

XXIII.—DESCRIPTIONS OF NEW SPECIES  
OF LAND, MARINE AND FRESHWATER  
SHELLS FROM THE ANDAMAN  
ISLANDS.

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The species described in the present paper formed part of the collection of the late Rev. J. Warneford who was, for many years, Chaplain to His Majesty's Forces in the Andaman Islands, and an ardent and indefatigable collector; the collection took twelve years to amass, and is perhaps the largest ever got together on those Islands. The "types" have recently been acquired by the Trustees of the Indian Museum, in whose collection they now are.

*Sitala denselirata*, sp. nov.

Shell perforate, conical, carinate at the periphery, opaque, pale yellowish horn colour; whorls  $6\frac{1}{2}$ , rather convex, sculptured with fine spiral liræ; base of shell somewhat convex, spirally striate; columella straight, reflexed over the very narrow umbilicus, peristome acute; aperture sub-quadrate.

Altitude .. .. .	6	mm.
Diam., major .. .. .	6.25	„
Aperture, alt. .. .. .	2.25	„
„ diam. .. .. .	3	„
Habitat—Andaman Islands.		

Approaching *S. attega*, Benson<sup>1</sup> (= *cadelli*, Nev. MS.). The spire is, however, less acuminate and in general shape the shell is much narrower in proportion to its height; the carination is also not so marked and the spiral sculpture is coarser than in *S. attega*.

*Tornatina conspicua*, sp. nov.

Shell imperforate, regularly cylindrical, white, shining, covered with a rich reddish brown periostracum; spire somewhat exerted; whorls 6, the last sculptured with fine, wavy spiral striæ; sutures deeply and broadly channelled; aperture narrow, scarcely dilated below, a thickening of the shell appearing about half a millimetre from the edge of the peristome; peristome slightly inflated in the middle, acute; columella arched, terminating in a basal fold, a callus extending from it to the suture.

<sup>1</sup> Ann. Mag. Nat. Hist. (3), iii, p. 184, 1859.

Altitude .. .. 10.5 mm.  
 Diam., major .. .. 4.5 ,,  
 Aperture, alt. .. .. 9 ,,  
 ,, diam., minor .. .. 7.5 ,,  
 Habitat—Off Port Blair, Andaman Islands, 7—10  
 fathoms.

*Atys convexa*, sp. nov.

Shell umbilicate, tumid, ovate, constricted at the ends, pale lemon colour, with two irregular narrow greenish bands especially noticeable on the ventral surface, smooth, polished except at the ends where it is spirally grooved; apex closed; aperture narrow above, broadening below; columella descending obliquely, curved outwards, produced; peristome simple, rising high above the vertex.

Altitude .. .. 3.25 mm.  
 Diam. .. .. 2 ,,  
 Habitat—Off Port Blair, Andaman Islands, 7—10  
 fathoms.

*Atys neglecta*, sp. nov.

Shell imperforate, elongately ovate, sub-cylindrical, rather convex in the middle, greyish white, polished, smooth except at the ends where several grooves appear; apex closed; aperture very narrow above, moderately wide below; columella oblique; peristome broadly thickened, bent slightly inwards, a little extended above the vertex.

Altitude .. .. 4 mm.  
 Diam., major .. .. 2 ,,  
 Habitat—Off Port Blair, Andaman Islands, 7—10  
 fathoms.

*Atys pacei*, sp. nov.

Shell straight, cylindrical, semi-transparent white, sculptured throughout with fine spiral striæ, becoming more numerous and closely set towards the base; apex very narrowly perforate; aperture narrow above, dilated below; columella obliquely arched; peristome simple, rising above the vertex.

Altitude .. .. 11 mm.  
 Diam., major .. .. 5 ,,  
 Habitat—Off Port Blair, Andaman Islands, 7—10  
 fathoms.

*Atys vixumbilicata*, sp. nov.

Shell ovate, narrowly perforate, pale yellowish horn colour, very finely spirally striate and rather coarsely grooved towards the ends; apex closed; aperture narrow above, broadening below;

columella descending obliquely ; peristome thickened, produced above the vertex.

Altitude	..	..	3.5 mm.
Diam.	..	..	2 "
Habitat—Off Port Blair, Andaman Islands,			7—10 fathoms.

