SPERATI TECHNIQUE

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The Complete Technique of the Art of Philately.

I N D E X .

PREFACE.

In my first work, which I entitled "Philately without Experts" I deliberately raised a query to be finally settled now as to who, in the philatelic world, could count on the experts, not only those who wished to consider the position from an unduly pessimistic point of view not corresponding to the actual facts but also those large numbers of philatelists who, realising the dangers which they would encounter during the course of their collectings, found their fears disappear by the aid of the experts.

In my first work I wrote "There are experts and experts as there are faggots and faggots", which in other words means that it is necessary to distrust the title of expert which a large number of dealers give themselves. A title to catch the confidence of the clentele they hope to attract to themselves.

It is for the philatelist to make his own choice and his preference for a professional expert should be for one who carries a considerable stock for purposes of comparison for these are the main points which are able to play an overwhelming part in expertising at the same time giving them the technique which I mentioned in that work with which for so long our good old writers and philatelic professors have entertained us; differences in design, in size, in the thickness of the paper, in the shades, in the perforation, in the watermark.

All ~~those~~ that, as well ~~as~~ by ~~the~~ daylight, ~~which is used in the~~ as by Wood's lamp, ~~are subject to confirmation.~~ should be used cautiously.

What do they decide? Only when it is possible to compare a rare stamp with several similar examples of undoubted authenticity is one able to furnish a true assessment.

What is not the business of the champion of these experts is the titles displeyed on their

visiting cards, on the headings of their business notepaper, in their newspaper advertisements and indeed by the side of their door-bells.

In my first work "Philately without Experts" I have abstained from teaching the reader the technique ~~art~~ for this little work had not that object, that of leading the beginner towards the philatelic truth but he was advised to abstain from spending his money on issues more commercial than postal. A questionable trade where one does not know where one goes but which increases year by year without ceasing and swelling the profits of countries of the U.P.U., a great attraction to stamp collectors and even of certain speculators in that sort of thing.

In short, all philatelists should utilise their available liquid funds, their time, on such issues as have been made strictly for postal purposes in the past and if they want more, those of the present and of the future.

But let us return to the essential aims of this work - the technique.

Already, in my first book I announced the publication at some future date of a second book which I had intended to call "Confessions of the Experts". I was proposing to address myself to the experts and to make known to them in their own language, that is to say to talk about the making of philatelic pictorial masterpieces, the methods I use for my reproductions of "Philatelic Art" just as genuine as imitations from other sources but of which the technique is too suspect in certain aspects to be mistaken for mine.

In this work, of which above all the title is significant, we shall see better later. Also all those who are interested in this technique will find detailed, from A to Z, the procedure and formulae that I have used, technical explanations of the methods, the results obtained and also details of all that I have created, invented, introduced, in the course of my researches, an

experience of more than thirty years which have been given to this technique.

It will therefore be a more complete exposure than I was proposing to reveal in "Confessions to the Experts" where I was limiting my contribution to that which would have been of help to the expert but which would have been insufficient for a work entitled "The Complete Technique".

In order that the skill can be fully appreciated and also so that the work can be followed as easily by the beginner as by the master and his pupils the extensive knowledge that I have acquired during the course of my researches has been outlined in the greatest detail. Also, abandoning my original idea of publishing only limited revelations I have decided in this work to reveal the whole of my knowledge in other words all that is contained in my brain in connection with the art of philatelic reproductions, As for myself, I have decided that I ought to wait no longer for it was in 1946 that I announced for future publication "Confessions to the Experts".

A force of circumstances have delayed its appearance. Two unsuccessful legal actions, one by the Customs Authorities and which, even though it went against me at the price of a small fine, has had the advantage of opening the eyes of philatelists to the shortcomings of certain experts at the same time increasing their knowledge. This forces one to the conclusion of a kind of failing of the pure science of philately if it is not accompanied, as I have already explained, with an adequate collection of references for comparison, which nowadays constitute the indispensible equipment of the expert.

The other action, heard in Paris, that centre of the world, has opened the eyes of philatelists all over the world to the incompetence of

a great number of experts and expertising committees of all countries. This has been proved by my "Book of Gold" made up from my collection of authentic imitations and which I presented to the Tribunal at the time of my hearing.

Two trials, of which the happy endings have left me in no doubt that it is thanks to them that periodicals and magazines throughout the whole world have discussed the subject in articles that have sometimes been far reaching. This happy result, because these articles by the Press have also put on their guard the professed experts whose work is done casually, with insufficient data, and has given them an incentive to improve their methods, from now on out of date, this being an enormous advantage to philately as a whole.

In discussing the thread of my explanation I repeat by saying that, 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.

Shall I be subject to criticism? Only too true. That should please everybody.

"The dogs howl but the caravan passes".

Jean de Sperati.

November 1953.

Chapter 1.

INTRODUCTION.

Before instructing the reader as to the different steps of my method of reproduction several preliminary explanations are necessary.

This introductory chapter therefore, which one could call "An Overall Glance" has for its object to enable the reader to understand better the technical explanations which will appear in the following chapters.

At times I have inserted details unnecessary to some experts of graphic art who will read this work but which are indispensible for the layman, who wishes to benefit from it either for professional usage or merely for simple learning.

To begin with, one might ask why one calls the subject that one proposes to reproduce "THE ORIGINAL" as it takes in some manner the same part as NATURE to the painter or sculptor.

In the chapters which I shall devote to the treatments which each original are to be subjected to, it will be seen that in as large a number of cases as possible stress has been placed on the extent of the innumerable problems which crop up, each one differing from another. Every original possesses characteristics which are peculiar to itself so that one can say without contradiction that it is impossible to use the same treatment for two different stamps when reproducing them.

The various subjects need a varied treatment.

This means that there are a multitude of points to be considered before we can proceed to work.

What does remain important - let us understand clearly - is that the original must be in a fit state for handling through the various processes.

The original must emerge intact. Preparation which is imposed by my revolutionary technique to obtain the "matrices", which consist of obtaining the image of the original, is that of the role

an operator without the intervention of standard photographic apparatus.

Now that the original is ready to fulfil the task assigned to it one should mention "ready for his part" which indicates that the original has been submitted to an innocuous preparation which will leave no traces. For details I refer to the chapter following that devoted to The Original.

Oneehaving obtained an original and prepared same, for it is seldom that a commercial original is ready for use, it is necessary to resolve the problem of light radiation, which is most important in order to secure a good matrix.

For details I refer to the chapter which deals with the Matrix.

Because of the differences in originals, the obtaining of matrices is a far from standard procedure, nothing like it, as the photographer will find out, as for the originals the methods used in reproduction, in order to secure a perfect revelation of the design, are susceptible to undergo many modifications according to the quality of the model.

Once this matter has been settled, we are still a long way from having exhausted the technique. To begin with, as with the originals, once we have obtained the matrix it is not useable. It is still necessary to undertake a chain of successive operations, of which some need a very delicate handling, before the matrix is ready to provide the cliche.

A most important chapter, for equally in the manufacture of the cliches and the manner of obtaining them, one must take into consideration the variations in the originals. There is also the question of a holder, the sensitive surfaces, the method of using them, the formulae and many others in the preparation of the matrices.

But even when in possession of the cliches there is still a lot for me to say. Have you considered the different problems still to be solved?

That of inks (and when I mention inks I mean also colours, including black), of their choice, of their blending and what is called blending - which is so very often necessary - sometimes called "club" mentioned because it helps to initiate the reader into the machinery of these "mixtures" and helps him to succeed, with a minimum of experiments, in obtaining the shade of the original.

And the problem of paper? What researches are necessary, what improvisations, what formulae how to obtain the papers of another age and then the different make-ups of our present manufacturers

Add to all this the difficulties met with by the complications of their reaction to various forms of light, - daylight, artificial, Wood's lamp, sodium lamp.

And after this, after this train of stages that I have enumerated, in which chemistry, physics, mechanics and the innumerable formulae all play a part, what have we at our disposal? A cliche not ready for the impression and white or whitish paper on which to print it.

The question now arises, in the first place of submitting the cliche to a special preparation

This effected and the question of inks satisfied, it is now necessary for us to pass on to another operation of the greatest importance, the impression.

Here I draw the attention of the reader to the two conditions which are essential if one is to obtain good results, - the fixation of the design and the impression.

As much of one as for the other, if with certain originals everything goes off a little too smoothly, other originals, on the contrary present the greatest difficulty in reproducing a worthwhile copy, often causing the workman to be discouraged with his early attempts but he will be able to more fully comprehend my instructions after a short period of experimentation.

Everyone knows the meaning of the word "impression" in connection with graphic art, it is the application by pressure on a support X (in our case the paper) of an image in colour or in black.

Now, in our case, the impression, as well as everything else, must agree with the original, - on account of the differences in make-up peculiar to every stamp, - it is not a question of applying a standard method, there is also the question of the modifications imposed in the method of preparation, spreading and application of the ink.

Having used the greatest care over the impression of the image, a suplementary operation has now to be taken into consideration, made necessary by the obliteration for no one can ignore the fact that there are two types of stamps, - mint and used. It is necessary therefore to go through the same operation with respect to the obliteration, often very complicated. Standardisation of these, especially with regard to obliterations. which are not dumb, would detract from a collection of forgeries. Such standardisation is excusable when the workman finds it impossible to obtain an original in its mint state.

I shall therefore give an explanation of my method of composing the obliteration, its reproduction, its cliche and its impression. In addition to the differences of vignettes, the extra work to be carried out in the shape of modifications and variations, principally concerning the dates. In addition certain retouches or make-ups are necessary in order to obtain with the cliches a difference of aspects which will characterise an obliteration made with a metal stamp from one with a pad.

Having arrived at the stage of the image on the paper, mint or obliterated, one should not make the mistake of imagining that all that is now required is to check the position of the perforations, the watermark and a quick snip with

the scissors round the margins of the imperforates.

One must not forget that almost all the specimens that we wish to copy are one hundred years old or nearly so that during this time they have been subjected to the ravages of the weather not to mention that of man.

The different vicissitudes that these poor pieces of paper have suffered during their long stay in oblivion. In bygone days accumulated in damp collections or exposed to the dampness of cellars or to the tropical temperature of summer in attics. Oxidation resulting in a change of colour and of paper, disintegration of the paper by dampness, discolouration or yellowing by exposure to the light and through being exposed to the sun in shop windows.

Now having executed the various stages which I have outlined briefly, what are we in possession of? Impressions in a mint state or with brand new obliterations. Therefore it is still necessary for us to undergo several more operations which, after the lapse of several hours or even several days, will transform our "brand new" into a specimen showing all the necessary signs of old age. This also applies to the paper, the ink and the obliterations without forgetting, as many philatelists might, the gum which will be dealt with in the chapter entitled the "Trimmings" and which can easily double or treble the value of the stamp.

Chapter 2.

THE ORIGINAL.

During this and the following chapters, the words "originals" "prototypes" or "reliefs" will be often mentioned for they crop up repeatedly especially in connection with the obliterations, where one has to overcome certain difficulties or impossibilities to obtain a sufficient quantity of suitable material and, in which case, the description "prototype" or "relief" is used instead of the "original".

As there is a kind of preventive preparation necessary before they are put into use, I am going to separate the explanation into two parts, one to be known as manipulations of the original stamp and the other dealing with models of the obliterations. But before dealing with this subject it is important that we first consider the original from the intrinsic point of view, that is to say the possibility of using them in their normal state.

It is obvious, and this should be evident to the layman, that a new original, unused, with the paper unstained, with a bright colour and the exterior frame complete is a dream for the reproducer. But how many times is it possible to find such a specimen? One in ten or perhaps a hundred. For on such a discovery one is brought into the realms of finance for such specimens are only procurable at very stiff prices, which would lessen the financial earnings of the workman straight away or rather would induce him to increase the number of copies of a work that should restrict him to a very small number.

Lacking the perfect original, one has to consider the following list of "usables".

Firstly a mint copy, then a second choice unused, even without gum or with a small hole or

better still a crack or a thinning as long as the design remains intact.

Next comes the originals of which the design is partly cut, a stamp with one or more sides missing, perhaps owing to a badly centred impression or due to a snip with the scissors at the time it was put into use or, once again a specimen that has a tear in the paper affecting thedesign.

In the two lists above I regard an original as a stamp that has not yet undergone any manipulations. But as these manipulations, these works of the philatelic clinics, are essential for these "poor things" which have been damaged by time and man, it is often necessary to also regard them as potential material when one is looking for an original. In the absence of something better, if the work of embellishment does not include retouches by hand of a portion of the design and is limited to the repairing of a crack or of a thinning not breaking the surface of the stamp, one could with care use such a specimen.

But if the design has to be modified by this work (for example a missing corner, a cut design or a repaired stamp) then as the reproduced image does not faithfully represent the whole of the original design, such a specimen must be rejected as unusable.

Again one may only be able to procure a mint copy at a time when one has need for a used specimen. Here I am forced to reply that experiences soon forced me to apply myself to the question of obliterations. All that is necessary to remark at this stage is that whenever possible, and this should be easily understood, one should obtain obtain specimens with insignificant or light obliterations, covering only a small portion of the design of the original.

In order to lessen the confusion of the reader, it is necessary here to interpose a reference to the operations which will be discussed

in the chapter dealing with the manipulation of matrices after reproduction and on retouches after impression.

Several types of cases crop up, where the obliteration is in a oily black ink, or again in an oily coloured ink (red, blue, green, violet) or again in a water ink which is always or nearly ~~always violet~~ always violet.

In the first of these cases, oily black ink, manipulations on the matrices and on the "trimmings" consist of trying to remove them or to leave only the faintest traces. In the second case, obliterations in coloured ink, one is able sometimes, with a suitable screen (see later in the chapter on the Matrix), ~~how it is possible~~ to reduce this inconvenience, if the ink is not too heavy, ~~and sometimes~~ a very delicate operation, to effect their removal by a chemical process (see in the chapter "The Paper" the decolouring formulae).

Obliterations with oily colours are not easy to conceal, derivations of mercury (vermillion), of lead orc chrome(yellow, orange) will respond only if they are light or insignificant and should be treated as I have indicated in one or the other of these two types.

With regard to water inks (anilines or such like) where the colour of the stamp is not susceptible to alcohol or water, a prolonged immersion in one part water, two parts alcohol should remove them or nearly so.

But if at the precise moment one is not able to obtain an unused stamp, or even one with a light obliteration, and one is eager to reproduce a certain specimen in order to complete an issue, perhaps by adding a very rare specimen, then it may be necessary to resort to the use of a very heavy or indelible obliteration.

What does one do in such a case? It is no use considering the make up or retouches on the matrices, cliches or vignettes for they will simply damage the design. One must take the bull

by the horns and by a process which I consider quite in order invest the vignette with a "standard" obliteration.

My reference collection contains several vignettes with this kind of obliteration.

I shall explain in detail in the chapters headed "The Cliche" and The Impression" the method I use in such a case.

In passing, I add that the display of my reference collection with "standard" obliterations caused much ink to flow, raising a number of impressive assumptions.

In returning to our talk on "originals" instead of dwelling on other points to be considered, it is necessary, as I have already hinted in the preceding chapter, to submit the original, which is to play the part of "master" copy for the design to a certain preliminary treatment. In assigning this part to the original I stress that it is thanks to its intervention and by its intervention alone without the aid of any other apparatus usually associated with the securing of reproductions, that I obtain my matrices. It is also due to this non-intervention of optics that I am able to obtain images of which the distinctness of the lines and their exactitude are far superior to anything that could be obtained by the methods usually adopted. In addition to this, a greater flexibility in the revelation of the image, together with the formulae and the method of application have made it possible for me to obtain a degree of precision never before attained. These remarks also apply to the method of fixing the image, the manufacture of my cliches and in my method of impression.

The original having been raised to the position of "master copy for the design" here is the technique of the preparation that it has to undergo.

In order to fulfil this task it is

necessary to make the paper of the stamp as transparent as possible and in order to do this the following operation should be undertaken: first, the original is immersed in cold water, preferably distilled, in order 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 however this is not the case, however, I shall later detail a special treatment that can be undertaken.

Having cleaned and dried the original, it should next be placed in a wide mouthed cup of sufficient depth and with a capacity of from 20 to 25cc. and in which spirit of turpentine of the finest quality has already been deposited, for abot 15 - 20 minutes. After this lapse of time the stamp should be recovered from its bath by means of tweezers and should be examined as quickly as possible on the face and reverse before the spirit has had time to evaporate.

Two things may have happened:

1. The design is now as visible from the back as from the face, without any break therein. This indicates that the paper has acquired the requisite transparency without furthur preparation.
2. The design, clear on the face, shows only partially through the back of the satmp or is indistinct. In this second case in order to obtain a good transparency it is necessary to proceed as follows:

Having ready in a receptacle (preferably of fire resisting porcelain) some boiling water and float the stamp, which has been soaked in turpentine of which the excess has been absorbed between blotting paper, for about one or two minutes. This operation is completed by immersing the stamp for some seconds in boiling water,

On removing it (always work with tweezers), wipe it with blotting paper and allow it to dry naturally. Once the original is dry again it should be immersed for trial in the spirit of

turpentine.

The paper, now freed from its gum, should be left soaking in the spirit for some minutes.

Sometime the action is very slow and it may be necessary to soak the stamp for half an hour or even longer before the design, in its entirety, can be seen through the back (as the stamp is always absorbing the turpentine it should be taken out of its bath from time to time in order to check the progress of this operation).

There are still other points that have to be taken into consideration:

(a) The colour of the stamp is sensitive to boiling water.

(b) The original is gummed and the question arises as how to retain this.

In the first case after bathing the stamp in cold water (before its immersion in turpentine) it should be submitted to heavy pressure under a cylindrical press, the stamp being placed between a suitable metal plate or covered with a sheet of glossy paper and a sheet of gelatine or celluloid (an optional operation but one which helps towards success)

At the same time have ready three mugs with large apertures and a capacity of about 25 to 30 cc. containing the first cold distilled water and the second pure alcohol or 95% proof and the third spirit of turpentine, Begin by soaking the stamp in the cold water until it is thoroughly damp (several minutes). Withdraw it and soak up the excess moisture with blotting paper, and then plunge it into the alcohol for 5 - 10 minutes. Again after taking it out remove the surplus liquid and, this time very quickly, in order to avoid evaporation of the alcohol absorbed by the paper, immerse it in the spirits of turpentine, where it is left until transparency through the back is satisfactory; this often requires a much longer time

than the boiling water treatment.

In case (b) - preservation of the gum, there is no question of having been able to immerse it in water; at the very most, with extreme care, one should be able to float it for two or three minutes on cold water (if this is successfully accomplished) in taking off the excess moisture by flicking the design with a piece of blotting pa per at the same time holding the stamp with tweezers. One is thus limited to the use of two liquids only, alcohol and spitit of turpentine, so one proceeds as follows:

On immersing the stamp in the cup containing alcohol, it is left there for from 10 - 15 minutes, Taking off the excess of moisture between sheets of blotting paper, very quickly to avoid evaporation of the alcohol absorbed, soak the stamp in the spirits of turpentine until transparency has been aquired. If the paper has not ~~been~~ reached the desired state, the pressure process, already described, should be applied again.

If you are afraid that the action of the boiling water (although personally I have used it generally for nearly all of my originals) will be injurious, you should limit yourself to the triple process: cold water, alcohol, and spirit of turpentine, which will succeed in nearly every case case. Finally if it is necessary to work with a stamp of which you suspect that the colour is sensitive to alcohol (very few on the whole), choose the method in which the alcohol is omitted.

Spirit of turpentine does not act on the colours so that a prolonged immersion in this liquid is not dangerous. One precaution must be taken before the task is complete. Dip the stamp for 2 - 3 minutes in pure benzine, the same as is used for the examination of stamps, in order to eliminate all traces of the turpentine, which would in time cause oxidation and stiffening of the paper.

So now I pass on to the obliterations.

Here a number of problems crop up, for, as

every philatelist understands, the same type of stamp receives a considerable number of types of cancellations which, because of their variety make their treatment different.

How does one tackle this multitude of different cancellations?

One could not dream of aquiring a sufficienty of original documents in order to obtain for each type a sufficient number of different cannellations. Therefore it is necessary to assist oneself by devices in which one can have sufficient confidence that they will provide a suitable facsimile of this variety of cachets.

I shall therefore, in the passages which follow, have occasion to consider two coditions.
1. The cancellation is reproduced from an authentic document (the obliteration impressed clearly on the stamp, be it detached, on letter, or on piece).
2. The prototype of the cancellation is obtained from a copy of a genuine cachet. Such copies are available in large numbers in auction catalogues, offers in dealers circulars, advets, etc.

I will discuss No. 1 first.

When one takes one's model the cancellation on a detached stamp, one should choose those specimens which bear a cancellation of which the details are clearly visible and also, if possible, complete. In the event of part of the cachet being missing, one should use an ordinary cannellation or one completed by an appropriate retouch (the stamp having first being stuck on paper by drops of gum). If necessary one should strengthen certain pa rts which may be faint, by a black water ink, capable of being removed later by wetting.

This is then placed in spirits of turpentineand, once the required degree of transparency has been achieved one should proceed with.

the fixation of the design (see the following chapter "The Matrix")

If it is desired that the cancellation should appear on the paper (a letter or fragment of a letter), provided that the stamp is not of great value, the cancellation should be cut out.

But if this amputation cannot be justified, then one should proceed as I shall now show below in No. 2 or use the normal procedure, usually adopted, of using standard photographic apparatus providing that the subject and its printing will give a satisfactory result. In this case use the special electro plates to secure the greatest contrast.

I shall now pass on to No. 2, the method by which I have secured the largest number of my cancellations. By this method, a reproduction from a reproduction, a very necessary precaution has to be taken, the verification of the scale.

When one has found, in a printed plate, a copy of the required obliteration, checked by comparison with the stamps, where one of the stamps of the same plate to which the size of these stamps conform, or with a very minute variation in height and width with the dimensions of the same original stamp. Once this point ~~ha~~ has been established, I proceed with the TRACING of the cancellation.

In the event of a different dimension between the original and the print, correct this error by a reproduction with a photographic apparatus. From the negative obtain a positive proof that will be the exact dimensions and use this.

The operation TRACING requires a certain skill and experience as a glance will show the degree of acceptability of the design obtained.

In order to make these tracings I have, in the course of my work, employed ma ny methods, I will detail three, all of which are capable of securing the desired results.

