

this, is the appearance of brilliant white spots at its poles, which have been conjectured with a great degree of probability, to be snow; as they disappear when they have been long exposed to the sun, and are greatest when just emerging from the long night of their polar winter. By watching the spots during a whole night, and on successive nights, it is found that Mars revolves round its axis in 24h. 39m. 21s from west to east.

We come now to a much more magnificent planet, Jupiter—the largest of them all, being in diameter no less than 87,000 miles, and in bulk exceeding that of the Earth nearly 1300 times. It is moreover dignified by the attendance of four moons, satellites, or secondary planets, as they are called, which constantly accompany and revolve about it, as the Moon does round the Earth, and in the same direction, forming with their principal or primary, a beautiful miniature system, entirely analogous to that greater one, of which their central body is itself a member, obeying the same laws, and exemplifying in the most striking and instructive manner, the prevalence of the gravitating power, as the ruling principle of their motions.

The disc of Jupiter is always observed to be crossed in one certain direction by dark bands or belts. These are, however, by no means alike at all times; they vary in breadth and in situation on the disc, (though never in their general direction); they have even been seen broken up, and distributed over the whole face of the planet; but this phenomenon is extremely rare. Branches running out from them, and sub-divisions, as well as evident dark spots, like strings of clouds, are by no means uncommon; and from these attentively, watched, it is concluded that this planet revolves in the surprisingly short period of 9h. 55m. 50s. on an axis perpendicular to the direction of the belts. Now, it is very remarkable, and forms a most satisfactory comment on the reasoning by which the spheroidal figure of the Earth has been deduced from its diurnal rotation, that the outline of Jupiter's disc is evidently not circular, but elliptic, being considerably flattened in the direction of its axis of rotation. This appearance is no optical illusion, but is authenticated by micrometrical measurements, which assign 107 to 100 for the proportion of the equatorial and polar diameters. And to confirm in the strongest manner the truth of those principles on which our former conclusions have been founded, and fully to authorise their extension to this remote system, it appears, on calculation, that this is really the degree of oblateness which corresponds, on those principles, to the dimensions of Jupiter, and to the time of his rotation.

The parallelism of the belts to the equator of Jupiter, their occasional variations, and the appearance of spots seen upon them, render it extremely probable, that they subsist in the atmosphere of the planet, forming tracts of comparatively clear sky, determined by currents analogous to our trade-winds, but of a much more steady and decided character, as might indeed be expected from the immense velocity of its rotation. That it is the comparatively darker body of the planet which appears in the belts, is evident from this, that they do

not come up in all their strength to the edge of the disc, but fade away gradually before they reach it.

A still more wonderful, and, as it may be termed, elaborately artificial mechanism, is displayed in Saturn, the next in order of remoteness to Jupiter, to which it is not much inferior in magnitude, being about 79,000 miles in diameter, nearly 1000 times exceeding the Earth in bulk. This stupendous globe, besides being attended by no less than seven satellites or moons, is surrounded by two broad, flat, extremely thin rings, concentric with the planet and with each other, both lying in one plane, and separated by a very narrow interval from each other throughout their whole circumference, as they are from the planet by a much wider. This is the most singular and astonishing object in the whole range of the planetary system, no other planet being found environed with so wonderful an appendage; and the planets which may belong to other systems, being placed beyond the reach of our observation, no idea can be formed of the peculiar apparatus with which any of them may be furnished. The outside diameter of the exterior ring is 204,000 miles; and consequently its circumference will measure 640,000 miles, or 80 times the diameter of our globe. Its breadth is 7,200 miles, or nearly the diameter of the Earth. Were 450 globes of the size of the Earth placed close to one another on a plane, this immense ring would enclose the whole of them together, with all the interstices, or open spaces, between the different globes. The outside diameter of the innermost ring, is 184,000 miles, and its breadth 20,000 miles. The dark space, or interval, between the two rings, is 2,800 miles. The breadth of both the rings, including the dark space between them, is 30,000 miles, which is equal to the distance of the innermost ring from the body of Saturn. When we view Saturn through a telescope, we always see the ring at an oblique angle, so that it appears of an oval form, the outward circular rim being projected into an ellipsis more or less oblong, according to the different degrees of obliquity at which it is viewed.

These rings cast a deep shadow upon the planet, which proves that they are not shining fluids, but composed of solid matter. They appear to be possessed of a higher reflective power than the surface of Saturn, as the light reflected by them is more brilliant than that of the planet. One obvious use of this double ring, is to reflect light upon the planet in the absence of the sun. What other purposes it may be intended to serve in the system of Saturn, is to us, at present, unknown. The rings of Saturn must present a magnificent spectacle from those regions of the planet which lie above their enlightened sides, as vast arches spanning the sky from horizon to horizon, and holding an invariable situation among the stars. On the other hand, in the regions beneath the dark side, a solar eclipse of fifteen years in duration, under their shadow, must afford (to our ideas) an inhospitable asylum to animated beings, ill compensated by the faint light of the satellites. But we shall do wrong to judge of the fitness or unfitness