

to be accurately returning phenomena. They are much more numerous during the latter half of the year, when the earth is passing from summer to winter, from aphelion to perihelion. The same increase of number in the last six months of the year is observable in the appearance of fire-balls and aerolites. Now, by what theory can we account for this uniform return of meteors in each year? The theory generally accepted is, that there is a ring or annulus of small bodies revolving with planetary velocity about the sun; that the bodies in question are distributed very unevenly in the ring, there being a small section of the ring where the bodies are numerous, with a few stragglers scattered along the rest of its circuit; that the earth passes through the ring every year, and each year in a new place; and that it passes through that part of the ring in which the planets are most numerous once in about 33 years. When the bodies composing this assumed ring come within the limits of our atmosphere, they are rendered visible to us as shooting stars or fire-balls. Prof. Newton and Mr. Archibald Herschel have concluded independently that shooting stars commence at 70 miles and disappear at 50 miles above the surface of the earth. The velocity of their passage through the air is 38.7 miles, or nearly 40 miles per second. We have reason to expect a shower in 1866, since the cycle of 33.25 years is probably to be reckoned from some date between November in 1832 and in 1833.

THE FIXED STARS.

STRIKING as are the results obtained by spectrum analysis when applied to the sun, moon, and planets, they sink into insignificance when compared with the revelations afforded us of the constitution of those distant bodies the stars, and the light which is thus thrown upon their structure is conclusive as to their being of the same nature as our own sun; a result which analogy had previously indicated, but which had not been supported by any positive evidence. It might be supposed that their distance offered insuperable obstacles to such an inquiry, but spectrum analysis knows no such limits, and as long as we can obtain light of an incandescent substance in appreciable quantity, it matters not whether it exists within a few inches of the spectroscop, or at a distance of unnumbered millions of miles, the result being equally certain. In the spectra of all the brighter stars that have been examined, the dark lines appear to be as numerous and as fine as in the solar spectrum. No stars sufficiently bright to be observed are without lines, and star differs from star only in the arrangement of the lines, and consequently in the elementary substances present; but all the stars are constructed on one and the same plan. These spectrum observations on the stars contribute something towards an experimental basis, on which a conclusion, hitherto but a pure speculation, may rest, namely, that at least the brighter stars are, like our sun, upholding and energizing centres of systems of worlds adapted to be the abode of living beings.