

ON SOME HOLOTHURIANS FROM THE GULF OF MANNAR, INDIA

By

S. K. MUKHOPADHYAYA

Zoological Survey of India, Calcutta

INTRODUCTION

The gulf of Mannar is a part of the Indian ocean on the south point of India and west of Ceylon. It embraces several islands like Pamban, Krusadai and Rameswaram etc. Our knowledge of holothurians of this area is based on the works of Bell (1888 & 1889), Thurston (1894), Pearson (1903), Koehler & Veney (1908), Gravely (1927), Nair (1946), Nair & Mahadevan (1965) and James (1969). The total number of species until now recorded from this area is 39.

The present paper is based on sporadic collections made from the gulf by the various survey parties of the Zoological Survey of India. The material contains ten species, none of which is, however, new to science but three of them show new locality records. (Marked with astericks).

As the work was carried out on sufficiently old and preserved material, the unvarying skeletal characters were considered for their identification. Synonyms were reduced to avoid repetition. The paper also furnishes a list of species hitherto known from the gulf water together with their distribution in the Indian region.

Key to species

- | | |
|---|---|
| 1. Tube feet present ; spicules include tables, rods,
and plates. ... | Aspidochirotida & Dendro-
chirotida 2 |
| 1'. Tube feet absent ; worm like bodies, spicules
are wheels, anchors and anchor plates. ... | Apodida, <i>Synapta maculata</i> . |
| 2. Body curved, (U-shaped) ; tentacles richly
branched. ... | Dendrochirotidae & <i>Actinocucumis
typicus</i> . |
| 2.' Body never curved ; tentacles leaf shaped. ... | Aspidochirotida 3 |

3. Double gonadial tufts ; spicules include 'O' shaped and branched rods and tables but no button. ...	Stichopodidae & <i>Stichopus chloronotus</i> .
3'. Single gonadial tuft ; spicules with tables and buttons but never 'O' shaped rod. ...	Holothuriidae 4
4. Spicules consisting of tables in combination with rosettes and rods but never button. 5
4'. Spicules with tables in combination with buttons always. 7
5. Spicules consisting of curved and spiny rods, spines are of various grades, tables with small and reduced discs. ...	<i>Holothuria (Semperothuria) cinerascens</i> .
5'. Rods never present, tables with reduced disc and rosettes are of various sizes. ...	<i>Holothuria (Helodeima) spp.</i> 6
6. Rosettes abundant, tables with long spire but reduced disc. ; colour uniformly black. ...	<i>Holothuria (Helodeima) atra</i> .
6'. Tables with disc wanting ; colour greyish dorsally, lighter ventrally. ...	<i>Holothuria (Helodeima) edulis</i> .
7. Table disc smooth, buttons simple or knobbed. 8
7'. Table disc spiny, button smooth or transformed into pseudobuttons. 9
8. Buttons smooth and thin, table disc with more than eight peripheral holes. ...	<i>Holothuria (Thymiosycia) hilla</i> .
8'. Buttons knobbed, arranged irregularly, table disc with numerous holes. ...	<i>Holothuria (Metriatyla) ocellata</i> .
9. Stout tables with knobs, sometimes developing into fenestrated spheres, buttons knobbed with three pairs of holes which may be obscured by the emensity of the knobs. ...	<i>Holothuria (Cystipus) rigida</i> .
9'. Tables variously developed with short spire, rim of disc upturned like a saucer, pseudobuttons abundant and are various configurations. ...	<i>Holothuria (Lessonothuria) pardalis</i> .

GLOSSARY

Spicules : skeletal elements of the body wall.

- a. Anchors : spicules looking like anchors with two arms and a pillar or stalk.
- b. Anchor plates : large, quadrangular, perforated plates having a arched and cross bar or bridge across the narrower posterior end with which the stalk of anchor remains attached.

- c. Buttons : elongated or oval plates perforated by paired holes with smooth or knobbed surface.
- d. Pseudobuttons : usual type of button, twisted or reduced to a simple row of holes.
- e. Tables : Three dimensional bodies having a base made up of perforated disc and 2-4 vertical pillars joined by transverse bars to make a spire.
- f. Fenestrated spheres : modified tables forming hollow perforated bodies.
- g. Rods : elongated, bar like, branched or unbranched, spinous or lobed or smooth structures.
- h. Rosettes : button like two dimensional perforated bodies derived from branched rods with irregular holes.

Tentacles : perioral circle of modified tube feet.

Tube-feet : soft, cylindrical tube like projection from the body wall, their lumen being continuous with the water vascular system. Those on the dorsal side are nonlocomotory and called papillae while those of the ventral side are locomotary and called pedicels. These may be restricted in rows or scattered over the whole body.

SYSTEMATIC ACCOUNT

Order : ASPIDOCHIROTIDA

Family : HOLOTHURIIDAE

Holothuria (Lessonothuria) pardalis Selenka

(Fig. 1)

Holothuria pardalis Selenka, 1867. *Z. wiss. Zool.*, 17 : 336, pl. 19, fig. 85.

Holothuria (Lessonothuria) pardalis : Rowe 1969. *Bull. Br. Mus. nat. Hist. (Zool.)*, 18 (4) : 149, fig. 15.

Material : exs., Z.S.I. Reg. No. E810/1, from dead coral reef, Krusadai Is., 30.iv.1955, *H. C. Roy* coll ; 3 exs., Z.S.I. Reg. No. E856/1, Galaxea reef, Krusadai Is., 4.v.1955, *H. C. Roy* coll. ; 3 exs, Z.S.I. Reg. No. E907/1, Pulli Is., 5 miles from Krusadai Is., 17.v.1955, *H. C. Roy* coll. ; 2 exs., Z.S.I. Reg. No. E1449/1, Sandy Point, among rocks, Krusadai Is., 2.ix.1925, *S. L. Hora* coll. ; 2 exs., Z.S.I. Reg. No. E1595/1, Krusadai Is., March 1950, *Hora & Menon* coll.

