

Sperati's Technique

The year 1942 brought a great change in Sperati's modus operandi, as is evident from the last chapter. Before the French customs caused him to be prosecuted in that year for violating their export regulations, Sperati had essentially no public visibility. He was a secretive man, operating behind the scenes.

The customs case, whether provoked by him as he claimed, or the result of his being caught unintentionally, brought Sperati immense publicity. From that time on he sought publicity about his skills and exploited it to increase his sales of forgeries as such.

In 1944 he published his book, La Philatélie sans Experts. It offered his views on philatelic experts and on all manner of issues affecting philately. It has been quite adequately summarized in Sperati I. In that first book of his, he promised to write for later distribution another book which he planned to title Confidences aux Experts (Secrets for the Experts). This book, he wrote, would be printed in one thousand numbered copies and have limited circulation to the experts. It would draw on his 25 years of serious technical research.

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By 1946 he had refined his plans for Confidences aux Experts. He advertised that there would be "only" 382 copies, with distribution limited to philatelic experts, merchant-experts and professionals charged with issuing guarantees. There was to be one copy accompanied by 225 specimens of his forgeries, at a price of 185,000 French francs. A second was to be accompanied by 225 proofs of the artist in colour, at a price of 135,000 French francs. Both of these were soon sold, according to Sperati's notation on his advertising notices.

185,000 FF
~ 1220 x 220
135,000 FF
~ 160
~ 8425
9/30/46

One hundred copies were to be accompanied by collections of his forgeries, the originals of which would have a minimum value of 200,000 French francs. It appears that few, if any, of these were sold, perhaps due to resistance from professional philatelists. At least that was Sperati's claim in letters he wrote.

price?

Finally, there were to be 280 copies accompanied by collections of his forgeries, the originals of which would have a minimum value of 100,000 French francs. These were said by Sperati in a letter to have sold very poorly.

price?

Possibly some copies of Confidences aux Experts were sold and exist, but one has not been available for examination. In one advertisement, at a time when subscriptions were apparently lagging, Sperati wrote: *in case at least 200 subscriptions are not reached from Paris, Marseille and Lyon by 30 November (1946)--I shall give up on the publication of the work, concluding that my book is not sufficiently interesting to justify its appearance.* He later extended this deadline to 31 December 1946.

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In 1947 Sperati began selling collection of his forgeries without the book Confidences aux Experts.

The subjects to be treated, technically and confidentially, were advertised to include: materials, fabrication, and detection. Imitations were to be covered as regards: Nomenclature. Descriptions. How and by what means I have been able to catch the experts napping in regard to all the stages of fabrication. Also, paper (white and tinted), watermark, gum, perforation, image, dimensions, obliteration, surcharge, retouches, finishing operations; followed by a study mentioning the methods of detection applicable to the processes employed. ✓

It was in November 1953, immediately after turning over his stock to the British Philatelic Association, that Sperati completed a comprehensive manuscript on his techniques. By then the title had become La Technique complète de la Philatélie d'Art and the contents had grown to a complete description of the processes and formulas that I have used, technical explanations in support of the results obtained and details of all that I have innovated, created, invented, in the course of my researches, an experience of more than thirty years, to perfect this technique. It will therefore be a more complete account than I was proposing to reveal in Confidences aux Experts where I was limiting my contribution to that which would help an expert, but which would have been insufficient for a work entitled La Technique complète..... ✓
...personally, I have estimated that I have not long to wait to "empty my mind".....At the age of 70 years this book takes the form of a "technical testament" and that is what I hope to achieve by this work.....Will I be subject to criticism? Of course. That should please everyone....."The dogs howl, the caravan passes". ✓

This work of Sperati remained unpublished* with only five or

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[FOOTNOTE: *As noted in the last chapter some extracts from the manuscript appeared in Point de Vue-Images de Monde, 23 January, 30 January and 6 February 1959, in a series of three articles by Paul Almasy. Further, Kenneth F. Chapman evidently had access to the manuscript and drew some from it in his five articles issued as a supplement to The Philatelic Magazine, London in 1981-82. ✓

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ten typewritten copies made by him (actually by his then secretary). His book contained 120 pages plus a title page. The rights to the English translation were held by the British Philatelic Association and are now held by its current residuary legatee, The British Philatelic Trust. It is by their permission that the partial summary in this chapter is provided. It is "partial" because the chemical formulas used by Sperati are, in general, omitted. These would be of little use to the ordinary philatelic expert or specialist and their omission is useful as a barrier to anyone who would seek to follow in Sperati's footsteps. It would be, in any event, highly difficult to emulate Sperati, using this information, since a large part of his success was due to his acquired skills in the manipulation of chemicals, paper, inks and

photography, as well as his tremendous expenditure of time and energy.

INTERVIEW

Jean de Sperati's La Technique complète de la Philatélie D'Art, which is henceforth abbreviated as La Technique, is divided into nine chapters after the Preface. These are:

Chapter I	Introduction
Chapter II	The Original
Chapter III	The Matrix
Chapter IV	Completion of the Matrices
Chapter V	The Cliché
Chapter VI	The Ink
Chapter VII	The Paper
Chapter VIII	The Impression
Chapter IX	The Trimmings

and to provide the highlights further not interested in the details. using chemical and formulas

These will be reviewed in order, but first it may be useful to give a short overview of Sperati's techniques, to orient the reader. His basic process was to use contact photography to prepare a lithographic printing surface. In order to obtain the highest accuracy in his reproductions, he made a genuine stamp (the original) transparent to light and then placed its printed surface in direct contact with a photographic emulsion on the surface of celluloid or glass. Using light behind the stamp, he exposed the emulsion and obtained a negative.

At this point, if he were to make an exposure with the negative's emulsion side in contact with the emulsion side of a film (or glass plate) he would create a positive faithful to the design of the original, as viewed from above its exposed surface. If he then made that positive into a lithographic transfer surface, he would obtain a mirror image of the original when he printed from it.

To avoid obtaining a mirror image of the original, Sperati developed a process for lifting the emulsion from the exposed side of his negatives and transferring it to another piece of celluloid or glass. This he called his matrix. Now, using the matrix and contact photography, he created a mirror-image positive of the original. He called this a cliché after it was made into a lithographic transfer surface by the use of chemicals. His clichés were what he printed from directly.

The details are omitted in this short overview. Many of these will now be dealt with in the subsequent review of La Technique, which follows. This will principally consist of a paraphrasing, occasionally a literal translation, and sometimes a summary. There is interpretation also at a few points. Lost in this approach are many of Sperati's colourful expressions which are, however, generally not substantive.

I. Introduction

This chapter ^{was} Sperati's own effort to present an overview. He first recognized^s that the reader might wonder at the need to discuss the original since it was, in effect, as nature is to the painter or sculptor. In fact, he wrote^s, innumerable problems arise and every original has peculiar characteristics of its own. It was not possible for him to use the same treatment for two different stamps. ✓ ✓ ✓ ✓ ✓

The original, he wrote^s, must be in a fit state for handling through the various processes. Further, it must emerge intact. It is to be used to create a matrix without the use of a standard photographic apparatus. However, it is then necessary to resolve the problem of light exposure, which is essential to obtaining a good matrix. ✓

There is no standard procedure for obtaining the matrix. The method used, in order to obtain a perfect design, must be modified according to the quality of the model used as an original.

Next, the matrix must be modified in a chain of operations, some very delicate, before it can be used to make a cliché. (This is the transfer and reversal of the negative, discussed above.)

Each cliché must take into account the variations in the originals. There is the question of a holder for them, of sensitive surfaces, of how to use them, of formulae and many others, just as in the preparation of the matrices.

Even with the clichés in hand, many problems remain. For example, the inks, that is to say, the colours, including black. They must be chosen, blended--which is so very often necessary.

And the problem of paper. What researches are necessary, what improvisations, what formulae? How to obtain the papers of another age which differ from those of the present?

Add to that the difficulties arising from the complications of the paper's reaction to various forms of light--daylight, artificial light, Wood's lamp (ultraviolet light), sodium lamp. ✓ ✓ ✓
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Next the cliché must be submitted to a special preparation and the design fixed, before it is ready to be used in making an impression.

Sometimes, he writes, the fixation of the design and the impression are easy, but other originals are more difficult and may even be discouraging at first. There will be differences in how one prepares for the impression, and in the spreading and application of the ink.

Now it is necessary to go through the same operation again, if it is a question of using a cancelled stamp for the original. Often this is complicated. It is necessary to avoid standardization of cancellations, which would detract from the finished product. However, sometimes such standardization is unavoidable, if it is impossible to find an original in mint condition.

Consequently, Sperati promises the reader to give an explanation of his method of composing the obliteration, its reproduction, its cliché and its impression. Additionally there is extra work to be carried out in making modifications and variations, principally concerning the dates. Certain retouches are necessary in order to obtain the characteristics of different types of cancelling devices.

Then Sperati discusses the need to age the stamp properly. After that the "brand new" stamp will be transformed *into a specimen showing all the necessary signs of old age*. This must be done for the paper, the ink, the obliteration and the gum, if a mint stamp.

II. The Original

Sperati uses the word *original*, if a suitable example is available for copying. Sometimes when it is not, a *prototype* or *model* will take its place. He first discusses the original-stamp and later he discusses obtaining models of obliterations.

In the case of originals, it is obvious that there will rarely be available an outstanding new specimen, with unstained paper, a vivid colour and a complete exterior frame. Such a specimen would be costly, reducing the financial reward to the workman. Lacking the perfect original, one turns to other useables. Firstly, a mint stamp which is a second choice specimen, perhaps without gum, or with a small hole or tear or thin spot, so long as the design is intact.

Next in preference come the originals of which a part of the design is cut into. Perhaps one or more sides is small, or perhaps there is a tear. If the repair of a tear or the filling of a thin spot will remedy the situation, that is acceptable, lacking a better original. If the design has to be modified, retouching it by hand, such a specimen is unusable and should be rejected. If using a used original, a copy with a light cancellation, covering only a small part of the stamp is to be preferred.

~~In dealing with~~ ^{Regarding} the question of cancellations on an original it is necessary to refer to the ~~Chapter~~ ^{Chapter V} dealing with the manipulation of matrices and the ~~Chapter~~ ^{Chapter VI} dealing with retouches after the impression. Several cases arise: where the obliteration is in oily black ink, or in an oily coloured ink (red, blue, green,

violet), or in a water based ink which is always or nearly always violet.

In the first of these cases, oily black ink, manipulation on the matrices and in the *finishing* are necessary to try to remove or leave only faint traces in a small area. In the second case, obliterations in coloured inks, if the obliteration is not too heavy, one can sometimes use a colour filter at the matrix stage (see later in the chapter "The Matrix"). Other times, in a very delicate operation, they may be removed chemically (see the chapter "The Paper" for the decolouring formulae*).

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FOOTNOTE: *Which we omit.

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Obliterations with heavy oily colours, derived from mercury (vermillion), or from lead or chromium (yellow, orange), if they are lightly applied or insignificant, can be treated as indicated in one or the other case above.

For obliterations in water based inks (aniline or similar), if the colour of the stamp is not sensitive to water or alcohol, Sperati describes a treatment for removing the obliteration.

But what does one do, when there is no specimen available except one with a heavy or indelible obliteration, and one wants to proceed to complete an issue or to reproduce a very rare stamp? Manipulations will simply damage the design, so one must take the bull by the horns and give the vignette a *standard* cancellation. Sperati notes that his reference collections (sold in the forties and fifties) contain several vignettes with this kind of obliteration. His methods for that case are explained in the chapters on "The Cliché" and "The Impression".

Returning to the discussion of the *originals*, it is necessary to submit the original to a certain preliminary treatment in order for it to play the part of *master copy*. This treatment makes it possible to make matrices without the use of the photographic apparatus usually associated with reproductions. By not using an optical apparatus, Sperati writes, he is able to obtain distinct and exact images far superior to those obtained by the more usual methods. Additionally, a great flexibility in the development of the image, together with his formulae and procedures, makes it possible to obtain a degree of precision never before obtained. These remarks also apply to his method of fixing the image, the manufacture of his clichés and his method of impression.

The preliminary treatment involves making the original as transparent as possible. First the original is immersed in cold water, preferably distilled, to remove all traces of hinges or paper. If the stamp is gummed this process will also remove the gum, provided that one is able to dispense with this. If not, a special treatment will be detailed later.

