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The Son of Sir William Vernon Harcourt.

(FROM A NEGATIVE BY

W. J. BYRNE.

RICHMOND, SURREY.)

Permanent Autotype Photograph.

THE "A. B. C." GUIDE



THE MAKING OF

◇ AUTOTYPE PRINTS ◇

IN

LONDON

PERMANENT PIGMENTS.

BY J. R. SAWYER.

(DIRECTOR OF THE AUTOTYPE WORKS.)

THE AUTOTYPE COMPANY,
74, NEW OXFORD STREET, LONDON.

1887.



RAITHBY & LAWRENCE,
PRINTERS,
LEICESTER.



PREFACE TO THE
“ A. B. C. ”
GUIDE TO AUTOTYPE PRINTING.



THE SEVENTH EDITION of the Autotype Manual being entirely exhausted it became a question whether I should simply revise it, writing it up to date, or, whether with the experience gained in the conduct of the bi-monthly demonstrations at the Autotype Works, it would not be best to remodel it with a view to setting out the working of the Autotype processes in a more simple form, and with special reference to

iv.

new and improved methods. I decided to adopt the latter course, and although I quite despair of giving an idea of the real ease and simplicity of Autotype printing by mere description, yet I hope that a fairly careful student with the aid of this little book, and helped also by the fact that the Tissue may now be had sensitive ready for placing on the negative, will find success within easy reach.

Before setting out the plan of this guide, it should be understood that the Autotype printing processes are not hampered by patents or restrictions of any kind; any person is free to use Tissue, Transfer Paper, Temporary Support, and all other materials, and to prosecute the cause of permanent photography by the Autotype processes without let or hindrance.

The introductory chapter, pp. 1 to 12 is simply a short sketch of the History of

Autotype; the following pages are devoted to a description of the Tissues, giving their colours and characteristics, with the general principles upon which the operations are based.

The next chapter treats of the best modes of cutting up and making the tissue sensitive to light; this may be omitted by those who purchase the Tissue in cut pieces already sensitized.

The use of the Actinometer is explained in pp. 24 to 30 and general directions given as to the preparation of the negatives and exposure of the sensitive Tissue to light.

The next few pages are devoted to the general principles of the development of the latent image, followed by pp. 35 to 40 descriptive of the plant and materials required for the Single Transfer process with very precise instructions for their use; this is the

most important section of the guide, for if the printing and development of photographs in permanent pigments by the single transfer process first be thoroughly mastered, all the rest will come "easy as A. B. C."

Double Transfer from temporary supports of paper and opal is next treated of, and the applications of the process for the production of autotypes on various materials given with full working details. Formulæ for the various solutions will be found at page 90, followed by a short description of the various means of making inverted or reversed negatives which forms the conclusion of the book.

There are two illustrations, the frontispiece being an autotype from a negative kindly lent to me by Messrs. Byrne & Co., of Richmond, so well known for their lovely portraits of children; the other illustration facing page 36, is by the Collotype process and represents

the materials and plant used in Autotype printing, with the process of development in actual operation.

More than a quarter of a century has elapsed since the first photographs in gelatine and pigment were produced ; these early works of the inventor, Mr. Swan, still remain, convincing proofs that Autotype prints are unharmed by the influences of light and chemical action, so fatal to all known forms of silver printing ; how greatly photography has benefited by the fact that its records can be rendered permanent as engravings, needs no proof, but in addition to this quality of permanency, the power of reproducing art works has been immeasurably increased by the fact that photographs may now be made in almost any pigment employed in art, and with a surface and texture in consonance with the original work.

Each year marks a steady rise in the popular estimation of Autotype Art, and its adoption for the production of copies of the works of the Great Masters contained in the picture galleries at home and abroad, its employment by our great Museums, by the learned Societies, and by art publishers, is a sufficient proof that Autotype has made good its claim as an artistic and permanent method of photographic record.

J. R. SAWYER.

London, July, 1887.



THE AUTOTYPE PROCESSES.

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THE "A. B. C." GUIDE
TO
THE AUTOTYPE METHOD OF MAKING
PERMANENT PHOTOGRAPHS.

INTRODUCTION.

Meaning of the
term Autotype.

THE term AUTOTYPE has been proposed, and been very generally accepted as appropriate, to signify the *reproduction* of an artist's work in Monochrome, without the intervention of another hand or eye: the only means used being the natural forces of LIGHT or ACTINISM, and CHEMICAL AFFINITY; and the material employed being any of the PERMANENT PIGMENTS of the artist's palette.

Autotype, — the
Company's Reg-
istered Trade
Mark,

The term has been adopted by the Autotype Company, and registered as forming

with a design of a rising sun, their Trade mark ; this is used exclusively by themselves and their licensees to characterize Autotype productions in permanent photography.

SHORT HISTORY OF THE PROCESS.

- Action of light. The BASIS of all the processes to which we shall have to refer, is the action of light upon organic matter in presence of the bichromates of potash or ammonia.
- Mungo Ponton. MUNGO PONTON first observed this action, when exposing to light, paper which had been immersed in a solution of the bichromate of potash.
- Becquerel. BECQUEREL showed that sized paper acted much more rapidly under such action than that which was unsized—hence the association of gelatine or gum, or their analogues, with the bichromates in such experiments.
- Poitevin. POITEVIN found that if a pigment were mixed with the compound of gelatine and bichromate, those portions upon which the light acted were rendered wholly or partly insoluble. On coating paper with this compound and exposing it to light under a

negative he expected by washing away the soluble parts of the film where the light had not acted, to have been able to produce a picture, but on putting his exposed pigmented paper into warm water he found it floated off from the paper altogether; but he also found that if he spread his pigmented gelatine *very* thinly upon paper, and exposed it to light under a negative with pure black and white lines, he was then able to dissolve away those portions upon which the light had not acted, and he actually so produced the first photograph in pigment.

Abbè de Laborde.

Burnet and Blair.

It was the Abbè de Laborde in France, and Burnet and Blair in England, who pointed out the reason for the imperfect results arrived at by Poitevin; they showed that the pigmented compound became entirely insoluble on the surface which had been in contact with the negative, this surface being actually covered with a skin, or film, which prevented the warm water getting to the soluble portions of the film, and it was clearly demonstrated that if the pictures were to be developed at all, that could only be

Insolubility of
surface of tissue.

successfully accomplished by attacking the film on the opposite side.

Fargier's process. To accomplish this, Fargier coated a levelled sheet of glass with his pigmented gelatine, allowed it to dry, then exposed it to light under a negative; he then coated the film with thick collodion. This was allowed to set, but not become, dry. He then placed the whole in warm water, which attacked the soluble gelatine in contact with the glass, and soon set free the picture, which floated as a film held together by the collodion; this was caught, collodion side downwards, upon a piece of paper, thus enabling it to be washed up from the back, and so the first half tone photographs in pigmented gelatine were obtained. But it is manifest that this was by no means an easy process, and could never be practically or commercially useful.

Joseph Wilson
Swan.

To Joseph Wilson Swan we are indebted for the first practical method of pigment printing; in 1862 he took out a patent for pigmented tissues and the use thereof. He at first followed Fargier's lines somewhat. He coated glass with pigmented gelatine, but

Early efforts.

first coated it with collodion ; when the whole was dry it was stripped from the glass, and thus was made the first autotype tissue.

Swan's tissue.

This tissue being exposed to light under a negative, the next question was, How was it to be developed ? The tissue having been placed with its collodionised surface next to the negative, it was evident that the *back* of it could be got at for the purpose of washing away the soluble gelatine, but the picture must be supported in some way during treatment. This Mr. Swan accomplished by coating the collodion surface of the tissue with indiarubber solution, also coating paper with the same solution and allowing both to dry ; the two were put together and passed through the rollers of a copperplate press, thus forcing them into very close adhesion. This being put into warm water could be developed by washing away the soluble portions of the gelatine and pigments, leaving on the indiarubber paper a picture *in relief* giving the various gradations of tone incident to the negative.

Mounting and development.

Joseph Wilson
Swan's improve-
ments and patent,
1862.

Mr. Swan during the six months afforded by the law for the perfecting of his invention, made a most important improvement; he did away with collodion and glass, and simply spread his pigmented gelatine on paper; this, being sensitive to the light, was exposed to its action under the usual photographic negatives; the surface was then coated with indiarubber solution, forced into contact with a piece of paper similarly coated, the adherent sheets placed in warm water, which softening the gelatine in contact with the paper upon which it was *first* spread, enabled that to be skinned off, the picture washed up from the back, rinsed in cold water, allowed to dry, and there was the photograph complete, resting on the indiarubber paper. But it was *inverted*. To obviate this, paper was prepared with gelatine rendered partially insoluble by means of alum, this being placed in warm water the gelatine became softened; the photograph on the indiarubber paper was then put into contact with this gelatine paper under water and the two surfaces forced together; when dry the indiarubber paper was removed by moistening it with benzine, thus

revealing the print in its *proper* position firmly attached to the gelatine paper; and in this manner have been produced some of the best pigment prints that have appeared.

J. R. Johnson's
patent, 1869.

About the close of the year 1868 Mr. J. R. Johnson introduced and soon after patented another method of proceeding. He found, that in order to fix a pigment print upon a permanent or temporary support, no cement was necessary, provided that the support be impervious to air and water; that if we simply lay the wetted tissue upon such support, removing the air and excess of water from between the surfaces, the insoluble, or partially insoluble surface of the tissue adheres to the support, exactly as the boy's leather lifter, or sucker, adheres to the stone to which he has applied it. The picture being thus mounted on an impermeable support is placed in warm water, which softening the gelatine at the back, enables the paper to be skinned off and the picture developed.

If transparent glass be used as the support, the picture is complete as a transparency; or as a picture to be viewed by reflected light when backed with paper. If the support be

opaque, as opal glass, ivory, prepared canvas, indiarubber paper, &c., the result is the same, but the picture is inverted, if the ordinary negatives have been employed.

J. R. Sawyer's
patent, 1874.

In October, 1874, the author introduced and patented his "Flexible Temporary Support," which, by permitting the development of the picture on a soft couche or film of an insoluble colloid body, secures perfect adhesion during development.

Nature of
Sawyer's tem-
porary support.

This Temporary Support consists of a tough and hard paper especially made for the purpose and coated very evenly by machinery with a solution of gelatine, which, when dry, is perfectly insoluble; this is again coated with an alkaline solution of lac, then dried and rolled with great pressure between polished plates; the surface is next treated with a Waxing Compound, which enables the picture to leave the Support on the application of the Transfer Paper.

Its advantages.

The advantages of this Support are numerous: it enables the picture to be viewed perfectly during the process of development, the yielding nature of the

surface holds without blurring the delicate details of the photographic image. The pieces of Support can be used over and over again almost indefinitely, and finally when the pictures are stripped, they leave the temporary support with a very agreeable surface and finish.

M. Lambert's
improvements,
1874—1875.

In 1875, Monsieur Lambert exhibited in this country undoubtedly some of the finest specimens of pigment printing that had ever been seen; these he obtained from collodionized glass; many previous attempts had been made to develop prints upon glass, but there were certain difficulties in the way which it seemed practically unable to overcome. It was well known that the pigment print could be developed on glass coated with collodion washed in water and then used wet; but the difficulty was that the picture absolutely refused to leave the glass upon the application of the Transfer Paper, and it was not till Monsieur Lambert showed that if the glass were treated with a fatty body before applying the collodion it would enable the picture to leave the glass and retain all the brilliancy

and lustre of the surface upon which the collodion had rested.

We have now touched lightly upon the various stages by which the Autotype method of producing photographs has reached its present development; for five-and twenty years its productions have been before the world; unlike photographs produced in silver compounds the Autotype is as durable as the pigment employed in its production. If this be *permanent*, so is the print, for it owes its colour entirely to this inert pigment in its unchanged condition. We say, inert, for it is the medium, or vehicle, employed with it, which is the agent in the chemical changes involved, and *not* the pigment. The basis of this medium is gelatine, a substance, universally recognized as a legitimate agent, and employed extensively, by the Old Masters, in distemper, or tempera-painting notwithstanding its solubility in water, and its liability to become affected by damp and moisture. But the substance of the Autotype picture is not subject to this defect. The vehicle is not *soluble* gelatine but gelatine

combined with an earthy basis, and therefore *insoluble* even in hot water : this substance is also the substratum used for the transfer of the finished print. It has been called with great propriety, transparent leather ; that is to say, it is of the nature of parchment or vellum, a material universally used for muniments, title deeds, and other important documents. Our ancient illuminated manuscripts prove, by the centuries which have elapsed since they left the artist's hands, that this material is, of all organic bodies, one of the most stable and permanent when employed as a basis for coloured pigments ; nor is the pigment or vehicle used in these paintings (size or gelatine) less permanent than the surface upon which they rest, the purity of the colours forming a marked contrast to those in oil paintings of a much later date ; the siccative oil varnish of the latter having in oxidizing, acquired the well-known yellow hue which modifies the tint of every pigment.

THE AUTOTYPE PROCESSES.

DESCRIPTION OF THE AUTOTYPE TISSUES.

Autotype tissues.