Description : Spicules comprise of tables, buttons and smooth curved rods ; table disc usually spinose, occasionally smooth, rim of disc appear upturned like soccer when looked from sides, diameter of disc 0.5 mm., spire moderately high terminating in a ring of small

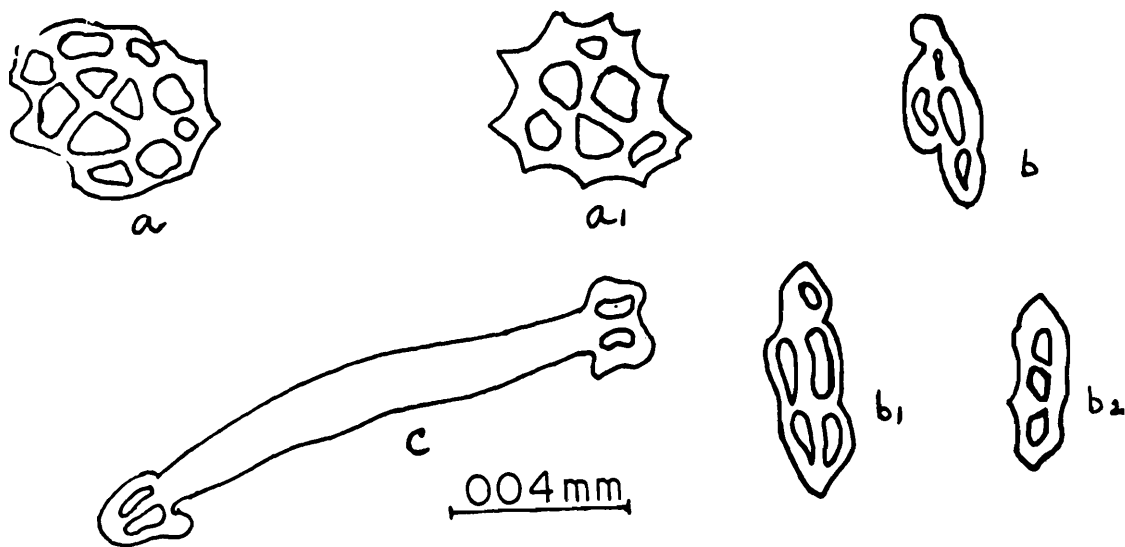


Fig. 1. *Holothuria (Lessonothuria) pardalis* Selenka a, a₁. Table disc ; b b₁, b₂. Pseudobuttons ; c. rod.

spines ; buttons variously modified as pseudobuttons, irregular and sometimes represent half of a button with a single row of 3-4 holes, sometimes regular buttons are also found with 3-4 pairs of small holes, length of buttons .04-.05 mm., rods bent and perforated at ends measuring .14 mm. in length approximately.

Distribution : Throughout the tropical Indopacific littoral waters.

Holothuria (Semperothuria) cinerascens (Brandt)

(Fig. 2)

Stichopus (Gymnochirota) cinerascens Brandt, 1835. *Prodromus descriptionis animalium ab H. Mertensio in orbis terrarum circumnavigatione*. Petropoli, 1 : 51.

Holothuria (Semperothuria) cinerascens, Rowe, 1969. *Bull. Br. Mus. nat. Hist. (Zool.)*, 18 (4) : 135.

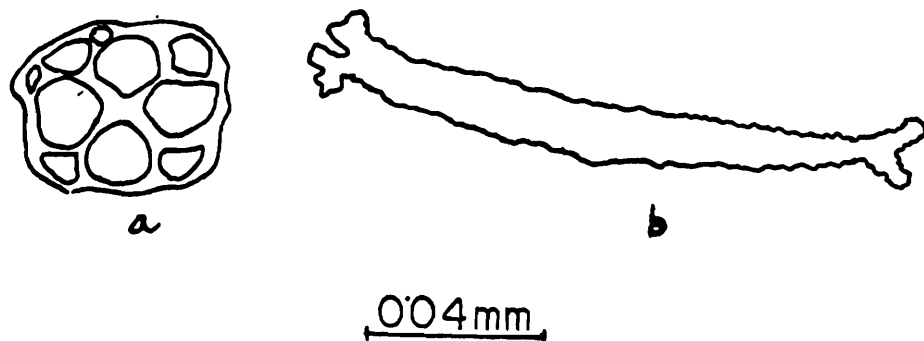


Fig. 2. *Holothuria (Semperothuria) cinerascens* (Brandt) a. table disc ; b. spinose rod.

Material : 1 ex., Z. S. I. Reg. No. E1590/1, Krusadai Is., March 1950, *S. L. Hora* and *A. G. K. Menon* coll.

Description : Spicules are tables in combination with rods ; tables with disc reduced, quadrangular measuring $.05 \times .04$ mm., with four larger holes alternating with four smaller holes at four corners, spire moderately high, terminating in a few spines forming a single or double maltase cross when viewed from above, rods curved and spinose throughout their length, bifid at ends which again may be branched and spinose, length of rods .14 mm.

Distribution : Widely distributed in the Indopacific littoral waters.

***Holothuria (Helodeima) atra* Jaeger,**

(Fig. 3)

Holothuria atra Jaeger 1833. De Holothuris Diss. inaug. Turici : 22.

Holothuria (Halodeima) atra : Pearson, 1914. *Spolia zeylan.*, 9 (35) : 170, pl. 9, fig. 11.

Material : 3 exs., Z. S. I. Reg. No. E1626/1, 5 miles S. of Mandapam camp, 20.2.1962, *V. K. Premkumar* coll. ; 4 exs., Z. S. I. Reg. No. E1604/1, Krusadai Is., March, 1925, *S. L. Hora* coll. ; 6 exs., Z. S. I. Reg. No. E1040/1, Krusadai Is., near Pamban, Feb. 1925, *B. Chopra* and *H. S. Rao* coll. ; 3 exs., Z. S. I. Reg. No. E1092/1, 8 miles SW. of Mandapam camp, 6.5.1955, *M. A. S. Menon* coll. ; 6 exs., Z. S. I. Reg. No. E1195/1, Krusadai Is., March 1950, *S. L. Hora* and *A. G. K. Menon* coll.