At this point Sperati presents an extensive discussion of how to make the unprinted portion of the original transparent to light through the use of various liquids, heat and pressure, details which are mainly omitted here. His test at any point is for the design to be as visible from the back as it is from the front. When it is not he goes on to more extreme treatments. He is careful to warn the reader always to use tweezers, just at the point where he describes the use of boiling water!

Sperati also deals with the cases where the colour of the original is sensitive to boiling water or when the original is gummed. He has alternative treatments for these.

Sperati's objective, of course, is to be able to illuminate the back of the original and, with its printed surface in contact with a photographic emulsion, expose the emulsion. Because of the contact between printed design and emulsion, light leakage around the design is minimized and high fidelity in its reproduction is achieved.

The effect of forcing a transparent liquid into the original appears to be that light paths are created through the otherwise opaque unprinted portions of the original. The reader can observe this effect to some degree by examining the back of a stamp before and after immersion in water.

Now Sperati turns to the production of obliterations and how to obtain a great variety, as he himself did. In all cases he develops a prototype or model which he can then use to produce a matrix and subsequently a cliché.

His first case is when he copies a model from an authentic document, that is, with the cancellation impressed clearly on a stamp, either detached, or on a letter, or on a piece. He chooses a specimen of which the details are clearly visible and also, if possible, complete. If part of the cancellation is missing, he attaches it to a piece of paper and retouches the missing portion. If necessary, he strengthens any weak or missing parts by using a black water soluble ink which can later be removed by washing. If the cancellation to be used for a reproduction is on cover or on a piece, it may be cut out provided the piece bearing it is not of great value. If this is not feasible, then the methods used for the second case (below) can be used. Alternatively, the cancellation can be photographed with a camera, printed, and then used as a prototype. In this case special plates or films are used to obtain reproductions with great contrast.

His second case, the one he has used for most of his cancellations, is to make a tracing from a cancellation in an auction catalogue, a dealer's circular, an advertisement, etc. First it is necessary to adjust the size to that of the genuine stamp and cancellation. He does this photographically, using the

stamp size as his measure for enlargement or reduction. At this point tracing can begin.

Tracing requires a certain skill and experience, but a glance will show the degree of acceptability of the design obtained. In his work he has used several methods to make the tracings and he describes three of these, all of which are capable of giving him satisfactory results.

Method A. Use a sheet of thin unglummed wove paper and make it transparent by the use of certain liquids. Cut squares from this sheet, each larger than the cancellation, and superimpose one on the cancellation to be copied. If necessary to place these on a genuine piece, it may be protected with a piece of thin cellophane. The transparent paper is held in place by a special adhesive (described) used at the four corners. The tracing is then made with the use of a magnifying glass. In his own work he uses (jewelers) spectacles with interchangeable lenses, allowing several magnifications and, at the same time, leaving his hands free.

Take care not to disfigure the design. The letters and figures particularly need close attention in order to assure the correct form. He uses for this work an H or HB Kohinor, sharpened to a fine point. In order to inspect the progress of his work without displacing the tracing paper, he slips a piece of white paper under the transparent paper.

When he is satisfied with the tracing he detaches the transparent paper and fixes it on a sheet of white paper, in order to strengthen the image. He uses a graphite powder scraped off a soft pencil (B3 or B4) in a solution of linseed oil. This is very carefully applied with the aid of a sable hair brush or a piece of wood with a finely tapered point. This work is somewhat the work of an artist for it is necessary to obtain an authentic appearing obliteration. Alternatively, this strengthening can be done by going over the two sides of the design on the transparent paper with a very delicate pencil. Erasures can be made at any point by the use of a knife.

Method B. In this method, Sperati restores the opacity (or nearly so) of the tracing paper and fixes it with his special adhesive to a slightly larger piece of white paper. He strengthens the image by the use of a drawing-pen which gives very fine strokes, dipped in a soluble ink which he makes himself from lamp-black, etc., into a very thick paste. The lines can be corrected with a paper knife, such as that sold under the name *vaccinostyle*. Before making the matrix the paper must again be made transparent, with the same methods as used for stamps.

One can also use sticks of Chinese ink, of good quality, which dissolve in warm water to make a beautiful, intense black which flows freely from the pen. One should avoid using the Chinese ink

known as indelible, which is alkaline and contains phenol. This runs and gives an enlarged stroke.

Method C. Here the image is traced on a thin sheet of cellophane. To make a pencilled sketch it is necessary to remove the surface gloss. He uses a very fine sand-paper (grade 000) which is made still finer by rubbing it against a piece of hard wood, or better still, grating it with a thin blade of scissors, or of a pen-knife, etc. He places a long, thin strip of cellophane (6 x 13 cm) on a very flat surface, such as a pane of very thick glass, with a piece of Bristol board between the glass and cellophane. Rubbing the cellophane with the sand-paper, it is possible to obtain uniform deglossing. At this point a pencil will mark the cellophane and an obliteration may be traced. Subsequently, attach the cellophane to a piece of white paper and strengthen the image as in method B, that is, with a drawing-pen and soluble black ink. To make a correction again use a pen knife, but only when the ink is dry. Otherwise it will flake and come away in the places where it is touched by the pen knife.

The details of making the matrices from the images of obliterations--and their embellishments at that stage and their subsequent retouches--are in the chapter on "The Matrix". One must remember that the obliterations are not mute, but have different dates and modified characters. These can be constructed, a detail of some importance. The time of making the sketch is the time to make certain modifications in order to increase the number of varieties. For example, when making several sketches of a similar nature, insert for part of the design a different drawing. Take care that the characters and figures resemble printing and practice this technique in order to produce a little work of art.

With Sperati's typescripts^{manuscripts}, he includes at this point actual samples of his three methods of obtaining a prototype. ✓

III. The Matrix

As a result of the work of the last chapter we now have originals and prototypes resembling stamps and also obliterations, ready to manufacture the matrices. Since there are differences in the treatment of stamps and obliterations, they will be dealt with separately. ✓

For the stamps it is necessary^{approach} to take account of their colour. Because of Sperati's operations using transparency and direct contact to obtain the matrix, it is necessary to consider the degree of covering, or opacity, of the inks of the original. ✓

To understand this better consider a colour obtained with vermilion or red sulphur of mercury and a red lacquer. The vermilion colour increases in density and darkens in its transparency and will furnish a sufficient contrast to give a good

matrix. On the other hand, a red or carmine lacquer is a light colour which only darkens slightly in its transparency, especially if its intensity is weak, so the use of a green filter, the colour complement to red, is needed in order to increase the contrast.

The subject of chromatic filters is of the highest importance, because the judicious choice of them enables good matrices to be made, or at least a quality which will give satisfactory results in making reproductions.

Sperati writes that he makes his own ^{liquid} filters in the following colours: violet, blue, green, yellow, red-orange, red and red-violet. For each he gives the chemical that he uses. After dissolving the stain he uses it between two good quality plates, separated by 2 to 3mm, and made into a fluid tight pocket.

^{alternatively} He also uses filters made by soaking, for cases where it is necessary to adjust the density to obtain the best results. For these he uses several photographic plates of which the glass is normally of the best quality. He removes the silvery coating chemically and then washes them until every trace of salt is removed. Then he dries them. He notes there are two kinds of plates: one with a soluble coating of gelatine; the other with an insoluble coating. The latter should be rejected for this use, because its gelatine will not absorb the coloured liquid, as is desired. The solubility of the gelatine may be tested by soaking a small corner of the plate in hot water. The right kind will have its gelatine liquified and the glass will appear to have become rid of the gelatine. If, however, the gelatine is insoluble, it will appear to be shrunken and rippled on the surface of the plate.

In the absence of plates with soluble gelatine, after having desilvered the insoluble ones and made them transparent, it is necessary to cover them with a coating of 10% of film gelatine. This is done with the plate level, in a place free of dust, and allowing it to dry naturally.

The same process can also be used with commercial celluloid film.

To assure that the coating absorbs the coloured liquid, the following techniques may be used. Soak a tuft of absorbent cotton thoroughly with the liquid and pass it to and fro over the plate until a regular intensity is obtained. Remove any excess liquid with a piece of fine linen or better still with a piece of smooth gumless paper, making pressure with a small squeegee, or some substitute.

One can also colour the plate by immersing it completely in the liquid for several minutes and then removing the surplus liquid as above. In colouration by immersion it is a good idea to make both sides absorbent by gelatine.

In all these little operations, and there will be very many more in the course of the following chapters, it is impossible to detail a fixed method for their execution. After a little experience, at the same time utilizing one's own ideas and with the help of the explanations herein, one should be able to obtain satisfactory results.

As for the intensity of the colouration of the filters, there are several rules of approximation. For the green screen, when used to illuminate a bright red object (without any white light mixed in), the object should appear an intense black. For the red-orange, used with a blue object, it should appear black. For violet and dark blue filters, used with a yellow or yellowish object, it should appear as a grayish brown to dark yellowish. These last two filters are employed to obtain deepenings, for pale yellows and brown yellows that need reinforcement. Yellows of chromium or of zinc, if they possess a certain intensity, do without such filters.

Here are several suggestions for the logical use of the various filters:

Dark violet filter--Intensifies (increases the contrasts) of yellows, greenish-yellows and yellow browns. Neutralizes violets.

Dark blue filter--Intensifies oranges, greenish-yellows and yellow-browns. Neutralizes blues.

Green filter--Intensifies reds and orange-reds. Neutralizes greens.

Yellow-green filter--(obtained by mixing ^{two} my green solution with a small quantity of my yellow) Intensifies violets and reds with a violet tinge. Neutralizes yellows and greens.

Deep yellow filter--Intensifies violets. Neutralizes yellows.

Normal yellow filter--Used when the image is sufficiently intense, but when paper is yellowish, or has yellow stains due to dirt or old age.

Orange-red filter--Intensifies blues and blues with a violet tinge. Neutralizes oranges.

Red filter--Intensifies blues with a greenish tinge. Neutralizes reds.

Violet-red filter--Intensifies blue-greens. Neutralizes violet-reds.

Among the colours usually sufficiently intense are the blacks, yellows, reds and greens derived from lead, zinc, mercury or mineral earths and, generally speaking, all colours giving a marked contrast of opacity when examined for transparency on a transparent or translucent stand.

But it must be understood that when it is necessary to make use of filters, the sensitive surface which provides the matrix should be sensitive to the light rays which the filter allows to pass through. So I give it the name orthochromatism and, by extension, panchromatism when the preparation is fairly sensitive

to all the wavelengths of the spectrum. But panchromatism is not of interest here, only in normal photography, whether uni-coloured or coloured.

We have need for a variety of wavelengths, so I shall now address the ortho preparations. As I have already said for images of intense colour or covering, one can do without all the ortho preparation and use them with the sensitive material which I am going to discuss later. But when it is necessary to use a filter between the light and the sensitive layer, the layer must be treated in a preparation called orthochromatisation.

Thanks to the extraordinary flexibility of my method of developing the matrix, I have been able to reduce the number of subsequent operations, because I use the same formulae as I use in my filters. As to the blue and violet filters which I use, there is no need for ortho, because these two wavelengths are intense and the layer is already sensitive by itself to these two colours.

There are several kinds of orthochromatisation.

The manufacturers of sensitive material embody the substances utilized in the emulsion itself. This is not so in my case, for I begin with a sensitive layer which is not orthochromatised and which, for the work with filters, I am able to convert into a layer sensitive to different wavelengths of light. In order to obtain this result I have used the method known as orthochromatisation in the bath, that is, I immerse the plates in the liquids and let them stay there for a certain time. There are many precautions to take in this operation which will emerge gradually from my explanations.

Sperati then details the chemicals and manipulations he uses in baths to make the plates sensitive to various colours: (1) for yellow or green and also being able to be used for the orange filter which colour contains a strong proportion of yellow; and (2) for red or red-orange. He then uses the resulting solutions in a photographer's bath which holds his glass plates vertically, wrapped in black paraffin paper. All this must be done under dark room conditions. After a suitable time the plates must be turned around so that the bottom becomes the top and vice versa. He cautions not to prepare too many, because they do not last more than a few months before spoiling.

Then the plates are washed for several hours, changing the water every half hour. Next they are dried as quickly as possible, first by means of blotting paper or cloth, and then using 95% alcohol to remove the remaining traces of water. With the sensitive surface on top, the plate is then placed on a pad of blotting paper to remove the excess alcohol from the back and a pad of very fine, very porous linen is passed over the face. This rids the sensitive layer of any excess alcohol.

