REPORT ON THE SOUTH AMERICAN SEA STARS COLLECTED BY WALDO L. SCHMITT

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The following list of sea stars is based upon material collected by Dr. Waldo L. Schmitt, of the United States National Museum, in 1926 and 1927, during an extended investigation of the higher crustacea of South America, made under the auspices of the Walter Rathbone Bacon scholarship. General collecting was therefore incidental to the main object of the expedition. The principal localities are: Salaverry and Talara, Peru; Antofagasta, Tocopilla, and Punta Arenas, Chile; the Juan Fernandez Islands; Port Stanley, Port William, and Teal Inlet, Falkland Islands; Dessado, Patagonia.

Especially valuable and perplexing has been a series of Anastereis from the Falkland Islands. Ophidaster agassizi is figured for the first time.

Ophidaster agassizi Perrier

Plates 1 and 2; text Figure 1


Juan Fernandez, December 9, 1926, two specimens.

Clark (1921) writes that this species is related to O. confertus of Lord Howe Island and O. kermadecensis of Raoul Island, Kermadeces, but is perfectly distinct from both. These species belong to the section of the genus characterized by having between the furrow spineslets one or more granules on the inner surface of the furrow, and only one madreporite. Clark writes that the papular pores are numerous (10 to 20 in each area), but in these examples of agassizi (R. 27 mm.), there are only 5 or 6. Many of the furrow spineslets are without intervening granules. On the proximal half of the ray
there is a characteristic pedicellaria in, or bordering, most of the papular areas; distally they are much less numerous than proximally (text fig. 1).

**Cycethra verrucosa** (Philippi)


Port Stanley, Falkland Islands, three specimens. Near Teal Inlet, Falkland Islands, one specimen, March–April, 1927.

![Figure 1.—Ophiaster acanthus. A characteristic pedicellaria, X100](image)

Dr. R. Koehler, in the citation noted above, has given a very full discussion of this species together with excellent figures.

**Patiria chilensis** (Lütken)

Plate 3, Figures 1, 2


San Lorenzo, Island, Callao, Peru, November 1, 3, 1926, two specimens.

Antofagasta, Chile, November 15, 1926, one specimen.

The colors of the Peruvian specimens in life were recorded by Doctor Schmitt as: “Above, dark maroon purple with irregular lines and markings of nile blue; under side, glaucous green, tube feet cream buff” (Ridgway’s, Nomenclature of Colors, 1886).

**Patiriella calcarea** (Perrier)

Plate 4, Figures 1, 2


Asteraea calcarata var. sessiliforme MEISSNER, Archiv f. Naturgesch., 1896, p. 97, pl. 6, fig. 3.


Juan Fernandez, six specimens; one from 15 to 18 meters. Bahia de Padre, December 15, 1926.

Doctor Lieberkind, in the citation above, has given a critical review of this species.

**Patiriella fimbriata** (Forster)

*Plate 5, Figures 1, 2*


Punta Arenas, Magellan Strait, February 4, 1927, two specimens.

Port Stanley, Falkland Islands, March 11 and 27, 1927, five specimens (R, 5.5 to 8 mm.).

Near Teal Inlet, April 3, 1927, two specimens (R, 8 to 11 mm.).

Koehler (1923) has given critical notes and excellent figures of this species. His largest specimen had R 16 mm. In alcoholic specimens the delicate abactinal spinelets are more or less obscured by a soft skin, traversed by fine channels. It is relatively thicker in the smaller than in the largest specimens and disappears on drying.

**Porania antarctica** Smith


Punta Arenas, Chile, February 1, 1927, one specimen.

For a critical discussion see Koehler, 1912, above. Sladen gives excellent figures of the entire animal, and Ludwig, details of skeleton.

**Heliaster helianthus** (Lamarck)


Tocopilla, Chile, November 14, 1926, one specimen.
Salaverry, Peru, October 18, 1926, three specimens.
Clark gives a full description and figures. These specimens were taken well within the known range.

HELIASTER CANOPUS Perrier

*Heliastra canopus* Perrier, Bèv. des Stell. Ind., 1875, p. 88.—H. L. Clark, Bull. Mus. Comp. Zool., vol. 51, 1907, p. 74, pl. 8, fig. 21; pl. 9, fig. 7.

Juan Fernandez, December 8, 1926, eight specimens.
The largest example has R, 72 millimeters and 21 rays. Clark, who gives a full description and figures, records 60 millimeters as being the maximum among his 27 specimens.

