

Papers from Dr. Th. Mortensen's Pacific Expedition
1914—16.

XLIV.

New Cidaridæ.

Preliminary Notice

by

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The detailed study of all the recent Cidarids, undertaken as a consequence of my plan to write a Monograph of this Order of Echinoids, (and, indeed, of the whole Class) has led to the establishing of quite a number of new genera, subgenera, species and varieties. In order not to have these designations: n. g., n. sp. etc. in the Monograph itself, which does not seem desirable, this preliminary notice of the various new forms is published. Only quite short diagnoses and indications of the main distinguishing features are given here, the full descriptions and illustrations being left for the Monograph (now in press).

A very considerable percentage of the new species and varieties I have collected myself, partly on my Pacific Expedition 1914—16, partly on the Danish Expedition to the Kei Islands 1922. Some other of the new forms were found among material belonging to various foreign Museums, namely the Amsterdam Museum, the Museum of Comparative Zoology, Cambridge, Mass., the Hamburg Museum, the British Museum, London, the Museum d'hist. nat. Paris, and the U. S. National Museum, material which has either been sent me for examination, or which I have had the opportunity of studying by my visits to the said Museums. I beg here to express my deep obligation to the authorities of these Museums for the very important help thus rendered me.

Histocidaris formosa n. sp.

Ambital primary spines upwards curved, with fine, but distinct serrations, mainly arranged so as to form a pair of lateral keels.

Marginal series of ambulacral tubercles somewhat irregular. Pedicellariæ with very long, slender valves, compressed in the lower part of the blade which is filled up with a close meshwork, arranged so as to form longitudinal ridges; no groove above the apophysis.

The Kei Islands, 245—290 m.

Type in the Copenhagen Museum.

Histocidaris recurvata n. sp.

Very like the preceding species, but the primary spines are provided with coarser, not serially arranged thorns in their basal part, mainly on the adapical side. Pedicellariæ with shorter and broader valves, with a distinct groove above the apophysis.

E. of Great Kei Island, 984 m. ("Siboga", St. 267).

Type, and only known specimen, in the Amsterdam Museum.

Histocidaris carinata n. sp.

Ambital primary spines with scattered larger thorns in the basal part, not curved. Scrobicular spines with a median keel. Valves of pedicellariæ very broad, triangular, the blade concave, not filled up by coarse meshwork.

Off Kiushiu, Japan, 360 m.

Type, and only known specimen, in the Copenhagen Museum.

Histocidaris australiæ n. sp.

Primary spines as in the preceding species, only shorter; scrobicular spines not keeled. Pedicellariæ with narrow valves with a distinct depression above the apophysis.

Off N. S. Wales, ca. 130—415 m.

Type in the Copenhagen Museum.

Histocidaris crassispina n. sp.

Primary spines rather thick, fusiform, apparently quite smooth, but with numerous low, very finely serrate ridges. Pedicellariæ short and thick, the valves triangular, slightly excavate.

Off Sydney, ca. 740 m. ("Challenger", St. 164 b).

Type, and only known specimen, in the Museum of Comparative Zoology.

Eurocidaris nutrix, var. *longispina* n. var.

Differs from the typical *E. nutrix* by the much longer primary spines (ca. 2—2.5 h. d.), and in the oculars being all insert. The genital pores do not appear until at a size of ca. 18 mm h. d.

Off Heard Island, 270 m.

Type specimen in the Copenhagen Museum.

Homalocidaris n. g.

Differs from the related genera *Ctenocidaris* and *Notocidaris* in the character of the primary spines, which are perfectly smooth, without a trace of ridges or hairs; the milled ring remarkably prominent. Oral primaries simple, smooth.

Genotype: *Austrocidaris gigantea* H. L. Clark.

Aspidocidaris n. subgen.

Upper primary spines with basal disk more or less developed, and with terminal disk usually very large, covering the whole apical side. Ambital spines fairly stout, not curved, with a rather well developed coat of slightly anastomosing hairs. Miliary spines slender.

Type of this subgenus of *Goniocidaris*: *Goniocidaris clypeata* Döderlein.

Goniocidaris spinosa n. sp.