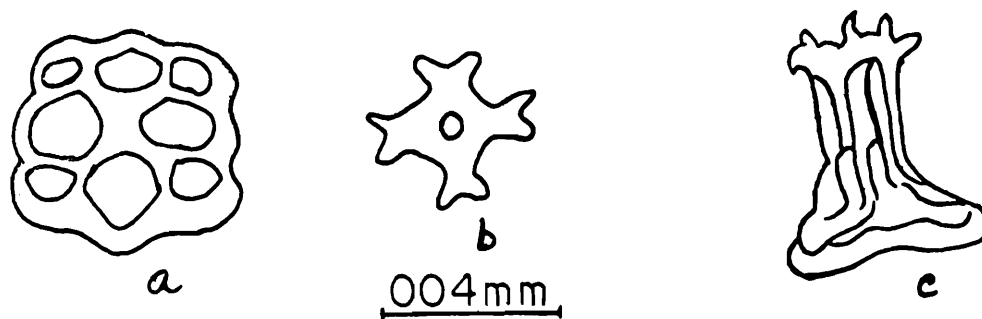


Fig. 3. *Holothuria (Helodeima) atra* Jaeger a. table disc ; b. top of spire ; c. side view of table.

Description : Spicules are tables in combination with rosettes, buttons never present ; table disc spiny, sometime smooth, much reduced, measuring 0.05 mm. with alternately arranged smaller and larger holes or with a circle of small holes at the periphery ; rosettes are of various configurations and measures .02-.025 mm.

Distribution : Universally distributed, principally in the Indo-Pacific region, also found in the Atlantic.

Holothuria (Halodeima) edulis Lesson

(Fig. 4)

Holothuria edulis Lesson, 1830. *Centurie zoologique ou choix d' animaux rares, nouveaux ou imparfaitement connues*. Paris : 125, pl. 46, fig. 2.

Holothuria (Halodeima) edulis : Rowe, 1969. *Bull. Br. Mus. nat. Hist. (Zool.)*, 18 (4) ; 138.

Material : 4 exs., Z. S. I. Reg. No. E1631/1, Pearl Bank, Tuticorin, 12 miles from shore, 9-10 fms., March 1926 ; 2 exs., Z. S. I. Reg. No. E1632/1, Oyster bed, Tholoyiram parr, in the gulf of Mannar, 5 miles from Tuticorin, 21.4.1955, H. C. Roy coll.

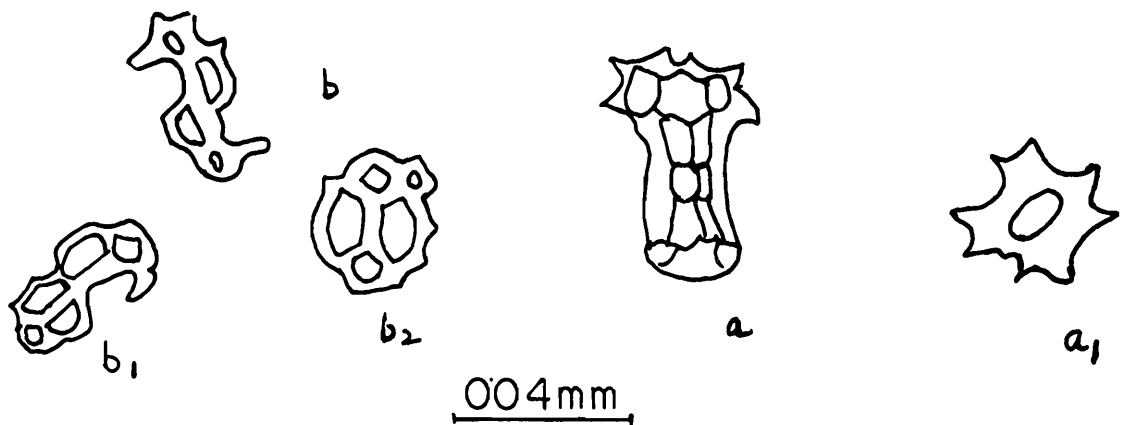


Fig. 4. *Holothuria (Halodeima) edulis* Lesson a. table ; a₁ crown of the same ; b, b₁, b₂, rosettes.

Description : Spicules consisting of tables and rosettes ; tables are most peculiar in having disc developed poorly or reduced almost to a ring, spire high, ending in a large squarish crown so that the upper end looks broader than the narrower lower end, the crown have three teeth pointing three sides, length of tables .05-.06 mm. ; rosettes are of two types, regular ones having two to three pairs of holes, one or two pairs at the sides and one pair at the ends, irregular ones are having less number of complete holes, average size of rosettes .035-.04 mm.

Distribution : A most common Indo-Pacific littoral form.

Holothuria (Metriatyla) ocellata Jaeger *

(Fig. 5)

Holothuria ocellata Jaeger 1833 : *De Hologhuris. Diss. inaug.* Turici : 27.

Holothuria (Metriatyla) ocellata : Rowe 1969. *Bull. Brit. Mus. nat. Hist. (Zool.)*, 18 (4) ; 160.

Material : 1 ex., Z. S. I. Reg. No. E1633/1, Kundugal point, Pamban, inshore area of the gulf of Mannar, 2.10.1960, A. Daniel coll.

Description : Spicules consist of tables and knobbed buttons ; table disc smooth and wavy with one central hole, surrounded by smaller holes at the periphery or disc perforated by numerous holes, greatest

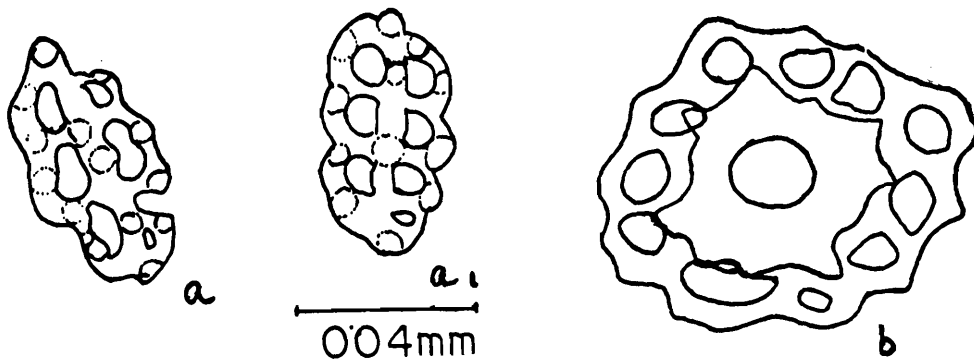


Fig. 5. *Holothuria (Metriatyla) ocellata* Jaeger. a, a₁. Knobbed buttons ; b. table disc.

diameter of disc .08-.09 mm., spire high or moderately high, ending in a number of spines ; buttons .05-.06 mm. long, knobbed with mostly 3 pairs of large holes, though the number may go upto ten pairs.

