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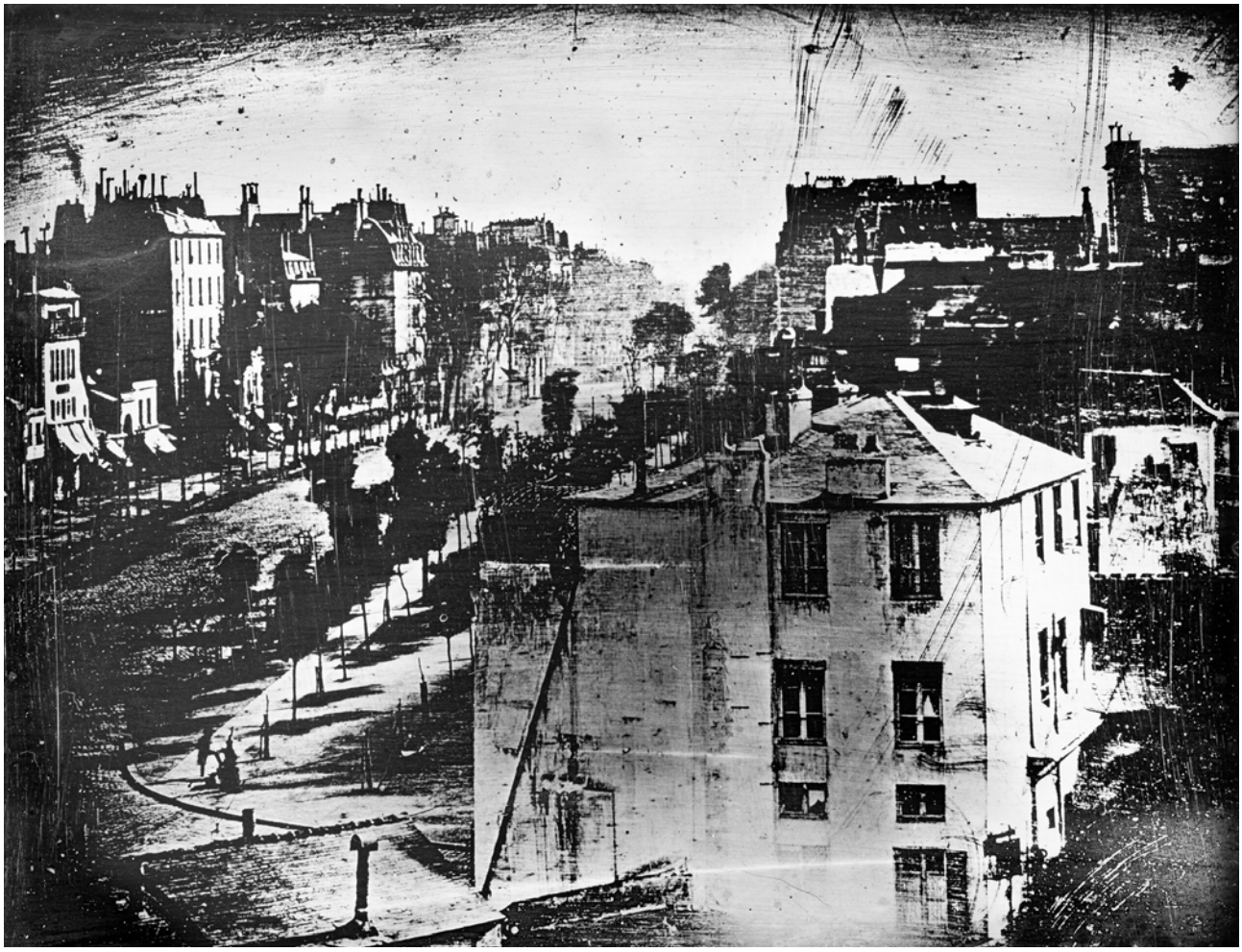

Photogenic Manipulation

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Heliograph, Calotype, Talbotype, Daguerreotype: these are some of the early names that circulated prior to the word "photograph" during the early, experimental stages of its invention. This fascinating historical text from the mid-1800s lays out the early development of photography from a point in time when the technology had advanced, yet was still intriguingly modern. From the alchemists' accidental discovery of light-sensitive silver chloride in 1556, to new hypotheses of "actinism" (photochemical reactions to radiation), the text details key scientific breakthroughs in the now common practice of "drawing with light".

Keywords: History, Photography, Technology.

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1. Several names have been given to this new art, and nearly all of them serve as definitions of it it has been called Photography, from two Greek words, meaning, drawing by light. MM. Niepce and Daguerre originally called their process Heliography, or drawing by the sun the last name, like the first, being also; derived from the Greek. Mr. Talbot has named a process invented by him, the Calotype, or, beautiful picture, but this name has lately been altered to Talbotype, in compliment to its discoverer, and a process of producing

photographs on metallic plates by M. Daguerre is known as the Daguerreotype, and for a similar reason.

2. To the Alchemists, with all their charlatanry, we are indebted for the germs of a great many important chemical discoveries. The early history of Photography is an illustration of this remark; for it seems that in their fruitless researches after *Elixir vitae*, &c., they obtained a compound, which we know as the chloride of silver, but which they called, from its appearance, horn silver, and so far back as the year 1556, they noticed that this substance was blackened by exposure and we have on record one or two experiments, expressed, it is true, in a very mysterious way, but which appear to indicate that they had applied this property as a means of forming pictures.