Method A.

Take a sheet of thin ungummed paper. It is essential that this paper should be abs orbent so that it can soak up the following solution which should be prepared in only small quantities composed of several drops of petrol combined with the same number of drops of castor oil. Let one or two drops of this liquid fall on each side of the sheet of paper and, on rubbing it by making pressure with the thumb and index finger (one finger on ea ch side) one is able to secure a good and lasting transparency. Remove any surplus by successive pressure of the fingers. From this paper cut squares of a size larger than the cancellation and superimpose one on the other. If it is necessary to superimpose it on a genuinepiece, place between the greasy paper and the original a sheet of thin cellophane. To fix this greased paper to the printed plate use on the four corners a thick and very sticky mixture obtained from finely ground resin soaked in alcohol and melted by gentle heat (without a flame)

Add to this mixture several drops of castor oil in order to delay its evaporation. This mixture will be found handy for use several times during the course of the operations as I shall describe in greater detail in my chapter "Impression".

Once the square of tracing paper has been fixed over the design to be reproduced, the tracing should be made with the aid of a magnifying glass. (In my work I use specracles with interchangeable lenses, allowing for several magnifications and, at the same time, leaving my hands free.)

Take care not to disfigure the design, the letters and figurse particularly need close attention in order to secure the correct formation. The pencil that I use for this sketch of the design is a H or HB Kohinoor, sharpened to a very tapering point. In order to inspect the progress of the work without displacing the tracing paper,

I slip a piece of white paper between the board and the transparent paper. Having sketched the design in a manner that I consider satisfactory, I detach the greased paper and fix it on a sheet of white paper with the composition already described. In order to strengthen the image, one then one has to use a powder made with the powder scraped off a soft pencil (B3 or B4) a solution with adrop of linseed oil, which is very carefully applied to the sketch with the aid of a very fine camel ha_ir brush or a piece of wood tapered like the point of a very delicate pencil.

This is somewhat of the work of an artist for it is necessary to realise the resemblance of a postal obliteration. One could also dispense with this solution by going over the two sides of the oily paper with a very delicate pencil.

By these means one obtains a double strengthening of the image; erasures can be effected by means of a knife.

Method B. In this method proceed as follows:

Trace on the paper containing the castor oil and paraffin using a H or HB pencil. When this is done immerse the square of paper in an acetone which will not only dissolve the oily substances but will restore the paper to its original opacity or nearly so. At this stage the paper carrying the design should be fixed to a slightly larger piece of white paper by means of some drops of the previously mentioned adhesive or with a gum mixed with glycerine. In this method I strengthen the image with a mapping pen, giving very fine strokes, dipped in a soluble ink which I make myself from best gum arabic to which a quantity of soot is added until I obta in, by careful mixing, a very thick pa ste which I dilute with water sufficient to allow the ink to flow freely from the pen.

One can also use Chinese ink, in sticks of good quality, which dissolve (to be quicker) in warm water until it becomes a beautiful intense

black, flowing freely from the pen. Avoid using the Chinese ink known as indelible, which is alkaline and contains phenol, which runs and gives an enlarged sketch. The lines can be corrected by means of a paper knife, such as is sold under the name "vaccinostyle"

In this method (b) as the immersion in the acetone gives a new opacity to the paper, in order to make it transparent again so that one can make the matrix, it will be necessary to soak it for several minutes in the spirit of turpentine in a simila r manner as already described for the stamps. Method (c) Lastly in method c the image is traced on a thin sheet of cellophane. But as it is necessary to make a pencilled sketch and as it is not possible to do this on the polished surface of the cellophane the gloss must first be removed from its surface. Get some very fine glass paper (grade 000) but as its grain will still be too coarse, it must be furthur reduced before use by rubbing it against a piece of hard wood or a sheet of gelatine or celluloid or better still grate it with a thin blade of scissors, a knife, etc.. Now having obtained a glass paper with a very fine grain I take a sheet of thin cellophane (I use long and narrow strips 6 x 13mm) and place it on a very flat surface, such asa tile of very thick glass, and place between the glass and the cellophane a piece of Bristol board. Then whilst keeping it upside down and rubbing it with glass paper, one is able to secure a uniform deglossing.

When it is this state the pencil will mark and it is possible to obtain a sketch of the obliteration.

To secure the tracing fix the square of de-glossed cellophane to the paper for the copy by means of four drops of the resinous mixture. The sketch having been completed, detach the cellophane and pla ce it on a sheet of white paper, fixing it in a manner already described.

Strengthning of the design is effected as in

method (b), that is to say with a mapping pen and with soluble black ink of the type already described. In order to correct or erase the strokes, use the same pen knife, but only whilst the ink is dry, otherwise it will flake and come away in the places touched by the pen knife.

Being thus in possession by one or the other of these three methods, the prototypes of the cancellations, one can now proceed to manufacture the matrices, and thus obtain the cliches.

In the chapter on the Matrix will be found all the details as to their manufacture, In addition one will find all the details relating to their embellishments and subsequent retouches for it is necessary not to loose sight of the fact that in making the obliterations which are not mutes, such as obliterations with dates or with modified characters, it is possible to construct the largest number of different varieties possible, a detail of some importance.

Also 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 na ture, each to themselves perfect, insert partly a different drawing by substitution to that of the model. Take ca re that the formation of the characters and figures resemble printing and practice this subject by making a few and so produce a work of art.

Chapter 3.

THE MATRIX.

Having put to good use the instructions that I have given in the previous chapter "The Originals" we now find ourselves with originals and prototypes resembling sta mps, also obliterations, ready to manufacture the matrices.

In considering the differences of treatment which stamps a nd obliterations require, I shall deal with these two subjects separately.

Firstly I sha ll deal with the manufacture of matrices for stamps.

The first point on this subject is that it is essential to draw attention to the properties of the colour of the sta mp to be reproduced but before detailing the opera tion by direct contact and by transparency which I use to obtain the matrices it is necessary to consider the degree of covering or opacity by transpara nce of the inks of the original.

In order to understand this distinction better, consider a colour obtained with vermillion or red sulphur of mercury and a red lacquer. The vermillion colour increases in density and darkens by being made transparent and will furnish a sufficient contrast that will give us a good matrix whilst a red or carmine lacquer, light colours which only darken slightly on being made transparent, especially if their intensity is not great, the use of ~~a green~~ a green chromatic screen, a colour complement to red.

The subject of chromatic filters or screens is of the highest importance, for it is the wise choice of them that ena bles the best matrices to be made or at least of a quality which will give sa tisfactory results to the impression.

I constructed my own screens of which the nomenclature is given below with indications of

the colour a nd the stains used. Later I will indica te the method of using them.

For violet	Hoechst or Bayer violet crystals.
" blue	Hoechst blue filter.
" green	Green 11 for Hoechst screens.
" yellow	Yellow.
" red-orange	Hoechst red-orange 11
" red	Hoechst red 11 for screens.
" red-violet	solution of erythrosine.

All these colours are soluble in water so that it is easy to obtain the screens by soaking or with narrow dishes containing the coloured liquids, the partition being ma de by two good quality glasses, separated by a 5mm space. In order to verify the non-porous character of these dishes I have used a paste composed of wax and resin, applied warm and hardened with cooling. The chink or space between the two glasses is maintained by slipping between them on three sides strips of glass of the thickness in millimetres that is required. I also often use screens, reserving the use of the latter to such cases as it is necessary to adjust the density in order to secure the best efficiency.

With regard to the screening by soaking with the help of glass or celluloid (film) I work a s follows.

Firstly the glass, I choose several photographic plates of a make of which the glass is normally of the best quality and select from these, when the work of preparation is completed, those that are likely to make the best screens. I remove the silvery coa ting from these plates by soaking them in a bath of hyposulphate of soda, then they a re submitted to a very careful washing until every trace of the salt is removed and then I dry them. Whilst talking about the choice between different kinds and ma kes of photographic

plates, I would draw attention to the fact that two types exist, one with a soluble coating of gelatine and the other with an insoluble coating.

Reject those with an insoluble coating for this would absorb a coloured ~~light~~ liquid. In order to ascertain the solubility or otherwise of the coating, it is sufficient to wask a small corner of the plate in hot water; the kind that will suit us will have the gelatine liquified and the glass will appear to have become rid of this layer. If however the gela tine is insoluble it will appear on the surface of the plate as shrunken and rippled.

In the absence of plates with soluble gelatine, after ha ving de-silvered the insoluble ones and made them transparent, it is necessary, after drying them, to place them on a level and to cover them with a coating of 10% of film gelatine then placing them carefully, because of the adhesiveness of the jelly, in a place immune from dust and allow them to dry naturally.

If this base, instead of being of glass, is of celluloid or gelatine, I work just the same but in this case by taking as my basis a photo-graphic film.

To ensure that the coating of coloured liquid is absorbed, one ca n proceed in one of the follow-ing ways.

Soak a wad 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 by means of a piece of smooth gumless paper, making pressure with a small squeegee or some substitute.

It is also possible to colour the plate by immersing it completely in the liquid for several minutes and then removing the surplus liquid as before. With colouration by immersion, it is as well to make both sides absorbent by gelatine.

In all these little operations, and there will be very many more of them 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 utilising ones own ideas, one should be able with the help of my explanations, the fruits of my experience, to obtain satisfactory results. As for the intensity of the colouration of the screens, I give several rules of approximation.

For the green screen, which when applied to a bright red colour, subject exclusively to its own radiation (that is to say without any mixing with the white light) appears a s an intense black.

For the red-orange, so tha t when applied to a blue object, makes it appear as black.

For violet and dark blue screens, on applying them to a yellow or yellowish object, this appears as a greyish brown to dark yellowish. These last two screens are employed to obtain deepenings, for yellows and brown yellows are pale colours that need reinforcement. Yellows of chromium or zinc, as these have mineral bases, possess a certain intensity and will appea r through such screens.

I am giving below s everal hints concenning the logical use of the various screens:

Dark violet screen: Intensifies (increases the contrasts) yellows, greenish yellows.

Dark blue screen: Intensifies oranges, greenish-yellows, yellow browns, and neutralises.blues.

Green screen: Intensifies reds and orange reds, neutralises greens.

Yellow-green screen:(obtained by a mixture of Hoechst green with a small quantity of Hoechst yellow) intensifies viol ets, reds with a violet tinge a nd neutralises yellow and greens.

Deep yellow screen: intensifies violets and neutra lises yellows.

Normal yellow screen: this is used when the

image is of sufficient density but when the paper is yellowish or has a yellow tinge or stains due to dirt or old age.
Red-orange screen: intensifies blues and blues with a violet tinge, neutralises orange.
Red screen: intensifies blues with a violet tinge and neutralises reds.
Violet-red screen: (erythrosine) intensifies the blue-greens and neutralises the violet reds.

Smong the colours usually sufficiently intensified are to be found the blacks, yellows, reds and greens with foundations of lead, zinc, mercury, mineral earths and, generally speaking, all colours giving a marked degree of opacity when examined for transparency on a transparent or translucid stand. But it must be understood that, when it is necessary to make the use of screens, the sensitive surface which provides the matrix should also be susceptive to those rays which the screen allows to pass through. Therefore I call it Orthochromatism and, by extension, Panchromatism when the prepara tionis at least sensitive to all the rays of the spectrum, but Panchromatism does not interest us, it is only of interest in normal photography, whether unicoloured or in colour.

As for ourselves, we have need for a variety of radiations so I will now discuss the "ortho" preparations.

As I have already said for the reproduction of designs in intensified colours it is possible to undertake all the "ortho" procedure and to use them with such sensitive material as I shall mention later. But now the question of the screen to interpose between the source of light and the sensitive film comes into play and it is essential that this film should be subjected to the preparation which is called "orthochromatisation"

Thanks to the extraordinary flexibility of my method of disclosure of the matrices, I have been able to reduce the number of subsequent operations

because I use the same formulae: for a dark gree, obtain it with Hoechst 11 green, for designs in red or red-orange, and a second dark red, from Hoechst 11 red for designs in green & yellow green.

As for the blue and violet screens that I use, there is no question of the ortho, for these two radiations a re intensified and the film is already sensitive by them to these two shades.

There are several kinds of orthochromatisation:

The manufacturers of sensitive ma terials embody these substances and use the same emulsion. This is not so in my case, for I begin with a sensitive film which is not orthochromatised and which, for the work with the screens, I am able to convert into a film sensitive to different radiations.

In order to obtain this result I have used the method known as orthochromatisation of the "bath", that is to say, I immerse the plates in the liquids and let them stay there for some time. There are in this operation several precautions which will emerge gradually during my explanations.

These are the formulae which I use for this purpose:

Bath to make the plates sensitive to yellow or green and which can also be used for an orange screen which colour contains a strong proportion of yellow.

Firstly one prepares a solution of alcohol of erythrosine, made up as follows:

Pure alcohol or, in its absence 95%	100cc.
Erythrosine	1gr.

Filter through paper, this solution will keep for a long time.

The "ortho" bath will then be made with:

The above solution of erythrosine	10cc.
Distilled or rain water, filtered	1.000cc.

Cyanide bath in which to render the plates sensitive to red or orange-red. The cyanide not being soluble in water, a solution has to be prepared, made up as follows:

Cyanide 1gr.
Pure alcohol 500cc.

From this solution take 40cc and mix it with 1.000cc. of distilled water.

For orthochromatisation I use upright earthenware basins with tight lids for plates 6 x 9 or 8½ x 10, they can also be used for plates 6 x 12 or 9 x 12. This type of basin is in general use in normal photography for slow developements. They can be found on sale with 6 or 12 grooves for 6 or 12 plates but it is probably possible to pass through such a bath double the number of plates by placing them back to back in the same groove, leaving the sensitive part of each pair of plates on the outside, in contact with the liquid. But I do not recommend the undertaking of this procedure on too large a scale for however well the plates are wrapped in black paraffin paper, because of the existance of moisture, they will not keep for more than a few months at the most, after which time the designs will gradually cloud over.

Below I describe the detailed steps of an operation:

Take for example that I wish to treat 12 plates 8½ x 10 in the bath of erythrosine. I take an upright basin corresponding to this size and I pour into it enough liquid to cover the plates, disposed vertically, to a depth of 2 or 3cm. According to the previously mentioned formulae the amount of liquid necessary for this operation would be composed of the following:

Solution of alcohol of erythrosine 1% 17cc.
Distilled water 1700cc.

This operation should be performed in a dark room having for its illumination a red light

obtained from one of the lamps that are found on sale for this purpose, but as it will not be necessary to work with very sensitive materials a clear red light will suffice. It is observed that when working with baths with a cynade basisit is necessa ry to replace the red light by a shaded green light. The Maison Lumiere manufactures special papers with which to cover the globe of a white or yellow electric light and which supply a shaded coloured light, which is always prefera ble to direct lighting.

The plates should remain in the ba th of erythrosine for from one hour to one hour and a half in summer and for two hours in winter and once during the course of this immersion they sould be turned round so that the bottom becomes the top and visa versa.

This delay of immersion over, the liquid is thrown away, for it should be changed every time, and the plates washed in water in order to rid them of all excess of the erythrosine.

Wash them for several hours, changing the water every half hour. The washing completed we pass on to the drying which should be effected as quickly as possible. To do this I use 95% proof alcohol which I place in two dishes 9 x 12. The plates removed from the water have their surplus moisture removed by means of blotting paper or ra g. They are then placed into the first dish which should contain sufficient alcohol to cover them. The dish is then rocked and, after a time, the plate is placed in the second dish, also containing 95% alcohol, in order to completely remove any traces of water, I then place it on a small pad consisting of a thickness of several sheets of blotting paper which absorbs any excess of alcohol on the back and I pass over the face a pad composed of very fine linen, very porous, which rids the sensitive film of any excess of the alcohol.

I then take the plates one by one (always

by the coloured light of the laboratory) on a grooved draining board, which should be enclosed in a chest or trunk that is absolutely light-proof and there I leave them to dry naturally. This drying should be completed in an hour or so but so as to assure myselfthat they have been thoroughly dried, which helps so much in the preservation of the plates, I then submit them to a dose of warm air with an electric drier.

To begin with, have ready for their storage a box wide enough to contain them, paraffin papper and black paper.

All having been thoroughly dried, I wrap my plates ready for use as required. The choice of sensitive plates to use, in order to obtain the best possible conditions for good matrices, has been the patient study and research.

The conditions which obtain are as follows: 1st. Using a sensitive film avoid the lateral diffusion of light coming into contact with it, this will have the effect of clouding the image. 2nd. Especially, if possible, select one with an absence of specks.

Now these two conditions cannot be met until after a most careful preparation which should furnish a transparent film or nearly so.

It is known that all the sensitive preparationsthat one can purchase, 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 constitution of the silvery salts precipitated in the film and that the developement to which the emulsions are submitted will make these crystals still larger, a feature which, on the one hand, has the advantage of considerably increasing theit sensitivity. With less rapid preparations, for reproductions in black shades, of bromide or of chlor-bromide, there can be no questionthat the film is of the same opacity. I must fall back therefore on very slow preparations of silver chloride which have the advantage of

having a very fine grain which makes 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 whole world also circulated freely I was able to choose from among very many makes of sensitive preparations those which were the most suitable for my kind of work, I was also a little embarrassed by the range from which I could choose but at last, after many trials, I selected the English make known as "Ilford Alpha" a type of pla te intended to produce diapositives in va rious shades, red, crimson, sepia, yellow green, bluish etc. These very slow plates, that is to say were able to be handled in a yellow light, had very little grain and possessed a transparency which I considered to be satisfactory.

But the Wars intervened carrying, in addition to other misfortunes, a restriction on the circulation of merchandise, restrictions which are still felt toda y so that I had to give up my use of "Ilford Alpha" as they could not be procured in France and to restrict my choice to a French production. In time I replaced the "Ilford" by a product of the Societe Lumiere, called "Photographic plates for warm tones", of which the almost absence of grain and the degree of transparency appeared to me to be adequate. For a large number of years now I have used this brand satisfactorily. These plates a re orthchromatised quite satisfactorily in the bath with the "ortho" formulae that I have already given.

Before tackling the problem of fixation of the image of the original on the plate, I ought to talk for a few lines on the possibility of having to retouch the original before making the matrix.

Certain originals, especially those with thick lines, have no need of retouching, the least that one has to do is to reinforce some little detail that has disappeared or become weakened by wear.

It is the originals consisting of fine lines

which are rather weak which require some reinforcement. To do this I use soluble inks and special water, of my own making, which guarantees the greatest thinness of lines, and of which I shall give the composition and method of use later, 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 talk about another very important subject before discussing the fixation of the image: this is the question of preserving from the image the dangerous effects of "halo" caused by the rays of light, which having passed through the sensitive film, strike the transparent base (in this case the glass) and then react on the sensitive film, causing a lateral emission of light round each ray. The usual super-sensitive preparations, known as instantanious, now cater for us as an anti-halo film has been manufactured, rendered all the more necessary because their milky coating is prepared for side-spreading, but the slow preparations, called "Ilford Alpha" or "Lumiere wa rm shades" are not able to stop this halo. It became necessary therefore for my having recourse to an anti-halo.

The ideal is to have an anti-halo ready for use, one that can be used over and over again, that is to say detachable and easy to use. The anti-halo which I am going to describe fulfils these conditions.

The is a commodity known as "Carbon paper" which can be obtained in a large ra nge of colours, which include black. In photography it is used to make pretty effects since, although of only colour, it can be obtained in many colours. 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 warm water) and containing several layers of an insoluble pigment.

Forour purpose I obtain black carbon paper.

It can be purchased in rolls or even in sheets measuring 9 x 12 cm, 13 x 18 cm etc. I take one of these sheets and soak it in cold water, in oreder to soften the layer. After taking off any excess of water I place it in a bathe composed as follows:

Cold water	100cc.
Calcium chlorate crystals.	20 to 25 gr.

According to the quality of the gelatine in the carbon paper lessen the quantity of chlorate if after two or three hours it shows a tendency to dissolve, on the other hand increase it if, when having removed the excess moisture, it does appear to be sufficiently responsive. Distrust tepid water as this will cause a disintegration of the gelatine. Having by this means a black film on paper at our disposal, for a stamp of normal shape one should use a piece larger than the size of the stamp by at least one centimetre on every side; for pairs or blocks of four cut a piece of paper the same amount larger than the size of the piece. And here are the details of how to use it:

Having at hand my sheet with the required dimensions the next question is to provide the back glass side with my prepared anti-halo paper in such a manner that it will completely cover the place where the image will be disclosed. After having ensured a perfect contact between the prepared surface of the anti-halo paper and the glass, I proceed as follows:

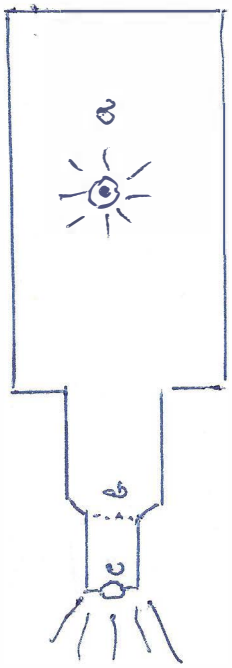
I place the plate glass side uppermost on a support consisting of: firstly a thick mirror (12 x 16 forexample) secondly two thicknesses of a good absorbent blotting paper, the sensitive side being now against this blotting, with the ~~stopper-o~~ stopper of a type with which one is able to count

the drops, pour on the middle of the three or four drops of the liquid. Then quickly place, well towards themiddle, the prepared black paper to cover it with two thickneses of blotting paper. Wipe it with an india-rubber squeegee in order to get rid of any air bubbles or surplus alcohol and that ends the operation "anti-halo"

From a quarter to half an hour later (this delay is necessary to ensure that the prepared paper is well stuck to the glass) the plate is ready to be exposed to artificial light, white or coloured. As for the plates I use those sized 6 x 9cm; 8½ x 10cm to 9 x 12cm. For a single stamp of usual size, of the type of old France, Spain etc. I divide a glass plate size 8½ x 10 into two. Of course it is necessary to have availabbe a diamond glass cutter or one of the special steel and als o a ruler. I have ma de myself templets which enable me to correctly cut to the exact measurements.

Now it remains for me to describe the sort of frame I use. The placing under the frame, prior to the exposure to artificial light will be explained by the example of a stamp which is submitted to a succession of operations in order to obtain the matrix.