Primary spines banded white and dark, very coarsely thorny, the upper ones with a well developed basal disk. The uppermost spines ending in a not very large disk, adapically produced into a coarse thorn. Oral primaries strongly thorny on the aboral side, long and straight. Scrobicular spines slightly thorny on the base.

Amboina, 200 m.

Type, and only known specimen, in the Copenhagen Museum.

Goniocidaris alba n. sp.

Test and apical system closely and finely tuberculated. Primary spines rather thick and robust, with a small, incomplete basal disk; the longest of the spines slightly downwards curved. Upper primaries ending in a large, round disk. Oral primaries smooth, shining. Colour white.

Off Kiushiu, Japan, 400 m.

Type, and only known specimen, in the Copenhagen Museum.

Goniocidaris crassa n. sp.

Nearly related to *G. alba*, but differs from it in the more coarse tuberculation and in the upper areoles being separated only by a narrow space, with few miliary tubercles, while in *G. alba* they are separated by a broader space with numerous miliary tubercles. (Apical disks unknown). Colour of test and spines white.

Off Mindanao, ca. 450 m.

Type in the Copenhagen Museum.

Goniocidaris Sibogæ n. sp.

Naked midline of interambulacra very narrow and indistinct. Primary spines slender, cylindrical or slightly fusiform, with a small, incomplete basal disk. The apical spines ending in a moderately sized round disk. Oral primaries with serrate edges. Colour of test and spines white.

Moluccan Sea ($5^{\circ} 3' S.$, $119^{\circ} E.$), 450 m.

Type in the Amsterdam Museum.

Goniocidaris australiæ n. sp.

Nearly related to *G. Sibogæ*, but differs from it in the more conspicuous naked midline of the interambulacra and in the oral primaries being more coarsely serrate. Upper side of test greenish.

Off N. S. Wales, ca. 270—470 m.

Type in the Copenhagen Museum.

Rhopalocidaris rosea n. sp.

Primary spines with confluent bands of red. Secondary spines rather coarse, the adapical ones in most of the scrobicular circles distinctly brownish green. A very small form, scarcely exceeding 15 mm in horizontal diameter.

Japanese Seas (Sagami Sea; off Goto Islands), ca. 160—700 m.

Type in the Copenhagen Museum.

Rhopalocidaris rosea, var. *tenuis*, n. var.

Differs from the typical form in the bands of the primary spines being not confluent, and in the secondary spines being more slender,

the adapical ones of the upper scrobicular circles scarcely with an indication of greenish colour.

Off the Kei Islands, 300 m.

Type, and only known specimen, in the Copenhagen Museum.

Stereocidaris stylifera n. sp.

Marginal ambulacral spines cylindrical, sharply pointed. Distinct small grooves in the midline of the ambulacra, and also some grooves on the interambulacral plates, besides rather numerous grooves in the upper horizontal sutures.

Philippines (12° 12' N., 124° 02' E. 247 m. "Albatross").

Type, and only known specimen, in the U. S. National Museum.

This species recalls, by its grooves on the interambulacral plates and along the ambulacral midline, the fossil (cretaceous) genus *Temnocidaris*.

Stereocidaris grandis, var. *hyatorina* n. var.

Differs from the typical *Stereocid. grandis* in the marginal series of ambulacral tubercles being quite regular even unto the peristomial edge, and in the secondary spines on the oral side not being thick and clubshaped.

Off Kiushiu, Japan, 200—400 m.

Type specimen in the Copenhagen Museum.

Stereocidaris hawaiiensis n. sp.

Primary spines fusiform, simply pointed; secondary spines on oral side not thickened, miliary spines scalelike, appressed. Marginal series of ambulacral tubercles quite regular unto the peristome. Tridentate pedicellariæ with very slender, straight valves.

Hawaiian Seas, ca. 285—455 m. ("Albatross").

Type specimen in the Museum of Comp. Zoology.

Stereocidaris granularis n. sp.

Related to *St. grandis*, var. *hyatorina*, from which it differs mainly in the much finer granulation of the test, and in the flat, not thick and arched upper coronal and apical plates. Apical system of a rosy colour.