The material employed for prints in permanent pigments is known as Autotype Tissue, it consists of paper coated with gelatine charged with pigments; it is made in several colours to suit the varied methods of reproduction that may be required; it is one of the advantages of the Autotype process of producing photographs, that whilst there is no difficulty in obtaining *photographic* tones in great variety; copies of drawings and works of art, which may perchance be in sepia or red chalk, in pencil or crayon, can be reproduced not only in facsimile as regards colour, but even in the same kind of material as that employed by the artist in the original work.

Colours resembling ordinary photography.

Works of art in the colours of the originals.

Special colours to order.

The following is a list of the Tissues made by the Autotype Company, and in addition special shades of colour can be

manufactured when required.

For photographic
tones.

**STANDARD BROWN. This is the colour adopted by the Company for general work where a rich photographic tone is desirable, and is a color in every day use at the works.

For reproduc-
tions in black.

**ENGRAVING BLACK. This is a standard colour always in use. Employed for the Auto-carbons ; also for copies of drawings in black and white, maps, engravings, &c.

For sepia
drawings.

**SEPIA. Another standard colour employed for the reproduction of sepia drawings, also for portraits on canvas to form the basis of oil painting.

For red chalk
drawings and
Bartolozzi red.

**RED CHALK. A standard colour made to give the tint of a red chalk drawing or a print in Bartolozzi red.

For transparen-
cies and magic
lantern slides.

**AUTOTYPE TRANSPARENCY TISSUE. This is made with filtered Indian ink, and shews no grain or texture when put into the magic lantern, or employed for transparencies for enlargement purposes.

** The above five tissues are in constant use at the Autotype Works, they are made in a sensitive condition twice a week, and can be sent securely packed in rolls or cut pieces ready to expose on the negatives.

In addition to the foregoing, other colours are made. Standard purple, Warm black, Portrait brown, Portrait purple, Special purple (for Lambertype licences), Sea green, &c., these, with *all* the tissues made by the Company, are kept in stock in an *insensitive* condition, requiring of course to be made sensitive before using.

Tissues not sensitive to light.

GENERAL PRINCIPLES OF SINGLE AND DOUBLE TRANSFER.

Principles of the single transfer process.

Pigment prints from negatives taken in the usual manner would be inverted if printed by the Single Transfer process, i.e., the left hand of the picture would appear as the right and vice versa; unless, therefore, the negatives are themselves made *inverted*, this process is inadmissible, unless inversion of the picture is of no consequence.

Inverted negatives are obtainable by means of the reversing mirror, or by being made *through* the glass of the dry plate, or by contact printing from a pigment print on glass. Prints from negatives so made can be mounted and developed at once upon Single Transfer

paper which forms their *final* support.

Principles of the
double transfer
process.

The great body of negatives, however, not being specially made, it becomes necessary to develop them upon a temporary or intermediate support from which they may be transferred to their final support after development; this by turning the picture over as it were, secures a non-inverted image.

Consideration of
the two methods.

It will be evident that all pigment prints may be produced by one or other of these two methods. Prints on paper from *specially made* negatives, also prints on glass, such as magic lantern slides and window transparencies from ordinary negatives, involving only *one* transfer. Prints from *ordinary* negatives and destined for a final support of paper, opal, canvas, ivory, wood, tiles or panels, must be treated provisionally on a Temporary Support, and be transferred by a subsequent operation to their final resting place.

Single transfer.

Double transfer.

THE AUTOTYPE PROCESSES.

CUTTING UP AND

RENDERING THE TISSUE SENSITIVE TO LIGHT.

Autotype Com-
pany employ
tissue sensitized
in process of
manufacture.

The Autotype Company find it to their advantage to employ tissue made sensitive at the time of manufacture, and as they supply it promptly per post in cut pieces of any required size, they advise their clients to purchase it in this condition rather than have to go through the operations of sensitizing; but as this may not suit those who employ it on a large scale and is quite out of the question for export, full details of the best methods of cutting it up and sensitizing are here given.

Tissue supplied
both in the sen-
sitive and insen-
sitive condition.

Materials for
cutting up tissue.

Materials for cutting up tissue.

A piece of stout zinc cut square and true, with inches marked and numbered on the bottom and right hand edge; these can be procured in the following sizes: 30 by 18 inches, 30 by 24 inches, and 30 by 30 inches.

A stout oak T square.

A cutting knife and sharpener.

Four pieces of lead the size and shape of a two-ounce weight.

An Autotype pressure box.

Hints as to the actual mode of cutting up tissue.

To cut the tissue, unroll it gently, put it on the zinc cutting plate, put the lead weights upon it, place its edge square against the lower edge of the plate, and square up the tissue by cutting a strip off the right-hand edge, using the T square; now registering the tissue to the right-hand edge of the plate, shift it up so that you can see the numbered inches at the bottom of the plate, apply your square and make clean cuts right through the tissue to either the length or width required, afterwards making transverse cuts for the other dimension.

The keeping of cut tissue.

The cut tissue should be kept under a heavy weight so as to come out flat when you wish to sensitize; a couple of metal plates with a 56-lb. weight will answer, but the best plan is to put the cut pieces into an Autotype pressure box, the weighted lid of which will press them flat and keep them in

proper condition ready to sensitize.

Remedy for
harshness in the
tissue.

Should the tissue be very dry it will have a tendency to crack, this can be remedied by putting it for a few hours in a damp place till it becomes pliable.

SENSITIZING THE TISSUE.

Apparatus,
materials, and
chemicals
required for sen-
sitzing.

Apparatus and Materials required :—

Tin sensitizing dish.

Zinc tray, two inches larger each way than the sensitizing dish.

Squeegee board covered with zinc.

Squeegee.

Broad camel's hair brush.

Egg boiler (three minute).

Common cardboards, 22 by 17 inches or larger.

Quire of red blotting paper.

Two-gallon jug.

Piece of muslin to form bag for ditto.

Granulated bichromate of potash.

Autotype pressure box.

The sensitizing
bath.

To make the sensitizing bath, tie over the mouth of the two-gallon jug the piece of muslin quite loosely so as to form a bag, into

it put 15 ounces of granulated bichromate of potash and pour upon it as much hot water as the jug will hold, or as much as will reach the bichromate salt, allow it to stand till cool, and when perfectly cold it is ready for use.

Preparation of materials for trying the tissue.

Next prepare the cardboards by tying a piece of fine twine about 12 in. long to the middle of one end of each piece of cardboard, and at the other end cut a slit about half-an-inch long exactly opposite, then make a knot in the twine, bend the card into the shape of a bow, slip the twine into the slit, the knot being on the outside, and you have an arch of cardboard to support a sheet of blotting paper on which the tissue is to be dried. These cardboards can be suspended by passing a cord through them, or arranging splines to stick out from a wall or shelf.

Details as to the method of sensitizing tissue.

Place the sensitizing dish upon a table or bench before a window with a yellow blind, and to the right of it place the larger tray, upon which put the squeegee board resting upon two bars of wood supported by the edges of the tray; have the squeegee handy, and the egg boiler in such a position that you can easily see when the sand has run out;

untie the muslin from the top of the large jug, just enough to be able to free the spout, and pour the solution without making more bubbles than you can help into the sensitizing bath, which of course ought to be perfectly clean.

To have sufficient fluid in the bath.

The sensitizing bath should have, at least, 2-in. of fluid in it, and the first step is to immerse the tissue without allowing air bubbles to adhere to the surface. Take up the sheet of tissue with both hands, and bending into a convex shape, pigmented side downwards, lay it on the bath so that it touches first in the middle ; now lower each end, and with the camel's hair brush push it bodily under the fluid. Turn your egg boiler ; now give your attention to the tissue, with an eye now and then cast in the direction of your time meter, viz., the egg boiler.

Avoidance of air bubbles.

With the camel's hair brush wipe off any air bubbles there may be on the back of the tissue ; *be sure and get rid of them*, then turn the tissue over and attend to the face, brushing it carefully in every direction, now turn it down, carefully avoiding any splash or disturbance ; about this time you will see that

the sand of your egg boiler is running low. As soon as the sand has run out, take up the tissue by two corners with the thumb and finger of each hand, and lift it SLOWLY out of the fluid; let it drain for a few seconds, then holding it over the squeegee board allow a few drops of the solution to fall on to the zinc plate, and then lay down the tissue very carefully, face downwards.

application of the
squeegee to the
sensitized tissue.

Now place two fingers close to the left-hand edge of the tissue, and holding the squeegee *quite* in the *middle*, pass it over the tissue slowly and steadily with moderate pressure from left to right, commencing quite close to the fingers, so that the back of the tissue is made surface dry; if necessary, go over it again, but one application of the squeegee should be sufficient. Raise the tissue slowly and steadily from the plate; if it sticks very tight, you may take that as a hint to be a little quicker in your movements next time. Having got off the sheet, lay it *face uppermost* on a sheet of blotting paper, place this upon one of your arched cards, and hang up to dry; treat sheet by sheet in this way. If your room has had a fire burning

in it during the day, and you sensitize at night, the tissue should be perfectly dry and in good order by the morning, and you will never be bothered with irregular sensibility, reticulation, or any other trouble. Do not forget to darken the room, and when you leave it, lock the door after you and pocket the key.

The proper drying and keeping of the tissue.

Supposing that you have sensitized your tissue in the evening, it will, if your drying room has been suitable, be ready to take down the next morning. It should then be cut up into the sizes for use, and put into the pressure box, by this means the tissue is kept flat in the most convenient form for the pressure frame, and the light and atmosphere perfectly excluded.

Special cautions as to temperature

In drying tissue it must be borne in mind that gelatine, of which the coating is composed, swells up in cold water and absorbs a considerable quantity thereof without dissolving, but that if the temperature be then materially raised, solution takes place, causing the film to run into drops, and the regularity and continuity of the surface to be deranged.

It is for this reason that the adoption of

the squeegee is recommended to remove the excess of fluid from the paper at the back of the tissue compound.

One other precaution has to be taken, viz.--that in very hot weather the temperature of the solution itself should not be allowed to exceed that of 60° or 65° , as a higher temperature than this would suffice to soften and commence the solution of the gelatinous compound during the immersion of the tissue, short though the time required may be.

To obviate this difficulty, it is simply necessary to cool the solution below 65° , which may be done with facility by the introduction of a small piece of ice, the solution of which in the liquid speedily reduces the temperature to a sufficient degree.

This precaution, however, is rarely necessary in this country except during the very hottest days in summer.

THE AUTOTYPE PROCESSES.

THE EXPOSURE OF THE SENSITIVE PIGMENTED PAPER TO THE ACTION OF THE LIGHT.

Ordinary printing
frames available

Any of the frames ordinarily in use will answer, though as no image is visible on the exposed paper it is quite unnecessary to have the back jointed as for silver printing.

Autotype print-
ing frames.

The Autotype Company make up special frames with solid backs, whereby an even and regular pressure is secured, they are light and inexpensive, at the same time quite efficient.

No visible image
in pigment print-
ing.

In pigment printing there is no visible image upon the sensitive tissue however long may have been the exposure to light, so that it was necessary to devise some means of ascertaining the sensibility of the tissue by comparison with a visible image; this is provided by means of an instrument known as an actinometer; of these there are several forms, the simplest is the one invented by Mr.

Actinometers.

J. R. Johnson and called by his name : it consists of a small tin box with a glass lid, the inside of the lid is painted with opaque colour to match a medium tone of silver paper after a short exposure to light ; in the centre of the lid is a portion of clear glass ; in the box is placed a small roll of sensitive silver paper, and this is pulled forward under the glass lid so that the light passing through the aperture discolours the silver paper underneath ; when the tint of this matches the colour painted on the rest of the lid, the instrument is said to register *one* tint.

Another form is one introduced by the author, and consists of a rectangular tin box, with a glass lid bearing twelve tints gradated from slight discolouration, to a degree of opacity representing the extreme amount of deposit upon the lights of the densest negatives, each division of this screen of tints bearing a number in opaque pigments ; a roll of sensitive silver paper is placed in the box, and the end pulled forward so as to pass under the tints ; when this arrangement is placed in the light the silver paper

Johnson's acti-
nometer.

Sawyer's acti-
nometer.

commences to discolour underneath the graduated screen, beginning of course at the lightest, but the number on the tint being in an opaque pigment is preserved white, and serves to register the progress of the printing, for, if upon opening the lid, the number one for instance shews clearly upon a tinted ground the instrument is said to have registered *one* tint, by that time the number two will have begun to appear, and a sufficient exposure to light will print through the scale by successive steps and shew up the numbers 1 to 12.

Burton's acti-
nometer.

The third form of actinometer is the invention of Mr. H. J. Burton; it consists of a rectangular box to contain the roll of sensitive silver paper, and has a glass lid furnished with six tints of different densities, and imposed upon them a series of six tiny identical negatives; upon the silver paper being pulled forward under the negatives and exposed to light, the negative underneath the lightest tint begins to print, and in a little time assumes the appearance of a good silver print; when upon examination this is found

to be the case, the actinometer is said to register *one* tint, by a further exposure to light the next small negative will have become sufficiently exposed, the instrument will then have registered *two* tints, and a prolonged exposure will print the whole of the series.

