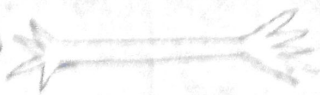



The Sigmæ which are spirally twisted are known as Sigmæ. Microscleres spicules with small spines are known as Stictotum which are distinguishable into.

(I) Spiraster (spirally twisted) 

(II) Rod shaped 

(III) Plectaster → there are few spines covering from very small axis.

(IV) Amphister → whose both ends are spiny

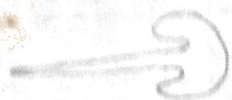
(V) Tetragon → these are spicules with four rays radiating from one point. With the gradual loss of rays, these spicules may become three rayed, two rayed or even one rayed. In the last case it may be distinguished from the axial thread of the last rays.

Tetragon spicules can be distinguished into following subtypes.

(1) Calothrope → All the four rays are more or less equal but generally one of the rays is larger and known as rhabdome.



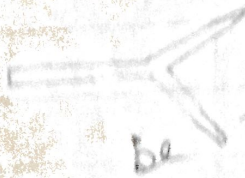
(2) Triacene → when rhabdome is much longer and the remaining three rays are quite small, the



later are like a crown on one end of the rhabdome.

The three rays forming the crown are called clades. Such a spicule is known as Triacene.

(3) Diacene → when one of the three rays forming the cladome is lost it is known as diacene. Diacene



be

may be of different forms for example there may be formed some disc like structure at either end. Such spicules are known as Amphidisc.



(4) Triradial: → This is also a type of hexaxon spicules from which the cladome has been lost leaving only the cladome containing three rays.

③ Triaxon spicules: → These are six rayed spicules formed on three axis each crossing one another at right angles. These are siliceous in nature and are formed only in the Hexactinellida. The typical triaxon may undergo various modifications by loss of rays, branching or curving of rays etc. They are of following sub-types.

① Pinnula → one ray elongated and curved with spines.

② Pentact → with the loss of one ray the spicules like a crown of four rays at the top of long basal ray.

③ Tetract: → It is formed by the loss of one entire axis. All the four rays are with same plane.

④ Triact → with three rays only.

⑤ Diactis: → these have only two rays.

⑥ Monactis: → there is only one ray but remaining of all other rays are present.

④ Polyaxon: → These are spicules in which several equal ^{rays} radiate from a central point and these are most common as microscleres and also known as Asters. They have following sub types.

① with small centers

① Oxyaster → these are with pointed rays.



② Strongylaster: → ends are round.



③ Tylaster: → with knobbed rays.

③ with large centre: →

④ Spheraster: → spicules with definite rays.





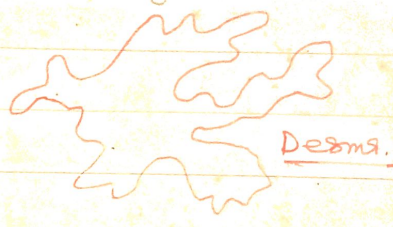
② Steraster → The rays are in the form of small projection coming out from a spherical surface.

③ Spheres: → these ^{are} rounded body with concentric growth around the centre. These are very uncommon spicules and may be of following types.

① Desma: → These are a class of megascleres. They may consist of monaxon, tetraaxon or triaxial spicules known as crepis, on which a layer of silica is deposited. The desmas are named according to the shape of crepis.

They may be


- ① Monocrepid
- ② Tricrepid
- ③ Tetracrepid



They usually form a network which is known as ^{lithified} skeleton.

② Spongin fibres: → The spongin skeleton consists of a network of spongin fibres arranged in a branching manner in the body of the sponges. This is a type of protein secreted by a group of mesenchymal cells. Skeleton of the sponges of the class Keratosa is entirely made of spongin fibres. In the monaxonida sponges the siliceous spicules are bound to galls by the spongin fibres.




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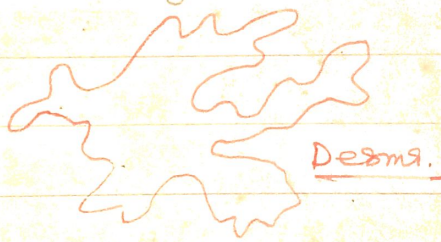
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→ ←

"Importance of skeleton in classification of Porifera"

The classification of sponges presents a great difficulty and no one scheme has been unanimously accepted by specialist on sponges. The classification is based chiefly on the types of skeleton. The following arrangement of skeleton in the classification is based on the publications of TOPSENT, H.V. WILSON and DE LAVBENFELDS.

Class I Calcareous :->

The sponges in the class were separated from others on the basis of their skeleton, composed of separate calcareous spicules - which are monaxon, triaxon, or tetraaxon with one, three or four rays.

Megascleres and microscleres are indivisible.

Order I - Homocoela :-> Generally with monaxon spicules - in Ascanoid sponges.

Order II - Heterocoela :-> usually with Triaxon and Tetraaxon spicules (calcareous) in Syconoid & Leuconoid sponges.

Class II - Hexactinella :->

This class has the skeleton composed of triaxon-hexactinal silicious spicules or some modifications of the triaxon forms - separate or united into networks. Sponges of this class are known as "Glass-sponges".

Order I - Hexastereophora :-> Hexasters spicules are always present in the body of sponges of this order.

Order II :-> Amphidiscophora :->

NB. hexasters present. Amphidisc

Form & of spicules are always present.

Class III - Demospongiae :->

The skeleton is composed of either spongin fibres or of spongin fibres with silicious spicules or sometime skeleton is wanting. usually spicules are differentiated into micro- and megascleres and are never six-rayed.

Order I - Monaxonida :-> skeleton composed of spongin fibres and monaxon silicious spicules.

Order II - Keratosa :-> they are horny sponges with the skeleton composed of only spongin fibres without spicules.

Order III -> Myxospongiae -> the sponges of this group have no skeleton.

Conclusion ->

Going through the above descriptions it may be concluded that the skeleton of sponges is of great importance which on the one hand show the advancement of the group over the protozoans and on the other hand helps greatly in classifying the group of sponges.

