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PLATE 1.



TRIPTYCH IN PAINTED ENAMELS:
SCENES FROM THE LIFE OF SAINT
PATRICK. BY ALEXANDER FISHER

THE ART
OF ENAMELLING
UPON METAL

WITH A SHORT APPENDIX
CONCERNING MINIATURE
PAINTING ON ENAMEL

BY

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THE ART OF ENAMELLING

*To the Honble. Mrs. Percy Wyndham
in token of deep regard for her
great friendship and unfailing kindness,
and for her patronage and help in
reviving the Art of Enamelling.*

PREFACE

I HAVE written this book with a desire that it shall be of use to those who are studying the Art of Enamelling, and in doing so I wish it to be understood that whatever it contains is the result of my own personal knowledge and experience in daily practice. I have kept the technical descriptions of processes as brief as is compatible with clearness. Other methods I have been compelled to omit, owing to the intricacy and complexity involved in their manufacture. These cannot be explained except and save by the aid of demonstration, and even then can only be really understood and appreciated after some years of study and practice.

The illustrations I have chosen chiefly from our museums in order that they might be conveniently referred to, and others are from my own work and that of contemporary artists.

I tender my thanks to PROFESSOR H. VON HERKOMER, R.A., and M. FERDINAND THESMAR, for their kindness in lending me photographs of their work for illustration.

ALEXANDER FISHER.

17, WARWICK GARDENS,
KENSINGTON, W.

December, 1905.

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THE ART OF ENAMELLING.

CHAPTER I.

IN treating of this important subject I purpose to address myself not to the reading public only and to art connoisseurs and artists, but also and chiefly to those young students of the schools who love enamelling for its own sake, and who know something about its essentials—form, tone, colour and design. My aim will be to give them, in a short and direct way, a complete account of my subject in its varied technical aspects; and some remarks will be made on its relation to a few of the more general and abstract truths that form a basis common to all arts.

In the education of art-students many important things have to be weighed and considered. What, from a teacher's point of view, is the first of these things? It is not, I believe, the training of the hand, the acquiring of manual dexterity; rather it is the inculcation of such a general knowledge of art as should fire the students with enthusiasm for their calling, and with ardent respect for the kind and high office which they have to perform in its daily service. The study of technique should go hand-in-hand with this stimulating appeal to the intellect; the craft should not be allowed to supersede the art, as it does usually in the thoughts of academic teachers and their pupils.

Even the humblest article of utility deserves to be made beautiful—yes, and ought to be made beautiful; and every student should be made acquainted with the full significance of that fact. He who transforms a common article of daily use into a thing of beauty discharges as high a function as he who is building the greatest temple or painting the finest picture. He is a true artist, that is to say. One remarks, among those who are practising art, either as students, professionals, or sincere dilettanti, that the intellectual side of æstheticism receives not half the attention that it merits. There are some, indeed, who have no inkling at all of the practical bearings of philosophy upon art; many students are not even aware that a work of art is a series of emotions made real to us and reproductive within us by means of an arrangement, sometimes of harmonious colours, tones and forms, sometimes of musical sounds, sometimes of proper words in their proper places.

Most of my readers will understand at once what is meant here by the word "emotion." It is not to be confounded with the psychical freaks suggested by the phrase "an emotional person." It is simply that æsthetic pleasure or pain, or mingled pain and pleasure, aroused within us by the impression of natural phenomena. This impression is received by sensation. In pictorial and plastic art, as in architecture, it is received through the eyes, by means of the sense of sight; but, when thus received, it frequently owes much to another sense. If, for instance, when standing before a beautiful picture you criticise it aloud, so as to put a name upon its special graces, the impression made upon yourself by your spoken words may not accurately describe, but it certainly intensifies, the æsthetic pleasure that moves you to admiration. As another example, one different in kind, wherein a great emotion is intensified by the charm of words, I give here a

short quotation from William Blake, that rare and golden genius. Blake says:—

“I am asked, on seeing the sun rise, ‘Do I see a little round disc something like the size and shape of a guinea?’ And I answer, ‘Oh no! I see an innumerable multitude of the heavenly host singing Holy, Holy, Holy, is the Lord God Almighty!’”

Of course, Blake did not mean that he with his physical eyes saw the heavenly host, and heard with his physical ears their singing. He meant that the poetic emotion called into being by the glory of the sunrise was of such magnitude that he could not choose but speak of it with a religious exaltation of spirit, as though the visiting radiance of the dawn were actually peopled with angels.

Such æsthetical emotions are psychical events, and every artist who tries honestly in his own way to give them imaginative expression, like William Blake, is certain to be individual. None can say with strict accuracy that he will reveal himself; for, as one element of nature combines with another to form a third that is different from either, so an artist's self, his personality, combines both with his acquired knowledge of external nature and with his new impressions of external nature, producing something that is neither himself nor what he feels and sees, but a transformation of each by each. That is to say, lifted out of his ordinary self by æsthetic emotion, beautiful things in nature—the productive agents of the emotion—cease to be as “airy nothings” to him; they charm him like sonnets, they become as poems to him, and, while he is giving them their enchanted existence in art, they pass through the alembic of his imagination and come out idealised. Only a man incapable of emotion, who would look at external nature with the impassivity of a camera, could with justice call himself a Realist! Art, inevitably, is an idealisation of the real.

This is why Goethe says that an artist's relation to external nature is a two-fold relation. "He is at once her master and her servant. He is her servant, inasmuch as he cannot choose but work with earthly things in order to be understood; but he is her master also, because he subjects these things to his higher intentions and renders them subservient." She inspires him in all his efforts, delights him with her varied magic, makes him her eager disciple; but she leaves him free to show in his own way that the most effective sunlight in art is—imagination. Consciously or unconsciously, he creates in and with his imitations of nature's products; and we may be sure that the worth of his creations will be commensurate with his knowledge and appreciation of her ways and works. He cannot have too much assimilated knowledge of any subject that has a practical bearing on his art, the needs of which are so vast and so varied. Among these needs, as Coleridge points out, self-study occupies a very important place, for the reason that no artist can hope to depict human passions if he be ignorant even of the incessant drama, played by his many incomplete selves in their own emotions, thoughts, impulses, and actions. It may be said that human nature is a sort of Pandora box, filled with winged banes and blessings. To open this box in art, and set free its winged agents of good and evil, you must know yourself. That is the key to it.

The foregoing remarks show that the study of art is not by any means so simple as teachers of the schools commonly believe. We may be sure that everything that enriches the mind, or kindles and stimulates the imagination, or develops and strengthens character, or keeps the intellect and the body in robust health, is more needful to art-students than that dogged striving after manipulative skill that now occupies far too much of their time, greatly to the injury of the mind's higher aspirations. For this reason, and no other, I have thought it right and necessary not to begin this series of

technical articles without some reference to questions of even greater import to students than are the implements of enamelling upon metals. In the arts of to-day there is a marked sterility of the imaginative faculty, and the explanation of this is to be sought in the trivial attention given in schools to art on its intellectual and imaginative sides. It is not too much to say that the stimulus of thought, of culture in its true sense, is urgently needed. Technique, of course, is a necessary servant in the domain of art; but the training now in vogue usually sets it to reign where it ought to serve. Students are not even taught the social and æsthetic history connected with antique sculpture. Their imaginations must not be excited, you see! Is it forgotten that craftsmen should be artists, as artists should be craftsmen? Be this as it may, enough has been said here to prove that I have no sympathy at all with such a maimed and halt-footed training. And so, without the least fear of causing anyone to rate technical matters at too high a level, I can pass on at once to questions of material.

A student ought to "feel" his material as keenly as he does his subject. He must get inside it, so to speak, and live at his ease there within the bounds set by its limitations. He should be able to think in his material as easily as musicians do in sounds *plus* counterpoint and harmony, or as writers do in words *plus* grammar and syntax. And so, in order to understand what enamel is, he must first learn to feel it in all its special and peculiar beauty, in its gemlike preciousness, in its unlikeness to anything else in art materials; and then, by practical experience in the use of enamel, knowledge must be gained of its capabilities.

Every form of art, as is well known, owes to its implements certain attributes of beauty that cannot be attained by means of other materials; and these attributes are often a joy to us even when viewed apart from subject and design. To see them at their best, in different and varied forms, we have but to study,

say, the Elgin Marbles, the Tanagra terra-cottas, the old Persian tiles and carpets, the nobly pious simplicity of Mr. Whistler's portrait of his mother, and—not to multiply examples—the later pictures of Turner. In each of these manifestations of true art I am delighted by a complete expression of the materials employed. And this applies also to three of the old enamels which have been reproduced as illustrations to this article. I refer, first, to the *Kings' Gold Cup*; next, to the *Textus Cover*; then to the *Jewel Casket*. To be appreciated, of course, they must be seen in all their beauty of substance and colour.

Evidently, a complete expression of the material is of the utmost worth to every art, and in the art with which we are concerned here, the charm of preciousness is the first quality to command attention. Indeed, he who does not endeavour to attain this gem-like lustre of enamel should set himself to feel and think in a coarser medium. It has been thought that the preciousness of enamel, with its exquisite subtlety and radiance, seems to be most charming in small, if not minute, works of art. This is commonly true; but it does not follow that small enamels are precious merely because of their smallness. One admits, indeed, that the kind of work and treatment that would be most offensive in large pieces might be less disagreeable in enamels on a much smaller scale; and it is also perfectly true that rare and exquisite things ought not to be squandered over such a large surface as renders them fatiguing to an eye that is sensitive to their beauty and brilliance. The difficulty is to find the golden mean in this question of size. But one may advise every serious worker in true enamel not to go in search of the many dangerous pitfalls lying about the feet of those who wish to make their art a rival of fashionable portrait-painting in oil-colours.

