many years, that a plate which is not absolutely level can be grounded by it without any difficulty. This is no small advantage, for it often happens that the plates, which have been bent with printing, have not been put right, and the larger roller lays a ground in such cases with greater difficulty.

For re-grounding.

This instrument is of the greatest possible value for re-grounding a plate that is under-bitten. It is also of service for plates too large to be conveniently prepared with ground in the liquid form. Up to about eight inches by twelve the liquid ground flows freely enough to be run all over the plate, and the surplus returned to the bottle, but for larger plates the roller is more convenient. It may be kept in a small bag made upon the pillow-slip principle, with strings to draw the ends close round the handles. In connection with the roller it is advisable to have three sheets of plate glass of a

convenient size, say ten inches by fourteen, provided the paste ground is to be used. Spare copper plates will do, but they are not so pleasant or convenient for the purpose. Clean the sheets of glass each time after using. These take the place of the heater, and spare copper plates, which I recommended in a former chapter; one being used to lay the plate upon, the second to spread the paste upon and charge the roller from, and the third to take the superfluous ground, when the roller is too heavily charged. This plan may be followed, with advantage, by the etcher who does not print his own plates, and who does not, therefore, include the heater among his studio furniture. But there are certain objections to the use of ground in the paste form, and in another paragraph I shall give my reasons for preferring to avoid it.

The rubber roller.

It has often been suggested that the rubber roller used by photographers, called a "squeegee" I believe, should be suitable for the purposes of the etcher, but the objection that the rubber is injured by the oil of lavender used in making the paste has hitherto been considered insuperable. But, by the method suggested here of applying the ball ground to the warm plate, which obviates the use of the paste, this objection would appear to be done away with. The only objection I see to the "squeegee" is that it is usually of too small a diameter to be of use, except for very small plates, perhaps. My leather roller is two and a quarter inches thick, giving a diameter sufficient for plates of any ordinary size. If a "squeegee" can be obtained of sufficient diameter, I see no reason why it should not be equally suitable with the leather roller for the re-grounding of the plates.

connect the Bunsen with the ordinary gas pipe. It is lined with wire, and costs about ninepence a yard. If you have not a jet to spare in the studio, an ordinary gas bracket with an extra mouthpiece, to which to attach the tubing, can be made and fitted by your gas man for a few shillings.

The primary use of the heater is, of course, to warm <sup>its uses.</sup> the plate when inking and cleaning off for printing, as fully described in the proper place. But another, and to me equally important, purpose which it serves is that of warming the plate (*a*) when re-grounding to re-bite, and (*b*) when re-grounding to add work. I have described these processes also in their proper places, and only repeat here that it is essential for this purpose that the heat be kept at a low point, on account of the danger of burning the ground. Keep the plate at such a heat as will just melt the ground so that it may be manipulated easily; such a degree of heat as will just allow the hand to touch the plate, and no more, will be about right. In this way, a very thin, but perfect, ground can be applied to a plate that is to be re-bitten, by means of the roller; with greater ease, and with less danger of filling the lines already bitten, than by any other method. And when re-grounding to add work, the ground which has been rubbed into the plate can be made even with still greater ease. The objection to the use of the paste, ground lies, in my mind, in the fact that it is necessary to get rid of the oil of lavender, after the plate has been grounded. This can be done by laying the plate aside for twenty-four hours, to allow time for the oil to evaporate; or it may be done by heating the ground so as to expel the oil. The former is tedious, and often inconvenient, and the latter gives rise to the danger of burning the ground, and both methods have the

## CHAPTER XIII.

### PRINTING PARAPHERNALIA.

The heater.

