

structure,—they appear to be of a more trustworthy morphological character. The function of the skeleton is to support the soft parts. The heterogeneous and homogeneous skeletal fibres are equally fit for this function; and when once a sponge has adopted the heterogeneous fibres, it would but conserve them. One might logically compare the heterogeneous and homogeneous skeletal fibres with calcareous and siliceous skeletal spicules, these latter propping the sponge-sarcode equally well in both cases; and since it is necessary to separate systematically the *Calcarea* and *Silicea*, it must be equally necessary to separate the *Ceratina* and the *Psammonemata*.

To sum up, the procedure of the above-mentioned systematists may be regarded as very logical. Yet each question admits of numerous answers equally logical and undeniable; and it is not to be forgotten that what we think to-day to be thoroughly logical, we may perhaps regard to-morrow as quite impossible, that the really logical is that which alone corresponds with the reality. The ascribing of such systematic importance to the properties of the skeleton in question cannot be reconciled with the reality, and in no case can these properties serve as the basis for the primary subdivision of the group *Keratosa*. Such a subdivision would express that the *Keratosa* with homogeneous skeletal fibres form one phylogenetic branch of the group, the *Keratosa* with heterogeneous fibres another, phylogenetically equivalent to the first, the intermediate connecting links having died out. This, however, is not the case, the differences in the structure of horny fibres, as already pointed out by Vosmaer, being but of a quantitative nature. There are amongst the *Keratosa*, forms, the horny envelope of whose heterogeneous skeletal fibres is very thin (*Aplysina*, *Aplysilla*, *Darwinella*), so that the pith-substance forms the main part of the fibre; there are again other forms (*Verongia*, *Luffaria*), the horny walls of whose fibres are far thicker, and, at least in some representatives of the genus *Luffaria*, there are to be found amongst fine fibres, fibres quite similar to those of *Euspongia*, or *Spongelia*, viz., fibres apparently entirely devoid of any central differentiation (Pl. IX. fig. 6). I say apparently, for, thanks to F. E. Schulze, we know that each normal horny fibre does possess what he calls an "Achsenstrang." He has been able to discern it in the fibres of *Euspongia*¹ and *Spongelia*,² and that certain homogeneous fibres show no differentiation, even under high microscopic power, seems to be due to the fact that, hand in hand with a more voluminous development of the pith-substance, there is a variation in its chemical and optical properties. In the fibre of an *Aplysina* or *Aplysilla* the core and the surrounding horny laminæ can be readily distinguished under very low magnifying power, and the designation "hollow-fibred," which has been adopted by many spongiologists with respect to forms like *Aplysilla* or *Verongia*, owes its existence to the fact that even when simply dried out, the skeletal fibres of the above forms show no more trace of the pith-substance.

¹ *Zeitschr. f. wiss. Zool.*, Bd. xxxii. p. 633.

² *Ibid.*, pl. vi. figs. 6 and 7.