teristic that one can hardly find a more striking proof of close relationship. Of less importance, though in detail often not without striking peculiarities, are the characters which distinguish the four living families of Scopularia. Thus, for example, the family of Melittionidæ, though including only the single genus *Aphrocallistes*, with a few species, is so sharply defined and removed from the other families by the hexagonal, prismatic, honeycomb-like radial perforations of its flat dictyonal framework, that one must assume a long, independent, ancestral series, that is to say, a somewhat early separation of the twig from the common branch of the Scopularia. The characters of the primitive portion of this branch appear to me to be represented in their least modified form by the family of the Euretidæ, where the structure is comparatively simple and slightly differentiated, especially in regard to the afferent and efferent canals penetrating the body-wall. For while in the Euretidæ the afferent and efferent canals, which traverse the thin wall of the tubes forming the entire sponge, are quite short and usually sack-shaped, of simple uncharacteristic form, the efferent canals of the Melittionidæ are straight, hexagonal prisms, those of the Coscinoporidæ straight, narrow, and usually long, alternating funnels penetrating the body-wall at right angles, and those of the Tretodictyidæ, finally, are of irregular course. And as to the other Hexasterida which contain no uncinates, the family of the Mæandrospongidæ, which flourished in the Cretaceous period, is distinguished by the structure of the body, which consists of a system of anastomosing, meandering, thin-walled tubes, with an interjacent system of anastomosing canals.

But while these Mæandrospongidæ have long since become true Dictyonina, the other families of Hexasterophora, without uncinates, have either entirely preserved the Lyssacine character, or they nearly approach the Dictyonine type by the more or less marked soldering of the larger spicules into a connected framework, which develops with increasing age. Of the three families—Euplectellidæ, Asconematidæ, and Rossellidæ, the first has a markedly separate position, due to the hexradiate character of the spicules supporting the skin (hypodermalia), while the others exhibit only pentact hypodermalia, with an internal radial ray. While in the Asconematidæ autodermal pinuli are also developed within the skin, giving to this Hexasterid family a very peculiar character somewhat resembling that of the Hyalonematidæ, in the Rossellidæ such autodermalia, with a freely projecting fir-tree-like ray, do not occur. It is difficult, if not indeed impossible, to determine, with any certainty, the relationship of these three allied families. It is obvious that the Euplectellidæ, both in their relatively simple, saccular or tubular form, and also in their hexradiate dermal spicules, have retained primitive characters, so that one need not wonder that very simple related forms are found at a comparatively early period. On the other hand, both in the parenchyma of several species, such as *Dictyocalyx gracilis*, and also in the extremities of the dermal projections of many genera, *e.g.*, *Euplectella*, *Tægeria*, *Walteria*, &c.,