On what is the quality of preciousness dependent? Upon the relation of line, tone, mass and colour to the special

“genius” of the material. Now, there is one advantage that the quality of enamel possesses over all other pigments or materials used in art: it reigns supreme over them in luminosity, in transparency, and translucency. One need not make an exception either of stained glass or of glass mosaic, the conditions of their use being entirely different. In enamel, as you may observe, it is possible to reproduce the various play of colours in opals and in labradorite, the translucency of such stones as the onyx and agate, and a brilliance of reflection and transparency equal to that of emeralds and rubies, and almost comparable to the diamond’s splendour. The truth is that a complete gradation from transparency to opacity can be achieved. The surface may range from the dulness of antique Roman glass to the greatest brilliance and clearness possible in art. These are the properties of enamel that enable an artist-craftsman to get such qualities of radiant preciousness as charm like gems.

Among the antique enamels still extant, there are some wherein the magic of this preciousness comes to me like a wind that has passed over far-distant lands of flowers, bringing with it their freshness and fragrance. Such to me is the famous *Kings’ Gold Cup* now treasured in the British Museum; such, too, are the *Jewel Casket* and the *Textus Cover* in the Art Museum at South Kensington. In the *Kings’ Cup* the result is mainly due to excellence of process and of craftsmanship. But I do not find that the colour-arrangement as a whole is on a par with the exceeding high merit displayed in the technical skilfulness.

This beautiful cup, “a relic of the sacred treasures of England,” seems to have belonged to Henry V.’s treasury. It is enamelled with many scenes from the life of St. Agnes. Not ten years ago it was acquired for the nation from Messrs. Wertheimer, who sold it for £8000, the price at which they purchased it from Baron Pichon. The Baron, who bought it

from a Spaniard in Paris, got at the cup's identity from an inscription on the cup itself. It is said to have belonged to Charles V. of France, and through his granddaughter to have come into the possession of Henry V. of England. The cup was certainly in the Royal Treasury before the days of the Tudors, and is mentioned in the inventories of Henry VIII. and Elizabeth. It is thought that James I. gave the cup to Velasco, the Spanish ambassador, as a memento of the friendly understanding between Spain and England that existed in the early part of his reign.

As regards the *Textus Cover*, illustrated on page 251, is it not a surprising work of art? In its border, and around the figure, some pieces of *cloisonné*, separated by fine gold lines, and rich with fortunate contrasts of opaque, pearly-white and translucent shades of turquoise and emerald, are as precious in their refinement as needs be. The whole work is a gorgeous example of the goldsmith's art, adorned not with enamels only, and with filigree, but with plaques of interlaced ornament in *repoussé*, and also with large stones set about the enthroned figure of Christ.

There are parts of later enamels, in what is known as the Limoges style, that do not lack the high quality of preciousness. This is true in the case of the *Jewel Casket*, to which reference has already been made. This casket, the work of Leonard Limousin, belonged to Queen Margot, wife of the French King Henry IV.; and, to my mind, it deserves to be looked upon as perhaps the finest work of its style at South Kensington. The white, as is generally the case in Limoges enamels, is too white, so that its tint is discordant with the rest of the colour-scheme; the transparent colours, too, are weak, are even rather insipid, being *too* transparent; and, again, the figures are not fine in form and drawing. But the arrangement and design are at any rate excellent, having each a frolicsome kind of elegance, such as should belong to the

gay Queen Margot's jewel casket. In the enamel gallery at South Kensington there are many examples of the Limoges method of work, but, except here and there in details, beauty is sacrificed either to subject or else to process.

A few pieces of Japanese enamel possess the quality of preciousness, though they suffer not a little from their too imitative form and character. Still, taking the whole display of old Japanese and Chinese enamels, we see a great, even a consummate achievement in handicraft, as well as a beautiful arrangement of the colouring; and this is all the more noteworthy as none but opaque enamels were then employed in China and Japan.

The Indian enamels, which consist of *champlevé*, are mainly used as an enrichment for jewels, sword-hilts, horse-trappings, and the handles of daggers. In some very rare cases they are precious, but they have never the inwardness nor the restraint of the *Textus Cover* and the *Kings' Gold Cup*; indeed, they are apt to be tawdry. Not seldom they look like mere toys, things of a moment. Now, the quality of preciousness has among its admirable traits the following characteristic: it is made to last, it is a delight for all time, a joy for ever.

It is not my intention to write an archæological treatise on enamelling. That has been well done again and again; but it may be of use briefly to notice the changes which have taken place in its development. We know that enamel in its simple forms was in use among the Egyptians, the Phœnicians, the Assyrians, the Greeks, the Romans, the Etruscans; but that they knew *all* the processes now in vogue is a very rash assertion. The British Museum has a specimen of Egyptian work, a bracelet, upon which the opaque turquoise-tinted enamel is applied in the same way as gems might have been.

As regards the *champlevé* process, it seems to have had its origin in Britain, in days preceding the Roman conquest.

Thence it passed to France and Italy, where it was used only for small articles of jewellery, if an opinion may be formed from the Castellani collection in the British Museum. In the eleventh century we find the same process in several countries, usually mixed with *cloisonné*; but one may note here at once that in all the earlier enamels the processes are employed from a goldsmith's and a jeweller's point of view, not from that of a genuine worker in enamel. It is not till we come to the twelfth century that the fine craft of enamelling begins to assert its independence as an art and its full capacity for change and progress. From that time onward we meet with enamel done *per se*.

In Christian times—probably as early as the eighth century—the Irish, from a craftsman's standpoint, employed enamel processes with remarkable success; and I wish to draw great attention to the unusual beauty of the interlaced patterns in their goldwork and silverwork, the chief characteristic of which is a simplicity of shape and contour that contrasts admirably with the utmost elaboration and delicate intricacy of design. This, to my mind, gives their art a truly wonderful fascination; the style is so gallantly restrained, yet with so much life and vigour and ease. This Irish enamelling, specimens of which are to be seen in the Celtic room at the British Museum, was applied in a larger way to shields, helmets, fibulæ, and horse-trappings; as far as can be ascertained now, the enamels used were opaque. I should like to dwell upon this beautiful Celtic art, but it has really more to do with goldsmithing than with enamelling.

Byzantium and Ireland were long the two centres of learning, and in art they were unrivalled for the beauty of their enamels in *cloisonné* and *champlevé*. The delicacy, the preciousness of their work is in many cases beyond praise. In form, in drawing, to be sure, there is a lack of the symmetry and grace that we find in the intaglio of the early Etruscans;

but the work has a form, an expression, a magic, peculiarly right in *champlevé* enamelling. The graduated colouring between the metal lines, the tones of the whites, the yellows, and, indeed, of all the colours, are as beautiful as Persian tiles or as plates of Damascus. All these enamels have a kinship of colour, and here it will be noticed that the fructifying influence was oriental.

Some of the great charm of Byzantine work is due to the fact that the enamels are applied to the metal in such a way that they seem to be a sort of natural metallic growth. In the gold jewels the fine gold straps keep the parts together in a manner as artistic as it is technical; the enamel and the metal are ground to the same level; and the polish on the enamel is of a piece with that on the metal's surface. Also it is worth noting that this deliberate choice of a most subtle surface proves, beyond doubt, that the Byzantine artists had a keen and wise appreciation of the refinements of their exquisite material.

CHAPTER II.

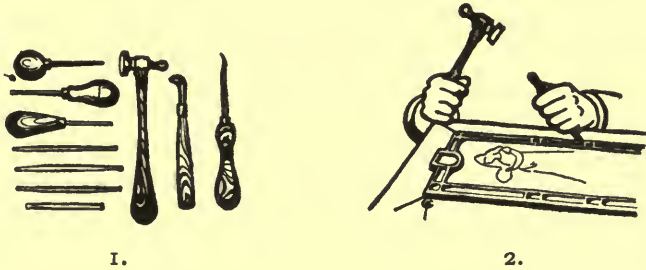
THERE are two ways of interpreting the words "an enamel." They may signify the substance enamel, or may be applied to the completed work. The substance enamel is a vitreous compound that adheres to the surface of the metal upon which it is fused. Enamels are divided into three kinds, the transparent, the translucent, and the opaque. The transparent are those through which it is possible to see quite clearly the metal and its quality of surface—as, for example, in bassetaille, where the whole effect of the process is due to the transparency of the enamel. The translucent are those which are not transparent, but which admit the light through them, which the opaque do not.

These enamels are composed of a simple flux, and also of a flux combined with oxides of metals. The flux is composed of silica—that is, of powdered flint or silver sand; minium, which is red lead; nitrate, or carbonate of soda, or potash, all melted together in a crucible until there are no bubbles left in it. This flux, which is the base of all enamels, is combined with different metallic oxides in various proportions. To a certain point, beyond which no combination occurs, the more oxide fused with the flux, the darker in tone and richer in colour will the enamel become, and *vice versâ*. Transparent enamels are made opaque either by the addition of calx, which is a mixture of tin and lead calcined, or else by arsenious acid, that is to say, of white arsenic. The flux when combined with a precipitation of gold and tin, called purple of Cassius, gives a beautiful purplish red; when combined with oxide of copper, green, blue, and red may be obtained; with oxide of

cobalt, a blue ; with iron, a brown or orange ; with manganese, a purple ; with silver and gold, an orange red ; and with stannic acid or oxide of tin, an opaque white.

These enamels can be mixed together in the crucible to obtain any variety of colour. All of them are made by the flux and the oxides fused together at an even temperature, and the quality of their tone is determined by the intensity of their fusion and the intimacy of their combination. There is no limit to the range of colour, except that vermilion and lemon yellow cannot be obtained.