The heater, which the reader will find shewn in plan 5, facing page 180, is an iron box, say eight inches by ten, and seven inches deep. This is a good size for all the ordinary purposes of the amateur. The top should be an iron plate sufficiently strong, say one-eighth of an inch thick, not to warp with the heat, and it should measure about twelve by sixteen inches. The sides may be made of thin iron. In the four sides should be cut out a semicircular hole, large enough to admit one's hand, or provision for ventilation may be made in the manner suggested in the illustration. I have sometimes seen a simple iron plate used on the top of the Bunsen, but I think the box is better, as it gives a gentle steady heat with the gas turned low, and a too rapid heating of the plate is undesirable. It should be made by the local smith for half-a-crown. To heat it, use the smallest size of ring Bunsen usually sold in ironmongers' shops, such as would boil an ordinary egg pan. It costs about fifteen pence. This, turned low, gives a steady heat which is ample for your purpose. If you find any difficulty in getting a heat low enough for such a purpose as grounding plates, stuff some of the openings in the Bunsen with asbestos, or plaster of Paris. It is essential that the heat can be kept at a very low point, and this should be provided for. It can, of course, be increased by turning up the gas at any moment. A yard or two of flexible piping should

disadvantage of tending to weaken the ground, by shrinkage, in getting rid of the volatile oil. But, with care, the method of using the paste ground is perfectly good for general purposes. It is only in cases where the possession of a heater gives a choice of procedure that I recommend the method of warming the plates as preferable on the whole. The warm ground works more sweetly than the cold paste, because the oil evaporates to some extent in the latter case, as it is spread out on the plate, and it is difficult to keep the paste in right working order for any length of time. On the other hand, the warm ground remains perfectly workable as long as it is kept warm, and, if the degree of heat be attended to, there is no danger of burning it.

The jigger.

The jigger is a wooden box of similar size and height, the latter especially, to the heater. Any empty box of suitable size will do. It is used to transfer the plate to when sufficiently hot, and it is of a more convenient height usually than the work table, for cleaning off the plate. When not in use it can be turned up, and the printing materials, colours, oil, palette knife, etc., kept all together inside.

The ink slab.

The ink slab may be of stone or any convenient material; a sheet of plate glass will do. I use a "thin" slab of lithographic stone, and find it pleasant to work upon and easy to clean. You could probably get a suitable piece through a local printer for half-a-crown. See that you get a thin slab; the usual thickness is about three inches, and as the stone is very heavy, a slab of this is unwieldy to lift. A thin piece, say an inch and a half thick, and twelve inches by fourteen, will be found a convenient size, and quite heavy enough to move with comfort.

The muller

The muller is a sugar-loaf shaped piece of glass, stone, or marble, costing from a few pence upwards according

to the material; glass is cheapest, and quite suitable. This is required to grind the ink, so as to secure the absence of lumps and grit. Get it from the local oil and colourman. The ink slab and muller are shewn in plan 5.

The dabber.

The dabber (fig. *k*) is useful for two purposes, and is made as follows:—Spread on the table, face downwards, a piece of fine leather, (the palm of an old kid glove will do for a small one). Spread on this a layer of cotton wool, then a little horsehair, and put over that a circular disc of stout card-board. The edges of the leather are then gathered up and tied at the back into a handle. When finished it is the size and shape of a biggish mushroom. It is better to get a skin of any fine, soft, smooth leather from the leather merchant, and make two dabbers, one to measure, say, five inches across, and another three. Keep the larger one for inking the plate, and the smaller one for dabbing the ground even after using the ball, say for re-grounding to add work, etc. Be careful to clean them always after using, and put them away out of the dust. *Never* make dabbers of silk, as is so often recommended. These are responsible for much of the pitting of etching ground under the acid, so often attributed to dust.

The oil rubber.

The oil rubber (fig. *l*) may be made from a strip of flannel, or soft woollen cloth, four or five inches wide, rolled tightly up and bound round with twine. The ends may be shaved even with an old razor. This is sometimes useful to clean the plate with a few drops of oil before printing, to remove weather stains, or to polish up after using the burnisher.

The sketching apparatus.

I take the opportunity to illustrate (fig. *m*) the sketching apparatus described in a former paragraph (see outfit, chapter entitled "Painter-Etching," on page 123). The sketch shows the arrangement of straps and bag which

makes the carrying of the acid bottle both convenient and safe. There are, of course, *two* boards, of the kind shewn in fig. *g*, strapped face to face, in which several plates of various sizes can be carried with perfect safety. A glance inside the bag shews that everything is in its place, and if you do not forget the sketching stool, you are fully equipped for a day's outing.

