

spiral grooves on the outer surface follow these irregularities just as they would in a natural shell which had been distorted in its growth.

This is not only the case with the external surface, but the inner surface of the cavity is equally accurate, polished, and marked with spiral grooves which exactly agree with the spiral ridges on the outer surface, which are interrupted by the irregularities of the malformed corrugated shell, but placed just as they would be in an ear shell with such an irregular surface. The external spiral apex is well exhibited; and the cavity within the spire most accurately represents the cavity that would be found in an ear shell of that shape.

Some conchologists to whom I have shown the specimen think it is a real shell. I think it doubtful; but they may be right: time only will show.

Descriptions of two new Species of Fishes from the Bermuda Islands.
By G. BROWN GOODE.

In a collection of fishes, including some seventy species, made at the Bermudas in the spring of 1872 I find two forms apparently undescribed, descriptions of which are given below. As the marine life of the Bermuda group is essentially West-Indian in its character, these species may be regarded as additions to the ichthyological fauna of the West Indies.

1. *Diapterus Lefroyi*, sp. n.

This species belongs to the genus *Gerres* as defined by Dr. Günther. It is distinguished from all other members of the genus and family by its relatively greatly elongated form. The body is fusiform, compressed, its greatest height, at the thoracic region, being a little less than one fourth ($\cdot 23$) of the total length, and a little more than one fourth ($\cdot 27$) of the length without caudal ($\cdot 89$): in *Diapterus aprion*, the most elongated of the species hitherto described, the greatest height is one third of the length. The height of the body is uniform under the spinous portion of the dorsal, sloping gently and at a nearly uniform angle above and below to the middle of the caudal peduncle; the height of the body behind the dorsal ($\cdot 10$) is less than one half, the least height of the tail ($\cdot 06$) is one fourth of the greatest height of the body.

The scales are large, measuring $\cdot 03$ and $\cdot 04$ in height, and $\cdot 02$ and $\cdot 03$ in length; they form about forty-five oblique transverse rows between the head and the caudal, four and a half longitudinal rows between the back and the lateral line, and ten between the lateral line and the belly.

The length of the head ($\cdot 22$) equals the greatest height of the body, and is double the greatest width of the head ($\cdot 11$); the height at the pupil ($\cdot 14$) is double the width of the interorbital space ($\cdot 07$). The length of the snout ($\cdot 06$) equals the length of the operculum ($\cdot 06$); when the mouth is protruded the length of the snout is

doubled ($\cdot 12$), and when retracted the posterior extremity of the intermaxillary process extends to the vertical through the centre of the pupil. The nasals are very prominent, and the nostrils are nearer to the orbit than to the extremity of the jaw.

The orbit is circular, its diameter ($\cdot 08$) one third the length of the head. The origin of the dorsal is slightly behind that of the ventrals, its distance from the snout ($\cdot 31$) twice the length of its base ($\cdot 16$). The dorsal spines are graduated nearly in the proportion I. = $\cdot 02$, II. = $\cdot 12$, III. = $\cdot 11$, IV. = $\cdot 10$, V. = $\cdot 09$, VI. = $\cdot 085$, VII. = $\cdot 0725$, VIII. = $\cdot 05$, IX. = $\cdot 04$. The notch between the spinous and soft portions is very deep, and the connecting membrane barely perceptible. In the soft dorsal the fifth ray is the longest ($\cdot 09$) and equals the fifth spine, the succeeding rays diminishing regularly to the last, which equals the ultimate spine ($\cdot 04$); the length of its base ($\cdot 20$) is greater than that of the spinous dorsal. The anal begins behind the centre of the body ($\cdot 56$); the first spine is very short ($\cdot 01$), one fifth the length ($\cdot 05$) of the second, which is slender; the first ray is the longest ($\cdot 08$), the succeeding rays regularly diminishing in length to the last ($\cdot 03$). The lobes of the caudal are equal, the outer rays in length ($\cdot 21$) five times the inner ones ($\cdot 04$). The extremity of the pectoral reaches the vertical from the last dorsal spine; its distance from the snout at the axilla ($\cdot 25$) is nearly equal to the height of the body. The ventral spine resembles the fifth dorsal spine in shape and size; the length of the longest ray ($\cdot 11$) slightly exceeds one third of the distance from the snout to the ventral axilla ($\cdot 30$); the axillary appendage consists of four lanceolate scales, the first and longest as long as the last ventral ray.