Practical use of
the actinometer.

The practical employment of the actinometer is extremely easy to acquire and when once acquired makes pigment print more convenient and pleasant than printing in silver; there is no necessity to touch the frames, no having to retire them into a subdued light, to open and examine to see if the prints are done enough; it is only necessary to take up the actinometer and this shews at once the progress of the printing.

Ascertaining
ratio of sensibility

In the employment of the actinometer it is necessary to ascertain the ratio of the sensibility of the silver paper with regard to the sensibility of the tissue; in the first instance this will require a preliminary experiment or two, a good method for a beginner is to proceed as follows: select three negatives to serve as guides, a thin

one, a medium one, and a dense one ; put them into pressure frames and place upon each a piece of sensitive tissue, expose all three to daylight and at the same time put out with them the particular form of actinometer adopted,—suppose, for instance, the author's ; after an exposure of ten minutes or so in good diffused light an examination of the actinometer shews perhaps a registration of *two* tints ; retire the thinnest negative, put out the actinometer again, now retire the medium negative when *four* tints are registered, and retire the remaining negative when the little instrument has registered *six* tints ; as these prints are developed it will be seen if they are over or under exposed, or just right, and these three test negatives will indicate the power of the light in producing an image as yet invisible in the gelatine and pigment, by comparison with its visible effect upon sensitive silver paper.

Experiment with
test negatives.

Having thus obtained definite ideas as to the amount of exposure required by negatives of varying densities, it will be best to mark upon the negatives it is proposed to print,

Marking nega-
tives with number
of tints required.

the number of tints they will require ; this should be done on the glass side of the negative and in one uniform place, so as to be readily seen : a good way to do this is to place a piece of glass supported at an angle opposite a window, upon this place the three test negatives and mark the others by comparison ; a few days' practice will enable any intelligent person to judge at a glance how many tints any given negative will require.

Freshly sensitized tissue not in the best condition.

Before proceeding further, it may be as well to remark that tissue always produces better pictures if used a day or two *after* being made sensitive to light ; there is much less danger of the lights washing away, and softer and better pictures are produced with tissue in this condition, than with that freshly sensitized.

The continuing action of light.

There is one more matter that may be mentioned, which, although not likely to have much bearing upon general practice, may occasionally be utilized, and that is the continuation in darkness of the action set up by the light ; thus, pictures known to be under-

printed in the latter part of one day will by the next morning have acquired as much force as if they had had a proper exposure. In the dull days of winter it is possible to organize a system by which prints given a shorter time of exposure than would be necessary in ordinary cases, are by keeping until next day capable of being developed into good pictures.

THE AUTOTYPE PROCESSES.

DEVELOPMENT OF THE LATENT IMAGE.

Up to this point the manner of proceeding in Autotype printing will be the same whatever may be the nature of the support upon which the picture finally rests; this may be paper, canvas, wood, ivory, porcelain, glass, opal, metal, &c., in fact a variety of substances, thus opening up to photography an extended field, including not only the production of views and portraits, but enabling permanent photographic reproductions and fac-similes to enter largely into many kinds of illustrative and decorative art.

The pieces of tissue after having been exposed to the action of light under negatives in the printing frames have now the latent images formed in the pigmented gelatine, which has been rendered more or less insoluble according to the strength and gradation of light and shade in the negative; but as has been noted at page 3 the whole

Preliminary
reference to sup-
port and develop-
ment.

of the *surface* in contact with the negative has been rendered entirely insoluble, whilst much of the pigmented gelatine in contact with the paper upon which it is spread, remains in a soluble condition, and it is by washing this away in warm water that the picture is revealed : but it is manifest that in order to preserve the picture during this operation its face must be mounted down upon some support to retain it intact whilst the process of development is being carried on.

General principles.

If the pigment film, after exposure, be plunged into water for a very short space of time, and be then laid upon any plane surface impermeable to water, it will firmly adhere thereto, provided air be carefully excluded from between the surfaces, and it will equally adhere to paper prepared with insoluble gelatine, or other colloid body, when the two surfaces are brought into contact in a moist condition.

Difference of treatment for specially made negatives and for negatives made in the usual manner.

It has been already noted that a pigment print from a negative made in the ordinary way developed at once upon its final support will be *inverted*, and that this, the most easy probably of all methods of producing photo-

graphs, is only available for negatives themselves reversed or inverted, or for subjects in which an inversion of the image is of no consequence, or again for pictures on transparent glass which can be viewed equally well from either side.

Prints made from negatives taken in the ordinary manner must as a rule be developed on a temporary or provisional support, and this gives the power of transferring them not only to paper, but to opal, ivory, panel and other surfaces.

So far then, the operations will be precisely the same whatever may be the destination of the Autotype pictures, but a point has now been reached where the two processes of single and double transfer take their departure.

Prints from reversed or inverted negatives or where inversion of image does not matter, are developed at once upon their final support (single transfer paper) which holds them permanently and firmly. Prints from negatives taken in the ordinary manner are developed upon a provisional or temporary

Distinction
between single
and double
transfer.

Point of
departure single
and double
transfer processes

support, which they are expected to leave when laid down upon their final resting place.

The development of the latent image will now be treated of under three heads.

- 1°. *The development upon single transfer paper.*
- 2°. *The development upon the author's temporary support.*
- 3°. *The development upon a temporary support of opal.*

THE AUTOTYPE PROCESSES.

THE DEVELOPMENT OF SINGLE TRANSFER PICTURES.

PLANT AND MATERIALS REQUIRED.

One mounting tray with squeegee board
and squeegee.

Three trays for cold water.

One developing tank.

A "Hero" stove, or a gas ring, as source
of heat.

One dish of earthenware or porcelain for
the alum solution.

American clips for hanging the prints.

Blotting boards, or thick blotting paper.

Single transfer paper.

Thermometer.

Iron tressels for supporting the developing
tank above the source of heat.

As pigment prints are developed in warm
water, temperature from 105° to 110° Fahr.,
it might be supposed that a considerable
supply of *hot* water would be necessary.

ant and
aterials for
ngle transfer.

arge quantities
hot water not
ecessary.

This, however, is by no means the case ; it is not of the slightest consequence how *apparently* dirty the water in the developing tank becomes, the prints come out, after the water has been used for an hour or two's developing, just as clean as at first ; all that is absolutely necessary, especially for an amateur, or for anyone who does not produce large quantities of prints, is some means for getting the water in the developing tank up to the proper temperature, and then keeping it there. Where gas is laid on, and convenient to arrange, a Fletcher's Gas Boiling Stove is the very thing ; where gas is not at hand, a Ripplingille's 'Hero' kerosene stove is absolutely perfect, the small size tank will stand very well on the top of the stove, the larger sizes can be supported above it on cheap iron tressels sold by the Autotype Company.

Placing the apparatus for developing.

Before beginning the developing operations, place the required trays, &c., as follows :—On the left a cold water tray, next on the right the mounting tray with its board and squeegee, then a dozen blotting boards,

AUTOTYPE PRINTING.—THE DEVELOPMENT.



1. Mounting (use of the Squeegee). 2. Developing the Prints. 3. Fixing in Alum Solution.

A. Cold Water Tray, No. 1. B. Blotting Boards C. Mounting Dish and Stool. D. Developing Tank. E. Cold Water Tray, No. 2.
F. Alum Bath. G. Cold Water Tray, No. 3. H. "Hero" Stove. J. Johnson's Actinometers R. Burton's Actinometers. S. Sawyer's Actinometers.
T. Pressure Frames. P. Autotype Pressure Boxes. V. Packets of Cut Tissues. W. Waxing Compound. X. Collodion.

followed by the developing tank with its "Hero" stove or gas ring as source of heat, then cold water tank No. 2, followed by a dish for a five per cent. alum solution; and the cold water tank No. 3 completes the necessary plant.

Arrange the squeegee board in the mounting tray so that its left hand end rests on the left hand edge of the tray, whilst its other end rests on the bottom of the tray, thus forming a slope, and fill the three zinc trays half full of cold water; the developing tank should be half full of water at a temperature of a 105° to 110° Fahr., and the earthenware dish should contain the solution of alum.

For those who are making their first experiments in Autotype printing, it will be best to commence with the development of prints by the single transfer process, without regard to the fact of the resultant images being inverted, which will of course be the case if ordinary negatives have been printed from. The single transfer process is so simple and easy that it forms an excellent

and warm

solution.

pro to com-
e with the
transfer
s.

commencement for anyone who wishes to take up and work out a pleasant mode of making permanent photographs

Mounting the
exposed tissue

The first thing to be done is to mount the tissue bearing the latent image upon the single transfer paper; this is paper coated with a thin and insoluble film of gelatine. Having the pieces of single transfer paper cut a little larger than the pieces of exposed tissue it is proposed to mount upon them, proceed as follows: put one of the pieces of tissue into the clean cold water contained in the tray on the left, be careful to completely submerge it, and avoid air bubbles by passing the hand over the front and back; now immerse the piece of transfer upon which it is to be mounted; the tissue will begin to curl as soon as it gets into the water; when it begins to *uncurl* and straighten itself out, put its surface in contact with the surface of the single transfer and bringing them out together, lay them upon the board in the mounting tray, and force into intimate contact by a vigorous application of the squeegee, the tissue being uppermost, then place between

blotting boards for five or ten minutes.

The development

TO DEVELOPE. Place the adherent pieces in the warm water (Temp. 105° to 110° Fahr.) of the developing tank; as soon as the warm water has softened the gelatine, which is known by its beginning to ooze out from the edges of the picture, skin off the paper upon which the pigmented gelatine was spread, and throw it away, then wash away the soluble gelatine in which the picture is buried by gently laving it with the hand; in a few seconds it will begin to appear, and in a very brief space will be fully developed, the development is stopped by placing it in the cold water tank No. 2.

The development considerably under control.

The development of an Autotype picture is considerably under control; for instance, an *over* printed picture can be much reduced in depth by the employment of hotter water or long soaking; and heavy shadows may be lightened by gently pouring upon them *hot* water from a jug. In like manner *under* printed pictures can be frequently saved by careful development in cooler water, thus artistic effects can often be secured by a

judicious treatment of the picture in the Developing Tank.

The fixing in
alum solution.

TO ALUM. This is to thoroughly discharge the bichromate salt, and to confer insolubility upon the finished print. The print is taken from the cold water tank No. 2, and placed in the dish containing the solution of alum, for ten minutes; a final rinse in cold water completes it, and it may be hung up to dry, a finished picture; care should be taken to get rid entirely of the yellow stain before removing the print from the alum solution.

Mounting, spotting,
and finishing

As soon as the picture is dry it is ready for mounting, spotting, finishing in monochrome or water colour, and it can in short be treated just the same as any ordinary photograph.

THE AUTOTYPE PROCESSES.

THE DOUBLE TRANSFER PROCESS.

Process of double transfer.

It has been stated that the double transfer process differs from the single in the fact that the tissue is mounted and the latent image developed upon a temporary support, from which it is afterwards transferred to its final resting place.

Materials required.

Additional materials for double transfer.

In addition to the plant and materials required for the single transfer process, it will be necessary to have :

Pieces of the author's temporary support cut to sizes larger than the prints to be developed upon them.

A bottle of waxing solution.

Two pieces of cotton flannel.

DEVELOPMENT ON THE AUTHOR'S FLEXIBLE TEMPORARY SUPPORT.

Development on Sawyer's temporary support.

This is paper prepared as described on page 8 ; it should be cut into sizes a little

Application of the
waxing solution.

larger than the pictures it is intended to place upon it; before each time of using the surface should be treated with the waxing solution in the following manner: pour a few drops of the solution upon the face of the support, and rub it over the surface with a piece of cotton flannel; put this piece of support aside and treat, say, half-a dozen in the same manner; now take up the *first* piece, and with another piece of the flannel polish it with a light circular motion, then put it aside to allow the spirit to *entirely* evaporate; this operation should be performed some hours before the support is required for use, if the day before, all the better, or the pieces may be kept waxed ready for use.

Mounting the ex-
posed pieces of
tissue.

The pieces of tissue bearing the latent pictures are now mounted upon these pieces of waxed temporary support in precisely the same way as described for single transfer; the tissue and support are immersed in the cold water, and as soon as the tissue begins to uncurl, it is brought into contact under water with the face of the piece of temporary support, the two lifted out together, placed

Development.

on the stool, forced into contact with the squeegee, developed and fixed exactly as indicated for single transfer; it will be found that the temporary support becomes much more stained with the bichromate salt than does the single transfer, and it is necessary to allow the prints to remain in the alum solution until this stain has entirely disappeared; this may take ten or fifteen minutes, after which a final rinse in clean water will complete them, and they may be either transferred at once, or hung up to dry to undergo this operation at a future time. There is but little difference in the appearance of prints transferred whilst they are still wet, and those allowed to dry first; it is thought that the latter gives rather the sharper picture owing to the contraction of the gelatine in the first drying, and on the whole the operation is slightly more easy than with wet prints.

TRANSFER OF THE PICTURE FROM ITS
TEMPORARY TO ITS FINAL SUPPORT.

The pictures having been developed on

Fixing in alum.