*Haminea callosa*, sp. nov.

Shell ovate oblong, very narrowly perforate, yellowish horn colour, thin, vitreous, marked with oblique transverse lines of growth ; peristome simple ; aperture narrow, posteriorly elevated, not greatly expanded anteriorly ; columella twisted at base, a callus joining it with the lip above.

Altitude	..	..	15 mm.
Diam., major	..	..	9.25 "
Aperture : diam., min.	..	..	1 "
Habitat—Off Port Blair, Andaman Islands,			7—10 fathoms.

*Terebra carnicolor*, sp. nov.

Shell subulate, pale flesh colour, polished, shining ; remaining whorls 15, sculptured with closely set longitudinal costæ, crossed near the upper end by a slight spiral groove, thus forming an infra-sutural crenate band ; the interstices between the costæ spirally punctate, the punctations of the upper row being coarser than the rest ; aperture small, narrow ; columella descending rather obliquely ; peristome simple ; base of shell marked with three revolving punctate grooves.

Altitude	..	..	22 mm.
Diam., major	..	..	4 "
Aperture, alt.	..	..	3 "
„ diam.	..	..	1.25 "
Habitat—Andaman Islands.			

*Terebra rubrobrunnea*, sp. nov.

Shell narrowly subulate, reddish brown ; remaining whorls 21, very flat, sculptured with oblique, rather closely set transverse costæ interrupted by spiral striæ and two crenate sutural bands, the upper of which is much the broader ; sutures scarcely impressed ; columella descending in a curve, extending into a thick, projecting callus which joins the lip above ; peristome sinuous, slightly re-flexed ; aperture narrowly ovate ; canal short, re-curved.

Altitude	..	..	47 mm.
Diam., major	..	..	6 "
Aperture, alt.	..	..	6 "
„ diam.	..	..	2 "
Habitat—Andaman Islands.			

Allied to *T. fenestrata*, Hinds<sup>1</sup>; the transverse costæ in the present species are, however, closer together and not so coarse, the spiral striæ are also more numerous and not so well defined.

*Terebra unicolor*, sp. nov.

Shell rather bluntly, elongately subulate, pale brownish orange throughout; remaining whorls 17, sculptured with a coarse infra-sutural spiral crenate rib and five smaller spiral crenate ribs, the interstices finely punctate; aperture small; columella recurved, twisted; canal short.

Altitude	..	..	44 mm.
Diam., major	..	..	7.25 ,,
Aperture, alt.	..	..	6 ,,
„ diam.	..	..	2.5 ,,
Habitat—Andaman Islands.			

Allied to *T. albomarginata*, Desh., of which species I was at first inclined to consider it a variety, but its much blunter form, lack of white edging to the whorls, coarser ribbing and finer punctation lead me to think that it is specifically distinct.

*Conus edwardi*, sp. nov.

Shell turbate, coronate, white, the upper whorls tessellated with reddish brown; the body whorl painted with four irregular bands of bright reddish brown, the first much interrupted, the intervening spaces streaked, tessellated and very indistinctly lined with the same colour, faintly and regularly spirally striate; spire bluntly exerted; interior of shell whitish, except at the base where the reddish brown colouring is again apparent.

Altitude	..	..	58 mm.
Diam., major	..	..	28 ,,
Aperture, alt.	..	..	49.5 ,,
„ diam., minor	..	..	3 ,,
Habitat—Andaman Islands.			

Allied to *Conus zonatus*, Hwass; it is, however, narrower and less pyriform in shape, the spire is more exerted and the beautiful reddish brown colouring readily distinguishes it from that well-known species, in which the bands are purplish gray, and which is so conspicuously lined with orange.

*Pleurotoma rimata*, sp. nov.

Shell turreted, yellowish brown; whorls 11, the upper bearing two spiral ridges between which is a row of coarse tubercles, the intervening spaces sculptured with minute spiral and transverse striæ, the last whorl bearing five spiral liræ in addition to the

<sup>1</sup> *Proc. Zool. Soc. London*, 1843, p. 153.

row of tubercles between the first two of these ; base of shell coarsely spirally liriate ; aperture oval ; peristome reflexed, especially round the sinus ; sinus broad and rather deep ; columella lip expanded, erect, forming an umbilical fissure between it and the base of the shell ; canal rather long, slightly reflexed upwards at base.

