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THE GENERA AND SPECIES OF ROSSELLIDÆ.

(Preliminary Notice.)

By Prof. I. IJIMA, Ph. D.

Having finished sometime since my studies of the Rossellid materials contained in the Science College Museum, I propose to give here a brief notice of the results arrived at with respect to the system of family Rossellidae. Taking into account the characters of not only parenchymal microscleres, but also as far as possible of megascleric elements, I have been led to divide the family into four subfamilies, synoptically shown as follows :

a′. Dermalia not differentiaded into autodermalia and hypodermalia. No oxyhexaster present among intermedia.....A. *Leucopsacinæ.*
a″. Dermalia differentiated into autodermalia and hypodermalia. Oxyhexaster generally present among intermedia.
  b′. Without octasters.
    c′. With plumicomes; with or without oxyhexasters.....B. *Lanuginellinæ.*
    c″. Without plumicomes; oxyhexasters always present.....C. *Rossellinæ.*
  b″. With octasters; oxyhexasters always present.....D. *Acanthascinæ.*

The definition of the family itself may remain as it stands (F. E. Schulze, Revision d. Syst. d. Asconematiden u. Rosselliden. Sitz.-ber. k. pr. Akad. Berlin, 1897).

A. LEUCOPSACINÆ.

Dermalia not distinguishable into autodermalia and hypodermalia, but consist of large pentactins, which are but little differentiated from parenchymal megascleric hexactins beyond the total absence of sixth, distally directed rays.* Gastralia, hexactins or pentactins, or both. Parenchymal megascleres contain large or medium-sized hexactins (except in *Caulocalyx*), together with diactins in

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* This character of dermalia and the presence of well-developed hexactins as parenchymal megascleres probably represent a more primitive condition than what we find in other subfamilies.

greater or less quantity. As intermedia there are only discohexasters or their modification, usually in one or two kinds (macrodiscohexasters and microdiscohexasters.)

Artificial Key to Genera and Species.

a′. Parenchymal megascleres extensively fused together
  b′. Discohexaster in one kind. ..... *Euryplegma auriculare.*
  b″. Discohexaster in two kinds (including "rhopalaster") ..... *Caulocalyx irregularis.*
a″. Parenchymal megascleres loose (except at surface of attachment).
  b′. Dermalia pronged ..... *Caulocalyx tener.*
  b″. Dermalia without prongs.
    c′. With hexactinose discohexaster.
      d′. Rays of parenchymal hexactins straight ..... *Leucopsacus orthodocus.*
      d″. Rays of parenchymal hexactins curved ..... *Leucopsacus skoliodocus.*
    c″. Without hexactinose discohexaster.
      d′. Discohexaster in one kind ..... *Placopegma solutum.*
      d″. Discohexaster in two kinds (minute clavicome and very large discohexaster with anchor-like terminal discs) ..... *Chaunoplectella cavernosa.*

Leucopsacus, n. g.

Small, sack-like forms with smooth surface. Parenchymal megascleres consist chiefly of hexactins ; diactinic parenchymalia present, but play a subordinate part. Intermedia are usually of two kinds : *macrodiscohexaster* hexactinose, i. e., six-armed as in a regular hexactin ; each arm, or more properly terminal, ends with an anchor-like umbel of 3—5, strong teeth† ; length of arm 50—90 μ. *microdiscohexaster*, of variable shape and size. Gastralia are usually hexactins, differing in no way from those of parenchymalia.

1. ***L. orthodocus,*** n. sp.

Body ovoid, with stalk-like base ; 10 mm. long. Rays of dermal pentactins and of parenchymal or gastral hexactins straight. Hexactinose macrodiscohexaster as already characterized. Microdiscohexaster 50—88 m in diameter ; each short principal with 4—8 slender terminals, which together from a bell-shaped perianth ; terminal disc with 5 or 6 minuts teeth.

Loc. : Sagami Sea.

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† The spicul here characterized has been figured by Schulze, Chall. Rep. Hex. Pl. LV, fig. 8. In this peculiar modification of discohexasters the axial cross is confined to the centre.

2. ***L. scoliodocus,*** n. sp.