Enamels are either "soft" or "hard"—that is, they are



either easily fused at a comparatively low temperature or they require a great heat. An enamel is perfect when the combination of the component parts of the flux, together with the oxide of metal, is such that there is no difference of colour, opacity, or transparency, throughout the whole mass. The best way to determine whether the combination is perfect is by dipping a copper rod into the crucible and withdrawing it with a part of the enamel sticking to the end ; pull out the rod some distance, so that a fine thread of enamel may be formed ; then pass the thread between the thumb and finger, and the slightest difference of surface will be detected throughout its length. The quality of the colour will also be perceptible.

-
1. *Steel Tools—Chisels, scorpers, graver, chaser's hammer and burnishers.*
 2. *Chiselling cells in the border of a frame for the insertion of enamel.*

Now, the harder the enamel the greater the quantity of silica contained in it, and the greater the resistance to atmospheric or chemical action; the softer the enamel the greater its percentage of lead and potash, and the more liable it is to be decomposed by atmospheric influences and chemical agencies. It is very tempting to use soft enamels, for at first they look so much more brilliant, and are so much easier to work with, but there are dangers to which the harder kinds are less subject. Thus, when in a state of fusion in the furnace, dust and foreign matters may injure them greatly, dulling the surface and destroying their transparency. The soft kinds of enamel contain a large quantity of lead, and sometimes of borax—a substance that renders them utterly worthless. The brilliancy and perfection of an enamel will depend upon the intimate combination of its parts; and this depends largely upon an even temperature being sustained throughout its fusion in the crucible. It is better not to make the enamel from the raw materials, but to obtain the best optical Crown glass, and add minium and potash in proportions which I shall give further on. It is advisable to use enamels made with the same base of flux, to prevent their cracking; for instance, an enamel heavily charged with lead, if fused upon one that is made with a large proportion of silica, will crack very readily, and probably peel off in the course of time. It is impossible to obtain all coloured enamels with the same flux as their base, so that it is best to employ those fluxes which are most nearly allied. After some experience it is almost possible to ascertain by touch and weight and fracture the kind of substances composing a piece of enamel.

Silica is procured from flint or sand; if from flint, the white flints and the black are better than the yellow, as they contain less iron. The process of clarification is interesting. The flints are made red-hot, then thrown into cold water; after this they are pulverised, sieved, and washed several

times. This done, they are treated with hydrochloric acid to remove all trace of iron, and finally washed once again in water to remove the acid. Silica has the property of increasing the hardness of an enamel. The minium or red lead is the orange-red coloured oxide of lead, which is easily procurable. It has the power to soften enamels and to give them a greater degree of expansibility. The compositions of flux are as follows :—

First, for copper flux and gold flux, take—

4 parts of silica, 6 minium, 12 nitrate of potash ; or
4 parts optical glass, 3 minium, 6 nitrate of potash.

Second, for silver flux, take—

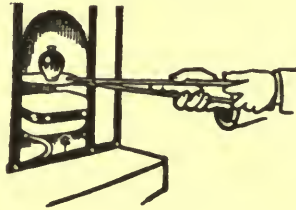
| | | | |
|------------------------------------------------------------|-----------|-----------|--|
| 4 parts of silica, 6 minium, 20 nitrate of potash. | | | |
| Cobalt, oxide of cobalt... .. | 1 to flux | 50 parts. | |
| Green, black oxide of copper ... | 1 ,, ,, | 40 ,, | |
| Yellow, chloride of silver ... | 1 ,, ,, | 12 ,, | |
| Ruby, purple of Cassius ... | 1 ,, ,, | 112 ,, | |
| Ruby, chloride of gold | 1 ,, ,, | 200 ,, | |
| Purple, peroxide of manganese | 1 ,, ,, | 200 ,, | |
| Orange red { purple of Cassius ... | 1 ,, ,, | 20 ,, | |
| { chloride of silver ... | 2 ,, ,, | 20 ,, | |
| White, calx (calcined tin and lead) | 16 ,, ,, | 10 ,, | |
| Opalescent yellow, from chloride of silver and arsenic ... | 6 ,, ,, | 24 ,, | |
| Yellow, oxide of antimony ... | 6 ,, ,, | 22 ,,* | |

Calx is prepared from tin and lead, not only by melting them together, but by exposing them whilst melting to the air, in order that the metals may oxidise. White can be modified to any extent by the addition of a more densely coloured enamel, to make it grey or brown as the case may be. To do this the coloured enamel is pulverised to a granular

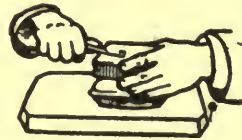
* It is necessary to note here that every enamel requires a special treatment in the method of its manufacture, and that it would require a large volume to discuss the making of enamels in all its subtleties. The receipts printed above give only a broad idea of the subject.

state, then put in a crucible and melted in the furnace; to this is then added the pounded white enamel, the crucible being stirred all the time, and the mixture is ready for the furnace. It may require several firings and good stirrings before the ingredients become thoroughly combined. As soon as the combination is complete the mixture is poured into a tin of water.

The enamel substances being made, the next step is to prepare them for use upon the metal. This is done in the following manner:—Take an agate mortar measuring 5 ins. in diameter, fill it half full with distilled water, and add a



3.



4.

small quantity of enamel; then place the mortar over a leather pad, and holding an agate pestle firmly in the left hand perpendicularly over the enamel, strike the top of it with a wooden mallet, taking care to avoid the sides of the mortar. Continue this operation until the enamel is smashed into fragments. Then take the pestle in the right hand, and hold the mortar firmly with the left, still on the leather pad; rotate the agate end of the pestle on the enamel, and go on doing so until the enamel is pulverised to the finest powder. Meanwhile the water has become milky, so pour it away, and

3. *Placing an enamel vase into the furnace.*

4. *Usual method of cutting cells with a scorper. Observe the position of the hands. The left hand moves the piece on the sandbag horizontally against the fixed point of the tool, which is held rigidly.*

add a fresh supply, repeating this part of the work until the discoloration of the water disappears. Thoroughness of washing is of the utmost importance in the preparation of a clear transparent enamel. Opaque enamels do not require so much washing.

And now, leaving the enamel corked up securely in a clean bottle, to prevent any dust or foreign matter from getting in, let us see how the metal is prepared. The first process which I shall describe is that known as *champlevé*; the next *basse-taille*; then *cloisonné*; then *plique à jour*; then painted or



5.



6.

Limoges enamels; and, last of all, miniature painting in enamel.

Champlevé enamelling is so called from the two words *champ*, a field, and *levé*, raised. The field or ground of metal is cut away, leaving bands of metal to form the outlines of the design; then with enamel the part cut away has to be raised flush to the surface of the outlining bands, so that the whole is a uniform surface. The first requirement is a pitch block, that is, a piece of wood on which a composition of two parts of pitch, six of plaster, and one of tallow, all mixed together in a saucepan over the fire, is poured to the thickness of an inch. In the case of large work the wood must be strong and

5. *Rolling a sheet of metal through rolling mill.*

6. *Drawing wire through draw-plate.*

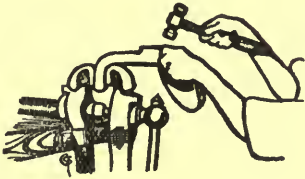
heavy, but when the work is minute the pitch or cement must be placed upon the end of a stick.

There are two ways of using the tools, concerning which it is now necessary to speak. For large work a chaser's hammer and long steel chisels must be employed; for small work the graver or the scorper is held rigidly in the right hand, and by a firm, restrained pressure, the metal is gouged out, as shown in the illustrations. It is very necessary to keep the tools sharp and clean. The design is either drawn on the metal with a hard black lead point or else transferred upon it by means of transfer paper in the usual way, and then the lines are traced with a fine graver, giving a faint hair line of the utmost exactitude. This done, the line is cut deeper with a V-shaped tool, about one-thirty-second of an inch to one-sixteenth, the depth being governed by the strength of colour required. In transparent enamelling on silver or gold, for instance, the darker the colour used the deeper the cutting ought to be—within limits, of course—one-sixteenth being quite deep enough for an object of any size. When this depth is exceeded the enamel is so thick that it flies off. A trench having thus been chiselled all around the spaces, leaving the line of design untouched, the spaces themselves have to be cut to an equal surface, at the same depth as the surrounding trench—that is, one-thirty-second or one-sixteenth of an inch below their present surface. The metal ought to be fairly thick, either No. 14 or 16 metal gauge, and for larger pieces No. 18 or 20 metal gauge.

This surface, which has been chiselled or "scorped," must now be cut into a roughened surface, so as to give it a strong key for the enamel to hold on by. Many varieties of textures and patterns may be given to this keying of the surface, which in the case of transparent enamels is of very great importance.

As soon as the surface is well keyed, the metal plate is taken off the pitch by means of a very gentle heat from a

blow-pipe flame. The back is cleaned thoroughly with paraffin, and then treated with a hot solution of crystal soda, after which it is finally cleaned with methylated spirits. Then, upon the parts which are cut out, the chosen enamels, mixed with distilled water, are laid with a small spatula. If the piece of work is large, and may take several days or weeks to fill in, it is better to add a few drops of a weak solution of gum tragacanth or of quince-pips, so that those parts which are set and dry may not be disturbed by the subsequent filling-in of other parts. This being finished, it is necessary to *fire*—that is, to fuse the enamel. For this purpose I find that a gas



7.