Importance of getting rid of the chromic salt.

Pictures may be transferred wet or dry.

The final transfer.

Corrects the inversion of image.

Eliminates the chromic salts.

Apparatus for final transfer.

Autotype final support.

Autotype final support larger than the pictures, but smaller than the temporary support.

their temporary support of paper, are now ready for the final transfer to the support upon which they are to remain. This final transfer overcomes the inversion common to pictures printed from negatives taken in the ordinary manner, and presents objects in their correct positions, it is also of advantage in securing the total elimination of the chromic salts whilst the picture is on the temporary support.

Apparatus and materials required. Two of the cold water trays. The squeegee and board. Porcelain or other tray containing a two per cent. solution of alum. Autotype final support in cut pieces.

Autotype final support is a fine paper coated with a solution of hard gelatine containing a permanent white pigment; this on being immersed in alum solution swells, and imbibes sufficient to confer not only upon itself, but also upon the picture mounted upon it, insolubility. The Autotype final support should be cut into sizes a little larger than the pictures to be transferred (but smaller than the temporary support), and placed in a

two per cent. solution of alum for half an hour before they are required for use, the exact time is not of much importance, an hour's immersion will not hurt them.

When ready to commence operations, half fill one of the trays with tepid water at a temperature of about 70° Fahrenheit; place the other tray to the right of this, with the squeegee board resting in a horizontal position on two pieces of wood placed across the tray; put one of the prints into the tepid water and take out of the alum solution a piece of the *final* support of a suitable size, place this also in the tepid water, put the gelatinous coating of the final support in contact with the picture, avoiding air bubbles, lift both out together and lay them upon the squeegee board, the final support being uppermost, and force them into absolute contact with the squeegee; if the prints have been allowed to dry before the final transfer is made, a vigorous action of the squeegee will be necessary, but if the prints are transferred wet, it will not be advisable to use too much pressure for fear of injuring the soft

Immersion in
tepid water
necessary.

General
directions.

gelatinous image of the recently developed prints.

The adherent sheets may now be hung up to dry, which will take some hours at ordinary temperatures, when perfectly dry, the temporary support will leave the print firmly imbedded in the gelatinous insoluble couche of the final support.

The finished picture will have a surface resembling a silver print on albumenized paper, and if properly printed and developed will render every gradation of tone in the negative in a satisfactory manner.

The picture will, in most cases, come off pure and brilliant. Should any dulness appear, a few drops of methylated spirit applied to the surface and rubbed over with a piece of flannel will at once make it perfect.

The temporary support may be employed repeatedly, and is made again ready for use by rubbing over the glazed surface a little of the waxing compound with a piece of cotton flannel, and then polishing it off with a second piece: as soon as the spirit has evaporated the support is quite ready for use.

The adherent sheets hung up to dry.

Surface similar to that of a print on albumenized paper.

To restore the brilliancy if necessary.

Repeated use of the temporary support.

THE DOUBLE TRANSFER PROCESS
CONTINUED.

DEVELOPMENT OF PRINTS ON A TEMPORARY
SUPPORT OF OPAL, GIVING PICTURES
WITH MATT SURFACES.

It has been one of the functions of Autotype to aid in educating the public taste with respect to photographs; it is now no longer considered necessary that an Autotype should have a high glaze or polish, or that it should be confined to the colours characteristic of prints in the salts of silver; Autotypes are produced in various colours to suit particular classes of work, and with great advantage as giving increased artistic expression.

Pictures in engraving black, in sepia, in Bartolozzi red, in Vandyke brown, colours in short that lend themselves to artistic reproduction, and in many cases to artistic portraiture, are easily attainable in Autotype. This has naturally involved a desire for surfaces more nearly resembling those of engravings and drawings; these may readily be obtained by the development of Autotype prints upon

Autotype artistic
in texture and
colour.

Varieties of colour

Varieties of sur-
face.

smooth opal glass which gives a delicate matt surface, and by reason of there being more gelatine in the shadows than in the other portions of the picture has a certain depth and richness, scarcely attainable by any other process.

Special depth and richness of shadows.

The opal glass suitable for this process is a speciality ; should there be a difficulty in procuring it, it can be had from the Autotype Company under the name of *extra smoothed pot opal*.

Extra smoothed pot opal.

As more than one picture can be developed on a plate, it is well to have the plates a fair size, say ten inches by eight ; upon this can be laid down a nine by seven print, or two half plates, or even with some dexterity and skill, as many as four quarter plates.

Development of two or more pictures on one plate.

MATERIALS REQUIRED.

In addition to those specified for single transfer, it will be necessary to have :

Materials necessary for the double transfer process on opal.

Pieces of extra smoothed pot opal, one inch larger each way than the picture or pictures to be developed upon them.

A bottle of waxing solution.

Two pieces of cotton flannel.

Treating the opal
plates with
waxing solution.

The first operation is to treat the opal plates with the waxing solution ; having the plates quite clean and dry, pour upon the middle of one of them, a few drops of the waxing solution, and with a piece of cotton flannel rub it carefully all over the surface, rear the plate up, and go on with two or three or more up to about half a dozen, in the same way ; now returning to the plate first treated, with another piece of flannel rub it all over with a light polishing motion, treat the others in a similar manner, and put in a rack that the spirit may completely evaporate, this operation is best done some time before the plates are required for use, in fact it is a good plan to have them waxed beforehand.

Arrangement of
the developing
apparatus.

Arrange the developing plant in the order previously described, having the squeegee board supported horizontally over the mounting tank by means of two pieces of wood laid across it.

Mounting the
printed tissue on
the opal.

Place one of the pieces of opal on the board and immerse the exposed tissue in cold water as before directed, as soon as it begins to uncurl, dash some cold water on the

opal plate, and lift the print out of the tray with as much water as can be managed, lay it down upon the opal, floating it into its place and force into intimate contact with the squeegee, then place the plate between blotting boards for a few minutes.

Laying down more than one print on a plate.

If it is wished to mount and develop several small pictures upon a large plate, place as many as the plate is intended to carry in the cold water tank, but not all at the same time, allow a few seconds to intervene between each; as soon as the first is ready, take it out and lay it down as previously described, following it by the others in regular succession; when all are down and in position, take a piece of the author's temporary support a little larger than the plate, immerse it in water and lay it upon the pictures resting on the plate, *glazed* side uppermost; by using the squeegee upon this, the prints will be forced into contact, and any risk of disturbing their positions will be avoided; the squeegee should be used with considerable force to ensure perfect adhesion.

Use of a piece of temporary support.

The development is proceeded with after the prints have remained five or ten minutes between the blotting boards, and in precisely the same manner as previously described; the opal is an admirable material for developing upon, shewing the progress of the operation in a very satisfactory manner.

The success of the operation at this stage largely depends upon the prints having been exposed to light a proper time, and if this has been fairly correct, the pictures will appear with their details in perfection; if the exposure has been too long the gelatinous compound will have dissolved with some difficulty, the resulting pictures will be heavy in their shadows, and the lighter tones wanting in clearness. If, on the other hand, the exposure has been insufficient, the compound will dissolve away quickly, leaving the developed pictures bare and chalky in the high lights, and lacking vigour in the shadows.

Of course a proper exposure ensures the most perfect result, but there is an advantage attending this process, that an under or an over exposed picture may be made fairly

The development as before described.

Success dependent upon correct exposure.

Effects of over and under exposure.

Modifications
possible in the
development
process.

presentable by modifying the development ; using hotter water than usual in the case of an over-exposed print, which may be further reduced by soaking for a short time in water at a high temperature ; and on the other hand an under-exposed print may often be saved by removing it, when partially developed, from the warm water, and continuing the development in cooler water. The pictures should appear a little lighter in the water than wished for finally, as they dry up a shade or two darker.

As in the case of prints on the author's temporary support, when the development is completed, the further action is arrested by the plate being plunged into cold water, and from thence transferred to the solution of alum, it need only remain in this for a couple of minutes, it is then rinsed in cold water, and the operation of transferring to the final support may take place at once, or the plates be reared up or placed in a rack to allow the developed pictures to dry.

TRANSFER OF THE PRINT DEVELOPED UPON
A TEMPORARY SUPPORT OF OPAL TO ITS
FINAL SUPPORT.

APPARATUS AND MATERIALS REQUIRED.

Two of the trays.

Squeegee and board.

Dish containing two per cent. solution of alum.

Autotype final support in cut pieces.

The transfer to the final support is made in much the same way as previously described for pictures developed on the author's temporary support. The necessary pieces of final support should be got ready by soaking for half-an-hour or an hour in a two per cent. solution of alum. The squeegee board and tray being placed in position as in mounting the prints for development; take one of the developed pictures—if it has been dried it should be placed in tepid water for a minute or two, if wet it will simply require flooding with cold water—and place it upon the squeegee board with plenty of water

The final transfer

Soaking the final support in alum.

Variations in treatment.

Application of
the final support.

upon its surface, take one of the pieces of final support from the alum solution and pass it into the tepid water, which should not exceed 70° Fahr., now place it upon the print, avoiding air bubbles, and with a few firm strokes of the squeegee drive out the water at both ends and thus force the two surfaces into contact.

Dry between
bibulous boards.

Put the plates upon a rack for half-an-hour, then place them between dry blotting boards or blotting paper for twelve hours or so, they will thus become nearly dry, and avoid all risk of *partially* leaving the opal; finally place them on a rack in a moderately warm current of air, and in a short time they can be stripped from the opal with a delicate matt surface; if this is rubbed with a little methylated spirit, applied with a piece of the cotton flannel, all traces of the waxing solution will be removed, and the picture will take retouch or colour, or whatever spotting may be necessary, without the least difficulty.

Finish with
gentle heat and
strip.

Cleaning the sur-
face with spirit.

Opal plates not to
be washed.

The opal plates should never be washed after they have once been treated with the waxing solution; if a picture is spoiled in

developing, it is better to waste a piece of final support in transferring it rather than to wash it off. After the opal plates have been treated with the waxing solution a time or two, it will penetrate the pores of the glass and enable the pictures to be stripped with ease and facility.

Opal plates in
good order after
once or twice
using.

THE AUTOTYPE PROCESSES.

RESUME OF OPERATIONS.

Autotype printing easy in actual practice.

Those who have taken part in the Demonstrations of Autotype printing and development given bi-monthly at the Autotype Works, invariably exclaim, how easy it all is; and that however much they may have studied the books and manuals treating of the subject, it has always appeared much more complicated; it is to be feared that this must always be the case, it is so very different the *seeing* a thing done and having a viva voce explanation of the whys and the wherefores, to only *reading* about the same thing however carefully it may be described.

Persons interested should attend a demonstration.

* The moral to be drawn from this, is, that persons who are really interested and who "want to know," should attend a demonstration, and afterwards with the assistance of this little guide, success will probably attend their steps in this most agreeable way of producing permanent photographs.

* Invitation cards for these demonstrations, and full particulars can be obtained by writing to the Manager, Autotype Company, 74, New Oxford Street, London, W.C.

Resumé of operations.

A brief resumé of the operations will convey an idea of their simplicity, and enable a comprehensive view to be taken of the ground that has been traversed.

Cutting up and sensitizing.

The first operations are the cutting up and sensitizing the Autotype tissue, this rather troublesome operation may be avoided by sending for sensitized tissue in cut pieces; it will remain in good condition for ten or twelve days, if kept from light and air in the Autotype pressure boxes.

Exposure to light with the actinometer.

The exposure to light takes place in much the same way as with other photographic papers, except that as the image is latent and not visible, the time of exposure has to be regulated by the tint given by the silver paper in one or other of the actinometers.

The exposure having taken place, the following operations are necessary.

FOR SINGLE TRANSFER.

Operations for single transfer.

- 1°. Mounting the print on the single transfer paper, or on transparent glass.
- 2°. Developing by washing away the soluble gelatine in warm water.

- 3°. Stopping the development in cold water.
- 4°. Immersion of the print in a five per cent. solution of alum for ten minutes, to discharge the chromic salts and make the picture insoluble, so that it will not be affected by damp and atmospheric influences.
- 5°. The final rinsing in cold water.
- 6°. The hanging up to dry if paper, or the placing in drying racks, if glass.

FOR DOUBLE TRANSFER.

Operations for
double transfer.

- 1°. Mounting the prints on a *temporary* support, which may be the author's temporary support of paper, or a specially prepared opal glass.
- 2°, 3°, 4°, 5°. Exactly the same as for single transfer.
- 6°. The transfer of the image from the temporary support to a final one, which may be paper as already described, or other substances which will be treated of in the next section of this manual.
- 7°. The drying of the prints now mounted

down on their final resting places.

8°. The removal of the temporary support, which becomes available for future use, and the revelation of the Auto-type print in its correct position.

It will be seen, therefore, how very close together are the operations of single and double transfer, the latter involving but two more operations, and enabling prints to be obtained from any negative already in existence.

Only two more
operations for
double transfer.

THE AUTOTYPE PROCESSES.

ADAPTATIONS OF THE PROCESSES OF PERMANENT PIGMENT PRINTING TO THE PRODUCTION OF PHOTOGRAPHS ON VARIOUS MATERIALS.

