

Literary Gazette, "The Daguerre Secret," 24 August 1839

(keywords: Louis Jacques Mandé Daguerre, Nicéphore Niépce, François Arago, Alexandre Dumas, Alphonse Giroux, history of the daguerreotype, history of photography.)

THE DAGUERRETYPE: AN ARCHIVE OF SOURCE MATERIAL

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FINE ARTS.

THE DAGUERRE SECRET.

AT the weekly sitting of the Academy of Sciences of Paris, on Monday last, the process of M. Daguerre, for the formation of photogenic drawings, was, as had been previously announced, communicated to the public. From an early hour, all the seats allotted to the public were occupied; and upwards of 200 persons, disappointed of gaining admission, were stationed in a crowd in a court of the Institute, and formed a kind of scientific *émeute*. Every body was anxious to hear *the secret*, every body to catch the *mot*; all were desirous of learning whether their own scientific conjectures would be confirmed or not.

At three o'clock M. Arago commenced his explanation. We shall not attempt to follow the great *savant* through all the details of his long statement, a large proportion of which related to the history of the discovery,—a subject already pretty well known to the public; and we shall only mention so much of that part of it as belongs to Messrs. Niepce and Daguerre. In a similar manner, our account of the process itself will be brief; both because M. Arago was obliged to give only a *résumé* of it, and because it is announced that, in a few days' time, the documents communicated by M. Daguerre, under seal to the Committee of the Deputies, on his grant, will be published, and the inventor himself will give a series of public representations of the actual performance of his method.

M. Arago, after alluding to the history of the camera obscura, originally discovered by Porta, a Neapolitan chemist, reminded the Academy that, as early as 1566, the influence of light on what the alchemists termed *lune* or *argent corné* (chlorure of silver), had been observed, and was mentioned in the work of Fabricius. A Frenchman, named Charles, at the commencement of the present century, had made use of a sensitive paper for the tracing of outlines, by the action of light, but had died without leaving any account of his method. After this came the memoir of Wedgwood, of 1802, &c.; a part of the history of the discovery too well known to need repetition. The late M. Niepce, M. Arago proceeded to state, was living near Châlons-sur-Saône, occupied in scientific pursuits, and appeared to have commenced his photographic experiments in 1814. His first connection with M. Daguerre commenced in 1826, when, through information received from an optician at Paris, he learned that this gentleman was engaged in an independent series of photogenic researches, and especially in trying to fix the images of the camera obscura. They associated their labours in 1829, after M. Niepce had visited London in 1828, and had presented his memoir on his photogenic discoveries to the Royal Society. It is proved that for the *photographic copying* of engravings, and for the formation of

plates for engravers, in an advanced state of preparatory sketching of the subject, this gentleman was, in 1826, possessed of the secret of making shades correspond to shades, light parts to lights, demi-tints to demi-tints, &c.; and that he also knew how to make his drawings so produced insensible to the ulterior action of light. The act of partnership, drawn up between M. Niepce and M. Daguerre, and which afterwards stood good between his son and the latter gentleman, states that some entirely new methods had been discovered by M. Daguerre, and that they had the advantage of being able to reproduce images from sixty to eighty times more rapidly than by the processes previously adopted.

It appears that M. Niepce, in his own photographic researches, had first made use of a sheet of silver covered with the purest bitumen (called, in France, *Bitume de Judée*), which had previously been dissolved in oil of lavender. He used to heat this sheet of silver till the oil was completely evaporated, and only a kind of whitish powder remained adhering to the surface. He then placed the sheets so prepared in the focus of the camera obscura, and obtained the image of the object; but the trace was hardly visible. To obviate the imperfection, M. Niepce next thought of plunging the sheet, when removed from the camera obscura, into a mixture of oil of lavender and oil of petroleum,—a method that succeeded and augured still further improvement; for the image became visible like an ordinary engraving, and on washing the sheet with distilled water left the representation permanent. As a further improvement of this, M. Niepce used a new mixture of sulphuret of potassium and iodine; but the light acted very slowly upon it, and the iodine, spreading itself over the surface, rendered the image confused and obscure. The oil of petroleum, first used by this gentleman, was found to have the property of attaching those points of the metallic surface which had been preserved from the action of light by the shades, while it was of no effect on those parts touched by the solar rays.

It was at this stage of the invention that M. Daguerre's labours were joined to those of M. Niepce; and it is only after a long series of experiments, carried on with unwearied perseverance for many years, that, after M. Niepce's death, M. Daguerre has at length resolved the problem to its present extent. We omit the history of these experiments, and pass on at once to the actual process as now used by its author.