I make the exposure in a strong photographic frame, not the little playthings of anateurs, provided with two strong springs. I find tha t the size 9 x 12cm is ample for single stamps pairs a nd blocks of four. I furnish this with a pad consisting of a thickness of thin sheets of paper and on the side which makes contact with the plate place a piece of gelatine celluloid, of which the silver bromide has been darkened by the usual photographic exposure Over this pad of paper place a small piece of wood <u>in a single piece</u>, that is to say without shutters, quite smooth and od hard wood, with one side covered with a layer of fine felt, glued to the wood. The tension produced by the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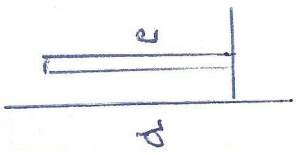
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two legs of the frame will act on the springs. It now remains for me to explain the s ource of light and how it is used in order to eff ect an "exposure".

It is essential that this source should have the widest possible range in order to obtain the most distinct lines.

At the commencement I used a Nernst lamp having for its supply a small cylinder of refractory ma terial that would provide incandescence. I found afterwards that is was impossible for me to revitual it after a time. It was necessary therefore to replace it and I chose a 46 Watt electric bulb of Hungarian make, known as "Tungsram Kripton", of which I purchased a supply in order not to be caught unawares. I chose this type of lamp because it gave its light in a rectilinear form and was very compact.

The illustration shows the lay-out of the lighting which I used for this operation, a light-proof box in which I placed the source of light (a); a tube (b) to the end of which is attached the screen holder (c) by means of a screew thread. Opposite, at (d) at a variable distance from the lighting apparatus is a board for mounting the frame, which is shown at (e) with the frame erected thereon facing the light. For this purpose I use an artist's easel which I place in such a manner that I can vary the distance between the frame carrying the stamp and the plate and the source of light.

Taking for example, when using the ordinary "lumiere wa rm tone" plates, that is to say a white light from a 46W. bulb without a screen or "ortho" preparation at a distance of $2\frac{1}{2}$ metres between (a) and (e), I allow an exposure of from 1 minute 30 seconds to 3 minutes according to the subject.

If it is necessary to make reproductions of subjects requiring the use of screens or orthochromatic plates, I reduce the distance to 70cm.

This is done in order to avoind a too long exposure. At the distance given one can reckon on an exposure of from 5 to 6 minutes, when working

with green or deep red screens.

Here is a list of objects that one s hould have at hand before shutting oneself in the dark. room ready to commerce operation "Exposure"

(1) The light-proof box together with the screens, holders and the lamp.
(2) The coloured screens, if it is necessa ry to make exposure with "ortho" plates and the screen holder.
(3) The easel.
(4) A tape measure and a piece of chalk for marking the distances.
(5) The things required for the operation "anti-halo", the black prepared paper, the 95% a lcohol in in a phial with a dropper, blotting paper, a squeegee, an open box with black paper in which to pla ce the plates treated with their anti-halo.
(6) A mug of 25 to 30cc capacity with a very large aperture in which to hold the filtered spirit of turpentine in which the original will be immersed, a reserve phial of turpentine filtered through paper and also a phial with a drop stopper containing this liquid.
(7) A bottle with a drop stopper containing pure benzine.
(8) Three or four rags of fine soft linen, very absorbent, about the size of a large hankerchief, to use with turpentine and benzine.
(9) A watch that will clearly show in the feeble light the minutes and the seconds.
(10) A pocket lamp with the light subdued by the insertion between the glass and the bulb of a screen (paper or cellophane) in dark red.
(11) A glass tile (glazed) 12 x 16 or 13 x 18 cm. for a support during the operation "anti-halo"
(12) The frame (I use one 9 x 12 cm)
(13) The sensitive plates.
(14) An empty box and black paper in which to contain them after exposure.
(15) The laboratory lamp with the light neutralised (yellow or diffused clear green for the plates without "ortho", diffused red for the

"ortho" and the erythrosine, dark green diffused for thosewith cyanide.
(16) A plug for the white light.
(17) A glass cutter (diamond or steel) and a ruler.
(18) The original stamp or obliteration and a pair of tweezers.

Before showing the differences in colours and in the intensity of the subjects it is not possible in a standard work or for me to explain once and for all the various threads of opera tions. I do not see a solution of this complex problem without furnishing several examples of typical cases. A little experience and several experiments will do the rest.

Exaple No 1. not "ortho" The original is Bavaria 1849, 1 kreuzer, in intense black or grey.

The stamp having undergone its preparation its paper being absorbent, it is placed into the basin containing the spirit of turpentine. There it is left until it is established that the design is as visible through the back as from the front, without any opaque breaks. As for the plate, this is also ready with its anti-halo on its back. Then take out stamp from the basin of turpentine and place it in the middle of the glass of the sta nd, image side uppermost. Pour, with the aid of its dropper, from the bottle containing turpentine two or three drops of spirit on to the sta mp and do the same on to the sensitive surface of the plate then place the latter in contact with the glass of the frame at the same time ensuring that the stamp has been placed centrally on the plate. Begin by putting an edge of the plate in contact with the glass a nd then lower it very, very slowly in order to avoid a displa cement of the stamp and also to ensure better the expulsion of the air. I apply the pressure of the springs to the frame and behold I am ready for the exposure to the 46 watt lamp.

For this black stamp I use "warm tone" plates without "ortho" preparation and I expose to the white light without screen.

I place the frame vertically upright on the easel facing the lamp at a dis tance of 2½ metres from the bulb. The screen carrier is provided with an "ad hoc" shutter which I withdraw when exposure commences. I now light the 46 W. lamp remove the shutter and give for the Bavaria in grey an exposure of two minutes and for the intense black 2½ minutes. After the lapse of this time and always by the light of the laboratory light I free the plate and the stamp which I put to dry between blotting paper (these having been impregnated with turpentine).

As for the plate which also has been impregna ted with the turpentine, both front and back, I wipe both sides simultaneously with the two absorbent pieces of linen of the muslin type which have been mentioned before and then set aside the two pieces of linen, one to remove the surplus of turpentine from the pla te that is in the frame and the other saved to give a final morecareful wiping of the plate. After this, in order to remove the last traces of the turpentine I pour on to the sensitive film three or four drops of pure benzine, which I s pread rapidly, and then absorb the liquid with a piece of linen reserved for the benzine and which has not been mixed with the other pieces. This done, I remove from the back the anti-halo paper, which with care can be made use of again.

The plate is now wrapped in black paper and stowed away in the box, ready to be subjected to operation "developement of the plate".

Having arrived at this stage by a series of operations I am now going to instruct the reader how I equip myself in order to perform these two sta ges (a). Exposure to the 46 W. light. (b) Disclosure and developement of the design.

I perform each operation at the same session a s both require the use of the dark room provided with yellow or green light, dark red or dark green, by interchangeable bulbs according as it is necessary to operate with orthochromatic plates or not.

In order to be able to work in comfort with the distance between the bulb and the frame 2½ metres the room for the exposure should be at least 3¼ m. long a nd the room where I develop the image need not be as large even 1m 50 wide and 2m 50 long will be sufficient.

Again the "exposure" room does not require an installation for taking off water, such will be required in the "developement" room. A kind of sink should suffice where the basins can be taken for the purpose of washing a nd for other necessary operations with the matrix and the cliche. Supplementary requirements for the "exposure" room are: a small table on whichb to support the box with the light, 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 stand the a ccessories and a cupboard or set of drawers for the products.

For the "developement" room, which I use also for the preparation of the cliches, I equip myself with the following:

A kitchen table with two drawers size 1m 20 by 45cm. where I effect the disclosure and which I use also during the preparation of the cliches and upon which I place the neutralised light which allows me to proceed with the operation "developement".

A type of sink with water tap and the means of eva cuation, under which is installed a cupboard with shelves.

Two electric points for the white light, one over the kitchen table and one over the sink.

Here are 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 x 9cms and two size 9 x 12cms, for the simultanious operation of strengthening the silvering of the two plates.

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

A quantity of absorbent cotton.

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

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

A strip (of which I shall explain the use of later) of celluloid with soluble gelatine, for cutting into small squares used to control the progress of weakening or strengthening the matrix after developement.

And as to the substances and prepared solutions, I give below their use and their composition:

Developers.

Developer (a) An alkaline developer in two separate solutions.

Solution A. Water 250cc; anhydrous sulphate of soda 14gr; or crystals 25gr; hydroquinone 4gr; methyl 1/3gr.

Solution B. Water 100cc; anhydrous carbonate of soda 10gr.

Developer (b) Water 250cc; anhydrous sulphate of soda as below to 160cc of a solution of 9% sulphate; hydroquinone 4 to 5gr; methyl 1/3gr.

Developer (c) The alkaline developer (a) plus a strong dose of 10% bromide of potassium.

In order to strengthen the silvering prepare separately the three following solutions, which are used in varying quantities:

1. Water 250cc: anhydrous sulphate of sode 22gr. or crystals 35gr; hydroquinone 4gr.
2. Distilled water 100cc; silver nitrate 10gr

3. Anhydrous sulphate of soda 45gr; water 500cc; corresponding to a solution of 9% of sulphate.

In order to regularise the action of the developers and the solution for strengthening the silvering I use a mildly acid solution made up as follows:

Solution of anhydrous sulphate of 9% 20cc.
Pure acetic acid 2cc.

This solution should be contained in a drop stopper bottle as it is only used in drops.

Have ready for use during the developement:
Iodine of potassium 3% solution.
Hyposulphate of soda 35% solution.
Metabisulphate of soda, in a bottle, to act as an acidifier in the bath for hyposulphate.

Before undertaking my explanations of the different methods of developement I ought to remark that the alkaline developer (a) is used with stamps of very marked colours and of sufficient contrasts such as intense blacks, vermillions, oranges, yellow, greens, for covering the metallic basis.

Nevertheless lately I have adopted also for thse types of subjects, and even for obliterations, developers (b) & (c), especially (b).

For the other colours, in order to increase the contrasts more strongly, I proceed at the outset with a developement of very little depth, at times hardly perceptible with the magnifying glass, with developers (b) and (c) leaving on the second bath of silver strengthening the onus of steadily increasing the intensity of the image, which is obtained by a molecular action between the particles of silver in the first developer and those released by the strengthener.

The developer used fot the Bavaria intense black is the alkaline developer (a) blended with

20cc. of solution (A) and 4 to 5cc of (B) several drops of 10% bromide of potassium with eventual addition of furthur drops during the developement if the appearance of the image is too quick (normal period of developement 3 to 4 mins). Time of exposure about 1½ minutes with the alkaline developer and the 46W. Kripton lamp at 2½ metres from the frame.

One could also use the developer (b) but in this case, as also with (c), the required intensity is obtained in two stages.

For developer (b) in a single bath, pour into a 6 x 9cm dish 25cc of the liquid adding for this quantity two or three drops of the acid regulating solution, for which the formulae has been given. Leave the plate in this first bath of developer (b) until it has attained aabout a third of the desired intensity for it is the question of an intense black. After a ~~while~~ little experience one quickly masters these details.

Take the plate from the bath and quickly place it in another dish containing a prepared solution of : iodine of potassium 1½% , that is to say the solution given in the formulae at 3%, diluted with an equal quantity of water. This bath has the property of stopping, almost instantaneously the action of the first developer. Always rock the dishes whilst they contain the plates in order to ensure the greatest regularity of action.

Leave it there for 3 to 4 minutes and then wash it in a dish or under a jet of water and then put it in the "silver reinforcing" solution, which has been prepared in advance before the start of developing, made up, separately of the following two preparations:

For one part, pour into a 50cc graduated test tube 5cc. of solution (1) formulae already given, of "silver reinforcer", add 20cc. of 9% solution of anhydrous sulphate and 5 to 6 drops of the solution of sulphate and acetic acid (do not forget this important addition which prevents

the rapid decomposition of the silver reinforcer.

For the second part, in a small graduated test-tube pour 3 to 4cc. of the 10% solution of silver nitrate.

Avoid mixing these two solutions too early in advance, they decompose quickly by depositing their silver which is thus reduced.

I advise, during the stay of the plate in the iodide of potassium, pouring the prepared quantity of silver nitrate into the test-tube containing the other solution.

Shake rapidly in order to stir up the dissolution of the white precipitate which has formed, composed of sulphate of soda and silver. The contents should then be tipped into a dish, 6 x 9cm, reserved for this strengthening solution and the plate is immersed in it, after it has been rinsed in water, after its period in the iodide of potassium.

The plate is now in the bath of silver re-inforcement.

Clearly understood that all these operations must take place by the neutralised light of the laboratory lamp.

From time to time carefully pass a swab of absorbent cotton over the image, soaked in the reinforcing solution and keep rocking the dish in order to ensure an equality of action.

Follow the progress of the increasing of 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, after fixing a little paler when examined in the daylight. I cannot explain this better, on this point experience is the bes t guide.

The time for reinforcement of our present example is not long, as the colour intense black allows us to push on with our developing.

Having satisfied oneself that the intensity is ample, the plate is withdrawn from its bath, rinsed quickly in water and plunged (if the fixing bath for this first developer has been a 1½% solution of iodide of potassium) into a strong 35% solution

of sulphate of sode, acidified by a pinch of metabisulphate of potash. The silver chloride of the film having been converted into silver iodide, the fixing having given a degree of solubility to this iodide, proceeds slowly (about a quarter hour)

Examine the back to ensure that all the traces of cloudiness have been eradicated before commencing the fixing. Rock the dish in order to expedite this.

If on the other hand, the bath slows up, I have been successful in using a 5% solution of bromide of potassium, the chloride being converted into bromide, the fixa tion will be completed in 2 or 3 minutes. Lately, nevertheless, I have preferred fixing with iodide, the image being strengthened more quickly by the prescence of silver iodide.

I took for my first example in order to illustrate the succession of operations the Bavaria lkr. intense black. If, from this original, I pass on to the Bavaria lkr. grey or pale black, which gives less intensity, there is need to accentuate the contrasts. This problem of increasing the intensity of the contrasts arises for 9/10ths of originals and takes on an even greater importance when it is a question of transparent colours or feeble shades.

And, moreover, it is always essential that the ma trix always 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 partially obviate this difficulty and which will be discussed furthur in the chapter headed "The Impression". In addition I indicate in that same chapter other expedients liable to reduce ~~thi~~ this inadequacy although developement and strengthening have been completed; that is to say, if one understands, that it is necessary, with the grey or pale black Bavarian, to accentuate the contrasts which are adequate with a deep black.

So, in such a case, taking the example of the alkaline developer (a) in two baths, which are augmented for this purpose with five times its

volume of water and the addition of several drops of potassium bromide or the developer (b) in a single bath, the first developement will be limited, that is to say restricted to an image with its design hardly perceptible through a magnifying glass (with certain very pale subjects the first image will be practically invisible) followed by an immediate fixation by immersing the plate without delay in the fixing bath of 1½ to 2% iodine, this solution having been used fot the fixing since the alkaline bath is no longer serviceable with the developing bath (b).

As for the course of the operation, this does not differ from the first example given, that is to say, silver reinforcement until the desired intensity has been secured. This strengthening, which is gradual, calls for a longer duration as, being given only the first developement, has been less exhaustive. When there is a strong deficiency of contrasts and one is obliged to restrict the first developement to an almost imperceptible image, the developement may last of upwards of two hours duration, the bringing out of the intensity being constantly watched. All that can be done to expedite slightly the strengthening of the developement, is to increase by 2 to 3cc the dose of the solution of silver nitrate for the above indicated quantity of the strengthener.

I will continue with the methods of obtaining an increase of the contrasts:

1. Reducing the time of exposure to my 46W or other sources of artificial light.
2. The first developement so faint that it is hardly perceptible with a magnifying glass.
3. A first developement as faint as before in a bath of (b) of which the activity has been increased by 10 drops for every 20 to 25cc of the bath of the regulating solution of sulphate of soda and acetic acid.

After my experiments, I prefer to use the 2nd and 3rd methods and instead of making a marked

lessening of the time of exposure for, by doing so, I am commited to a longer stay in the bath of first developer which above all if it is a question of using plates in the bath after several months will cause a general clouding of the plates. On the other hand by lessening the time of exposure slightly I run less risk of having the plates marred by applying methods 2 or 3.

Now I pass on to other originals which will need the use of orthochromatic plates, to name, for example, by chance a blue type Spain 1861 6 Rs; or a pale blue, type Vancouver 1865 10c. imperf; or again Brunswick 1852 2/-, or a rose type Vancouver 1865 5c. imperf or a Bordeaux 80c. etc, etc,

The above colours have been taken as examples because they are "coverers", put in other words they retain their shading when examined by transparency, the paper having been made transparent by being soaked in turpentine. For this reason the use of screens and "ortho" plates a re essential for such types. Generally speaking, unless it is the question of a very deep blue, indigo or blue-black, the blues are not coverers,they are in the same category as roses, carmines and violets. By contrast to the reds, green and yellows there is a group of metallics (mercury, zinc, cadmium,lead, chromium) to consider, which although coverers or opaque after tra nsparency, are able to pass through the ortho. Nevertheless it is not necessary to consider all the greens, reds and yellows as coverers, for we have the lakes and colours of vegetable and animal origin which can be classified among the transparent colours but, if there are any doubts, this distinction can be quickly made by examining the piece after it has been soaked in turpentine.

If as a result of this examination there

is still cloudiness which will mitigate transparency, then, as with the specimens previously quoted as examples, it will be necessary to use the "ortho" plates which one will have in reserve, prepared in advance, and to decide which screen to use.

Generally speaking for blue I use an orange screen with plates orthochromatised with the erythrosine. The red screen and the cyanide plates for the clear greens with a well balanced yellow and blue with no signs of yellowish or bluish. The dark orange screen and the erythrosine plates for the transparent reds and the roses. The yellow green screen with the erythrosine plates give the best results for reds with a violet tinge and for violets.

This said I pass on to the operation of developing an orthochromatised plate, the method of procedure being the same whether one is handling a blue or a rose etc.

Only one must still take into account, in the first place, of the degree of intensity, absent from the paler colours or of a reduced contrast, it is therefore necessary to remain in the first developement until as soon as an image, almost imperceptible, is attained; this will only be noticeable afterca prolonged duration and will be attained according to the degree of silver strengthening; its stay in this bath in the ca se of very small contrasts being as long an hour or evn more. Also, in this case, it is necessa ry to be patient, when rocking, in the light of the laboratory lamp, the dish for this duration of time and veryfying the progress of the intensification of the image. In such a case I recommend using, in order to stop the action of the first developer, a bath of 2% iodide of potassium, which allows for a quicker reinforcement.

As for the laboratory lamp, as in my first example, it is a question of non-orthochromatised plates, in such conditions a yellow or

diffused clear yellow green light is satisfactory it is necessary when using "ortho" plates to adjust the laboratory lighting which should be diffused red for those with erythrosine and a diffused strong green for those with cyanide. I must mention that, despite the experience gained in the art of stoppage of the action of the silver strengthening solution, when the intensity acquired appears to be satisfactory, there are times, and these occur frequently, when the intensity appearing on the matrix is either insufficient or isexaggerated. In the first case, resource is had to a continustion of the silver reinforcement witha new bath, or, reusing the one that has just been used, filtered through paper, for these baths decompose very quickly. This intensification after fixing can be effected by white or artificial light, preferably diffused by the use of opaline or frosted bulbs.

Other strengtheners such as the standard 2% bichloride of mercury, followed, after washing, with the application of diluted ammonia or 10% sulphate of soda, or still better iodide of mercury details of which can be found in any of the photographic handbooks, ca n be used when reducing the silver, which cons titutes the image, composed of black or greenish black.

But, if after a process of compensating exposure for a very delicate conservations, which I shall describe later, it happens that the silver container has a reddish tinge, so that under this molecular form of silver the intensity is reduced rather than increased, I advise the use in every case of the silver strengthener which has the advantage of a slow and progressive intensificat-ionwhich can be easilt controlled.

In the above list I gave the articles that should be at hand before commencing the developing I included "a s trip of celluloid in order to strengthen or weaken". This transparent strip, width a bout lcm. is made of a narrow strip cut

from an emulsified film, with soluble gelatine and which has been fixed.

To use it I cut this strip into small squares of about 1cm. square which I press dry against a damp (without excess of water) corner of the plate under treatment and to which it adheres. The portion of film under this square being sheltered from the influence of the bath makes it ea sy to control the progressive effects of increasing or decreasing the intensity.

As for enfeeblers, a large number of these are recommended in s tandard photography. Enfeeblers of copper salts, of ferrocyanide of potassium, of persulphate of ammonia or bichromate and permanganate acidifiers, etc.

Below I give two formulae suitable in our cass, which act very slowly, because they are very weak, and which therefore allow their effects to be studied with ease. With these two formulae . the scales remain.

Acidifeid permanganate of potash

Prepare a solution of 6% permanganate. Pour into 30cc of water 3 or 4 drops of this solution and 9 to 12 drops of sulphuric acid. Remove from the bath as soon as as its effects appear to be sufficient, comparing with the portion of the silver reduced by shading under the display square of celluloid and then wash.

Ferrocyanide of potassium.

Prepare a solution and also one of 20% hyposulphate of soda. Put 5 to 10 drops of the solution of ferrocyanide into the solution of hyposulphate, again watching the effects by comparison with the piece of the plateunder the corner square.

These enfeebling mixtures decompose quickly. Also, if the effect is to obtain the desired degree too slowly, one can, in the same proportions add additional solutions or recommence the operation with a new solution in a fresh bath. As an important

observation, I add that the images in reduced silver of reddish shades are more sensitive to the action of the enfeebler so, in these cases, I recommend working with very weak doses.

The matrices thus obtained give a reversed image from which a rectified positive can be obtained on photographic paper but not for the impression which is required, on the contrary, a reversed positive cliche, in order to secure on the paper a rectified image. In the following chapter "Completion of the Matrices" the subject matter will be the supplementary operation which calls for much skill and a deal of attention and of which I claim the invention of the procedure employed.

It remains for me to discuss two matters which crop up frequently.

1. The original is short of margins, at some point parts of the framework are missing, or it is a case that some details of the design are missing or are hidden by stains or by superimposition thereon. All that has to be ma de good.

2. The original is of too pale sha de or is too actinic (rose, pale violet) and how is it necessary to create the constrasts which in these ca ses are missing.