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Next the plates are taken one by one (always in the coloured light of the dark room) to a grooved draining board, which should be enclosed in a chest or trunk that is absolutely light proof. There they are left to dry naturally. Finally they are submitted to an electric dryer to give them a dose of warm air. Thoroughly dried plates are preserved the best. Afterwards they are stored in a box large enough to contain them and covered with paraffin paper and black paper.

The choice of which sensitive plates to use, in order to obtain the good matrices, has been the subject of patient study and research. The best conditions are: using a sensitive film which does not laterally diffuse the light striking it, for it would cloud the image; and selecting film, if possible, without grain. These two conditions cannot be met until after the most careful preparation which should furnish a transparent film, or nearly so.

All the sensitive preparations that can be purchased, whether on glass or on film, that are generally used for photography, have an opaque film with a milky appearance, attributable to the coarse grain of the silver salts precipitated in the emulsion. The development of these emulsions will make the silver crystals still larger, which greatly increases their sensitivity. With less rapid preparations, for reproductions in black shades, there can be no question that the film is of even opacity. I therefore must fall back on very slow preparations of silver chloride which have the advantage of having a very fine grain making an almost transparent film.

At the beginning of my labours, at the time which is now called *The Golden Age*, the age when gold circulated freely, the age when all the produce of the world also circulated freely, I was able to choose from among very many makes of emulsions those which were the most suitable for my kind of work. I was a little embarrassed by the range of choices, but at last, after many trials I selected the English make known as *Ilford Alpha*, a type of plate intended for production of ~~diapositives~~ in various shades: red crimson, sepia, yellow green, bluish, etc. These very slow plates could be handled in a yellow light, had very little grain, and possessed a transparency which I considered to be satisfactory.

But the wars intervened with, in addition to other misfortunes, restrictions on the circulation of merchandise, restrictions still in force today, so I had to give up my *Ilford Alpha*. It could not be procured in France, so I had to restrict my choice to a French production. In time I found a product of the *Société Lumière*, called *Photographic Plates for Warm Tones*, of which the almost absence of grain and the degree of transparency appeared adequate. I have used this brand for a large number of years with satisfactory results. These plates are orthochromatised quite satisfactorily in the bath technique described above.

Before dealing with the fixation of the image on the plate, I should use a few lines for the possibility of retouching the original before making the matrix. Certain originals, especially those with thick lines do not need retouching, the most one has to do being to reinforce some little detail that has disappeared or been weakened by wear.

It is the originals with fine lines which are rather weak which require some reinforcement. For this I use special water soluble inks, of my own making, which guarantees the greatest thinness of lines. Later I shall give its composition and the manner of its use, in the chapter headed "Trimmings" where I deal with the overhaul and retouching of works of art. Once the matrix has been made, all these retouches can be removed with a damp cloth.

But I am bound to discuss another important subject, before discussing the fixation of the image: this is the elimination of the dangerous effects of a "halo" caused by the rays of light, having passed through the emulsion, striking the transparent base (in this case glass) and then reflecting to the emulsion. In effect this causes a lateral displacement of the light and a broadening of the image. The fast emulsions, commercially available, are treated for this effect, but the slow preparations, such as I use, are not able to stop this halo. I therefore had to develop an *anti-halo* myself.

The ideal anti-halo is detachable and reusable over and over again. Mine fulfills this. I use a commodity known as *carbon paper* which can be obtained in a large range of colours, including black. In photography it is used to make pretty effects. Certain kinds of high quality are used to a great extent by engravers. It is made of a strong paper on which is spread a layer of soft gelatine (very soluble in water) and containing several layers of an insoluble pigment.

For ^{Sperati's} ~~my~~ purpose I obtain^{He} black carbon paper in rolls or in sheets. ~~Sperati~~ then describes how he removes the gelatine in a chemical bath and obtains a black film on paper. He uses a piece larger than the stamp being copied by at least one centimeter on every side. ✓

To use it he attaches the anti-halo paper on the back side of the glass plate (which has the emulsion on its front), ensuring a perfect contact. Then the plate is ready for exposure. He uses plates 6 x 9cm, 8 1/2 x 10cm, or 9 x 12cm. For a standard sized stamp he divides an 8 1/2 x 10cm plate into two, using a diamond glass cutter, or one of special steel, and a ruler. He uses special templates which he has made in order to cut to exact measurements.

For the exposure he uses sort of a frame. It is a strong one,

not the little plaything of an amateur, but one with two strong springs. The size 9 x 12cm is ample for single stamps, pairs and blocks of four. He furnishes this with a thick pad consisting of thin sheets of paper. On the side which makes contact with the plate, he places a piece of gelatine celluloid, of the type used in photographic films and of which the silver bromide has been darkened by the usual photographic exposure. Over this pad of paper he places a small piece of wood, in a single piece, that is to say without shutters. He uses quite smooth and fine wood, with one side covered with a layer of fine felt, glued to the wood. The pressure produced by the two sides of the frame acts on the springs.

Sperati then describes how he makes the exposure, beginning with the source of light. It is essential that the source have as limited a size as possible in order to obtain distinct lines. In the beginning he used a Nernst lamp, having as a source a small cylinder of refractory material producing the incandescence. After a time, he found it impossible to restock. He then chose a 46 watt electric bulb of Hungarian make, known as *Tungsram Krypton*. He purchased a sufficient supply in order not to be caught unawares. This type ^{gives} gave its light in a rectilinear form and was very compact. ^{is}

Sperati goes on to detail how he mounted ^{is} the light in a chamber, with a tube extending from one side in order to obtain collimation. A filter holder was mounted at the outer end of the tube by means of screws. The emerging beam was used horizontally. Opposite the light source was a vertical board on which could be mounted the photographic frame. ^{could be} For this purpose he used ^{an} an artists easel which could be moved to vary the distance between the source of light and the photographic frame.

For example, when using warm tone plates, that is, with a white light from a 46 watt bulb and no filter or ortho preparation, at a distance of 2.5 metres from the light source to the plate, he allowed ^{an} an exposure time of from 1.5 to 3 minutes, depending on the subject.

For ^{reproductions} reproductions requiring the use of filters and orthochromatic plates, he reduced ^{the} the distance to 70 centimetres. This was done in order to shorten the exposure which was still 5 to 6 minutes when working with green or deep red filters. ^{is}

Sperati then lists eighteen items, or groups of items, which one should have at hand before shutting ^{oneself} oneself in the dark room to make an exposure. Besides all those already mentioned, they include a tape measure and a piece of chalk for marking distances, a container for the liquid chemical to be used to make the original transparent and a drop stopper for applying more of this liquid, absorbent linen rags about the size of a handkerchief to use with this liquid, a bottle with a drop stopper containing still another

chemical liquid (used to clean the exposed emulsion of all traces of the first chemical which was used to obtain transparency), blotting paper, a watch with a seconds indicator which can be read in the feeble light of the dark room, a pocket lamp with a red filter, an empty box and black paper to contain the plates after exposure, the laboratory lamp with filtered light (yellow or diffused clear green for the plates without ortho; red or green for the plates with ortho, depending on the type), a plug for the white light source, and the original stamp or obliteration with a pair of tweezers.

Considering the differences in the colours of the originals and their intensities, Sperati states that it is not possible for him to explain in a single way the various threads of his operations. He could approach this only by presenting several examples of typical cases. A little experience and several experiments would do the rest.

Example No. 1, no ortho. The original is Bavaria 1849, 1 kreuzer, in intense black or gray. For this stamp "warm tone" plates without ortho preparation are used and exposed to white light.

The stamp having undergone treatment to make its paper absorbent, it is placed into the basin containing the liquid chemical to make its paper transparent. It is left there until its design is as visible from the back as it is from the front, without any opaque discontinuities. The plate is ready with its anti-halo on the back. The stamp is taken out of the bath with tweezers and placed in the middle of the glass of the photographic frame, with its image side uppermost. Two or three drops of the liquid used for transparency are dropped on the stamp. The same is done on the sensitive surface of the photographic plate. The latter is then placed in contact with the glass of the frame at the same time ensuring that the stamp will be well centered on the plate. Begin by putting an edge of the plate in contact with the glass and then lower it very, very slowly to avoid a displacement of the stamp and also to ensure better the expulsion of the air. The pressure of the springs is applied to the frame and, behold, all is ready for the exposure to the 46 watt lamp.

The frame is upright on the easel, facing the lamp at a distance of 2.5 metres from the bulb. The filter holder is provided with an ad hoc shutter which is withdrawn when exposure begins. For the gray 1 kreuzer an exposure of 2 minutes is given to the 46 watt light and for the intense black 2.5 minutes. After this lapse of time, the shutter is again closed. Now, by the light of the laboratory light, the plate and the stamp are freed and the latter (which has been impregnated with the fluid used for transparency) is put to dry between blotting paper.

The plate which has also been impregnated with the same fluid,

both front and back, is wiped successively with two absorbent pieces of linen of the muslim type which have been mentioned before. The two pieces of linen are then set aside, one to remove the surplus of liquid from the plate and the other saved to give a final more careful wiping of the plate. After this, in order to remove the last traces of this liquid, three or four drops of a second liquid are put on the sensitive emulsion and spread rapidly. It is then absorbed with a piece of linen, reserved for the purpose and not mixed with the other pieces. This done, the anti-halo paper is removed from the back, which with care can be used again.

The plate is now wrapped in black paper and stored in the box, ready for the operation *development of the image*.

At this point Sperati digresses to explain to the reader the rooms which he uses for the two operations: (1) exposure to the 46 watt light and (2) disclosure and development of the image.

These operations are performed in separate rooms. Both require the use of a dark room provided with yellow or green light, dark red or dark green, by interchangeable bulbs, depending on whether it is necessary to use orthochromatic plates or not.

To have enough working room with the distance between the source and frame 2.5 metres, the exposure room should be at least 3.25 metres long. The room for developing the image need not be as large. Even 1.5 metres wide by 2.5 metres long will be sufficient. The exposure room does not need a sink, as does the development room. The latter need only be a place where the basins may be taken for washing and a place for other necessary operations with the matrix and the cliché.

Supplementary requirements for the exposure room are: a small table on which to support the box with the light source, a table with drawers on which to effect the operation anti-halo and to fill and empty the frame, another small table on which to place the accessories and a cupboard or set of drawers for the products.

For the development room which is also used for the preparation of the clichés, the following equipment is used: a kitchen table with two drawers, 1.2 metres by 45 centimetres where the disclosure is effected and the clichés prepared. Upon this table is placed the neutralized light needed during the operation *disclosure*. Also needed is a sink with water tap and drain, under which is installed a cupboard with shelves. There are two electric fixtures, one over the kitchen table and one over the sink.

Here is a list of the objects and accessories that should be available before shutting oneself up in order to develop the image: 5 china or porcelain dishes, 6 by 9 cms and two 9 by 12, for the simultaneous operation of strengthening the silvering of two plates.

3 graduated test tubes, two of 50 cc, one from 10 to 20 cc.

A quantity of absorbent cotton.

A magnifying glass in order to follow better the development of the image.

A laboratory lamp with appropriate light according to the type of plates.

A test strip of celluloid with soluble gelatine, for cutting into small squares used to control the progress of weakening or strengthening the matrix after initial development.

check
film?

Sperati then describes in detail the three different developers which he uses. He also describes three solutions used in strengthening the silvering. Further he gives the formula for his mildly acid solution and lists other chemicals used to regularise the action of the developer and also the solution for strengthening the silvering. (These details are omitted here.)

He explains that his approach is to proceed very slowly with the development, the image being in the beginning hardly perceptible with a magnifying glass. The intensity of the image is steadily increased by the molecular attraction between the particles of silver from the first development and those released by the strengthener.

Using the example of the one kreuzer intense black of Bavaria, Sperati explains in some detail the partial development of a plate, stopping the development, reinforcing the silver, and then continuing this cycle until the desired image is obtained. He advises following the progress in increasing the intensity of the image with a magnifying glass, bearing in mind that the intensity revealed by the light of the laboratory lamp will be a little paler in the daylight. Experience, he writes, will be the best guide.

Having satisfied oneself that the intensity is ample, the plate is withdrawn from its bath, rinsed quickly in water, and plunged into a solution for fixing.