Philippines — Moluccan Sea, ca. 360—510 m.

Type specimen in the Copenhagen Museum.

Stereocidaris purpurascens n. sp.

Primary spines slender, cylindrical, rather smooth; the hairs grouped on small warts, not uniting into a continuous coat, as is the case in most other *Stereocidaris*-species. Young primary spines of a conspicuous dark purple colour. Miliary spines flat, scalelike, appressed. Apical system of a yellowish-brown colour.

Off the Kei Islands, ca. 200—385 m.

Type specimen in the Copenhagen Museum.

Stereocidaris squamosa n. sp.

Related to *St. granularis*, but differs from it in the much more smooth character of its primary spines and in the greenish colour of the apical system.

Saya de Malha Bank, Indian Ocean, 270 m.

Type specimen in the British Museum.

Stereocidaris sulcatispinis n. sp.

Primary spines cylindrical, deeply channeled; the hair coat low, smooth on the surface; secondary spines scalelike, appressed. Apical system of a reddish colour.

Off Celebes; Kei Islands, ca. 230—385 m.

Type specimen in the Amsterdam Museum.

Stereocidaris tubifera n. sp.

Primary spines long and slender, the subambital ones terminating in a conspicuous trumpet-shaped widening. Miliary spines very numerous, small, flat. Genital plates distinctly higher than broad, almost rectangular. Very large form.

Kei Islands, Philippines, ca. 350—400 m.

Type specimen in the Copenhagen Museum.

Stereocidaris tubifera, var. *impressa* n. var.

Differs from the typical *St. tubifera* mainly in the interambulacral midline being conspicuously sunk and in the genital plates being not higher than broad.

Kei Islands, 245 m.

Type specimen in the Copenhagen Museum.

Stereocidaris indica, var. *philippinensis* n. var.

Differs from the typical *St. indica* in the hairs of the primary spines being very small and simple (in the typical *indica* they form a thick, spongy coat).

Philippine Seas, ca. 475—745 m.

Type specimen in the Copenhagen Museum.

Stereocidaris sceptriferoides, var. *lanceolata* n. var.

Differs from the typical *St. sceptriferoides* mainly in the scrobicular spines being slender and pointed (broad, almost rectangular in the typical form).

Sagami Sea, ca. 400 m.

Type, and only known specimen, in the Copenhagen Museum.

Cidaris cidaris, var. *meridionalis* n. var.

Differs from the typical form mainly in the darker colour, the secondary and the young primary spines being brownish-purplish. The test is usually somewhat lower and the primary spines apparently also shorter than in the typical form.

Bay of Biscay — Canaries — Madeira, ca. 850—1000 m.

Type specimen in the Copenhagen Museum.

Stylocidaris amboinæ n. sp.

Primary spines rather thick, fusiform, not tapering to a fine point, closely set with low spinules arranged in fairly distinct longitudinal series, not forming smooth ridges in the distal part; with faint pinked bands; no spots on the collar. Interporiferous zone wholly covered by secondary tubercles, not arranged in distinct longitudinal series. Test white, apical system brown or greenish.

Amboina, 180—225 meters; off Mindanao, ca. 180 m.

Type specimen in the Copenhagen Museum.

Stylocidaris rufa n. sp.

Primary spines fusiform, tapering to a rather fine point; they are light brownish, set with numerous low, white spinules, being thus finely spotted. No spots on the collar. Interporiferous zone with a regular series of small tubercles adradially to each marginal

series, the median space bare. Test reddish-green, apical system dark redbrown.

Hawaiian Islands, 128—515 m.

Type specimen in the Copenhagen Museum.

Stylocidaris (?) *longicollis* n. sp.

Primary spines nearly cylindrical, slightly widened at the point. 8—9 series of rather sharp spinules, forming more or less continuous ridges. The collar unusually long, 3 mm, with scattered small red spots; the shaft banded white and red. Interporiferous zone naked, except for a few secondary tubercles adradially to the marginal tubercles, at the ambitus. Test white, excepting the pore-zones and the marginal ambulacral tubercles, which are yellowish-red, as are also the genital plates.

Amirante Islands, 610 m.

Type, and only known specimen, in the British Museum.

