anatomy of the Order would have delayed this Report far beyond the time allotted to me, and it was taken for granted that this part of the subject would have to be undertaken *de novo* for the whole group. The comparisons which have been attempted here are rarely made from the study of monographs alone; they are based on an extensive acquaintance, not only with the recent species but also with the fossil. The number of the latter, although many times greater than that of the recent species, is yet by no means so great[1] as to make an accurate knowledge of all the principal species a difficult task. As it has been my good fortune to examine for myself all but a few of the deep-sea species collected thus far, this Report has been prepared under the best possible circumstances, with the aid of the large collections both of recent and fossil species in the Museum of Comparative Zoölogy at Cambridge, Mass.

Having described the first important collection of deep-sea Echinids made, that of Count Pourtalès, it has been for me a most gratifying task to work up the report of the magnificent collection of the Challenger, and to have the opportunity, thanks to the generous invitation of Sir Wyville Thomson, of going over the whole group of Echinids again with so much new and important material at my command, which could not fail to develop many novel and unexpected problems relating to the past and present history of Sea-urchins.

Classification.

With regard to the general classification of the Echinoidea; the additional light obtained from the deep-sea genera regarding the systematic affinities of many fossil forms would lead us to modify somewhat the systematic arrangements hitherto proposed. I have already given my reasons for not adopting the artificial classification in vogue; the same objections which apply to the system adopted by Wright, apply with equal force to those of de Loriol and of Zittel, wherever they are based upon characters of such uncertain value as the presence or absence of teeth, or the presence or absence of actinal cuts. We, of course, admit the ease of application of these characters as keys for the identification of fossils, and also the difficulty we find in bringing fossil species within the limits of the smaller subdivisions adopted among the recent Echinids, from the impossibility of tracing characters generally imperfectly retained. Several of the sub-families readily recognised among the recent Echinids are not generally adopted by palæontologists, and they have, perhaps, in other directions divided the group into smaller subdivisions, based on structural features which the study of recent types shows to have but little value.

I would in the first place regard the Palæechinoidea as one of the sub-orders of Echinoidea, the others being the Desmosticha, the Clypeastridæ, and the Petalosticha.

[1] According to Zittel the number of fossil species does not exceed 2000.