

cess, the real activity of photographic work may be said to have commenced in earnest, and the advisability of originating a photographic society began to be discussed. Many able men in various parts of the country and abroad were taking up the subject, and in prosecuting their researches, the desirability of means for intercommunication soon became apparent. A society was consequently formed in London by the then leading experimentalists, and it has steadily grown from a small nucleus to its present magnitude under its original and still adopted title, "The Photographic Society of Great Britain." Shortly afterwards the Manchester Photographic Society was established.

The Rev. Mr. Reade and Mr. Arthur Nield were prominent members at that early period. If I remember rightly, it was the latter gentleman who, in order to show how easily photography might in bad hands be made instrumental in perpetrating fraud, undertook, with the collusion of a local bank manager, a very curious and successful experiment. At the bank in question the cheques issued to customers were simply printed in black on a white ground. There was no coloured band nor red numbers, and the paper contained no watermark. Mr. Nield engaged to photograph one, that should be filled and signed by a customer who had an account at the bank, so successfully that when presented the cheque would be duly honoured, without the least suspicion being excited as to the nature of the deception. The spurious cheque was to be sent to the bank any time on a certain day fixed by the manager and Mr. Nield himself, the tellers, of course, not being taken into confidence. The time arrived, and when the business of the day was over, the cheque, which had been presented and honoured, could only be selected from the legitimate ones by the assistance of Mr. Nield himself.

The wet collodion process, though daily becoming better understood, and more successfully practised, had serious drawbacks when out-door photography was sought to be united with pleasure. For professional work, where a successful result was demanded, and substantial remuneration in prospect, the *impedimenta* of bath, chemical bottles, &c., &c., was not to be taken into account; but, to the gentleman amateur, it required an enthusiasm bordering on desperation to carry about with him half the chemical laboratory, to say nothing of the risks he might incur in spotted clothes and soiled linen, or a smeared face. Hence a successful method of preparing the plates beforehand, to be kept stored up in a sensitive condition for future use, became a general desideratum.

About 1857, a process of French origin formulated by M. Taupenot, and since known by the name of "collodio-albumen," began to be recognized in Manchester as the most reliable process hitherto made known. It was taken up with great spirit by Mr. Sidebotham, Mr. Parry, and other able pioneers of that time, and for twenty years subsequently the annals of the Manchester Photographic Society abounded with references to the admirable work done by the various modifications of that process. Manchester became the home of the collodio-albumen process, and the success which attended its practice stamps the past history of the Society with a position and a character ever to be perpetuated in the history of dry-plate work.

The gelatine process has now practically superseded collodio-albumen. Its general adoption has brought about a large accession of strength to the Society in its increased roll of members, and the work of the present day is perhaps more uniformly good than it was in the past.

My own connection with this Society—extending now over a period of sixteen years—has been accompanied with very many pleasant associations.

THE AUTOTYPE OR CARBON PROCESS.

BY J. PIKE.*

I WILL briefly run over the derivation and principles of the process. The term "autotype" has been and is understood to mean generally the reproduction of a photographic picture in a permanent pigment, such as those used by artists in water-colour, crayon, or pencil.

Mungo Ponton first observed the peculiar action which light has upon the bichromates, especially those of potash and ammonia, when exposed to the actinic rays of light in contact with organic matter.

Bequerel showed that *sized* paper acted much more readily

than *unsized* under such action; hence the association of gelatine or gum with the bichromates.

Poiteven found that if a pigment were mixed with the compound of gelatine and bichromate, and then exposed, the pigment became enveloped in that portion of the gelatine thereby rendered insoluble, and that it could not be removed by washing in water. By availing himself of this property he succeeded in obtaining the first photograph in pigment,

From these experiments, improved upon in detail and subsequent working by numerous eminent photographers—amongst whom should be mentioned the names of Swan, Johnson, and Sawyer—the autotype process has been derived and perfected.

Carbon tissue (so-called from the fact that Indian ink, a pure carbon, enters into the composition of most of the tissues made) consists, then, of a paper coated with a composition of gelatine, pigment, sugar, glycerine, and water. Full directions for making the various tissues may be found in Captain Abney's work, "Instruction in Photography,"* also in an excellent paper by Mr. Annan, published in the photographic journals of January 19th of this year.

Tissue is sensitized by immersion in a bath of bichromate of potash one part, and water twenty parts. It should remain three minutes, be then removed, and laid, face downwards, on a piece of plate glass. A squeegee must be passed over the back to remove excess of moisture, and then the tissue be suspended to dry in a pure atmosphere and in perfect darkness. A temperature of about 70° is required.

Tissue sensitized at night should be dry by the morning. My own plan is to sensitize the last thing at night, after the gas has been turned off; and the room—preferably the kitchen—allowed to purify somewhat by letting a free current of air pass through for a short while. After the tissue has been squeegeed, I lay it, face upwards, on a sheet of white blotting-paper, and place it on a cupboard shelf to dry. I have no arrangement for suspending the tissue. In the morning, before anyone else is up and while still dark, I go into the room, collect the tissue, now dry, and place it away in a safe place free from damp, light, and as far as possible free from air.

Before exposing, the negatives are prepared. A narrow strip of paper is gummed round the edge of the negative to the extent of an eighth or quarter of an inch. This forms what is called the "safe edge." It is this which prevents the picture being washed off the plate during development. I do not myself find it necessary to put any paper on my negatives, they not being of large size. I cut the tissue as nearly as possible the full size of the frames, and the width of the rabbet forms quite a sufficient safe edge.

The tissue, already cut to size, is placed in the printing-frame in the usual way, and exposed to light. As, however, the progress of the printing cannot be watched, as is the case with silver prints, an actinometer must be used. This is an arrangement which allows a very small piece at a time of silver paper to be exposed to the action of light. This actinometer, being exposed to the light at the same moment as the tissue, is watched, and when the piece of silver paper has arrived at the colour of the surrounding disc, this signifies what is called a "tint." Some negatives require six or seven tints, though I must say I have never met with such. Of course, in practice, a standard negative is chosen and tested. When the correct exposure by means of tints is acquired the negative is marked, and other negatives being compared with it for density, it is, comparatively speaking, easy to calculate the amount for exposure necessary.

As will be seen further on, under and over printed prints may be so developed as both to produce passable pictures, although in carbon, as well as in other methods of printing, correct exposure is necessary for the production of perfect pictures.

It is as well to remark here that bichromatized tissue is much more sensitive to light than silver paper. A negative requiring twenty minutes to produce a good print in a fair, diffused light, will give as good a print in from ten to twelve minutes in carbon. It must not be forgotten, also, that the action set up by light continues after the tissue has been removed from the frame. A picture under-exposed to-day will be found fully exposed to-morrow, and over-exposed the day after. Advantage is, of course, sometimes taken of this. I have a picture here which was exposed a very short time—three minutes only; the same time with silver paper would have hardly made an impression. It was developed four days after exposure, and was by that time fully exposed, yielding a passable print.

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