per will become darker and darker, in proportion to the time it continues exposed the spectrum: and, besides, I have found (*Annales de Chimie et de Physique*, 3rd series, vol. ix. p. 268 *et seq.*) that the electrical effects arising from the chemical decomposition of the iodide always act in the same direction.

It will be seen that the conclusion to which Messrs. Foucault and Fizeau came, viz. that there exist in the red prismatic rays negative rays, cannot be received, simply from the fact that the Daguerreotype plates are not always the same in appearance. The contrary effects, as will be seen hereafter, are secondary effects produced by several chemical reactions taking place simultaneously, and are not due to contrary action, exercised on the part of the solar rays, on the iodide of silver alone.

Another fact which I will call attention to is, that the least refrangible part of the spectrum, instead of possessing a negative action upon the iodide of silver, exercises a continuance influence upon most of the salts of silver alone, such as the iodide, the bromide, and the chloride; and also that the experiments upon which this proposition is founded have been verified by the commissioners of the Academy, charged with the examination of one of my memoirs.

In the foregoing, the only point discussed was the influence of light upon iodide of silver, or the simple salts of that metal. When plates of silver are exposed successively to the vapors of iodine, bromine or chlorine, the mixtures obtained may give rise to various kinds of chemical reaction, of which the result only is appreciable. For this reason these mixtures must not be employed without great caution, and the Daguerreotype plates must be used as little possible in experimenting as to the nature of the active rays.

In order to show how far the mixture of sensitive materials is capable of influencing the effects of the spectrum, I will direct attention to the following observations of Sir J. Herschel:—

If paper be prepared, first with a strong solution of lead and afterwards with bromate of potash and nitrate of silver, a surface will be produced which will speedily become black on exposure to the light; on being presented to the spectrum, the black tint will be produced in the most refrangible rays, as far as green. But if the paper has been blackened by previous exposure to the light, on being covered with a dilute solution of iodine of potassium and exposed to the blue parts of the spectrum, the paper will become white. This result proves that the iodide of potassium is decomposed, and that the silver which stained the paper being iodized, and coming in contact with an alkaline iodide, ceases to be affected by the light; the paper will therefore remain of a yellowish-white in that portion of the spectrum on which the reaction takes place.

If the layer of iodide of potassium employed is produced from a dilute solution of that salt, the paper not only becomes white in the violet part of the spectrum, but also becomes darker in the red rays, and even beyond, a neutral line being in the middle. It would appear, therefore, from an examination of the image thus obtained, that two contrary results were produced, viz. the destruction of the color in the violet part and its augmentation in the red. These effects may be easily explained as two distinct chemical reactions: first, the action of the light upon the iodide of silver, the coloring of which had commenced; second, the action of the light to effect the decomposition of the iodide of potassium, and the iodizing of the silver arising from the subiodide formed by the first reaction. As the red part of the spectrum contains those rays which continue the chemical action commenced upon the salts of silver, and as the first reaction is only commenced, the latter has most influence in that part of the spectrum. The second reaction is, on the contrary, at its height in the violet. Thus