

17 of his Catalogue) when he was making an observation of Bode's Comet in 1779. Sir John Herschel was the first who delineated and accurately determined its position (R. Asc.  $19^{\circ} 52'$ ; N. P. Decl.  $67^{\circ} 43'$ ). This nebula, which is not of an irregular form, first received the name of the "Dumb-bell" on the application of a reflector with an eighteen-inch aperture. (*Philos. Transact.* for 1833, No. 2060, fig. 26; *Outlines*, § 881.) This similarity to a dumb-bell entirely disappeared in Lord Rosse's reflector of three-feet aperture.\* (See his recent important delineation, *Philos. Transact.* for 1850, pl. xxxviii., fig. 17.) It was also successfully resolved into numerous stars, which, however, continued mixed with nebulous matter.

The spiral nebula in the more northern of the Canes Venatici was discovered by Messier on the 13th of October, 1773 (on the occasion of his discovery of the Comet), in the left ear of Asterion, very near  $\eta$  (Benetnasch) in the tail of the Great Bear (No. 51 of Messier, and No. 1622 of the great Catalogue published in the *Philos. Transact.* for 1833, p. 496, fig. 25). This is one of the most remarkable phenomena in the firmament, both on account of its singular configuration, and of the unexpected transformative effect produced on its appearance by Lord Rosse's six-feet speculum. In Sir John Herschel's eighteen-inch reflector, the nebula presented the appearance of a spherical body, surrounded by a far-distant ring, so that it exhibited, as it were, an image of our starry stratum with its galactic ring.† But in the spring of 1845, the large Parsonstown telescope transformed the whole into a helicine twisted coil—a luminous spiral, whose convolutions appear unequal, and are prolonged at both extremities, both in the center and outward, into dense, granular, globular nodules. Dr. Nichol made a drawing of this object, which was laid before the meeting of the British Association at Cambridge in 1845 by Lord Rosse.‡ But the most per-

\* Compare pl. ii., fig. 2, with pl. v. in *Thoughts on some important Points relating to the System of the World*, 1846 (by Dr. Nichol, Professor of Astronomy at Glasgow), p. 22. "Lord Rosse," says Sir John Herschel, *Outlines*, p. 607, "describes and figures it as resolved into numerous stars with much intermixed nebula."

† *Cosmos*, vol. i., p. 150, and note, where the nebula, No. 1622, is termed a "brother-system."

‡ *Report of the Fifteenth Meeting of the British Association for the Advancement of Science, Notices*, p. 4; Nichol, *Thoughts*, p. 23. (Compare pl. ii., fig. 1, with pl. vi.) In the *Outlines*, § 882, we find the following passage: "The whole, if not clearly resolved into stars, has a resolvable character, which evidently indicates its composition."