

from 0.050 to 0.100 mm., while the width is about half as much. Supporting rods of pedicels (pl. 38, fig. 20) not very abundant, but large, flat, branched, and perforated at the ends; terminal plates present. Supporting rods of tentacles not very abundant, nearly straight, rough or spiny at tips. Color in life white, with or without a brown tinge and two series of dark blotches on dorsal surface; sometimes with numerous small blackish spots; in alcohol the white becomes yellowish or brownish; tentacles pale yellowish or brownish; pedicels tipped with yellow. Surface of body commonly more or less covered with sand-grains, concealing the true color; these are apparently held by a cement-like mucus which does not release them readily even after death.

Holotype: M. C. Z. No. 1029; from under a rock-fragment, on southeastern reef-flat, Mer, Murray Islands, Torres Strait.

This holothurian is fairly common at Mer, and I also took a specimen at Green Island, Queensland, and at Hilo, Hawaii. A specimen from Port Galera, Mindoro, Philippine Islands, is in the Museum of Comparative Zoölogy. What seems to be the same species is common in the West Indies, and specimens are in the Museum of Comparative Zoölogy from Bermuda, Jamaica, and Tobago; but these West Indian specimens may perhaps represent a closely allied species. Whether allied or identical, the West Indian specimens, like those from Mer, were found buried in the sand under rock-fragments. They apparently live a very sedentary and usually subterranean life. Occasionally individuals are found closely attached to the under surface of rock-fragments where these are well buried in sand.

It is somewhat remarkable that so common and widespread a holothurian has not hitherto been described, but it has not been wholly overlooked, for specimens of *hypamma* occur in the type material of *Stichopus rigidus* Selenka in the Museum of Comparative Zoölogy. This species has long been considered a *Holothuria* rather than a *Stichopus*. It is superficially much like *hypamma*, but is easily distinguished by the buttons having 5 to 8 pairs of holes and the tables being small, with a peripheral circle of holes in a smooth disk, and having 8 supporting rods. Selenka obviously confused the two species, as he describes the tables of *rigida* but the buttons of *hypamma*. The name *rigida* is to be restricted to the form with distinct tables, and buttons having 5 to 8 pairs of holes. The type locality is the Society Islands.

#### Holothuria immobilis.

Semper. 1868. Holothurien, p. 90, pl. xxix; pl. xxx, figs. 27a, b.

Although this fine species is recorded from Mauritius, the Philippines, and Samoa, it is very little known. It was therefore an unexpected pleasure to find it at Mer, though we secured only a single specimen, found on the southeastern reef-flat. It agrees very well with Semper's description.

#### Holothuria impatiens.

*Fistularia impatiens* Forskäl. 1775. Desc. Anim., p. 121, pl. xxxix, fig. B.  
*Holothuria impatiens* Gmelin. 1788. Linn. Syst. Nat., ed. 13, p. 3142.

(Plate 19, Figures 3 and 5.)

Of all holothurians this is, I believe, the most perplexing to the systematist, for it displays a diversity of color most unusual in a holothurian, and there is also a lack of constancy in the development and distribution of papillæ that causes trouble. Moreover, it appears to have a tropicopolitan range, although there are considerable regions where it has not yet been taken. No critical comparative study has been made as yet of the calcareous particles in specimens from widely separated areas, nor is anything known of the growth-changes in the species. It is not at all improbable, therefore, that several perfectly distinct species are now united under the name *impatiens*.

Throughout the Torres Strait region, *impatiens* (*sens. lat.*) is one of the commonest holothurians, occurring under rock-fragments and in dead coral wherever local conditions permit. The specimens collected fall into the following groups, which are easily distinguished (with one exception) by color alone, but I have not as yet discovered any correlated character or characters which are reliable.<sup>1</sup>

(1) *H. impatiens*, typical (pl. 19, fig. 5). This is the usual variegated form, the coloration of which is most diversified; the ground-color is gray (with or without a purple cast) or brown, and either black or white or both may occur in blotches or bands; the papillæ are brown or yellowish, often with light tips, or they may be the same color as that part of the animal from which they arise. Forskål's figure shows what his description indicates, that he had this variety as the basis of his species. In some individuals from Mer the papillæ are all yellow, in handsome contrast with the purplish-brown background. I have been inclined to designate these by a varietal name, but as they intergrade with ordinary specimens, I have decided not to do so.

(2) *H. impatiens* var. *concolor*. Holotype, M. C. Z. No. 1039. This form is a uniformly purplish-gray; the exact shade varies from light to dark, but there is not much diversity; the papillæ are the same color as the body itself. Specimens of this form are often smaller than typical *impatiens*, and the papillæ seem relatively smaller still. The West Indian holothurians referred to *impatiens* are nearest this variety.

(3) *H. impatiens* var. *pulchra* (pl. 19, fig. 3). Holotype, M. C. Z. No. 1043. This is a very conspicuous variety, with the body-wall yellow (often with a greenish tinge) and the papillæ brown (often with a purple tinge). It is strikingly different from the preceding forms and contrasts especially with the extreme *impatiens* which has yellow papillæ.

(4) *H. impatiens* var. *lutea*. Holotype, M. C. Z. No. 1041. In this form the papillæ and body-wall alike are a uniform yellow, having a slightly brownish tint. Only a single specimen was seen, and that was found under a stone on the southeastern reef-flat at Mer.

It may seem a needless multiplication of names to designate each of these varieties in this way, but in future discussions of the species it will be a convenience to have some simple means of indicating such well-marked forms, and I am not at all sure that one or more of them may not prove to be valid species.

All these holothurians as seen at Mer agreed in the cylindrical body, showing no clear difference between dorsal and ventral surfaces, but uniformly covered with rather well spaced, large papillæ, and without distinct pedicels. They all have 20 light-colored tentacles and conspicuously well developed, white, very viscid Cuvier's organs. They grow to a large size, at least up to 400 mm. in length. They are somewhat gregarious, three or four specimens often occurring under the same shelter.

#### Holothuria leucospilota.

*Stichopus* (*Gymnochirota*) *leucospilota* Brandt. 1835. Prod. desc. Anim., p. 251.

*Holothuria vagabunda* Selenka. 1867. Zeit. f. w. Zool., 17, p. 334, pl. xix, figs. 75, 76.—Semper. 1868. Holothurien, p. 81, pl. xxi.

*Holothuria leucospilota* Ludwig. 1881. Zeit. f. w. Zool., 35, p. 595.

Although Ludwig does not use the combination of generic and specific names here credited to him, either in this place or in subsequent publications, he demonstrates beyond doubt the identity of Brandt's and Selenka's species and indicates that *Holothuria leucospilota* is the proper name to use. It is regrettable to abandon so familiar a name as *vagabunda*, but there seems to be no reason whatever for not using the much older name. The species has very distinctive calcareous tables, which make its identification relatively easy as compared with most members of the genus. The distribution is throughout the Indo-

<sup>1</sup> I hope at some future time to make a thorough study of all the *impatiens* material I can obtain and determine positively the significance of the unusual diversity.

EXPLANATION OF PLATES.

PLATE 19.

- FIG. 1. *Holothuria pervicax*; Mer; dorsal view.
2. *Pseudocucumis aciculata*; Mer; dorsal view.
3. *Holothuria impatiens* var. *pulchra*, juv.; Mer; dorsal view.
4. *Holothuria edulis*; Erub; side view.
5. *Holothuria impatiens*; Mer; dorsal view of anterior end.

All figures natural size.

