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RESEARCHES

ON THE THEORY OF THE PRINCIPAL PHENOMENA OF PHOTOGRAPHY IN THE DAGUERREOTYPE PROCESS.

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ALTHOUGH the Daguerreotype process has, during the last ten years, been investigated by a great number of philosophers, and brought to a considerable degree of perfection by a still greater number of practitioners, it may appear surprising that the principal phenomena upon which the new science is founded, are still enveloped in a mysterious darkness. My constant endeavor has been to explain them, and at the two last meetings of the British Association, I have had the honor of stating the results of some of my researches.

Photography is so wide a field, that it may offer an interesting and useful task to many investigators. I have had the satisfaction to meet, among the members of the Association, an indefatigable competitor, who had embraced in his researches not only all the various processes of photography, some of which he has discovered himself, but many very ingenious and elaborate investigations of the different properties of all the rays composing light. Mr. Robert Hunt has taken this most important task, and he has so ably performed it, that it remains to me to confine myself to that particular branch of the science which refers only to the Daguerreotype, which has been my constant occupations since its discovery.

The principal phenomena in the Daguerreotype process which have not yet been satisfactorily explained, are those referring to the following points:—

1st, What is the action of light on the sensitive coating?

2nd, How does the mercurial vapor produce the Daguerreotype image?

3rd, Which are the particular rays of light that impart to the chemical surface the affinity for mercury?

4th, What is the cause of the difference in achromatic lenses, between the visual and photogenic foci? Why do they constantly vary?

5th, What are the means of measuring the photogenic rays, and of finding the focus at which they produce the image? These are the various subjects I shall have to treat in the present paper.

At the last meeting of the British Association, which took place at Swansea, I announced that the decomposition of the chemical surface of the Daguerreotype plate, by the action of certain rays of light, produced on that surface, a white precipitate insoluble in the hyposulphite of soda, which, when examined by the microscope, had the appearance of crystals reflecting light, and which, when seen by the naked eye, were the cause of a positive Daguerreotype im-