

a *radiation-spectrum*. Each element appears to have its own characteristic arrangement of lines, which in general retain the same relative position, intensity and colors. Moreover, gases and the vapors of solid bodies are found to intercept those rays of light which they themselves emit. The spectrum of sodium-vapor, for example, shows among others two bright orange lines. If therefore white light, from some hotter light-source, passes through the vapor of sodium, these two bright lines become dark lines, the light being exactly cut off which would have been given out by the sodium itself. This is called an *absorption-spectrum*.

From this method of examination, it has been inferred that many of the elements of which our earth is composed must exist in the state of incandescent vapor in the atmosphere of the sun. Thirty-two metals have been thus identified, including aluminium, barium, manganese, lead, calcium, cobalt, potassium, iron, zinc, copper, nickel, sodium and magnesium. These elements, or at least substances which give the same groups of lines as the terrestrial elements with which they have been identified, do not occur promiscuously diffused throughout the outer mass of the sun. According to Mr. Lockyer's first observations, they appear to succeed each other in relation to their respective densities. Thus the coronal atmosphere which, as seen in total eclipses, extends to so prodigious a distance beyond the disk of the sun, consists mainly of subincandescent hydrogen and another element which may be new. Beneath this external vaporous envelope lies the chromosphere, where the vapors of incandescent hydrogen, calcium and magnesium can be detected. Further inward the spot-zone shows the presence of sodium, titanium, etc.; while still