Special description of opal necessary.

Permanent photographs on opal.—The opal glass for this purpose should be that sold under the name of “pot metal,” and is distinguished by having the colouring matter distributed throughout the entire material of the glass; there is another kind which is known as “flashed,” in which the colouring matter is present as a thin layer upon transparent glass, but for the purposes of photography the pot metal opal is infinitely superior on account of its richness and depth of colour.

Pictures on opal from reversed negatives.

The piece of opal selected should have a fine, smooth (not polished) surface; if the negative should happen to be a *reversed* one, the picture is made by the single transfer process, in which case the operation consists of

plunging the exposed tissue into water, laying it down on the opal, the surface of which should be thoroughly clean, applying the squeegee, and developing as previously described ; when developed, washed, and passed through the alum bath, it is dried, and the operation is concluded.

Should the negative be one taken in the usual manner, the following method must be adopted : the negative being printed in the usual manner must be developed upon the temporary support ; when dry it is ready for transference to the opal, which operation is conducted as follows :—

Make a solution of Nelson's No. 1 gelatine one ounce, water twenty ounces, soak the gelatine in the cold water first, then raise it to a gentle heat till solution takes place. In another vessel dissolve twelve grains of chrome alum in one ounce of warm water and pour it in a very thin stream into the gelatinous solution, stirring rapidly all the time.

Having thoroughly cleaned the opal, put it into a small tray with the above solution,

Opal pictures
from ordinary
negatives.

Transfer solution
for opals.

Mode of transfer.

or place the opal on a levelling stand, and pour on as much of the warm solution as the plate will hold ; then having the picture on the temporary support in cold water, place the two surfaces together, apply the squeegee *gently* to get rid of the surplus gelatinous solution and allow to dry.

When perfectly dry the temporary support can be peeled off, leaving the picture firmly attached to the opal, the borders and edges may now be cleaned with a soft sponge and warm water if they are vignettes, and the shading can be modified to almost any extent by means of ink eraser or fine pumice powder.

Characteristics of
opals.

From good negatives, prints on opal have beauties peculiar to themselves, they are exquisitely soft and delicate in appearance, and are susceptible of a great range of artistic treatment in monochrome as well as in colour, and can be worked so as to be viewed both by reflected and transmitted light.

PERMANENT PHOTOGRAPHS ON IVORY AS A BASIS FOR MINIATURE PAINTING.

Ivory free from
scratches, &c.

The ivory used is the same as that

employed for miniature painting, and is sold fit for use ; however it sometimes happens that the surface is not free from scratches, and these imperfections are not visible until after the ivory has been immersed in water, then the marks and scratches previously filled up by the white powder of the ivory shew in a very disagreeable manner.

To smooth the ivory.

When this occurs, take a piece of fine cork and with a little water and some cuttle fish powder go carefully over every part of the ivory ; when the surface is satisfactory wash with distilled water and wipe dry with a clean soft cloth.

Pictures on ivory by double transfer.

A photograph on ivory should always be done by the double transfer process, as any attempt to develop the picture direct on the ivory, will so stain the material with the free bichromate left in the pigment paper, as to render the ivory utterly useless.

Transfer from temporary support to ivory.

Having the picture printed and developed on the temporary support, take a piece of ivory of the proper size with its surface perfectly clean and free from marks or scratches, immerse it face to face with the

picture in the gelatinous solution as named in the preceding section, apply the squeegee carefully and allow to dry.

The temporary support will peel away with the greatest ease, and leave the picture on the ivory in a most perfect condition for working in monochrome or colour.

PERMANENT PHOTOGRAPHS ON DRAWING
PAPER AS A BASIS FOR WORK IN CRAYON,
WATER COLOUR, &c., &c.

Pictures on drawing paper by single transfer.

The pictures for this purpose, should by preference be printed by the single transfer process ; the drawing paper may be fine, medium, or coarse, according to the kind of picture wished for, it must be prepared with a solution made as follows :—Nelson's flake gelatine one ounce, water one pint, soak and dissolve by means of heat, dissolve twenty grains of chrome alum in one ounce of warm water and stir briskly into the gelatinous solution, adding the chrome alum solution very gradually.

Gelatine solution

Coating the paper

Pin the drawing paper upon a board, and coat it with this solution, using a broad

camel's hair brush, and putting on the solution evenly all over, allow this to dry, and then go over it again in a similar manner; this operation will make the drawing paper suitable for the reception of the pigment print, will in fact convert it into single transfer paper: it can be purchased all ready prepared of the Autotype Company, and as crayon paper, in several varieties of tint.

The prints, after being taken from the frames, are immersed in cold water and mounted upon pieces of the drawing paper cut to the sizes desired, in the same manner as before described at page 38, after allowing them to rest between blotting boards for a few minutes they are developed, then rinsed in cold water, and finally immersed in the solution of alum: the drawing paper being so much thicker than the ordinary transfer paper should be kept in the alum bath for a considerable time, in order that the chromic salt may be entirely got rid of, which may be known by the entire disappearance of the yellow tint.

single transfer
drawing paper.

varieties of tint.

mounting.

Developing.

Fixing in alum.

TRANSPARENCIES ON GLASS.

Pigment pictures developed upon clear glass.

Pigment prints developed upon glass are well adapted for making transparencies for reproducing inverted negatives for single transfer printing; also for enlargement purposes, and from sufficiently vigorous negatives they give fair results for the magic lantern.

Preparation of the glass.

The first operation is to prepare the glass for receiving and holding firmly the image to be developed upon it, this is accomplished by coating the glass, which should be perfectly clean and free from any suspicion of greasy matter, with a solution made as follows: soak one ounce of Nelson's gelatine in one pint of cold water, and dissolve by the aid of gentle heat, then add enough bichromate of potash with vigorous stirring to give it a golden sherry colour; this should be used warm, the plates coated and dried in daylight and they are all the better for being prepared some days before use.

Gelatinous solution.

Good deep prints a necessity.

It will be found necessary to print the picture to a much greater depth than usual, and to employ a tissue made with very finely

divided colour, the Autotype transparency tissue made with filtered colour is specially designed for this class of work, and is calculated to give the required density, without which the resultant transparency will be flat and weak. For reproducing negatives it is manifest that every detail should be brought out, and a very good estimate of whether this is the case, may be formed, by laying the transparency down on a sheet of white paper; if the paper shews through in many places, the chances are that the transparency will be too thin, the exposure having been insufficient; but if the paper shews in just the few places where the highest lights are, the probability is that the transparency is about right; a good transparency should look vigorous and full of modelling when held up to the window.

The print, when taken from the frame, is treated exactly as a single transfer print; mounted on the glass by immersion in cold water and a vigorous action of the squeegee, allowed to rest for a few minutes, developed, rinsed, treated with alum, finally rinsed and

Every detail to appear.

Method of estimating the value of a transparency

Mounting and developing.

Suitable for en-
larging from.

is, when dry, a finished picture. From these pigment prints, most excellent enlargements can be made: also by putting them into contact with dry plates, reproduced negatives can be secured, and by giving an opportunity for getting more or less density, the original negatives may frequently be considerably improved upon. Negatives so made are *inverted* and suitable for pigment printing by the single transfer process.

Reproduction of
negatives.

Magic lantern
slides.

It is not easy to get sufficient force from ordinary dry plate negatives to make good magic lantern slides; in the days of collodion this difficulty did not present itself; whilst writing this the author has been informed by a very well-known amateur, that if the tissue has been kept until it is nearly insoluble it is a very great help in this direction, the prints have to be very strongly printed and developed in water of a temperature of 120° to 130° Fahr. for a considerable time.

Means suggested
for getting
sufficient vigour.

PHOTOGRAPHS IN PIGMENT FOR WINDOW TRANSPARENCIES.

Tissue best
adapted.

The pigmented tissue for this purpose should have the colour in rather large

quantity to give the necessary vigour. The Autotype Company's special Transparency Tissue, will be found to produce very good pictures of a fine rich tone when viewed by transmitted light.

In order to secure a bold and vigorous image when viewed as a window transparency, a prolonged exposure under a strong negative will be necessary, in fact a negative that will not bear deeply printing is quite useless for this purpose.

The print being made is laid down upon glass coated with gelatine and bichromate of potash, developed, washed, and fixed as previously described.

As the picture can be viewed either through the *glass* or through the *picture*, either inverted negatives, or negatives made in the ordinary manner may be employed. When dry the picture should be mounted with a piece of ground glass, binding the two together with thin black paper, gumming small strips of card down the extreme edges to prevent the surfaces touching. Neat metal frames are to be procured, fur-

strong negatives
necessary.

Mounting on
elatinated glass.

Mounting for
hanging.

nished with rings for hanging in windows, where they make effective ornaments.

It will be seen that the permanent pigment process lends itself to the production with ease and certainty of many different varieties of pictures. It is not pretended that this chapter has exhausted its applications; many new ones will doubtless suggest themselves to the enthusiastic amateur or professional, and the Autotype Company will always be willing to consider any proposal for a modification of pigmented paper or material, and give any assistance that may be in their power, to the carrying out of new suggestions.

THE AUTOTYPE PROCESSES.

HINTS IN PIGMENT PRINTING.

PUTTING IN SKIES AND CLOUD EFFECTS.

As the pigment printer labours under the disadvantage of not being able to see what he is about, some means had to be devised to produce effects, which easy enough in silver, require special methods in pigment printing.

Landscapes frequently require cloud effects printed from a different negative. It is not a difficult matter to print these by adopting the following method :—

Holding the landscape negative up to the light with a piece of white paper against it, trace roughly the sky-line with a black lead pencil, lay this tracing on a piece of yellow paper and go over the outline with something blunt so as to mark it through on to the yellow paper, which cut with a pair of scissors and trim its edges to the *exact* size of the negative ; having selected the cloud negative, lay the landscape negative upon the cloud

negative, so that the cloud effects wished for, appear in the sky portion; with a piece of black crayon (which will easily rub off), go round the edges of the landscape negative, so as to mark its *exact* position upon the cloud negative, with reference to the cloud effect to be printed.

Place the blank which represents the sky, upon the *back* of the landscape negative, and place the counterpart (representing the foreground, &c.) upon the front of the cloud negative, the outline tracing of the landscape negative being the guide to position.

The printing may now be begun, the state of affairs being this—a sky mask on the landscape negative, a foreground mask on the cloud negative.

Cut a piece of sensitive tissue the *exact* size of the landscape negative, print it in the usual way; when sufficiently exposed, place the printed tissue on the cloud negative, registering it accurately by the traced lines which give the exact size and position of the landscape negative, place in the frame, and with a piece of card just soften the edge of

the sky-line by moving it up and down over the junction ; the exposure will be very short in a good light, and the whole operation although lengthy in description is exceedingly easy and simple in practice.

PRINTING IN BACKGROUNDS.

Printing back-
grounds.

This is very simple ; place a piece of white paper on the face of the negative, and holding it up to the light, carefully trace the outline of the figure, or so much of it as is wished for, lay this tracing on to thin yellow paper and mark it with a blunt stiletto or style, so that the outline will be visible on the paper.

Cut round this outline carefully with a pair of scissors, and with a few dabs of *strong* india-rubber solution place the background mask in its position on the face of the negative. It is now ready for printing.

Cut the piece of sensitive tissue the *exact* size of the negative (it must be the exact size), and lay it accurately upon the negative so that its edges coincide with the edges of the negative ; a good way to do this is to push the negative up to, say the left-hand top corner and side of the pressure frame, and

make the piece of sensitive tissue also touch the top and left-hand side of the frame; expose to light as usual—now take the negative out of the pressure frame, and put a few dabs of the india-rubber solution upon the *upper* side of the figure mask—now lay it (the mask) down upon the negative, fitting it in to the background; the whole being in position, and the negative now *entirely* covered, lay the tissue, with the figure already printed, down very carefully, again registering its edges with the edges of the negative, press the tissue on the figure mask which has the india-rubber solution, and allow to remain two or three minutes; the tissue may now be raised with the figure mask adhering to the tissue in exactly the right place to shield the figure; the arrangement is now placed under a sheet of clear glass, the background printed in, toned, shaded, or treated in any way that may be necessary.

The india rubber solution should be very thick, and it will not affect the tissue in the least, if before development what remains is

rubbed off with the finger or a piece of soft cloth.

TRIMMING THE PRINTS.

The best mode of trimming is by cutting with a glass shape and a long pair of paper-hanger's scissors; of course any of the varieties of cutting knives in vogue may be employed, but they all, more or less, pull or jag the edge, and by far the neatest work is made with the scissors.

MOUNTING THE PRINTS.

The mounting of Autotype prints--whether single transfer, or by the double transfer process, from rigid, or flexible supports--may be conducted exactly in the same manner as for ordinary silver prints; mounting them with starch, dextrine, gelatine, or any of the usual mountants; if portraits, they may be spotted, rolled, or burnished; treated, in fact, much the same as other photographs.

The objections raised to starch or gum as the medium for mounting silver photographs do not apply to the present case, as the colours of the pictures being permanent, are

Trimming
Autotypes.

Mounting
Autotypes.

