

JUPITER.



PERSON having occasion to walk abroad on any of the fine, star-lit nights in which this season abounds, cannot fail to notice amid the brilliant galaxy of sparkling gems which dazzle the gloom-enshrouded eye of the observer, one which stands forth in the eastern sky as a prince among his fellows, which does not twinkle like the others, but shines with a broad, steady glare, surpassing all the rest in size and magnificence. But how few there are, who look upon this resplendent orb, that see in it anything more than a monster star; remarkable merely inasmuch as it outshines its neighbors; how few, who notice that its motion is different from that of the others, that it is a *wanderer* in the heavens, and follows its own simple course throughout the realms of space; how few, indeed, who know that they are gazing upon the greatest brother of their mother earth, Jupiter, the giant of the solar system! For several weeks now this planet has been an evening-star, and, while it yet offers such a fine opportunity of examining its appearance and phenomena, we should devote a little time to the consideration of this, the largest and most important of all the bodies which accompany us in circling round the sun.

Jupiter, though not so bright as Venus at her best, but not, like her, confined to the neighborhood of the sun, is the most beautiful object in the midnight sky, being about five times as bright as Sirius, the brightest of the fixed stars. It is the fifth in order from the sun, and by far the largest of the planets, surpassing both in mass and volume, all the others taken together. Its mean distance from the sun is 483 millions of miles, and the eccentricity of its orbit is one-twentieth. Its distance from the earth when at opposition is 390 millions, and when at conjunction, 576 millions of miles, and its orbit is inclined to the ecliptic $1^{\circ} 19'$. It revolves around the sun in the long period of 4.86 terrestrial years, sailing majestically through space at a velocity of about eight miles a second, all the while whirling round on its axis in about 9h. 55m., a rotation so rapid

that bodies on its equator would go round at the rate of 450 miles a minute, or 27 times as fast as those on the earth. Its equatorial diameter is about 88,200, and its polar 83,000 miles, or they are to one another as 17 to 16, thus giving the planet a distinctly oval shape, due to the great centrifugal force caused by its rapid rotation. Its diameter is about $\frac{1}{10}$, its surface $\frac{1}{100}$ and its volume $\frac{1}{1000}$, that of the sun, while these dimensions are respectively, 9,119 and 1,300 times those of the earth. Its mass is $\frac{1}{1048}$ that of the sun, and about 316 times that of the earth, so that its density is almost the same as that of the sun, that is 0.24, or nearly $\frac{1}{4}$ the density of the earth, or about $1\frac{1}{3}$ that of water. Its superficial gravity is about $2\frac{1}{2}$ times that on the earth, so that bodies of the same size would weigh $2\frac{1}{2}$ times as much on the surface of Jupiter as they would on the earth. As the plane of the planet's equator is inclined only about 3° to that of its orbit, there are no seasons such as we have, nor is there any difference in length between day and night, and since its distance from the sun is more than five times that of the earth, the intensity of the light and heat received by it must, as it is inversely as the square of the distance, be relatively less, or is only about $\frac{1}{27}$ of that received by the earth.

While to the naked eye Jupiter appears such a brilliant and beautiful object, viewed through a powerful telescope, he presents a truly magnificent appearance, and forms, as he swiftly whirls round beneath the observer's gaze, showing in succession the various details of his immense surface, a most interesting subject of study, and much the more interesting because, though farther away, his characteristic details are far more easily distinguished than those of Mars and other nearer bodies. In a large instrument his surface appears tinted with a variety of beautiful colours, the one predominating being a ruddy, salmon color, somewhat similar to the prevailing tint of Mars. The planet appears to be enveloped in an extremely dense atmosphere, filled with clouds and vapours continually varying in shape and colour, which render it very difficult to obtain any idea of its true condition and constitution, but its