Distribution : Indian ocean, North Australia, China and S Japan.

***Holothuria (Cystipus) rigida* Selenka ***

(Fig. 6)

Stichopus rigida Selenka, 1867. *Z. wiss. Zool.*, **17** : 317, pl. 18, figs. 30-31.

Holothuria (Cystipus) rigida : Rowe, 1969. *Bull. Br. Mus. nat. Hist. (Zool.)*, **18** (4) : 155, fig. 18.

Material : 1 ex., Z. S. I. Reg. No. E1189/1, Krusadai Is., 18.2.1962, V. K. Premkumar coll. ; 1 ex., Z. S. I. Reg. No. E1343/1, inshore area, one mile E of Mandapam camp, 22.2.1962, V. K. Premkumar coll. ; 3 exs., Z. S. I. Reg. No. E1344/1, inshore area of gulf of Mannar at Krusadai Is., 1.10.1960, A. Daniel coll. ; 3 exs., Z. S. I. Reg. No. E1627/1, Manoli Is., 20.2.1962., V. K. Premkumar coll. ; 2 exs., Z. S. I. Reg. No. E1628/1, rocky shore in the gulf of Mannar, Mandapam camp, 11.5.1955, H. C. Roy coll. ; 2 exs., Z. S. I. Reg. No. E1629/1, Kundugal point, Pamban, inshore area of gulf of Mannar, 2.10.1960, A. Daniel coll. ; 2 exs., Z. S. I. Reg. No. E1630/1, Vedalai, 2 miles away from Mandapam camp, 30.9.1960, A. Daniel coll.

Description : Spicules consisting of knobbed table, knobbed buttons and supporting rods ; table with low spire, terminating into a few to numerous short blunt and closely crowded spines which sometimes obscure the disc or get connected to the knobbs of the margin to

form what is known as fenestrated sphere, diameter of disc .09-.12 mm.; buttons simple with large and regularly arranged knobs, holes small and may be even obliterated by the emensity of the knobs, sometimes entire button may be transformed into fenestrated ellipsoids, average length of buttons .04 mm.; rods lobed, blunt and perforated at the ends measuring .15 mm.

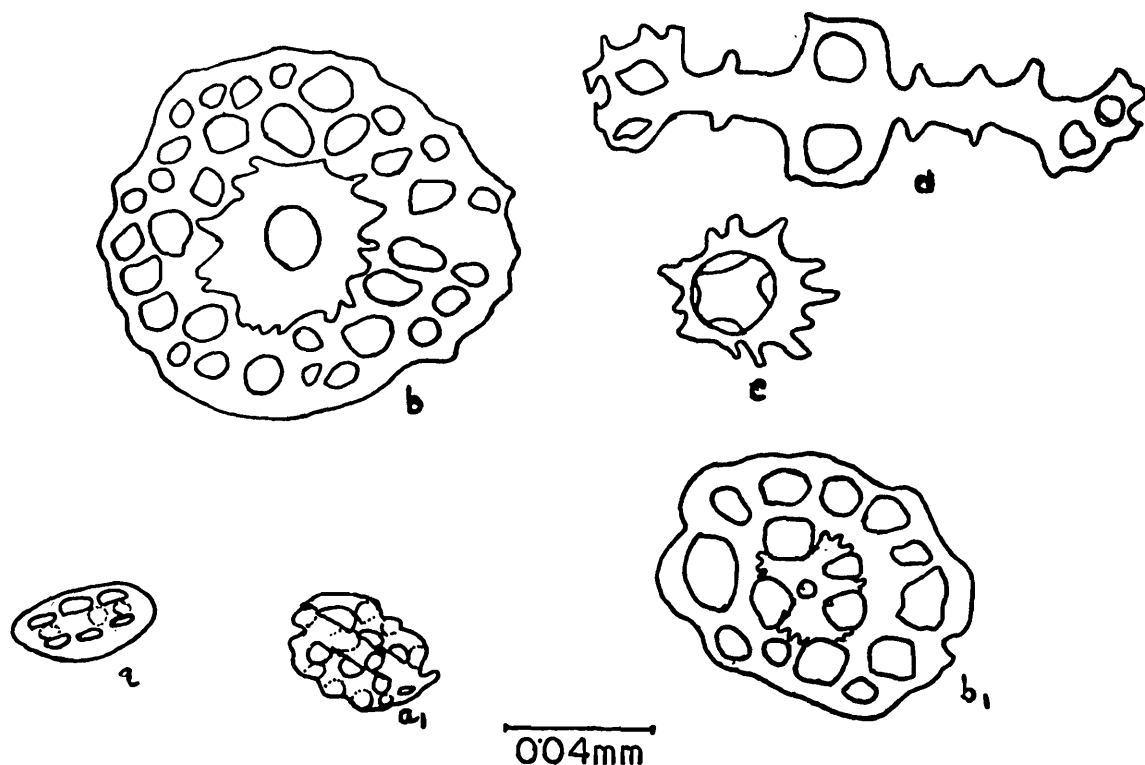


Fig. 6. *Holothuria (Cystipus) rigida* Selenka a, a₁. buttons; b, b₁. table disc; c. top of spire; d. rod from pedicel.

Distribution : From Mascarene Is. to Red sea and from East Indies to South Pacific Is., of the Indo-West Pacific area.