Usual objections
to ordinary
mountants do not
apply.

not liable to be decomposed by acidity in the mounting solution or the action of atmospheric air, &c. ; therefore any of these substances may be employed.

When pictures, such as cartes-de-visite or cabinet portraits, are to be mounted on small thick mounts, thick starch is a very convenient material ; dextrine mixed up very thick with water is also easy of application, but as both starch and dextrine take up a great deal of water, they are liable to make the board or mount cockle very much when of large size ; to remedy this a mounting compound has been prepared containing spirit which does away with this disadvantage.

In applying cement, of whatever kind it may be, it is necessary to avoid touching the face of the print with it, as it is liable to injure the surface, especially if friction be applied whilst it is still moist.

Starch,
Dextrine.

Autotype Mount-
ing Compound.

THE AUTOTYPE PROCESSES.

FAILURES AND THEIR REMEDIES.

Failures. To the inexperienced in pigment printing, failures will inevitably arise just as they would in any other branch of novel manipulation, and when it is considered with what uncertain compounds the manufacturers of the pigmented papers have to deal, it is a little surprising that so few of the failures arise from the materials employed.

In treating of failures, the same order will be observed as has been followed in treating the subject generally, commencing with those appertaining to the excitation of the pigmented papers and going regularly through the whole of the processes.

INSOLUBILITY OF TISSUE.

Tissue does not stick to the transfer paper, &c. This shews itself principally in two ways—first, the tissue refuses to adhere properly to the transfer paper or to the

temporary support—second, when it is attempted to develop the image in warm water, it is found to be difficult or impossible to wash away the surplus pigments, and consequently the latent image produced by the action of the light is buried and invisible.

This state of things is the result of insolubility of the tissue and may be produced (a) by the use of a sample of bichromate of potash containing a good deal of free acid—(b) drying the sensitized tissue too slowly—(c) not being careful to exclude white light whilst drying—(d) by the tissue being kept too long after having been made sensitive, or not being carefully preserved from light and air; if tissue is purchased in a sensitive condition, troubles of this kind are not likely to arise.

FAILURES IN THE FIRST TRANSFER PREVIOUS TO DEVELOPMENT.

On attempting to develop the picture it exhibits a tendency to wash up at the edges. If this does not arise from insolubility of the tissue, it is probably owing to a too long

Picture exhibits a tendency to come away at the edges.

immersion of the printed tissue in water before mounting, the remedy will be not to allow it to remain so long in the water, but remove it before it has had time to expand and begin to curl outwards (see special instructions on page 38).

This failure may also arise from the margin of the negative having been masked on the negative so as to print quite white, and should there be a heavy shadow in the picture coming against this white portion, it is very likely to wash up. The remedy is, to always place the mask on the *glass* side of the negative.

The picture on development appears with bubbles or irregular froth-like markings. This generally arises from air having been included between the tissue and its support, and the subsequent action of the squeegee* having been insufficient to get rid of it. The remedy will be to pass the hand carefully over the face of the tissue when placed in the water to remove the air bubbles, and not to

* Note especially the vigorous application of the squeegee as given on p. 38.

allow any air to be included between the tissue and the support upon which it is to be developed, getting the two surfaces into absolute contact.

Air entangled in the water.

There is another cause which but rarely occurs, but however, is worthy of notice ; if the water comes in from the tap at a very high pressure, there is generally a large quantity of air included, evinced by a sort of milky appearance, which disappears after the water has remained in the bath or tray for a few minutes. If the water itself is not free from imprisoned air, a perfect transfer for development is impossible.

Picture too dark.

The picture is difficult to develop and appears dark and heavy. Due either to over exposure or to insolubility of tissue ; try hotter water or expose for a shorter period. If the tissue is *insoluble* it is waste of time going on with it.

Picture too light.

The picture develops very readily and is too light. Insufficient exposure to light, the tissue too new, or perhaps want of sufficient sensibility in the tissue by reason of the bichromate bath being too weak—for sen-

sitizing, the bichromate solution should be of the proper strength, not less than four per cent. (see page 19).

Granular texture
of film.

Granular texture and reticulation all over the picture. This is a failure peculiar to pictures developed on glass. Most of those who meet with it for the first time, at once put it down to "bad tissue," but that this is rarely the cause is manifest that one operator will produce perfect pictures, whilst another operator will produce the most startling examples of granular structure from the same band of tissue.

Insoluble skin
necessary.

To avoid reticulation, there must be a very delicate insoluble skin over the *face* of the tissue (this is produced by slow drying); it is not sufficient to interfere in the least with the brilliancy of the picture, but it holds the film together and prevents its disruption—it is for this reason that tissue coated with collodion and dried, never reticulates.

If the tissue is not purchased ready for use, it should be excited upon a *five* per cent. solution of bichromate, treated with the squeegee, placed upon blotting paper hung

over sticks carrying cardboard, and allowed to dry slowly at an ordinary temperature in a room that has had a fire in during the day (see page 21).

The sensitizing bath should never have a higher temperature than 60 degrees Fahrenheit, also the water in which the transfer to the opal or glass plate is effected should never be of a higher temperature than that just named; these last two directions are very important in the summer time.

The loss of the half-tints. This is sometimes from the same cause as the evil for which the remedy has just been pointed out, but it is very often due to the fact of the tissue not having been excited upon a bath of sufficient strength, or that the tissue is used too soon after being sensitized; tissue excited as described at page 19, is at its best from one to three days after being excited, and will preserve the most delicate half tints; loss of half tone is sometimes due to insufficient exposure, and sometimes to the water being used too hot to begin with in developing: the best method of developing

Slow drying.

Cool sensitizing bath.

Loss of half tints.

is to strip the pictures in water of about 100 degrees Fahrenheit, then dash the water well over them, and then allow the plates to *develope themselves* in the warm water; they will do that admirably, and may be taken one by one to be finished with hotter or colder water as circumstances may require.

Shining specks.

Minute shining specks. These arise from air imprisoned between the face of the tissue and the plate in laying down the tissue in the first transfer; the remedy is to pass the hand over the face of the tissue so as to remove any adherent air bubbles, lay it carefully down, holding it by opposite corners, and letting it touch the plate only at the diagonal line at first, and then lower the corners.

Avoidance of air bubbles.

Method of applying the squeegee.

In applying the squeegee, holding the plate with the left hand, begin just a little past the centre, a little nearer to the left hand than to the right, scrape off the superfluous water over the right-hand edge of the plate, then turn it round and repeat the operation towards the other edge; by applying the squeegee in this

manner, any air bubbles there may be, will not have so far to travel, and will be driven clean off the plate instead of remaining to be churned into froth under the action of the squeegee.

FAILURES IN THE FINAL TRANSFER.

Difficulty in stripping.

The picture obstinately refuses to leave the opal. Entirely the fault in waxing: the Autotype waxing solution alone must be used, it must not be polished off too closely, especially when the opal is new (see page 49); when the plates have been employed many times the same care is not necessary; it has frequently been observed that an old plate will allow of a picture being stripped from its surface, without being *re-waxed* at all, but new plates must have a sufficiency of wax left upon them.

Weak prints.

Weak prints and the colour grey and poor-looking. It is an axiom amongst silver printers, that a good vigorous negative will produce a fine-coloured print, and that a poor weak one can only be made to yield weak-looking prints; just the same

holds good of pigment printing; from the same batch of tissue can be produced the most brilliant and fine-coloured prints, and also the poorest and greyest looking things imaginable. To produce prints of a good colour it is necessary to have reasonably good negatives; if the negatives are thin, a weak sensitizing bath should be used and the negatives backed with thin paper to help the contrast.

Shining lines or patches against the edges of the deeper shadow. This defect generally occurs where a deep shadow comes next to a strongly lighted portion of the picture, and is caused by the final support not having been soaked sufficiently in the tepid water to render it pliable (see p. 54); so that instead of adjusting itself to the relief in which the pigment picture is formed, it bridges over the interval and the white or shining line shows the imperfect contact.

The remedy is to allow the transfer paper to soak for a longer time so as to ensure a sufficient "couche" of softened gelatine for

Shining
against
shadows,
lines
deep

the pigment print to rest upon in perfect contact.

FADING AND DETERIORATION.

Pigment pictures are supposed to be permanent, and they are so exactly to the extent that the *pigments* employed are *permanent*; so long as the latter belong to the class known as permanent pigments, and the prints themselves are freed from the chromic salts, pigment pictures are as permanent as paintings, engravings, water colours, or any other artistic work.

Gelatine, which is employed somewhat extensively in the process, is in itself a very lasting and durable substance, and when hardened by the action of alum it becomes practically the same as vellum or parchment.

The very fact of the pigment being locked up in the insoluble gelatine is in itself a very great aid to permanency. It is believed that most of the pigments employed by artists, if they do not act upon or decompose the gelatine, may be employed in the manufacture of tissue, and the result will be as satisfactory

as regards permanency, as that of any artistic work in water colour.

The basis of most of the tints of Autotype tissues is carbon, the material that enters so largely into the composition of printers' ink. The other colours employed are red and blue.

The blue employed by the Autotype Company is a permanent colour specially treated in a gelatinous compound producing in combination with differing proportions of red and black the varieties of purple and brown obtainable in Autotype tissue.

The invention of artificial alizarine by Mr. Perkins, and the successful issue of the experiments carried on at the Autotype Works, some years ago, for its manufacture as a scarlet or crimson lake, has enabled it to be employed as a permanent colour, and thus replace the handsome and powerful tones of the cochineal colours which experience has shewn to be not absolutely stable; for such colours as sepia and red chalk, the iron oxides are employed; these are amongst the most permanent coloring matters known.

There is one element of change that

Autotype, in common with every thing having paper for a basis, has to contend against, and that is the discoloration of the paper. It is practically impossible to find a paper that is unchanged in tint after a week's exposure to daylight. This can only be overcome by choosing those papers which change least, and in the case of the Autotype final support made by the Company, and which forms the basis of prints in pigment from ordinary negatives, the introduction of permanent white into the coating eliminates this defect.

One cause of fading or deterioration may be the failure in getting entirely rid of the surplus bichromate salt. The picture must be immersed in alum, which should not be weaker than one part of alum to thirty of water, and it should there remain till *all* yellow colour has entirely disappeared ; this is very easy to effect in double transfer from rigid surfaces ; a little more care is required with the flexible support, and with single transfer prints ; the latter being mounted at once and developed upon the paper upon which they are destined to remain, the bichromate gets

into the paper, and stains it a yellow colour; this should be perfectly got rid of by the action of the warm water used in development followed by the alum bath.

Fortunately the yellow colour is so apparent that its imperfect elimination is easily detected, and it is not too much to say that by the processes described in this Manual, photographs that will last as long as the material upon which they are made, may be produced, to suit many different purposes, and to meet a great variety of needs.

THE AUTOTYPE PROCESSES.

FORMULÆ.

Sensitizing solution (p. 19).

- (a) Granulated bichromate of
 potash 15 ounces.
 Water 2 gallons.
- (b) Commercial bichromate of
 potash 15 ounces.
 Strong Liquid ammonia . . . 1 dram.
 Water 2 gallons.

Alum solution for fixing the prints (pp. 37--40).

- Common alum 1 pound.
 Water 2 gallons.

Alum solution for the immersion of the Autotype final support (pp. 44—53).

- Common alum 8 ounces.
 Water 2 gallons.

Waxing solution for Sawyer's temporary support (p. 42).

Yellow resin	6 drams.
Pure bees' wax	2 drams.
Turpentine	1 pint.

Or dissolve a cake of the waxing compound sold by the Autotype Company, in a pint of turpentine.

Transfer solution for opals.

Nelson's No. 1 gelatine	1 ounce.
Water	1 pint.
Chrome alum	12 grains.
Dissolved in water	1 ounce.

For instructions as to mixing, see p. 61.

Substratum for transparencies and magic lantern slides.

Nelson's No. 1 gelatine	1 ounce.
Water	1 pint.

Soak the gelatine in cold water, then dissolve by gentle heat and add enough bichromate of potash to give it a sherry colour.

Solution for the transfer of pictures to ivory, same as that for opal.

Solution for preparing drawing paper for the reception of single transfer pictures.

Nelson's No. 1 gelatine	.	.	1 ounce.
Water	.	.	1 pint.

Dissolve by gentle heat.

Chrome alum	.	.	20 grains.
Water	.	.	2 ounces.

Dissolve and pour very gradually and in a thin stream into the gelatinous solution, stirring vigorously all the time.

THE AUTOTYPE PROCESSES.

A perusal of the preceding pages, will, it is hoped, be sufficient to prove that the making of photographs in lasting materials presents no difficulties that may not be overcome with a fair amount of perseverance and skill, whilst the wide range of application, the variety of colour, and the artistic effects attainable, render the Autotype processes unique amongst all other methods of producing photographs.

The question of making reversed or inverted negatives will now be discussed, with a view to rendering the future working of the process so easy as to induce all interested in photography to give it their attention.

REVERSED OR INVERTED NEGATIVES.

