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ZOOLOGY.—*A new brittle-star* (Ophiocoma anaglyptica) *from Canton Island.*[1]

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H. L. Clark lists 19 species for the genus *Ophiocoma* Agassiz in his "The Echinoderm Fauna of Torres Strait."[2] All these have been known for 25 years or, in many cases, much longer. Since the publication of Dr. Clark's paper, apparently only three new species have been assigned to the genus, and one has been removed to the new genus *Ophiocomella* established by A. H. Clark in 1938. In view of the fact that the genus is a conspicuous one and already well known, the addition of another species is rather remarkable, although perhaps not surprising since the fauna of many isolated Pacific islands is still incompletely known.

Ophiocoma anaglyptica, n. sp.

Named *anaglyptica* (embossed) in reference to raised interbrachial plates.

Description.—The disk is about 20 mm in diameter, with well-spaced granules that encroach upon the interbrachial areas to a variable extent. Among the normal scales thus exposed in each interbrachial area are a number of enlarged bare plates, usually between 25 and 30. The genital slits are bordered by eight to ten small granules. In length the arms are about five times the width of the disk. The upper arm plates, which are thickened and raised above the general surface, are about two and one-half times as broad as long; of irregular outline and extremely variable in shape. The majority of these plates suggest an open low-arched fan from which one of the lateral angles has been sheared abruptly. The uppermost arm spine on the side of the missing angle is greatly swollen and enlarged, while a similar spine on the opposite side of the same segment is lacking. As a rule there is an alternation of this arrangement from segment to segment. Thus an upper plate with the right angle missing and a

[1] Received July 15, 1944.
[2] Carnegie Inst. Washington Publ. 214 (Dept. Mar. Biol., vol. 10). 1921.

swollen dorsal spine will be followed by one with a deficient left angle and a swollen left dorsal spine. Occasionally both upper plate angles are present, in which case the large spine is lacking on both sides. Conversely, both angles may be lacking and both upper spines present and enlarged. The first few segments frequently bear five spines; the next few four; and the remainder bear three on one side and four on the other alternately down the arm.

The lowermost spine is the shortest and tends to taper to a flattened blunt tip. The second lowest is slightly longer and spatulate. The next spine above is about a third longer than the one below and tapers to a rounded tip. The highest spine, when present, is typically bottle-shaped, expanded in the middle but slightly compressed; as a rule, narrowing abruptly to form a short neck. It is about two and one-half to three segments long.

There are two tentacle scales on all but the first two or three segments, each of which may bear three.

The shape of the oral shields is typical of the genus. They are roughly obovate with the proximal border nearly straight. The triangular adoral shields are equilateral and separated by the width of the oral shields. There are generally eight distinct oral papillae, with two or three small granular ones at the apex which are indistinguishable from dental papillae. The first is rectangular and lies above the second which is round and scalelike; the remainder are toothlike. There are five or six dental papillae.

The lateral arm plates are barely visible above and below.

The under arm plates are as broad as long, regular in size and shape, and overlap distally. They are pentagonal, with gently rounded angles and with slightly concave sides.

The color of dry specimens is uniformly chocolate-brown above except for white bands extending the length of the lower three arm spines and, in some instances, spotted areas at the base of the uppermost spines. The lateral intersegmental spaces are occasionally white with conspicuous black stripes extending between the lateral arm plates.

The oral surface is variously spotted and mottled with white, yellow, and light brown. The teeth and oral papillae are almost entirely white. The oral shields and proximal ventral arm plates are mottled with white and brown, but farther out on the arms the ventral plates are colored with barely visible dense dark spots on a slightly lighter background. The two lowermost spines are nearly all white near the disk; farther out they are white at the tip and become dark brown near the base. In some cases they are spotted similarly to the lower arm plates.

As seen from within the radial shields are small for the genus.

Locality.—Canton Island, reef; near shore beneath loose coral blocks. Three specimens were collected November 18, 1941.

Remarks.—The presence of 25 to 30 enlarged interbrachial plates serves to separate this new species from *O. scolopendrina* and *O. erinaceus*,

