Owing to the great rarity of the *Rutilariæ*, the present forms have not been observed from the zonal aspects; and, with the exception of *Rutilaria epsilon*, Grev.[1]—whose convolute nodule recalls the shape of the Greek letter from which its specific name has been derived—it has been found impossible to determine the form of the nodule.

Hitherto no living specimens belonging to this very interesting genus have been recorded, and it is therefore of the highest importance that such specimens should have been procured during the Challenger Expedition. It is true, indeed, that Professor Cleve, of Upsala, records in his Memoir[2] on some New and Little Known Diatoms, Plate iv. fig. 57, a, b, under the name of *Rutilaria recens*, Cleve, two curious lanceolate forms which were brought home by the "Eugenie" Expedition[3] from the Galapagos Islands. These, however, have not the slightest trace of the convolute central nodule—a circumstance which should serve to exclude the organisms in question from the genus to which they have been ascribed by him—unless, perchance, it can be proved that one of the valves is normally devoid of such a nodule, as happens in *Cocconeis*. But this peculiarity has not hitherto been substantiated, and it seems an improbable one in the case of a genus whose frustules are disposed in series.

Of the specimens collected by the Challenger, one was obtained in a surface gathering, and so must have been in a condition of active vitality.

Rutilaria tulkii, n. sp. (Plate XVIII. fig. 11.)

Valvis elliptico-lanceolatis, apicibus productis, rotundatis et in partem elevatiorem exeuntibus; denticulis rariusculis marginalibus circumductis, et aliis medio irregulariter distributis; striis tenuissimis medio radiantibus, ceterum decussatis, nodulo centrali convoluto. Ad Samboangan ex insulis Philippinis.

This organism was found in a surface collection, in which hardly anything but small animals occurred. After washing these with distilled water, a preparation composed chiefly of spicula was obtained, but a more minute examination revealed the presence of the two small elegant frustules here figured, which were similar to one another, and arranged in a cruciform manner. I at first believed that this peculiar arrangement corresponded to the intersection of the axes of the figures, as occurs in some other genera, such as *Campylodiscus*, but after submitting this view to my friend, Mr Tulk, I became convinced that the frustules are enabled to have this disposition because of the peculiar form of the central nodules which form the real points of union between them.

A similar arrangement was also observed by Dr Gray, who had artificially caused two Rutilarian frustules to move from their normal parallel position.

Rutilaria tulkii possesses a small but elegant elliptico-lanceolate form, having its two

[1] *Quart. Journ. Micr. Sci.*, n. s., vol. iii. p. 228, pl. ix. fig. 1.
[2] *Kongl. Svenska Vetensk.-Akad. Handl.*, Band xviii. No. 5, Stockholm, 1881.
[3] The Expedition of the Royal Swedish Frigate "Eugenie" took place during the years 1851–53.