parent diameter, which by no means alone determines the degree of brilliancy.* The eccentricity of the orbit of Venus expressed, as in all cases, in fractional parts of half the major axes, is only 0.00686182. The diameter of this planet is 6776 geographical miles; the mass $\frac{1}{401830}$, the material contents 0.957, and the density 0.94 in comparison to the Earth.

Of the transits of the two *inferior* planets first announced by Kepler after the appearance of his Rudolphine tables, that of Venus is of most importance for the theory of the whole planetary system, on account of the determination of the Sun's parallax, and the distance of the Earth from the Sun deduced from the latter. According to Encke's thorough investigation of the transit of Venus in 1769, the Sun's parallax is 8".57116. (Berliner Jahrbuch for 1852, p. 323.) A new examination of the Sun's parallax has been undertaken since 1849, by command of the government of the United States, at the suggestion of Professor Gerling of Marburg. The parallax is to be obtained by means of observations of Venus near the eastern and western stationary points, as well as by micrometer measurements of the differences in the right ascension and declination of well-determined fixed stars in very different latitudes and longitudes. (Schum., Astr. Nachr., No. 599, p. 363, and No. 613, p. 193.) The astronomical expedition, under the command of the learned Lieutenant Gilliss, has proceeded to Santiago in Chili.

The rotation of Venus was long subject to great doubt. Dominique Cassini, 1669, and Jacques Cassini, 1732, found

* "That point of the orbit of Venus in which she can appear to us with the brightest light, so that she may be seen at noon even with the naked eye, lies between the inferior conjunction and the greatest digression, near the latter, and near the distance of 40° from the Sun, or from the place of the inferior conjunction. On the average, Venus appears with the finest light when distant 40° east or west from the Sun, in which case her apparent diameter (which in the inferior conjunction can increase to 66") is only 40", and the greatest breadth of her illuminated phase measures scarcely 10". The degree of proximity to the Earth then gives the small luminous crescent such an intense light, that it throws shadows in the absence of the Sun."-Littrow, Theoretische Astronomie, 1834, th. ii., p. 68. Whether Copernicus predicted the ne cessity of a future discovery of the phases of Venus, as is asserted in Smith's Optics, sec. 1050, and repeatedly in many other works, has recently become altogether doubtful, from Professor de Morgan's strict examination of the work De Revolutionibus, as it has come down to us. -See the letter from Adams to the Rev. R. Main, on the 7th of September, 1846, in the Report of the Royal Astronomical Society, vol. vii., No. 9, p. 142. (Compare also Cosmos, vol. ii., p. 325.)