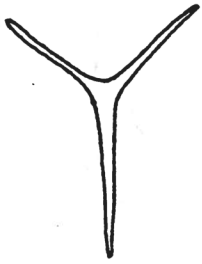


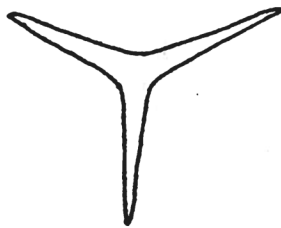
Spicule Types
drawn by Karen Green

Class Calcarea

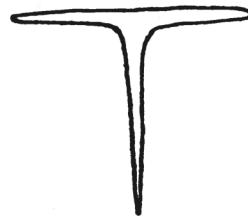
Triaxons



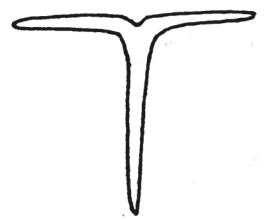
regular



regular

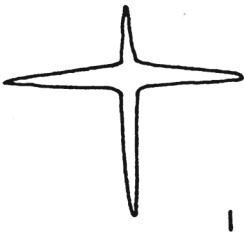


sagittal

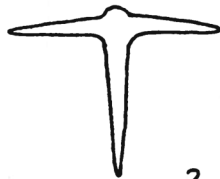


sagittal alate

Tetraxons



1

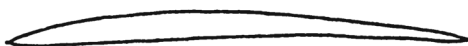


2



3

Oxea



Microtylostyles



Class Hexactinellida



rhabdodiactins



diactin



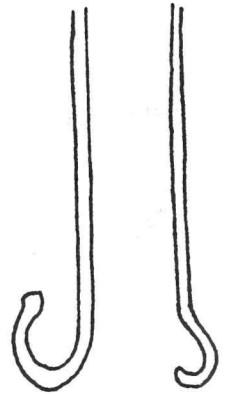
ambuncinate



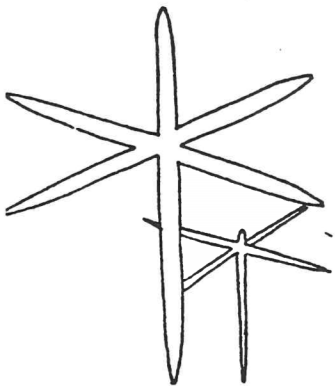
uncinate



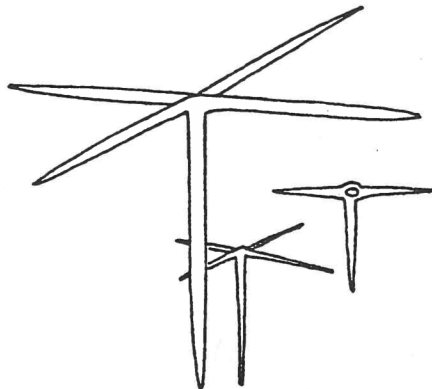
tignule



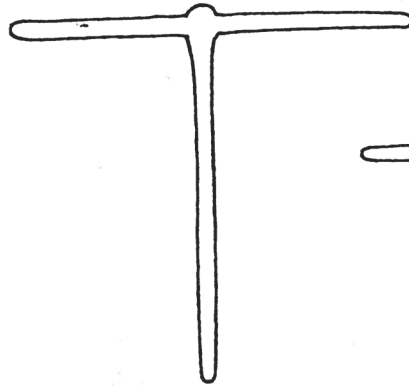
xylostyles



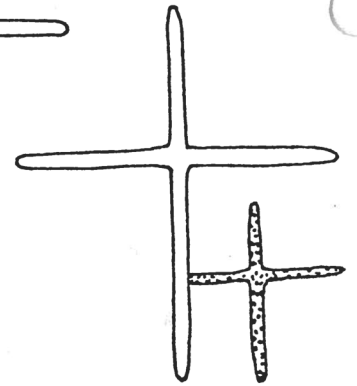