In these two cases there is no question of working on the matrices themselves but it is necessary to use them in order to prepare the cliche which, after a careful preparation (which is the subject of the chapter headed "The Cliche") manages to give me a number of cases of passable copies, printed in black. As an important observation rememberthat it is necessary to print off several copies on paper that is smooth, thin, white, gummed, of best quality and with an even grain which will take, despite the gum, a regular transparency after being immersed for some minutes in spirits of turpentine. Make some trials with this subject.

Having selected a copy which I consider the

most successful, I place it on one side for 8 to 10 days in order to dry the thick black ink After that I dip the copy into pure acetone for several minutes and then take off the excess moisture with blotting paper. In this state the image is not affected by the bath of turpentine to which it must be subjected in order to make the paper tra nsparent.

But, having accomplished this operation, there are lastly the retouches to be made.

It it is a matter of completing the exterior framework with the help of a very tapering small mapping pen or to remake several details that are missing, or finally, to strengthen certain weak parts, these retouches should be made with water ink, of a deep black, obtained from chimney black with the addition of gum, or better still, of fish glue (soluble fish glue) or better still by diluting stick China ink of the finest quality. All that concernsthe revelation of this black image on paper, this la st operation, is to again make it transparent with the turpentine and proceed, not forgetting the anti-halo on the back, as I have shown for the Bavaria intense black or for the Bavaria grey according to whether the black is required intense of of a less intensity.

In completing the processes that I have already described for obtaining the matrices, I ought to mention a process which I have sometimes used especially when my procedure of mechanical inversion of the matrices does not meet the point.

It is the procedure known as "CONTRETYPE" which guarantees automatically the reversal of the image by its reproduction on a second plate which becomes the definitive matrix. As this ma trix is obtained by contact ~~with the~~ and as the first ma trix is also obtained by contact with the original, the dimens ions in both directions are perforce identical with those of the model.

The problem of the dimensions, very important to us, is thus resolved automatically, Besides the "contretype" procedure allows for an increase often considerable, of the contrasts. The procedure is known and I have only to adopt it to our use.

The first matrice obtained by the already described processes, is put into contact with a "warm tone" plate. It is exposed by "excessive overexposure" for example for a first very transparent matrix it is necessary to give 4 to 5 mins at 60cm from the 46W Kripton.

For a developer use the alkaline developer (a) in a mixture of 30cc - 25cc of (A) and 5cc of (B). Develop thoroughly without worrying about obtaining an excessive intensity, that is to say that the deepest parts (corresponding to transparencies on the first matrix) have arrived on the film. Do not be perturbed if the plate still shows clouding. Wash in water and immerse it in one of the two following baths:

1. Water 100cc; bichromate of potash 5gr; sulphuric acid ~~20 to 30 drops~~. 10 drops.
2. Water 100cc; permanganate of potash 1gr; sulphuric acid 20 to 30 drops.

In one or the other of these two baths the silver will dissolve.

After complete dissolution wash in water changed several times and place it for a short time in a 9% solution of anhydrous s ulphate.

Rinse in water and again immerse it in the alkaline developer made a little more lively by adding 8cc of solution (B). This second developmentca n be underta ken in a s trong light, indeed by the light of day.

Watch the d evelopement of the intensity and stop it when it is considered sufficient. The fix it it in a bath of hyposulphate and wash it as usual.

When the forulae containing perpanganate is used, it will be noticed that it produces a yellow clouding which can be made to disappear by immersing the definitive matrix in a 1%

solution of oxalic acid until it has gone. Once more rinse.

It remains for me to mention an operation which does not concern the definitive matrix obtained by the procedure "contretype" but the others, intended for the mechanical reversal of the image on the film, which will be dealt with in the following chapter.

It is the question of the operation which I call "compensatory exposure" and which I call in the course of my explanation by the abbreviation "EXCO".

I have used it to a large extent when it is necessary to reduce the intens ity which a matrix with too great contrasts gives to the impression, or rather to preserve extremely fine features.

In order to control this operation better there are several modifications to be carried into the procedure described for strengthening the image.

Again withdraw the plate from the first developer with the image very faint, immerse it in water acidified with several drops of acetic acid which must be pure (8 to 10 drops to 30cc of water), this bath replaces that of iodide of potassium given for arresting the action of the first developer.

Rinse after acidification and place it in the reinforcer which has not been altered.

The increasing of the intensity is made much more slowly. In order to speed it up, one could increase a little the dose of silvernitrate. It is however still necessary to have patience more than with the stopping with iodine if one desires to reach the required degree of intensity.

On taking the plate out of the reinforcer, wash it carefully in water, but hasten to plunge it into a bath of hyposulphate because it is not yet fixed.

Dry it in a place sheltered from the daylight the plate is picked up again and the image is covered with a 5% solution of silver nitrate.

Stay in liquid 3 to 4 minutes. Take off the excess with a piece of linen or blotting paper and place it to dry in the dark.

The exposure that the light makes to the recto, that is to say the image side. Watch and s top as soon as the right sid , which is under the liquid, comes out with an aspect of a clear reddish stain, which on prolonged exposure to daylight will become a dark stain, if the re-inforcement, tha t is to say the intensity, is too deep. After exposure, fix quickly in a weak solution, hardly 4 to 5% of hyposulphate of soda, for if one lingers over this process the hypo-sulphate, particularly if it is more concentrated will weaken the EXCO which will be useless if one has overexposed. The subsequent operations should be carried on without modifications.

It remains for me to explain the manner in which to obtain the matricesrequired for "obliterations".

I sha ll call these "originals"or "proto$ types", 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 of offers, handbills, advertisements etc.

I summarise in a few lines what I have already detailed in the chapter "Originals".

In the first place I have removed the origin date stamp be it from an old letter, or again a single stamp, or pair, or block, so that I have a complete image or nearly so.
In the second case I commence with a pencil outline, obtained by tracing and completed by a strengthening of the design, after assuring myself of the accuracy of the dimensions.

As for original cancellations, having followed the treatment laid down in chapter "Originals" (removal of paper if necessary and also retouching and possibly modifications) I soak them in spirit of turpentine, which will

make the paper transparent and ready for exposure in contact with the sensitive plate.

As for the prototypes, I refer to the description in the chapter "Originals" on the three methods (a), (b) and (c).

In methods (a) and (c) with the help of translucid paper or cellophane, it is exposed without immersion in the turpentine. On the other hand, in method (b) where the support is an opaque paper, immersion and a stay in the turpentine in order to secure a transparency is essential.

The operations already described having been completed the originals and the prototypes are ready for exposure to the light of the 46W lamp.

In order to save with the obliterations, which do not need so much precision, the long and delicate operation of mechanically reversing the image, remember that instead of the "recto", as in the case of stamps, the "verso" or reverse of the prototype is placed in contact with the plate.

To push on the work, I succeed, especially when I have a large number of obliterations to disclose, to spread four or six on a table, each image having its excess margins cut off. I find a place for six obliterations of normal dimensions in a dish 8½ x 10.

In order to obtain the pictures, I begin by outlining on a Bristol board the size of my plate the diagram of my 4 or 6 cases, keeping a margin of a bout 5 to 6mm round what corresponds to the edges of the plate. Then I cut a rectangle of transparent cellophane (of the type susceptible to water) avoiding waterproof cellophane, the same size as the Bristol board. For six cases, it will be, for example, 8½ x 10cm. On this sheet of cellophane, place upside down, that is to say the wrong side of the 4 or 6 obliterations, for a reason which I shall explain later, and make them adhere by several touches of a thick solution of gum with a small dash of glycerine on the one

side only, (that is the uppermost), after allowing the air to escape under the pressure of the frame.

As an important observation, I draw attention to the fact that, if the obliterations on their original paper, are those obtained by methods (a), (b) and (c) they should not be mixed, that is to say 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 furnis hed on the "verso" side with an anti-halo paper, with the dimensions corresponding to the space occupied by the images.

The light I use for my exposure is the white of my 46W.

As some indication, the time of exposure will vary, at a distance from the source of light of 2½M. between 2 and 4 minutes (paper yellowish), for originating date stamps on paper that have been soaked in turpentine. It should be from 2⅔mins to 3⅓mins for methods (a), (b) or (c).

For developer after exposure, one can use a developer made up as follows:

Water 250cc; anhydrous sulphate of soda 14gr. or crystallised 25gr; methyll/3 gr. ~~of the liquid~~ hydrpquinone 4 to 5gr., adding to 30cc of the liquid used 3 to 4 drops of the regulating solution of sulphate and acetic acid. The developement is completed in this bath. Avoid a too long intensity for the reduced silver is of a neutralised greenish black.

However, it may be that the stamps of origin, which one has not been able to strengthen with a fine pencil or with black ink, made of soot, so that they only give feeble impressions. The, in that case, give the same time of exposure, double the quantity of drops of the acid bath and take the pla te from the bath when the image is still very weak and operate as for the developing already indicated, used for stamps with pa le colours, that

is to say after the fixing with the iodide of potassium and complete the intensification with the bath of silver strengthener.

In ending this chapter, I may be permitted to remark that I claim the ownership of the processes which I have described and combined with it all that concerns the formulae, the train of operations and their adaption to the ends which I have set out to attain and which are the result of a long period of research.

CHAPTER 4.

Completion of the Matrices.

Having arrived at the stage we are now in the possession of negatives which still require certain operations before being used as matrices for the manufacture of cliches.

I shall deal separately with matrices for the reproduction of stamps and those used for cancellations.

With regard to matrices representing stamps we have on the plate a reversed negative image if we look at the side with the film containing the image. This reversed image can be used, as I have already said, to obtain rectified images on paper, but not for our purpose which is to obta in a rectified negative looking at it from the side of the film carrying the image.

It is necessary therefore to proceed with the operation "Reversal of the image", were it not for the procedure "countertype" which I have described in my previous chapter and where the rectification is made photographically by obta ining on a second plate a rectified negative image.

But as I only used this procedure in very few cases, particularly at the beginning of my labours, when the mechanical reversal of the image was not entirely in the right condition, I give particular attention to this subject, especially as the procedure requires an exact comprehension of the various operations if one is to secure a firm result.

In a few words, it is necessary to remove the film containing the image from its glass support and to place it on a support consisting of a celluloid film. And this is how it is done.

To obtain this support, I procurecommercial films on spools, size 6½ x 11cm (2½ x 4¼ins)

preferably of soluble gelatine, which is the most suitable for the success of the operation. These films, which bear the date of expiry, can be obtained easily from the manufacturers.

As for the soluble gelatine evidentaly one cannot instruct the merchant on this point, he will simply tell you to mind your own business. Therefore to gain this end there is only one way.

Procure a sample of different makes (one out of three on a n average are coated with a soluble gelatine) and in my case, when I have ascertained which, I have laid in a stock. Owing to the vague descriptions a nd not being able to satisfy myself tha t the same quality of gelatine is maintained, I have settled for Kodak verichrome 26 and 28 and the English make Ilford Selo.

Having secured these films it remains to make them transparent, that is to say to fix them. This This operation is done for the whole spool at the same time.

For a fixing bath use the standard solution of hyposulphate of soda acidified, with a pinch of metabisulphate of potash. Wash at once in running water or in several changes of water ang hang up vertically to dry. But if there are reasons to doubt the solubility of the gelatine and strong reasons to suppose that it is insoluble, then it will be necessary to thicken the layer of film with another supplementary coating of soluble gelatine (the soft of commerce). For this operation, with the restricted means at one's disposal, which are not those of a factory employing machines for spreading the emulsion, it will be necessary to break up the film into pieces having the required dimensions for effecting the reversal of a matrix. For example, in order to treat a matrix on glass size 5 x 8½cm (a 8½ x 10 plate cut in two) I cut the film into pieces of 6½ x 10 leaving myself a certain margin on all sides.

And this is how I proceed with the operation of thickening the film.

I soak 5gr of gelatine in 50cc of water

Then, having the pieces of film ready, I lay them flat on sheets of thick cardboard of a size slightly narrower than the film but much longer so as to be able to work more easilt (see figure). I hold the pieces of film flat by means of 4 paper clips (the kind used in offices) which fasten the film to the cardboard. at the four corners. In order not to have to return to this operation too frequently, I work with about a dozen pieces at a time.

The gelatine having s tayed in the cold water for about a quarter of an hour, it has now to be melted in a saucepan. I filter it through fine muslin whilst it is still warm and I effect the spreading by passing quickly over the film a tuft of absorbent cotton wool thoroughly soaked with the gelatine solution.

This solution is very quick to dry, being helped by absorption of the liquid by the under film. At the same timewith the aid of tweezers and linen I gradually affix a piece of cord to the length of cardboard and leave it to dry naturally.

To spread the solution, only use absorbent cotton of the finest quality, with the retentive fibres, so as to avoid as far as possible particles of the cotton becoming detached and depositing themselves on the film.

And now I pass to the operation of "skinning" the matrix.

Prepare a solution as follows:
Water 100cc; formyl (foraldehyde) 100cc; fluorhydric acid 15 to 20 drops.

Because of the prescence of fluorhydric acid in this solution, it is necessary to keep it in

a bottle of plastic material or indiarubber, which can be purchased at shops where they sell chemistry materials.

At the same time have handy a frame with spring clips, several sheets of blotting paper, paraffin paper, size 9 x 12 or 12 x 16 according to the size of frame selected and the pieces of film on which the layer of gelatine has been thickened. The frame should be arranged thus: cover the glass with a sheet of paraffin paper On the cover side arrange a thick cushion of sheets of paper (the usual cushion tha t I use for my exposure to light) and add to it a sheet of blotting paper and over all a sheet of paraffin paper.

The glass of the matrix will be placed flat (the layer with the image upwards) on a support previously levelled, made of a glass, 12 x 16 for example, covered with two or three sheets of blotting paper.

An important observation. Have ready to hand before commencing the work, the various objects that will be required, that is to say: the open frame , ready to receive the matrix, the matrix flat on its support, the solution and the pieces of film on which to effect the transfer; for the operation, for a good result, must be performed quickly and without hesitation.

All being ready, I pour into a teaspoon of plastic or of horn, the solution indicated previously (a quantity that would fill half of a coffee spoon would be adequate); this I empty on to the middle of the glass of the matrix and very quickly I spread it with a finger over the whole extent of the glass. Immediately without waiting a single moment, I place over, well centred, the film, which, quickly, I press against the glass in order to expel any air bubbles and also any excess of liquid. Continuing this pressure for from 10 to 20 seconds, I then,

quickly, transfer the glass in contact with the film into the frame. Cover with the cushion of paraffin paper, blotting, sheets of paper, cover and close the frame.

It is necessary that one should fully comprehend the process of effecting a change of basis of the matrix, which passes from glass to a film which requires very rapid handling, on the contrary the transfer is not effected rapidly.

The glass and the film require to be 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. Avoid a temperature below 10 degrees centigrade. This period having elapsed, the frame is opened and everything removed.

Then working very carefully, holding a corner of the film between two fingers, it is raised.

If the operation has been performed quickly, the matrix will have completely left the glass support and will have adhered to the film.

This procedure, of which I claim the sole rights to publish, presents great opportunities, especially philatellically, of ensuring that the image, with absolute precision, retains the dimensions of the original. Now, all the methods used up to date for the mechanical transfer of a film, originated on a photographic plate, treated in very alkaline baths or better still of formyl and fluorhydric acid, leave this film, carrying the image, floating in the liquid so that it must become distended to an extent leaving afterwards to the baths of alcohol and water the task of contracting, in an indefinite manner, the dimensions of the film, wider and larger, under the influence of these baths.

Here are the preparations that should be made whilst the matrix is adhering to the film.

Prepare strips of ordinary thin white paper size about 10 to 12mm and equal in length to that of the film, i.e. 6½cm. For each matrix two strips of paper are required, for the top and

bottom edges, so that the edges of the film carrying the image are firmly fixed to the margins of its celluloid support. This adherence should be made with a thick solution of gum arabic, besides, with this same solution, spread on the two other borders and margins, which are not covered by the paper strips, an almost imperceptible layer.

Previously, one should have made available one or more frames, if one is dealing with several matrices at the same time, from which the glass has been withdrawn and replaced by strips of thick glass with a width of about 3cm. and of the same length as the glass that has been withdra wn.

On these two strips of glass place the two edges of the matrix, which have already received their two bands of paper, with the film carrying the image underneath, that is to say in contact with the strips of glass. Close the frame and circulate it in a manner to let the air dry the central part of the film which is not in contact with the glass. It is easy to understand that the portion exposed to the air will dry quicker than the portion that is screened by the glass. Once this central part of the film is dry, take out the matrix and then pass on to the small operation of drying the remainder. Inorder to do this withdraw one of the two strips of glass and place the other in the centre and then repeat the process until the whole has dried. In order to avoid putting into direct contact the image withthe glass and also to allay any tension, I interpose one or two squares of an indiarubber of the thickness of an inner tube. This mode of operation prevents the portion of the film carrying the image of the stamp possesses the exact dimensions as that of the original. Once the marginal portions are dried, the matrix is ready to pass on to the operation "retouch"

In order to undertake this work it is necessary to provide onesself with a "retouch desk" which can be found for sale and which consists of wooden frame carrying an inclined glass, on which is placed a screen, which can admit the daylight through part of the glass only by cutting off part by means of a kind of window.

This desk should be placed where the light falls on it from above and als o on the two sides. A mirrow, or a sheet of white paper, is so placed that the light falls on one or the other 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 the matrices on glass, by the method known as "counter-type" where the retouches executed on the glass side give an unsatisfactoty blurred effect.

As for colour; black for retouches, stick China ink could be used but not the liquid China ink known as indelible. This ink, which contains alkali and a little phenol, is unsuitable for all our uses because its components cause it to spread out, enlarge and penetrate a basis like paper whilst it would crack if used on a water-proof basis. It is because of their penetration into the paper which causes their indelibility. On a slightly gummed paper they form smudges.

I have lingered on this theme for the eventual retouches, which are dealt with at the time of the refinement of the sta mps of art, also need to have at our disposal other tinges, besides black, for images in those colours.

In the chapter on "Refinements" I shall give the special composition of these colours, which I have been compelled to make for myself as none of the commercial propositions were found suitable for my use, for reasons that I shall indicate. It should be clearly understood that these colours, being sensitive to moisture, must be used exclusively for the retouching of 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 a stand, of a larger kind than can be found at the opticians, commonly called a "thread counter").

As examples, I give several cases of re-strengthening ond retouches that might have to be made, for them use a small, very tapering mapping pen or a paint brush with the finest quality sable hair.

On the edges round the design: stop up any trace left by the perforations and in the case of the imperforates a very clear stain is left by the slicing of the paper.

On the background: These irregularities arise on a dirty original or with wrinkled paper, small holes or scratches due to faults in the plate and sometimes caused by the glass of the frame being badly dried before its exposure to the electric light.

As Strengthenings: for example a portion of the image may have disappeared and thus does not make an impression.

On this subject, considering one case with another, let us take an example of a stamp where the body and the centre are in two different colours. Take for example by chance a Swiss "Poste Locale", a Spain 1865, 19 cuartos etc.

In order to obtain the cliche first print the frame work in black for the "Poste Locale" and in brown for the Spanish, at the same time it is necessary to make the centre disappear on the matrix under a black film. That is what I call making the spares.

The retouches are made whenever possible on the back, thus avoiding the roughness of the recto which has to come in contact with the sensitive surface of the cliche.

With regard to obliterations of which the matrix, whether it is from an original or from a design, stays on glass, where retouches or strengthenings are effected particularly where it is desired to suppress the action of light on the cliche and which should be expressed by traces of the colours of the impression.

In mentioning a little of the precision required for these types of obliterations, the large isolated spaces of the obliterations should be treated on the back, that is to say on the glass side, at the time that the retouches near to the image are treated from the front.

It should be noted that an obliteration, taken from a stamp and on the matrix of which are still traces of the image of the stamp, needs work that is very tedious and painsta king, for it is necessary to preserve the parts of the obliteration proper to the impression whilst eliminating those representing the stamp by a film of black applied to the "recto" side.

In the case where the obliterations resting on a stamp will not take off easily or is not strong enough so that the image of the stamp is likely to cause some embarassment, I prefer to work by tracing with one of the methods that I have already indica ted, a pencil sketch of the obliteration, rid of the strengthener and then completed following one or the other of the procedures which I have already mentioned.

The retouches effected, the matrices are ready to be exposed to the light of day, with the object of obtaining the "cliche".

Chapter 5.

THE CLICHE.

When the question of cliches arises, this is a large subject and I invariably apply myself to engraving on metal.

I shall confine my researches to engraving on copper, in which it is possible to replace the acids by solutions of perchloride of iron, 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.

Despite this advantage however I soon came to abandon its use. When the starting off ground is an original of majestic character, more or less well preserved, and of which it is desired to retain the delicate features, it is necessary to have a flexible cliche, that is to say that, the operator when ready should be in a position to shape the impression, to strengthen or weaken the whole or certain parts only, to even see them omitted, to increase or lessen the contrasts, if the original which he has under observation seems to him to require any of these modifications.

A cliche, which in the place of the usual "standard" engraving on metal, is ready to make the impression is the work of an artist. To emphasise the important advantage gained by my non-metal cliches, which lend themselves to being converted into transparent cliches, which I shall expound in greater detail later in this chapter and in the chapter entitled "The Impression" and which permits of the substitution of a very simple manner of procedure for the complicated machinery of the large establishments of graphic art, for obtaining the superpositions, the juxtapositions of inks and the manipulations required in polychromatic reproductions.

If the principles of my procedure have been

known for some time, that is to say since the discovery of POITEVIN on the properties of gelatine bichromate under the influence of light, the method of using this property, the method of making it suitable to give a faithful imitation of the three kinds of impressions in line production, the extreme flexibility of my cliches, thanks to special preparations, all these constitute a new form of using these principles and which belong to me alone.

Having relinquished metal, the first point to be resolved is that of the quality of the support. Glass with its good qualities of not losing its shape, has the inconvenience of breaking easily, indeed by the roughness or a particle which passes unnoticed at the time of passing under the press. And then after much toil, thanks to the suppleness of my cliches, the images emerge quite satisfactorily I hear, across the image, a little crack appear. I can assure you that I am not very pleased. All has to be done again.

By the way, in order to lessen these chances of a fracture, I decided to strengthen the glass plate with a second undercoat (a piece of gelatine photographic film) the two strips being held together by warming the gelatine of the underplate. Under these conditions it is nine times out of ten that the under strip breaks in the case of an accident and this is easily replaceable.

