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TWO NEW ASTEROIDS FROM AUSTRALIA.

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(Plate xviii.)

THIS contribution contains descriptions of two new species, one from New South Wales and one from Western Australia. The former belongs to the genus *Pseudarchaster*, which has not hitherto been recorded from Australian waters; the Western Australian species belongs to *Parasterina*, and has already in that State an ally, *P. crassa* (Gray).

The genus *Parasterina* is, so far, confined to the southern hemisphere, being recorded from South Africa, Australia, and South America.

Pseudarchaster boardmani sp. nov.

(Plate xviii, figures 7–11.)

Description.—Rays five; R. = 28 mm., r. = 11·5 mm., R. = 2·4 r. Breadth of ray between second and third superomarginal 10 mm. The rays are fairly short and tapering; narrow. Interbrachial arcs rounded, though slightly inclined to acuteness.

The abactinal surface is covered in paxillæ, which are compact but not wholly uniform in size. Some are small, carrying about eight granule-like spinelets, while others, particularly the regularly arranged median radial series, are much larger, carrying up to forty spinelets. The peripheral spines are slender, some almost needle-like in appearance. The paxillæ decrease in size on the rays and near the margins of the disc, but no groove of any kind exists between the paxillæ and the superomarginal plates. The abactinal plates, which carry, and are totally hidden by, the densely packed paxillæ, are roundly hexagonal, slightly domed, and surrounded by six papular pores as in species of *Mediaster*. The plates vary in size, some being very small, particularly on the rays. Only the median radial series reaches to the terminal plate. The series next to it ends at the fifth or sixth last superomarginal plate.

Counting from the middle of the interbrachial arc to the terminal plate the superomarginals are seen to be fifteen in number. Superomarginals in and near the middle of the interbrachial arcs are high and narrow, with deep sutures between them, but gradually become wider and lower and the sutures much shallower towards the ends of the rays. The ultimate superomarginal plate is very small. All the superomarginals are clothed in a spine-like granulation, which is very dense and evenly distributed. The terminal plate is fairly large and conspicuous, prismatic, and possesses a rugged surface and a glassy sheen. On the actinal surface the terminal plate is deeply channelled to accommodate an extension of the ambulacral groove.

The inferomarginal plates correspond in number, size, arrangement, and general character to the superomarginal plates. In both series of marginals the deep sutures occurring between plates in and near the centre of the interbrachial arcs are partially filled in by long slender spinelets, which spring from the inner walls of the plates and stand out at right angles.

The madreporite is small, hexagonal in outline, dome-like, and perforated by deep wavy channels.

The polygonal actinal intermediate plates are fairly prominent, dome-like, and separated by well-defined grooves. Many near the oral plates are provided with only a few short spinelets of varying thicknesses. In specimens older than the holotype over half the number of actinal intermediate plates are absolutely bare; the remaining plates carry short spines of varying thicknesses numbering up to twenty to each plate. The series lying next to the adambulacrals terminate between the fourth and fifth inferomarginal counting from the middle of the interbrachial arc.

The adambulacral plates are directed obliquely inwards and are joined to one another laterally by a yellowish, glistening, membranous integument. The furrow spines vary from five to eight to a comb, seven being the usual number. Near the mouth these furrow spines are short and stout; in the middle of the ray they are comparatively long and stout and of even width for their entire length, while near the ends of the rays they are fairly thin and short. On the actinal face of each adambulacral plate and behind the furrow series, are three irregular rows of short spines, which are slightly thinner than the spines of the furrow series, yet often quite as long.

The oral plates are elevated above the actinal intermediate plates and bear well-defined sutures. Eight marginal spines occur, the innermost two being flat sided and very much bigger than the remaining six. The outer half of the actinal surface of each oral plate is almost bare, being provided with only from four to five granules arranged in a row. The inner half is covered by short, stout, and untapered spinelets.

Localities.—Off Cape Everard, New South Wales, 75 fathoms; sea floor composed of sand and clay. Trawled and presented by Captain K. Moller, 1930. One specimen, the holotype (Austr. Museum Reg. No. J.5633).

Twenty-four miles N.N.E. of Montagu Island, New South Wales, 80 to 90 fathoms. Collected by W. Boardman, Sept., 1926, on trawler "Gunner." Three specimens. (Austr. Museum Reg. Nos. J.5035–37).