hexactins



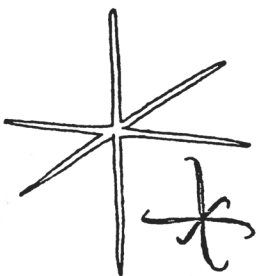
pentactins



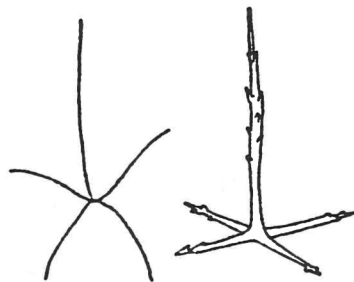
tauractin



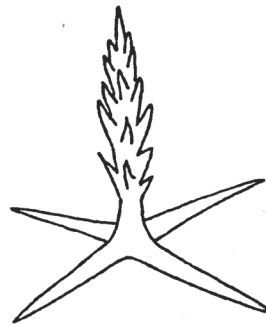
stauractins



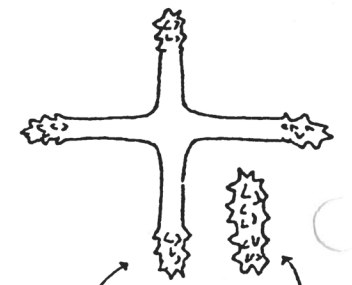
oxyhexactins



oxypentactins



pinule



stauractin diactin

acanthophores

Class Hexactinellida cont.



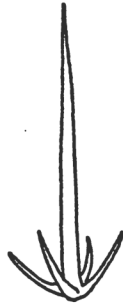
amphidisc



anchoring basal



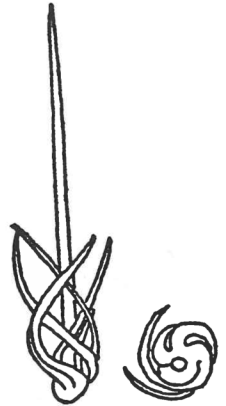
sceptre



anchorate clavule



pileate anchorate clavule



spiro-anchorate clavule



clavule



pileate clavule



cusped clavate clavule



cuspidate



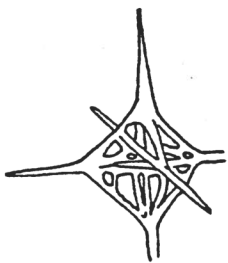
scopules



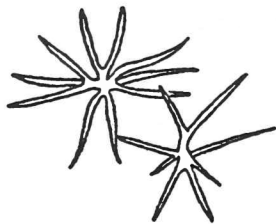
lonchiole



sarule



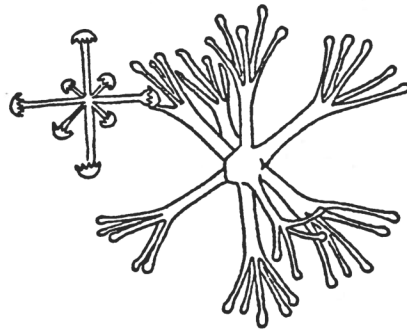
lychnisc (free)