Printing muslin. The rags to be used in cleaning off the plate are of the greatest importance. Indeed one is largely—I had almost said entirely—dependent upon a supply of rags of the right sort for the ability to get a good proof. The stiff French muslin used is of the sort that our grandmothers made their crinolines of! I do not know where it is to be obtained in this country, but almost the exact equivalent of it is the kind which the ordinary draper calls "stiff book muslin." It is made in Glasgow. Get the coarsest quality made, in white. The ordinary quality of "book muslin" is not what is wanted. It must be the "stiff book." Any draper will order a piece of a dozen yards for you, and it costs about three-halfpence per yard. It is quite as good as the French, indeed I prefer it. It is moderately stiff, and coarse enough to admit a pencil point between the threads. The stiffness is essential, as it is this which allows of the surface ink being cleaned off without removing what is in the lines. In addition to this, a supply of fine soft muslin is required. It is probably on account of the softness that *old* linen rags are usually recommended. But old rags are not necessary, and cotton will do just as well. Get from your draper a piece of the soft white muslin known as "butter cloth," and you will have all you require. This is wanted to give the artistic finish to your proof described in the paragraph headed "Retroussage," in the chapter on Printing.

## CHAPTER XIV.

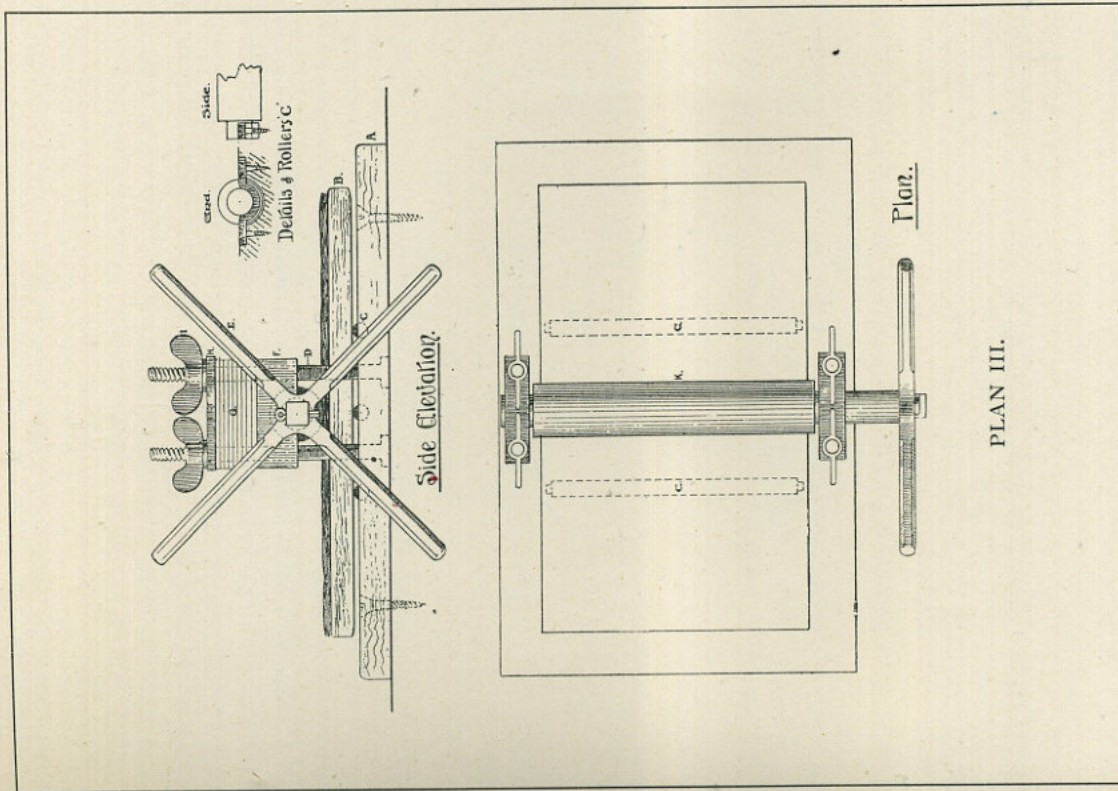
### THE PRESS.