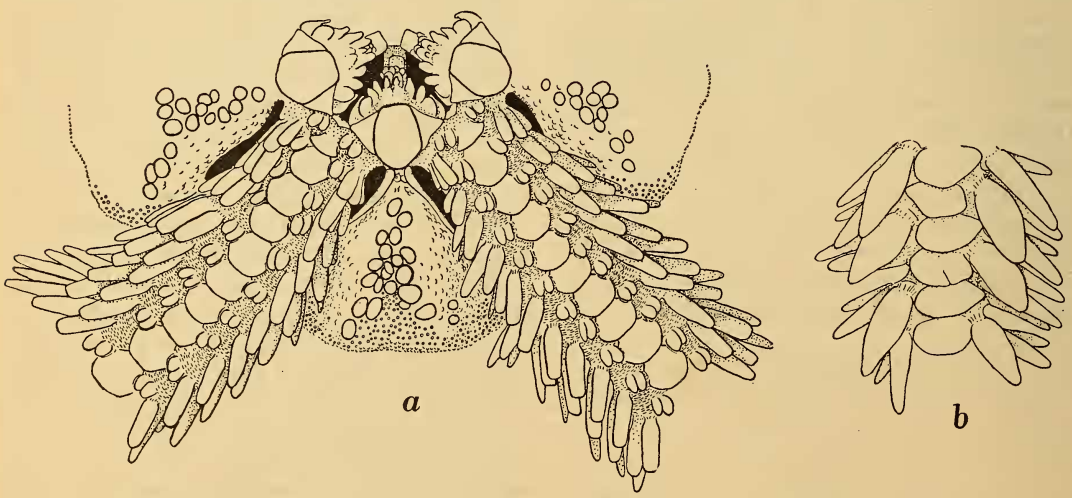

FIG. 1.—*Ophiocoma anaglyptica*, n. sp.: *a*, Oral view of disk and arm bases; *b*, aboral view of arm.

with which it seems most closely allied. Both of these species may show the general arrangement of arm spines and dorsal arm plates, but with less extreme and less regular development. In these species the fan-shaped or triangular dorsal arm plates are sheared to a lesser degree at the lateral angles, and consequently the uppermost arm spines of each segment are less conspicuously developed. However, three and four spines on opposite sides of the same segment occur in some specimens of these species. Often both species possess the flattened spatulate lower spine. In general, as shown by comparison of specimens from Canton Island, *anaglyptica* approaches *scolopendrina* more closely than *erinaceus* in these respects. However, considerable individual variation very likely occurs.

In coloration, *anaglyptica* is somewhat intermediate. The uniform coloration suggests *erinaceus*, but it is not black. On the other hand, the lighter spotted and mottled oral surface and striped lateral intersegmental areas are more typical of *scolopendrina*. Further noteworthy differences may be seen in the disk granules which are more widely and evenly spaced in *anaglyptica* than in either *erinaceus* or *scolopendrina*. Also the shape of the second innermost oral papilla is distinctive for *anaglyptica*. In this species it is round and scalelike, whereas in *erinaceus* and *scolopendrina* it is rectangular.

ICHTHYOLOGY.—*A description of a new gobiid fish from Venezuela, with notes on the genus* Garmannia.[1]

ISAAC GINSBURG, U. S. Fish and Wildlife Service.
(Communicated by LEONARD P. SCHULTZ.)

The specimens forming the basis of this paper were collected by Dr. Leonard P. Schultz, curator of fishes in the U. S. National Museum, on his recent expedition to Venezuela and turned over to me for study. These comprise one specimen of *Evorthodus lyricus*, 45 specimens of *Bathygobius soporator*, and 158 specimens, in six samples, belonging to populations of *Garmannia*, most nearly related to *G. spes*. The latter specimens illustrate a common course of speciation in fishes.

Garmannia spes was described by me (JOURN. WASHINGTON ACAD. SCI. **29**: 62. 1939) from three small specimens, not in very good condition, which were brought back from the Canal Zone by Dr. Samuel F. Hildebrand in 1937. The samples collected by Dr. Schultz in Venezuela are evidently closely related to *spes*. Although these samples were taken in comparatively close proximity, within a range of about 50 miles, yet they show average morphological differences, but of varying degrees. The populations represented by the samples examined are divisible into two primary groups, which may be treated as representing two species. The other differences, within the primary groups, are of lesser degree, racial, or subspecific at the most. One of the species from Venezuela is evidently the same as the Panamanian *spes*. The other species is here described as follows and named for Dr. Leonard P. Schultz:

[1] Received July 25, 1944.

Garmannia schultzi, n. sp.

Diagnosis.—Anterior part of body naked, scaled posteriorly. Transverse row of scales on caudal base absent. A lengthwise row of 3–6 nonimbricate, spaced scales behind pectoral base. Head depressed to subterete. First dorsal spine not prolonged. Dorsal rays usually 11, often 12. Anal rays usually 10, often 9, infrequently 8. Pectoral rays modally 17, often 18, sometimes 16, infrequently 19. Usually diffusely and irregularly cross-banded, alternating lighter and darker, irregular areas; often nearly uniformly colored, especially in the larger males; caudal uniformly pigmented or faintly cross-banded, band at base usually rather more prominent; ventral aspect usually more or less pigmented, moderately or not much lighter than side. Extent of squamation differing markedly with sex, less extensive in male, as follows (also differs with population, see below). Male: scales extending forward to a point under base of fifth to tenth dorsal ray; transverse rows of scales 7–12, longitudinal rows 3–5. End of maxillary reaching approximately to under posterior margin of eye. Female: scales extending forward to under base of third to eighth ray; transverse rows 9–14; longitudinal rows 3–7. Maxillary ending under posterior margin of pupil.