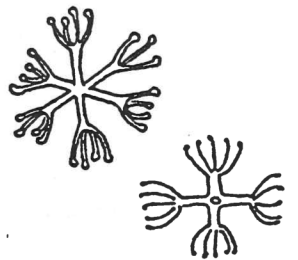
oxyhexasters



hemi-oxyhexasters



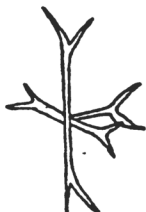
discostasters



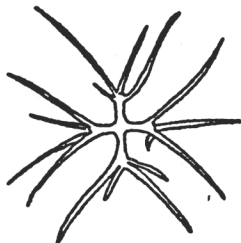
discohexasters



tylohexasters



oxypentaster



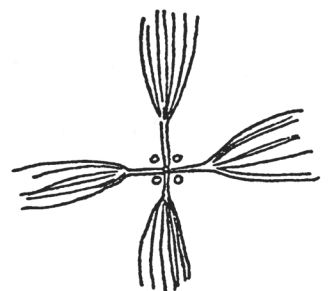
oxystauraster



oxydiaster

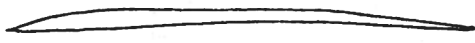


floricome



graphicome

Class Demospongiae
megascleres



oxea



tornote



style



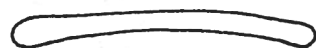
subtylostyle



tylostyle



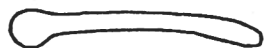
acanthostyle



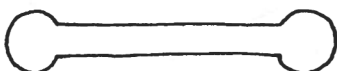
strongyle



acanthostrongyle



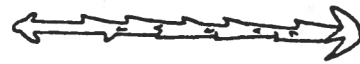
subtylostrongyle



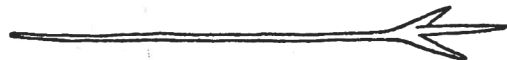
tylote



subtylote



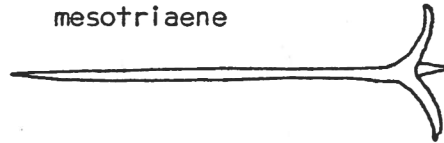
cladotylote



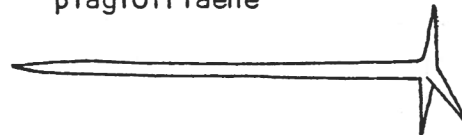
protriaene



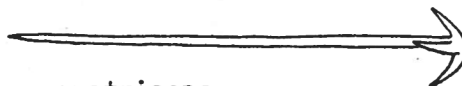
mesotriaene



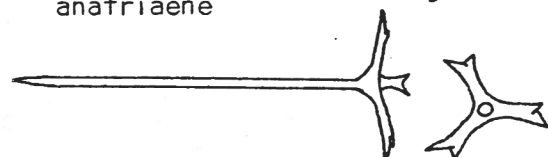
plagiotriaene



orthotriaene



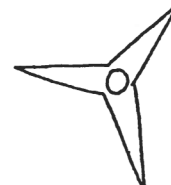
anatriaene



dichotriaene



calthrops



trioid

Class Demospongiae
microscleres




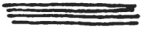



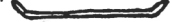










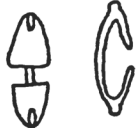




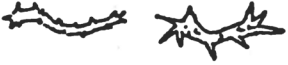



	raphide		bipocilli		sterraster
	trichodragma				
	acanthoxea		palmate anisochelas		sphaeraster
	bicurvate microstrongyle.				
	centrotylote microxea		palmo-dentate anisochelas		chiaster
	diancistra				oxyaster
	sigmas		arcuate isochelas		tylaster
	toxa				
	forceps		palmate isochelas		rosette
	streptaster		anchorate isochela		palmate isochelas
	spirasters		unguiferate isochela		desma
	amphiasters				

Table of Spicule Types with Some Local Sponge Representatives

by Karen Green

Spicule	Drawing From	Page #	Local Sponge Example
Class Calcarea			
microtylostyle	DeLaubenfels, 1932	1	<u>Leucetta losangelensis</u> (DeLaub., 1932)
oxea	specimen	1	<u>Leucandra (=Leuconia) heathi</u> (Urban, 1905)
Tetraxon			
1	specimen	1	<u>Leucilla (=Rhabdodermella) nuttingi</u> (Urban, 1902)
2			
3	specimen	1	<u>Leucosolenia eleanor</u> Urban, 1905
Triaxon			
regular	specimen	1	<u>Leucandra (=Leuconia) heathi</u> (Urban, 1905)
regular	specimen	1	<u>Leucetta losangelensis</u> (DeLaubenfels, 1930)
sagittal	specimen	1	<u>Leucilla (=Rhabdodermella) nuttingi</u> (Urban, 1902)
sagittal alate	specimen	1	<u>Leucosolenia eleanor</u> Urban, 1905