Colour silvery, with a bluish tint above; axils of the pectorals and extremity of snout brownish.

Radial formula:—D. IX. 10. A. II. 8. P. 12. V. I. 5. C. 3, 9, 9, 3.

The unit of measurement used above is one hundredth of the total length, which in an average specimen is 7.29 inches (M. 0.185). The species is common in the protected inlets about the islands in company with the "shad" (*Diapterus gula*), from which it is distinguished by the name "long-boned shad;" they are in demand for bait, and are easily seized in large quantities. I take pleasure in dedicating the species to his Excellency Major-General J. H. Lefroy, F.R.S., Governor of the Bermudas, who, while doing so much for the social and political welfare of the islands, is taking an active part in adding to our knowledge of their natural history.

2. *Engraulis choerostomus*, sp. n.

This species closely resembles *Engraulis surinamensis* (Blkr.) Gthr., differing from it, however, in several respects.

The height of the body ($\cdot 16$) is a little more than two thirds of the length of the head, and is contained six times in the total length and a little more than four times in the length to end of middle

caudal rays ($\cdot 90$); the height of the ventrals is less ($\cdot 13$). The scales are large, in thirty-eight oblique rows between the head and the caudal.

The length of the head ($\cdot 22$) is less than one fourth of the total, and is double its height at the pupil ($\cdot 11$); its greatest width ($\cdot 08$) is about one third of its length. The orbit is nearly circular, and its diameter ($\cdot 05$) equals the length of the snout ($\cdot 05$) and the width of the interorbital area ($\cdot 05$). The snout projects far beyond the lower jaw, whose extremity just passes the vertical from the anterior margin of the orbit. The maxillary is dilated above the mandibular joint, rather tapering behind, and extends to the gill-opening. The gill-rakers are fine, setiform, not longer than the eye ($\cdot 05$), about twenty-five on the lower branch of the outer branchial arch.

The origin of the dorsal fin is in front of the middle of the body ($\cdot 45$ from snout), and directly above the extremities of the ventrals; the length of the first ray ($\cdot 06$) is half that of the second ($\cdot 12$), which nearly equals the length of the base ($\cdot 11$).

The origin of the anal is at the middle of the body ($\cdot 51$ from snout) and below the posterior dorsal rays; its greatest height ($\cdot 11$) nearly equals that of the dorsal.

The length of the middle caudal rays ($\cdot 08$) is two-fifths of the outer rays ($\cdot 20$). The length of the pectorals ($\cdot 11$) equals the length of base of dorsal ($\cdot 11$), the extremities reaching to the origin of the ventrals. Length of ventrals $\cdot 09$, distance from snout $\cdot 35$.

Colour: back and sides brownish, belly white; a broad, clearly defined lateral band of silver as wide as the diameter of the orbit ($\cdot 05$).

Radial formula:—D. 13–14. A. 23–24. Length 2.68 inches (M. 0.068).

Common in shoals in Hamilton Harbour, where it is taken for bait in cast-nets. Its enormous mouth has given it the name of "hog-mouth fry."

The types of these descriptions are preserved in the United-States' National Museum in Washington and the University Museum in Middletown, Conn.—*Silliman's American Journal*, August 1874.

On the Embryogeny of the Rhizocephala. By M. A. GIARD.

In a former communication ('Comptes Rendus,' tome lxxvii. p. 945) I submitted to the Academy the principal results of my researches upon the Cirripedia Rhizocephala; and I have since been able to continue the investigation of those curious parasites, and to verify on other species the exactitude of my first observations. *Pagurus bernhardus* is common at Wimereux, where it inhabits by preference the shells of *Buccina*, *Naticæ*, and *Purpuræ*. About a third of the *Paguri* collected in this locality bear a large *Peltogaster*, evidently *P. paguri* of authors. Singularly enough this parasite is entirely wanting on the shores of Roscoff and Saint-Pol-de-Léon, where *Pagurus bernhardus* is nevertheless exceedingly common. The *Peltogaster* of Roscoff, which I had named *Peltogaster paguri*, from the old very imperfect descriptions, is quite new, and may



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