***Holothuria (Thymiosycia) hilla* Lesson**

(Fig. 7)

Holothuria hilla Lesson, 1830. *Centurie Zoologique ou choix d' animaux rares nouveaux on imparfaitement connues* Paris : 226, pl. 79.

Holothuria (Thymiosycia) hilla : Rowe, 1969. *Bull. Brit. Mus. nat. Hist. (Zool.)*, 18 (4) : 147.

Material : 2 exs., Z. S. I. Reg. No. E906/1, Pulli Is., 5 miles from Krusadai Is., 17.5.1955, H. C. Roy coll.; 2 exs., Z. S. I. Reg. No. E1153/1, Krusadai Island, 7.9.1925, S. L. Horra coll., 1 ex., Z. S. I. Reg. No. E1634/1, Vedalai, 2 miles from Mandapam Camp, Inshore area of gulf of Mannar, 30.9.1960. A Daniel, coll.; 1 ex., Z. S. I. Reg. No. E1346/1; Hare Is., Tuticorin 27.4.1955, H. C. Roy, coll.

Description : Spicules consisting of smooth tables and buttons; table disc smooth, glossy, oval or squarish having one central hole and

more than eight peripheral holes, the number may go upto a dozen, spire low, ending in a number of small spines, diameter of disc 0.055 mm ; buttons with smooth or wavy outline and with three or more pairs of comparatively large holes, average length of button .06-.07 mm.

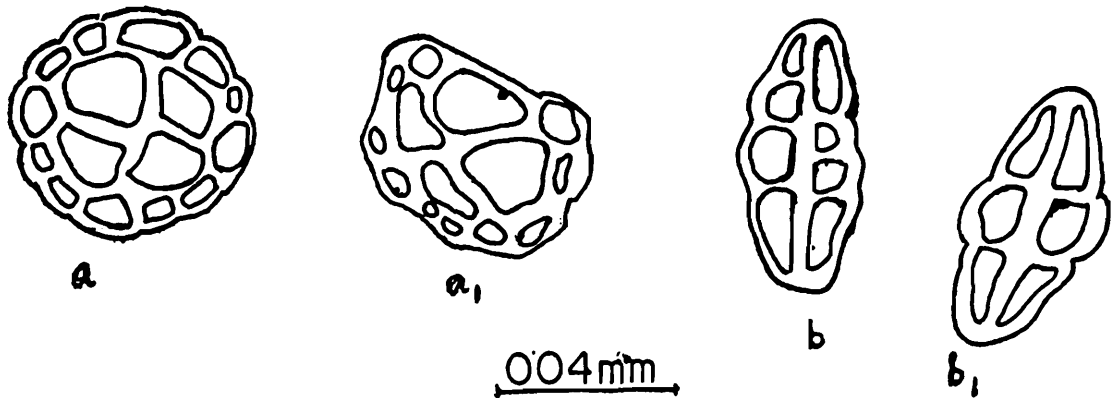


Fig. 7. *Holothuria (Thymiosycia) hilla* Lesson a, a₁. table disc ; b, b₁. buttons.

Distribution : Tropical Indo-Pacific regions.

Family : STICHOPODIDAE

***Stichopus chloronotus* Brandt.**

(Fig. 8)

Stichopus (perideris) chloronotus Brandt, 1835. *Prodromous descriptions animalium ab H Mertensio in orbis Circumnavigatione*. Petropoli, 1 : 50.

Stichopus chloronotus : Clark, 1922. *Bull. Mus. Comp. Zool. Harv.*, 65 : 53, pl. 2, figs. 1-10.

Material : 11 exs., ZSI Reg. No. E 1635/1, Rameswaram, 11.9.1935, H. S. Rao, coll.

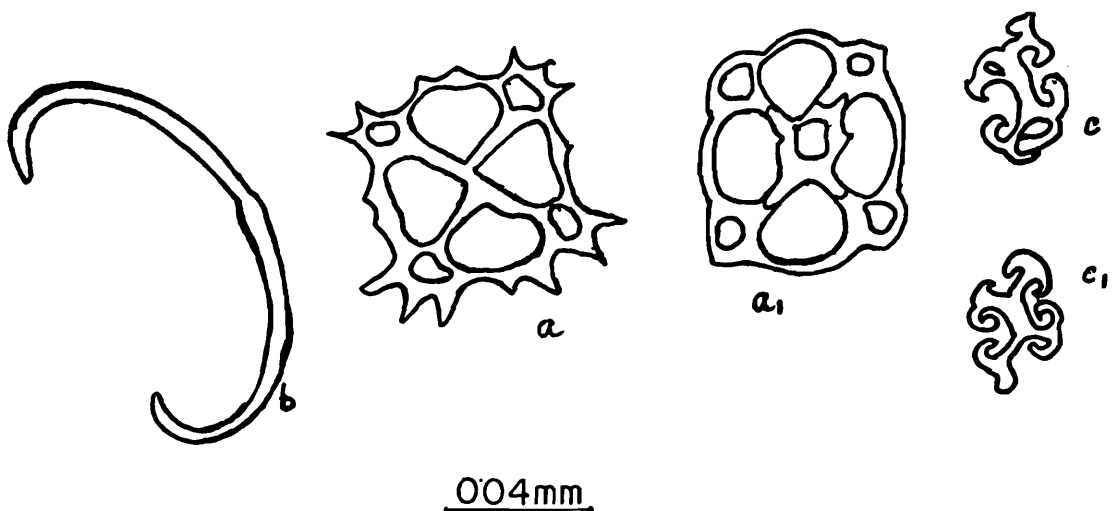


Fig. 8. *Stichopus chloronotus* Brandt a, a₁. table disc ; b. rod ; c, c₁. rosettes.

Description : Spicules consist of tables, 'C' shaped rods and a few rosettes ; tables with quadrangular disc and smooth margin, occasionally spinous with a large central hole and smaller holes at corners,

diameters of disc .065-.08 mm. spire low, ending in small spines, 'C' shaped rods are abundant and are of various configurations, some with a definite central lobe, branched rods are also present, rosettes few, measuring .04 mm. on average.

Distribution : Littoral area of Indo-West Pacific oceans.