The first example was that of the Bavaria 1 kr intense black. In the case of the Bavaria 1 kr gray or pale black, which gives less intensity, there is a need to accentuate the contrasts. This problem of increasing the intensity arises for nine-tenths of originals and takes on an even greater importance when it is a question of transparent colours in feeble shades.

Moreover, it is essential that the matrix shows well defined contrasts in order to make the impressions easier. A matrix with insufficient contrasts makes the impression more difficult and forces the use of expedients to obviate partially this difficulty. These are discussed in the chapter on *The Impression*.

In summary, Sperati uses still longer development times with the less intense originals. He also finds useful shorter exposure

times, keeping the first development so faint that it is hardly perceptible with a magnifying glass, and some chemical changes in the first bath used in the development process. After experimentation, he prefers the last two approaches to the first. That is because a shorter exposure time means a longer stay for the plate in the first development bath, leading to a general clouding of the plates, especially if they are several months old. On the other hand, by lessening the time of exposure slightly he runs less risk of having the plates clouded by applying the last two methods above.

*orthochromatised
with this?*

Passing on now to other originals which require the use of orthochromatic plates, he considers by chance example a blue type Spain 1861 6 rs, or a pale blue type Vancouver 1865 10c imperf, or a Brunswick 1852 2s, or a rose type Vancouver 1865 5c imperf, or a Bordeaux 80c, etc., etc. These colours have been taken as examples because they are not covering, or in other words because they still show their shade when examined from the reverse, the paper having been made transparent. For this reason the use of filters and ortho plates are essential for such types.

colours?

Generally speaking, unless it is a question of a very deep blue, indigo or blue-black, the blues are not coverers and they are in the same category as roses, carmines and violets. By contrast, in the reds, greens and yellows there is a group of metallics (mercury, zinc, cadmium, lead, chrome) to consider which, being coverers or opaque after transparency, are able to do without the ortho. Nevertheless, it is not necessary to consider all the greens, reds and yellows as coverers, because there are the lakes and colours of vegetable and animal origin which are classified among the transparent colours. If there are any doubts, this distinction can be quickly made by examining the piece after it has been made transparent.

If, as a result of this examination, there is a shade which is visible by transparency, then, as with the previous examples cited, it will be necessary to use the ortho plates and to decide which filter to use. Generally speaking, for blue Sperati uses an orange filter, for the pure greens a red filter, for the greens with a bluish tinge a dark orange filter, for the transparent reds and the roses a green filter, and for reds with a violet tinge and for violets a yellow green filter.

Developing an orthochromatised plate, again the plate is kept in the first developer only until an almost imperceptible image is formed. This will take as long as an hour or more, during which time it is necessary to be patient and verify the progress in the intensification of the image. Sperati recommends using still another chemical solution in such a case to stop the action of the first developer and allow for quicker reinforcement of the image. It is necessary when using ortho plates to adjust the colour of the laboratory lighting to the type plate being used.

Sperati then deals in some detail with the frequent cases in which, despite one's experience, the intensity obtained appears insufficient or exaggerated. Those with insufficient intensity are strengthened. He describes here also his use of the transparent test strips of emulsified film, with soluble fixed gelatine, which were listed earlier, in order to ascertain the progressive effects from an increase or decrease of the intensity.

Plates with too much intensity are weakened. Sperati gives two solutions which act very slowly, allowing their effects to be observed with ease.

The matrices thus obtained have a reversed negative image from which a rectified positive can be obtained on photographic paper. But this is not what is needed, which is a reversed positive image, from which may be printed a rectified positive stamp. In the following chapter on *Completion of the Matrices* a supplementary operation on the matrices will be described, calling for much skill and a great deal of attention. Sperati claims this as his invention.

There are two further matters which crop up frequently and need to be discussed. First is the case where the original is short of margins, so that at some point parts of the frame are missing or are hidden by stains. All that has to be made good. Second is when the original is of a very pale shade or is too actinic (rose, pale violet), which requires creating the missing contrasts.

In these two cases there can be no question of working on the matrices themselves, but it is necessary to use them to prepare the cliché which, after a careful preparation (discussed in the chapter *The Cliché*) manages to give passable copies printed in black. It is necessary to print several copies on paper that is smooth, thin, white, gummed, of the best quality, and with an even grain which will take, despite the gum, a regular transparency after immersion in the liquid used for that purpose.

Having selected a copy which appears best, it is set aside for 8 to 10 days in order to thoroughly dry the oily black ink. It is then dipped into pure acetone for several minutes, after which the excess moisture is removed with blotting paper. It can then be given a bath in the liquid used for transparency without affecting the image. But, having accomplished this operation, there are still the retouches to be made.

In order to complete the exterior frame, a very tapered small drawing-pen is used. To restore several details that are missing or to strengthen certain very fine parts, the retouches should be made with water ink, of intense black, obtained from lamp-black with the addition of gum or, better still, of dissolved fish glue.

It is even better to use China ink of the finest quality.

All that remains is to make this transparent and to proceed as in the case of the Bavaria 1 kr intense black to make the matrix, not forgetting the anti-halo on the back. Or, if the image is less intense, use the method for the Bavaria 1 kr gray.

At this point Sperati digresses to discuss an operation which he calls *compensating exposure* or *exco* for short. He uses this to reduce the intensity which a matrix with too large contrasts gives to the impression, or rather to preserve extremely fine features.

In order to control this operation better there are several modifications introduced into the procedure for strengthening the image. The increase of intensity is made much more slowly, with a change of chemicals. Subsequently the image is covered with a solution of silver nitrate which is dried. Then an exposure is again made to reinforce the image. The ~~exact~~ details are omitted here. ✓

Finally, Sperati deals with matrices for obliterations. He calls these *originals* or *prototypes*, reserving the first name for obliterations obtained from an original cancellation and the second for those which have been drawn from reproductions of the originals in catalogues, prospectuses, advertisements, etc.

As for original cancellations, having followed the treatment described in the chapter *Originals* (removal of paper, if necessary, and also retouching and possible modifications), the paper is made transparent and ready for exposure in contact with the photographic plate. No chemicals are needed for this when the prototype cancellation is on translucent paper or cellophane.

Obliterations do not need so much precision as stamps, so the long and delicate operation of mechanically reversing the image can be disposed of by placing the back of the paper with the prototype in contact with the emulsion side of the photographic plate.

To speed up the work, when there are a large number of obliterations to copy, four or six are placed on a table, each having its excess margins cut off. Six obliterations can be fitted on a plate 8.5 by 10 cm.

To obtain the pictures the diagram of four to six examples is first outlined on a Bristol board the size of the photographic plate, keeping a margin of about 5 to 6 mm at what corresponds to the edges of the plate. A rectangle of transparent cellophane (of the type susceptible to water) is cut the same size as the Bristol board. For six examples it will be, for example, 8.5 by 10 cm. On this sheet of cellophane fit the four or six obliterations upside down and make them adhere by several touches of gum with a small dash of glycerine on one side only (for example, the top), after

allowing the air to escape under the pressure of the frame.

Note that if the obliterations on their original paper were obtained by methods (a), (b) and (c) they should not be mixed. Each setting should be composed of pieces of the same kind which have been submitted to the same treatment.

The plates to be used are the *warm tone* without ortho treatment, but furnished on the back side with anti-halo paper, with the dimensions corresponding to the space occupied by the images. The 46 watt white light is used for the exposure. The time of exposure will vary, at a distance from the light source of 2.5 metres, between two and four minutes (yellowish paper) for date stamps on paper that has been made transparent. It should be from 2.5 to 3.5 minutes for pieces made by methods (a), (b) or (c).

Sperati then recommends a special chemical solution for the developer. The development is normally completed in this bath. However, it may be that cachets of origin, which have not been strengthened with a fine pencil or with black ink made of soot, give only feeble impressions. In that case take the plate from the developer when the image is very weak and use the same intensification method as described for stamps with pale colours, that is, use a silver strengthener.

In concluding this chapter Sperati remarks that he claims ownership of the processes which have been described, including the chemical formulas, the train of operations and their adaptation to the ends he set for himself. They are, he writes, the result of a long period of research.

IV. Completion of the Matrices

This chapter deals mainly with the reversal of the image on the matrices, a subject discussed briefly in the preliminary remarks which followed the listing of the chapters.

Sperati touches on this subject in chapter three, by discussing a technique he used in his early work, which he identified by the name *contretype*. In this process, which he adapted from known techniques, he exposed a second photographic plate with its emulsion surface in contact with the image bearing surface of the first matrix. He then used an acidic developer which removed the exposed parts of the second matrix. He only used this process in his early work, preferring instead the mechanical transfer of the developed surface which he perfected later.

Sperati used the mechanical transfer process only for images of stamps, treating obliterations more simply as will be discussed toward the end of this chapter.

Sperati writes that the mechanical transfer process requires

an exact understanding of the various operations, if one is to be successful. In a few words, it is necessary to remove the emulsion containing the image from its glass support and to place it on a support consisting of a celluloid film.

The celluloid film is a commercially available photographic film which Sperati chemically treats to make it transparent, that is, he *fixes* it. He prefers celluloid film with a soluble gelatine to receive the matrix and eventually settled on Kodak verichrome 26 and 28 and the English make Ilford Selo. However, he sometimes uses celluloid film with an insoluble gelatine, in which case he coats it with a layer of soluble gelatine. In order to make a transfer from a glass sized 5 x 8.5cm he prepared pieces of film 6.5 x 10cm, thus providing a margin on all sides.

The actual transfer of the film makes use of a hydrofluoric acid solution which is spread over the image surface of the leveled, first (glass) matrix in a rapid operation. Immediately, the celluloid film is pressed against the glass in order to expel any air bubbles and also any excess liquid. Continuing this pressure for 10 to 20 seconds, Sperati then quickly transfers the assembly into a prepared (photographic) frame with spring clips.

Below the assembly he has the glass of the frame, covered by a sheet of paraffin paper. Above the assembly he has the cover glass of the frame, a thick cushion of sheets of paper, a sheet of blotting paper, and a sheet of paraffin paper.

While very rapid handling is required to this point, the transfer itself is not effected rapidly. The glass and the celluloid are left in contact under pressure for from 6 to 7 hours in the summer, or at summer temperature, and from 10 to 12 hours in the winter. A temperature below 10 degrees centigrade is to be avoided.

After this period the frame is opened and all removed. Holding a corner of the celluloid film between two fingers, it is raised. If the operation has been performed quickly, the matrix leaves the glass support completely and adheres to the celluloid film.

Sperati claims this procedure is uniquely his and that it ensures that the image, with absolute precision, retains the dimensions of the original. Prior methods, he writes, for the mechanical transfer of a film, left it floating in the transfer liquid so that it was distended and allowed to contract to an extent.

Strips of ordinary white paper, 10 to 12mm in width and the same length as the film^s (6.5mm), are folded over and glued to the top and the bottom of the celluloid and its film with a special adhesive, thus protecting them. Further, the same special adhesive

is used to seal lightly the other two sides of the celluloid and film.

Subsequently, the celluloid with its film, held by the two paper enclosed ends and with the image (film) side down, are placed in a frame to dry. The central part of the film will naturally dry first, after which the matrix is removed from the frame. Now the central portion is held in a frame, protected by one or two squares of India rubber of the thickness of an inner tube, and the ends are allowed to dry. Once dry, the matrix is ready for operation *retouch*.

This work is done on a retouch desk which can be found for sale and which consists of a wooden frame carrying an inclined glass, on which is placed a screen. This admits daylight through part of the glass only by a kind of window.

This desk should be placed to prevent light falling on it from above or coming from the two sides. A mirror, or a sheet of white paper, is so placed that the light falls on it and is reflected through the window.

In view of the extreme thinness of the film of the matrix, the retouches are made on both sides. This has a great advantage over matrices on glass, by the *contretyp* method, where retouches executed on the glass side give an unsatisfactory blurred effect.