8.

furnace is greatly superior to any other kind. It is cleaner, it requires less attention, and it gives a more uniform heat, and in many ways saves a good deal of time. If, however, gas cannot be obtained, a furnace heated by coke or by petroleum is sufficiently serviceable. Besides a furnace it is necessary to have supports or "planches" for holding the enamelled metal plate. These may be made of iron, coated with chalk, loam, silica, or rouge; or they may be of fireclay, coated with the same substances. It is better to heat the "planche" before placing the enamelled plate upon it ready for the furnace. The tongs should be long and firm, with long, thin, pointed fingers.

7. *Planching on a stake.*

8. *Blocking out a shape.*

When the muffle of the furnace has reached a pale orange red, the second part of the process begins. It consists in taking a firm hold of the planche, with the enamelled plate upon it, and very gently placing it into the furnace. Then observe it carefully, on no account leaving the furnace at all until the enamel is fused; and when the enamel shines equally all over, withdraw the planche carefully, and lay it gently on the top of the furnace or upon some other warm place near at hand. You will now see that the surface of your enamel is very irregular, so you fill up all the hollow parts, and fire again. This process is to be repeated until the plate is as regular in surface as you can get it. If there are still some irregularities, you take the plate and, while holding it firmly in the left hand under a tap of water, you file it with a corundum file, repeatedly washing the plate and scrubbing it clean with a hard nail-brush. This will give you an even, unpolished surface. To regain a bright surface it is necessary either to put the plate into the furnace again and fire it as before, or else to polish it. This entails a constant rubbing—first, with a smooth corundum and water until all the roughest scratches are out of the enamel; next, with pumice-stone and water until the surface is much smoother; then with water-of-ayr stone and water, when a dull, smooth surface will appear; then crocus powder and water, with a stick and leather; and, finally, with rouge, either on a buff fixed on a lathe, or by hand with rouge and chamois leather. This is a laborious process, but it produces a result that no fire polish can give, and is one of the chief charms of the old *champlevé* work. The metals which lend themselves readily to this class of work are gold, silver, and copper. Copper is the one which has been most commonly used at all times. The best copper for this purpose is not pure; it is composed of 1 lb. of pure copper to 1 oz. of zinc. The alloy of zinc prevents the edges of the copper from oxidising into a rough burr, which is most unpleasant to work with.

CHAPTER III.

CHAMPLEVÉ enamel upon the precious metals, silver and gold, is done in identically the same manner as upon copper (see Chapter II.). It is better to use silver a little above the standard, as it is more flexible; and gold ought not to be less than 18 carats. Enamel, practically speaking, after it has been fixed is neither expanded by heat nor contracted by cold. In this, of course, it is at variance with the copper, the silver, or the gold, and it is the constant effort of the one to throw the other off. And this accounts for several of the most important parts of the processes used in enamelling. In the case of the champlévé process, it is the reason for the enclosing lines of metal and the keyed grounds; in cloisonné, the reason of the wire cloisons and of other essential parts of the processes, which I shall describe in their place.

After the work in the champlévé process is finished one of the most important things is the gilding of the metal parts. This is generally done by a gilder. There are two methods of gilding. One is called "mercury-gilding" or "water-gilding," and the other, "electro-gilding." The first is done by an amalgam of gold and mercury, which, mixed with water, is painted on the metal, and then subjected to a heat sufficiently great to drive off the mercury, leaving the gold attached to the metal.

The process of electro-gilding is carried out by the use of an electric battery, in which the metal lines and parts not covered with enamel receive a fine deposit of gold. The gold may afterwards be brightened or burnished. It is often the unhappy experience of all enamellers who have entrusted

their work to gilders to receive it back from them either wholly or partially destroyed. The principal causes—apart from those due to carelessness—are several. One is that, in the case of mercury-gilding, the heat used to draw off the mercury has been too suddenly applied; or it may be that the acid employed in cleansing the metal has been allowed to undercut the enamel, so that any very slight friction would peel the enamel off at the parts thus undercut. The same cause in the process of electro-gilding would allow the gold to be deposited underneath the enamel, thereby lifting off the enamel in flakes. Therefore it would be wise for an enameller to do his own gilding. An excellent description of the gilding processes may be found in Spon's Encyclopædia.

The design for *champlevé* enamelling should be done in a simple manner, and with as few lines as possible consistent with the technical necessity of holding the enamel, and the lines should be of such a thickness as to be readily seen. It is noticeable that colours of medium strength give greater breadth than those which are much lighter or darker than the metal, and that a certain degree of hardness is overcome by gradating the colour spaces, and also by engraving a pattern on the metal surfaces left bare of enamel. It is by such means that a certain hardness and tightness, observed in almost all modern objects of this kind, is avoided in the beautiful old work.

Bassetaille.—The word *Bassetaille* is derived from the two old French words, “*basse*” meaning low, and “*taille*,” cut,—that is, “low-cut,” like an Egyptian *bas-relief*. It consists of a subject carved in low-relief below the general surface of the metal object; so that when the enamel is placed over the design the whole surface of enamel and metal is one, and the relief is seen through the transparent enamel. The tools employed for *champlevé* may be used also for *bassetaille*. That they should be more numerous and with greater variety

of shape of edge will depend upon the kind of work and the artist's choice. The whole process is exactly similar in other respects to that described under the head of *champlevé*, except that it is carving in relief and not merely sinking a flat space for the enamel inlay. The great example is the "Kings' Cup" at the British Museum. There is another at King's Lynn, commonly known as the "Lynn Cup," which was done in this *bassetaille* method. It is to be observed that there is no metal division between the different coloured enamels in *bassetaille*. This is a great advantage: there is no necessity for a metal division unless the enamels are very soft, in which case they are bad for any kind of work.

The method of enamelling after the subject has been carved is much the same in *bassetaille* as in *champlevé*, the only difference being that, owing to the absence of a metal division, much greater care is required in keeping the edges of the colour quite clear and sharp and clean.

The best way to do this is by adding a little gum tragacanth and water to each enamel, and by letting this mixture partly dry after it has been laid upon the metal; by this means a sharp clear edge is formed before the next colour is put in juxtaposition to it. Great care, again, must be taken in handling the work and in placing it into the furnace, for if any particles of enamel get moved out of their place, the edges of colour will be blurred after the firing. There are, indeed, many pitfalls in this *bassetaille* process, and you will find it a most valuable thing to test a small part of each enamel you intend to use. For this purpose I keep always by me some small pieces of metal ready prepared. When the metal is being carved, it is a great help to test the relief for enamel by mixing a little water-colour of the same tone as the enamel and floating it over the metal spaces carved for the reception of the enamel.

Although the enamelling is difficult, the most difficult as

well as the most important part is the carving of the metal. It requires the most accurate drawing and the most perfect mastery of the graver and scorper. You will see that there is a large amount of metal work of different kinds to do in order to become an enameller, and it is certainly of great assistance to serve an apprenticeship in engraving, in repoussé work, in hard silver and gold soldering, and also, of course, in hammering and fitting. It is also advantageous to know how to polish. Each of these processes will be found of the greatest possible aid.¹

I have detailed the manner in which the engraving and carving for *champlevé* and *basetaille* are done. But I must note here that if it be desired to make a small cup, a *tazza*, plate or box, it will be necessary to have one or two other tools besides those pertaining to the art of enamelling. A few hammers are required and a sand-bag, some stakes and mandrils, a vice, a blowpipe, a planishing hammer, and a bath for pickling. Supposing the article to be a bowl of four inches diameter and three in height, the mode of procedure is this. If we measure the height plus the diameter and with half the sum of these as the radius, we strike a circle on a piece of silver or copper of 14 metal gauge, then we describe a number of concentric circles, leaving a quarter of an inch between each circumference. Then the edge of the metal, slightly tilted on the sandbag, is held firmly in the left hand, and with a well-directed blow you strike it with the end of the hammer on the first line from the centre, then, while moving it slowly round at the same angle, the blows are struck regularly on this line. It requires a very strong hand to do this. Go once round on each line, and then start on a fresh one, until you get to the outer edge; then take the metal to the blow-pipe and anneal it, softening the metal by making it red-hot and then letting it cool. All metals become hard and springy by hammering, and are softened by heat. After it is

cold you repeat this process of hammering, until a deep saucer shape is obtained, then turn it over and put its edge on a curved stake of iron or steel, shaped conversely, corresponding to the design, and with well-regulated blows upon the parts immediately above the stake, go round it, turning it and beating it at the same time. After each course of hammering it is necessary to anneal it, otherwise it will crack and split up; then continue to hammer in this way until the shape is complete.

Cloisonné.—To put a cloisonné pattern upon this, you proceed in the following manner. The design is drawn or transferred upon the metal, and then with a steel point is scratched distinctly upon it, so that the design may be clearly seen during subsequent processes. The flat strip must now be thought of for the cloisons. In cloisonné enamelling on copper it should be of the hardest brass; silver wire should be used on silver; the width of the wire is partly determined by the character of the design and the aim of the artist, but one-twentieth of an inch commonly suffices for the boldest work. With round and flat-nosed pliers the strip is bent to the design, then cut with cutting pliers at convenient points; and the pieces thus made are carefully gummed to cardboard, so that they may not be injured or lost. When all the cutting is done and the pieces have been bent accurately to the design, each cloison is soldered with silver solder to the metal bowl. The way to do this is somewhat complicated. The bowl has first to be cleaned with sulphuric acid and water, and afterwards thoroughly washed in water. A lump of calcined borax, moistened with water, has now to be rubbed upon a flat piece of rough slate until a thick paste is made; into this paste dip that edge of the strip which is to touch the bowl, and then lay it accurately in its place upon the surface of the metal. Next cut up into minute pieces some hard silver solder, and lay them on each side of the strip about one-eighth of an inch

apart. Now lay the bowl—it must be firmly placed—on some coke or charcoal, and with a blow-pipe drive the flame gently all around the bowl, getting gradually nearer the strip. When the strip is touched by the flame, blow until it becomes red hot, so that the solder may flow along the cloison to hold it firmly in its place. You will first see the borax melt, and afterwards the solder. Take care not to melt the strip. By strictly observing these instructions the process will not be difficult. Now take the bowl and put it into the sulphuric acid and water—about 20 parts of water to 1 of acid (this is called pickle)—and leave it there until quite clean. The whole of this process must be repeated for every cloison. As regards the enamelling, it is done in exactly the same way as the enamelling of *champlevé* work.

