age. This fact had not been observed before. The opinion of Daguerre himself and other writers was, that the action of lights on the iodide of silver had only the effect of darkening the surface and producing a negative image; but it escaped them that under the darkened iodide of silver another action had taken place, and that the hyposulphite of soda could disclose a positive image. I have proved this unexpected fact in obtaining by the action of light only, and without mercury, images having the same appearance as those developed under the action of mercurial vapor. This direct and immediate effect of light is certainly remarkable, but the Daguerreotype process is not found on that principle on account of the slowness of its action. It is fortunate that long before light can produce the white coating I have alluded to, it produces another effect, which is the wonderful property of attracting the vapor of mercury. This vapor is condensed in white powder, having also, when examined by the microscope, the appearance of reflecting crystals. The cause of the Daguerreotype image is due to that property which was entirely discovered by Daguerre.

M. Moser has given an ingenious theory of the action of mercury. Knowing that the yellow ray had the property of continuing the effect commenced by light on the iodide of silver, he has supposed that mercury, when in a state of vapor, evolves a latent yellow light; and it is to the action of that yellow light of mercurial vapor that he ascribes the continuation of the decomposition of the iodide of silver. But as the analysis of the surface discloses the presence of mercury, that metal must have been amalgamated with the silver set free after the action of light. We must therefore look for another explanation of the phenomenon.*

* The speculations of M. Moser are too purely hypothetical to be admitted in explanation of the phenomena observed. Indeed, his doctrine of latent, or, as he calls it, "invisible light," involves some absurdities.—R. H.

It is more probable that light exercises two actions on iodide of silver, whether it is or is not combined with chlorine of bromium. By one, the iodide is decomposed, and the silver set free is precipitated on the surface in a white powder or small crystal; by the other, which begins long before the former, the parts affected by light have been endowed with an affinity for mercurial vapor.

By means of my photographometer, (*Art-Journal*, March, 1849,) to the principles of which I shall presently refer, I have been able to ascertain that the pure light of the sun produces, in about two or three seconds, the decomposition of the bromo-iodide of silver, which is manifested by the white coating; while the same intensity of light determines the affinity for mercurial vapor, in the space of about $\frac{1}{1000}$th part of a second, so that the affinity for mercury is produced by an intensity of light 3000 times less than that which effected the decomposition manifested by the white coating.

For this reason it is difficult to suppose that the two actions are the same: we must admit that they are different. Long before it can operate on the decomposition of the chemical surface, light imparts to the sensitive coating the affinity for mercurial vapor, and this appears to be the principle of the formation of the image in the Daguerreotype process.

In a paper I communicated to the Royal Society on the 17th of June, 1847, and an abstract of which I read before the Association at Oxford, I stated that the red, orange, and yellow rays destroyed the action of white light, and that the surface recovered its former sensitiveness after having been submitted to the action of these rays. I inferred from that curious fact, that light could not have decomposed the surface, for if it had decomposed the compound it would be difficult to understand how the red, orange, and yellow rays could combine again elements so volatile as iodide and