Having carried in these modifications, I have usually used a support of good quality glass.

Nevertheless in recent years, I have decided to replace the glass completely by celluloid, with which I have succeesed, by perfecting the methods of use, in overcoming the inconveniences, at the same time having the advantage of easy manoeuvreability and no risk of accident during the impression.

Whether it is a question of dealing with a glass support or one of celluloid, the succession of operations which I describe do not vary much, however, there are certain modifications which I should point out and which should be taken into account.

So I will begin to talk about cliches on glass before passing to those on celluloid, at the same time avoiding the repetition of those phases where the treatment remains unaltered.

One perhaps prepares himself, as I have always done, the gelatinous emulsion to spread on glass, the thickness of this latter being that of the photographic plates of commerce.

I use the word "emulsion" because, in this way, the gelatinous film should appear as a milky white, that will allow, from the impression having the appearance of black ink on a white background, easily, a verification of the image when it is placed on paper.

And this is my method of preparing the emulsion:

Take glass plates 9 x 12cm or 13 x 18cm and wash them thoroughly in order to remove all traces of grease.

In order to assure the adherence of the gelatine film to the glass, place the latter a 3% solution of fluorhydric acid and let it dry.

Then prepare a solution composed as follows:

Syrup of silicate of potash 5cc.
Fresh beer 20cc.
containing all its carbonic acid.

Mix these and cover the plate with a thin layer of this preparation. Lea ve it to drain without washing. Thanks to the carbonic acid and the action of the air, the silicate will be converted to silica. Two days later, rinse the plate in water to get rid of anything soluble, and dry it.

The plate is now ready to receive the emulsion.

Composition of the emulsion.

(a) Hard Gelatine 2gr.
(I use the make "Coignet" and the British make Nelson No. 2)
10% solution of potassium bromide. 8 - 9cc.
Distilled water 12cc.

(b) Silver nitrate 10gr. Water 100cc.

Place (a) in a saucepan in order to make it tepid and add in small quantities, stirring it continually, 10cc. of solution (b).

By these means I obtain an emulsion of silver bromide from which it is necessary to get rid of the nitrate of soda, by product of the decomposition by washings in water.

Once the emulsion has assumed a jelly like formation, cut it up into small pieces and shut it up in a kind of canvas bag, from which, it can be forced in the shape of strips having the appearance of vermicelli.

Pass now to the washing of the emulsion which being heavier than water, has sunk to the bottom of the receptacle. It should be placed in a muslin bag of closely woven woof. Wash it for 3 to 4 hours with several changes of water, terminating the operation by placing it in a closely woven silk bag and expelling the excess of moisture by pressure.

With the doses already indicated, the jelly collected should be about 33 grammes. Add 20cc of distilled water and dissolve it. For a regular spreading of the emulsion the glasses should be placed level with the help of supports known as "gradual screw" and a spirit level. It is a good thing to strain the warm emulsion through a piece of muslin before commencing the spreading. Have the glass plates lukewarm at the time they receive the emulsion in order to assist them to take on the jelly during this operation. The spreading will be assisted by shaking the glass. As for quantity, take as a basis 5cc of emulsion to each square decimetre, that is about 12cc for a 13 x 18cm. plate. The quantities indicated should be sufficient for four 13 x 18 plates.

The plates are then left to dry in a place free from dust and away from the daylight.

In order to hasten the drying, the plates should be placed in an air-tight box provided in the corner with an open mouthed rectacle containing dry calcium chloride. The ordinary "drying" quality

of commerce will suffice and its action is to absorb the dampness in the liquid. On warming it afterwards, it will loose the waterand, thus, can be used again.

From a plate 13 x 18cm. one should obtain 8 usable pieces to make 8 cliches and from a 9 x 12 one should obtain 4 cliches.

In place of my preparations of emulsion to be placed on glass I have also used commercial preparations, that is to say photographic plates, using for preference plates with thick film.

With these kinds of emulsions one also finds those with soluble, and those with insoluble gelatine. I keep the former for work during the winter and for delicate images and the latter for images without fine lines and for obliterations.

In order to make the gelatine film sensitive to the light of day I prepare the following bath:

Distilled water 100cc.

Bichromate of ammonia 6gr.

As an example, the time the plates should remain in this bath is $1\frac{1}{2}$ minutes, at a temperature around 15 degrees centigrade. Reduce this time for a higher temperature and increase it for lower tempera tures which however are not advisable in view of the risk of having salt crystals on the surface once the plate is dried.

For its proper use for different types of impression follow the rules below:

1. <u>Cliches for reproducing very fine images.</u> In this case it is necessary to manufacture cliches with a very fine grain, which can be obtained by different methods.

Take the soluble gelatine plates (those of my preparation ca n be placed in this category) which have been sensitised as indicated above but whose drying has been effected at a temperature higher than tha t used for the sensitization.

Once the plate is taken from the bath, remove the excess of liquid on both front and back by absorbing it with blotting paper, which will remove it and allow it to dry.

It is possible to avoid totally immersing the plate in tha bath by placing it on the level and pouring over it several cc. of liquid, in such a way as to cover it uniformly.

In the summer, in warm weather, it can be left to dry naturally, but when the temperature is below 18 degrees Centigrade, in order to obtain a drying at a higher temperature, I use a warm air apparatus, of the kind used for drying hair: this I play on the plate from a distance of about 15cm. Drying can thus be effected in a very few minutes. It is a good thing to use this method because the sensitivity at a low temperat-urecoupled with the insoluble gelatine (in this case I advocate lightly warming the bath) will give rise to the danger of the formation of crystals owing to slow evaporation.

2. Very fine grain films can be obtained by adding in the sensitizing bath 2 or 3 gr. of potassium iodide to 100 cc of liquid.

But when it is reguired to make reproductions from originals in taille douce which, different from line images, make use of half tones, it is necessary that the grain should be more evident.

In order to secure this result, I have constructed a kind of little drying room with moderate heating (gas, oil, electric) where, after sensitization, I place the plates on the level to dry. This little drying room is supplied with a thermometer visible from the outside. The temperature is tetained between 30 & 35 Centigrade.

One should also have plates with grain when using one or the other of the two procedures which I shall now indicate.

1. Plate with soluble gelatine. Bichromate bath containing 3% potassium iodide. Stay in the bath increased by one half to two thirds. Dry with the hair dryer much closer (about 5cm.)

2. A process where the warmth of the drying does not intervene, the grain being obtained

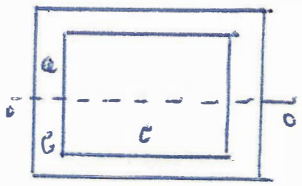
by immersing a film of gelatine which is insoluble (before sensitization) into warm water according to the insolubility of the film.

This forms a rippled surface, a sort of very fine vermiculation which will ensure, on the impression, the conservation of the delicate and half tones. The sensitization in bichromate should be undertaken in a bath of normal temperature but never below 15 degrees C.

Having thus obtained a plate sensitized and dry, it is now necessary to put it in contact with the negative matrix.

For this operation, which I call "exposure" to the light it is necessary to have a frame suitable for stamps, a frame 9 x 12 will do, this would be suitable for singles, also for pairs and blocks of four.

In order to assure a firm control of the action of the light passing through the matrix and striking the sensitive film if the cliche, I have modified a cover, usually of wood and with shutters. I have discontinued those which give an irregular and insufficient pressure at the side of the hinges and have replaced them by a cover of very thick glass, consisting of three strips. Two of these (a) and (b) are placed horizontally and join each other in the middle of the frame along the line O...O, the third (c) will apply the pressure across the other two.



In order to check the image during its exposure to the light, I release gently, with great care (in order to avoid any displacement) the vertical strip and then I withdraw one of the two horizontal strips temporarily maintaining pressure on the other strip with the hand and on which, to replace the thickness of the vertical strip which I have withdrawn from

over it, I replace by another glass strip before replacing the two tension springs. Then, raising the cushion of sheets of paper from the half set free, I check the degree of the effect of the light, be it below through the glass, as is necessary with this kind of support, or be it above, by raising part of the film if the support is of celluloid. Verification having been made, everything is restored to its place, and if the effect is considered insufficient, the exposure to the light is continued.

It is impossible to fix a rule as to the duration of the exposure. As a rule an image which is composed entirely of pale yellow brown without shade or with insignificant shade betokens a certain exposure whilst for certain cliches of which the matrices have been obtained from the originals without contrasts, it is necessary to expose the cliche until a deep image has been obtained in spite of a quite visible shading.

After what I ha ve explained, one of the reasons why I finally preferred a cliche on celluloid will be understood; the control of the exposure to the light made by the "recto" whilst it forms the image, at the same time it being necessary to satisfy, by examination, the image on glass with its rigid support.

If occasionaly in order to remedy errors of exposure I decide to make several cliches from the same matrix, I have found it useful, and I have used it generally, to combine for the control a kind of small photometer of simple construction. I take a piece of white paper with straight grain and I cut it into strips of about 4cm. wide and 15cm. long. I make up several with different figures, in black ink.

Below on these strips I place a piece of photographic paper; celloidine or citrate which I stick to the bottom of the strip with a little gum. If I have not correctly exposed the first c cliche, I adjust it more or less according to the darkening of the photographic paper which acts as an additional control to the verification which I perform directly on the cliche and which I am going to explain. In addition, this kind of photometer is indispensible for exposures back, which will be discussed later.

For placing the matrix and the cliche under the frame, exception being made of matrices having pencil retouches, I spray several drops of essence of terebinthine on the front and back of the matrix and then I place the cliche, well centred on the image, taking care to expel, thanks to this liquid, any bubbles of air.

The time of exposure will vary in a most marked manner; from only a few minutes with a strong shaded light and a matrix with very transparent whites and blacks a little intense, until a whole day in cloudy weather and a matrix with intense blacks or with the whites cloudy, or again intense but having been treated with the compensating exposure "exco" to look after certain details or to lessen an intensity that would be too excessive for the impression. As a guide to the approximate, 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 eyesight.

These variations with warm tone plates give arise to modifications at the time of exposure, in the formulae and in the conduct of the developing.

The plate on glass withdrawn from the frame (no longer do I keep the film support which it replaces) and having received its exposure,

which I call the "before" in order to distinguish it from an exposure of the verso, which I call the"back", goes rightly now to be submitted to the last of these general applicationswhich are nearly always very exhaustive and which constitute a characteristic of my procedure.

As I have already mentioned, the use of my photometer of white paper is indispensible for the exposure of the back.

It is impossible to lay down fixed rules for these two exposures so I am forced to limit myself to approximate indications:

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

Feeble matrices or clouded 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 paper of the photometer.

Matrices of medium intensity, cloudy or with "exco": The "before" until the cloud is quite visible. The "back" blackening of the paper of the photometer a little less than before.

Matrices intense and transparent. 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.

Matrices intense and cloudy or with "exco"; require a long exposure, but with the contrasts reduced by the clouding or the "exco". The "before" clouding hardly visible. The "back" a blackening very much less than that given to the previous exposure which will give an excessively intense blackness.

The exposure to the back is with the object of reducing the hollows in the features where the cliches have absorbed water, to give a refinement to the images, to avoid the softening of the film in thus strengthening the resistance of the cliches to the impression, to allow, from the surplus of cliches obtained, a resistance by manipulation of the preparation of the cliches to the impression, indispensible for nearly all cliches.

As for the grained cliches, used for images in taile douce, of which the matrices have received, thanks to the special retouch, an increase of intensity in certain partsband a lessening in others, the exposure of the "before" should be pushed on with very visible cloud (certain matrices with double image supimposed require a very long exposure, in sunlight, in order to reduce their duration).

The exposure of the "back" will be reduced to a feeble blackness, in order to increase the hollows of the cliches and thus allow on the right side a strong intensification and a more extensive range of cloudiness.

I am in the habit, once the exposures have been completed, of noting on the cliches certain details of their manufacture, For this purpose I use a strong standing ink for ordinary usage made of salts of iron, which becomes indelible on contact with the bichromate of the film.

The plate having been exposed, it is now washed in wa ter in order to rid the film of gelatine or any excess of bichromate. Wash carefully for several hours, often changing the water.

Having reached this stage in the operations several explanations are necessary.

The printed film, as I have already mentioned is of a milky white, which is caused by the silver bromide precipitate which it contains. Whiteness moreover is effected, for it takes into account the inking of the image which is detached from its white base. But this white, since it acts with the 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.

In order to effect this transformation, prepare the following solutions:

(a) Water 20cc; pota ssium iodide 2gr; adding several flakes of bisublime iodine until a dark red brown liquid has been obtained.

Into this liquid are placed the plates, without drying them, after washing; they remain there from one quarter to three quarters of an hour, without being able to give a fixed duration, the cliches having received a greater exposure than the back require a longer period.

As an approximate indication I add that one ought to assume that all the bromide has been converted into iodide when the film, originally a dark brown, has become on both sides a clear yellow.

Now take the plates out of the bath and place them without furthur washing, into a dish of water, for the traces of iodide solution, which must still remain on the film, better ensuring its insensibility to light. With the aid of blotting paper, or a pad of soft muslin, wipe them off and leave them to dry.

Having described the train of operations required to obtain a cliche, with its support a sheet of glass, I now pass on to cliches with a support of celluloid, a support which, I have already explained, gives advantages. Also, of

late years, I have only produced cliches with the films based on celluloid.

On the commercial films, sold in spools of 6, 8, or 12 exposures, etc ; for Kodak make apparatus, there are, as with the plates, two kinds o of gelatine. I have already explained the method of use for each of these varieties.

Among these films, I have found that those that are suitable for my work. I have even been able to buy the best cheap, their date of use having expired. On the off chance, I mention some kinds with soluble gelatine that I have used;

Verichrome26 antihalo; Kodak; Pathe rapid; Ilford panchro SFP; SH Pantihalo; pernox Zeiss antihalo; Isopan Agfa antihalo.
Among the ilsolubles, - Agfa ; Voigthlander "illustra" antihalo; Kodak superll antihalo etc.

I have pointed out the word "anti halo" because it is necessary in the kinds provided for colours to get rid of them because they hinder the exposure on the back. To achieve this object, place the film in a bath acidified with metabisulphate of soda, until the colouration has disappeared then wash lavishly, acidifying the last washing with a few drops of acetic acid.

As I have already stated in the chapter on "The Matrix" the thickening of the film of gelatine of the films before us ing their support, it is necessary, in order to increase their sensitiveness, to divide the spools of 6, 8 or 12 exposures into pieces.

Take for example the use of films describedas $6\frac{1}{2}$ x 11cm, I divide them into pieces 9cm in length. Thus I obtain pieces $6\frac{1}{2}$ x 9 cms which will furnish two cliches for a single stamp. For pairs and blocks of four adjust pro rata the sizes of the pieces.

To supply the rigidity of glass, I use the same process as I have described for the reversal of the matrix.

The strips of film having been made stable by being attached by four paper clips to strips of thick cardboard, these pieces of cardboard should be rather longer than the film but only slightly so in width so that the edges of the film can, on three sides be placed so that the left, the right and the base overlap by about 2mm. and thus stop the sensitising liquid from overflowing on to the underlying cardboard. For these films, held flat by the strips of cardboard, it is quite easy to understand why there is no question, a s for those on glass, of immersing them in the liquid.

In this case, for a size $6\frac{1}{2}$ x 9cm. one pours over it a coffee cup full of the filtered sensitising liquid (6% bichromate of ammonia), well to the centre of the film and spreading it all over the surface but not letting it overflow.

I refer back to the instructions given for cliches on glass with regard to the duration that this liquid should remain ($1\frac{1}{2}$ to 3 mins.) according to whether one is working with soluble or non soluble gelatine, the temperature of the atmosphere and the kind of cliches required.

After being sensitized, the film is then dried, as already mentioned, either naturally or with the hair dryer. The exposure to light is made a t the same time sprinkling a few drops of therebentine on the glass of the chassis, the matrix and the cliche.

In order to follow the action of the light, one is at an advantage when working on glass for then one can raise a corner of the frame and examine the "recto" side of the image.

The work of exposure being ended, before undertaking the washings, place a few drops of benzine on each cliche and spread it with a piece of muslin in order to remove any traces of grease left by the turpentine.

Do not forget, when working with film, that they have on the whole of their back a second

film of gelatine. Therefore after the washings and the iodine, before they are dry, remove this gelatine from the back with the aid of the blade of a knife held horizontally. This operation is easy, the gelatine is moist.

On the subject of "Cliches" it only remains for me to say a few words regarding the obliterations.

Do not forget, as I have already explained, that with obliterations we have the matrices on glass of which the image is already as required.

As I have already said, in order to expedite the work, I have often grouped patterns of the same type (originals and prototypes) in panels of 4 or 6; also according to the size of the matrix so they are arranged on the sensitive film which will furnish the cliche.

The sensitizing and the exposure to the light is carried out in the same manner as I have shown for the reproduction of stamps; however, requiring less precision for the contact, the use of turpentine can be dispensed with.

The successive operations are not altered; examine during exposure, expose the back (which will always be less exhaustive than for stamps, washings, iodisings, eliminating the gelatine from the back if working with films.

In concluding this chapter I ought to mention a variety of cliche of which the advantages, which are not obtained with cliches on metal, have been the deciding factors to makeme choose for the impression after the method where the image rests on a transparent support (glass or celluloid). It acts as a"transparent cliche".

To obtain it, the procedure is very simple take an ordinary cliche, design or obliteration, which has received its preparation (see the chapter "The Impression") and having inked it in vermillion plunge it into a tepid solution of about 35% hyposulphate of soda, until the silver iodide, which

forms the milkiness of the film, has been dissolved into the white and is no longer visible, on looking at it through the back, with the image of the design in white. Rinse immediately.

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

I have used this type of cliche to a large extent for polychrome impressions and for obliterations. As a matter of fact with regard to obliterations, this is how the disclosed secret of my"standard" obliterations procedure which has given rise to ludicrous assumptions as to their manufacture.

CHAPTER 6.

THE INK.

I was going to call this chater "The Colours" but I prefer to call it by this title, because the images in which we are interested are not only made of a coloured pigment but also of an agglutination which is nearly always a varnish derived from linseed oil.

The colours are customary made from insoluble powders. Their number, during the period in which we are interested, and which began from the appearance of the first postage stamp, although considerably less than the actual number, have been increased again considerably by the innumera ble by-products of aniline, tar and carbon derivitives.

As I have already pointed out, it is necessary to distinguish between two catagories of colours: the "transparents" and the "coverings".

The two most covering colours are the vermillion and the cerise, with which our fathers made an extensive use in painting.

Such as red, during the stamp issuing period they had at their disposal vermillion, cinnabar, red ochre, carmine, certain carmine lakes derived from cochineal, and derivitives from eocene and pummice.

Such as orange, those with a basis of chromium or lead, these are obtained by mixtures of red and yellow, such as vermillion with yellow of chromium or of ~~lead~~ zinc, of yellow lakes with red lakes.

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

Such as greens, those of copper, of cobalt (called mineral green), Scheele green, Schweinfurt green, green of Verona with arsenic, green earth or green of the mountain, or a mixture of yellow

and metallic blue (chrome yellow and iron blue, ultramarine and zinc yellow).

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

Such as violets , several lakes, burnt red-ochre, solid violets, derivants from Callein, the mixtures of carmine red and blue.

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

Such as black,the blacks of smoke and 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, during my trials, I have constantly had to use, for a single or a mixture of colours, more modern productions; the lakes of recent manufacture, those obtained from eosine, from fuschine, the greens with the viridity obtained from aniline lakes etc, adapt themselves very well for obtaining certain shades, agreeing with the light of day and tha t of Wood's lamp.

As an example; the cadmium red was never used or hardy ever used during this period. It has a strong resemblance to vermillion, being slightly more of a covering and changing a little less to red. Now vermillion, used at that time mixed with a heavy substance, shows up more clearly by Wood's lamp than a vermillion mixed with a heavy subs tance does today. Why is that? It is because the action 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 the gum it becomes clearer.

I have got round the difficulty by replacing vermillion with cadmium red and adding to it a few drops of chromium yellow, in order to reduce the red, and I have obtained both by daylight and by Wood's lamp an exactitude of shade.

Also, without giving too much offence, although colours with an aniline basis did not begin to make their appearance until about 1860, here is a list of the inks tha t I have used to advantage, their names being those used by the French manufacturers.

For Reds: Vermillion, cadmium red, primary red, crimson lake, lakes derived from eosine, scarley lake, geranium lake, poppy, maddar lakes, 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, viridine lakes, emerald green, although derived from aniline.

For blues; Prussian blue, Turnbull blue, Paris blue, primary blue, ultramarine, oriental blue, marine blue, blue lake, turquoise blue. This last ink is slightly soluble in water. Nevertheless I have used it occasionally for it gives mixed with blue lake, a very clear and bright blue.

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 lakes.

For blacks; those with a basis of soot and black lake.

For whites; white ceruse (white lead), snow white, white lake, transparent white.

It should be mentioned that vermillion and ultramarine are composed of metallic sulphides and they should not be mixed with derivitives from lead such as chrome yellow and cerise. On the contrary they may be mixed with compositions 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 it losing its freshness ar altering its colour.

The drying of inks does not take the same time for various colours.

Colours with mineral bases (earths) those of lead, zinc, mercury and iron (Prussian blue), dry rapidly by congealing on the varnish. For the other colours, I advise, in order to slow up the drying out during the impression, the addition of traces of castor oil, if however the cliches allow of this. (See the chapter headed "The Impression"

In order to end this chapter, I am going to give some information as to what I allowed myself in the preparation of inks for the impression.

That is not to say that I advise changes in the manufacture of all inks, for the means at the disposal of the manufacturers in order to ensure a perfect crushing and mixing, which are effected by machinery, enable them to obtain inks with a

maximum of uniformity. But sometimesit is found that the ink purchased is too loose, that is to say mixed with a varnish too weak or with an insufficiency of colouring matter, then I have been obliged to crush and mix the ink again after adding a coloured pigment. To guard against this deficiency I have occupied myself in making a supply of colours in the dry state.

A good precaution, because certain colours easy to mix like the vermillions, colours of cadmium, yellows, reds and primary blues, carmine, lakes, madders, violet lakes, are liable, after being carefully crushed and mixed by hand, to provide very good inks for our purpose with the advantage of being able to control each composition in accordance with the requirements of the cliche, with regard to degree of consistancy and the depth of colour.