Plique à jour.—The one process which has excited more curiosity than any other, is that termed *plique à jour*. The cause of this is no doubt due to the fact that it is a kind of cloisonné enamelling, without any apparent means of supporting the enamel whilst in the furnace, in a molten state. It is one of those things which in a large measure partake of the marvellous, for we are so accustomed to think of all things being subject to the laws of gravitation that it is quite inconceivable that enamel in a powdered condition, which, when placed between wires separated at some distance from each other, and frequently having no attachment to the surrounding ones, should not only remain there without falling through, but, as I said above, should allow of its being heated to a temperature sufficient to melt it and cause it to adhere to the wires. The obvious thing, to the uninitiated, is to solve the mystery by asserting that a metal base is first of all used as a support, which is afterwards removed when the “firing” is accomplished. This is true, of course, in many cases, but the smaller pieces of this work require no metal foundation. Strange as it may sound, it is sufficient to lay the enamel in the spaces, to dry carefully and

fire in the furnace, with the planche holding it by its edges. And for this reason, that when the enamel begins to melt it becomes viscous, readily adhering to the wires. Bearing this in mind, it can be taken from the furnace repeatedly, examined, and filled up in the parts requiring it until it is finished. By alternating the sides of the piece in the furnace, any degree of convexity can be obtained.

For larger work, such as lamps, cups, and bowls, the process is naturally much more elaborate. Gold wire of the greatest purity must be employed, and the thinnest is the best. If you think of this process of enamelling as belonging more to glass manufacture, it will enable you to understand the process better, for here we have as it were a glass object with an inlay of metal. The metal is not inlaid after the enamel object is made, but the enamel is proportionately so far in excess of the metal that it is the reverse of the condition of other enamels. The base upon which the enamel is laid is either gold, silver, copper, or any other metal or substance which is capable of being removed either by cutting, pulling, filing, or acid. There are many such substances, such as tripoli, soft glass, and cement made of fireclay and pumice covered with silica. But the best are those at first stated. Like all other enamelling and almost everything else, it is very easy to do little pieces badly, but to make them really perfect is one of the most trying and difficult things in the world. For every perfect piece at least ten are spoiled. And nothing will give success but patient labour and infinite care. The firing is the chief difficulty. Hence all the possibilities of any accident must be accurately foreseen and guarded against. The all important part is to prepare the appliances for firing. These must be such as to give the operator all possible facility for turning the object in all directions, in order to give it the same regular heat throughout; and afterwards the arrangements for cooling must be such as no draught of cold air can get near it. At present

there is no furnace made at all suitable for this work, and as the demand would in all probability be very small, there is no likelihood of one being supplied, so that there remains nothing for it but to make one upon the lines of a glass painter's or pottery painter's furnace.

For encrusted enamelling it is sometimes desirable to prepare the design in repoussé. To do this well, as indeed to do any other part well, a very great amount of practice is necessary.

The implements required consist of one or two chasers, some hammers, and a considerable number of tools, which are made of pieces of square steel about 5 ins. long, and ranging from $\frac{1}{8}$ in. to $\frac{1}{4}$ in. thick. The ends are shaped from a flat square to a round ball, from a thick tracer, which is like a chisel in shape with a blunt edge, to one which gives a hair-like line. It is best to make one's own tools. The rule is to make a tool that will shape the relief according to the design. For instance, a tool with a curved edge is used for a curved line, a round ball-ended tool to raise its own shape, a straight tool for a straight line, and so on. Pitch blocks are requisite. I have already described how the pitch is mixed and spread when warm over the block of wood or stone or metal; and the reader will guess at once that the metal object must be pressed into the soft pitch until it sticks there. Then transfer your drawing in outline upon the wrong side of the metal, and then take a tracing tool—that is an edged tool, either curved or straight—and holding it at right angles to the metal, go gently yet firmly along the outline, striking the top of the tool with the hammer in a regular series of taps, moving the tool at the same time. For the raised parts softly rounded tools should be employed.

To remove the embossed plate from the pitch the metal must be warmed before the fire or by the flame of a blowpipe. To clean it use paraffin. Now place the embossed plate with its face upwards and work with the tools on its face, sharpening

parts or softening others, until it is finished, then clean it as described. The manner of enamelling such work is of the simplest; it consists of overlaying the parts with a thin enamel both back and front, and firing. This is the way in which many of the most costly gold and silver ornaments, jewels and snuff-boxes were made.

CHAPTER IV.

IN the preceding chapters I have described in detail the following processes of enamelling: *champlevé*, *cloisonné*, *basetaille*, and *plique à jour*. All these are intimately related to the processes of working in metals, and were brought into existence for the colour decoration of metal objects—perhaps by metal workers. The treatment, artistically speaking, was made subservient—and rightly so—to the other parts of the object which it adorned. And thus far we see enamelling had not reached its full development as it did later, when it could exist as an art in itself independently of all others. That was the position of enamelling before the discovery of the method which I shall describe under the name of “*painted enamels*.” After this discovery the art of enamelling assumed a more important place amongst the fine arts; for it had a larger and more subtle power of expression, with far greater freedom with more varied possibilities of form and colour. I have chosen the term “*painted enamels*” in preference to the older one, “*Limoges*”; the latter word is the name of an old town in France where each kind of enamelling was developed during a period commencing about the middle of the eighth century A.D. and ending during the latter part of the seventeenth century. The name “*Limoges*,” as applied to enamels, has been generally used to signify the last development which occurred during the Renaissance. It is included under the head of “*painted enamels*.” This term is also descriptive as part of the process, for the enamels are painted in true enamels and fired; but the forms in the design are not enclosed with a wire line, neither is the metal surface engraved, carved, or

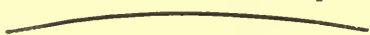
repoussé, as is the case in those methods previously described. And although it is historically correct to label painted enamels of the Renaissance "Limoges," still we cannot call the higher development which has occurred within the last twelve years in England "Limoges," for there are fundamental differences, not so much of process—although great developments have taken place beyond the ancient methods of the enamellers of the Renaissance—as of æsthetic intention, and realisation of the true expression of the material substance and its capacities, as experienced by the artist. The "Limoges" enamel is not a true expression of enamel. The great majority of these old enamels have no *raison d'être*. For they could have been done equally well in other materials not nearly so difficult of achievement. The high quality of enamel, as differentiating it from all other substances employed in the arts, is the great power of its unrivalled colour, and the unlimited variety of its qualities. All the bewildering surfaces, all the depths and lovelinesses that lie darkly in the waters of sea-caves, all the glistening lustre of gleaming gold or silver back and fin of fish, the velvet of the purple sea anemone, the jewelled brilliance of sunshine on snow, the hardness greater than that of marble, the flame of sunset, indeed, the very embodiments in colour of the intensity of beauty—these are at hand waiting for expression in enamel. With a few great exceptions, to which I have already referred, I do not find in the old Limoges work any true appreciation of such qualities, neither are they to be found in modern French enamels, most of which are slavish copies of the dead methods and aims of this period of work. But what I do find are, generally, modulated drawings in white enamel upon a black ground, or these black-and-white shaded drawings coloured with flat washes of transparent enamel. Sometimes these are heightened by the introduction of pieces of intensely bright enamels upon foil, which have no relation in the scheme, and no sense of "value" whatsoever.

In point of fact there is an utter lack of understanding of the beautiful artistic qualities of enamel. On the other hand, however, the works which have survived by the most eminent enamellers of that time show a great aptitude for the mechanics of the process, and have a regularity which is worthy of praise. In the case of an enamel, as much as in any other work of art, it is, of course, necessary to think out completely the colour, tone, and the form before the actual enamelling is commenced. And it is because of having a desire to give the design its due colour, which in this case is the most powerful means of its expression, that we choose enamel as the substance rather than any other, in the same manner as we should select a marble in preference to a bronze for a particular expression of form, and *vice versâ*.

Colour and tone and form are intimately related and dependent upon each other, and you cannot take one away without the others suffering. Therefore when you have to deal with colour it will be observed that certain shapes are more suitable to the colour employed than others. To understand this more thoroughly it will be well to take examples. If a photograph of a picture by a great colourist is examined and compared with one of a work by a draughtsman who is not a colourist, it will be noticed that the shapes in the work of the former are different from those in that of the latter. They will be fuller, larger, and not so restrained; and the movement in the lines will be simpler and more noble. Or if a photograph of a Byzantine enamel is put side by side with one of a Renaissance enamel, you will see how beautifully the shapes and lines lend themselves to the colour, and *vice versâ*, in the former; and how in the latter they are quite apart from each other. It is singular that, at a time when colour was so magnificently felt in pictorial art, there should be no sense of it in much of the enamel work of the same period, although the Venetian enamels are certainly much finer in this respect than the Limoges.

In the foregoing remarks it is necessary to understand that I am speaking of colour, not colours. There are many drawings made in colours without there being the smallest sense of colour in them. It was from the preceding conclusions, I asserted that most of the work of the Limoges enameller was so dull. There are some noble exceptions, to which I referred in my first chapter—giving illustrations—but the mass of the work is *colourless*.