Altitude	..	..	25.5 mm.
Diam., major	..	..	10 ,,
Aperture, alt.	..	..	5.5 ,,
,, diam.	..	..	3 ,,
Habitat—Andaman Islands.			

Allied to *Pleurotoma acutigemmata*, Smith, which has also been recorded from the Andamans<sup>1</sup> ; it is, however, broader at the periphery, more sharply turreted, and possesses a much longer canal ; the reflexed peristome in the region of the sinus and the expansion of the columella also easily distinguish it from that species.

*Drillia fraga*, sp. nov.

Shell elongately fusiform, deep reddish brown ; remaining whorls 7, rather flat, sculptured with regular closely set rows of small white tubercles and bearing a single infra-sutural row of coarser tubercles between which and the remaining smaller rows there is a broad but shallow groove ; sutures impressed ; aperture obliquely ovate ; canal short.

Altitude	..	..	22 mm.
Diam., major	..	..	8 ,,
Habitat—Andaman Islands.			

In many respects resembling *Drillia digitalis*, Reeve, from the Philippines ; it is, however, separable from that species by its more acutely fusiform shape and flatter whorls ; the rows of tubercles are also placed further apart and at more regular intervals.

*Drillia sikesi*, sp. nov.

Shell solid, imperforate, acuminate fusiform, chalky white, painted with a broad, pale brown, infra-peripheral band ; whorls 10, the upper much eroded, the lower bearing a row of coarse tubercles at the periphery ; columella descending abruptly, solid, white ; sinus broad ; peristome thin and irregularly serrated ; aperture oval ; interior of shell white.

Altitude	..	..	31 mm.
Diam., major	..	..	14 ,,
Aperture, alt.	..	..	12 ,,
,, diam.	..	..	4 ,,
Habitat—Andaman Islands.			

<sup>1</sup> Melvill and Sykes, *Proc. Malac. Soc. London*, vol. ii, p. 165.

not reflexed; columella bearing three plaits, the first strong and nacreous white.

Altitude .. ..	25 mm.
Diam., major .. ..	9 ,,
Aperture, alt. .. ..	13 ,,
,, diam. .. ..	2.5 ,,
Habitat—Andaman Islands.	

Related to *M. cruentata*, Reeve, but is more cylindrical in general outline, is much more finely sculptured and lacks the yellow markings on the ribs; the aperture is also more elongate than in that species.

*Nassa gerstenbrandti*, sp. nov.

Shell ovately fusiform, yellowish white, narrowly banded at the sutures; periphery and base with reddish chestnut; whorls 6½; the apical whorl smooth, polished, the remainder finely, spirally striate and sculptured with somewhat distant, varicose ribs; sutures impressed; aperture inversely auriform; columella descending obliquely, extending into a callus which reaches the lip above; peristome varicosely thickened, finely denticulate within; canal short.

Altitude .. ..	1.75 mm.
Diam., major .. ..	2.25 ,,
Aperture, alt. .. ..	1.5 ,,
,, diam. .. ..	.75 ,,
Habitat—Andaman Islands, 7—10 fathoms.	

*Nassa jucunda*, sp. nov.

Shell fusiform, pale yellow, painted with an infra-sutural band of rich chestnut and a paler peripheral band of reddish brown; whorls 5, rather flat, sculptured with closely set transverse coste and fine spiral striæ; sutures impressed; columella tridenticulate; aperture oval; peristome thickened, denticulate within.

Altitude .. ..	5 mm.
Diam., major .. ..	2.25 ,,
Aperture, alt. .. ..	1.5 ,,
,, diam. .. ..	.5 ,,
Habitat—Andaman Islands, 7—10 fathoms.	

Easily distinguished from *N. gerstenbrandti* by the finer sculpture, flatter whorls and more pronounced colouring.

*Nassa tristis*, sp. nov.

Shell fusiform, dull greyish olive with a pale infra-sutural band; whorls 8, transversely, coarsely ribbed and finely, spirally lirate; sutures impressed; peristome varicosely thickened, bearing a row of denticles just within the aperture of which the posterior one is the coarsest; aperture ovate; columella broadening into a

thick callus which reaches the lip above and bearing a bifurcated fold or plait below and an obliquely transverse plait above.