The press is, unfortunately, the most serious item of The press. expense in connection with the practice of the etcher's art. The cost of a press is, I doubt not, one of the reasons, perhaps the chief one, why the final process is so often left to the professional printer. An effective printing press can hardly be bought under from twelve to fifteen guineas, and then the size is limited. Mr. Herkomer speaks in the most cheerful way of spending £30 upon his, a moderate enough sum, but too much for many people. All this, however, is not as one would like to see it, for the question of expense disheartens many a beginner, and stands seriously in the way of progress. For, the convenience of being able to test a plate from time to time is not merely a great source of interest, not to say delight, but it is a great help and encouragement as well. It not only makes the practical pursuit of the art possible, where otherwise it would be impossible, but it teaches the etcher much. Printing, in fact, is part of the artistic process, and a press should be made a *sine qua non*. It is so practically. Sometimes a good press can be picked up second-hand. Such firms as Messrs. B. Winstone and Sons, Hughes & Kimber, Ltd. (for addresses see list of materials in chapter I.), Furnival & Co., and others, issue lists from time to time of second-hand presses in stock. Messrs. Robertson & Co., of Long Acre, make

a hand press listed at four guineas, which prints up to about six inches by nine. This is a good little press, and mine has done a lot of work during the past twelve years. I have always felt, however, that a simple form of hand press, suitable for screwing down upon the worktable, could be made by anyone with the aid of an intelligent local joiner, at a very moderate cost. With the end in view of making this possible to any of my readers, I give a plan of one I had made recently. An etching friend also had one made to this plan in a small provincial town (under exactly the conditions, that is to say, that I wish to provide for), and the result of the double experiment warrants me in saying that a press, which is sufficient for the ordinary purposes of the amateur, and capable of printing up to, say, seven by ten inches comfortably, or even eight by twelve inches at a pinch, can be made for about a couple of guineas, or two guineas and a half at the outside. This is a very practical point, and I am much indebted to the friend referred to for the carefully drawn plans which accompany this article (see plans 3 and 4). I advise any of my readers who may wish to make himself a press to study it attentively. It is drawn carefully to scale, and any intelligent joiner will understand it at a glance. He can get the necessary castings made at any local foundry, the roller (*k*) of common iron, and bearings for the same (*f*) in brass or gun metal. He should note to have the roller turned, after casting, with the pointed tool, not the flat one. The latter leaves a polished surface which is not desirable. The pointed tool leaves a surface which is quite regular, but slightly rough, and better for the purpose. He can also obtain from the same source, or from the ironmonger, four ordinary bolts (*d*), (square heads preferred to round,) say half or

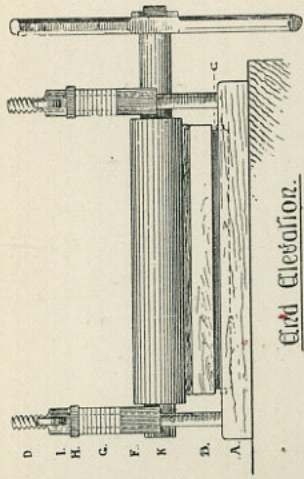
How to make.

Description of the parts.

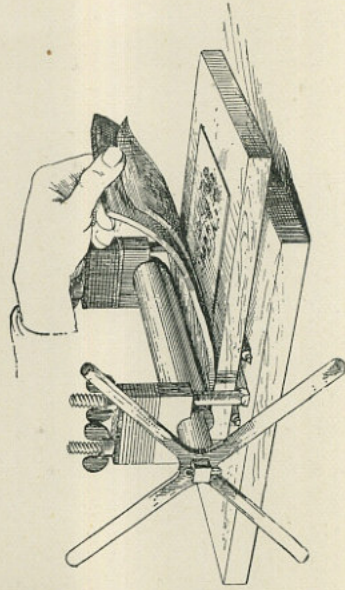
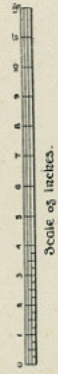


PLAN III.





