

of plane spinous or denticulate surfaces, and on this account W. Smith, acting on the suggestion of Thwaites,¹ separated from the genus *Melosira* those forms which are connected in the manner last named, grouping them into the genus *Orthosira*. This scheme has, however, not been generally adopted, the character in question not being regarded as of generic significance, nor can it ever be defended unless the genus *Melosira* should ultimately become so rich in species that its separation into two parts should become necessary for the facilitating of systematic work.

Melosira sol, Ehrenb., var. nov. (Plate X. fig. 3, Plate XVII. fig. 13, and Plate XXI. fig. 7.)

Among the *Melosiræ* contained in the Challenger collection, the present forms, which were collected in the neighbourhood of Kerguelen Island, are of great elegance. The two complete frustules, which are united to one another by their valval sides (Plate XXI. fig. 7), although having very close affinities to *Melosira sol*, Ehrenb.,² cannot be regarded as identical with the latter. The description given by Pritchard³ of *Melosira sol*, as determined by Ehrenberg, corresponds with the characters of the variety now in question with the exception of the fact that, in the latter, one additional feature has to be added—namely, the circumstance that between the radiating lines or plicæ, which run centripetally from the periphery and quickly disappear, more minute radial lines occur and also soon vanish. Although this is not clearly indicated on Plate XXI. fig. 7, owing to the insufficiency of the magnifying power employed, it is shown in Plate X. fig. 3 under a power of 800 diameters.

With the comparatively imperfect instruments used by Ehrenberg, it is not surprising that these fine lines escaped his observation.

Melosira costata, Grev., var. nov. (Plate XXIII. fig. 5.)

Among the pelagic organisms collected in the Bay of Yedo, the very elegant series of frustules represented in the present figure were not unfrequently met with. That these frustules belong to the genus *Melosira* cannot be questioned, and the presence of the longitudinally disposed costules, which are contiguous to the surface of junction of two adjoining valves, seems to point to their identity with *Melosira costata*, Grev. On comparing, however, Greville's figures⁴ with the present one, the following differences may be noted:—(1.) The smooth areas around the different frustules of *Melosira costata* are almost equal, and in many more restricted than in the present form, where they are much larger and unequal; and (2.) in the typical Grevillean species these smooth areas

¹ Thwaites, *Ann. Nat. Hist.*, March 1848.

² = *Gallionella sol*, Ehrenberg, *Mikrogeol.*, pl. xxxv. A. 22, fig. 12. This species rivals *Melosira arenaria*, Moore, in size, Ralfs, *Ann. Nat. Hist.*, vol. xii. pl. ix. fig. 4.

³ Pritchard, *op. cit.*, p. 819. ⁴ *Trans. Micr. Soc. Lond.*, n. s., vol. xiv. p. 77, pl. viii. figs. 3–6, 1866.