Globular or ovoid sack, up to the size of a hazel-nut. Rays of dermal pentactins straight, but those of parenchymal and gastral hexactins curved. Hexactinose macrodiscohexaster as in foregoing species. Microdiscohexaster spherical, 46—70 μ or more in diameter ; each short principal bearing 4—10, straight or nearly straight terminals ; discs about equidistant at the peripheral surface of the spicule, toothed. Of inconstant occurrence is a third modification of discohexasters, which I should call *clavicome.* This most nearly resembles the sigmatocome of SCHULZE. Diameter 38—50 μ ; principal takes about $\frac{1}{4}$ of a ray and bears a narrow perianth of very slender, terminally swollen terminals set in a single whorl.

Loc. : Sagami Sea ; found attached to *Hexactinella lorica,* Ij. MS.

CHAUNOPLECTELLA, Ijima.

Thick-walled goblet of egg-like shape, attached by a short stalk-like base. Parenchymal megascleres, chiefly hexactins and diactins with bent rays. Intermedia, of two kinds : large macrodiscohexaster and small clavicome.

3. ***C. cavernosa,*** Ijima.

Ijima (Zool. Anz., p. 250).

Loc. : Sagami Sea.

PLACOPLEGMA, F. E. Sch.

4. ***P. solutum,*** F. E. Sch.

Schulze (Hex. Ind. Oc., II., p. 63, pl. VI. 11—77). (Rev. Asc. u. Ross., p. 544).

Loc. : Bay of Bengal.

AULOCALYX, F. E. Sch.

5. ***A. irregularis,*** F. E. Sch.

Schulze (Chall. Rep. Hex., p. 174, pl. 174, pl. LX).—(Revision Asc. u. Ross., p. 544).

Loc. : off Marion Island, SE of Cape of Good Hope.

Eurypleg ma, F. E. Sch.

6. ***E. auriculare,*** F. E. Sch.

Schulze (Chall. Rep. Hex.. p. 176. pl. CII). (Rev. Asc. u. Ross., p. 545).

Loc.: NE of New Zealand.

Caulocalyx, F. E. S.

7. ***C. tener,*** F. E. S.

Schulze (Chall. Rep. Hex., p. 172, pl. LXIX). (Rev. Asc. u. Ross., p. 549).

This species seems to occuppy an isolated position in this subfamily, particularly on account of the fact that hexactins are not known to occur among its parenchymal macroscleres. The "aspidoplumicome" of this species is undoubtedly closely related to the plumicome of *Lanuginellinæ* and, in my opinion, also to what I have called clavicome in *Leucopsacus skoliodocus* and *Chaunoplectella cavernosa.*

Loc.: W. of Tristan d'Acunha.

B. LANUGINELLINÆ

Dermalia with stauractinic or pentactinic autodermalia and larger pentactinic hypodermalia. Gastralia, hexactins. Parenchymal megascleres consist of diactins and of large or medium-sized hexactins. Plumicome always present among intermedia, which for the rest consist of either discohexaster or oxyhexaster, or of both.

Artificial Key to Genera and Species.

a′. Firmly attached to solid substratum. No oxyhexaster..... *Lanuginella pupa.*
a″. Rooted in loose bottom by basal tuft of anchor-like spicules. Oxyhexaster present.
b′. Dermalia, stauractins. Intermedia in two kinds (oxyhexaster and plumicome).....*Lophocalyx philippinensis.*
b″. Dermalia, pentactins. Intermedia in three kinds (oxyhexaster, discohexaeter and plumicome).....*Melonympha velata.*

Lanuginella, O. Schm.

8. ***L. pupa,*** O. Schm.

O. Schmidt (Spong.—Fauna Atl. Geb, p. 13, T. II, 1, 3).—W. S. Kent (Mouthl. Micr. Journ. 1870, p. 247, pl. LXV, 1—7) :—Schulze (Chall. Rep. Hex., p. 130, pl. LIII 3--5).—(Rev. Asc. u. Ross., p. 548).

Loc. : Atlantic; off Little Ki Island ; Sagami Sea

Lophocalyx, F. E. Sch.

9. ***L. philippinensis*** (Gray).