~~As for colour,~~ Black retouches can be made with stick China ink, but not the liquid China ink known as indelible. The latter flows undesirably. Other colours, besides black, will be needed for images in those colours. These will also be used for refining the stamps of art (reproductions) and will be dealt with later in the chapter on *Refinements*. I have been compelled to make these myself for none of the commercial preparations were suitable for my use, for reasons which I shall indicate. It should be understood that these colours, being moisture absorbent (hygroscopic), must be used exclusively for the vignettes. ✓

With the aid of a powerful magnifying glass and keeping the hands free (one can obtain lenses of different strengths, interchangeable, and also a lens on stand, of a larger kind than can be found at the opticians, commonly called a *thread counter*). ✓

Here are some examples of retouches and restrengthening that might have to be made. For them use a small, very tapered drawing pen or an artist's brush with the finest quality sable hair: ✓

On the edges around the design: eliminate any trace left by the perforations of an original and, in the case of imperforates, the clear trace left at the edge of the paper.

In the background: irregularities arise from a somewhat dirty

original or one with wrinkled paper, from small holes or scratches due to faults in the plate, and sometimes from the glass of the frame being badly cleaned before its exposure to the electric light.

For spares: for example, a portion of the image may be made to disappear in order to avoid an impression from it. For instance, consider the case, among others, where the frame and the center of a stamp are in two colours. Take as chance examples the *Poste locale* of Switzerland, the Spain 1865 19 cuartos, etc., etc.

In order to obtain the cliché for printing the frame in black of the *Poste local* or in brown of the Spain 1865 19 cuartos, I must make the center of the matrix disappear under a layer of black colour. It is this which I call *making the spares*. Spares ✓

The retouches are made whenever possible on the back, thus avoiding roughness on the image layer which will come in contact with the cliché.

Obliterations: For these the matrix, whether it is from an original or from a drawing, stays on glass where retouches or spares are made wherever it is desired to prevent light action on the cliché. These are done using the colours of the impression.

Given the ^{large} little precision required for this kind of image, the large isolated spaces of the obliterations are treated on the back, that is, on the glass side. Retouches near to the image are treated from the front. ✓

Note that an obliteration taken from a stamp and on the matrix of which are still traces of the stamp's image, requires work that is more tedious and painstaking. It is necessary to preserve all parts of the obliteration which are proper to the obliteration whilst eliminating those representing the stamp, by a layer of black applied to the image side.

In case the obliterations on a stamp are not easily removed or are not strong enough, so that the stamp's image is likely to cause embarrassment, I prefer to work by tracing, using one of the methods already discussed. I make a pencil sketch of the obliteration, reinforcing it and completing it following one or the other of the methods which I have already mentioned.

With the retouches done the matrices are ready to be used in order to make the cliché.

V. The Cliché

Sperati writes that in the beginning he routinely turned to metallic engraving for his clichés. He confined his studies to copper engraving, in which it is possible to replace the acids by solutions of ferric chloride, it being well known that with this salt, as opposed to the strong acids, the harmful lateral action is less, the perchloride acting particularly in depth. However, despite this advantage he soon came to abandon its use.

When the starting point is an original of majestic character, more or less well preserved, and of which it is desired to maintain the delicate features, it is necessary to have a flexible cliché. That is, the operator when ready should be in a position to shape the impression, to strengthen or weaken the whole or only certain parts, to even eliminate them, to increase or decrease the contrasts, if his original seems to require any of these modifications. A cliché, which in place of the standard metallic engraving, is ready to make the impression is the work of an artist.

Sperati emphasizes the important advantage of his non-metal clichés, which lend themselves to being converted into transparent clichés. These clichés permit the substitution of a very simple procedure for the complicated machinery of the large graphic arts establishments, when it is necessary to obtain superpositions, for the juxtapositioning of inks and for polychromatic reproductions. Later in this chapter and in the chapter entitled *The Impression* these will be expounded on in greater detail.

While the principles of his procedure have been known for some time, that is, since Poitevin's discovery of the properties of gelatine bichromate under the influence of light, he claims authorship for its detailed application. He has developed the method of making it suitable for the faithful imitation of the three kinds of impressions in the reproduction of a line and its extreme flexibility.

Having abandoned metal, the first point to be resolved is that of a suitable support. Glass, with its good property of not losing its shape, has the inconvenience of breaking easily, even by the roughness of an unnoticed particle when it is subjected to the pressure of the press. And then, Sperati writes, after much toil, he sees a little crack appear across the image. He is not very pleased. All has to be done again.

In order to reduce the chances of breaks, he strengthens the glass plate with a second underlying one (a piece of gelatine covered photographic plate), the two plates being held together by moistening the gelatine of the under plate. Nine times out of ten it is the under plate that breaks in case of an accident and this is easily replaceable. With these modifications he has usually used a support of good quality glass.

Nevertheless, in recent years he has replaced the glass completely by celluloid. He has succeeded in perfecting its use and at the same time eliminating the problem of glass breakage.

Whether a glass or a celluloid support is used his operations do not vary much, but there are some differences which should be pointed out.

Sperati begins with a discussion of clichés on glass, before turning to those on celluloid.

He has often prepared his own gelatinous emulsion to spread on glass of the thickness of commercial photographic plates. The gelatinous film will appear milky white and the impression on it will thus appear as black ink on a white background. This allows a check on the image before it is transferred to paper. Sperati starts with glass plates which are 9 x 12cm or 13 x 18cm and washes them thoroughly to remove all traces of grease. He gives his chemical mixture and his steps for accomplishing this.

Sperati then describes his formula for the emulsion and the steps he takes in its preparation. The spreading is undertaken with the plates exactly level and lukewarm. The plates are left to dry in a place free of dust and away from daylight. This can be facilitated by the use of an air-tight box containing an open mouthed receptacle holding dry calcium chloride. The latter can be warmed later and reused.

From a plate 13 x 18cm one should obtain 8 useable pieces, 6.5 x 4.5cm. From a 9 x 12cm plate 4 pieces are obtained, 6.0 x 4.5cm.

He has also used commercial photographic plates, preferring those with a thick film. The gelatine may be soluble or insoluble. He uses the former for work during winter and for delicate images and the latter for images without fine lines and for obliterations.

The plates are made sensitive to daylight by further chemical treatment. The method differs depending on whether the plates are to be used for very fine images requiring fine grained clichés, or for engraved originals which make use of half tones. In the latter case the grain should be more evident.

Having obtained a plate which is sensitized and dry, it is next necessary to put it in contact with the negative matrix. For this operation it is necessary to have a frame suitable for stamps. One 9 x 12cm will do and will be suitable for singles, pairs, or blocks of four. (A photograph of a frame actually used by Sperati, with four openings of 8 x 11cm each, is shown in illustration xxx.)

In order to assure strict control of the action of the light passing through the matrix and striking the sensitive film of the cliché, Sperati uses a modified cover, usually of wood and with shutters. He no longer uses those which give an irregular and insufficient pressure at the side of the hinges. Instead he uses

a cover of very thick glass, consisting of three strips. Two of these are placed horizontally and meet each other in the middle of the frame. The third, oriented vertically, applies pressure across the other two.

To check the image during the exposure to light, the vertical strip is released with great care (in order to avoid any displacement), then one of the two horizontal strips is withdrawn while temporarily maintaining pressure on the other strip. On this strip is placed another glass strip of the same thickness as the glass of the withdrawn vertical strip and the two tension springs are replaced. Then, raising the cushion of sheets of paper from the half set free, the degree of exposure can be checked, either through the glass from its back if it is a question of this type of support, or from the front by raising part of the film, if the support is of celluloid. Subsequently, everything is restored to its place and, if necessary, the exposure continued.

It is impossible to set forth a rule for the duration of the exposure. In principle, an image which is composed entirely of pale yellow brown without veil or mist, or with insignificant clouding, calls for a certain exposure whilst for certain clichés of which the matrices have been obtained from the originals without contrasts, it is necessary to expose the cliché until a deep image has been obtained in spite of a quite visible shading.

With that, it will be understood, in part, why Sperati has finally preferred a cliché on celluloid. The control of the exposure may be made from the front where the image forms.

Sperati then explains a simple photometer which he has found useful in cases where he is making several clichés in order to remedy errors. He simultaneously exposes the cliché and a strip of paper on which he has affixed a piece of photographic paper. If he has incorrectly exposed the first cliché, he adjusts his next exposure more or less according to the darkening of the photographic paper. This type of photometer is also indispensable for exposures of the backs of clichés which will be discussed later.

The time of exposure varies markedly. Only a few minutes suffice for a strong light and a matrix with very transparent whites and somewhat intense blacks. A whole day may be necessary in cloudy weather and a matrix with intense blacks, or with cloudy whites, or also with intense blacks which have been treated with exco to preserve certain details or to lessen an intensity that would be too strong for the impression. As an approximate guide, matrices with reduced silver, intense reddish, or greenish black require a longer exposure than those of bluish black silver or purplish blue black, the strength of their intensity often deceiving the eye.

These variations with warm tone plates give rise to modifications in the time of exposure, in the formulae and the

development.

The glass plate is now withdrawn from the frame, having received its exposure, which Sperati calls the *before* in order to distinguish it from an exposure of the back or verso which he calls the *back*. The plate is now submitted to the last of these processes which are nearly always very exhaustive and which are characteristic of his procedures. As already mentioned the use of his simple photometer is indispensable for the exposure of the back.

It is impossible to lay down fixed rules for these two exposures, so approximate indications are necessary:

Feeble and transparent matrices. Short exposure of the *before*, clouding slightly visible on the cliché. The *back*, a little more than the *before*, judged by the blackening of the photometer.

Feeble or clouded matrices, or with exco. The *before*, until the clouding is accentuated. The *back*, blackening of the photometer about the same.

Matrices of medium intensity and transparency. The *before*, until the clouding is barely visible. The *back*, the same blackening of the photometer.

Matrices of medium intensity, cloudy or with exco. The *before*, until the cloud is quite visible. The *back*, the same blackening of the photometer.

Intense and transparent matrices, giving intense impressions. The *before*, with no cloud or hardly perceptible. The *back*, same blackening of the photometer, or more if it is required to obtain images with medium or feeble intensities for the impression.

Intense and cloudy matrices, or with exco, require a long exposure, but with the contrasts reduced by the clouding or exco. The *before*, clouding hardly visible. The *back*, a blackening very much less than the *before* which would give an excessively intense blackness.

The exposure of the back is with the objective of reducing the hollows in the features where the clichés have absorbed water; to give a refinement to the images; to avoid the softening of the film in thus strengthening the resistance of the clichés to the impression; to allow, from the surplus of clichés obtained, even with soluble gelatine, resistance to the manipulations in the preparation of the clichés for the impression, indispensable for nearly all clichés.

As for the grained clichés, used for engraved originals, of which the matrices have received, thanks to a special retouching, an increase of intensity in certain parts and a lessening in

others, the exposure of the *before* should be carried to a very visible clouding (certain matrices with double image superimposed require a very long exposure, in sunlight, in order to reduce the duration). The exposure of the *back* will be limited to a weak blackness, in order to increase the hollows of the clichés and thus allow here and there a strong intensification and a more extensive range of nuances.

Sperati writes that he is in the habit, once the exposures have been completed, of noting on the clichés certain details of their manufacture. For this purpose he uses the ancient, ordinary writing ink made of salts of iron, which becomes indelible on contact with the bichromate of the film.

The plate having been exposed is now washed in water in order to rid the film of gelatine of any excess of bichromate. This careful washing takes several hours, often changing the water.

At this stage several explanations are necessary.

The printed film, as already mentioned, is milky white, caused by the silver bromide precipitate which it contains. Moreover valuable whiteness, because it allows the inking of the image which thus comes loose from the white base. But this white, since it is silver bromide, turns black in the light of day at the same time as the image.

Therefore it is necessary to transform this bromide into a salt, equally white, but insensitive to light. This salt is silver iodide. Sperati details his method of doing this using a solution of potassium iodide.

Sperati next discusses his use of celluloid for the manufacture of clichés. He repeats that he has used these exclusively in recent years. He obtains his celluloid from commercial film, removing any anti-halo layer and the film of gelatine on their back side. He then treats it with a sensitizing liquid.

Finally, Sperati addresses clichés for obliterations. As already explained the matrices are on glass with the image as required. As mentioned, they are often grouped in panels of 4 or 6 in order to expedite the work. The sensitizing and exposure to light is carried out in the same manner as for the reproduction of stamps. Examine the progress of exposure, expose the back (which will always be less than for stamps), washings, iodisings, etc.

In concluding this chapter, Sperati discusses a useful technique he has employed in which he converts a cliché to a transparent form. This possibility with clichés on glass or celluloid, he writes, is a major reason why he abandoned metal clichés at an early date.

