

A HISTORICAL SKETCH OF PHOTOGRAPHY.

By Charles Corey, Esq.

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To attempt the description of an art, the particulars of which are as "familiar" in every one's mouth "as household words," would, it is to be feared, involve the tedium, not merely of a twice-told, but oft-repeated tale; still, though many here are doubtless already conversant with it in most, if not all of its branches, a brief history of its rise and progress may not be wholly uninteresting. Solomon said "there is nothing new under the sun." I think he was not a photographer; certes, though we cannot carry the knowledge so far back as that, the action of light on most of the salts of silver was known to the ancients, the native chloride or horn silver, called by philosophers *Cornus Lutea*, being most perceptibly affected by the action of light. But notwithstanding the early date of these observations, there is no record, prior to 1722, of any experiments at all calculated to apply this chemical effect to use. Shortly after that date, a Swede named Scheele discovered that this same chloride, when spread upon paper, was speedily darkened by the blue rays, whilst the red produced little or no change. In 1788 Count Rumford communicated a paper to the Royal Society, called "An inquiry into the chemical properties that have been attributed to light." His experiments, however, were carried out upon gold, more costly but not so susceptible as the subject of our previous remarks, for this is so pre-eminently sensitive as to supersede all other material.

In 1801 Ritter of Jena repeated the experiments of Scheele, and demonstrated the existence of solar rays possessing great chemical power, whilst producing little effect on the organs of vision. In the same year Labillardiere elaborated some previous experiments of Dr. Priestley, and elicited that not only were plants influenced by light in the respective gases thus emitted, according to the Doctor's theory, but that also plants, blanched by being grown in the dark, had no pores, and that cresses, &c., grown under artificial light have only half the number of pores, compared with those grown in natural light. Numberless other experiments followed, which served to confirm the now universally admitted chemical agency of light; but the most important were by Mr. Wedgwood and Sir Humphrey Davy in 1802. They published a description of a method of copying paintings on glass and making profiles by the action of light on nitrate of

silver. This was certainly the first published statement of any attempt to procure images by the decomposing powers of light. Their account is that with which we are now so familiar, viz., the blackening of the salts of silver in combination with an organic substance when exposed to light. Their efforts were carried out upon white paper and white leather, and gave, of course, very faithful representations in reverse, of everything that was laid over them so as to intercept the rays that fell upon them; but alas, the magician that called this wonder-working power into life possessed not the cabala to arrest its progress; the mystic representations pursued their nigrescent course till all vestige of the much-coveted but fleeting image was absorbed in a universal blot. The failure of two men so eminent, appears to have discouraged all further attempts in England for a long period.

In 1814 M. Niepce, of Chalons, pursuing researches on this subtle agency, was led to remark the property of light in altering the solubility of many resinous substances, and here laid the foundation of the art of engraving by light; very accomplished specimens of which are now before us. Ten years after, M. Daguerre was united with him in a series of researches, and in 1829 they entered into a partnership, to pursue their studies for their mutual benefit. M. Daguerre, however, appears to have been dissatisfied with the slow progress of this method. In 1831 M. Niepce hoped for great success by the use of iodine, but must have had very imperfect ideas of its efficacy, for we find him regretting that he had lost so much time with it. "I do not see," he says, "any greater advantage than from the use of other metallic *oxides*." He having died, M. Daguerre seems to have found its virtue in the evanescent property that iodine evinces when exposed to light, for he published his process in 1839, certainly the first known as manageable in the camera obscura.* This discovery of Daguerre was so highly estimated by the French Government that they rewarded his efforts by a pension of 6000 francs for his life, with a reversion of half that sum for his wife.

M. Daguerre's success induced Mr. Fox Talbot, who had been experimenting with the chloride of silver, to make known the result of his labors; which appeared in the *Philosophical Magazine* of the same year. He there gives directions for the production of both negative and positive images, and indubitably has established a fair claim to be considered the father of the method of printing on paper.

* That admirable invention of Baptiste Porta, who conceived the idea from seeing the objects in the street outside represented on the walls of his dark chamber, thrown by the rays of light pouring through the lenticular opening of a hole in the shutter.