Rossella philippinensis, J. E. Gray (Ann. & Mag. Nat. Hist., 1872, Ser. IV, Vol. X., p. 137). &c.—*Psetalia globulosa*, Gray (ibid., 1873, Vol. XI., p. 234). &c.—*Lophocalyx philippinensis*, Schulze (Chall. Rep. Hex., p. 133, pl. LIII. 1—2, pl. LIX). (Rev. Asc. u. Ross., p. 546).

Loc. : Philippine Islands ; Little Ki Island.

Melonympha, F. E. Sch.

10. ***M. velata*** (W. Thoms.)

Rossella velata, W. Thomson (Depth of the Sea, p. 418, fig. 65). Schulze (Chall. Rep. Hex., p. 143).— *Melonympha velata*, Schulze (Rev. Asc. u. Ross., p. 547).

Loc. : Strait of Gibraltar.

C. ROSSELLINÆ.

Autodermalia variable. Pentactinic hypodermalia generally present, sometimes wanting. Gastralia, hexactins, sometimes pentactins Parenchymal macroscleres, chiefly diactins, may however enclose medium-sized or small hexactins. As intermedia, oxyhexasters absent or more generally present in one or two kinds.

Artificial Key to Genera.

a′. Hypodermal pentactin wanting.
  b′. Sack-like or vase-like forms without distinct stalk..... *Aulosaccus.*
  b″. Body with gastral surface everted so as to form a large part of the outer surface ; with long, tubular stalk..... *Aulochone.*
a″. Hypodermal pentactin present.
  b′. Intermedia, only oxyhexaster..... *Bathydorus.*
  b″. Intermedia include discohexaster besides oxyhexaster.
    c′. Discohexaster in one kind.

d′. Autodermalia; pentactins with boss-like rudiment of distal sixth ray; occasionally hexactins.....*Hyalascus.*
d″. Autodermalia stauractins or pentactins, or both; without rudiment of distal ray and never hexactinic.
e′. Forms without distinct stalk.....*Vitrollula.*
e″. Forms with long, distinct stalk.....*Crateromorpha.*
c″. Discohexaster in two kinds.....*Rossella.*

Bathydorus, F. E. Sch.

Autodermalia, diactins, stauractins or pentactins. Hypodermal pentactin present. Gastralia, probably always hexactins. Parenchymal megascleres with or without hexactins. Intermedia, oxyhexaster only.

Artificial Key to Species.

a′. Autodermalia, almost exclusively straight diactins.....*B. baculifer.*
a″. Autodermalia, predominatingly stauractins.
b′. General surface smooth, without diactinic prostalia.
c′. Cup-like forms, expanded above and without marginal fringe of spicules.....*B. laevis.*
c″. Tubular forms, with a fringe of marginalia.....*B. fimbriatus.*
b″. General surface with diactinic prostalia.
c′. Oxyhexaster with principals exceedingly shortened as to be almost annulled.....*B. stellatus.*
c″. Oxyhexaster with distinct cylindrical principals.....*B. spinosus.*

11. ***B. fimbriatus,*** F. E. Sch.

Schulze (Chall. Rep. Hex., p. 152, pl. LVIII). (Rev. Asc. u. Ross., p. 533).

Loc.: North Pacific.

12. ***B. stellatus,*** F. E. Sch.

Schulze (Chall. Rep. Hex., p. 152, pl. LIX 1—5). (Rev. Asc. u. Ross., p. 534).

Loc.: Messier Channel in Patagonia.

13. ***B. spinosus,*** F. E. Sch.

Schulze (Chall. Rep. Hex., p. 153, pl. LIX 6—9). (Rev. Asc. u. Ross., p. 534).

Loc.: Pinguin Islands.

14. ***B. baculifer,*** F. E. Sch.

Schulze (Chall. Rep. Hex, p. 154, pl. LIX 10—18). (Rev. Asc. u. Ross., p. 535).

Loc.: South Pacific.

15. ***B. laevis,*** F. E. S.

Schulze (Hex. Ind. Oc., II, p. 57, T. VI 1—10). (Rev. Asc. u. Ross., p. 535).

Loc.: Bay of Bengal.

Vitrollula, n. g.

Autodermalia, stauractins or stauractins and pentactins. Hypodermal pentactin present. Gastralia, hexactins and pentactins. Parenchymal megascleres with or without hexactins. Intermedia, of oxyhexaster and discohexaster; the latter in one kind.

