

the various points of the plate will meet a different focus. The centre of the plate will coincide with the visual focus, and by its inclination it will, in one direction, meet the photogenic focus at a point more or less distant from the centre, if the photogenic focus is shorter than the visual focus, and in the other direction if it is longer. The frame is furnished with a scale of division, having the zero in the centre. When the image is represented on the Daguerreotype, by applying against it another moveable scale of division similar to the other, the operator can find what is the division above or under zero, at which the image seems the best defined; and after having removed from the camera the experiment frame, and set the focus, as usual, on the ground glass, he has only to move the tube of the object glass by means of the rack and pinion, and to push it in or out of a space corresponding with the division of the scale indicating the deviation of the true photogenic focus. The tube of the object glass is, for that purpose, marked with the same scale of division.

Before concluding, I shall call the attention of all persons conversant with optics, to the singular fact I have observed respecting the constant variation of the foci. I have not been able yet to find its cause, and I leave its investigation to more competent persons.

A. C.

Since the statement I made to the Association at Birmingham, I have heard some critical remarks, which induce me to add a few observations. When I announced that in achromatic lenses, the visual and photogenic foci did not agree, the fact was denied not only by practitioners, but by several opticians. These last, at all events, did not seem to have been aware of it before my communication, otherwise they would not have failed to mention it in selling their apparatus, and to recommend some plan in order to correct the error. Although I published this fact in 1844, in in-

dicating a very simple means to find the true photogenic focus, and thereby to prove the accuracy of the discovery, still object glasses were for a long time sold without any mention of the position of the photogenic focus. It has been only very lately that opticians have taken the trouble to ascertain the difference, and M. Voigtlander has introduced on the sliding tube of the object glass some divisions, showing once for all, how much the tube must be pushed in or out to meet the photogenic focus for every distance of object, after having found the visual focus on the ground glass. But I need not remark how much this plan must be subject to error, when I have proved that by some unexplained causes, there is a constant variation between the two foci. I know this fact has already been received with incredulity. I know that it is denied by persons who have not even taken the trouble of trying a single experiment.—There are photographers who content themselves by saying, that as they *always* obtain well defined images without attending to any alteration in their usual mode of finding the focus, the variation I mention cannot exist. My only answer is—what do these photographers consider well defined images? are they really so? I grant, that without attending to the variation between the two foci, they may sometimes obtain images tolerably well defined, but certainly it is only when, by the law I have alluded to, and some other causes, the difference of the foci is at its minimum. Before I had discovered the anomaly, I was not without producing pictures of quite an unexceptionable character, but certainly I was more subject than I am now to failures, the cause of which I could not account for.

I must remark, that the principal difficulty of obtaining well defined pictures is due to the dispersion of the chemical rays which are spread by glass prisms on a more or less elongated space, so that a spectrum formed by such glass prisms may be shorter or longer according to the dispersive