Order : DENDROCHIROTIDA

Family : PHYLLOPHORIDAE

Actinocucumis typicus Ludwig

(Fig. 9)

Actinocucumis typica Ludwig, 1875. *Arb. Zool. Zoot. Inst. Worzburg*, 2 (2) : 91 pl. vi, fig. 24.

Material : 2 exs, ZSI Reg. No. 1675/1, Pamban, 19.9.1925, H. S. Rao, coll.

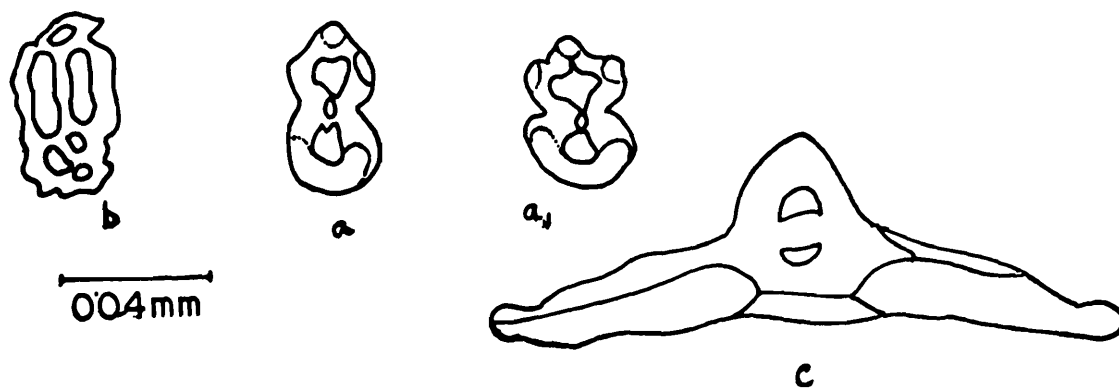


Fig. 9. *Actinocucumis typicus* Ludwig a, a₁. buttons ; b. rosette ; c. table.

Description : Spicules are tables and buttons ; buttons look like figure of eight shaped fenestrated ellipsoids and measure .04-.05 mm. ; tables irregular, spires eccentric and made up of four strong pillars ; pedicels contain abundant rosette like plates with four holes, two larger and longer at sides and two smaller at the upper and lower ends, average length of rosettes .05 mm.

Distribution : From west coast of India to North Australia except Maldives, China and S. Japan.

Order : APODIDA

Family : SYNAPTIDAE

Synapta maculata (Chamisso & Eysenhardt)*

(Fig. 10)

Holothuria maculata Chamisso and Eysenhardt, 1821. *Nova Acta Acad. Caesar. Leop. Carol.*, 10 : 352, pl. 25.

Synapta maculata : Heding, 1928. *Vidensk. Meddr. dansk naturh. Foren.*, 85 : 113, fig. 2 (1-10).

Material : 2 exs., Z.S.I. Reg. No. E.1594/1 Krusadai Is. March 1950, A. G. K. Menon coll.

Spicules consisting of massive anchors and anchor plates ; anchor .21 mm. in length, quite large, with long unbranched stalk, arms smooth and large with blunt end, apex depressed, with no minute speherical bodies, anchor plates oblong or subrectangular with broad posterior

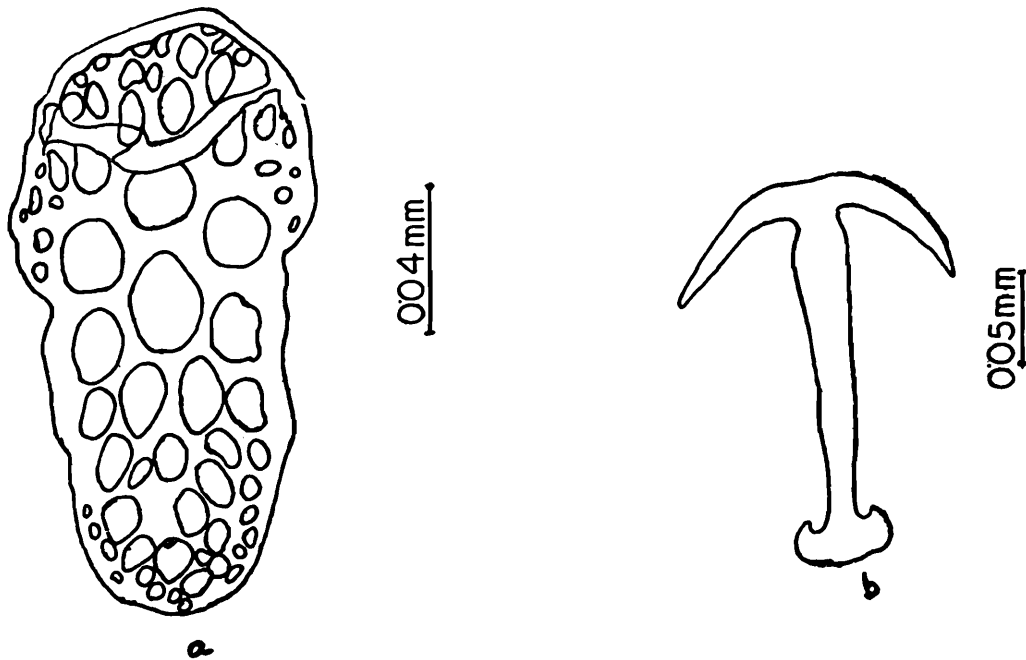


Fig. 10. *Synapta maculata* (Chamisso & Eysenhardt) a. anchor plate ; b. anchor.

end; holes smooth and numerous, larger at the centre, bridge across the lower end quite distinct, anchor plate measure .16-.17 mm. in length and .09 mm. at the greatest breadth.

Distribution : Throughout the Indo-west Pacific area except Hawaii.

Chart showing the holothurians hitherto known from the different places of the gulf of Mannar together with their distribution elsewhere in the Indian region.

