

While the general characters of the stem are identical in *Rhizocrinus* and *Bathycrinus*, there is a good deal of variation in its details, and especially in the mode of growth.

In all cases the new joints are added at the top of the stem, immediately beneath the cup; but the rate at which they increase in length is very different in the different species. It appears from Sars's figures,<sup>1</sup> and from my own observations, that the production of new joints in the stem of *Rhizocrinus lofotensis* is slow compared to their subsequent increase in length. For there are very rarely more than three joints beneath the cup which are wider than high, and even these have an appreciable thickness (Pl. IX. figs. 1, 2; Pl. X. fig. 1). Sars remarks of the uppermost one that it is "annulaire et a 2 ou 3 et même souvent 5 ou 6 fois plus de largeur que de hauteur;" while there are usually not more than eight cylindrical joints beneath it. Below this limit the joints have the well-known dice-box shape, with the characteristic terminal faces, the peculiarities of which begin to appear very few joints below the cup.

Most individuals of *Rhizocrinus rawsoni* seem to be generally similar to *Rhizocrinus lofotensis* in these characters (Pl. IX. fig. 3; Pl. LIII. figs. 7, 8). But in one example I found five joints beneath the cup which were wider than high. The second and third are mere circular disks with perfectly plain faces like those of the fourth (Pl. X. fig. 10); and the faces of the newly formed joints of *Rhizocrinus lofotensis* which are figured by Sars<sup>2</sup> are of the same nature. But the uppermost joint of all is of a different character altogether (Pl. X. fig. 9). It has a pentagonal outline, and its surface, which rises gradually from the circumference towards the centre, is divided by five radiating ridges into an equal number of trapezoidal fossæ that receive the lower ends of the elongated basals (Pl. X. figs. 3, 5). Here, therefore, we find the top stem-joint presenting the same characters that it does in *Apiocrinus*<sup>3</sup> and *Millericrinus*,<sup>4</sup> and entering to some extent into the composition of the cup, while the new joints are probably intercalated below it. Quenstedt<sup>5</sup> speaks of this uppermost stem-joint in the *Apiocrinidæ* indifferently as "Endstück, Endsäulenglied, or Fünfrippenglied." De Loriol<sup>6</sup> has named it "article basal;" while Zittel<sup>7</sup> speaks of it as the "Centro-dorsal," and remarks "Dasselbe scheint, wie aus der Andeutung von Nähten hervorgeht, aus 5 ursprünglich getrennten Stücken entstanden zu sein und entspricht wahrscheinlich den 5 Infrabasalplättchen bei *Encrinus*." It is perhaps a little inexpedient to employ the term "centro-dorsal" for a joint which bears no cirri, as its similarly named homologue does in the *Comatulæ*.

<sup>1</sup> Mémoires pour servir à la connaissance des Crinoïdes vivants. 1. Du *Rhizocrinus lofotensis*, tab. i., ii.

<sup>2</sup> *Op. cit.*, tab. ii., figs. 20-22.

<sup>3</sup> D'Orbigny, Histoire Naturelle, générale et particulière des Crinoïdes vivans et fossiles., pl. ii. fig. 3, pl. iii. fig. 4, pl. v. fig. 4.

<sup>4</sup> *Ibid.*, pl. xiv. figs. 15, 23, 24; and *Quart. Journ. Geol. Soc.*, vol. xxxviii. p. 33, pl. i.

<sup>5</sup> *Encriniden*, pp. 314, 315.

<sup>6</sup> *Swiss Crinoids*, p. 4; *Paléont. Franç.*, *loc. cit.*, p. 19.

<sup>7</sup> *Handbuch der Palæontologie. Palæozoologie*, Bd. i., pp. 388-390.