A quite fresh ink, which again has the advantage of a complete absence of all traces of skin, which is so often found with commercial inks that have not been us ed for some time and after they have been used several times, these pieces of skin often mix with the actual ink and one is obliged to do the best one can with them.

On the other hand I do not advise the preparation of inks of which the pigments are difficult to mix such as browns, lakes of mineral origin (ochre, sepia, bistre, umber, sienna, Mars yellow), certain yellow lakes, ultramarine and oriental blue.

And here, in a few words, are the details of how to prepare them:

Spread on a marble slab a quantity of the chosen colour and crush it until it is reduced to a fine powder with a printer's spatula.

Mix the colours with a small quantity of special varnish, medium or strong, which can be found in the shops. The inks for our use, ought preferably to be hard and wearing, free of softenings according to the requirements of

the cliche.

After making this mixture, I soften the ink with several drops of benzine, or crystallizable benzine, which, as it evaporates immdediately, gives the mixture a solid consistency. Having carefullyundertake the operation of crushing and mixing it will then be necessary to give to the ink a "touch of warmth" with the object of softening it and making it more uniform, thus rendering it more consistant by the expulsion of volatile particles.

In order to give it this"touch of warmth" I spread my mixture on a metal plate, or on the spatula which has a very large base, and holding the metal with pincers (not those of philately) I carry it to a source of heat such as a small electric stove, that is to say anything without direct flame.

I continue the mixing and stir whilst warming. When it is nearly boiling, I remove it from the fire and put the ink to cool on the marble, still stirring it. When the consistency of the ink is quite soft, add the pigment, mix carefully and again give it a "touch of warmth". When the red cadmium and the vermillion are warm it will be observed that they darken but this is only for the time being, they will regain their shade on cooling.

CHAPTER 7.

THE PAPER.

Thanks to my "The Art of Philately" I have already made contact, by correspondence, with many distinguished philatelists, and even some laymen, in the five parts of the world. Among them are to be found a great number who are not only interested in my productions but also the method of making them.

Of the majority, what intrigues them most, is the question of the paper, probably influenced by certain literature such as "Studies of the Forgeries", "Vade mecum of the Expert", "The Grand Book of Forgeries", etc etc. which enact "it would be very difficult, if not impossible, to obtain the paper of the period" (I refer to several extracts from this literature in my work "Philately without Experts" pages 85 to 87.

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

Have you mused through archives, at merchants of old papers, through old correspondence and finally the shopkeepers of the Quai des Grands Augustines and other places?

But pay attention, the old papers of the time of vellum, of rag paper since the Middle Ages until about the beginning of the 19th centuary, I have only to make them.

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

And after they had opened their eyes a little as to the sources of paper, I see that these correspondents, these archaic men of letters, pass from one extrem to the other and say to themselves, "For sure, with all that he has not to go in

for racking his brains".

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 appear to give an extended choice, it is often necessary, in fact nearly always, to work on the choicest kinds, to modify the grain, the thickness, the opacity, the feel, the coating, the gum, the tone not only for the light of day but, oh complication, also to take account of an examination with an ultra violet lamp.

All this concerns old papers, taken from ~~those of th~~ those of the period and adopted by me for use in my "Art of Philately". But besides these I must reveal another source of papers, those which are strictly 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 the others at a high price. I take a cheap stamp, remove the colour of the 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 subjected to more or less corrosive chemicals, is no more than pure cellulose, absorbent as blotting paper, of a horrible shade when exposed to the Wood's lamp, liable to crumble into dust after some time, if a whole series of operations are not worked on it.

To stop the corrosion, one must replace its lost gum, its grain, its opacity, and modify its touch so as to pass muster of the Wood's lamp.

I shall have to discuss all these, a complexity of subjects, of questions, of matters 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 perios. 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 transp arency? the same thickness? Does it give the same feel to the touch? Ande then with regard to consistency; is it too brittle, too soft, too silent or too noisy when a coin is rattled on it with the finger?

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

While it is necessary to test the papers in order to discover the kind which appears to possess, as near as possible when considered by daylight, the requisite qualities, is it not possible to stop at this point.

It is necessary to collect a certain number, appearing to differ only slightly, for a more meticulous examination, either by daylight or by Wood's lamp, for, at the time of transferring the image, more than once there has come a time when out of five to ten pieces put aside, it has not been possible to find one suitable and again, sometimes, for this unique kind, one has been obliged to effect modifications and even the suppression of the body and the gum of the original, which does not agree when viewed underthe light of Wood's lamp, and replacing them with another body and gum. In this case, as it is necessary to have the paper already gummed, that is 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 possesses the characteristics of the original, it will have to be decided which of the two sides is more suitable for receiving the image. If it is required for an imperforate variety, cut it in pieces slightly larger than the size of the stamp, with margins, especially if one wishes to reproduce "the edges of the sheet" or to pass on later to the operation of gumming.

As for sheets from archives and from the white margins of books of the period, it happens for the first of the two kinds that, occasionally, the paper contains nu gum, so that for books of this period mearly all of the paper is limp. For this sort it is necessary to provide the stiffening and the gum.

As it is since the period when papers were only made in a vat, the work of making hand-made papers one was preoccupied with this question until the need arose for writing paper, and at the same time for printing books, paper that has now been in use for a long time.

Care as to the composition, conferring opacity to the paper, only followed afterwards, when paper making machines commenced to function. At first it was considered sufficient to place the sheets in a gelatinous solution. In such conditions the paper not only lost its absorbent properties but also its opacity. All, or nearly all, of the papers used at the time the first postage stamps appeared, were made by using a machine that first appeared in France in 1814, imported from England, which provided both a surface and a paste.

I am now going to discuss these two subjects.

It should be noted that the manner of effecting these two operations differs from those adopted for the paper for postage stamps, for this is machine made, their ingredients for the substances and the gum having been, one can say always, mixed in the paste before that is converted into sheets.

With myself however, I am obliged to perform these operations in a bath, that is to say to soak the ungummed papers in an appropriatesolution.

At the start of my operations, I effected the stiffening and the gumming in a single operation as follows:

Prepare on the one hand a 10% solution of Sulphate of soda.

On the other hand beat up the white of eggs, but do not overdo it, so that the albumen settles rather quickly.

The surplus albumen not used couls be preserved for future use in a tightly corked bottle, with the addition of a few drops of ammonia.

A solution (a) is then made as follows:

10% sulphate of soda solution 3 parts.
Albumen of eggs 1 part.

Soak the ungummed paper in it to absorption point, which does not take long, and remove all excess either with blotting paper or other means and then dry it.

Once the paper is dry it should be immersed in the following solution:

Distilled water. 100cc.
Nitrate of lead. 12gr.

Leave it in this for from 10 minutes to a quarter of an hour in order to make sure that it is thoroughly soaked.

Thanks to this second bath, the albumen becomes curdled, this constitutes the gumming, and the sulphate of soda combining with the nitrate of lead forms lead sulphate, a product with very covering qualities and which forms the stiffening and which, having penetrated the paper, confers on it its opacity.

After this process, the amount of gum and body having become satisfactory, there is still a "but".

There came the day when an additional method of expertising saw the light of day, the date that I place its present application to philately being about 1919.

It was the introduction of the ultra-violet lamp, also called the quartz lamp or Wood's lamp,

the name of the inventor, a professor of Baltimore (U.S.A.) who in 1905 discovered that a filter of oxide of nickle would permit the selection of the ultra-violet rays.

Now the procedure which I hace described, although it satisfied requirements as to body and gum content, did nothing to modify the fluorescence of the paper as revealed in Wood's lamp, which would show the fluorescence as darkened as for paper without gum. It therefore became necessary to discover other methods that would vary the fluorescence and enable it to resemble that of the originals.

Gum, composed of soap of resin, was being used on a large scale in the machines of the period, incorporated in the paste, so I turned to this kind of gum in order by some process to obtain a bath for lessening the fluorescence.

In effect, the resins, such as colophony, sandarac, mastic, shellac etc and soaps in general gave a very clear fluorescence, indeed luminous, when examined under ultra-violet rays.

In thse circumstances, I was moved to make my papers undergo a supplementary treatment, having already been treated with albumen and lead, in order to effect a brightening of their tonality in the Wood's lamp.

This is what emerged, having, for these trials used a soap with a basis of alkali and colophony.

But before indicating the methods to be adopted, I am going to explain the method of making the ~~basic~~ resin soap.

As this depends on the quality of the colophony used, I adopted powdered resin, finelysifted, which can only be obtained at the shops of those who cater for engravers and printers.

In a receptacle, larger than the quantity of liquid, in order to avoid losing the foam, warm 80cc of water containing 4 to 5gr of bicarbonate of soda. On the other hand have available about 20gr of colophony. In the boiling liquid, pour

little by little the resin, constantly stirring it. Gradually as the resin melts more is added. By this means a solution of soap and resin is obtained of a brownish red colour. Taking into consideration evaporation during these proceedings we now have the following formulae; -
Water 60cc; bicarbonate of soda 4 to 5gr.
resin 20gr.

This is a concentrated solution. For the use as indicated previously, that is to asy for vignettes already been treated with albumen and lead, I take 30cc of this solution and add 30cc of water plus 10 to 12 cc alcohol, this addition assuring a better penetration into the paper. Perhaps this could better be remembered on a 50cc base. Add the same quantity of water plus 15cc of alcohol.

In order to avoid as far as possible any action on the colour of the image, I commence by floating the vignettes on their backs, immerse them for an instant, remove them and remove any excess of liquid with blotting paper. Leave them to dry and then place the papers into a second bath composed of a 12% solution of sulphate of zinc. The action of this bath is not only to precipitate, in making it insoluble in water, the resin soap, but also to deposit on the paper a coating of bi-carbonate of soda which will make the paper opaque.

The time of immersion will be about ten minutes. The sulphate of zinc could be replaced by chloride of barium, which will make the opacity a little stronger but will give a little less gum. If one requires a white ungummed paper, it should be totally immersed until penetration is uniform.

Later I perfected a resinous soap in which the alkali, bi-carbonate or carbonate of soda, ~~was~~ replaced by borax which has the advantage of a

greater resistance to the effects of warm water and spirits.

Here is the method of preparing it; -

Dissolve 10gr. of borax in 90 cc of water. When this is boiling add little by little gradually as it dissolves 6gr of finely sifted colophony. Continue boiling until dissolved.

This mixture is used lukewarm, for, in cooling the resin forms a deposit after a certain time

In order to use it again, it is necessary to dissolve this precipitent by placing the flask which holds it (a narrow necked kind of bottle used for feeding babies, preferably of Pyrex) into boiling water, until a clear liquid is obtained.

To use it proceed as for alkali soaps, also using the second bath of zinc or of barium.

In order to dilute it, in order to make its action weaker use a solution of 10% borax, with the addition of alcohol.

This gives under the Wood's lamp a less yellow flourescence than soap of alkali, tending more to grey with the zinc or bluish grey with the barium.

Finally, to end the list of my researches into kinds of soap here is a formulae, based on ammonia, which will give in the Wood's lamp a very yellow fluorescence. -

Water 60cc.

Pure Ammonia (22 to 25%) 60cc.

First heat the water and then add the ammonia, when the liquid boils add little by little 15 to 20gr of resin. After dissolution add another 10 to 15cc of ammonia and transfer the solution to a tightly corked bottle. It can be increased by the addition of ammonia or of alcohol.

Of later years I have used a procedure of performing separately the operations of supplying body and gum in addition to the process described of performing these operations simultaneously.

Now, the body and gum obtained separately give a greater flexibility to the process of securing differences of fluorescence of paper under Wood's lamp.

In the procedure which I shall now describe I replace the colophony by sandarac and there is no question as to the soap. It is necessary to use a resin which dissolves as well in alcohol warmed and sulphuric ether, but almost insensitive to benzine and other spirits. Having been precipitated in the paper, it must not act on its other properties. Only use sandarac of very finely sifted, the kind that can be purchased at the shops of the suppliers to engravers and printers.

Without laying down fixed quantities, for there is always an insoluble deposit and one should only use the clear liquid floating over it after it has remained quiet for several days, make a thick paste with 95 % proof alcohol without attempting to dissolve the resin. Denaturalized alcohol alleged to be 95 degree could also be used. However I recommend, if the operator can obtain it, the denaturalized quality, formerly sold coloured, containing traces of hexamethyl-pararosaniline chlorhydrate. This alcohol has the invaluable property for our work of presenting in the Wood's lamp an extremely white and luminous fluorescence, due to this colouring matter, thus facilitating the brightening of the paper in the Wood's lamp, in a permanent manner.

Heat the mixture of alcohol and sandarac in an uprightand deep receptacle, avoiding the direct flame. This method of melting in the alcohol gives a cloudy liquid, sticky, which is poured still warm into a long and straight bottle ready for the decantation, which could take place after 10 to 15 days and will then allow for the separation of the clear soluble part.

In possession of a thick and concentrated disintegration, it will be necessary, in order to use it, to eke out more or less the alcohol

(coloured denaturalized alcohol for preference) in doses which it is impossible to indicate exactly, for they vary according to the quality of the paper and the shade given under Wood's lamp.

Therefore one makes three solutions; strong, medium and feeble by varying the addition of alcohol to an equal quantity for the strong, double for the medium and from three to four times for the weak. The task of adding body to make the paper more opaque should precede adding gum by the sandarac. Below are the forulae for different kinds of body builders; -

Carbonate of zinc; To begin with immerse the white white absorbent papers in a bath of 10 to 15% carbonate of soda to which should be added a small quantity of a syrupy solution of fish glue, or instead of gum arabic. The penetration of the liquid is instantaneous. Remove the excess between blotting paper and leave to dry.

For the second bath use a 12% solution of sulphate of zinc. Leave the paper in it for about 10 minutes, wash it in water and leave to dry.

Charge of Barium carbonate; First bath in the soda as above. Second bath a 12% solution of chloride of barium. Treat as above.

Charge of Carbonate of chalk; First bath in the soda as above. Second bath a 10% solution of nitrate of calcium. Treat as above.

Charge of lead sulphate; First bath of 10% solution of sulphate of soda. Second bath a 10% solution of lead. Treat as above.

The body builder that I have most often used are those of zinc and barium.

Those of zinc bite well into the sandarac and thus ensure the gumminess and the tonality clear in the Wood's lamp. The shade in Wood's tends to be greyish.

Those of barium give an opacity slightly superior to that of zinc, but a clarity slightly inferior. The shade, in the Wood's lamp, tend, after gumming, to be bluish grey.

Those of calcium give less opacity than the previous two. The shade, in the Wood's lamp, tend after gumming, to whitish grey.

Those of lead give the maximum of opacity. The shade in the Wood's lamp is deeper than those already mentioned and tends to reddich.

Without using the lead only, one could, for grey shades tending to reddish, add in a bath of 10% nitrate of calcium, a small dose of the solution of nitrate of lead and use for a second bath the sulphate of soda.

Once the body has been built up, it is necessary to pass on to the second operation which is that of gumming and regulating the shade for Wood's lamp. Among the different dissolutions of sandarac at different concentrations, one should choose, whilst taking into account the influence of the "charge", the one that approaches as near as possible, to the fluorescence of the original.

It is necessary also to submit to these treatments papers already gummed because their opacity or their shade will have to be modified to conform to that of Wood's lamp.

In that case I immerse them first in the bath of soda reserved for body building. The penetration takes from several minutes to half an hour for certain papers. The successive operations for body building and gumming are the same as those for papers that are ungummed.

In my next chapter "The Impression" I shall have to describe the method for superimposed impressions. In that case it will be necessary to envisage occasionally gumming with resins after printing. Now, if the gumming is not effected after the printing, the papers with the sole treatment of the "charge" still remaining absorbent and the paper, through the loosening of the moist cliche after peeling off the pressure, as they cannot be used thus only with the cliche taking up a little of the water, having a kind of insoluble gelatine, in addition, receives a strong exposure on the back.

For the other cliches, inorder to avoid the risk of damaging the paper, it becomes necessary to immerse them after conditioning and before passing to the impression, in a solution composed of 15gr of colopony dissolved in 50cc of denaturalized alcohol.

I have called it "provisional gumming" for it will disappear in the succession of operations which I shall discuss in the next chapter.

In the previous pages I have busied myself with the traetment required for paper from archives, letters and books. I shall now deal witht the method of dealing with paper taken from genuine stamps of the same series or issue.

In this case it is necessary at first to chemistry, because it is necessary at first to remove the image in order to secure the rectangle of white paper. During my explanations I shall call the operation "The decolourization".

In order to follow the various processes better I am going to treat the subject separately for the two following categories;-

1. That of papers with obliterations, or that have been cancelled, that is to say without gum on the back.
2. Those with paper needed to be presented mint with original gum.

To begin with a number of baths should be prepared; -

95 degree alcohol	50cc.
Caustic potash in lozenges	5gr.
Water	100cc.
Protochloride of tin	10gr.
Hyposulphate of soda	50gr.
Water	500 cc.

In order to make my explanation clear I will give two examples, taken at random, for the stamps in the first category; -

Australia 1912-13 - 1d. red.

First be careful of the obliteration (in order to avoid damaging it), pass over it a weak solution of celluloid in acetone by means of a brush. The immerse in a bath composed as follows, 1 part of the solution of caustic potash with 4 to 5 parts of denaturalized alcohol. The stamp should have first been moistened in water, with any excess taken off with blotting paper.

Leave the stamp in this solution for several hours, then wash in water and dry.

The the paper is submitted to the action of chlorine gas which is released by putting into cantacy Javel water (hypochloride of soda) of commerce, diluted 3 or 4 times by tepid water, with hydrochloric acid.

This is how it is done; -

The papers are immersed in a glass dish with fairly high sides and flat edges, containing water.

Empty the water from the dish and replace it with the diluted solution of Javel water. At the same time, have on hand a thick or glazed glass plate, to act as a lid, and after pouring in the hydrochloric acid, close it immediately to prevent the escape of the very dangerous fumes.

Rock the dish, provided with its lid, for some minutes. A lather will be formed, this is chlorine gas. Leave the papers for from half an hour to an hour, depentent on circumstances, watching the effect. Then empty the dish of its liquid content and, after washing it out with water, replace it with a 10% solution of hyposulphate to which should be added several drops of ammonia. Finally was a gain in water, dry off between blotting paper and then leave to dry.

France, Empire 20c. blue.

Firstly to protect the obliteration, act as above in the preceding example.

Secondly, after a preliminary moistening with water, place in the bath of caustic potash, increased with 5 parts of alcohol, or water and alcohol

mixed, let it stay there for from half an hour to an hour when the blue should havevanished and been replaced by a very faint yellowish brown ~~image~~ image, caused by iron oxide.

This bath, diluted with alcohol, may be used several times. Wash, dry, adding to the water of the last washing several drops of acetic acid. Dry off.

Thirdly, immerse the papers in a bath, of which the formulae has been given, of protochloride of tin, until the removal of the image is practically complete, this will take about an hour. Wash and dry.

Fourthly, the operation as previously described with the chlorine gas. Wash in water, followed with the bath of hyposulphate of ammonia and wash again. Wipe off between blotting paper and dry.

The intermediate bath of protochloride of tin is to strengthen the action of removing the colour, but in many cases may not be necessary.

It is however included in this operation as an example.

Great Britain 1867-69 1/- green; 3d red.

First protect the obliteration as before.

Secondly, the alcoholic solution of caustic potash increased by 5 parts of denaturalized alcohol, the papers having first been moistened by being immersed in water before being placed in the bath of alcohol. Let them stay there for several hours, wash etc.

Thirdly, put them in a dry state into the bath of protochloride of tin and let them stay there until the image has practically disappeared.

Fourthly, a weaker bath of chlorine gas. Wash hyposulphate as before etc etc.

If some vignettes of the rose colour have not been completely whitened, repeat the operation of the caustic potash mixed with chlorine.

Complete as before.

We now have white papers which have lost their body and their gum, which it is now necessary to replace in the same manner as I have described for gummed papers. Only in the cases that I have described, we have at our disposal white papers with authentic cancellations to which it will be necessary to restore the decrepitude that they have lost in the baths and this, for preference whilst the paper is absorbant, that is to say before restoring the body and the gum. I shall give the method of doing this in the last chapter "The Trimmings".

I pass on to blanching such stamps on which it is wished to preserve the original gum.

Only the following colours lend themselves to this operation, violet, rose, lilac rose, carmine red and some light yellows. The operation is a very delicate one from the point of view of the price, the ingredients are very, very costly. In addition, if certain precautions are not taken, this operation is harmful to the respiration.

I prepare my baths and the following liquids; -

A solution of 10% caustic potash with a mixture of pure alcohol 95% proof in equal parts. Bottles containing acetone, spirit of turpentine, pure liquid bromine (a product which is very dangerous to breath and is sold in glass phials). A solution of 10% iodine in pure alcohol or 95% proof.

I am going to show in order the series of operations, available as well for a rose, red, yellow or lilac of the British Colonies as fortaken by chance, a Bolivia rose, an Iceland carmine, a North Borneo orange or rose, a Bermuda brown, orange or violet etc.

It is necessary to have available some cylindrical glass bottles without necks, of the same size, tightly corked with glass stoppers.

Also vertical dishes of glass with one or several grooves, in the flar edges, into which can be slipped a glass plate carrying a single stamp or a pair or a block of four, or even eight, which have already been stuck to the plate by peelable hinges. Cover this dish as well as possible with a glass resting on the edges of the plates if however it does not possess a lid make it air tight with glass. At a pinch one could, although such action would not be so suitable, place the stamps loose in the kind of square glass dish with raided sides and a glass cover which are sold for the preservation of food in refrigerators.

1. Submit the stamps to the bath of caustic potash composed of one part of a 10% alcoholic solution in four parts of 95% alcohol. Add to this two parts of acetone, which, while not dissolving the potash, will help in the preservation of the gum. Leave the papers in the bath for ten hours, that is for the night. Then wash in a bath of 95% alcohol and acetone mixed in equal parts. Change this bath two or three times finishing with a bath of the same constituents but with a little of the solution of iodine added to the alcohol. Wipe between blotting paper and dry.
2. Submit the papers (disposed in one of the two methods already indicated) to the action of a bromide bath, which is made by diluting pure bromide with about 5 to 6 parts of 95% alcohol. Make this mixture in the cylindrical bottle already indicated or in the refrigerator dish and place one or two pieces in it, ensuring thatthey are steeped in the liquid, and close immediately. If vertical dishes are used the pieces should have been previously fixed to their glass support by peelable hinges.