Spicule	Drawing From	Page #	Local Sponge Example
Class Hexactinellida			
acanthophore	Okada, 1932	2	
ambuncinate	Ijima, 1927	2	
amphidisc	Ijima, 1927	3	
anchoring basal	Ijima, 1927	3	
clavule	Ijima, 1927	3	
clavule, anchorate	Ijima, 1927	3	
clavule, cusped clavate	Ijima, 1927	3	
clavule, pileate	Ijima, 1927	3	
clavule, pileate anchorate	Ijima, 1927	3	
clavule, spiro-anchorate	Ijima, 1927	3	
cuspidate	Okada, 1932	3	
diactin	Okada, 1932	2	<u>Aphrocallistes vastus</u> Schulze, 1886
discoctaster	Ijima, 1927 Okada, 1932	3	<u>Staurocalyptus dowlingi</u> (Lambe, 1893)
discohexaster	Ijima, 1927	3	
floricome	DeLaubenfels, 1955 Ijima, 1927	3	
graphicome	Ijima, 1927	3	
hexactin	Okada, 1932 Ijima, 1927	2	
lonchioles	DeLaubenfels index card	3	
lychnisc	Ijima, 1927	3	
oxydiaster	Ijima, 1927	3	
oxyhexaster	Ijima, 1927	3	<u>Staurocalyptus dowlingi</u> (Lambe, 1893)

Spicule	Drawing From	Page #	Local Sponge Example
oxyhexaster, hemi	Ijima, 1927	3	
oxyhexactin	Ijima, 1927	2	<u>Staurocalyptus dowlingi</u> (Lambe, 1893)
oxypentaster	Ijima, 1927 Okada, 1932	3	
oxypentactin	Ijima, 1927 Okada, 1932	2	
oxystauraster	Ijima, 1927	3	
pentactin	Okada, 1932	2	<u>Staurocalyptus dowlingi</u> (Lambe, 1893)
pinule	Ijima, 1927	2	<u>Aphrocallistes vastus</u> Schulze, 1886
rhabdodiactin	Okada, 1932	2	<u>Staurocalyptus dowlingi</u> (Lambe, 1893)
sarule	DeLaubenfels card index	3	
sceptre	Ijima, 1927	3	
scopule	Ijima, 1927	3	<u>Aphrocallistes vastus</u> Schulze, 1886
stauractin	Okada, 1932	2	<u>Staurocalyptus dowlingi</u> (Lambe, 1893)
tauractin	Okada, 1932	2	"
tylohexaster	Ijima, 1927	3	<u>Aphrocallistes vastus</u> Schulze, 1886
uncinate	Ijima, 1927	2	"
xylostyle	Hernandez, 1932	2	

Class Demospongiae

Order Poecilosclerida

acanthoxea	Bakus, 1966	5	
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Spicule	Drawing From	Page #	Local Sponge Example
acanthostyle	specimen	4	<u>Hymectyon hyle</u> Delaubenfels, 1930
amphiaster	DeLaubenfels, 1955	5	
anisochele, palmate	specimen	5	<u>Iophon pattersoni</u> (Bowerbank, 1866)
anisochele, pamo-dentate	Bakus, 1966	5	<u>Mycale lingua</u> (Bowerbank, 1866)
bipocillon	Bakus, 1966	5	<u>Iophon pattersoni</u> (Bowerbank, 1866)
centrotylote microxea	specimen	5	new species
cladotylote	specimen	5	<u>Acarnus erithicus</u> DeLaubenfels, 19
diancistra	specimen	5	new genus
forcep	DeLaubenfels, 1955	5	<u>Asbestopluma lycopodium</u> (Levinsen, 18
isochela, anchorate	Bakus, 1966	5	<u>Plocamissa igzo</u> (DeLaubenfels, 193
isochela, arcuate	Bakus, 1966	5	<u>Lissodendoryx firma</u> (Lambe, 1895)
isochela, palmate	specimen	5	
isochela, uniguiferate	Bakus, 1966	5	
raphide	specimen	5	<u>Plocamilla illgi</u> Bakus, 1966
rosette	Bakus, 1966	5	
sigma	specimen	5	<u>Mycale lingua</u> (Bowerbank, 1866)
strongyle	specimen	5	<u>Iophon pattersoni</u> (Bowerbank, 1866)
style	specimen	4	<u>Microciona parthena</u> DeLaubenfels, 1930
subtylostrongyle	Bakus, 1966	4	
subtylostyle	specimen	4	<u>Ophlitaspongia pennata</u> (Lambe, 18
subtylote	specimen	4	<u>Acarnus erithacus</u> DeLaubenfels, 19