The method of work in "painted enamels" is different from any of those described in previous chapters. And it is unlike any preconceived idea of the subject. In the first place, the theory that it was necessary to make little cells in the metal to hold the enamel, with walls between the various colours in order to prevent them from mingling in the operation of firing, was found to be erroneous. Further, the idea that without these cells the enamel would fly off the metal was seen to be a mistake. On the contrary, it was discovered that there was no necessity for these cloisons—for they were of no technical value. It goes without saying that any enamel can be made to flow by excessive heat, just as the metal upon which the enamel is fired can be melted, as many beginners unhappily discover. But with due care and experience, there is no danger of such an event occurring. There are several conditions which successful enamelling demands. They are of the utmost importance, and therefore I place them first, before describing any of the processes employed in the making of painted enamels. They are as follows: use hard enamels, and pure or almost pure metals, and pure water, *i.e.* chemically pure. Further, great cleanliness must be exercised: clean metals, clean tools and brushes, clean saucers, pots and planches—a clean furnace, and above all, clean, freshly ground enamels. Painted enamels are generally done upon copper. And for this purpose thin copper is the best. The copper is cut with shears to the required shape and size, and then it is raised to a shallow bombé form,

so that the plate of metal rests upon its edges, leaving the underneath side free of the planche upon which it is subsequently placed for firing. The reason of this is, that the convexity helps to maintain the shape of the plate and prevents it warping in the furnace. It is made convex with steel or hematite burnishers, such as are shown previously by an illustration. The burnisher is pressed along a curved line, varying from one-quarter of an inch to one-eighth, in proportion to the size of the plate, within the edge of the metal from point to point, while the plate is held at an angle of 45 degrees to the surface plate. This line is carried round the other edges of the plate, and then the burnisher is rubbed across it repeatedly in every direction within this line, until the plate assumes a form in section thus :  through the middle ; while the edges lie perfectly level with the surface plate. After this has been done—and, perhaps, to get it true it may be necessary to anneal it several times—it is cleaned by being placed in a glazed porcelain bath containing a mixture of sulphuric acid and water, in the proportion of 1 to 20 parts. Then it is washed in water, and afterwards it is either dipped into strong aqua fortis, plunged into water to wash the acid off, and dried in warm oak sawdust ; or it is rubbed bright with pumice powder and whiting. Thus, having obtained a clean piece of metal, the first layer of enamel is placed on the underneath side by means of a palette knife, a brush or spatula, and water. The water is dried out of it by blotting paper. It is then turned over, and the design having been drawn on the copper, this is filled in with the various enamels suitable to the design. After that it is fired and worked on either by heightening parts with white or foil, which are glazed with clear enamels, or the first coat of different enamels is amplified, varied, darkened or modified, as the case may be, by other layers and gradations of enamel. Thus by very careful manipulation any degree of variety in strength, in brilliancy of

lustre, or depth of colour can be obtained. The only thing to be avoided is the danger of the plate falling in through too many firings or too great heat. It is advisable in making the design to pay as strict attention to every step in its journey towards completion as to the main result. The many pitfalls incidental to the craft, the innumerable combinations, and the different properties which enamels possess, cannot be indicated here. Neither is it possible to teach the process by any book, how ever long, without each step being demonstrated and then practised by the learner. But the better trained in other arts the student is, the more chance has he of ultimate success in enamelling.

To my mind, the domain of the enameller is the imaginative, and herein I include all real design and ornament. The methods of and results obtained by oil or water colourists are not those of the enameller; and it is quite wrong to try to translate a design in these methods. To copy a picture made in oil or water-colour is a mistake. The method of enamelling is different from that of any other kind of art, and neither can the process nor the result be imitated by any other. And this is true of all arts. When the design is to be carried out in opaque enamels, the work is very simple and only requires sufficient care to make a good enamel. But when the work is to be painted in transparent enamels, the possibilities are infinite, as are also the difficulties of their attainment. And I have no doubt, in years to come, when the art is better understood by artists, critics, and the public, when their knowledge has increased and their eyes have become accustomed to the peculiar qualities of enamel—to the same extent, at least, as their knowledge of other mediums—that there will be established a standard by which these qualities will be known and appreciated. The awakening of oil-painters with regard to the greater possibilities of their medium, as witnessed by the movement, on the one hand, of the pre-Raphaelites, and

of the impressionists and pointillists on the other, seems to support this contention. In enamelling the *material* enters more largely into the view of the spectator than any other question. And rightly so. There is no doubt that taste is acquired; and from habit more than from knowledge people regard things as beautiful or not. Consequently it will take years for enamels to be regarded with right eyes and to receive intelligent criticism. Let us then start by thinking of enamels as creations, not copies, made, as it were, of precious stones, only with this difference—that instead of a narrow range, they are capable of an infinite variety of coloration. And let us regard the “pitch” as being not due to or relying upon any comparison with nature in any form whatever, but depending solely upon the inherent quality of its material. The enameller has not to consider the intricate problems of colour notation in the same way as the painter in oil, although the laws of contrast and harmony, as laid down by Leonardo, Chevreul, Delacroix and others, are, of course, just as true for him as for any other artist. To repeat: enamels should never be copies of anything in nature nor of any other process of painting in art. They should be creations. They are for the representation and embodiment of thoughts, ideas, imaginings, and for those parts of a world which exist only in our minds. Even in portraiture, it is only the character, the charm of disposition, the mental aspect of the sitter which should be attempted, or which can be portrayed. No effort should be made to imitate the texture of the coat and skin, but—

“ Divinely through all hindrance break,
And find the man behind it.”

It is essentially in this realm that enamels can be rightly used, whereas all attempts to copy effects of nature are foredoomed to failure, while to enter into competition with other methods in which these effects are more easy of achievement, would be degrading to the art of enamelling.

APPENDIX.

ON MINIATURE PAINTING ON ENAMEL.

THE origin of the Art of painting miniatures on enamel is of comparatively recent date. It first arose upon the decline of Limoges enamelling which was a form of true enamelling. It differs from true enamelling in this one important point, that the colours employed are not vitreous enamels, but are, broadly speaking, raw oxides (*i.e.* uncombined with flux) and consequently they possess none of the qualities of enamels. These oxides, to which sometimes a very small amount of flux is added, separately, are painted upon a surface of white enamel, or *pâte laid* over a gold plate. And when the painting is "fired" the whole enamel becomes viscous, and so the oxides or "enamel colours" adhere to the surface. It is very nearly allied to china painting, and for this reason has been cultivated by painters upon china for the last hundred years or so. The most eminent painter in England was H. Bone—who was elected a Royal Academician for his copies of the Old Masters in this manner. His most important work was a copy of Titian's "Bacchus and Ariadne," for which he was paid £2,000. But the greatest miniature painter was Jean Petitot; many examples of his work may be seen at the South Kensington Art Museum, and in the Wallace Collection. He painted portraits of the celebrities, and of the Court of Louis XIV. of France. Some of these are amongst the great portraits of the world, and of unsurpassable beauty of finish.

(^a) The method employed by Petitot and all others except myself may be briefly described as follows: A piece of fine

(^a) I use *enamels* very finely ground, not enamel colours, because I think they are much more beautiful.—A. F.

THE ART OF ENAMELLING.

gold—about No. 5 metal gauge—is slightly domed, and then both sides of the plate are covered with finely ground white enamel—or pâte—which is fired, and afterwards filed to a perfectly even surface and fired again.

In the case of pâte being used, a finely ground layer of flux is put over it and passed through the furnace. The subject is then painted with the colours mixed with turpentine and fat oil of turpentine; or with oil of lavender or tar, according to the taste of the artist. The colours used are such as will remain impervious to the heat of the furnace. This operation may require repeating five or six times, as the case may be, according to the degree of finish required. Afterwards—if the work is successful—it is usual to cover the whole surface with a coat of flux, which is prepared specially for this purpose, and which serves to protect the painting. It is one of the most delicate of all the arts, and, compared with miniature painting upon ivory, possesses this one transcendent quality—that it is practically everlasting when properly done. Witness in this respect the miniatures in enamel which were done by Petitot. Miniature painting on enamel, although not a true enamel, occupies a very useful and refined place in the arts, and has been practised in this country from the time of Charles I. until the present day.

ALEXANDER FISHER.

PLATES.