This genus is closely related to *Crateromorpha*, but is distinguishable by the absence of distinct stalk to the sponge body.

16. ***V. fertile,*** n. sp.

Body ovoid or spindle-shaped, attached by one end to firm substratum; small, up to 15 mm. in total length. Autodermalia, of sparingly rough stauractins with rays 180—340 μ long. Hypodermal pentactin moderately large. Gastralia, hexactins and pentactins occurring in a sparing number. Parenchymal megascleres, chiefly diactins, but hexactins are of common occurence amongst them. Intermedia of two kinds: *Oxyhexaster*, 120 μ in average diameter; each short principal bearing 4—7, slender, straight, rough-surfaced, divergent terminals. *Microdiscohexaster*, of usual shape, 26—30 μ in diameter.

All specimens examined contained numerous larvae in various stages of development. These are at a certain stage spherical, covered externally by ciliated cell-layer and contain internally a mass of cells. Stauractinic spicules are the first that appear in the periphery of the internal mass. Later, the larvae are spindle-shaped, thickest nearer to one end.

Loc.: Sagami Sea.

17. ***V. namiyei,*** n. sp.

Slightly compressed sack with broad irregular base and a firm wall of moderate thickness. Dimensions, 76 mm. high and 30—56 mm. broad. The sponge has tendency to produce secondary oscula or persons by budding or division. Autodermalia consist of stauractins and pentactins with stout, strongly prickly rays, 90—165 μ long. Gastralia, of pentactins and hexactins, constituting a continuous antogastral layer. Parenchymal megascleres are exclusively diactins. Intermedia: *Oxyhexaster*, 52—76 μ in diameter; each very short principal bearing 2—4, diverging, nearly straight, minutely prickly terminals. *Discohexaster* spherical, 50—100 μ in diameter; principals exceedingly short, each with 3—5 or more, slender terminals that end with distinctly toothed discs.

But for the absence of a distinct stalk and the presence of hexactinic antogastralia, this species might be put under *Crateromorpha.*

Loc.: Sagami Sea.

Crateromorpha (J. E. Gray) Carter.

Autodermalia, hypodermalia and intermedia as in foregoing genus. Gastralia, pentactins; occasionally stauractins. Sponge-body with distinct narrow stalk, which generally contains a system of anastomosing canals.

Artificial Key to species.

a′. Autodermalia, stauractins and pentactins.
  b′. The wall with a system of anastomosing intercanals; through-going passages present at the junction of body with stalk.....*C. corrugata.*
  b″. Without above-mentioned characters.
    c″. Microdiscohexaster spherical; stalk with anastomosing canals.....*C. meyeri.*
    c′. Microdiscohexaster with each bunch of terminals making a prominence at surface; stalk simply tubular .....*C. thierfelderi.*
  a″. Autodermalia, exclusively pentactins; hypodermal pentactin unusually thick-rayed.....*C. pechyactina.*
  a‴. Autodermalia, almost exclusively stauractin; discohexaster thick-rayed .....*C tumida.*

18. ***C. meyeri*** (J. E. Gray) Carter.

Carter, Gray, etc.—Schulze (Chall. Rep. Hep. Hex., p. 161, pl. LXI). (Rev. Asc. u. Ross., p. 540).

Loc.: Philippine Islands; Sagami Sea.

Besides typical *C. meyeri* there occur in Sagami Sea two varieties:

α. *C. meyeri* var. *tuberosa.*

Larger than typical *meyeri*; 200 mm. or more in height. The wall projects externally in a number of small or large, irregularly rounded, hillock-like or tubercle-like prominences. A large quantity of diactins enters into the composition of hypodermal strands; otherwise of essentially same spiculation as in typical species.

β. *C. meyeri* var. *rugosa.*

Also larger than typical *meyeri*; almost a foot in height. The wall with irregular prominences, while the general surface is extremely uneven on account of numerous wrinkle-like ridges. Spiculation as in var. *tuberosa.*

19. ***C. pachyactina,*** n. sp.

Shape and size like *C. meyeri* var. *tuberosa* or *rugosa.* Sponge of rather compact texture, with scanty narrow afferent apertures. Both autodermalia and gastralia are pentactins. Hypodermal pentactins strong, unusually thick-rayed ($\frac{1}{3}$ mm. thick with ray length of $2\frac{3}{4}$ mm.). Intermedia as in *C. meyeri.*

Loc.: Tosa Sea (Shikoku).