Altitude	..	..	10 mm.
Diam., major	..	..	4.25 ,,
Aperture, alt.	..	..	3 ,,
„ diam.	..	..	1.75 ,,
Habitat—Andaman Islands.			

*Columbella suavis*, sp. nov.

Shell elongately fusiform, polished, white, broadly banded with brownish yellow and painted with occasional blotches of a deeper colour; whorls  $9\frac{1}{2}$ , scarcely convex, sculptured with closely set, transverse ribs and very fine wavy spiral striæ; base of shell spirally sulcate; columella stained with pale violet, slightly reflexed, descending somewhat obliquely; peristome broadly, varicosely thickened, dentate within; aperture elongate; canal long, narrow, scarcely recurved.

Altitude	..	..	9.75 mm.
Diam., major	..	..	5.5 ,,
Aperture, alt.	..	..	4 ,,
„ diam.	..	..	1.50 ,,
Habitat—Andaman Islands.			

*Gyrineum wilmeriana*, sp. nov.

Shell acuminate ovate, yellowish white, bearing traces of having been covered with a thin hirsute periostracum; whorls 8, transversely striate and spirally lirate, bearing at intervals interrupted tubercular ribs of a dark chestnut colour; varices interruptedly painted with dark chestnut; columella extending into a rough callus which joins the lip above; peristome varicosely thickened, bearing a row of denticles within; aperture roundly ovate; canal short, recurved; operculum horny, multi-spiral, roughly laminiferous.

Altitude	..	..	28.5 mm.
Diam., major	..	..	20.5 ,,
Aperture, alt.	..	..	8 ,,
„ diam.	..	..	5 ,,
Habitat—Andaman Islands.			

I have much pleasure in dedicating this species to Colonel L. W. Wilmer, to whose many years' collecting in the Andaman Islands a number of interesting forms are attributable.

*Vertagus kochi*, Phil., var. *polita*, var. nov.

Much shorter, thinner, more polished and more lightly sculptured than the typical form. In colour it varies from pale yellowish grey or straw colour to dark reddish chestnut.

Altitude .. .. 23 mm.  
 Diam., major .. .. 6.5 ,,  
 Habitat—Andaman Islands.

Mr. Warneford collected a large series of this shell, and as, with the exception of colour, there is no variation in size or texture, it would seem to be a well-marked local race and possibly even a distinct species.

*Melania charon*, sp. nov.

Shell elongately subulate, dark brownish black; remaining whorls 12, convex, marked throughout with lines of growth and spirally sculptured with faint, somewhat distant raised striæ; sutures well impressed; columella descending in a rounded curve and extending into a slight callus which reaches the lip above; peristome simple; aperture oblong ovate; interior slate colour.

Altitude .. .. 56 mm.  
 Diam., major .. .. 12 ,,  
 Aperture, alt. .. .. 11.75 ,,  
 ,, diam. .. .. 7 ,,  
 Habitat—Andaman Islands.

*Melania expatriata*, sp. nov.

Shell subulately turreted, dark blackish brown; remaining whorls 4½, spirally striated on the lower half of the upper whorls; the body-whorl encircled by an infra-sutural ridge forming a distinct shoulder and weakly spirally lirate throughout below the ridge; sutures impressed; peristome simple; columella arched, a callus joining it with the lip above; aperture inversely auriform.

Altitude .. .. 33.25 mm.  
 Diam., major .. .. 12.25 ,,  
 Aperture, alt. .. .. 10.5 ,,  
 ,, diam. .. .. 5.5 ,,  
 Habitat—Andaman Islands.

The shoulder formed by the infra-sutural ridge presents a somewhat striking appearance and recalls some of the Western Pacific Island forms in which this character occurs; the other characters, however, when taken collectively or singly, easily separate it from any of the species described from those regions.

*Melania multistriata*, sp. nov.

Shell decollate, subulate, dark olive brown; remaining whorls 4, rather flat, sculptured throughout with fine transverse striæ and coarser spiral striæ; sutures deep and incised; columella arched; peristome acute; aperture ovate; interior bluish grey.