But all these cunning devices were of little avail until Sir John Herschel published his paper, read before the Royal Society, "On the use of liquid hyposulphites for fixing the photographic impressions." This was followed by Mr. Robert Hunt in 1840, proving that the iodide of silver was much more susceptible than the chloride. Who can say how much he had been brought to the conclusion by the fact of M. Daguerre's pictures being obtained by the vapour of iodine brought in contact with the polished surface of a silvered plate, thus producing a crude iodide of silver?

Wondrous as this must have appeared to all who beheld it, it would seem extremely clumsy to our more occult and highly trained ideas at present, for I remember the sister of a friend of mine sitting under this magical process, as it was then supposed to be, for full ten minutes, in the bright blaze of a midsummer sun, until she no longer appeared herself, but a perfect "Niobe all tears." Early in the following years that process was farther advanced by an Englishman, a Mr. John Goddard, who, by discovering the accelerating effect of bromine, a subtle and noxious radical found in seasalt and other compounds, quickly reduced the operation from minutes to seconds. This process reigned without a rival for about ten years, and most beautiful results have been elicited from it; but our subsequent experience only makes us regret that they are so perishable.

It being now generally admitted that these phantasma owe their origin to the changeable character of the salts of silver, a more chemical means of bringing them under the influence of the master spirit, Light, became very generally sought after. Having seen the comparative readiness with which they might be spread upon paper, a more transparent medium was much to be desired, and a viscid and glairy liquid such as the white of an egg, scientifically called albumen, was generally used in France, spread upon plates of glass and rendered sensitive by immersion in a solution of silver. But the crowning effort was due to Mr. Scott Archer, who found that gun cotton, when dissolved in æther and charged with the needful salts, gave such an even, transparent surface, that by the subsequent addition of agents that precipitated the metallic silver, the picture was formed by it on those parts of the plate previously acted upon by light.

We have here pre-supposed all present to be perfectly cognisant of the precise forms by which these various processes are accomplished; but for the uninitiated we may state, that in Daguerre's method the iodide of silver was formed in the dry state by the ready deposit of a film from the vapour

of iodine on the metallic silver. This being partially denuded by the action of the light, rendered it easily attacked by the vapour of heated mercury, which deposited itself in just proportion as the lights or shadows had been deflected on the plate. In the more recent process the same salt was deposited on the plate by the collodion containing iodide of silver, and then, being immersed in a solution of nitrate of silver, the double decomposition produced the necessary iodide of silver with a little nitrate in addition. The consequent deposit of metallic silver by the operation of the needful reagents forms the picture.

We have now traced the art through all its conditions as merely forming a philosophical toy; but the almost forgotten labours of M. Niepce have not been without bringing forth good and useful fruit. His researches have been taken up by his nephew, M. Niepce St. Victor, and have brought about far more utilitarian results than those we have been considering. By the action of light on the finer resins of asphalté, there is little doubt that in time light will be enabled to engrave its own reflections.

A German named Pretsch has found that light acts upon gelatine when combined with bichromate of potassa; this forms a surface sufficiently uneven for a layer of liquified gutta percha to be spread over it, which forms an intaglio that serves as a matrix for the deposit of a sheet of copper by the electrotype; but being in relief, a second sheet has to be again formed, having hollows similar to an engraved copper-plate, that hold the ink and preserve these gems of art.

I conclude this brief outline by quoting the panegyric of a recent writer. He says, "By the aid of photography every one may become an artist, and when it is remembered that we are enabled in a few seconds to copy the most extensive architectural pile, with all its details of elaborate tracery; to preserve faithful pictures of those English shrines made holy ground to us by the sacred memories which cling to their crumbling walls; to possess ourselves of the most truth-telling representations of those mediæval relics fast mouldering under the imperative touch of slow-wasting time—which stand in their desolation like the embodied past, eager to instruct the present and guide to an enlightened future; and when, in addition to all this, photography is found to furnish the best studies of perspective, to preserve gradations of light and shade in their natural beauty and consistency, it will require no argument to convince every one of the real value of this beautiful art."