the mean distance from the Earth, 9″·9. His *mass*, which was determined as $\frac{1}{17918}$ from the first observations of the satellites, is, according to Lamont's observations, only $\frac{1}{24605}$; consequently his *density* would be between those of Jupiter and Saturn.* A flattening of Uranus was already conjectured by Herschel from his observations with magnifying powers of from 800 to 2400. According to Mädler's measurements in 1842 and 1843, it would appear to fall between $\frac{1}{10\cdot7}$ and $\frac{1}{9\cdot9}$.† The original supposition that Uranus had two rings was found to be an optical illusion by the discoverer himself, in all cases so cautious and persevering in confirming his discoveries.

The Satellites of Uranus.

"Uranus," says Sir John Herschel, "is attended by satellites—four, at least, probably five or six." They present a great and hitherto unparalleled peculiarity, viz., that while all satellites (those of the Earth, of Jupiter, of Saturn), as well as all the principal planets, move from west to east, and with the exception of a few asteroids, in orbits not much inclined toward the ecliptic, the satellites of Uranus move from *east* to west in orbits which are nearly circular, and form an angle of 78° 58′ with the ecliptic—very nearly perpendicular to it. In the case of the satellites of Uranus, as well as those of Saturn, the *arrangement* and nomenclature, according to their *distances* from the primary, are to be distinguished from the *arrangement* according to *the epoch of discovery*. According to a private communication from Sir John Herschel (November 8th, 1851), Mr. Lassell has distinctly observed on the 24th, 28th, and 30th of October, and 2d of November of the above year, two satellites of Uranus which appear to be situated still nearer to the primary than the first satellite observed by Sir William Herschel, to which he ascribed a period of revolution of about 5 days and 21 hours, but which was not recognized. The periods of revolution of the two satellites now seen by Lassell were near to 4 and $2\frac{1}{2}$ days. Of the satellites of Uranus, the second and fourth were first discovered by William Herschel in 1787, then the first and fifth in 1790, and, finally, the sixth and third in 1794. During the fifty-six years which have elapsed since the last discovery of a Uranus satellite (the third), the

* *Cosmos*, vol. iv., p. 119.

† Mädler, in Schumacher's *Astr. Nachr.*, No. 493. (With regard to the flattening of Uranus, compare Arago, *Annuaire* for 1842, p. 577–579.)