Name of the species	Localities in the gulf of Mannar	Other Indian localities.
Order Aspidochirotida		
Family Holothuriidae		
<i>Holothuria (Cystipus) rigida</i> Selenka	...	Andaman Is. (16)
<i>Holothuria (Helodeima) atra</i> Jaeger	Tuticorin (2) Krusadai Is. (4) Mandapam (7) Pamban (17) Gulf of Mannar (14)	Andaman Is (1) (8) (16) Minicoy-(Laccadive) (13) Laccadive (10) Nicobari Is. (16)

Name of the species	Localities in the gulf of Mannar	Other Indian localities
<i>Holothuria (Helodeima) edulis</i> Lesson = <i>Holothuria albida</i> Bell	Mandapam & Tuticorin (7)	Andaman Is. (1) (8)
<i>Holothuria (Lessonothuria) pardalis</i> Selenka	Krusadai Is. (4) Pulli is. (7)	Andaman Is. (1) (7) (8) (16) Minicoy Is. (7) (12) Chetlat Is. (Laccadive) (7) Gulf of Kutch (7) (9) Bombay (15)
<i>Holothuria (Metensiothuria) leucospilota</i> (Brandt) = <i>Holothuria vagabunda</i> Brandt	Tuticorin (2) (7) (17) Kilakarai (7)	Andaman (1) (8) (16) Nicobar, (16) Vizingam, Karwar & Minicoy (7) Laccadives (8) & (10)
<i>Holothuria (Metriatyla) ocellata</i> Jaeger	...	Laccadive-Sea (8) Gulf of Kutch (9)
<i>Holothuria (Metriatyla) scabra</i> Jaeger = <i>Holothuria cadelli</i> Bell	Krusadai Is. (4) Mandapam & Pamban (7)	Bedi port, Gulf of Kutch (7) Andaman Is. (1) (8)-(16)
<i>Holothuria (Selenkothuria) moebii</i> Ludwig = <i>Holothuria lubrica</i> Ludwig	Mandapam (7) Krusadai Is. (4)	Vizingam (7) Andaman Is. (8)
<i>Holothuria (Semperothuria) cineracens</i> Brandt	Mandapam (7)	Andaman (16) Vizingam, Andaman Is. & Minicoy (7) Laccadive (10)
<i>Holothuria (Theelothuria) kurti</i> Ludwig	Pearl bank (14) Palk Strait (8) Mandapam (7)	...
<i>Holothuria (Theelothuria) spinifera</i> Theel	Mandapam (7)	...
<i>Holothuria (Thymiosyca) hills</i> Lesson = <i>Holothuria monacaria</i> (Lesson)	Tuticorin (2) Krusadai Is. (4) Kilakarai (7) Gulf of Manner (14) Pamban (17)	Andaman Is. (1) (7) (8) Minicoy Is. (7) (13) Laccadive Is. (8) (10)

Name of the species	Localities in the gulf of Mannar	Other Indian localities
<i>Bohadschia argus</i> Jaeger = <i>Holothuria argus</i> (Jaeger)	Mandapam (7)	...
<i>Bohadschia marmorata</i> Jaeger	Tuticorin (2)	Andaman Is. (1) (7)
<i>Holothuria marmorata</i> (Jaeger)	Pamban (17)	(16) Minicoy Is. (7) (13) Laccadive (10)
<i>Bohadschia tenuissima</i> = <i>Holothuria tenuissima</i>	Gulf of Manner (14)	...
Family Stichopodidae		
<i>Stichopus chloronotus</i> Brandt	Pearl bank (14) Krusadai Is. (4)	Nicobar Is. (16) Andaman Is. (1) (7)
= <i>Stichopus chloronotus</i> var. <i>fuscus</i> Pearson		(16) Nicobar Is. & Chetlat Is. (7)
<i>Stichopus variegatus</i> Semper	Vedalai & Tuticorin (7)	Andaman Is. (1) (7)(8).Minicoy (13)
Family Psolidae		
<i>Psolus complanatus</i> Semper	Krusadai Is. (4)	...
Order Dendrochirotida		
Family Cucumariidae		
<i>Cucumaria turbinata</i> (Hutton)	Gulf of Mannar (14)	...
<i>Hemithyone semperi</i> (Bell) = <i>Cucumaria semperi</i> Bell	Rameswaram (3) Pamban (7) (17)	...
<i>Pentacta quadraangularis</i> (Lesson)	Tuticorin (3) (17)	...
= <i>Colochirus quadrangularis</i>	Vedalai (7)	
<i>Stolus buccalis</i> (Stimpson) = <i>Thyone sacellus</i> (Selenka)	Krusadai Is. (4) Rameswaram & Man- dapam (6) (7) Palk Bay (6)	Madras coast (3) Gulf of Kutch (9)
<i>Stolus conjugans</i> (Semper) = <i>Cucumaria conjugans</i> (Semper) = <i>Thyone conjugans</i> Semper	Pearl bank (14)	Bombay (15)

Name of the species	Localities in the gulf of Mannar	Other Indian localities
<i>Pseudocolochirus tricolor</i> (Sluiter) = <i>Cucumaria tricolor</i> Sluiter	Donnan's Par (14)	...
<i>Pseudocolochirus violaceus</i> (Theel) = <i>Colochirus violaceus</i> Theel	Mandapam & Pamban (7)	Ganjam coast Orissa (8)
<i>Trachythyone imbricata</i> (Semper) = <i>Cucumaria imbricata</i> Semper	Pearl bank (14)	Gangam coast Orissa coast & Madras coast (8)
<i>Havelockia herdmani</i> Pearson = <i>Thyone herdmani</i> (Pearson)	Adam's bridge (14) Mandapam (7)	...
<i>Thyone papuensis</i> Theel = <i>Thyone fuscus</i> var <i>papuensis</i> Theel	Gulf of Mannar (14)	...
<i>Cucumaria frauenfeldi</i> Ludwig	Krusadai Is. (4)	...
Family Phyllophoridae		
<i>Actinocucumis typicus</i> Ludwig = <i>Actinocucumia difficilis</i> Bell	Rameswaram (3) Krusadai Is. (4) Mandapam (7) Pamban (7) (17)	Bombay (15) Gulf of Kutch (9)
<i>Phyllophorus</i> (<i>Phyllophorella</i>) <i>pervipedes</i> H.L. Clark	Vedalai (5) & (7)	...
<i>Phyllophorus</i> (<i>Phyllothuria</i>) <i>cebuensis</i> (Semmer)	Gulf of Mannar (14)	...