The procedure simply uses an ordinary cliché for a stamp or

obliteration which has received its preparation (discussed in the later chapter on The Impression). After it is inked in vermillion it is plunged into a tepid chemical solution which dissolves the silver iodide which forms the milkiness of the film. When only the white of the image is visible from the back it is rinsed immediately.

The use of such a transparent cliché allows for repairs, superpositions and juxtapositions with exactitude without having recourse to elaborate machinery or knives which would be required for this work with clichés of metal or on an opaque support.

Sperati uses this type of transparent cliché to a large extent for polychrome impressions and for obliterations. As a matter of fact, he writes, with regard to obliterations, this is the secret of his *standard* obliterations (those in a constant position on the stamp) which have given rise to ludicrous assumptions as to their manufacture.

VI. The Ink

Sperati was going to call this chapter The Colours, but he preferred this title, because the images of interest are not only made of coloured pigment, but also of an agglutination which is nearly always a varnish derived from linseed oil.

The colours are customarily made from insoluble powders. Their number, during the period of interest, that is, from the first postage stamp, have been increased considerably by the innumerable byproducts of aniline, tar and carburized products.

As already pointed out, it is necessary to distinguish between the *transparents* and the *coverers*.

The two most covering colours are the vermillion and the cerise, which have been used extensively in painting.

Such as red, during the stamp issuing period vermillion, red oxide of lead, red ochre, carmine, certain carmine lakes derived from cochineal, some derivatives of Madder and later eosin, and poppy-red were available.

Such as orange, those with a base of chromium or lead, those obtained by mixtures of red and yellow, such as vermillion with chrome or zinc yellow, the yellow lakes with red lakes.

Such as yellow, those with a base of lead, of zinc, of antimony, of lead and antimony (Naples yellow), the yellows of Verona, of Cassel or oxychlorides, such as yellow lakes.

Such as greens, those of copper, of cobalt (called mineral green), Scheele green, Schweinfurt green, green of Verona with arsenic, earth green or mountain green, or a mixture of yellow and metallic blue (chrome yellow and iron blue, ultramarine and zinc

yellow).

Such as blues, those with a base of iron (Prussian blues, Turnbull blues), the ultramarine blues (double silicate of aluminum and soda), those of cobalt (Thénard blue), those of copper (Paris blue), indigo.

Such as violets, some lakes, burnt red-ochre, solid violets, derivatives from Calléine, the mixtures of carmine red and blue.

Such as browns, the mineral earths, the oxides of iron (umber, ochre, earth of Sienna, of Italy, of Cassel, natural and burnt), sepia, bistre of manganese, several brown lakes.

Such as black, the blacks of smoke and of the vine.

Such as whites, those of lead, of zinc (snow white), those of barium which have little covering power.

But it would be going too far to take literally this catalogue for, from Sperati's trials, he came to use, for a single or a mixture of colours, more modern productions: the lakes of recent manufacture, those derived from eosin, from fuchsine, the greens such as the viridine derived from aniline lakes, etc., adapt themselves very well for obtaining certain shades, agreeing in daylight and under Wood's lamp (ultraviolet).

As an example, the cadmium red was never used or hardly ever used during the early stamp period. It has a strong resemblance to vermillion, being slightly less of a coverer and changing colour a little more to red. Now vermillion, used in the early stamp period mixed with a heavy substance, shows up more clearly now by Wood's lamp than a vermillion just mixed with a heavy substance does. Why is that? It is because a bit of the linseed oil (the heavy substance) has in time turned it to a clear yellow brown by Wood's lamp. Also, as the ancient vermillion combines with its agglutinant it becomes clearer.

Sperati overcame this difficulty by replacing vermillion with cadmium red, with traces of chrome yellow added, in order to reduce the red, and he has obtained an identity of shade both by daylight and by Wood's lamp.

Also, without intending too much offense, although colours with an aniline base did not begin to make their appearance until about 1860, Sperati offers a list of the inks that he has used to advantage, the names being as used by french manufacturers (translated):

For reds: vermillion, cadmium red, primary red, crimson lake, lakes derived from eosin, scarlet lake, geranium lake, ponceau (poppy), madder lake, Solferino lake.

For oranges: orange chrome yellow, a mixture of vermillion and

zinc yellow, a mixture of yellow lakes and red lakes, cadmium orange.

For yellows: chrome yellow, zinc yellow, cadmium yellow, yellow lakes, primary yellow.

For greens: chrome green, (obtained by a mixture of chrome yellow and prussian or primary blue), ultramarine mixed with zinc yellow, blue lake or blue green with yellow lake, viridine lakes, emerald green, although derived from aniline.

For blues: prussian blue, Turnbull blue, Paris blue, primary blue, ultramarine blue, oriental blue, marine blue, blue lake, turquoise blue. This last ink is slightly soluble in water, Nevertheless, Sperati has used it occasionally for it gives a very clear and bright blue, when mixed with blue lake.

For violets: Magenta violet, a mixture of Solferino lake and blue lake, permanent violet, violet lakes.

For browns: those of mineral origin: raw Sienna, burnt Sienna, brown red, brown lake.

For blacks: those with a base of soot and black lake.

For whites: white lead, snow white, white lake, transparent white.

It should be mentioned that vermilion and ultramarine are composed of metallic sulfides and they should not be mixed with derivatives of lead, such as chrome yellow and white lead. On the contrary they may be mixed with combinations of zinc, yellow and snow white. The white lake and the transparent white have very little body and will not diminish other colours. It is advisable to use the transparent white when one wishes to turn an ink just a little paler without its losing its freshness or altering its colour.

The various colours of ink have different drying times. Colours with a mineral base (earths), those of lead, zinc, mercury and iron (prussian blue), dry rapidly by congealing on the varnish. For such colours, Sperati advises the addition of traces of castor oil in order to slow up the drying during the impression, provided the clichés allow this (see the chapter on The Impression).

To end this chapter Sperati gives some information on the preparation of inks for the impressions. That is not to say that he advises changes in the manufacture of all inks, for the factories have machinery to ensure perfect crushing and mixing, enabling them to obtain inks with maximum homogeneity.

But sometimes purchased ink is too soft, that is mixed with a varnish too weak or with insufficient colouring matter. Then he has been obliged to crush and mix the ink again after adding a coloured pigment. In preparation for this he has prepared a supply

of colours in the dry state. A good precaution, because certain colours easy to mix manually like the vermillions, colours of cadmium, yellows, reds and primary blues, carmine, lakes, madders, and violet lakes provide very good inks for his purposes. They also have the advantage of allowing control of each composition as regards the possibilities of the cliché, the degree of consistency, and the depth of the colour.

A quite fresh ink has the advantage of complete absence of skin which is so often found with commercial inks that have not been used for some time. After they have been used several times these pieces of skin often mix with the actual ink and one is obliged to make a kind of sorting of the mass.

On the other hand, Sperati advises against the preparation of inks of which the pigments are difficult to mix, such as browns, the lakes of mineral origin (ochre, sepia, bistre, umber, earths of Sienna, Mars yellow), certain yellow lakes, ultramarine and oriental blue.

Briefly, here is how to prepare fresh inks. Spread a quantity of the chosen colour on a marble slab and crush it with a printer's spatula until it is reduced to a fine powder. Mix the colours with a small quantity of special varnish, medium or strong, which is commercially available. The inks for our use ought preferably to be hard, free of softeners according to the requirements of the cliché.

After making this mixture Sperati softens the ink with several drops of benzine, or crystallized benzine, which as it evaporates gives the mixture a solid consistency. Having carefully undertaken the operation of crushing and mixing, it is then necessary to give the mixture a "touch of warmth", with the objective of softening it and making it more homogeneous, while making it more consistent by the expulsion of the volatile products.

This "touch of warmth" is achieved by spreading the mixture on a metal plate, or on a spatula with a very large blade, and then carrying it with pincers (not those of philately) to a source of heat, such as a small electric stove, that is anything without a direct flame.

The mixing by stirring is continued whilst warming. When it is nearly boiling it is removed from the heat and the ink is put to cool on the marble, still stirring it. If the consistency of the ink is quite soft, pigment is added, mixed carefully, and again given a "touch of warmth".

When red cadmium and vermillion are warm they darken, but this is only for the time being and they will regain their normal colour on cooling.

VII. The Paper

Sperati's own words, beginning this chapter, are set forth below in order to illustrate his colourful writing:

Thanks to my *Art of Philately* I have made contact, either in person or by correspondence, with many distinguished philatelists and even some laymen in the five parts of the globe. Among them there are many interested not only in my reproductions, but also in how I make them.

What intrigues them most is the question of the paper, probably influenced by certain literature, such as *Study of Forgeries*, *Vade Mecum of the Expert*, *The Grand Book on Forgeries*, etc., etc., which claim it would be very difficult, if not impossible, to obtain paper of the period. (I refer for several extracts from this literature to my book, *Philatélie sans Experts*, pages 85-87).

The source, or rather the sources, of papers of the period?

Have you mused through archives, at merchants of old papers, through old correspondence, and finally the booksellers of the Quai des Grands Augustins?

But pay attention, the old papers of the time of parchment, of rag paper, from the Middle Ages until the beginning of the 19th century, I have only to make them.

All this rubbish of rough, laid papers which denote to you dates like 1580 or 1790, etc., how do they help us? Not at all, for in our work we are dealing with from 1830 to 1870, especially 1830 to 1845, the period that gave us wove paper, uncrushed for glazing, and, as a matter of fact, the easiest to manage.

And after they had opened their eyes a little on the sources of paper, I see that these correspondents, these archaic men of letters, pass from one extreme to the other and say to themselves, *For sure, with all that he has not to rack his brain.* They forget that out of one hundred kinds of papers, even between 1830 and 1870, there are hardly ten that are manageable and 2 to 3% that can be used.

Have they considered that in spite of all these sources, which seem to give you an extensive choice, it is often necessary, nearly always, to rework the chosen varieties: to modify the grain, the thickness, the opacity, the feel, the sizing, the filler, the colour, not only for the light of day, but--oh, complication--to take account of examination by an ultraviolet light.

All this concerns old papers, taken from those of the period and adapted by me for use in my *Art of Philately*. But besides these I must reveal another source of papers, those

which are strictly from the period of each stamp, for the paper is taken from stamps themselves.

Consider an early issue, consisting of a series of values of which some are of low catalogue value and others are high priced. I take the cheap stamp, remove the colour of its image, and, on this piece of white paper, imperforate or perforated, or watermarked, I reproduce the design of the value of high philatelic worth. The game is played, say my correspondents and archaic men of letters.

Above all, gentlemen, do you know that this rectangle of paper, now white, after having been tormented by more or less corrosive chemicals, is no more than pure cellulose, absorbent as blotting paper, of a horrible dark shade under the Wood's lamp, liable to crumble into dust after some time, if a whole series of operations are not effected on it.

It is necessary to stop the corrosion, to restore its sizing and its lost filler, its grain, its opacity, to modify its feel, and, finally, to regenerate its colour under the Wood's lamp.

I shall have to discuss all these, a complexity of subjects, of questions, of cases which will have to be treated in order and also separately.

I am going to begin by discussing papers from archives, letters and books of the period. Just as for ink, before deciding on the choice of paper, it is necessary to compare it in all details with the original's paper.

Examine it by daylight. Has it the same grain? The same transparency? The same thickness? Does it give the same feel to the touch? And then with regard to consistency, is it too brittle, too soft? Too silent or too noisy when a coin is clicked against it with the finger?

Then pass it under the Wood's lamp. Does the paper appear too dark or too light? Too violet, too blue, too red or too yellow? Is it a clear grey or a dull grey? Is its luminosity the same?

When sorting papers in order to discover which possesses, as nearly as possible, when considered by daylight, the requisite qualities, it is not necessary to settle on the first picked out. It is necessary to collect a certain number, appearing to differ only slightly. This is because under more meticulous examination, either by daylight or by Wood's lamp, at the time of transferring the image, more than once it has happened that out of five to ten pieces put aside, it has not been possible to find one suitable and again, sometimes, for this unique sort, one has been obliged to effect modifications and even the suppression of the sizing and filler of the original, which does not agree under the Wood's lamp,

replacing them with another sizing and filler. In this case, as it is a question of paper already gummed, as it nearly always arrives on letters, in order to rid it of its old gum, it is necessary to soak it in boiling water with a little ammonia, until it has become absorbent.