HELIASTER POLYBRACHIIUS Clark

*Heliastra polybranchiatus* H. L. Clark, Bull. Mus. Comp. Zool., vol. 51, 1907, p. 54, pl. 2, fig. 2; pl. 7, fig. 12; pl. 8, fig. 8.

Talara, Peru, August 29, 1926, two specimens.
As Clark points out, this is the mainland form of *H. cuningii* (Galápagos Islands). Reference should be made to Clark's paper for description and figures.

ASTROSTOLE PLATEI (Meissner)

Text Figures 2, 2a

*Asterias* (Coscinasteriæ) *platei* Meissner, Archiv f. Naturgesch., 1896, p. 103, pl. 6, fig. 2.


Seven rays, some incomplete; no label, but in container with four specimens of *Heliastra canopus*; hence from Juan Fernandez. Material in poor condition.

Meissner has given a good figure of this species which is a typical *Astrostele*. The type is eight-rayed. Inner furrow-spine tapered, shorter and slenderer than outer, which is slender with truncate tip, but not tapered. Three series of prominent ventro-lateral spines, longer than adambulacral and with flattened, rounded or truncate tips, often shallowly gouge-shape. Inner of these three series are actinals, the other two inferomarginals. They form also oblique transverse combs, the base of outer spine carrying prominent bouquet of crossed pedicellariae.

Superomarginal spines about the same length, usually on alternate plates; a very irregular series of acicular carinal spines between which and superomarginals are irregularly spaced similar dorsolaterals corresponding to about two series on either side—all with conspicuous wreaths of crossed pedicellariae, about 0.1 millimeter in length (figs. 2, 2a). Straight pedicellariae slender-lanceolate, rare except on furrow face of adambulacral. Superomarginals with conspicuous area of tiny hyaline bosses.
This species is very nearly related to *Astronestes pachae* (H. L. Clark) of Easter Island. The general appearance of the two forms, and the details of the crossed pedicellariae are closely similar. The crossed pedicellariae of *pachae* average about 0.35 millimeter in length (profile view) while those of *platoi* are around 0.4 millimeter. Some reach 0.45 millimeter. Only one specimen of each species has been examined; in fact, no specimens of *pachae* other than the type are known.

**MEYENASTER GELATINOSUS** (Meyer)


Antofagasta, Chile, November 15, 1926, one specimen.

For a discussion of this genus see Fisher, citation above.

**COSMASTERIAS LURDA** (Philippi)


*COSMASTERIAS LURDA* LUDWIG, Exp. Antarct. Belg., 1912, p. 23, pl. 2, figs. 1-7; pl. 5, fig. 8.

Punta Arenas, Strait of Magellan, February 5, 1927, one specimen (R., 29 mm.).

This species, of many aliases, is characteristic of the region of the Strait of Magellan and adjacent coasts of both Atlantic and Pacific sides; Tierra de Fuego; South Georgia; low tide to 348 fathoms.

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1 For figures see Fisher, Bull. U. S. Nat. Mus. 76, part 2, plate 42, figures 7, 7a.
Genus ANASTERIAS Perrier


[Not Anasterias Ludwig, 1808; nor Koehler, 1906, 1908, 1912, 1920, 1923; nor Verrill, 1914. See Lyasterias.]

Diagnosis.—Resembling Sporasterias, but the abactinal skeleton typically reduced to an open, delicate irregular mesh, entirely hidden by thick pulpy skin, which, in the adult, even when dried, may conceal the underlying plates. Both series of marginal plates well developed; the superomarginals commonly monacanthid (or spineless), the inferomarginals diploacanthid; one series of actinals, sporadically spiniferous; adoral carina composed of about three pairs of contiguous postoral adambulacral plates; interbrachial septum strongly calcified; gonads opening ventrally—pseudohermaphroditic.

Remarks.—The above diagnosis is intended to characterize two known species of a larger group which includes Sporasterias and possibly Kalyptasterias, and which by right of priority would be called Anasterias. This diagnosis of Anasterias is therefore of the subgenus Anasterias.

Notes on the history of this group will be found in Asteroidea of the North Pacific and Adjacent Waters, Part 3. As there noted, the group is given generic rank in order to direct attention to the peculiar characters of Anasterias, ss. There seems to be no clear line of demarcation between Anasterias and Sporasterias.

ANASTERIAS MINUTA Perrier

Plate 6; Plate 7, Figures 1-2; Plate 8


1 Anasterias minuta var Asteroderma papillosum Perrier, 1891, pl. 10, figs. 6a-30.

The type of this species is in the Muséum d'Histoire Naturelle (E. 792, Hombroen et Jacquinot, 1847, alcohol). Perrier considered the type locality to be Port Famine, Magellan Strait.