Colour in Life.—Superomarginals pale orange, except for about the last six on tip of ray, which are creamish-white. Centre of disc deep reddish-orange with five inter-radial bands of the same colour reaching out to the superomarginals. Remainder of abactinal surface pale orange. Actinal surface creamish-white.

Remarks.—The comparatively large size of the terminal plate, the swollen nature and large size of the superomarginals in distal half of the ray, the single row of abactinal plates reaching to tip of ray, the nature of the oral plates and the narrow rays, are characters which, when grouped together, serve to separate this species from its allies.

Parasterina troughtoni sp. nov.

(Plate xviii, figures 1–6.)

Description.—Rays five. R. = 16 mm., r. = 5·5 mm., br. (near base of ray) = 5 mm. R. = 2·9 r. and 3·2 br. The rays are fairly short and stout; each tapers imperceptibly to a blunt rounded extremity. The amount of tapering is so slight that measurement shows it to be less than ·75 mm.

The entire abactinal surface is paved with distinctly raised almost flat-topped plates, varying slightly in size but always roughly oval in outline except near and at the tips of the rays, where they are inclined to be circular. All abactinal plates are clothed in very minute spinelets, which are almost granule-like to the unaided eye. These spines are very numerous; about forty occur to each plate, including an extensive peripheral series. The abactinal plates show no tendency towards imbrication. On the tops of the rays the plates are arranged in regular longitudinal rows; a papular pore occurs between each plate. On the sides of the rays the plates run uninterruptedly in downwardly sloping series. In these areas the papular pores do not separate the plates; they occur sparingly only between the series or rows of plates, and are comparatively large in size.

The madreporite, which is very small, is situated near the centre of the disc.

The terminal plate is small but readily distinguishable; it is dome-like and oval in outline.

The actinal surface presents a thinly furred appearance owing to the masses of short, cylindrical spinelets, which spring from the regularly arranged plates. The actinal plates are very small and are almost entirely hidden by the spinelets which surmount them. About ten to twelve spinelets occur to each plate.

The furrow combs, which overlap one another in a slightly oblique manner, each contain from two to four stout spinelets. On the actinal face of each adambulacral plate and behind the furrow comb is a clump of from three to six spinelets, which are smaller than the furrow spines. Each oral plate carries about ten stout marginal spinelets. Behind these and on the actinal face of the plate, a fork of two or a line of four smaller spinelets are to be seen.

The general spinulation of the actinal surface reminds one of species of *Nepanthia*, as it merges and blends the various areas of spines so well that difficulty is experienced in securing lines of demarcation.

Locality.—Shore at Albany, King George's Sound, Western Australia. Collected by Messrs. Troughton, Grant, and Wright, November, 1921, one specimen, the holotype (Austr. Museum Reg. No. J.3978.).

Remarks.—*Parasterina troughtoni* sp. nov. is allied to *P. obesa* H. L. Clark. The differences are as follows:—In *P. troughtoni* the rays taper so slightly that measurement shows the amount to be less than ·75 mm. Up to four spinelets occur to each furrow comb. Spines behind the furrow series number from three to six. The oral plates carry a greater number of spines both on the margins and on the actinal faces.

P. troughtoni has been compared with specimens of *P. crassa* (Gray) from Western Australia and the following differences seen. In *P. troughtoni* the abactinal plates are comparatively large, no small intervening plates being present; the abactinal plates are spaced some small distance apart on the tops of the rays and are not closely packed. The papular pores are comparatively large and conspicuous. Up to four very small and short spinelets in each furrow comb. Oral plates and spines small, the latter fewer in number. Spines on the actinal intermediate plates, short, stout, comparatively uncrowded, not long, thin, crowded, and plentiful.

EXPLANATION OF PLATE XVIII.

Figure 1.—*Parasterina troughtoni* sp. nov. Portion of abactinal surface of ray of holotype. Enlarged.

Figure 2.—Same species. Actinal surface of holotype. Slightly enlarged.

Figure 3.—Same species. Abactinal surface of holotype. Slightly enlarged.

Figure 4.—Same species. Denuded tip of ray of holotype showing terminal plate. Enlarged.

Figure 5.—Same species. Denuded abactinal surface of ray of holotype. Enlarged.

Figure 6.—Same species. Centre of actinal surface of holotype showing mouth spines. Enlarged.