Occasionally, when the chosen paper has the characteristics of the original, it is only necessary to decide which of its two sides is more suitable for receiving the impression. If the paper is for an imperforate variety, cut it in pieces slightly larger than the size of the stamp with its margins, especially if one wishes to reproduce sheet margins or to gum it later.

As for sheets from archives and from the white margins of books of the period, the former occasionally is ungummed, while books of this period nearly all have limp paper. For this sort it is necessary to provide the filler and the sizing.

Since the period when papers were only hand made in a vat, one was preoccupied with this question in order to make writing paper, while at that time paper for printing books had been in use for a long time.

Attention to the filler, adding opacity to the paper, only came when paper making machines were introduced. At first it was deemed sufficient to place the sheets in a gelatinous solution. Consequently, the paper lost its absorbent properties, as well as its opacity. All, or nearly all, the papers used at the time of the first postage stamp were made using a machine that first appeared in France in 1814, imported from England. These papers had both filler and sizing.

The method of providing filler and sizing differs from that employed for the paper of the original postage stamps, which was machine made, with the ingredients mixed with the pulp before sheets were made.

Sperati performs these operations in a bath, soaking the papers in an appropriate solution. In a long discourse, he details the chemicals he has used, as his processes have evolved over time. These chemicals and the associated procedures are omitted here.

Suffice it to say that in the beginning he treated the paper in a single operation. There came a day, however, when this was insufficient. This was the beginning of the application of the Wood's lamp (ultraviolet light) to the examination of postage stamps. Sperati places this as about 1919. Under ultraviolet light the paper of his early forgeries appeared dark. To counteract this he developed a supplementary chemical treatment to effect a brightening under ultraviolet.

If he ^{was} treating forgeries already printed, he floated ^{them} on their backs in the supplementary bath, in order to avoid so far as possible any action on the image.

As time passed he developed still further chemical treatments, in the end obtaining paper which fluoresced grey or bluish grey, depending on the exact chemicals used. He also used another treatment to obtain yellow fluorescence, if desired.

His final procedure, of later years, used four different body builders, for adding filler. He could obtain, under ultraviolet, shades of greyish, bluish grey, whitish grey, or reddish. Most often, he writes, he has ended up with the greyish or bluish grey.

To this point the discussion has been with regard to treating paper from archives, letters and books. It now turns to paper taken from genuine stamps of the same series or issue.

This begins with a chemical operation to remove the image on the rectangle of paper, or *decolourisation*, as Sperati calls it. He divides the subject into stamps carrying obliterations or to be obliterated, and mint stamps where the gum needs to be preserved. Those destined for imitated gum fall under the former category. For obliterated stamps he first protects the obliteration by overpainting it with a chemical solution. Depending on the particular stamp and colour he varies somewhat his procedures for removing the image.

For stamps with gum Sperati can only use those which are violet, rose, lilac rose, carmine red and some light yellows. the operation is delicate and the ingredients are costly. Without certain precautions, the chemicals used are dangerous to the health. In part, he uses chlorine gas or liquid bromine, a portable ventilator, and a gas mask. He offers a remedy in case of an accident. Further details are omitted here.

In either case it is necessary to rebuild the body of the paper, but a different method is given for those with gum than those discussed earlier for paper from archives, letters or books.

Finally, Sperati turns to tinted papers. While tinting for manufactured paper is incorporated in the pulp during manufacture, Sperati is again obliged to use a bath. The tinting is done with a chemical solution of the rich inks and before the sizing and filler are restored.

Sometimes for very deep tints multiple baths are appropriate. For example, he uses four baths for the Double Geneva. He dares not to overload the bath, for fear of a deposit on the paper. After each immersion the paper is blotted and dried.

VIII. The Impression

In the chapter on The Cliché there has already been a discussion of giving clichés an additional exposure on the back, more or less prolonged, but always very thorough. This exposure, characteristic of Sperati's processes, ensures a reproduction with

precision and fidelity. But this exposure, whilst giving a finesse to the images, considerably reduces the contrasts. Therefore, nearly all the clichés require a sort of preparation for the impression, without which efforts to obtain acceptable copies would be lost labour.

These enhanced contrasts, which are called for in the preparation to be described, are indispensable for increasing the difference of behavior between the background which does not take the ink and the design which should.

Sperati writes:

In order to effect this operation I have ready the following:

A very hard vermillion ink and a second less firm; sandarac and colophony (rosin), very finely sifted; turpentine and benzine; sable hair brushes of different sizes; a receptacle such as a casserole, preferably of porcelain; a small electric plate; several rags, such as closely-woven muslin, soft and very absorbent and about the size of a handkerchief; a watchmaker's magnifying glasses, to leave the hands free; a marble slab which should be level, carefully polished and with no traces of roughness, on which the work of preparation with the cliché and inks is performed (personally, I use a slab size 24 x 35cm, but one need not be too particular in this respect); finest quality absorbent cotton; two flared mugs with wide bottoms, capacity about 20 to 30cc; several small boxes with lids, containing pads made from a tuft of well packed cotton, contained in a scrap of muslin, which will constitute the small pads for benzine and turpentine used during the impression; and a small glass plate, about 6 to 9cm, covered over with a thick layer of adhering gelatine.

Parenthetically, I digress in order to indicate my own original methods for inking clichés of small format. I use, as may be required, two fingers. I have become accustomed, peculiar to me, of using the first and third fingers, the first reserved for the very hard or strong ink and the third for less firm or weaker ink. That is all I require for inking the surface of a stamp (sic).

For pairs and blocks of four, instead of the fingers I use the fleshy part of the palm under the thumb. For sensitive control of the inking this method is better than using a roller. However, if it is necessary to work on larger surfaces, the fingers and palm are replaced by a gelatine roller. Moreover, I occasionally use it for small formats, when a half tint is involved, as for engraved stamps.

Sperati continues his explanation. Once the materials are ready and in place, the cliché is immersed in cold water for some

seconds. Remove it and place it on the marble slab. If a celluloid cliché is being used fix it in position by covering it with the glass coated with gelatine.

On another part of the marble the two inks, very hard vermillion and not so hard, should have been placed. Begin by trying an inking with the very hard which should be spread all over the image. To aid the spreading make use of one of the little boxes containing a pad liberally soaked in benzine, on which the inking fingers should be moistened.

Attempt to clear the whites by passing over the cliché one of the tufts of cotton, moistened in a mug of water. This should be helped along with one of the damp muslin rags. If the whites are reluctant to be cleared the deposited ink should be dusted with sandarac powder, using a brush. The clearing of the whites will now be facilitated when using the moist cotton and the damp muslin rags.

If, despite this, the whites still do not clear, clean the cliché in turpentine and place it in slightly warm water for several minutes. Then start the operation of inking again, once more, if necessary, dusting the ink on the cliché with sandarac powder. It is possible to effect local clearing using a brush dipped in water.

Given the number of cases arising from differences in matrices which in turn arises from the different shades, intensities and designs of the originals, the clichés demand different methods of preparation, as will be indicated. A certain delay is therefore necessary as one experiments with the role played by the water factor as opposed to that of the thick ink. One will be able in each case to obtain a satisfactory vermillion image.

A small digression now on the preparation of the two vermillion inks. For the very hard take vermillion (of mercury sulphide) and crush it with a small quantity of strong varnish which has had a few drops of benzine added to facilitate the mixing. After a careful mixing, spread this ink on a metal plate and melt it until it just begins to boil. Mix it again on the marble slab. As it cools it will regain its colour. A very firm paste should have been obtained, but if too much varnish has been added it will be necessary to repeat these operations after adding more pigment.

In order to prepare the less hard vermillion, use a medium varnish instead of the strong, or still the strong with the addition of a very little linseed oil. It is not necessary to have a soft ink, which would be useless during the preparation, but only an ink less hard than the first. This second ink will be used during the second application of vermillion to the cliché, which will be described later.

The cliché, presenting a beautiful image in vermillion, should

now be dusted with very fine powdered colophony. This rosin will reinforce the impermeability of the lines in the vermillion image.

Next the cliché is boiled in very hot water for one to several minutes. This increases the contrast between the image and the background, of which the gelatine softens and inflates, thus increasing its repulsion of greasy ink.

Several cases arise. Consider a cliché made from an intense matrix, with very pronounced contrasts already, obtained from an original with very inactinic and intense colour. This cliché, which has been exposed on front and back, already possesses sufficient contrasts and therefore does not need an inking with vermillion. Immerse it in hot water for one to three minutes, according to the strength of the exposure the back has received.

As a general rule, a cliché which has received a strong exposure to the face should be exposed for the same time on the back. If this is not done the cliché softens too much in the boiling and printing with it is difficult. Conversely, if the back has been exposed, it becomes resistant to the boiling which is necessary to achieving satisfactory contrasts.

If the cliché has been made with a film of soluble gelatine, as opposed to insoluble, the exposure of the back is more thorough and is essential to maintaining its resistance to the boiling. It would otherwise soften too much and would produce a more pronounced and constraining hollow.

For clichés with insoluble gelatine the cooking may be even more prolonged (3 to 4 minutes). In certain cases where the exposure of the back has been overdone, a little ammonia can be added to the boiling water. This will have the effect of increasing the effect of the warm water on the uninked parts.

The second vermillion, of lesser consistency, would make the clearing of the image before boiling too hard. It can be used with advantage to give a second coating of vermillion after the first boiling, which will have increased the base gelatine's permeability to water.

Sperati then turns to what he calls his method of preparation for *strengthening*. For a cliché from a soluble gelatine film, sufficiently exposed on the front, but insufficiently exposed on the back, he applies vermillion to the cliché and then rubs on its surface with a finger covered with damp linen. During this operation the cliché is kept fairly damp and the image is given successive inkings in proportion to how the rubbings have affected various parts. For this the second, softer ink is used, because it withstands the rubbing better. As a result of the rubbing, the inflated gelatine should attract greasy inks less.

Clichés on film, after immersion in boiling water, can be flattened by placing them on a flat surface of glass or marble

while they are cooling. This will be found very useful for subsequent operations.

When the cliché is ready for being used with the desired colour it should be immersed again in water while leaving it inked.

Before proceeding to make the impression one should have previously prepared the papers. That is, they should have been selected, possibly bleached and restored as described in the previous chapter. On the otherhand, with the original available, the ink can be prepared by comparison, either in daylight or by ultraviolet light.

A general rule is always keep the cliché moist. The slogan *no water, no impression* is appropriate. After every copy clean the cliché with a wad of cotton soaked in water, taking off the excess first with a piece of moistened linen.

A hard and moreover pigmentary ink gives greater delicacy than a soft ink or one that has been brightened with a white lake or a transparent white.

A commercial ink that is too soft for our use can be hardened by the addition of the same coloured pigment, together with some drops of a solution of mastic in benzine. If such an ink is employed, however, take care to crush the pigment as finely as possible before mixing. Mix the pigment richly with strong varnish, aiding the mixing with the addition of several drops of benzine.

Mistrust a false vermilion or a false cadmium red. Abstain from using very soft inks, that is to say inks with too much weak varnish and too little colour, unsuitable for giving true whites.

Always have ready two consistancies of inks, one hard, the other less so. Add to the first traces of castor oil, which is preferable to tallow or linseed oil. But this last oil can be more suitable than castor oil, if required for slightly siccative (quick-drying) inks, such as the carmine lakes and the violets.

Sperati writes the following advice:

Before choosing an ink or a mixture of inks, check them for their appearance and transparency, with the original at hand.

Blues and every colour containing blue, such as green and violet, should also be scrutinized under artificial light.

Every colour, without exception, should be examined with an ultra violet light.

As to the behavior of certain colours, I note the following: For black: black ink from soot is a little siccative.

In order to have a grey or pale black, one can replace the benzine moistening by finger with turpentine, the finger covered a little, or else the addition to the black of a white lake or a transparent white. Add a commercial black ink to black soot in order to obtain an intense black. The blacks adapt themselves with the addition of a drop or two of ammonia in 30cc of water, which will ease their transfer to paper and the clearing of the whites on the cliché. 2

The last remark applies to all inks, but a too strong addition of ammonia will cause the lines of the image to reject ink. If that happens, it will be necessary to get rid of the ammonia on the cliché by repeated wiping with a water soaked cotton pad.

Matrices for blacks are more suitable, if somewhat under rather than over exposed, which would have the effect of bringing out too much the details in the deep blacks.

