

these important results, and a few minutes after their communication to M. Delaunay, of the French Academy, there was received by that gentleman a letter from M. Janssen, stating that during the progress of the eclipse he had conceived the possibility of attaining the same end by the same means as Mr. Lockyer was at that very time independently working at, and that on the following day he had experimentally confirmed his idea, and drawn the altered outline of one, the same protuberance he had observed the day before during the eclipse. Since then these astronomers and other spectroscopists—notably Father Secchi, of Rome—have worked in the same field, and vastly enlarged our knowledge of solar physics. I can but briefly enumerate the conclusions arrived at. It is now determined, with tolerable certainty, that there is a very attenuated atmosphere of burning hydrogen enveloping the sun at every point, measuring, in average height, about 5,000 miles; but at certain points, and chiefly near the equator, upheaved by internal volcanic forces within the sun into masses twenty times its height, and then wafted about by solar whirlwinds. Then, from the protuberances or prominences seen during an eclipse, the expulsive force is so violent that it displaces not only the light hydrogen which forms the outermost layer of atmosphere, but also projects from a deeper stratum the heavier vapours of iron and other metals into the base of the hydrogen flames. This outer layer has been called the chromosphere, from its giving a spectrum of bright-coloured lines. Here and there, as some of the photographs taken during the three last eclipses show, and as spectroscopic observations verify, clouds of hydrogen, and even of magnesium, are carried away, burning, into space, quite detached from the visible solar atmosphere, though probably within the limits of the real atmosphere, as certain of the hydrogen lines in the spectra of the protuberance extend faintly beyond the others, and indicate the extension of the atmosphere far beyond its more perceptible bounds.

Lockyer's description of a chromosphere is quite picturesque: "In different parts the outline varies. Here, it is undulating and billowy; there, it is rugged to a degree; flames, as it were, darting out of the general surface, and forming a rugged, fleecy, interwoven outline, which, at places, is nearly even for some distances, and then, like the billowy surface, becomes excessively uneven in the neighbourhood of a prominence. Here one is reminded of the fleecy, infinitely delicate cloud-films of an English hedgerow,