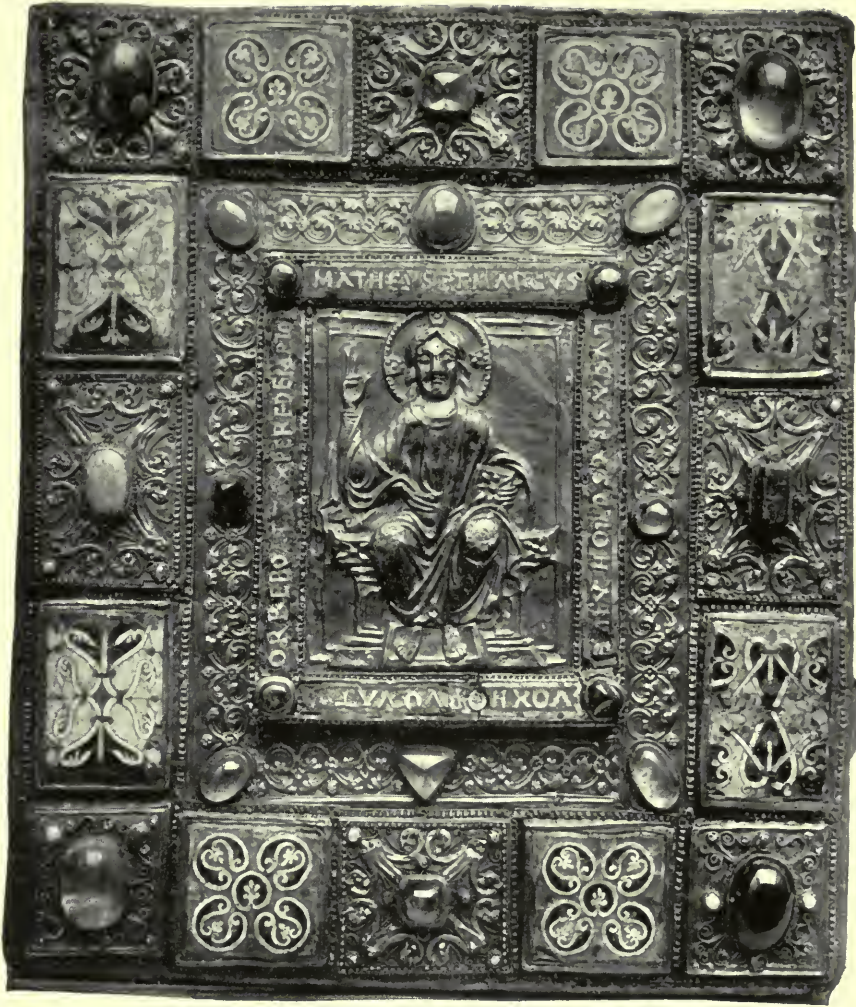
DESIGN FOR A YACHTING
CUP FROM A PASTEL DRAW-
ING BY ALEXANDER FISHER



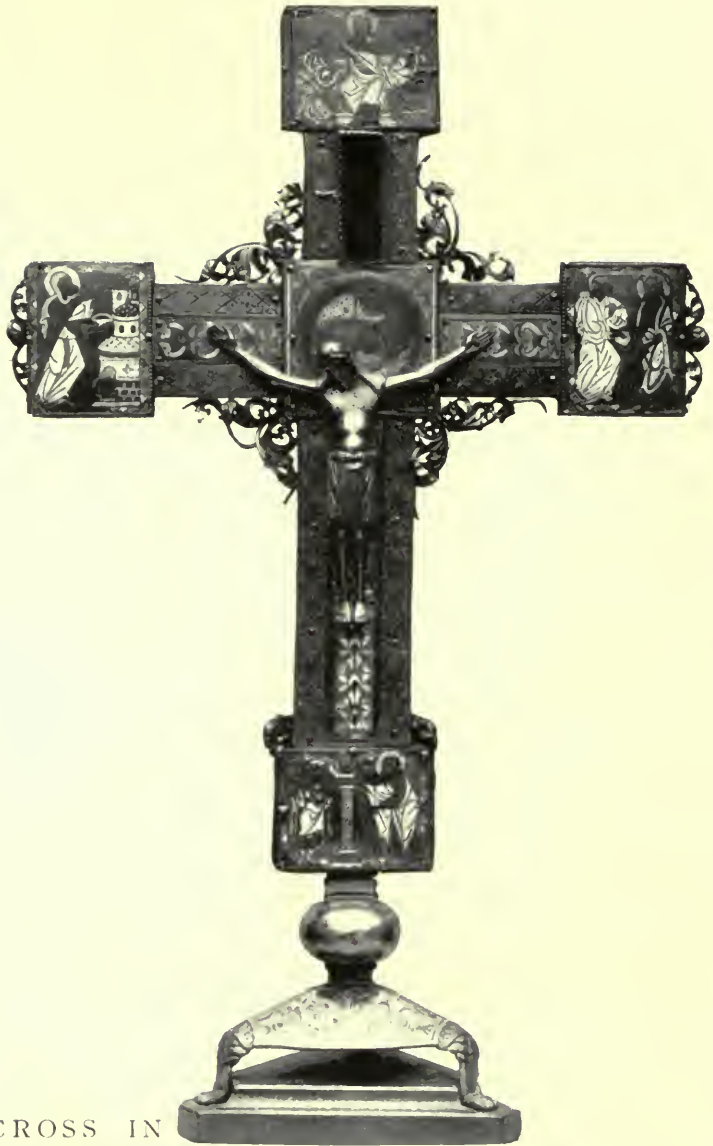
GOLD BRACELET
SHOWING WIRE
SETTING FOR CLOI-
SONS (B.C. III. OR II.)



SMALL CROSSES IN TRANSPARENT
AND OPAQUE CLOISSONNÉ
ENAMELS (X. OR XI. CENTURY)--
SOUTH KENSINGTON MUSEUM



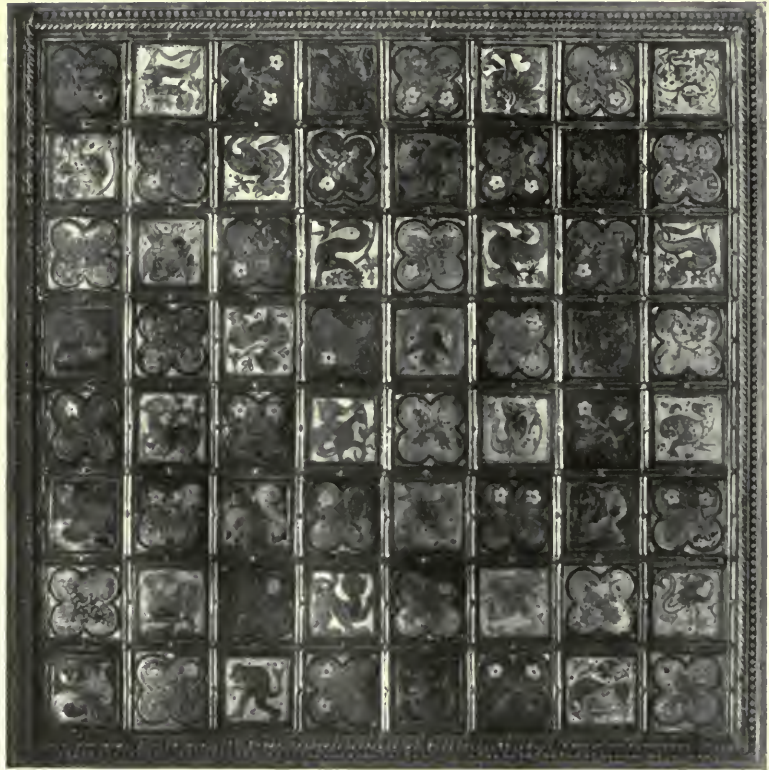
TEXTUS COVER IN GOLD REPOUSSÉ À PLIQUÉ,
WITH PLAQUES OF CLOISSONÉ ENAMEL IN
OPAQUE, AND TRANSPARENT ENAMELS
WITH GEMS, PASTE AND PEARLS (XI. OR
XII. CENTURY)—SOUTH KENSINGTON MUSEUM



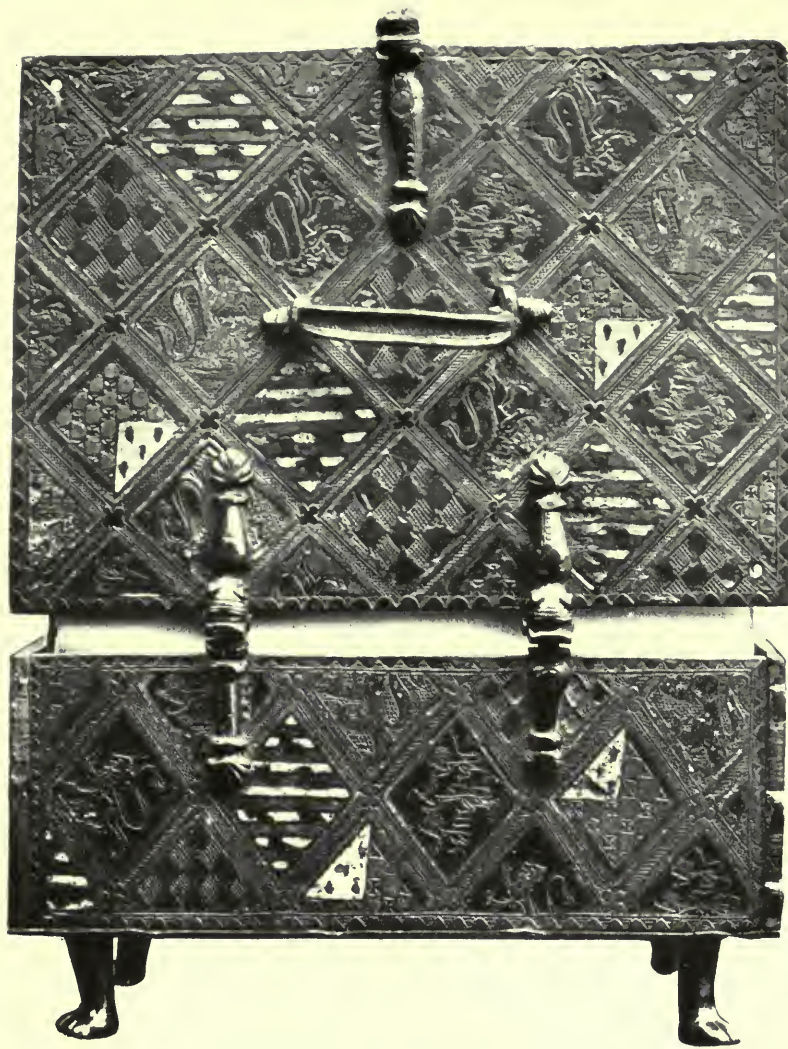
ALTAR CROSS IN
COPPER GILT WITH
CHAMPLEVÉ ENAMELS
(RHENISH - BYZANTINE,
XII. CENTURY)—SOUTH
KENSINGTON MUSEUM