Name of the species	Localities in the gulf of Mannar	Other Indian localities
Order Molpadida		
Family Molpadidae		
<i>Molpadia australis</i> (Semper)	Tuticorin (2) & (17)	Mouth of river Hoogly, Andaman Is. Coast of Bengal (8)
= <i>Haplodactyla australis</i> Semper		
<i>Acaudina irania</i> (Heding)	Tuticorin (7)	...
Order Apodida		
Family Synaptidae		
<i>Synaptula recta</i> (Semper)	Pamban (17)	...
= <i>Synapta recta</i> Semper	Krusadai Is (4)	
= <i>Chondrocloea recta</i> (Semper)	Mandapam (7)	
= <i>Synaptula varians</i> (Nair)	Pamban (11)	Madras Harbaur (11)
= <i>Chonorocloea varians</i> Nair		
<i>Synaptula striata</i> (Sluiter)	Tuticorin (7) & (12)	Detriot de Malacca, Is. —Nicobar (8)
= <i>Chondrocloea striata</i> Sluiter		
<i>Synapta maculata</i> (Chamisso & Eysenhardt)		Nicobar Is. (16) Andaman Is. (7) (8) (16)
= <i>Chondrocloea baselli</i> (Jaeger)		Minocoy (7) (13) Laccadive Is. (8)
<i>Protankyra pseudodigitata</i> (Semper)	Tuticorin (7)	Andaman Is. (8)

*The number (s) in the chart correspond to those in the list of the references.

SUMMARY

The paper deals with 10 species of holothurians from the different areas pertaining to the gulf of Mannar with 3 new locality records. An upto date list of holothurians hitherto known from the area together with their distribution in the Indian region is also furnished.

ACKNOWLEDGEMENT

The author is thankful to the Director, Zoological Survey of India for providing the necessary facilities and encouragement in carrying out the work.

REFERENCES

- BELL, F. J. 1887. Report on a collection of Echinodermata from the Andaman Islands. *Proc. zool. Soc. Lond.* 1887 : 139-145, Pl. xvi.
- BELL, F. J. 1888. Report on a collection of Echinoderms made at Tuticorin, Madras, by E. Thurston. *Proc. zool. Soc. Lond.*, 1888 : 383-389.
- BELL, F. J. 1889. Additions to the Echinoderm fauna of the Bay of Bengal. *Proc. zool. Soc. Lond.*, 1889 : 6-7.
- GRAVELY, F. H. 1927. The littoral fauna of Krusadai Island in the Gulf of Mannar : Echinodermata. *Bull. Madras Govt. Mus. (Nat. Hist.)* 1 (1) : 1-11.
- JAMES, D. B. 1965. *Phyllophorus* (*Phyllophorella*) *parvipedes* Clark (Holothuroidea) a new record to the Indian Seas. *J. mar. biol. Ass. India*, 7 : 325-327, 1 pl, 1 fig.
- JAMES, D. B. 1966. Studies on Indian Echinoderms. 2. the holothurian *Stolus buccalis* (Stimpson) with notes on its systematic position. *J. mar. biol. Ass. India*, 8 : 285-289, 1 pl, 1 fig.
- JAMES, D. B. 1969. Catalogue of echinoderms in the reference collections of the Central Marine Fisheries Research Institute. *Bull. Cent. mar. Fish. Res. Inst.*, No. 7 : 60-62.
- KOEHLER, R. AND VANEY, C. 1908. *Echinoderma of the Indian Museum*. Part iv. An account of the littoral Holothuroidea collected by the R. I. M. S. "Investigator". Trustees of the Indian Museum, Calcutta. 54 pp., 3 pls.
- GOPALKRISHANAN, P. 1969. On the Holothuroidea (Echinodermata) of the Gulf of Kutch. *J. Bombay nat. His. Soc.*, 66 (2) : 399-400.
- MUKHOPADHYAY, S. K. & SAMANTA, T. K. 1983.* On a collection of shallowwater holothurians from the Lakshadweep *Rec. zool. Surv. India*, 81 : 299-314.

*This paper has been published ; so delete the words *in press* and put *Rec. zool. Surv. India*, 81 : 299-314 in its place.

- NAIR, R. V. 1946. On *Chondrocloea varians*, a new apodous holothurian from the Madras harbour. *Proc. natn. Inst. Sci. India*, **12** : 361-384.
- NAYAR, K. N. AND MAHADEVAN, S. 1965. Underwater ecological observations in the Gulf of Mannar, off Tuticorin. II. The occurrence of the Synaptid *Chondrocloea* along with the massive sponge *Petrosia*. *J. mar. Biol. Ass. India*, **7** (1) : 190-291, 1 fig.
- NAGABHUSANAM, A. K. AND RAO, G. C. 1972. An ecological Survey of the Marine fauna of Minicoy atoll. (Laccadive Archipelago, Arabiae Sea). *Mitt. zool. Mus. Berlin*, **48** (2) : 290-291.
- PEARSON, J. 1903. Holothroidea. In Hardman ; W. A. *Report to the Govt. of Ceylon on the Peart oyster Fisheries of the Gulf of Mannar London* (Royal Society). Suppl. rep. **5** : 181-208, 3 pls.
- SANE, S. R. AND CHHAPGAR, B. F. 1962. Intertidal Echinodermata of Bombay. *J. Bombay nat. Hist. Soc.*, **59** : 672-676, 2 pls.
- SOOTA, T. D., MUKHOPADHYAY, S. K. AND SAMATA, T. K. 1983. On some holothurians from the Andaman and Nicobar Islands. *Rec. zool. Surv. India*, **80** : 507-524, 5 figs.
- THURSTON, E. 1894. Rameswaram Island and fauna of the Gulf of Mannar. Madras, *Bull. Madras Govt. Museum Sci. Ser.* No. 1 : 7-62, pls. i-iv.