3. Here the matter appears to have rested, until that eminent chemist, Charles William Scheele, noticed that the chloride of silver was affected very differently by the different-coloured rays of light; it being blackened in the violet and blue rays, whilst pure red and yellow light had no effect upon it. But a still more extraordinary fact was observed, in 1801, by Ritter, of Jena, whilst repeating the experiments of Scheele for he; found, on throwing the solar spectrum upon a piece of paper impregnated with chloride of silver, not only that there was a greater blackening effect at the blue or more refrangible end of the spectrum, but that the paper was darkened beyond any of the visible rays of light.

4. These experiments of Ritter appear to have given rise to the idea, that there must be some peculiar and separate fluid accompanying light, which produces all the chemical changes we notice and attribute to mere light. Several modern philosophers have experimented upon this subject, of whom the most distinguished are Mr. Robert Hunt, and Sir F. W. John Herschel. Mr. Hunt gave to this peculiar principle or influence the name of Energia, but Sir John Herschel, at a meeting of the British Association, proposed that it should be called Actinism, and this name appears to be generally adopted. To return, however, to our short history. In the year 1800, the famous Dr. (afterwards Sir William) Herschel, in making some experiments on coloured glasses, prepared for the purpose of defending his eye from the heat of the sun, when examining it with his large telescopes, noticed, that if he used a deep red glass, although it obstructed an immense quantity of light, yet it had little or no protecting influence from the heat.

On the contrary, a blue or gray glass defended his eye very perfectly; this induced him to examine the subject, and he discovered that not only had the red ray of light the greatest amount of heating power, but that he could detect heat even below the red ray, in other words, he could detect heat in the spectrum without any light accompanying it.

5. This is an analogous experiment with heat, to that of Ritter's with regard to chemical power, and we are, therefore, led to divide the influence proceeding from the sun into three distinct and separate fluids, viz., Actinism, Light, and Heat. The relation of these one to another, and their relative intensities in different parts of a decomposed sunbeam, are clearly shown in which the various colours of the spectrum are indicated in the order in which they occur, between the points A and B. We have already stated that Sir William Herschel found the greatest amount of heat in the red ray this is shown at D from this point the curve; of greatest heat declines, until it arrives at the lavender ray a, where it is altogether lost, but where the actinic power is greatest. It will be observed that this power extends to some distance beyond the spectrum as far as D. It also extends downwards as far as the luminous rays G, where a negative influence is exerted, after passing which, the curve again increases, and a second maximum is found at F, the chemical power entirely ceasing at e. Upon reference to the curves formed in the diagram, it would appear that these three forces are antagonistic one to another; for where we have the greatest amount of light, there is the least heat, and where the greatest heat, less actinic power.

6. In the year 1801, we find the first notice of a picture being taken by light, by the celebrated Joseph Wedgewood, the porcelain manufacturer, who endeavoured to apply it for making designs for his ware. His process was to sponge leather or paper over with a solution of nitrate of silver, and to place it behind a painting on glass, or other objects of which he wished a copy. The light passed through this with different degrees of intensity, and the paper or leather behind it was darkened, according as the glass was more or less permeable to its rays. But the greatest difficulty in this process was, to render the picture produced permanent, the same agent – light – which produced them, infallibly destroyed them. Sir Humphry Davy and Mr. Wedgewood were equally unsuccessful in their endeavours to remove this difficulty.

7. In 1814, M. Niepce, of Chalons-on-Soane, turned his attention to this subject, and he found the resins to be curiously affected by the action of light, with regard to their solubility, and the result of his researches was the discovery of a process named Heliography. These pictures were produced upon metal plates, having the polished surface of the metal to form the shadows of the picture, and a resin forming the light parts; they were very indistinct, and wanted depth. M. Niepce, through accident, became acquainted with M. Daguerre, and they agreed to pursue their experiments together, and amongst other things they tried the effect of sulphur and of iodine to deepen the shadows of their Heliographs and it is extremely probable that M. Daguerre noticed a darkening effect in some of those plates, upon exposure to light, and that this laid the foundation for his brilliant discovery of the Daguerreotype, which was announced in 1839.

8. About this time, Mr. Fox Talbot sent a paper to the Royal Society, with an account of his discoveries in this branch of science. The process he communicated was upon paper, whilst that of Daguerre was upon silvered plates. Mr. Fox Talbot's more recent discovery, the Calotype, was somewhat the result of accident; he had prepared papers in a variety of ways, and only exposed them for a certain limited time in the camera, these were thrown on one side in a drawer, and left as failures; but he was surprised to find, on examining one or two which had been washed with gallic acid, that perfect pictures had appeared of the objects at which the camera bad been directed.

9. These processes excited a great amount of interest and attention, and the photographic art has advanced since this time with great rapidity. A number of different methods of taking pictures by sunlight have been published; the most important of which we shall endeavour to make the reader fully acquainted with, our object being to instruct him in all the *little requisites* to success as a photographer, and at the same time to point out some of the chemical principles upon which the different processes depend.

Footnotes & references

Bingham, Robert J. (ca. 1800-1870). *Photogenic manipulation. Containing the theory and plain instructions in the art*. London: George Knight and Sons. [Online]. c. Available at: https://archive.org/details/photogenicmanipu00bing/page/n3/mode/2up [Accessed 12 December 2024].