Side Elevation.



PLAN IV.

five-eighths of an inch thick and nine inches long, with thumb-screws (*i*) to fit. These are fitted into the base-board (*a*), two on each side, and at such a distance apart as to take the roller bearings. Above the latter should be two or three thicknesses of cork (*g*), covered with a small plate of thin iron (*h*), and all of these of course fitted on to the pairs of bolts. The thumb-screws will keep everything in place, and give practically any pressure required. A lot of pieces of cardboard, of the soft coarse kind, may be cut and fitted on in place of the cork. The common yellow cardboard, known, I believe, as "straw" board, is the kind required. These serve the purpose just as well, and can be made by oneself. These should amount to not less than two inches of total thickness, in order that the required amount of "give" may be obtained, when the roller mounts the edge of the plate. Under the roller is the travelling board (*b*) which carries the plate. This runs on three rollers (*c*), fitted into the base-board in such manner as to shew about one-eighth of an inch above the surface. The centre roller should be exactly below the large one, as in the case of the ordinary domestic mangle. The three rollers should be made to work easily, but the sockets in which they turn should be fitted firmly. The base-board may be made of a heavy hard wood, but the travelling board is better made of ordinary pine or deal. This has a certain amount of spring in it, and facilitates the mounting of the roller upon the edge of the plate. It can be planed down when required, or renewed at any time. A double thickness of the thick felted cloth known as "printer's blanket," obtainable from any cloth merchant, completes the press. Four short lengths of ordinary wire spring should be placed on the bolts below the roller. These are not shewn in the plan, but

they prevent the roller from falling down on the base-board, when the travelling board is not in place.

The only difficulty that I have ever experienced with this press, and it is the one weak point common to all hand presses, is that when the edge of the plate comes to the roller, the latter shews sometimes a tendency to slip round upon the cloth, without mounting upon the plate. This is due partly to want of friction in certain places, *e.g.*, the surface of the roller and the face of the travelling board, and partly to want of sufficient "give," the result, on the other hand, of too much friction in the parts that fit upon the four upright bolts. Hence the reason why the roller should not be polished, but left slightly rough, so that it may grip the cloth and not slip. Hence also the necessity of having sufficient cork, or cardboard packing. On a large press this is a difficulty which never occurs, as the greater size of roller gives a very acute angle with the surface of the travelling board, and the plate is taken with a firm grip. But the small size of roller in a hand press, and the consequent more open angle, leads to a want of grip, if attention be not paid to these little points. As a rule, a slight roughening of the roller surface, which may be effected by rubbing it with a bit of rag dipped in acid, and an increase in the cardboard packing, will overcome the difficulty. It goes without saying, also, that the metal bearings, packing, etc., should fit on the bolts *easily*. If they do not, there is an unnecessary amount of friction to overcome, and this is often the main cause of the difficulty. Mr. Hamerton's method of fixing two strips of metal, the thickness of an ordinary plate, along the sides of the travelling board, I have not found satisfactory. It is better that the amount of "give" should allow of the roller mounting upon the plate without this assistance.

Weak point in the hand press.

Finally, a couple of strong nails, screwed through the base-board into the work table, gives the necessary stability. See that your table is firm on its legs. The only improvement I can suggest upon the plan is that an inch might be added to the *width* with advantage. An increase in the size of the roller would also be an improvement, but that would considerably increase the weight, which is not, perhaps, desirable. This press as it stands can be lifted from the floor to the table without difficulty, and that is often a great convenience in the studio of the amateur.

It remains to be added here that the fitting together of the parts must be very carefully done. It is essential, for example, that the roller be absolutely at right angles with the base-board; that it be exactly in line with, and parallel to, the travelling roller under it, and that the fitting of the bolts, and all the parts connected with them, be exactly true. Without careful attention to the details of the fitting, the result will be a press that works badly, and from which a decent proof is not obtainable. See that your joiner thoroughly understands this before putting the parts together.