When performing this operation, do it in the open air, back to the wind, so that the reddish noxious vapours are directed away from you.

Axportable ventilator, correctly placed, would be very useful. In addition protect the respiration by a linen pad moistened with a 10 to 20% solution of hyposulphate of soda, without forgetting if one has it available, a gas mask.

In the event of discomfort, after this operation, to the respiration, resort to smelling salts.

To avoid heating, when the bromide is poured into the alcohol to dilute it, hold the recptacle containing the mixture dipped into a basin containing as much cold water as possible. This operation should be performed very quickly withour irresolution.

Leave the papers in this bath for from four to five hours. As the vessels are of glass it will be possible to watch the process of thedecolourization. Exposure of the vessel to daylight during the action of the bromine will quicken the action.

As soon as this has been achieved, take the pieces out of the bromine and place them in a glass dish containing equal qauntities of acetone and turpentine, which should be changed one or two times. From this bath the papers a re transferred to a bath of pur e acetone and left there until they curl up. The object of this bath is to get rid of the turpentine, wipe them well on blotting paper and leave to dry naturally.

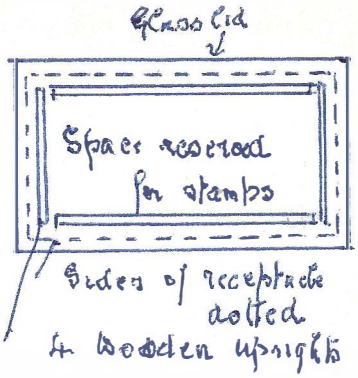
Another method for effecting the whitening of mint gummed pieces is to replace the bromine by chlorine gas, a method I will describe below.

The first operation in the caustic potash remains unchanged.

For the second operation in the chlorine gas an accessory is required.

Obtain a rectacle with high sides (of the strength of the type used in refrigerators) The lid should consist of a glass overlapping the four sides and resting on the sides of the receptacle.

In the interior of the receptacle and sticking to the lid, seen through the upright sides, one to each side, are placed small square



strips of wood. One could for this purpose, cut one of those small rulers from 6 to 10mm wide, as used by students, into four pieces to accord with the dimensions of the receptacle. In the space between theseuprights, should be fixed by hinges to the lid the stamps to be bleached.

The uprights are placed there to maintain a distance of about one centimetre between the stamps and a fine linen, without dressing, which will be stretched and fixed with drawing pins to the wooden uprights (cover the drawing pins with a coating of bitumen varnish to save them from corrosion).

The part of this linen, which will allow the gas to diffuse through it, is to prevent the particles of liquid caused by the effervescence of the gas from penetrating to the stamps to moisten and damage the gum. For this reason it is also necessary to slow up the action of the chlorine, on the pieces to be bleached, as much as possible. This work should be undertaken with great care. Terminate their drying by immersion for 10 to 15 minutes in pure acetone.

To fix the wooden uprights to the lid, use ends of adhesive cellophane, thanks to the mixture of very viscous rubber. This can be purchased in rolls. Cut into pieces the size of the contact between the pieces of ruler and the glass and stick these to the glass. The rest of the cellophane, devoid of adhesive, should be stuck to the wood by means of a very thick solution of mastic in benzine, made thicker by evaporation of the solvent which should be spread lavishly on the cellophane and the wood. Kept under pressure for 24 hours the uprights will have stuck to the glass.

The central part of the lid reserved for the stamps should be prepared in advance, protected by the stretched linen.

All being ready the lid must be put in place immediately for the chlorine gas is released with a strong froth. The Javel water should be diluted with three parts of warm water, into which mixture should be poured hydrochloric acid until it produces a copious lather.

As regards the consistency and glue of these gummed papers, one cannot proceed as with those without gum, by immersion in watery solutions. So consistency and glue are provided at the same time in a bath of benzine to which is added in drops a certain quantity of concentrated mastic which will assure the sonsistency and glue of the paper under the Wood's lamp. With regard to the consistency add to this mixture a thick paste, obtained by crushing white lead with avery little linseed oil, that is to say rich in white lead. Mix this paste well into the liquid.

One should still add several drops of a clear solution of bitumen into the benzine in order to lessen the whitening of the paper.

Important ; Every time that a single atamp is introduced, stir well and constantly in order to avoid the deposit of white lead. Rid the papers of any excess liquid between blotting paper.

It remains for me to mention "tinting" of the paper" This operation is useful toknow, the number of stamps on tinted paper being sufficiently consistent with a wide range of intensity between such strongly tinted kinds as Swiss, Bremen, Oldenburg etc. to the very light kinds as the first issue of France.

In order to perform the operation of tinting successfully it is essential that the paper should be absolutely free from glue, that is to say, very absorbent.

Here also, whilst during the manufacture of the paper the tinting is incorporated in the paste, we

are obliged to obtain this result in a bath. The liguids used are spirit of turpentine and benzine.

The colours are obtained by diluting the rich inks in one or the other of the said solvents. The operations of restoring the consistency and the glue take place after the tinting. Choose the ink, or the mixture of rich inks to be diluted, according to transparent or opaque colours are required. However for preference, it is best to select inks that do not settle quickly (as in the case of vermillions, yellows with lead base etc) and which, left for several minutes, without stirring, colour the solvent. In taking this into consideration, it should be appreciated that on leaving them undisturbed even the lightest of inks will, more or less, leave a small deposit. So I advise once the ink has been watered down, that it should be left for one or two minutes and then the liquid part transferred to another receptacle.

For this operation I use heavy earthenware mugs with bell mouths, of several sizes, but of which the base is very large so that they are not easily overturned. Contents 15 to 30cc.

If light or very light tints are required one transition will usually suffice but for deep tints three or four successive transitionsmay be necessary, always drying the previous one.

When dealing with papers from archives, the margins of booke and especially from letters make sure that the paper has been thoroughly de-glued and, if it has not, immerse it in boiling water with a strong ammonia content. It is possible to tint these papers in strips but stamps that have been blanched should be treated one by one. Stir the mixture constantly. After each transition, take off the excess moisture between blotting paper before using the bath of turpentine.

To expedite the work, especially if several

transitions are required, after each transition hasten the evaporation of the turpentine by holding the strips near a source of heat, without flame, such as an electric fire.

Taking an example: for the Swiss double I make four transitions, the colour being a slightly opaque green. I dare not overload thebath, for fear of a deposit on the paper, despite constant stirring of the liquid. With this kind of tinting there is no question of a duration for the immersion. The papers are passed rapidly through the agitated liquid and absorption, according to the capacity of the paper, is instantaneous so that the operation is only repeated, after drying, if it is desired that the paper should take on more colour. If it is desired to get rid of the heavy body and the remainsof the spirit and only look after the colour, when the operation is concluded soak the papers in the acetone which will also assist absorption during the operation of restoring body and glue.

For blanched stamps I reccomend the use of turpentine which is more consistant for small surfaces.

The operation of restoring body and glue is made, as I have already described for papers without gum in a watery solution of carbonate, or better still, of bicarbonate of soda, followed by that of zinc sulphate, barium chloride etc., for the body. Only, to avoid a too long action of the alkali of the first bath on the colour of the tint, take off the excess moisture between blotting paper and, without waiting to dry it, place the paper in a more concentrated solution either of 30% zinc sulphate or barium, passing it afterwards, after a four to five minutes stay, into a 12% solution where it should be left for 10 minutes.

To restore the body and glue at the same time, occasionally I have used the method of immersion in resin soap, obtained from borax, followed after drying, by the treatment of zinc sulphate or barium

and, finally, when the body, as indicated previously, has been restored separately, the restoration of the glue in the alcoholic solution of sandarac will be found advantageous.

CHAPTER 8.

THE IMPRESSION.

In my chapter on "The Cliche" I have already given the reasons why I give my cliches an additional exposure at the back, more or less prolonged, but always very thorough, which is one of the characteristics of my procedure and ensures that the reproduction of the images shall be precise and exact. But this exposure at the back, whilst giving a finesse to the images, considerably reduces the contrasts. Also, on almost the whole of the cliches there must exist a sort of preparation of the impression without which efforts to obtain acceptable copies would be time wasted.

These enhanced contrasts, which we shall call, for in the "preparation" which I shall describe, are indispensible to us for increasing the difference of behavours between the background, which does not take the ink, and the design which should, on the other hand, do so.

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

A very hard vermillion ink and a second of less firmness; sandarac and colophane, very finely sifted; spirit of turpentine, benzine, sable hair brushes of different sizes, a receptacle such as a casserole, preferably of porcelain, a small electric hot plate, several dusters such as muslin squares, soft and very absorbent and about the size of a pocket hankerchief, a watchmaker's magnifying glass, to leave the hands free, a marble slab which should be level, carefully polished and with no traces of roughness, on which are performed the work of the "preparation" with the cliche and the inks.(personally I use a slab size 25 x 35cm. but one need not be too particular in this respect, finest quality absorbent cotton, two wide mugs with large bottoms, capacity about

20 to 30cc., several small boxes with lids, containing pads made from a pad of well packed cotton, contained in a piece of muslin, which will constitute the small pads for benzine and turpentine used during the impression, a small glass palet, about 6 a 9cm, covered with a thick layer of soft gelatine.

I must make a short digression in order to indicate my methods, which are original, for inking cliches of small format. I use, more or less according to requirements , two fingers. I have become accustomed, peculiar to myself, to use the first and third fingers, the first kept for the very hard or strong ink, the other for the weaker ink with less consistency. That is all I require for inking the surface of a stamp. For pairs and blocks of four, instead of the fingers I use the fleshy part of the palm under the thumb. For sensitivity in controlling the inking, this method is better than by using a roller. However, if it is necessary to work on larger surfaces, the fingers and palm are replaced by a gelatine roller.

Moreover, on occasions, personally I use it for small formats, when a half tint is involved, such as for "taille douce".

Having placed the materials and products in position, begin by immersing the cliche in cold water for some seconds. Then take it out and place it on the marble slab.(if a cliche of filmis being used, secure it on the slab by covering it with a glass coated with soft gelatine).

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

Attempt should be made to disengage the whites by passing over the cliche a pad of cotton moistened

in a mug of water, using also one of the dampened dusters mentioned previously in the list of materials.

If the whites are reluctant to be disengaged the deposited ink should be dusted, with the help of a brush, with sandarac powder. The release of the whites, thanks to the use of moist cotton and duster will be eased.

If however, despite all efforts, the whites do not disengage, then wash the cliche in spirits of turpentine and place it in slightly lukewarm water where it should remain for some minutes, then start the operation of inking again, once more if necessary dusting the ink of the image with sandarac powder. It is possible to make local disengagements in certain parts with a brush dipped in water.

Having had to give a number of different examples, owing to the difference in matrices, this again due to the difference of originals, such as shades, intensity and design, the cliches, in their turn, feel the effects of the differences all of which demand management in the "preparation" and which I have indicated. It is therefore necessary "to come about" and to reconcile oneself to a certain delay whilst trials are being made of the role played by the ingredient water, in opposition to the ingredient thick ink, so that with the knowledge gainedone can, for each case, arrive at a satisfactory vermillion image.

A small diversion now regarding the preparation of the two vermillion inks.

For the very harh; take vermillion (with mercury sulphate basis) and mix it with a small quantity of strong varnish, to which, in order tofacilitate mixing, a few drops of benzine have been added. After a very careful mixing, spread this ink on a metal plate and melt it until it just begins to boil. Mix again on the marble slab and as soon as the vermillion cools it will regain its colour. A very firm paster should have been obtained, but it may not be ready yet, at this stage, for it too

much varnish has been added it will be necessary to do the operation again after adding more pigment.

In order to make the less hard vermillion, use a somewhat weaker varnish, or still the strong with the addition of a little linseed oil, for it is not necessary to have a soft ink, which would be of no use to us during the "preparation" but only an ink less hard than the former. This ink we shall use for the second vermillioning of the cliche as I shall describe later.

Our cliche, which should now present a beautiful image in vermillion, should now be dusted with very fine powdered colophony, this resin will reinforce the waterproofing of the outline of the vermillion image.

We pass on now to the operation of baking in water. This is done by a stay in very warm water, for a duration of one or more minutes, whilst the contrasts increase between the image rendered impervious to the absorption of water and the background, which the gelatine softens and inflates by increasing its repulsion to greasy bodies such as our inks.

The duration of this baking is very variable. Firstly I must mention the cliche taken from an intense matrix, with definite contrasts, obtained from an original with very inactinic and intense colours. This kind of cliche, which has been exposed both on front and back, already possesses sufficient contrasts and needs nothing more than an inking with vermillion except to be immersed in warm water for from one to three minutes, according to the strength of the exposure the back has received.

As a general rule, a cliche, having received a strong exposure to the face, should be exposed for the same time at the back, if this is not it softens too much in the baking and printing becomes hard. One of the advantages, among others of exposing the back, and which I have already

maintained, is precisely that the film becomes resistant to this baking, which is indispensible to us for increasing the spaces, that is to say the contrasts between the image and the background.

As for the baking, it still has to be considered whether the cliche has been made with a film of soluble or in soluble gelatine, for if it has been made from the soluble variety, the exposure of the back being more thorough, withoutwhich it would loose its resistance to the baking, softening too much, and thus would produce a very pronounced and embarrassing hollow. If this detail has been over looked, it will be necessary to reduce by some seconds its stay in boiling water and the contrast be increased by the method of "friction" which I hace described far back, or better, having the cliche inked with vermillion, dry it and proceed to a second sensitization in a 6% solution of bichromate. This time the liquid penetrates the film very slowly and it will need from 5 to 10 minutes immersion. Get rid of the excess of liquid and dry it, this ca n be done very quickly with a hair dryer.

Then proceed, all the time leaving the cliche inked, to a second exposure of the back, followed by a washing in water which should be of several hours duration. The dried cliche should have its ink removed and, after a stay of some minutes in water, the vermillionizing of the image can be proceeded with as already described.

When this is done place in boiling water for two to three minutes.

With regard to the insoluble gelatine, the baking may be more prolonged (3 to 4 minutes) and even 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.

As for the second vermillion which, being given less consistency, makes the disengaging of

the image before baking harder it can be used, with advantage, to give a second coating of vermillion after the first baking, which will have increased its impermeability to water of the gelatine cliches, of which the backs have been strongly exposed, it is best to use ink for the printing that is of a softer consistency, which should have a tendency to "clog".

Having stopped my explanation of the setting up of a cliche, I go on to describe the method of prep aration for "strengthening".

This method can be performed separately or in conjunction with the warm water preparation in cases where one finds themselves possessed of a cliche obtained on a soluble gelatine film which, having been sufficiently exposed at the front, has received a too short exposure on the back, or perhaps the baking has been prolonged a little too much, thus softening the film and taking away all resistance to printing. In this case after having effected a vermillioning appropriate for the image, one proceeds to rub on its surface with a finger covered with damp linen. During this operation keep the cliche fairly damp always and treat the image with successive layers of ink in proportion to the rubbings have affected the various parts. Also use the second ink, the one with less consistency, which will withstand the rubbing better. What should be aimed at can be expressed thus: on the inflated gelatine, caused by the water, rubbing should lessen the attraction of the greasy inks.

A method that can be used in conjunction with the warm water treatment, every time that it is not desirable to press on with softening of the gelatine, having to do it with slightly gummy papers, to which contact with the softish gluey gelatine would be injurious. In this way, the contribution of a lighty rubbing on the cliche holding the right vermillionage, as additional to the baking cannot

be used as it will increase for greasy inks, though shown to be particularly useful in the case of fairly soft inks, the difference of attraction between the lines of the image and the background.

With cliches on film, the immersion in boiling water can assist the process of flattening them if, when they are taken out of the water they are placed on a flat surface, marble or glass, whilst they are cooling and this will be found very useful for successive manipulations.

The cliche having once printed the desired colour should again be placed into the water in order to rid it of its ink.

Before passing on to the impression one should have previously prepared his papers, that is to say that they should have been selected already, possibly blanched, and that they should have had their substance and glue restored in the manner that I have described in the previous chapter.

On the other hand, having before one the originals one can prepare the ink by comparison, either by the light of day or of Wood's lamp.

But, before I discourse on this subject, I am going to point out certain useful hints for all the inks and the manner in which they should behave with the cliches.

For general rules, the following apply; Keep the cliche always damp. The slogan "no" water, no impression is very appropriate for us.

After every copy clean it copiously with a wad of cotton soaked in water, taking off the excess first with one of the pieces of linen, which has been moistened.

A hard and moreover pigmental 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, perhaps, 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 with strong varnish, aiding the mixing with the addition of several drops of benzine.

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

Always have at handtwo varieties of inks; one hard the other less so, adding to the first traces castor oil, which is to be preferred to tallow or linseed oil. But this later oil can be more suitably used than castor oil if required for slightly siccative inks such as carmine lakes and violets.

Before deciding on the choice of an ink or of a mixture always verify it, having the original before you, by its appearance and its transparency in the light of day.

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

Every colour, withour exception, should be examined with an ultra-violet lamp.

As compounds, appropriate to certain colours I mention the following; -

For Black ink made of soot is a little siccative.

In order to obtain a grey or a pale black, one coulsd replace the moisture of the finger inking with benzine by turpentine with the finger only slightly covered with the ink, or rather the addition to the black of a white lake, or a transparent white. A good pigment is made by adding to the soot black ink a black commercial ink in order to obtain an intense black. The blacks adapt themselves to the addition of one or two drops of ammonia to about 30cc of water, this will aid the unloading on to the paper and the release of the whites on the cliche.

This remark is valuable for all inks, but a very strong addition will remove from the lines the property of accepting the ink and if that occurs it will be necessary to get rid of the ammonia on the cliche by repeated wiping with a water soaked cotton pad. Matrices for blacks are more suitable if somewhat under than over exposed, which would ha ve the effect of bringing out too much the details in the deep balcks.

Yellows with a lead basis and other covering colours such as vermillion, cadmium red, certain greens, and browns with a mineral origin, accomodate themselves to the addition of a small quantity of ammonia which helped to release the details on the deep blacks (thus I call the aspects or the inks that are displayed or piled up). Use these inks in a very pigmental state and somewhat hard. Ink with an inky finger moistened with benzine.

To put in order, one could, if there is a need, finish off each inking by the quick passage once of a roll of gelatine on which has been spread a softer ink, obtained by the addition of a small quantity of castor oil. In order to spread this ink on the marble and on the roll, a few drops of benzine will help. Every time that this roller is used, never make several printings without first moistening the cliche after every use, for, I insist, and this remark is important in every case, a cliche having lost some of its water will have its whites clogged and their relation to the different parts of the image warped.

Covering inks require that the matrices should preferably be a little over exposed with the transparent parts well detailed.

With yellow and brown it is somtimes difficult to obtain with a single impression an image that satisfies as to the intensity required. So,if it is required to preserve all the delicacy of the image, it will be necessary to resort to a double impression by an exact superimposing of two images.

Later I shall explain in detail this procedure of double, and indeed triple impression, for it is going to be of great use to us in cases where a great intensity is required for certain parts or of the whole, which may consist of the printing of images of various tonalities, such a s in the case of the "Taille douce".

Blues of the type of Prussian blue also accomodate them selves to the addition of a smallquantity of ammonia. Always make comparative tests before undertaking the impression. The matrices secured from an intense blue original, of the type of indigo or blue balckand with "ortho" plates have sufficient contrasts to be able to furnish cliches which can take the vermillion inking prior to the baking. These need only a light baking, but this is not the case forpale blues which require an increase of contrasts.

For such blues the colour can be lightened by the addition of a transparent white or better to add to the ink traces of castor oil, finger inking very thinly.

With regard to ultramarine (Oriental blues) the correct ink is much moredifficult 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 vermillion to release the whites, helped by dusting with sandarac powder, followed by one or two minute immersion in boiling water and, if it is necessary to make a second inking with half hard vermillion, follow with another short stay in water.

For, this is important in all difficult cases, only an increase of the difference of the attraction of the inks by the whites and by the image, will assist a good inking.

For brown, green, red, yellow and violet, slightly covering, as in the case of the lakes, use the previous method of vermillionage, preceded by a very short stay in cold water and, if using

with reduced contrasts, operate as for the pales and the violets by doing two vermillionages with two short consecutive heatings. Avoid a very soft ink but have at hand the two consistencies, very hard and half hard.

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

The first, which is the most opaque white, increases the opacity of the ink for transparence and gives a chalky aspect. Zinc oxide possesses these qualities in the slightest. But where they differ most especially in in their fluorescence to ultra-violet light for they are both sensitive to modifications of shade in both the good and bad sense.

The fluorescence of the ceruse is a bluish white whilst zinc oxide, according to the different methods of production, gives a fluorescence ranging yellow brown to light yellow. White lacquer and transparent white have little opacity and give a slightly greyish white.

In this manner one is forced to make a correct adaption in each case, based on the comparative ma ke up, before one can print the impression of the vignette.

The cliche having undergone the "preparation" is ready to be inked with ink or the selected mixture of inks.

For inking it is essential to have available a mug of water, pad of cotton wool,dampened muslin strips, sable hair brushes with which to moisten certain parts if it becomes necessary to assist their release.

Begin by moistening the cliche thoroughly with the cotton wool soaked in water, taking off the excess with a piece of muslin. Then ink it with the finger as I have already described for

small formats. Having within one's 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 removed dispense the ink first on the finger and then from the finger to the cliche and, making pressure with quick to-and-fro motion ink the features and release the whites. The quicker the movement of the finger, the better the whites are released but the features, on the contrary, will be less inked. It is necessary therefore by trial and error to find the right medium of inking the cliche, nut, to begin, it is a question of executing this movement slowly, at the same time applying a certain pressure in order to ensure a good penetration of the ink into the hollows.

Do not forget that the cliche, during the whole of the process of inking, must be kept moistened by frequent applications of water.

Often the release of the whites needs a wiping with cotton wool soaked in water, also sometimes a wiping with the finger (as one of my specialities I usually use the little finger) to effect this release, or again by wiping with the linen used as a damp pad. The most obstinate releases cab be accomplished by passing a finger covered with linen over the cliche, which must be kept constantly moistened. These releases need very careful watching in order that they are kept strictly to thewhites, without breaking the lesser delicacies of the image.