It seems not improbable that this species rather belongs to the genus *Prionocidaris*, being perhaps nearly related to *Pr. baculosa*.

Stylocidaris maculosa n. sp.

Primary spines with usually 10 sharp, strongly serrate ridges, those on the adoral side lower and less serrate, which gives the spine a somewhat flattened appearance. The surface of the shaft, between the ridges, smooth, shining, entirely without hairs. Collar very short, with a conspicuous patch of reddish-brown; the shaft of the spines banded with reddish-brown. Interporiferous zone naked, except a very small tubercle adradially to the marginal one, at the ambitus. Test white, except the interporiferous zone, which is faintly brownish-pink. Apical system darker, brownish-olive, especially the inner part of the genital plates. Small form, scarcely exceeding 15 mm h. d.

Sagami Bay, ca. 90—700 m.

Type specimen in the Copenhagen Museum.

Stylocidaris (?) *fusispina* n. sp.

Primary spines fusiform, with 10—12 sharp, but perfectly smooth ridges, in the basal part of the spine transformed into series of low, rounded tubercles. The surface between the ridges covered by a

low, spongy coat of anastomosing hairs. Collar ca. 0.5 mm long, without spots; the shaft of the spines with 2—3 conspicuous brownish or reddish-yellow bands. Interporiferous zone naked. Test white, but the tubercles of a pinkish tint; apical system light reddish-yellow. Very small form, scarcely exceeding 15 mm h. d.

Sagami Sea, ca. 100 m.; Kagoshima Gulf, 185 m.

Type specimen in the Copenhagen Museum.

The generic position of this species is somewhat uncertain.

Eucidaris clavata n. sp.

Primary spines very thick, clubshaped, widest at the end, as much as 8—9 mm diameter, against ca. 4 mm at the base. Interporiferous zone wholly covered by secondary tubercles, arranged in regular vertical series. Oculars all insert. Primary spines brown, not banded, secondary spines whitish, indistinctly banded. Test white, with a tint of greenish on the genital and ocular plates.

St. Helena and Ascension. Probably littoral.

Type specimen in the Paris Museum.

Actinocidaris n. g.

Pores subconjugate; peristomial ambulacral pores in single series. Tubercles non-crenulate. Primary spines thick, finely tuberculated, with a coarse spongy layer formed by the thick, anastomosing hairs. Secondary spines not scalelike. Large globiferous pedicellariæ unknown, small globiferous with a distinct endtooth; tridentate pedicellariæ with long, slender valves.

Genotype: *Phyllacanthus Thomasi* A. Agassiz & H. L. Clark.

Hesperocidaris n. g.

Pores not conjugate, wall nearly flat; pores on peristome in single series. Primary spines slender, cylindrical, sometimes conspicuously widened and flattened towards the end; they are set with low granules arranged in longitudinal series; the surface covered with a thick, spongy coat of anastomosing hairs. Secondary spines not strongly appressed. Large globiferous pedicellariæ without an endtooth and without a limb on the stalk. Small globiferous with

a small endtooth. Tridentate pedicellariæ of one form only, with slender valves.

Genotype: *Dorocidaris panamensis* A. Agassiz.

Prionocidaris bispinosa, var. *nigro-brunnea* n. var.

Apical system somewhat smaller than in the typical *bispinosa*, ca. 32—40 % h. d. (against ca. 43—50 % h. d. in the typical form). Primary spines generally somewhat less than h. d., rather coarsely thorny, ending in a fairly conspicuous crown. Secondary, at least the scrobicular ones, of a uniform dark colour, sometimes almost black. Also the primary spines usually of a dark violet colour.

Shark's Bay, West Australia. 27 m.

Type specimen in the Hamburg Museum.

Phyllacanthus irregularis n. sp.

Interambulacral plates of adult specimens 8—9 in a series. Marginal series of ambulacral tubercles irregular, the tubercles (and spines) of varying size. Interporiferous zone with only two series of inner tubercles. A series of larger tubercles (spines) along the inner edge of the genital plates. Oral primary spines not flaring at the tip.

West and South Australia; littoral.

Type specimen in the Hamburg Museum.

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