Altitude	..	..	26	mm.
Diam., major	..	..	10	„
Aperture, alt.	..	..	9.5	„
„ diam.	..	..	4	„
Habitat—Andaman Islands.				

*Risella balteata*, sp. nov.

Shell conical, narrowly and deeply perforate, sharply carinate and slightly undulately waved at periphery, pale yellow with a broad pinkish yellow median band; whorls 4, somewhat convex, spirally striate; sutures impressed; base of shell flattened, spirally grooved and transversely striate; aperture obliquely subquadrate.

Altitude	..	..	1.75	mm.
Diam., major	..	..	3	„
Aperture, alt.	..	..	1.25	„
„ diam.	..	..	.75	„
Habitat—Andaman Islands.				

The above species may be compared with *Risella lutea*, Gld.; it is, however, much smaller, less undulately waved at the periphery and less coarsely striate on the upper whorls.

*Alaba warnefordiana*, sp. nov.

Shell turritiform, yellowish white; whorls 7—8, flat above, but slightly bulging over the sutures, spirally striate and indistinctly varicosely costulate; sutures impressed; aperture oval; peristome simple.

Altitude	..	..	4.5	mm.
Diam., major	..	..	1.5	„
Aperture, alt.	..	..	1	„
„ diam.	..	..	.5	„
Habitat—Andaman Islands.				

Allied to *A. blanfordi*, A. Ad., but has larger and fewer varices on the upper whorls; the spiral sculpture is also coarser than is the case with *A. blanfordi*.

*Rissoina angusta*, sp. nov.

Shell narrowly fusiform, solid, yellowish white; whorls 9, the first three smooth, the remainder transversely, obliquely ribbed; sutures impressed; aperture ovate; peristome somewhat sinuous.

Altitude	..	..	4.5	mm.
Diam., major	..	..	1.5	„
Habitat—Off Port Blair, Andaman Islands, 7—10 fathoms.				

*Rissoina cylindrica*, sp. nov.

Shell somewhat cylindrical, white with a brownish infra-sutural band; covered with a dull chocolate-coloured periostracum; remaining whorls 5, rather flat, sculptured with fine, transverse costæ and minute, spiral striæ, presenting a punctate appearance between the former; sutures impressed; aperture ovate; outer lip broadly thickened and somewhat expanded, a well-developed callosity joining the columella with the lip above.

Altitude .. ..	5.5 mm.
Diam., major .. ..	2 ..
Aperture, alt. .. ..	2 ..
,, diam. .. ..	1 ..
Habitat—Andaman Islands.	

*Rissoina lata*, sp. nov.

Shell elongately fusiform, dull white; whorls  $7\frac{1}{2}$ , the first  $5\frac{1}{2}$  very convex, the remaining 2 rather flat, sculptured throughout with fine, spiral striæ and oblique costæ, the latter becoming finer and almost obsolete on the last two whorls; columella descending rather obliquely and extending into a callus above; peristome varicosely thickened; aperture ovate.

Altitude .. ..	6.5 mm.
Diam., major .. ..	2.25 ..
Aperture, alt. .. ..	2 ..
,, diam. .. ..	1 ..
Habitat—Andaman Islands.	

*Rissoina pupiniiformis*, sp. nov.

Shell fusiform, somewhat flattened, semi-transparent white, polished; whorls 6, scarcely convex, encircled by a super-sutural spiral groove; sutures scarcely impressed; aperture oval; columella slightly arched; peristome simple, bearing one small basal denticle.

Altitude .. ..	6 mm.
Diam., major .. ..	3 ..
,, minor .. ..	2 ..
Aperture, alt. .. ..	1.75 ..
,, diam. .. ..	1 ..
Habitat—Andaman Islands.	

*Rissoina sculpturata*, sp. nov.

Shell decollate, fusiform, solid, whitish; remaining whorls  $4\frac{1}{2}$ , very flat, sculptured with transverse ribs interrupted by spiral ridges presenting a coarsely cancellate appearance; sutures scarcely defined; aperture ovate, oblique; peristome varicosely thickened; columella descending obliquely and extending into a callus which joins the lip above.