It is impossible moreover to indicate in an "standard" manner the nethod for inking the cliches because of the differences in their requirements which depend on a train of circumstances of which I will name several: variations in the matrix; in the exposure of the front and back to the light of the cliche; in its "peraration"; in the surrounding temperature which will have its influence on the rate of evaporation; in the capacity of the cliche to take on water; in the consistency and nature of

the inks and their more or less easy adaption to the principle of "water and fat in opposition" the principle on which the whole procedure is based. Numerous factors, which demand for their adaption a certain amount of experience, which can only be aquired after a certain amount of time has been spent in practice.
The cliche, once inked, will have to undergo a certain amount of pressure in order to enable it to deliver its ink on to the pa per.

One could perhaps use to advantage a press consisting of a plate which moves horizontally under a cylinder, a kind of heavy press, or better still a press with a vertical displacement, such as a kind of copying press. Nevertheless, whatever are the diffenences of these office presses, it is essential that any pressure applied does not cause the slightest sideways displacement. In order to achieve this end, it will be necessary to place between the pressure screw and the iron plate which exerts the pressure (a small plate 6 x 9cm. is sufficient for our work) a piece of steel (A) in the shape of a 7 to 8cm sides square, which can be moved in two directions, drawn vertically by the screw and tightened by two arms of iron forming a slot with the precision contact, the two arms being retained by two screws and fixed in place by two handy slots in the press, where their four ends can be lodged, To maintain a perfect contact between the piece of steel and the two arms which tighten it, this piece should always be supplied with grease, in order that it will work without friction which could be occasioned by rust. Also keep the screws and the little plate well greased.

But if it is a question of one or the other of these presses, one cannot establish direct

contact between the cliche, which will be of glass or film, and the metal of the tray or cylinder. It will therefore need a support and a kind of small pliant cushion, interposed between the metal and the cliche and on which the pressure will be exercised.

For a support, I have used for cliches on film a small plate of copper of rectangular shape about 1½mm thick and measuring about 7 x 13cm. I adopted this lengthened form in order to have room for manipulation. To one of the ends of this copper plate, I fixed, by dissolving celluloid in acetone a piece of celluloid about 5 x 6½cm thick on which I fix my cliche of film.

For cliches on glass instead of on celluloid, I fix for a support with a gluey mixture, a small plate of glass of the same dimensions and about 2mm thick. Lay the cliche on glass on the glass which must have no trace of roughness in order to reduce the risks taken when applying pressuer.

Moreover in the case of a cliche on glass, I advise, as I have already said, adhering to the cliche a second small glass plate of the same size for, in the case of breakage, it is uasually the second glass that goes and this is easy to replace.

For the small cushion, which ought to be soft but not excessively so, I have adopted a standard format of 8 to 9 x 6cm and made up as follows; -

1st The copper support, glued to it the piece of celluloid or glass.
2nd The cliche fixed on celluloid or glass destined to be inked.
3rd The paper which will receive the image placed there by the cliche.
4th A sheet of paper to catch any stains.
5th A sheet of soft indiarubber of the thickness of an inner tube.
6th A thickness of about 5mm of tissue paper in a strip without join or projection, placed by the side of the cliche.

7th A rectangle of thick celluloid.

Finally regarding the plate it is a matter of a sma ll press descending vertically.

8th A sheet of rubber of the kind used by shoemakers, about 4 ti 5mm thick.

If it is a matter of a clixhe on film, here is how I work; during the trials of ink and papers;

I fix my film on a glass covered with a thick layer of soft gelatine(several drops of concentrated solution of calcium chloride will soften a film of soluble gelatine previously inflated by water). In this manner I can remove or relace the film without difficulty, but with all the details of the printing stopped, the cliche being definitely ready, clearly understood that it must always be wet, I then fix the clixhe on the rectangle of celluloid fixed to the copper, with a sticky resinous solution of dissolved resin, obtained by mixing strong printer's varnish with several drops of a concentrated solution of mastic drops in benzine. Spread out, let the benzine evaporate, plate the cliche on it and under pressure it will adhere to the pad. The printing ended, this mixture can be removed from the back of the film with a piece of muslin soaked in benzine.

Now we are ready to begin the printing.

If we are dealing with an imperforate paper, once the cliche has been inked, it can be placed over the paper cut to the size required. Cover it with a small sheet of thin paper, smooth and of good quality, the same size as the cliche, bring down the pad and apply pressure. It will be necessary to ensure that the cliche does not surrender its ink badly. This sometime happens with a cliche over exposed, so that its lines are not sufficiently saturated with water, or by a too hard ink. In the first case, place the cliche in warm water without inking it or better still try to add 2 or 3 drops of ammonia into the mug containing the water and the cotton wool used for damping. In the second

case, try, if the cliche will stand it without clouding, the addition of traces of linseed oil. For a good printing, it is necessary for the cliche to yield to the paper nearly the whole of its ink.

In order to facilitate the correct placing of the perforations on the cliche, once the latter is exposed and before washing it should be provided with two little lines in bevel, bringing the serrations together, which will be indelible if traced by pen provided with iron writing ink (the long standing type). The bichromate of the film not yet removed by the washings will assure this indelibility.

For a stamp with the colour removed but has its original gum, in order to impede the damping of this gum and in consequence the paper when in contact under pressure with the cliche, which is always damp, this would result in a bad taking of the ink on the paper so that it is necessary before printing, the pieces having already received their body and glue, already described in the chapter "The Paper", to shut them up in a kind of insulated box containing a dish with a large wad of cotton wool soaked in formyl, which is placed in a corner. This treatment should be carried out for anout 24 hours with a temperature round about 20% centigrade. The formyl vapourswhich are given off will make the gum containing gelatine or soluble fish glue (English gum) less absorbent.

Next each gummed paper should be made to adhere (thanks to a film of resin of which I shall give the composition below) to a thin piece of paper about 4 x 6cm, made translucid and waterproof by a layer spread down each side of the paper, made from a resinous solution which will be mentioned later.

Once the printing has been completed, the release should function 24 hours afterwards, nearly always naturally. In case however of resistance cut the portion carrying the paper off and dip it into 95% synthetic alcohol; do the same if after a natural

release there remain traces of resin on the back. Only make this immersion however when it is really necessary. Take off excess moisture between blotting paper.

In order to make the paper translucid and waterproof, I use thin paper of the kind used for copying letters, but of good quality, that is to say from a square block and quite white. On the other hand, I prepare a solution of pulverised colophony in acetone. This solution should be well laced with resin until it is quite thick.

I undertake this work on pieces of paper about a quarter of the commercial size. I pour into a widemouthed mug a capacity of from 20 to 30cc. the solution. With a pad of well soaked cotton I wipe over the surface of one, taking care that the cotton wool is always well soaked in order to prevent streaks or an insufficient penetration. Underneath I place a somewhat larger piece in order to prevent staining.

Once the mixture is nearly dry, that is after an hour or two, I do the same to the other surface. The complete drying, indispensible if the paper is to be of use, will take several days in the air.

This thin paper thus treated, cut into pieces of from 6 to 6½ x 4cm. is also essential for performing the operation which I am going to describe of superimposed impressions .

Prepare also a syrupy solution of colophony in pure or synthetic alcohol, 95% proof and proceed as follows; -

In a cylindrical container, such as a drinking tumbler, resistant to fire, pour a quantity of alcohol, say 30cc. Mix in it powdered colophony, until a sort of paste is formed which should be brewed. Cover the container carefully and leave it for several hours, after which a little more alcohol should be added and it should be warmed over a source of heat without flame, until a transparent amalgam has been obtained. When this mixture has cooled it

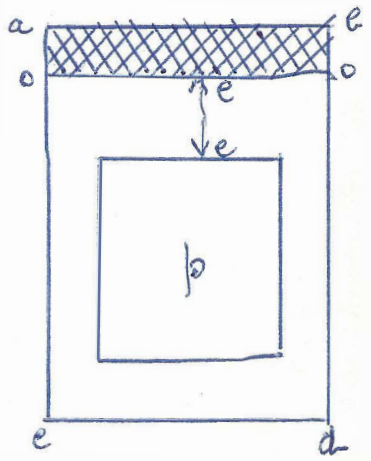
should have a doughy consistency. Add more alcohol a little at a time whilst it is brewing again.

Keep the container tightly corked.

Having thus at my disposal the pieces of thin paper, made translucid and waterproof, and this last solution of syrupy and soft consistency, I now pass on to the explanation concerning the superimposed impressions.

For this procedure use the cliche on film, the method of obtaining it and its "preparation" are not submitted to any modifications.

Being in possession of a certain number of translucid papers a-b-c-d, cut them to size 4½ x 6cm. (this is the size that I use for a single stamp) I fold them along the line O -----O. On the other hand the papers (ready for the impression) should receive on their backs a layer of the gum consisting of resin and alcohol of which the stickiness should be diluted with a little more alcohol, but not too much, otherwise it will become stained and transpierced. The papers to receive this layer should be placed on a sheet of ordinary paper in order to avoid staining. I press them immediately on the translucid paper near the place indicated in the diagram, noting that each piece of paper has the same space about e --- e from the top edge of the paper (p) and the line of the fold (O ---- O). When all the available papers with vignettes have been stuck on the translucid waterproof paper (a,b,c,d) I pass on the the impression.



The portion of the translucid should be about 7 to 8mm in breadth beyond the fold, and represented in the diagram by the hatched portion, with the

height of the cliche, taking care that the paper with the vignette (p) is well centred over the inked image of the cliche. Under pressure the hatched part will be bound up with the cliche by utilising the syrupy solution (thicker than for gumming) of colophony and alcohol contained in a little mug, and which will be spread by little touches with the end of a brush.
It is preferable to get rid of the gelatine from the upper part of the cliche which corresponds to the hatched part and thus leave the celluloid bare.

I will recapitulate the principal points of the procedure.

Superimposing of the two pale inks, but correct them to two different intensities, one reserved for the deep blacks, the other for pale, for the fine parts which ought not to be coated, or rather of different tonality, one kept for the features with its intensities and the other for the half-tones. Once the supporting paper (the translucid), placed beyond the fold, has bound itself up with the cliche, the first impression can be proceded with usually, always taking the precaution to proceed slowly, by gradual pressure, in order to avoid any displacement.

The raise the supporting paper carrying the paper with the image, turn it down at the fold and carry on with the second inking. The, very carefully turn the support paper down on to the cliche and proceed, again very carefully, to take the second impression, which should be superimposed exactly over the first, if one hasperformed the operation carefully. The two impressions are effected with the two inks of different consistencies which should be held available.

Usually I begin the inking with the less hard ink, spread it in small quantities, which gives me the pale tonality with all the delicacies. I sprinkle the first image on paper with finely sifted sandarac in order to promaote the removal

from the cliche of the second image of the hard and intense ink.

Once the printing has ended, everything is left as it is until the next day. The vignette papers will be left to dry on their supports.

Having decided that traces of resin still exist on the back, they should be eliminated by two successive baths in synthetic alcohol followed by being plunged into water and dried between blotting paper.

I have often used this method with difficult inks with which, if one wishes to obtain a certain intensity with a single impression the image will suffer.

But even inks like vermillion or a cadmium red, a blue or an opaque green which rarely need in the work of printing, a second impression, will give a superior finish if one adopts this procedure with two inks of different consistencies.

As for the 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, for should one wish to overload the cliche for a single operation the outline will suffer.

With regard to the imitation of the "taille douce" this is no longer a question of an impression of an outline with a single intensity. We now have 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 on corrects by the glaze the correct spreading of the tones, having the original available for comparison. The cliche will reproduce these different intensities and better still if it has received only a weak exposure at the back, will allow a more extensive range of tones. Besides, in order to assist the preservation of the half-tones, I use films with soluble gelatine, drying the sensitizing

solution with warm air thus forming a grain as I have explained in the chapter headed "The Cliche"

When it is necessary to take this kind of impression, have ready two or three inks of different consistencies and at times even of a slightly different tint. But this is the work of an artistwho has at his disposal the means of superimposing very pale images on others of more or less greater intensities.

The hardest and most pigmental inks should be kept for the parts with the greatest intensity and which as a matter of fact, thanks to their hardness (distribution is made with the help of a pad of benzine), will not adhere to those parts most exposed to the light, having regard to the parts veiled or shaded by the glaze in the matrix. The pale impression, particular to these parts of the image, are made with ink diluted with transparent white or better still with less pigment and to make this, rendered more soft, add a little castor oil or traces of linseed oil. Finally, by the substitution, with the pale inks, the benzine, the well filled pad of turpentine, avoid with the different distributing pads mixing the colours or even the benzine with the turpentine.

If the first impression is a pale one with the ink half hard or s oft, do not forget to dust this image on the paper with sandarac powder, removing any excess with a pad of absorbent cotton wool. But be careful not to disturb the paper support to which the cliche adheres at the top. I am emphatic about this for, if at any moment during the operation any displacement occurs, the impression will be a failure.

It remains for me to say some words on the impression of the obliterations.

I refer to the chapter "The Matrix" for all that concerns the negatives. I shall recall only that they are on glass, the image having been rectified by exposure of the back without having recour se to the operation of transferring to film.

To obtain the cli ches, I use films of insoluble gelatine, the question of finesse of lines does not arise in this case.

On the other hand, thanks to the already accentuated contrasts obtained with the prototypes on transparent or tanslucid supports (thick paper soaked in turpentine, or cellophane) the impression is quite easy. Nevertheless, when reduced contrasts are required, the kind of reproduction after the authentic obliterations, the vermillioning, after the boiling water treatment, is imperative. I will even say that I have nearly reduced this operation to general laws, being given that with an increase of contrasts, it is more easy for me to "mould" theimage of the obliteration. Moulding which is necessary, for my procedure differs essentially from that of the imitator, since the appearance of the first stamp, which consists of a metal stamp provided with an inking pad, giving an almost infinite variety, by putting the hand to the stamp and distributing the ink.

In order to print them better (and the results obtained have not been criticised) I proceed in the following manner; -

The cliches of the obliteration should always be kept damp, for it is thanks to the water that one is able to mould them,they possess a hollow deeper than those of stamps, the exposure of the back having been only slight. Now, in order to allow the ink to penetrate better into these hollows, instead of using the naked finger for inking as in the case for stamps, I cover it with a finger stall of fine absorbent muslin. The ink should consist of a black lightly pigmental with the addition of a little brown lake, verging slightly towards yellow, or in order to change the shades, another variety bordering on the reddish.

With one or the other of these inks, I tap unsteadily with my furnished finger (neither benzine nor turpentine but with a fairly soft ink) on the

cliche bathing in water with a very slight tinge of ammonia, changing the aspect from full through middle, to small charges to arrive at the same effect obtained by the irregular stamping of the postal official.

This is the kind of artistic finish which gains an appreciative glance and which can be acquired very satisfactorily after a series of attempts. Proceed in the same manner if coloured obliterations are required.

Whilst it is necessary to apply the obliterations with exactitude over certain parts, for example to hide a defect in the design, or for the execution of "satandard" obliterations (taken from a strong obliteration which it is necessary to reproduce with the image of the stamp) it will be necessary to use the method of "Transparent Cliches" which has many advantages and which are described in the chapter on "The Cliche".

CHAPTER 9.

THE TRIMMINGS.

In my chapter entitled "The Paper" after having described the manner of whitening used stamps in order to have at my disposal the paper, the obliteration, also the perforation and the watermark of an original, I wrote thus; -

"We now have at our disposal white pieces of paper with authentic obliterations to which we have to restore the body lost in the washings, and this for preference whilst the paper is still absorbent, that is to say before restoring the gum." As the title given to this chapter is not quite correct, for here is an operation which should be performed on the paper whilst it is still "limp".

I apologise for it, but at the same time the same instructions apply also to the aging of my obliterations after printing, I am taking the two cases together for they are treated alike.

I shall treat separately the trimmings of obliterated pieces and mint stamps, for their operations differ in several points. It is useful when performing the trimmings, to always have the original in sight.

For used stamps

1. Examine the paper under Wood's lamp. If the tinge is too deep, clear it with brushing the back with a weal solution of sandarac in alcohol, followed by an immersion, whilst dry, in a bath of 12% sulphate of zinc, and wash, if the first gumming has been performed with resinous soap, or placing in a very weak bath (diluted with water and alcohol) of resinous soap if the first gumming has been made with sandarac.

2. Examine the Image. Use a well sharpened pen knife to lightly weaken wholly or in part certain portions. With care, for the paper a good quality

eraser could be used (I have used different grades of "Pelican" which are good for pencil coloured crayons and ink).

3. Age the Obliteration.

Make a strong solution of finely powdered bitumen and benzine to which should be added a small dose of crude linseed oil. On the other hand I prepare a small platform carrying 4 to 5 very small dishes, about the size of the aluminium stopper of a bottle of aspirin. Into one of these pour two or three drops of the bitumen solution which should be diluted after preliminary trials with a certain quantity of turpentine which, in order to control it better, should be contained in a small bottle with a drop stopper.
In the second dish do the same but to this add traces of a yellow lake of a clear fluorescence by Wood's lamp.
In the third dish, pour a little of the mixture from the second dish and add to it traces of an aniline red (I use a red called Asiatic) with a clear nuance by Wood's lamp. One dish is reserved for pure turpentine. I now have at my disposal three shades for "ageing".
Having controlled the degree of intensity of the different solutions and having before the eyes the authentic design and ageings, with a fine sable hair brush I go over the lines of each obliteration. After having treated a small number with a piece of linen covering the finger which has been thoroughly soaked in benzine by being pressed on a small pad which has been previously steeped. I dampen quickly the back of each piece. This will form on both sides a brownish halo which will give the obliteration all the signs of genuineness.
If at times the penetration is not thorough, as may happen with thick papers or those already gummed, go over the lines at the back with the pure turpentine or some that is very slightly tinted, and benzine the back again, When

treating with benzine, place underneath blotting paper to absorb the excess over the sides.

4. Cutting out and ageing of paper.

When dealing with imperforates, I achieve the cutting out by removing the surplus of the margins (recall the edges of sheets). Thus I obtain each piece with its dimensions settled, but withe the four corners pointed by the cutting out with the scissors. Now the time has arrived to round off these corners and it is necessary to round off each corner like the others, for this opera tion I use a very s harp pen-knife. With a little practice one can make a good job of this taking care not to carry away the paper.

But this is not all. Time has carried off the freshness of these corners and where the four sides have been sliced they will also need to undergo the operation of ageing and tarnishing (excuse the word). Now it is easy to understand that it is also necessary to get rid of the "dust" and this is done by picking it up as for other things. Only there is the good and the bad. The good should present a dark greyish black, without tufts, finely distributed also the sweepings should be removed from it. Those from under the wardrobe will be of a much better quality than that recovered from higher up. The atmosphere of factories makes them dark and slightly greasy, and what could be better. In short it is necessary to be ingenious. And in addition to the dust, set out a sort of yellowish or brownish concoction, to your taste, and for the adjustments needed according to Wood's lamp, the metallic soaps, the resins , the salicilate of ammonia which plays the part of clearing in the Wood's, that is to say that it is only a trace that is required, especially of the salicitate of ammonia which clears the blues; the metallic soaps, especially of lead, clearing to reddish and theresins to yellow.

It is impossible to indicate the formulae, they are like those of cocktails which have to be adapted to meet all cases.

These mixtures will serve us not only for the corners and sides but also for the front and back of the paper.

As fittings, three or four small dishes, in each of which is placed a pad of absorbent cotton with which to absorb the different potions, which contain mixtures of dust. Keep one dish for dust soaked in water, for the tarnishings.

For the corners and the edges make a thick paste of the dustand the brownish, with which one should lightly charge the finger that is going to do the work.

5. Retouches.

It is now necessary to pass on to the revision of the design of the image and to complete or correct, or eventually strengthen, certain parts. For these retouches it is necessary for me to have available all the colours crushed with an agglutination that is soluble in water but insoluble in all the liquids with which the operation is ended. The gouaches and water colours of commerce do not fulfil these conditions so I have created and made my own compositions of which the details are given below; -

Take 30gr. of soft sheet gelatine, cut it up into small pieces which piece by piece gradually should be absorbed by the liquid made from 30cc. of a saturated solution of calcium chloride, (150gr of chloride in 50cc water) adding tothis 30cc of water. Warm the mixture in a test tube and when a pasty masshas formed put it on one side to let it dissolve as it cools. Take a little of this very thick mixture, incorporate it with a dry coloured pigment and, helped by a little water, stit continiously. Make a sort of collection of different colours which one might require should the occasion arise, blended among them.

The syrup of gelatine could be replaced by fish glue, which is very soluble (no gum, no dextrin no albumen, no glucose). For retouches only use sable hair brushes no 0-1-2 of thevery best quality. (Rowney's English, Delta U.S.A.)

Once the retouches have been made, expose the vignettes to the fumes of formyl for 12 to 24 hours, in a temperature not less then 20% Centigrade, using the airtight box already described in the chapter on "The Paper".

The object of this operation is to make the colours insoluble whether in water, in alcohol or in benzine etc..

Vignettes in the mint state.

Several words as regard their treatment have been reserved for them, for the greater part of the operation;

Overhaul the paper, the image, age, staining, cutting, if they have been necessary, retouches, following the rendering insoluble, etc, all operate in the manner already described. It remains to deal with the question of restoring the gum to specimens that have been bereft, For these specimens, if dealing with imperforates avoid cutting the edges before applying the gum.

The papers for this operation are fixed by putting the recto side in contact with a slightly soft sheet of gelatine, spread on a glass plate.

I advise for gumming the use of the albumen of eggs, beaten, but not to a lather, and then deposited. Thicken by evaporation under a warm flow of water in this manner obtaining a thick liquid which should be kept fresh, in a well corked bottle, by the addition of several drops of ammonia. The solution of gum arabic used alone is not advisable, its fluorescence is worthless. So if you wish to use it mixed with the concentrated albumen, add a little resinous soap which will give clearance under Wood's lamp or better still use fish glue for, a remark to remember, the early gums often contained soluble fish glue or a gelatine giving a whitish or whitish blue

fluorescence even a luminous white (Lombardy Venetia, early Austria) by the gumming with pure fish glue. To secure "cracking" give a double coat and dry in a flameless warmth. To avoid "percage" in the paper, I advise, before the procedure of gumming, to furnish the back with a coat of starch paste, which being ne utral in Wood's lamp, will not influence the shade of the paper. Finally for coloured gums, incorporate in the mixture a little of the corresponding colour.