20. ***C. corrugata,*** n. sp.

Sponge-surface with numerous pit-like or irregular depressions leading into a system of anastomosing intercanals. Through-going passages present at the junction of body with stalk, i. e., the latter divides into a number of branches at the upper end. Up to about a foot in height. Autodermalia stauractins and pentactins, the former predominating. Gastralia, mostly stauractins. Intermedia resemble those of *C. meyeri* or *C. pachyactina.*

Loc.: Sagami Sea.

21. ***C. thierfelderi,*** F. E. Sch.

Schulze (Chall. Rep. Hex., p. 164, pl. LXII 1—4). (Rev. Asc. u. Ross., p. 540):—*C. murrayi,* Schulze (Chall. Rep. Hex., p. 164, pl. LXIII).

Loc.: Little Ki Island.

22. ***C. tumida,*** F. E. Sch.

Schulze (Chall. Rep. Hex., p. 166, pl. LXVII and pl. LXVIII 2). (Rev. Asc. u. Ross., p. 541).

Loc. : Banda Islands.

Aulochone, F. E. Sch.

Autodermalia and gastralia, predominantly or exclusively pentactins. Hypodermal pentactins wanting. Parenchymal megascleres without hexactins. Sponge-body with gastral surface everted to a great extent so as to form a large part of the external surface ; with long tubular stalk.

23. ***A. cylindrica,*** F. E. Sch.

Schulze (Chall. Rep. Hex., p. 168, pl. LXVI and pl. LXVIII 1).—*Crateromorpha cylindrica,* Schulze (Rex. Asc. u. Ross , p. 542).

Loc. : NE of Kermadec Islands.

24. ***A. lilium,*** F. E. Sch.

Schulze (Chall. Rep. Hex., pl. 171, pl. LXVIII 3—7).—*Crateromorpha lilium,* Schulze (Rev. Asc. u. Ross., p. 542).

Loc. : Meangis Islands, NE of Celebes.

Hyalascus, Ijima.

Autodermalia, pentactins with distally directed sixth ray represented by a knob-like boss ; occasionally genuine hexactins. Pentactin hypodermalia present. Gastralia hexactins. Parenchymal megescleres, solely diactinic. Intermedia of two kinds : *Oxyhexaster* with 1 or more and often all principals bearing only one terminal (hemi-oxyhexaster and hexactinose oxyhexaster). *Discohexaster* of small or moderately large size. Sponge-body probably unstalked, vase-like.

This genus is decidedly to be taken up in *Rossellinæ,* notwithstanding the occasional occurrence of hexactinic autodermals.

25. ***H. sagamiensis,*** Ijima.

Ijima (Zool. Anz., 1896, p. 251).

Loc. : Sagami Sea.

26. ***H. giganteus,*** n. sp.

Known to me by a very large fragment of light, cavernous texture. Efferent apertures on gastral side as large as 18 mm. in diameter, covered over by an irregularly meshed lattice-work consisting mainly of strands of hypogastral di-

actins. Afferent apertures smaller. Spiculation similar to that of foregoing species, but rays of autodermalia and autogastralia almost smooth at base; intermedial oxyhexaster 76—103 μ in diameter; discohexaster 60—76 μ in diameter, with about 6 slender terminals to each principal.

Loc.: Sagami Sea.

Rossella, Carter.

Autodermalia, stauractins or pentactins. Hypodermal pentactin present. Gastralia, hexactins. Parenchymal megascleres may contain hexactins of medium size or under. Intermedia consist of oxyhexaster and of two kinds of discohexasters (macrodiscohexaster and microdiscohexaster).

27. ***R. antarctica,*** Carter.

Carter (Ann. and Mag. Nat. Hist., 1872, p. 409). Schulze (Chall. Rep. Hex., p. 139, pl. LV). (Rev. Asc. u. Ross., p. 536).—*Acanthascus grossularia*, Schulze (Chall. Rep. Hex., p. 145, pl. LVI).

Loc.: S. of Kerguelen Isl.; SE of Prince Edwards Isl.; Possession Isl.