The ease and simplicity of the single transfer process would at once commend itself to either the amateur or the general photographer, were it not for the fact, that from *ordinary* negatives, the prints are inverted, that is to say, the proper left hand of

the picture comes to the right hand, and vice versa : as will have been noted, this may be overcome by an additional operation, viz.—developing the print on a temporary support, from which it is transferred to its final resting place ; this, by turning it over, cures the inversion of the image ; but it suffices to take the series of operations out of the charmingly simple method of single transfer ; the question is, whether the negatives cannot be easily made so as to print pictures that will not have inverted images.

Non-inverted
prints by double
transfer.

Inverted ne-
gatives.

Film negatives.

First and foremost there are the films for making negatives upon, these are being perfected, and the tissue is coming into the market, if these can be made perfectly successful it will be a great boon, as it will at once do away with the trouble, risk, and weight of glass, and give negatives that can be printed from either side.

Negatives taken
through the glass

Next there is the very simple expedient of taking the photograph through the glass of the plate, i.e., putting the plate in the slide with the glass next to the lens instead of the film, taking care that the glass is clean, and

Reversing the
plate, glass next
the lens.

placing a piece of black cloth or velvet next to the film to prevent injury from the spring of the dark slide ; this method is admirably simple, the negatives are just as easy to manipulate as those made in the ordinary manner, when developing it is only necessary to raise them in the dish so as to see the glass or under surface, and when the high lights begin to show on the upper surface, the development will be pretty nearly completed ; a little practice will render the development easy, and the results are quite indistinguishable from those taken in the usual manner. The slight difference in focal length caused by the thickness of the glass may be disregarded, and in fact will in the majority of cases be an improvement, as it will bring the nearer objects better into focus, a result which, nine times out of ten, will improve the picture.

Another method of obtaining inverted negatives is to print a transparency from the original negative in Autotype transparency tissue, this will render it possible to print in clouds, or shaded skies, to modify shadows,

Easy of develop-
ment.

Negatives have
same appearance
as ordinary ones.

Inverted nega-
tives produced
from pigment
transparency.

and to considerably improve upon the original; when a good transparency is obtained and when quite dry, place it in a printing frame in contact with a good slow dry plate, and expose for a few seconds to a gas or lamp flame some yard or two away, and develop this with whatever developing formula is most approved; at this stage, modification is possible, the reproduced negative may be made more or less intense, and a clever operator will frequently make a reproduced negative a good deal better than the original, and this being an inverted negative, will produce prints by the single transfer process, having proper rights and lefts.

For the professional man, or those who propose to work on a large scale, the reversing mirror is the practical method; by its use inverted negatives result because the lens does not take the photograph of the *object*, but only a photograph of a *reflection* of the object, thus giving an inverted image which, printed by single transfer, comes out with its proper right and left.

Print on dry plate
by contact.

Modifications
possible.

The reversing
mirror.

Advantages.

The reversing mirror offers great advantages in the copying of engravings, drawings, plans, medallions, and in fact all objects which it is difficult or impossible to place in the usual vertical position, as by employing the mirror the objects simply require to be arranged on the floor, or upon a horizontal board capable of being adjusted to various elevations. The camera is placed in such a position that the mirror looks *down* upon the objects to be taken, which of course keep their position by their own gravity, and the illumination being vertical, there is a remarkable absence of texture or grain, which in the case of drawings, &c., is an immense advantage; whilst for medallions or objects in which strong relief and light and shade is desirable, it is very easy, by covering over the top of the camera and using only a side light, to obtain any amount of relief.

Description of the reversing mirror.

The Autotype Company have devised a convenient form of apparatus, consisting of a mirror formed by depositing a coating of pure silver upon a surface of plate glass ground and polished to a perfectly true plane; this mirror

is set at an angle of 45° in a well-constructed mahogany box, which fits on to the front of the camera, and is kept in its position by very simple means. In taking views, portraits, &c., the camera is turned sideways to the object taken, so that the rays of light proceeding from the objects to be photographed are reflected from the mirror through the lens and thence to the sensitive surface; in this manner the negative is reversed, but in every respect it will be of a quality quite equal to one taken in the usual manner.

One mirror for various lenses.

By the method of arrangement and fittings adopted by the Autotype Company, the same mirror will answer for all sizes and kinds of lenses, provided of course that it is large enough for the largest lens; in the old form it was deemed necessary to have a separate mirror for each lens, and the method of mounting besides was unnecessarily expensive and allowed extraneous rays of light to enter the lens, thus interfering with the definition and vigour of the negative.

PRICE LIST
OF
TISSUE AND MATERIALS
USED IN THE
PRODUCTION OF PERMANENT
PHOTOGRAPHS.

THE AUTOTYPE COMPANY,
LONDON & EALING DENE.

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MATERIALS.

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THE AUTOTYPE COMPANY'S
PRICE LIST OF MATERIALS & APPARATUS
FOR PRODUCING
PERMANENT PHOTOGRAPHS
BY THE
AUTOTYPE PROCESS.

IN issuing this Price List of Autotype Tissue and Materials, we have considered that it would be advantageous to make it of a somewhat more extended and explanatory character than heretofore, and of calling attention to certain recent improvements that have the effect of rendering the production of Permanent Autotypes extremely simple and easy.

Amongst the many advantages of the Autotype Process stands the fact of being able to produce permanent photographs in several different colours; pictures can be made, not only in the tint of a well-toned silver print, but in Engraving Black, Sepia, Red Chalk, and other shades of colour, thus conferring upon photography the added power of rendering copies of art works as well as natural objects, in the tint best suited to them.

We have made arrangements for the supply of Tissue *sensitive* to light, in the following colours: Standard Brown, Engraving Black, Sepia, Red Chalk, and Transparency; these are manufactured twice a week for our own use at the Works, will be sent promptly by Parcel Post, cut to sizes to suit clients, and ready to place in the Printing frame.

We have of late much improved the make of Sawyer's Patent Temporary Support. It has been for years in daily use at the Works, and greatly facilitates Autotype printing from Negatives taken in the ordinary manner. It is sent out ready for use, and if its surface be treated with a slight rub over with the waxing compound before each time of using, the same piece of support may be used an indefinite number of times, and the results will not fail to be satisfactory. By means of this Temporary Support, Autotype prints can be transferred to Opal, Drawing Paper, Canvas, Ivory, &c., and, in short, it enables photography to be applied to decorative and other purposes to which it has hitherto been a stranger.

One of the difficulties in Autotype Printing has been due to the fact that the Final Support or Double Transfer required hotter or cooler water according to its age or insolubility, thus introducing an element of uncertainty into the final operation. To remedy this and to improve the finished result we have introduced a new Final Support which we think may with advantage replace the Double Transfer; this we have named *Autotype Final Support*, the final transfer of the developed picture to its surface is very easy and simple, and it affords every security that the picture rests upon an insoluble and inalterable base. Full instructions for use will be sent with each roll or packet, and every roll or cut piece will be marked

F. S. 2.

We have put together and quoted prices for Sets of Apparatus suitable for Printing Autotypes of various sizes, have included some convenient sources of hot water supply, and we hope that in the present Price List will be found all the necessaries, and most of the conveniences, calculated to render the Printing of Autotypes easy and satisfactory.

THE AUTOTYPE COMPANY.

AUTOTYPE TISSUES.

(SENSITIVE. READY FOR USE.)

COLOURS.

Standard Brown	} Per Band, 12 ft. long, 30 in. wide ...	...	7/6
Engraving Black		} Per Half-Band, 12 ft. long, 15 in. wide ...	4/0
Sepia			2/6
Red Chalk	} Per Quarter-Band, 6 ft. long, 15 in. wide ...		

CUT PIECES—OF THE ABOVE COLOURS.

SIZES— $4\frac{1}{4}$ by $3\frac{1}{4}$	$6\frac{1}{2}$ by $4\frac{3}{4}$	7 by 5	$8\frac{1}{2}$ by $6\frac{1}{2}$	10 by 8	12 by 10	15 by 12 in.
Per dozen 5d.	10d.	1/0	1/6	2/0	3/0	4/0

TRANSPARENCY & MAGIC LANTERN TISSUE.

(SENSITIVE. READY FOR USE.)

CUT PIECES.

SIZES—4 by 4	$4\frac{1}{4}$ by $3\frac{1}{4}$	$6\frac{1}{2}$ by $4\frac{3}{4}$	$8\frac{1}{2}$ by $6\frac{1}{2}$ in.
Per dozen 8d.	7d.	1/3	2/0

The above Tissues are manufactured in a sensitive condition for our own use twice a week, and may always be relied upon as being in perfect condition for use, the Bands, Half-Bands, and Quarter-Bands are in rolls, and placed in air-tight tin cases, charged 2/- each, which will be allowed if the cases are returned in good condition.

The Cut Pieces are carefully done up in waterproof wrappings, and if kept in the Company's special Pressure Boxes they remain flat and in good condition. The date of manufacture is placed upon each tin or packet, and the Tissue can be depended upon as being fit for use for a fortnight from such date, if preserved from light and air.

SINGLE TRANSFER PAPER.

MARK S. T. 1.

This is a fine paper coated with insoluble gelatine, forming the support of Autotype Prints from especially made reversed negatives, or for prints where inversion of the image is of no consequence.

Single Transfer Paper, thick for large work, per Band	12 ft. by 30 in.	3/0
„ „ „ medium thickness „ „ „	„ „ „	2/9
„ „ „ fine thin, for small work „ „ „	„ „ „	3/6

CUT PIECES.—SINGLE TRANSFER, MEDIUM THICKNESS.

SIZES—5 by 4	7 by 5	9 by 7	11 by 9	12½ by 10½	15½ by 12½ in.
Per dozen 2d.	4d.	8d.	1/0	1/6	2/0

SAWYER'S TEMPORARY SUPPORT.

MARK T. S. 112.

This material forms the Temporary Support upon which are developed pigment prints from ordinary negatives ; it is a specially prepared paper coated with insoluble gelatine, and solutions of certain lacs ; it permits of the prints being developed upon it with the same ease and facility as Single Transfer ; the prints when finished and placed in contact with the surface of the Autotype Final Support, adhere finally to it, and will leave the Temporary Support with a gloss similar to Albumen Paper. The Temporary Support may be used an indefinite number of times, only requiring to be rubbed over with the waxing solution to ensure the stripping of the print from its surface.

CUT PIECES.

SIZES—5 by 4	7½ by 5½	9½ by 7½	11 by 9	13 by 11	16 by 13	20 by 17	23 by 18 in.
Per doz. 9d.	1/0	1/6	1/9	2/0	2/6	3/9	5/6

Other sizes cut to order.

Full instructions for use sent with each packet.

AUTOTYPE FINAL SUPPORT.

MARK [F. S. 2.]

This is a special paper coated with a gelatinous emulsion of a *permanent* white or tinted pigment. It is intended to supersede the old Double Transfer by reason of its greater efficiency, and the ease and simplicity of working with it. It forms the *permanent* base of pigment prints from ordinary negatives developed upon Sawyer's Temporary Support, or upon Collodionized glass. For use all that is necessary is to immerse whatever cut pieces may be required in a two per cent. alum solution for an hour or so, they are taken out as they are wanted, immersed with the picture to be transferred in clean *tepid* water, the surface of the picture and the surface of the final support forced into contact by the action of the squeegee, hung up to dry, and when dry the picture will be found firmly adherent to the now insoluble permanent basis, permitting the temporary support to be removed for further use.

In two Shades—"Azure and Opal."

Medium thickness, per Band, 12 feet by 30 inches	...	..	...	3/0
Fine thin, for small work	„	„	...	3/6

CUT PIECES.—OPAL SHADE.

SIZES—	4½ by 3½	7 by 5	9 by 7	11 by 9	12½ by 10½	15½ by 12½	22 by 17 in.
Per dozen	3d.	5d.	9d.	1/2	1/9	2/6	3/6

* * * Other sizes cut to order.

N.B.—The Autotype Double Transfer is now retired from the Company's Lists, but will be made to the order of Clients requiring the same.

AUTOTYPE TISSUES.

(INSENSITIVE.)

COLOURS.			
Standard Brown	}	Per Band 12 ft. long, 30 in. wide... .. 6/6	
Standard Purple		Per Half-Band, 12 ft. long, 15 in. wide ... 3/6	
Engraving Black		}	Per Quarter-Band, 6 ft. long, 15 in. wide 2/0
Warm Black			
Sepia			
Red Chalk			
Dark Blue for			
Night and Cloud effects			

CUT PIECES—OF THE ABOVE COLOURS.

SIZES—8½ by 6½	9½ by 6½	10 by 7	10 by 8	12 by 10	15 by 12 in.
Per dozen 1/6	1/8	1/10	2/0	3/0	4/0

SPECIAL TISSUES.

Portrait Brown	}	Per Band, 7/0	Half-Band, 3/9	Quarter-Band, 2/0
Portrait Purple				

CUT PIECES—OF THE ABOVE SPECIAL TISSUES.

SIZES—8½ by 6½	9½ by 6½	10 by 7	10 by 8	12 by 10	15 by 12 in.
Per dozen 1/9	2/0	2/3	2/6	3/6	4/6

Special Transparency Tissue for Enlargements, Magic Lantern Slides, &c.	}	Per Band, 12 ft. long, 24 in. wide 8/6
		Per Half-Band, 12 ft. long, 12 in. wide ... 4/6
		Per Quarter-Band, 6 ft. long, 12 in. wide ... 2/6

CUT PIECES—SPECIAL TRANSPARENCY TISSUE.