Yellows from ^{Spartite} lead, and other covering colours, such as vermillion, cadmium red, certain greens and browns of mineral origin, adapt themselves also to the addition of a small quantity of ammonia which helps clear the details in the deep blacks (which I call the places where the inks of any colour are spread out or piled up). Use these inks in a very pigmented state and rather hard. Ink with the inking finger moistened with benzine. ✓

To put things in order, one could, if necessary, complete each inking with a quick one-time pass of a gelatine roller on which a softer ink has been spread, obtained by the addition of a small quantity of castor oil. In order to spread this ink on the marble and on the roller, a few drops of benzine will help. For each printing using this roller, moisten the cliché first. I insist, and this remark is important in every case, that a cliché which has lost the least bit of its water will have its whites clogged and the relations between the different parts of the image distorted.

Covering inks require inks preferably a little over exposed, with the transparent parts well defined. 3

With yellows and browns it is sometimes difficult to obtain in a single impression a perfect image with the required intensity. So, if it is necessary to preserve the fineness of the image, a double image is required, this being done by an exact superimposing of two pale images.

Later I shall explain in detail this procedure of double, and indeed triple, impressions. It is going to be of great use in many cases where a great intensity if required for certain parts or the whole. This may include printing images with several tonalities, such as for engraved originals. 3

Sperati continues his discourse on inks by explaining that blues of the type Prussian blue also adapt well with the addition of a small quantity of ammonia. Again he cautions, make comparative tests before the impression. Matrices from an intense blue original, such as in indigo or blackish blue with *ortho* plates, have sufficient contrasts to make clichés which can often take the vermilion inking prior to the boiling. These need only a light boiling, but this is not for pale blues which require an increase of contrasts. For such blues the colour can be lightened by the addition of a transparent white or better still by adding traces of castor oil to the ink, with the finger used for inking being lightly inked.

For ultramarine (oriental blues) the correct ink is much more difficult to obtain than with the primary blues and the Prussian blues, so have available two inks of differing consistencies, hard and half hard. Effect in the *preparation* a correct inking with vermilion to release the whites, helped by dusting with sandarac powder, followed by a one or two minute immersion in boiling water and, if it is necessary to make a second inking with half hard vermilion, follow this with another short stay in hot water.

In all difficult cases only a difference in the attraction of the inks by the whites and by the image will assist in achieving a good inking.

For browns, greens, reds, yellows and violets, all slightly covering, use the previous vermilion process as for the case of the lakes, preceded by a very short stay in cold water. If the matrices have reduced contrasts, operate as for the pales and the violets by doing this process twice with two short heatings. Avoid a very soft ink, but have at hand the two consistencies, very hard and half hard.

For Whites: white lead, also called silver white, snow white of zinc, white lake, and transparent white. The first two are very siccative so it is only necessary to mix them with a portion of the prepared ink when making new mixtures during printing.

The first, which is the most covering white, increases the opacity of the ink and gives it a chalky aspect. Snow white possesses these qualities to a lesser degree. But where they differ most is in their fluorescence under ultraviolet light, for they are sensitive to modifications of shade, in both the good and bad sense.

The fluorescence of the white lead is a bluish white whilst the snow white, depending on the different methods of its production, gives a fluorescence ranging from yellow brown to bright yellow. White lake and transparent white have cover only little and give slightly greyish white.

In this manner one is forced to make a correct adaptation in each case, based on trial and error, before one can print the

impression of the vignette.

The cliché having undergone its *preparation* is ready to be inked with the ink or the selected mixture of inks. For inking it is essential to have available the mug of water and tuft of cotton the linen in damp muslin, and sable hair brushes with which to moisten certain parts, if it becomes necessary to assist their release.

Begin by moistening the cliché thoroughly with the cotton soaked in water, taking off the excess with a piece of muslin. Next the finger is inked, as already explained or small formats. Having within reach one of the small boxes containing a pad intended for the shade used and thoroughly soaked in benzine, press the finger on the pad and, with the traces of benzine which are picked up, distribute the ink first on the finger and then from the finger to the cliché. Make pressure with a quick to and fro motion, inking the features and releasing the whites. The more rapid the movement of the finger, the better the whites are released, but the features, on the contrary, will be less inked. It is therefore necessary by trial and error to find the right average in inking the cliché, but at the beginning this movement should be slow, along with a certain pressure, in order to have the ink penetrate the hollows.

Do not forget that the cliché, during the entire inking process, must be kept moistened by continual applications of water.

Often the release of the whites requires a wiping with cotton soaked in water and sometimes also a wiping with the finger (Sperati uses his little finger for this). Again, sometimes wiping with the linen, used as a damp pad, works. The most obstinate releases can be accomplished by passing a linen covered finger over the cliché, which must be kept constantly moistened. These releases need very careful watching in order that they are strictly limited to the whites, without destroying the fineness of the image.

It is impossible to standardize on a description of inking of the clichés, given the differences in their behaviour which arises from a number of circumstances. These include variations: in the matrix; in the exposure to light of the front and back of the cliché; in its *preparation*; in the ambient temperature which influences the rate of evaporation; in the capacity of the cliché to take on water; and in the consistency and nature of the inks and their adaptability to the principle of *water and grease in opposition*, on which principle the whole procedure is based. Only a certain amount of experience can properly guide the operator.

The cliché, once inked, requires a certain amount of pressure in order to deliver its ink onto the paper. One can use advantageously a press consisting of a plate which moves horizontally under a cylinder. Sperati's press of just this type is pictured in illustration xxx. On the structural arch of

Sperati's press the name *ARGENTOGRAFICA* is impressed. This is one of the companies which Sperati's photographer brother, Mariano, was associated with in Turin.

Alternatively, a heavy press with a vertical displacement could be used.

Whichever is used, it is essential that any force applied should not cause the slightest lateral displacement. In order to achieve this, Sperati attaches a heavy iron plate to the bed of the press, the plate having a 7 to 8cm square opening in its center. In this opening a thick steel plate is fitted precisely into the square opening, with its sides greased. Thus it can move only vertically with respect to the bed of the press and any problem with rust is avoided. This plate applies pressure to an iron plate below it, which in turn presses on the assembled package containing the inked cliché and the paper which is to receive the impression.

The assembled package on the bed of the press, from the bottom up, consists of first a small rectangular support plate of copper, about 1.5mm thick and measuring about 7 x 13cm. This lengthened form gives Sperati room for manipulation. At one end of the copper support plate Sperati attaches a piece of thick celluloid about 5 x 6.5cm, using for an adhesive celluloid dissolved in acetone. On this piece of thick celluloid Sperati fixes his celluloid cliché.

For clichés on glass instead of celluloid, below the cliché and above the copper plate Sperati interposes a second glass plate, about 2mm thick and of the same size as the cliché, to which the cliché is attached with an adhesive mixture. This second glass must have no traces of roughness in order to reduce the risk of breakage under pressure. In case of breakage, it is usually this second glass plate that goes and this is easy to replace.

Above the inked cliché is the paper which is to receive the impression. Above that is a piece of paper to catch any stains. Then, above that is a soft rubber pad of thickness about that of the inner tube of an automobile tyre. Above this is a 5mm thickness of glassine paper comprised of a band without join, or protrusion beyond the side of the cliché. Next comes a rectangle of thick celluloid and, finally, a plate of shoemakers rubber, about 4 or 5mm thick.

If the cliché is on celluloid, during his tests of inks and papers Sperati fixes the cliché on a glass covered with a thick layer of soft gelatine (several drops of concentrated solution of calcium chloride will soften a layer of soluble gelatine previously swollen with water). With this he can remove or replace the celluloid cliché without difficulty, but with all aspects of the printing stopped. The cliché is finally ready, it being understood that it must always be soaked with water, and Sperati attaches it to the rectangle of celluloid which has been fixed to the copper plate, as described above. Sperati describes his adhesive which is omitted here.

photo of ✓

Now the printing can begin. If dealing with an imperforate paper cut to the desired size, it can be placed above the cliché once it is inked. It is covered with a small sheet of thin paper, smooth and of good quality, the same size as the cliché. The pad is brought down and pressure is applied.

It can happen that the cliché yields its ink badly. That may be due to an overexposed cliché, so that its lines are not sufficiently saturated with water, or due to an ink which is too hard. In the first case place the cliché in warm water without inking it, or better still try adding 2 or 3 drops of ammonia in the mug containing the water used for dampening. In the second case try, if the cliché will stand this without clouding, adding traces of linseed oil. For a good impression it is necessary that the cliché yields to the paper nearly all its ink.

Sperati explains that for perforated stamps, he marks the cliché, during its processing, with guide marks in indelible ink.

For a stamp with its colour removed, but with original gum, Sperati treats the gummed paper chemically in order to make its gum less absorbent of water. To the gummed side he attaches a piece of specially prepared, translucent, waterproof paper with a special adhesive. This protects the gum from the water used in the printing process. After 24 hours the translucent paper separates naturally, nearly always. If not, it can be separated using a chemical.

The translucent paper mentioned above is also used for making superimposed impressions. For this procedure the standard clichés on celluloid are used.

The essence of this process is to attach each paper to be printed by its back onto a piece of the translucent paper, approximately 4.5 x 6cm. for a single stamp. A fold is made in the translucent paper parallel to a short end (4.5cm) and about 7 to 8mm from the end. This fold will become the hinge for the process. The distance from the fold to the near edge of the paper to be printed on is kept the same for all the papers.

Now the short folded end is attached with adhesive to the cliché, taking care that the paper to be printed on is well centered over the image on the cliché. In doing this it is preferable first to remove the gelatine from that part of the cliché to which the folded end is to be glued, leaving that part of the celluloid bare.

In superimposing two pale inks while correcting for two different intensities, one is reserved for the deep blacks, the other for pale, fine parts which ought not to be overloaded. That is, one is kept for intense features and the other for half-tones. The first impression is done slowly, with gradual pressure, taking care to avoid any displacement.

working

Then raise the supporting paper carrying the paper with the image, turn it down at the fold, and carry on with the second inking. Very carefully turn the support paper down onto the cliché and take the second impression which should be exactly superimposed over the first, if one has performed the operation properly.

Usually Sperati begins the inking with the less hard ink, spreading it in small quantities and obtaining the pale tonality with fineness. He sprinkles finely sifted sandarac on the first image in order to promote the transfer from the cliché of the second image in the hard and intense ink.

Once the printing has ended, everything is left as it is until the next day. The vignette papers are left to dry on their supports. The adhesive is then chemically removed from the backs of the printed papers.

Sperati has often used this method with difficult inks which would not provide a satisfactory result with a single impression. But even inks like a vermillion or a cadmium red, a blue or an opaque green, though they rarely require a second inking, will give a superior fineness if one adopts this procedure with two inks of different consistencies.

For other shades, such as brown of mineral origin, yellows and oranges of chromium and the other difficult inks, this procedure with a double impression justifies itself more. With these, if one overloads the cliché for a single impression the result will suffer.

For imitating engraving, there is no longer a possibility of a single impression. Now there are several tonalities from the greatest intensity down to the hardly visible half-tone, a sort of veil, which at times forms the background of the image.

In this case it is necessary to use the matrices where one adjusts the tones by correctly spreading the glaze, always using the original for comparison. The cliché will reproduce these different intensities better still, if it has received only a weak exposure at the back. Further, Sperati uses films with soluble gelatine to help preserve the half-tones, drying the sensitizing solution with warm air. This forms a grain, as was discussed in the chapter on *The Cliché*.

When taking this kind of impression, have ready two or three inks of different consistencies and at times even of slightly different tints. This is the work of an artist, writes Sperati, who has at his disposal the means of superimposing very pale images on others of average or great intensities.

The hardest and most pigmental inks should be kept for the parts with the greatest intensity. Thanks to their hardness (distribution is made with the help of a pad of benzine) these inks will adhere only to those parts of the cliché most exposed to the

light, having regard to the parts veiled or shaded by the glaze in the matrix. The pale impression, applied to these parts of the image, are made with ink diluted with white lake or transparent white, or better still with less pigment. To soften the ink, add a little castor oil or traces of linseed oil.

Finally, a few words on the impression of the obliterations are in order.

The negatives are discussed in the chapter on *The Matrix*. Recall that they are on glass, the image having been rectified by exposure of the back, without necessitating the transfer to celluloid.