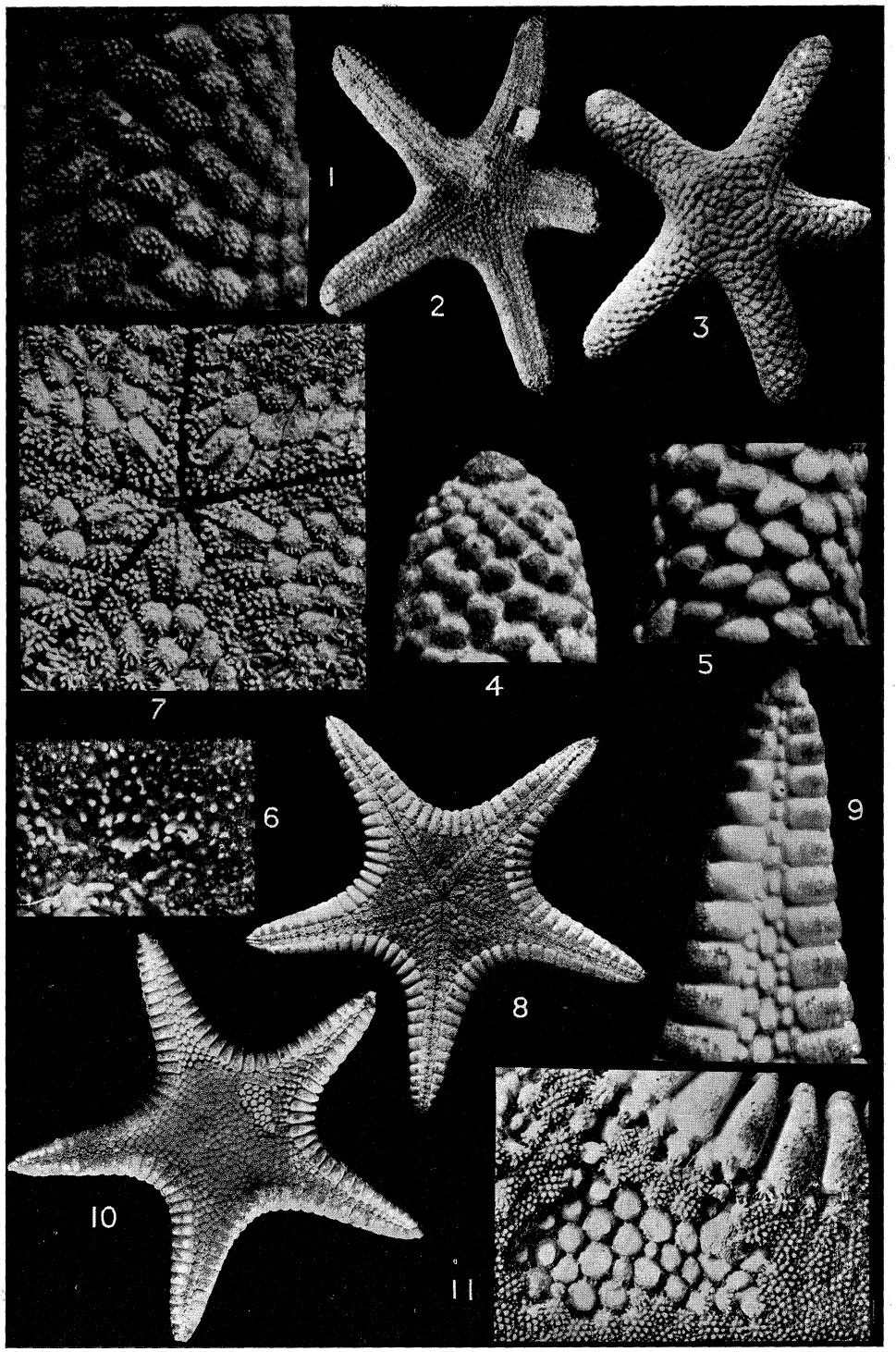
Figure 7.—*Pseudarchaster boardmani* sp. nov. Centre of actinal surface of holotype showing mouth spines. Enlarged.

Figure 8.—Same species. Actinal surface of holotype. About natural size.

Figure 9.—Same species. Denuded tip of ray of holotype. Enlarged.

Figure 10.—Same species. Abactinal surface of holotype. About natural size.

Figure 11.—Same species. Paxillæ removed from portion of the abactinal surface to show plates below and arrangement of the papular pores in the holotype. Enlarged.



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