28. ***R. longispina,*** Ijima.

Ijima (Zool. Anz., 1896, p. 253). Schulze (Rev. Asc. u. Ross., p. 538).

Loc.: Sagami Sea.

29. ***R. dubia*** (F. E. Sch.)

Acanthascus dubius, Schulze (Chall. Rep. Hex., p. 147, pl. LVII 8—13).—*Rossella dubia*, Schulze (Rev. Asc. u. Ross., p. 537).

Loc.: S. of Puerto Bueno, Patagonia.

Aulosaccus, Ijima.

Autodermalia, stauractins or pentactins. Hypodermalia, only diactins; without pentactins. Gastralia, hexactins. Parenchymal megascleres, only diactins. Intermedia consist of oxyhexasters with tendency to become hemihexactinose or even perfectly hexactinose, and of two kinds of discohexasters (macrodiscohexaster and microdiscohexaster).

30. ***A. schulzei,*** Ijima.

Ijima (Zool. Anz., 1886, p. 252). Schulze (Rev. Asc. u. Ross., p. 543).

Loc.: Sagami Sea.

31. ***A. mitsukurii,*** n. sp.

Autodermalia, stauractins with occasional pentactins ; rays stout, strongly spiny, 110—176 μ long Gastralia with rays twice or more than twice as long as in autodermalia. Oxyhexaster with diameter of 100—130 μ; occasionally hemi-hexactinose, rarely hexactinose. Macrodiscohexaster spherical, 80—120 μ in diameter ; with no less than 5, moderately thick, straight terminals to each very short but thick principal ; terminal disc small with minute marginal teeth. Microdiscohexaster of usual shape ; diameter 20—23 μ.—Thick-walled, sack-like sponge with prostal needles and hillocky elevations on external side, so that it closely resembles *Acanthascus cactus.*

Loc. : Sagami Sea.

D. ACANTHASCINÆ.

Autodermalia variable. Hypodermalia with pentactins or exclusively diactinic Gastralia, hexactins as a rule. Parenchymal megascleres exclusively diactins. Intermedia consist of oxyhexasters and of two kinds of discohexasters, *octasters* and microdiscohexasters.

Key to Genera.

a′. Hypodermal pentactins present.
  b′. Hypodermal pentactin not pronged. .....*Staurocalyptus.*
  b″. Hypodermal pentactin pronged. ....*Rhabdocalyptus.*
a″. Hypodermal pentactin wanting... .....*Acanthascus.*

Staurocalyptus, Ijima.

Paratangential rays of hypodermal pentactins not armed with hook-like prongs.

Artificial Key to Species.

a′. Autodermalia almost exclusively or predominantly pentactins ; at least with a large number of pentactins.
  b′. Octaster with radius of 72 – 145 μ. .....*S. dowlingi.*
  b″. Octaster with radius of 65—85 μ; autodermalia slender-rayed, often stauractins.....*S. roeperi.*
a″. Autodermalia almost exclusively or at least predominantly stauractins.
  b′. Octaster large, usually more than 200 μ in radius.....*S. glaber.*
  b″. Octaster small, not larger than 100 μ in radius.

c'. Autodermalia with occasional pentactins and triactins; rays faintly rough ..... *S. heteractinus.*
c''. Autodermalia almost exclusively stauractins, strongly prickly ..... *S. microchetus.*
a'''. Autodermalia, straight diactins ..... *S. pleorhaphides.*

32. ***S. dowlingi*** (Lambe).

Rhabdocalyptus dowlingi, Lambe (Trans. Roy. Soc. Canada, Sect. IV, 1893, p. 37, pl. III 2—2h). Schulze (Rev. Asc. u. Ross., p. 554).—*Staurocalyptus dowlingi*, Ijima (Annot. Zool. Jap., vol. I, p. 53).

Loc.: Strait of Georgia, Vancouver Isl.; Sagami Sea.

33. ***S. roeperi*** (F. E. Sch.).

Rhabodocalyptus roeperi, Schulze (Chall. Rep. Hex., p. 158 pl. LXV). (Rev. Asc. u. Ross., p. 553).—*Staurocalyptus roeperi*, Ijima (Annot. Zool. Jap., vol. I, p. 55).

Loc.: S. of Puerto Bueno, Patagonia.