I have allowed the foregoing paragraphs, relating to the hand press, to stand as originally written, in order that they may correspond with the plans. I may add, however, for the benefit of anyone who may think of making a press from them, that, taking advantage of an opportunity that offered to dispose of the old one, I have had a new one made a little larger in size. I think I may safely say that the new press is, in many respects, an improvement upon the old one. It is considerably heavier, but it is still not too heavy to lift to or from the table occasionally, and the disadvantage, after all, is only slight, seeing that the press is screwed

Careful fitting essential.

A larger press.

down to the work table, and only requires to be disturbed on rare occasions. The main alterations in the dimensions of the plans are as follows:—The printing part of the roller is eleven inches long and three inches thick. The bolts are ten inches long, by three-quarters of an inch thick. Instead of thumb-screws, nuts have been substituted, and a key made to fit them. These are better, because less in the way, than the wings of the thumb-screws, and the power is greater. The handle has two arms instead of four, and they are twelve inches long. This arrangement is equally effective, and the longer arms give greater leverage. All the other parts are the same, but the dimensions are altered to suit, the roller bearings and the metal plates which cover the packing, for example, being altered to fit the larger circumference of the roller ends. There are also lower, as well as upper, bearings. These carry the roller better, and are supported by four pieces of common spring, placed over the bolts before the bearings are put in place.

Its advantages. The advantages of this press over the old one are that the length of roller allows of printing with comfort up to eight or nine inches wide, ten in fact at a pinch, and the larger size of roller gives a more acute angle with the travelling board, so that the plate is taken with a stronger grip, and the danger of the roller failing to mount upon the edge of the plate is very much less. The cost of the ironwork was exactly two guineas and a half, and the cost of the wood and joiner's time in fitting exactly half a guinea more. The practical result is, therefore, that a press, which will print effectively up to eight or nine inches wide, can be made for three guineas—a sum that is not out of the way.

I have said that this press "will print effectively up to eight or nine inches wide." As a matter of fact, a plate measuring up to ten by fourteen inches might be proved in it, but there would be no margin, and to work up to the full limits of size is always difficult, and never satisfactory. The best results are always obtained by passing the plate through the press with its length *across* the travelling board, and while a trial proof, sufficient to shew the state of a plate, might be taken in this press up to the dimensions named, really good work could only be done up to, say, seven inches by ten. But for the purpose of the amateur this is usually quite sufficient; larger plates are not as a rule advisable, but an occasional one can be proved at a pinch.

My advice, however, is that a large press should be obtained when possible, or access had to one when a few good proofs are desired. This can sometimes be arranged with a local printer, who usually has a copper-plate press among his machinery. This small press is only recommended in the absence of a larger one, for the latter will always give better results. My sole object in giving a plan for a hand press is to make printing possible to those whose pockets cannot afford a larger one. But, with this press in good working order, there is no real difficulty in getting good results from plates up to seven by ten inches, or thereabouts, and the educational effect of having such a press beside one for proving a plate at any stage, even though the plates be afterwards sent to the professional printer when extra proofs are required, is great, greater than one would imagine.

I may, perhaps, add here that Mr. F. Goulding, 53 Shepherd's Bush Road, W., is *facile princeps* for the

printing of etchings in this country. Messrs. Thos. Ross and Son, 71 Hampstead Road, N.W., are specially recommended to me, by an experienced artist in mezzotint, as the best printers of that class of work. There are several good printers of etchings in Paris, the only firm known to me, however, being the Messrs. Porcabeuf (*maison* Salmon), 187 rue St. Jacques. This firm printed the illustrations for this book.

