The photographometer gives the means of comparing the degree of sensitiveness of two photogenic surfaces, differently prepared and of different kinds. This is done by employing two moveable plates with seven vertical openings, and two plates with seven corresponding holes. Receiving both the same light during the same time; the number of spots on each surface will indicate the comparative sensitiveness of the two.

It is a remarkable fact that the photogenic light cannot be measured, except in a geometrical progression; the difference of the effect, in an arithmetical progression, being imperceptible. In comparing the intensity of any two spots following each other, although one has received double the light of the next, it is difficult to find a sensible difference in the color given by the deposit of mercury; it is for this reason that I have adopted the geometrical progression.

The photographometer has, therefore, taught me that when a daguerreotype picture is too black, I must double the time of exposure for the next in order to obtain a marked difference; and that when it is too white, or too much done, I must, for the next, considerably reduce the time of exposure.

This enables the photographer to try several experiments in order to improve the sensitiveness of his preparation, and to adopt the best. There cannot be a surer and simpler method of comparing two different degrees of sensitiveness. By this means I have found that the sensitiveness of the prepared plate increases by being kept some time before using it. A plate prepared one or two days beforehand, is twice as sensible as one prepared immediately. When the prepared plates are kept in well shut, dark boxes, they may be preserved several days; I have employed some three or four weeks after they had been prepared, and I have found them excessively sensitive, and producing good pictures. I have also been able to compare the sensitiveness of the Talbotype and of the Daguerreotype, and I have found tha the Daguerreotype is about eight times more sensitive than the Talbotype. This experiment has been repeated by my friend Mr. Malone, who is well known as a most skillful photographer, and who practices the Talbotype with considerable success. The most sensitive preparation for the Daguerreotype is that produced by the bromides of iodine upon a plate lightly iodised.

Since the publication of my photographometer I have made an improvement which renders it more complete. It has enabled me to try several important experiments. Instead of one series of seven round holes, I have introduced four series; and by means of sliding blades, I can open and shut at will any one of these four series. This enables me to continue by repeated falls the geometrical progression from 1 to 512 on one plate, and when a second plate is added from 1 to 8192; so that I can compare and follow the different effects of light in a considerable range of intensities. This is done in the following manner:—After having given one fall with all the slides open, I shut one and give another fall, then shut the second and give two falls, and so on, always doubling the number of falls for every new slide shut. It is by this means that I have been able to discover at what degree of intensity of light the effect called solarization is produced. On a well prepared plate of bromo-iodide it does not begin under an intensity 512 times greater than that which determines the first effect of mercury. I also learn at what degree the decomposition producing the white precipitate without mercury, manifests itself, both on iodide and bromo-iodide of silver. On the first it is 100 times quicker than on bromo-iodide, and on the last it is produced by an intensity 3000 times greater than that which developes the first affinity for mercury.

(Concluded in our next.)