

This is not the place to answer his objections; I may only remark, that he has not taken into account the main intention of my classificatory essay, which was to prove analytically the theory of descent, and to prove that so-called "bonæ species" do not exist in nature, that they are all originally "bad species." I have noted this principal intention in the preface to my Monograph of Calcispongiæ (pp. xi, xii), and explained it in the second part of the fourth chapter (Phylogeny, pp. 340-360). A natural consequence of my phylogenetic conviction is the opinion that "natural species" do not exist, and therefore the 21 genera and 111 species which I have distinguished in my "natural system" can possess only a relative value. They are, indeed, more natural than those of the older artificial system. Poléjaeff, always looking for absolute distinction, must, of course, reject them. But his own distinctions are also more or less artificial, and exposed to the same general objections as all others.

Curiously enough, Poléjaeff says in the Narrative,<sup>1</sup> that "the whole Report on the Keratosa is almost exclusively of a critical character." My own view, based upon opposite principles, is that his Reports are more dogmatical than critical. For example, I must regard it as perfectly dogmatical when Poléjaeff unites all the Keratosa in a single family and all the Asconidæ in a single genus. What advantage is got by this summary blending? It would be scarcely less dogmatical to unite all the Keratosa in a single genus, or all the sponges in a single family. Poléjaeff strongly blames the *circulus vitrosus* which most authors follow in distinguishing genera and families among the sponges.<sup>2</sup> In my own opinion, his whole systematic work turns in a large *circulus vitrosus*. It is based upon dogmatic convictions which are quite incompatible with our modern phylogenetical views and with the first principles of the theory of descent.

#### RELATION OF THE KERATOSA TO THE OTHER SPONGES.

The new forms of so-called Keratosa (or Ceratina) which are described in this Report, and which inhabit the abyssal regions of the deep sea, seem to throw a new light on this remarkable group of sponges, and to modify somewhat our views on their relations to the other Porifera. The general opinion of most modern spongiologists (maintained by F. E. Schulze, Lendenfeld, Vosmaer, Sollas, and others) is, that the horny sponges or Keratosa have descended from Silicosa, or from sponges which possessed siliceous spicules. The uninterrupted chain which connects certain Keratosa with certain Silicosa is the mainstay of this opinion. I must confess that this phylogenetical hypothesis, though based on many acceptable arguments, seems to me by no means to be decidedly demonstrated. The new Keratosa here described present several great difficulties to its acceptance. It seems to me very improbable that all these characteristic horny sponges of the deep sea (and especially the cannocœlous Ammoconidæ) are degenerate Silicosa

<sup>1</sup> *Loc. cit.*, p. 645.

<sup>2</sup> *Zool. Chall. Exp.*, pt. xxxi. p. 83.