A sheet of copper, plated with silver, is washed carefully in a solution of nitric acid, which removes from it all the extraneous matters on its surface, and especially any traces of copper from the silver surface. A slight degree of friction is requisite in this process, but it must not be applied always in the same direction. M. Daguerre has observed, that with the friction used in a particular manner, a sheet of copper thus plated with silver answered better than a sheet of silver alone; and he infers from this, that voltaic agency is not unconnected with the effect. When the sheet is thus prepared, it is placed in a closed box, and exposed to the vapour of iodine. This vapour is made to pass through a very fine sheet of gauze, to render its distribution more equable over the surface of the silver, and in order to effect this object (which is quite indispensable) more certainly, the sheet has a small metallic rim raised around all its edges. A thin coating, of a yellow colour, is thus formed on the surface of the sheet, which is estimated by M. Dumas at not more than the *millionth part of a millimetre* in thickness. The sheet, when covered with this substance, is of the most excessive sensibility to light; and is thus ready for the camera obscura. M. Daguerre, in the instrument which he uses, employs a piece of unpolished glass, which he brings first of all into the focus of the lens, in order to determine the exact point at which the sheet should be placed; and, as soon as this is determined, the sheet is placed accordingly. A few seconds, or minutes, according to the time of day, the state of the atmosphere, &c., suffice for forming the photogenic image; but it is hardly, if at all

visible on the surface of the sheet. To make it so, the sheet is placed in another box, and exposed to the vapour of mercury, heated to 60° degrees Reamur, or 167° of Fahrenheit. One of the most curious circumstances attending this part of the process is, that the mercury must act at a certain angle. If the drawing is intended to be seen vertically, it must be suspended over the mercury at an angle of 45°; if it is to be seen at an angle of 45° it must be suspended horizontally. On being taken out from the mercury-bath, the sheet is plunged into another bath of the hypo-sulphite of soda; this solution attacking the parts upon which the light has not been able to act, and respecting the light parts,—being the very inverse of the action of the mercury. It may be supposed, therefore, observed M. Arago, that the light parts of the image are formed by an amalgamation of mercury and silver, and the dark parts by a sulphuret of silver, at the expense of the hypo-sulphite of soda. M. Arago observed, that no satisfactory reason had yet been given for this latter part of the process. The sheet is finally washed in distilled water, and the operation is terminated.

The drawing, thus obtained, is perfectly insensible to the action of light, but it is liable to injury, just like a crayon or pencil drawing, and requires to be preserved under a glass. The effect of the whole is miraculous: and as an instance, we may mention that one of the drawings exhibited by M. Daguerre, on Monday, was the view of a room with some rich pieces of carpet in it; the threads of the carpet were given with mathematical accuracy, and with a richness of effect that was quite marvellous.

Such is the process of M. Daguerre; we must add, that it is found that the sun-light does not act equally well at all hours of the day, nor even when the sun is at equal heights above the horizon. Thus the effect is produced better at ten in the morning than at two in the afternoon; and hence the *Daguerrotype* may be of immense value in measuring the intensity of light.

The camera obscura, employed by M. Daguerre, may be put in a box two feet long, two feet wide, and two and a half feet high: the price of the whole apparatus may be from 400 francs to 420 francs; the price of each metallic sheet is about three or four francs.

M. Daguerre has entrusted the manufacture and selling of the apparatus to the house of Alphonso Giroux, in the Rue de Coq, St. Honoré.

We need hardly say that the most enthusiastic cheers responded from the grave benches even of the Academy, on the termination of M. Arago's description; and the President, M. Chevreul, complimented M. Daguerre in the warmest terms.*

* It seems to us that, beautiful as this process is upon metallic substances, much of the utility of photogenic copying will be lost, unless the artist and traveller can use paper instead of copper, *silvered*, *iodized*, and *mercurialized*. The images produced by M. Daguerre are exquisitely correct, but gloomy-looking. They resemble moonlight pictures done in ink. We also hear from Paris, that M. Collat has succeeded in his method of copying busts, statues, or other solid objects, with mathematical precision. This is, perhaps, as remarkable a discovery as the photogenic; and one that may be applied to many valuable purposes.—*Ed. L. G.*

[End of text.]

EDITOR'S NOTES:

This text is one of three widely reprinted English-language accounts (published in London) regarding François Arago's disclosure of Daguerre's process at the 19 August 1839 meeting of the Academy of Sciences. Among the publications reprinting this text is

Mechanics' Magazine, Museum, Register, Journal and Gazette No. 839 (7 September 1839): 426–27. The *Mechanic's Magazine* reprint—not exact and with some omission of text—was accompanied by another article of length: Benj. Cheverton, “M. Daguerre's Photogenic Process,” (pp. 424–26.)

See also the account in *Athenaeum: Journal of Literature, Science, and the Fine Arts* (London) No. 617 (24 August 1839): 636–37.¹

1. http://www.daguerreotypearchive.org/texts/P8390007_DISCLOSURE_ATHENAEUM_1839-08-24.pdf

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