In addition to Doctor Schmitt's material, I have two dried specimens from Darwin Harbor, Choseul Sound, Falkland Islands (No. 2623 Mus. Comp. Zool.). The smaller measures R, 18 millimeters, r, 6 millimeters; the larger R, 48 millimeters, r, 13 millimeters. In

the smaller example the abactinal skeleton is clearly visible and consists of a weak, irregular reticulum resembling the condition in *A. pedicellatus* as figured by Koehler and closely similar to that of the type specimen of *minuta*. Most of the superomarginals carry one spinelet and the inferomarginals two, while scattered along the intermarginal channel and inside the furrow margin are rather numerous, lanceolate, straight pedicellariae two-thirds the length of the superomarginal spinelets. In the larger specimen, however, the abactinal integument has thickened and conceals the skeleton, which is quite weak and irregular as in Koehler's Plate 5, Figure 1, alluded to above. The proportions are about as in Figure 4. There are a few actinal plates and spines at the base of the ray and the adoral carina is composed of three pairs of contiguous adambulacrae, the first pair larger than second, and the second larger than third. The superomarginal spines have been mostly absorbed; pedicellariae as in the small example. A third specimen (No. 2624) carries a cluster of young.

Sixteen specimens from Port Stanley, Falkland Islands, collected February to April, 1927, by Dr. Waldo L. Schmitt (pls. 6, 7). These are evidently conspecific with the Darwin Harbor examples. A well-hardened alcoholic example (R., 48 min.) resembles the *Kalypptasterias conferta* figured by Koehler. The abactinal plates are slender, delicate, and form an irregular reticulum, with very large meshes, and are entirely hidden until dried by the soft pulpy integument. Dorsal spinelets few and widely scattered; only a few abactinal crossed and straight pedicellariae. Superomarginal plates normal, not massive, each with one blunt, terete, slender spinelet, 1 to 1.5 millimeters long; inferomarginals with two decidedly stouter and longer spines; actinal plates with one spine, slightly smaller, the series extending two-thirds length of ray, each spine forming with the inferomarginal spines a transverse series of three. Numerous, rather thickly lanceolate, subobtuse straight pedicellariae, decidedly longer than broad, are scattered on the marginal and actinal plates in the intermarginal channel and along edge of furrow. No associated cross pedicellariae, except near the end of the ray, and there only a few. [In *Sporasterias antarctica* the superomarginals are normally surrounded by crossed pedicellariae, and the inferomarginal plates carry at least a few on the intermarginal side of the spines.]

Another lot of nine from Port Stanley (April 16, 1927) differs in having numerous small capitulate abactinal spinelets and fairly numerous abactinal (but not marginal) crossed pedicellariae; straight pedicellariae scattered over abactinal surface and distributed later-

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*Swell. Antarctic Exp., vol. 1, no. 1, 1928, pl. 5, figs. 1 and 4.*

*Idem, pl. 4, figs. 3 and 4.*
EXPLANATION OF PLATES

PLATE 1: Agassiziana

Ophidiaster agassizii; Juan Fernandez; abactinal surface, X3.5.

PLATE 2

Ophidiaster agassizii; actinal surface of specimen figured in plate 1, X4.

PLATE 3

Figure 1. Patiriella chilenica; abactinal surface, X2.
2. Same specimen; actinal surface, X2.

PLATE 4

Figure 1. Patiriella crassata, Juan Fernandez; abactinal surface, X2.8.
2. Same specimen; actinal surface, X2.8.

PLATE 5

Figure 1. Patiriella ambriata; Port Stanley, Falkland Islands; abactinal surface, X4.
2. Same specimen; actinal surface, X4.

PLATE 6

Anasterias minuta, Port Stanley, Falkland Islands; abactinal aspect of a dried specimen of typical form, X2.

PLATE 7

Figure 1. Anasterias minuta; actinal surface of specimen shown in plate 6, slightly less than twice natural size.
2. Anasterias minuta; young specimen from Port Stanley, X3.5.

PLATE 8

Anasterias from near Teal Inlet, Falkland Islands, mentioned in text, p. 8; X2.3.
Ophidiaster agassizii
For explanation of plate see page 15.
P ATIRIA CHILENSIS

FOR EXPLANATION OF PLATE SEE PAGE 10.
PATIRIELLA FIMBRIATA

FOR EXPLANATION OF PLATE SEE PAGE 10.
ANASTERIAS MINUTA

FOR EXPLANATION OF PLATE SEE PAGE 10.
ANASTERIAS MINIATA

FOR EXPLANATION OF PLATE SEE PAGE 71.