## CHAPTER XV.

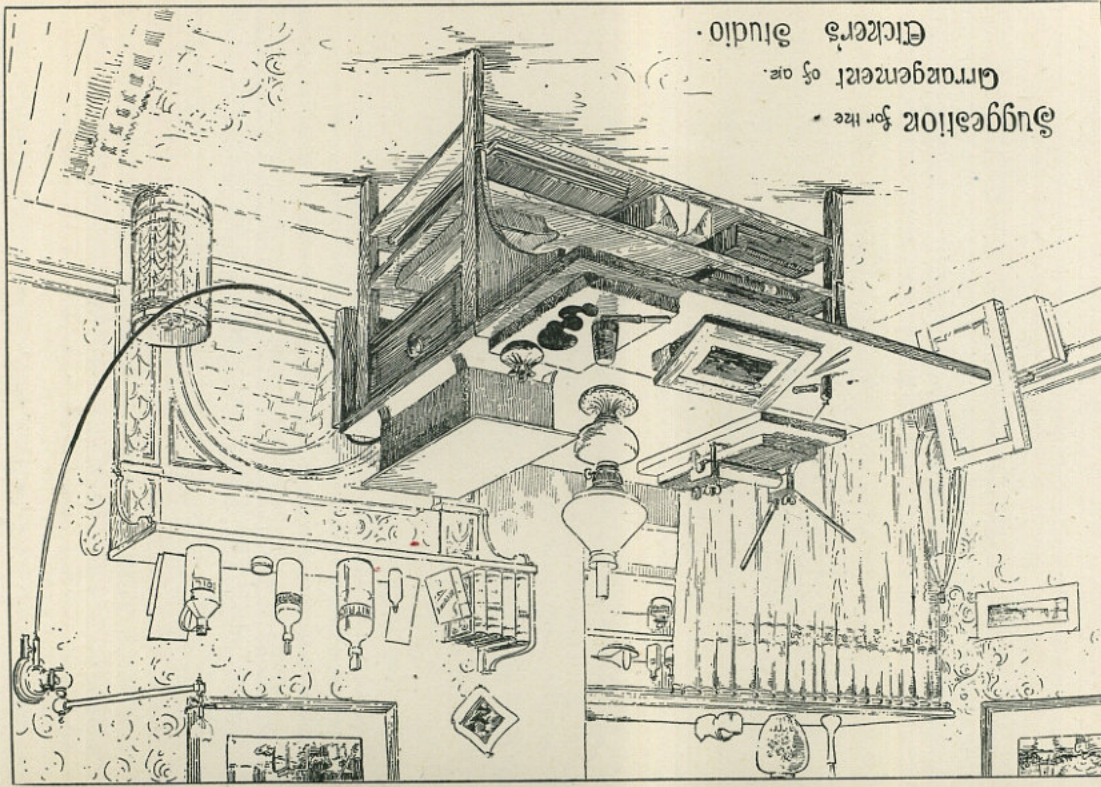
### THE STUDIO.

Finally, perhaps a few hints with regard to the arrangement of the studio may be useful to any who, like myself, find it convenient to adapt a spare room in a dwelling-house to the purpose. By the kindness of the friend who prepared the other plans, I am able, in plan 5, to give the reader a much better description of the essential points to be taken into account than would be otherwise possible, and a few explanatory remarks will be all that are required here. A large room is not necessary; mine is perhaps thirteen feet square, and is abundant for the purpose. A room ten feet square is large enough, if the space be well utilised.

The work table is one of the flap type; it was specially made with a view to solidity on account of the press, the legs being four inches square at the top and three at the bottom. In the centre section of the top, which measures about two feet two by four feet four inches, the press is fastened down at one end with a couple of strong screw nails, and is firm as a rock. The heater stands at the other end, and when not in use the piping is disconnected, and hung over the gas bracket out of the way. In the remaining space the ink-slab, lamp, etc., find a permanent place. The jigger, referred to once or twice in the text, is not shewn in the plan, mainly because I generally sit at my work, and find the height of the table more convenient. As long as the

heater be within reach the jigger is not essential, though useful to anyone who prefers to stand to his work when printing. The flaps of the table, which are about sixteen inches wide, are turned up as required when there is work to be done. The table then measures about four feet four by four feet nine inches, which is sufficient for most purposes. When not in use, the flaps are turned down out of the way, and the table then takes up very little space. A good deep drawer at each end of the table affords accommodation for printing rags, etc., and a couple of substantial shelves below carry stock of printing paper, folios of proofs, and any other bulky articles that may be in the way elsewhere. I find a good oil lamp, with the usual white shade, the best artificial light to work by; the light is concentrated low down on one's work, and is agreeable to the eyes. A movable gas jet might be used, but it would not be so pleasant to work by. The ordinary fixed jet is of no use; it is too high up for the light to be efficient. In one of the recesses beside the fire-place, two or three shelves provide accommodation for bottles. A curtain, which can be tucked aside when the room is in use, keeps the dust out at other times. Plates can be accommodated in one of the drawers or on a shelf, but see that it is in the driest part of the room.

