

Upon examining the two collections of the "Blake" and the Challenger, I found that they contained some half dozen species of which no figures had been drawn at all; so that several additional plates would be necessary in order to illustrate them adequately; while diagnoses were wanted of nearly thirty specific types, most of them being undescribed, and some representing new genera.

The preliminary study of these various forms in their zoological aspect alone occupied a good deal of time; but having a strong conviction that they could only be properly understood by the help of a detailed knowledge of their fossil representatives, I was led to take up the study of the fossil Crinoids, more especially those of the Secondary and Tertiary periods. This naturally brought up the question of the relation between the Neocrinoids and the Palæocrinoids, which had already been occupying my thoughts for some time past.

Besides these palæontological questions, many others presented themselves of a morphological nature; and I have endeavoured to obtain such a knowledge of the morphology of recent Crinoids as would be of substantial aid in the interpretation of the many puzzling forms among their fossil representatives, and also bring out their relation to the other Echinodermata. Many others have been at work upon the same lines, with varying opportunities and different degrees of success. Very much, however, still remains to be done, more especially with regard to the finer details of microscopic anatomy, which can only be thoroughly investigated in individuals specially prepared for the purpose when quite fresh. In this way alone is it possible to obtain series of sections of the requisite thinness and perfection of histological detail; and I would therefore ask those who may be disposed to criticise my figures to remember that the preparations were mostly made before the introduction of the Jung or Caldwell microtomes, from material which had been in spirit for periods varying from two to fifteen years.

Several morphological and one or two systematic works upon the Crinoids have appeared during the passage of this Report through the press; and I have therefore added an Appendix which contains a series of notes discussing the various questions to which those works relate. Reference is given to these notes in the text, so that this first part of the Crinoid Report may be regarded as presenting an epitome of our knowledge of Crinoid structure up to the end of the present year.

The second part of the Report, containing descriptions of the Comatulæ collected by the Challenger and "Porcupine," will be published as soon as ever the necessary plates can be drawn, and the manuscript revised, parts of the latter being now more than five years old.

Of the sixty-nine plates accompanying Part I., twenty-eight were drawn at Edinburgh under the direction of Sir Wyville Thomson. Five others illustrating the structure of *Pentacrinus wyville-thomsoni* were prepared by Mr. George West to accompany a memoir upon this type, commenced some years ago by my father, who has