34. ***S. glaber,*** Ijima.

Ijima (Annot. Zool. Jap., vol. I, p. 57).

Loc.: Sagami Sea.

35 ***S. microchetus,*** n. sp.

A rather thin-walled compressed sack of moderately firm texture. Length 95 mm.; breadth 23 mm. by 37 mm.; thickness of wall at middle 3 mm. Afferent apertures small, not over 1 mm. in diameter.—Autodermalia, stauractins with attenuated, strongly prickly rays 85 μ in average length. Hypodermal pentactins small, with paratangential rays only about 1 mm. long; they are protruded out of dermal layer and form a veil at about 1 mm. distance from the surface. Gastralia, hexactins with rays similar to those of autodermalia. Some parenchymal diactins as long as 20 mm. or more. Oxyhexaster 90—106 μ in diameter; rays rather slender, 2—3 and occasionally only 1 terminal to a very short principal. Octasters abundant near gastral surface, 114–136 μ diameter; terminals weakly bent S-like, 7—12 forming an outwardly expanded bunch; principal thick, taking about $^2/_5$ of the length of an entire ray. Microdiscohexasters of usual size and shape exceedingly rare.

Loc.: Sagami Sea.

36. ***S. heteractinus,*** Ijima.

Ijima (Annot. Zool. Jap , vol. I. p. 56).

Loc.: Sagami Sea.

37. ***S. pleorhaphides,*** Ijima.

Ijima (Annot. Zool. Jap., vol. I, p. 58).

Loc. : Sagami Sea.

Rhabdocalyptus, F. E. Sch.

Paratangential rays of hypodermal pentactins armed with biserially arranged hook-like prongs.

Artificial Key to Species.

a′. Autodermalia, pentactins and stauractins ; octaster 30—40 μ in radius..... *R. dawsoni.*

a″. Autodermalia, predominantly stauractins ; octaster 90—120 μ in radius ..... *R. victor.*

a‴. Autodermalia, predominantly straight diactins.

b′. Octaster 65—88 μ in radius..... *R. mollis.*

b″. Octaster smaller, 38 – 55 μ in radius..... *R. capillatus.*

38. ***R. dawsoni*** (Lambe).

Bathydorus dawsoni, Lambe (Trans. Roy. Soc. Canada, Sect. IV, 1892, p. 73, pl. IV 2 and pl. VI 2—2k).—*Rhabodocalyptus dawsoni,* Schulze (Rev. Asc. u. Ross., p. 555).

Loc. : near Vancouver Isl.

39. ***R. victor,*** Ijima.

Ijima (Annot. Zool. Jap., vol. I, p. 52).

Loc. : Sagami Sea.

40. ***R. mollis,*** F. E. Sch.

Schulze (Chall. Rep. Hex., p. 155, pl. LXVI). (Rev. Asc. u. Ross., p. 552).—Ijima (Annot. Zool. Jap., vol I, p. 50).

Loc. : Sagami Sea.

42. ***R. capillatus,*** Ijima.

Ijima (Annot. Zool. Jap , vol. I, p. 51).

Loc. : Sagami Sea.

Acanthascus, F. E. Sch.

Hypodermal strands consist exclusively of diactins.

42. ***A. cactus,*** F. E. Sch.

Schulze (Chall. Rep. Hex., p. 148, pl. LVII 1—7). (Rev. Asc. u. Ross., p. 551).—Ijima (Annot. Zool. Jap., vol. I, p. 48.

Loc. : Sagami Sea.

43. ***A. alani,*** n. sp.

An ovoid, thick-walled goblet, 190 mm. high ; attached by a short stalk-like base. Prostal needles unknown ; possibly not present.—Autodermalia exclusively pentactins with rather slender rays, 95—170 μ long Hypodermal strands of indefinite calibre. Gastralia, hexactins, not forming a continuous layer. Oxyhexasters large, with diameter of 144—190 μ ; terminals more or less slender, unusually 3—4 to each extremely short knob-like principal ; central node spherical. Octasters with radius of 68—110 μ ; principal about as long as or longer than terminals, of which 6—8 form an ontwardly expanded tuft. Microdiscohexaster of usual shape and size present in a sparing number.

Loc. : Sagami Sea.

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