Spicule	Drawing From	Page #	Local Sponge Example
tornote	Bakus, 1966	4	
toxa	specimen	5	<u>Microciona microjoanna</u> DeLaubenfels, 1930
trichodragma	specimen	5	<u>Mycale lingua</u> (Bowerbank, 1886)
triod	specimen	4	new genus
tylostyles	specimen	4	<u>Plocamissa igzo</u> DeLaubenfels, 1932
tylote	specimen	4	<u>Plocamia karykina</u> (DeLaubenfels, 1927)

Order Halichondrida

oxea	specimen	4	
style	specimen	4	
strongyle	specimen	4	

Order Haplosclerida

oxea	specimen	4	
sigma	specimen	5	

Order Tetractinellida

anatriaene	specimen	4	<u>Tetilla arb</u> DeLaubenfels, 1930
desma	DeLaubenfels, 1955	5	
dichotriaene	specimen	4	<u>Stelletta estrella</u> (?= <u>clarella</u>) DeLaubenfels, 1930
mesotriaene	specimen	4	
orthotriaene	specimen	4	<u>Stelletta estrella</u> (?= <u>clarella</u>) DeLaubenfels, 1930

Spicule	Drawing From	Page #	Local Sponge Example
oxea	specimen	4	<u>Tetilla arb</u> DeLaubenfels, 1930
oxyaster	specimen	5	<u>Geodia mesotriaena</u> Lendenfeld, 1910
plagiotriaene	specimen	4	<u>Geodia mesotriaena</u> Lendenfeld, 1910
protriaene	specimen	4	<u>Tetilla arb</u> DeLaubenfels, 1930
sigma	specimen	5	"
sphaeraster	specimen	5	<u>Geodia mesotriaena</u> Lendenfeld, 1910
sterraster	specimen	5	"
<hr/>			
23	Order Homosclerophorida		
asters (except sterraster and amphiaster)	specimen	5	<u>Penares cortius</u> DeLaubenfels, 193
bicurvate microstrongyle	specimen	5	"
calthrop	specimen	4	<u>Poecillastra tenuilaminaris</u> (Sollas, 1888)
dichotriaene	specimen	4	
oxea	specimen	4	<u>Poecillastra tenuilaminaris</u> (Sollas, 1888)
style	specimen	4	<u>Penares cortius</u> DeLaubenfels, 193
toxa	specimen	5	<u>Poecillastra tenuilaminaris</u> (Sollas, 1888)

Spicule	Drawing From	Page #	Local Sponge Example
<hr/>			
Order Hadromerida			
spiraster	specimen	5	<u>Spirastrella</u> sp. Schmidt, 1868
tylostyle	specimen	4	<u>Suberites ficus</u>
<hr/>			
order Epipolasida			
asters *	specimen	5	<u>Tethya aurantia</u> (Pallas, 1766) var. <u>californiana</u> DeLaubenfels, 1932
oxeas	specimen	4	
style	specimen	4	<u>Timea authia</u> DeLaubenfels, 1930
<hr/>			
Order Axinellida			
oxea	specimen	4	
style	specimen	4	
<hr/>			

* except amphiasters, spirasters and sterrasters