

IX.—ON THE RELATION BETWEEN THE RECENT AND THE
FOSSIL NEOCRINOIDS.

Our knowledge of the Crinoids of the Secondary rocks is largely due to the labours of d'Orbigny, Quenstedt, and de Loriol, the last of whom, having completed an elaborate Monograph on the Fossil Crinoids of Switzerland, is now publishing a still more extensive one devoted to those occurring in the Jurassic rocks of France.

He groups the Neocrinoids into ten families—

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| 1. Marsupitidæ. | | 6. Apiocrinidæ. |
| 2. Uintacrinidæ. | | 7. Bourgueticrinidæ. |
| 3. Encrinidæ. | | 8. Holopodidæ. |
| 4. Eugeniocrinidæ. | | 9. Pentacrinidæ. |
| 5. Plicatocrinidæ. | | 10. Comatulidæ. |

The first two of these, each based on a single genus, are placed provisionally among the Neocrinoids by de Loriol, who has transferred them from the Palæocrinoids (= *Tessellata*) with which they were ranked by Zittel. In this step, and also in the establishment of the new family Bourgueticrinidæ for the reception of *Bourgueticrinus*, *Rhizocrinus*, and allied genera, I entirely agree with de Loriol; but I am not disposed to follow him and Zittel in the association of *Hyocrinus* and *Plicatocrinus* into one family, and prefer to consider the former genus as the type of a new family "Hyocrinidæ." It has not yet been discovered in the fossil state; and of the ten families enumerated by de Loriol, the first six in the above list died out at or before the close of the Secondary period; while all the four others have living representatives.

Little need be said about the extinct Neocrinoids, except that the association of the Cretaceous *Marsupites* and *Uintacrinus* with the Palæocrinoids, the so-called *Tessellata*, appears to me to be based on a misconception; and that *Encrinus*, as might be expected from its stratigraphical position, finds its nearest allies in genera of the Carboniferous and not of the Jurassic epoch, as will be pointed out later.

The characters of *Plicatocrinus* are entirely different from those of any recent Crinoid, though its calyx has a singular resemblance to those of young Pentacrinidæ. The Eugeniocrinidæ are a less aberrant group; but though the symmetrical forms of *Eugeniocrinus* appear to have a considerable resemblance to *Rhizocrinus* and *Bathycrinus* in the structure of the lower part of the cup and in the distribution of the canal system, yet such types as *Phyllocrinus* and the distorted *Torynocrinus* are altogether different from any recent Crinoid.

The Apiocrinidæ, represented by some doubtful species in the Lias, flourished exten-