Family 4. MELLITIONIDÆ, Zittel.

Sponge body branched, spherical or flat. Body-wall completely perforated by numerous tubular water canals, and thus divided into honeycomb-like cells. Skeletal spicules with thick nodes of intersection. Surface (naked or) covered by a delicate, meshed or porous, siliceous skin, which also covers the openings of the canals. Root tuft absent.

Examples.—The genus *Aphrocallistes*, Gray, which is known both in the living and fossil form, the living genus (?) *Fieldingia*, Saville Kent, and the fossil genus *Stauronema*, Sollas.

Family 5. VENTRICULITIDÆ, Zittel.

Sponge body simple or polyzoic, beaker-, funnel-, or top-like, cylindrical or branched. Wall irregularly folded. Lattice framework with octahedral perforated nodes of intersection. Canal system usually well developed. Radial canals blind. Both surfaces with ostia or longitudinal furrows. Dermal layer seldom absent, and usually formed by thickening of the outer skeletal layer. Roots consisting of prolonged siliceous fibres united by transverse bridges and without axial canals.

Examples.—*Ventriculites* and other fossil genera.

Family 6. STAURODERMIDÆ, Zittel.

Sponge body top- or funnel-like, seldom branched. Lattice skeleton more or less regular. Intersection nodes thick or octahedral, perforated. The outer, or both surfaces of the wall provided with stellate spicules, which differ in form from those of the rest of the skeleton, and are either but loosely cemented to one another, or lie embedded in a continuous siliceous skin.

Examples.—*Stauroderma* and other fossil genera.

Family 7. MÆANDROSPONGIDÆ, Zittel.

Sponge body consisting of intricately labyrinthine and anastomosing thin-walled tubes or foliæ. Canal system absent or scarcely developed. Intercanalicular system always present. Dermal layer absent or represented by a continuous siliceous superficial skin.

Examples.—Besides *Cystispongia* and other fossil genera, the living genera *Dactylocalyx*, Stuchbury, *Periphragella*, Marshall, and *Myliusia*, Gray (*pro parte*).

Family 8. CALLODICTYONIDÆ, Zittel.

Sponge body beaker-like. Wall consisting of a regular wide-meshed lattice-like framework with octahedral intersection nodes; canal system absent or confined to the sometimes very thick dermal layer of the lattice-like skeleton.

Examples.—*Callodictyon*, Zittel, and other fossil genera.