SIZES—8½ by 6½	8½ by 8½	9½ by 6½	10 by 8	12 by 10	15 by 12 in.
2/0	2/3	2/3	2/9	4/0	5/0

* * * The above Tissues are sent out in an insensitive condition, and will require making sensitive to the action of the light before use. Full instructions are sent with each packet and the Tissue will keep good before sensitizing an indefinite time.

HOT WATER APPARATUS.

As pigment prints are developed in warm water, temperature from 105° to 110° Fahr., it might be supposed that a considerable supply of *hot* water would be necessary. This, however, is by no means the case; it is not of the slightest consequence how *apparently* dirty the water in the developing tank becomes, the prints come out, after the water has been used for an hour or two's developing, just as clean as at first; all that is absolutely necessary, especially for an amateur, or for anyone who does not produce large quantities of prints, is some means for getting the water in the developing tank up to the proper temperature, and then keeping it there. Where gas is laid on, and convenient to arrange, a Fletcher's Gas Boiling Stove is the very thing; where gas is not handy, Ripplingille's 'Hero' kerosene stove is absolutely perfect, the small size tank will stand very well on the top of the stove, the larger sizes can be supported above it on cheap iron stands sold by the Autotype Company.

For persons who desire a large supply of hot water for pigment printing or other purposes, the Autotype Company can warmly recommend Ewart's patent Geyser. Ewart's Geyser gives hot water at any temperature up to boiling point, 212° Fahr., indicates the temperature of the water as it flows from the apparatus by means of a Thermometer placed in a conspicuous position—has a new patented arrangement by which the gas is lowered to a minimum point as soon as the water is turned off, thus avoiding all risk of explosion or damage to the Geyser.

PRICES.

Ewart's Patent Geyser	...	...	...	...	£7	0	0
Fletcher's Gas Boiling Stove	...	...	..	...	0	4	6
The 'Hero' Kerosene Oil Stove	...	...	...	...	0	7	6
Iron Tressels for supporting Developing Tank over the Gas Boiling Stove	...	...	..	per pair	0	3	0
Ditto, over the 'Hero' Stove	...	...	...	„	0	3	0

SETS OF APPARATUS FOR THE DEVELOPMENT OF PIGMENT PRINTS.

	No. 1. For pictures $4\frac{1}{4}$ by $3\frac{1}{4}$ and under.	No. 2. $6\frac{1}{2}$ by $4\frac{3}{4}$ and under.	No. 3. $8\frac{1}{2}$ by $6\frac{1}{2}$ and under.	No. 4. 12 by 10 and under.
Stout Tin Mounting Tray	3/0	4/6	5/6	6/6
Stout Tin Developing Tank... ..	4/0	5/6	6/6	7/6
Three Nested Zinc Trays for cold water	10/5	13/0	24/0	27/0
Deep Porcelain Dish for Alum	2/3	3/0	4/3	5/3
Two Autotype Pressure Tissue Boxes...	6/0	7/0	8/6	10/0
Thermometer	2/0	3/0	3/6	3/6
Squeegee	1/6	2/0	2/6	3/0
Squeegee Board	2/0	3/0	4/0	4/6
Sawyer's Actinometer	5/0	5/0	5/0	5/0
American Clips	1/0	1/0	1/0	1/0
Bibulous Boards	1/0	1/0	1/0	1/0
French Chalk for Glass Plates	6d.	6d.	6d.	6d.
Three dozen packets of Tissue	1/3	2/6	4/6	9/0
One dozen Temporary Supports	9d.	1/0	1/6	2/0
Three dozen Final Support	9d.	1/3	2/3	5/3
Waxing Solution for Temporary Support	1/0	1/0	1/0	1/0
Five ounces Transfer Collodion	1/0	1/0	1/0	1/0
One yard Cotton Flannel	6d.	6d.	6d.	6d.
Bottle Black Varnish	6d.	6d.	6d.	6d.
Brush for ditto	2d.	2d.	2d.	2d.
'Hero' Kerosene Oil Stove	7/6	7/6	7/6	7/6
Iron Tressels for supporting Developing Tank over Stove	3/5	3/6	3/6	3/6
	<u>2/15/3</u>	<u>3/12/5</u>	<u>4/8/3</u>	<u>5/5/2</u>

If with Burton's Actinometer in lieu of Sawyer's, 1/6 per set more; if with Johnson's, 2/6 less.

Case and Packing for No. 1 size, 2/6, No. 2, 3/6, No. 3, 4/3, No. 4, 5/6, which will be credited if the cases are returned in good condition, and free of charge.

N.B.--Any of the above Articles may be had separately or others substituted from the following list. Estimates given for larger sizes.

SPECIAL APPARATUS AND MATERIALS.

	No. 1. 13 by 11	No. 2. 18 by 15	No. 3. 22 by 17	No. 4. 25 by 19 in.
Developing Tanks ...	4/0	5/6	6/6	7/6
Tin Mounting Trays ...	3/0	4/6	5/6	6/6
Zinc Cold Water Trays ...	3/6	6/0	8/0	9/0
Deep Porcelain Trays for Alum Solution ...	2/3	3/0	4/3	5/3
The Autotype solid back Pressure Frame, in pine—				
Quarter-Plate, 1/0, Half-Plate, 1/3, Whole Plate, 2/6, 10 in. by 8 in., 3/6, 12 in. by 10 in., 4/6, 15 in. by 12 in., 6/0.				
Ditto, in Mahogany—				
Quarter-Plate, 1/6, Half-Plate, 1/10, Whole Plate, 3/6, 10 in. by 8 in., 4/6, 12 in. by 10 in., 5/9, 15 in. by 12 in., 7/0.				
Autotype Pressure Tissue Boxes, weighted lids—				
Quarter-Plate, 3/0, Half-Plate, 3/6, Whole Plate, 4/3, 12 in. by 10 in., 5/0				
Johnson's Actinometer, with Sensitive Paper ...				2/6
J. R. Sawyer's ditto ditto ...				5/0
H. J. Burton's ditto ditto ...				6/6
Sensitive Paper ...				per rouleau 6d.
Squeegees ...	8 in., 1/6, 12 in., 2/0,	15 in., 2/6,	18 in., 3/0	
Squeegee Boards ...		2/0	3/0 4/0	5/6
Indiarubber Cloth ...				per square foot 8d.
American Clips ...				per dozen 1/0
Blotting Boards ...				" 1/0
Waxing Compound, in cakes, for solution in Turpentine ...				each 6d.
Waxing Solution, ready for use ...		5 oz. bottles,	1/0,	per pint, 2/6
Black Varnish for edging Negatives ...				per bottle, 6d.
Brush for ditto ...				2d.
Orange Vignetting Paper ...				per quire 2/0
Powdered French Chalk, for glass plates ...				per box 6d.
Transfer Collodion for developing upon, per 5 oz. bottle, 1/0, per pint 3/6				
Cotton Flannel for applying French Chalk and Waxing Solution, per yard 6d.				
PERMANENT Autotype Ruby Fabric, the best material for developing				
Rooms ...				per yard 2/0
Autotype Sensitizing Compound...				per tin 1/0

PURE GRANULATED BICHROMATE OF POTASH, 2/0 per lb.

AUTOTYPE GELATINE, 3/6 per lb.

AUTOTYPE COLLODION, VARNISHES, &c.

SPECIAL VARNISH FOR DRY PLATE NEGATIVES.

Winchester of 4 pints ... 10/6 Single pint ... 3/0, bottles included.

Gelatine Negatives coated with this Varnish are perfectly safe if the Instructions sent with each bottle are carefully observed. The Varnish is absolutely damp-proof, and the atmosphere cannot affect the film. For Crucial trials, see THE BRITISH JOURNAL OF PHOTOGRAPHY, Sept., 19th, 1879.

Dries hard, brilliant, and will bear any amount of wear and tear in printing.

SAMPLES OF TISSUES & TRANSFER PAPERS, &c.

The Autotype Company send out sample packets of two sizes, containing as follows :

1 Sheet of Insensitive Tissue, each—

Standard Brown

Standard Purple

Portrait Brown

Portrait Purple

Warm Black

Engraving Black

Sepia

Red Chalk and

Special Transparency.

2 Pieces of Flexible Support

6 Sheets of Single Transfer

6 Sheets of Autotype Final Support.

Free per post, 12 by 10 size, 5/0, Whole Plate, 3/0.

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ART PHOTOGRAPHS.

THE AUTOTYPE COMPANY,

74, NEW OXFORD STREET,

LONDON, W.C.

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THE AUTOTYPE COMPANY

Invite all interested in Fine Art to inspect the very complete collection of
Permanent Autotype

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One hundred examples.

SIR JOSHUA REYNOLDS.

Two hundred and thirty-four examples of this Master, from rare prints in the
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THE AUTOTYPE COMPANY, LONDON.

NATIONAL GALLERY OF LONDON.

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65 Do. OF THE BRITISH SCHOOL.

Subscription Price for the Foreign Schools, £131 15s. od.

„ „ British School, £32 10s. od.

Single Copies, large size, 12/-; small size, 6/-.

*Amongst the most celebrated of the Pictures reproduced,
will be found the following:*

A Triptych	...	...	<i>Perugino.</i>
Holy Family	...	...	<i>Mantegna.</i>
The Doge Loredano...	...	...	<i>Bellini.</i>
Angels weeping over the dead	}	...	<i>Francia.</i>
body of Christ			
Bacchus and Ariadne	...	...	<i>Titian.</i>
St. Catharine of Alexandria	...	...	<i>Raphael.</i>
Holy Family	...	...	<i>Murillo.</i>
Virgin and Child	...	...	<i>Boticelli.</i>
The Cornfield	...	...	<i>Constable.</i>
The Valley Farm	...	...	<i>Constable.</i>
Angel's Heads	...	...	<i>Reynolds.</i>
Age of Innocence	...	...	<i>Reynolds.</i>
The Fighting Temeraire	...	...	<i>Turner.</i>

*For further particulars, see the Autotype Company's General
Catalogue, page 81. (Post Free, 6d).*

The Autotype Fine Art Gallery, 74, New Oxford St., London, W.C.

THE ROYAL GALLERY,

WINDSOR CASTLE.

(By Special Permission of H.M. the Queen).

83 EXAMPLES.

This Publication is particularly rich in the examples of Masterpieces by *Van Dyck, Rubens, Holbein, Rembrandt.*

Subscription Price for the complete series, including Portfolios,
Thirty-nine Pounds.

Separate Copies at 12/- and 6/- each.

The following are of special interest:

Madonna del Silenzio ...	...	<i>Caracci.</i>
His Own Portrait ...	...	<i>Rubens.</i>
Family of Sir Balthazar Gerbier ...	...	<i>Rubens.</i>
Three Children of Charles I.,	...	<i>Van Dyck.</i>
Killigrew and Carew ...	...	<i>Van Dyck.</i>
Portrait of Charles I., (Bust, 3 positions)		<i>Van Dyck.</i>
Portrait of his Wife ...	...	<i>Rembrandt.</i>
The Misers ...	...	<i>Quentin Matsys.</i>
Portrait of Henry VIII.,	...	<i>Holbein.</i>
Duke of Norfolk ...	...	<i>Holbein.</i>
Mary Queen of Scots ...	...	<i>Clouet.</i>
Princess Charlotte of Wales	...	<i>Lawrence.</i>
Portrait of the Artist, and of Andrea } Franchesini ...	... }	<i>Titian.</i>

For Complete List, see the Autotype Company's General Catalogue, page 101. (Post Free, 6d).

The Autotype Fine Art Gallery, 74, New Oxford St., London, W.C.

THE ROYAL GALLERY,

BUCKINGHAM PALACE,

(By Special permission of H.M. the Queen).

78 EXAMPLES.

This Collection is largely representative of the Dutch and Flemish Schools, affording excellent examples of *Cuyff*, *Backhuysen*, *Wouverman*, *Paul Potter*, *Rembrandt*, *Rubens*, *Teniers*, *Frans Hals*.

Subscription Price for the complete set of 78 examples, in Portfolio, complete, £34 15s. od.

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The following are amongst the most noticeable :

Portrait of Himself	<i>Rembrandt.</i>
Burgomaster Pancras and his wife	...	...	<i>Rembrandt.</i>
Equestrian Portrait of Charles I.,	...	...	<i>Van Dyck.</i>
Young Bull	...	...	<i>Paul Potter.</i>
The "Cornemuse"	...	...	<i>David Teniers.</i>
Hunting Party	...	...	<i>Cuyff.</i>
Seascape, (A Fresh Breeze)	...	...	<i>Backhuysen.</i>
Portrait of a Gentleman	...	...	<i>Frans Hals.</i>
The Abduction of Europa	...	...	<i>Claude Lorraine.</i>

For the Complete List of Subjects, see the Autotype Company's General Catalogue, page 105. (Post Free, 6d).

The Autotype Fine Art Gallery, 74, New Oxford St., London, W.C.

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