There may be, of course, no need of having a table specially made. Any available table will do, provided it be firm on its feet, on account of the press. In my own case, I had one made specially, simply because there was not a suitable one to spare, and I adopted the flap style of table in order that, when not in use, it should occupy as little space as possible. It was made by a local joiner, and cost about thirty-five shillings.



• Suggestion for the  
arrangement of one  
Printer's Studio •

In addition, a side table, placed against the wall within easy reach, is extremely useful, especially when printing; it accommodates the supply of paper, and is often more convenient than the far side of the worktable.

A word or two as to bottles may be useful. All <sup>Bottles.</sup> acids and solvents should be kept in glass stoppered bottles. Liquid ground is better kept in an ordinary corked bottle, because the film of ground which remains in the neck every time the bottle is used may cause a glass stopper to stick fast, and it is difficult to remove. The ordinary method of warming the neck of the bottle is extremely dangerous, for the solvent explodes at quite a low heat, and the damage might be serious. Nitric acid may be kept in the bottles which the chemist supplies for the purpose, holding perhaps a quart. The name is on the bottle, and there is no danger of mistake. Those who may use the Dutch mordant will find it advisable to keep a larger bottle, such as a Winchester quart, in order that a sufficient quantity can be made at a time.

It is advisable to keep a supply of gum labels in <sup>Label the</sup> the studio, and to make a practice of labelling <sup>bottles</sup> bottles with particulars of their contents. It is exceedingly annoying to come across a bottle, say of liquid ground, the result perhaps of a special experiment, of which one has forgotten or mislaid the particulars. But, apart from this, a more serious mistake may occur occasionally. M. Lalanne tells the story of a pupil who was suffering from a cold in the head, and who, after spending some hours of labour upon the drawing of a plate, poured the acid upon it, as he thought, only to find the whole scaling off in a few seconds. He had used the turpentine instead! Unfortunately this was before the days of the phonograph. We all know what an

Englishman would have said in like circumstances; it would have been interesting to know what a Frenchman would say!

Farewell.

Now, reader, my task is done. I have done my best for you, and made many experiments in your interest; the rest remains with yourself. If it have given you half the pleasure to read the foregoing chapters that it has given me to write them, I shall feel amply repaid. But especially if I have succeeded in arousing here and there an intelligent practical interest in this most fascinating art of the etcher—an art which has experienced so wonderful a revival during the last generation, and which is yet so strangely misunderstood by many—the attempt to pull together into concise form the results of a very fitful and Bohemian practice will not have been altogether a vain one. Such at least is my earnest hope. And so I make my bow.





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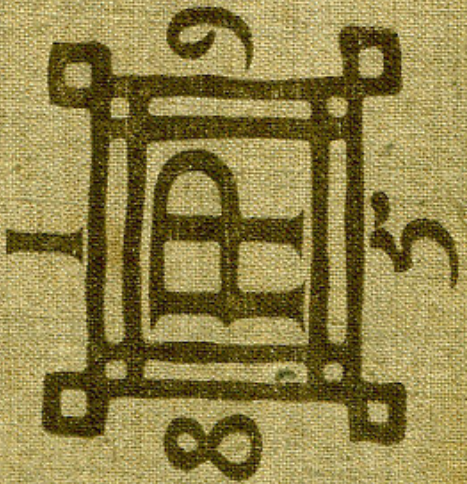
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8 3



A decorative square frame containing a stylized letter 'H'. A vertical bar is attached to the left side of the frame, and a flourish is attached to the right side. The numbers '8' and '3' are positioned below the frame.