PYXES IN OPAQUE CHAMP-
LEVÉ ENAMEL ON COPPER
GILT (XIII. CENTURY)—
SOUTH KENSINGTON MUSEUM



CHESS BOARD IN CHAMP-
LEVÉ ENAMEL ON
COPPER GILT (XIII.
CENTURY)—SOUTH
KENSINGTON MUSEUM



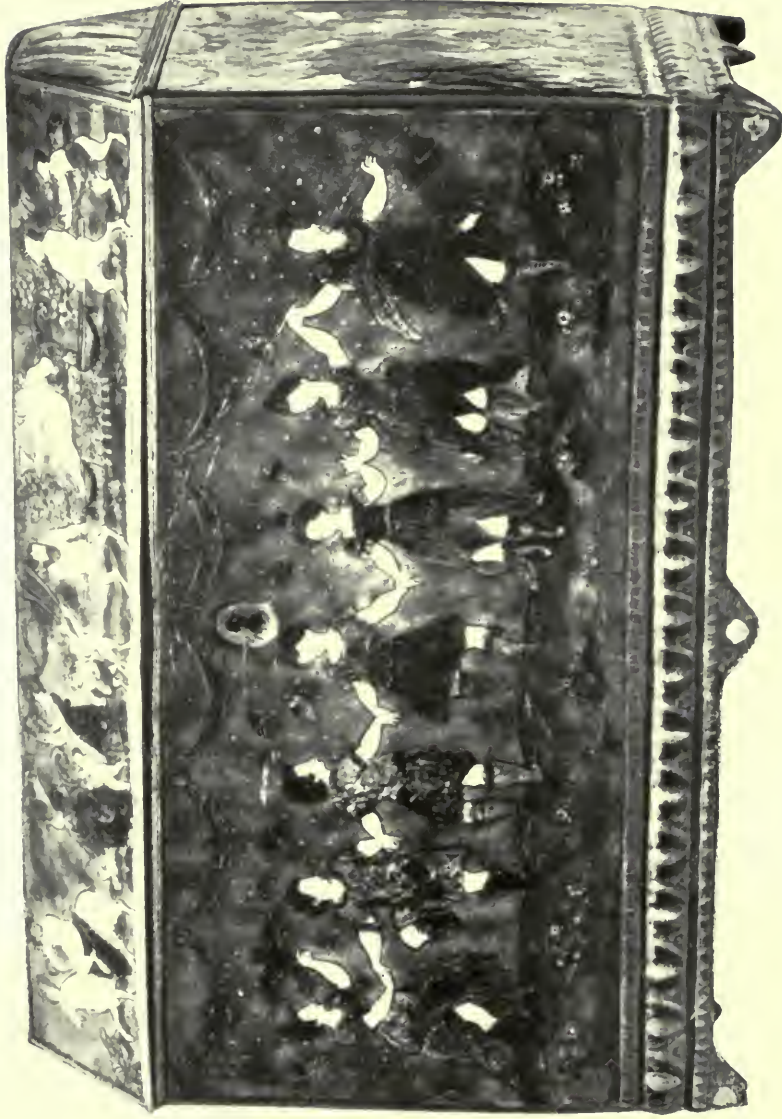
COPPER BOX WITH COATS-OF-
ARMS IN OPAQUE CHAMPLEVÉ
ENAMEL (ABOUT 1290—1300)—
SOUTH KENSINGTON MUSEUM



THE "KING'S CUP" IN
GOLD AND ENAMEL (XV.
CENTURY)—BRITISH MUSEUM.



SILVER GILT BEAKER
WITH "PLIQUE À JOUR"
ENAMELS (BURGUNDIAN,
EARLY XV. CENTURY)—
SOUTH KENSINGTON MUSEUM



JEWEL CASKET IN ENAMEL-
LED COPPER (XVII. CENTURY)
BY JEAN LIMOUSIN



RELIQUARY, ILLUSTRATING THE
USE OF CHAMPLEVÉ ENAMEL
—SOUTH KENSINGTON MUSEUM



CANDLESTICK OF CHAMP-
LEVÉ ENAMEL ON BRASS
(ENGLISH, XVII. CENTURY)



ANCIENT CHINESE CLOI-
SONNÉ ENAMEL BOWL—
IMPERIAL INSTITUTE



JAPANESE CLOISONNE
ENAMEL VASE—
IMPERIAL INSTITUTE

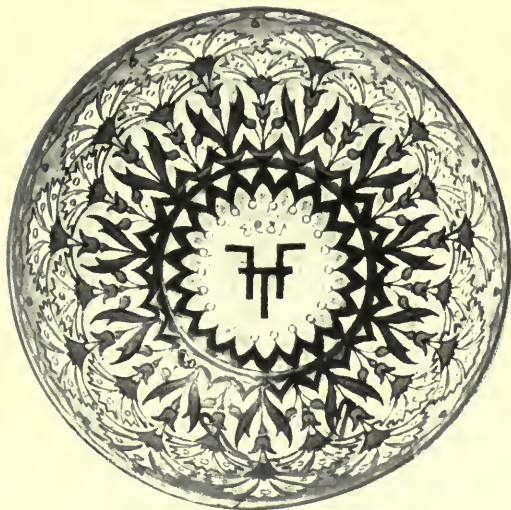


ANCIENT CHINESE CLOI-
SONNÉ ENAMEL POT—
IMPERIAL INSTITUTE



THE STAGES OF CLOISONNE
ENAMELLING :

1. PATTERN OUTLINED IN INK
2. WIRE SOLDERED ON OUTLINES
3. FIRST COAT OF ENAMEL, FIRED
4. SECOND COAT OF ENAMEL, FIRED
5. THIRD COAT OF ENAMEL, FIRED
6. ENAMEL POLISHED



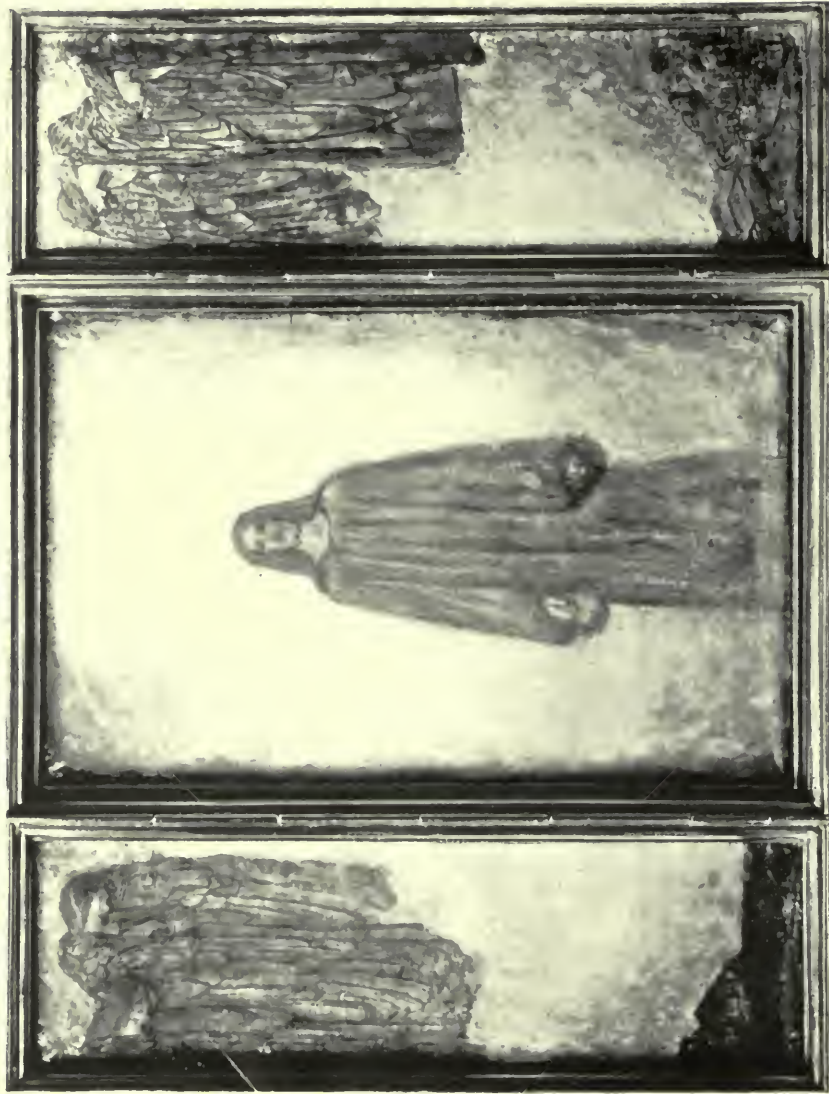
PLAQUE À JOUR ENAMEL
BOWL, BY FERNAND
THESMAR — SOUTH
KENSINGTON MUSEUM



PORTRAIT IN ENAMEL OF THE
LATE BISHOP OF LONDON, BY
PROF. H. VON HERKOMER, R.A.



"IN PRAISE OF WOMAN-
HOOD": FROM A TRIP-
TYCH IN TRANSPARENT
ENAMELS, BY ALEXANDER
FISHER (BY PERMISSION
OF MRS. EASTON)



"BEHOLD I STAND AT THE DOOR AND
KNOCK," FROM A TRIPTYCH IN SILVER
AND ENAMEL, BY ALEXANDER FISHER (BY
PERMISSION OF CHARLES CRANE, ESQ.)



CHALICE IN SILVER
AND ENAMEL, BY
ALEXANDER FISHER



BOOK-COVER IN REPOUSSE
GOLD ENRICHED WITH
TRANSPARENT ENAMEL,
AND PORTRAIT IN ENAMEL
BY ALEXANDER FISHER



JEWELLERY, BY
ALEXANDER FISHER

PLATE 26



JEWELLERY, BY
ALEXANDER FISHER

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