Altitude	..	..	45	mm.
Diam., major	..	..	2.25	..
Aperture, alt.	..	..	1	..
,, diam.	..	..	.5	..
Habitat—Off Port Blair, Andaman Islands, 7—10 fathoms.				

*Rissoina warnefordia*, sp. nov.

Shell small, fusiform, yellowish white; whorls  $7\frac{1}{2}$ , rather convex, the first two smooth, shining, the remainder transversely ribbed and finely, spirally ridged, presenting a coarsely punctate appearance between the ribs; sutures impressed; aperture obliquely ovate; peristome simple; columella descending rather obliquely.

Altitude	..	..	3.5	mm.
Diam., major	..	..	1.25	..
Habitat—Off Port Blair, Andaman Islands, 7—10 fathoms.				

*Narica depressa*, sp. nov.

Shell depressed, white, solid; whorls 3, sculptured with closely set, oblique, arcuate costæ, crossed by fine liræ, presenting a cancellate appearance; umbilical area smooth; umbilicus wide and deep; aperture oval; peristome continuous, simple, except in the umbilical region where it is slightly reflexed.

Altitude	..	..	7.5	mm.
Diam., major	..	..	17	..
Aperture, alt.	..	..	11.5	..
,, diam.	..	..	8	..
Habitat—Andaman Islands.				

*Eulima balteata*, sp. nov.

Shell acuminate pyramidal, solid, slightly distorted by curved, polished, greyish white, bearing a broad band of pure white above the sutures and at the periphery of the body-whorl; whorls 15; sutures scarcely impressed; aperture obliquely lunate; a callosity extending from the columella to the lip above.

Altitude	..	..	6.75	mm.
Diam., major	..	..	1.75	..
Aperture, alt.	..	..	1.5	..
,, diam.	..	..	.5	..
Habitat—Andaman Islands.				

*Styloptygma andamanensis*, sp. nov.

Shell subulate, greyish white, painted with an indistinct whitish, infra-sutural, spiral band, semi-transparent; whorls 10, marked

with transverse lines of growth; sutures impressed; aperture elongately oval; columella posteriorly plicate.

Altitude	..	..	6.75	mm.
Diam., major	..	..	1.75	„
Habitat—Andaman Islands.				

In some measure resembling *Odostomia aciculina*, Souv.; it is, however, broader and the whorls increase more rapidly; it is also more transparent than that species, and, with the exception of the indistinct, whitish spiral band, the shell is devoid of painting.

*Menestho acuminata*, sp. nov.

Shell acutely turriform, yellowish white; whorls 7, flat, regularly spirally striate; sutures scarcely impressed; aperture sub-quadrate; peristome simple.

Altitude	..	..	5	mm.
Diam., major	..	..	2	„
Aperture, alt.	..	..	1.5	„
„ diam.	..	..	1	„
Habitat—North Bay, Andaman Islands.				

*Turbonilla foveolata*, sp. nov.

Shell acutely, elongately, turriform, upper portion curved, distorted; pure white; remaining whorls  $17\frac{1}{2}$ , flattish, the first eight increasing very slowly, sculptured with closely set transverse ribs and spiral striæ; base of shell spirally striate only; sutures well impressed; aperture sub-quadrate; peristome simple; columella sub-tortuous.

Altitude	..	..	14	mm.
Diam., major	..	..	3	„
Aperture, alt.	..	..	2	„
„ diam.	..	..	1	„
Habitat—Andaman Islands.				

*Leptothyra solida*, sp. nov.

Shell globosely turbonate, very solid, narrowly perforate, rather flat at the apex, yellowish white, transversely streaked with small blotches of reddish brown; whorls  $3\frac{1}{2}$ , spirally lirate throughout; sutures impressed; peristome simple; aperture sub-circular; operculum shelly, slightly concave, pauci-spiral with a central nucleus.

Altitude	..	..	2.5	mm.
Diam., major	..	..	3	„
Aperture, alt.	..	..	1.25	„
„ diam.	..	..	1	„

Habitat—Off Port Blair, Andaman Islands, 7—10 fathoms.

*Gibbula athena*, sp. nov.

Shell turbinately conical, angled at the periphery, dark bronze colour, painted with oblique, transverse, thin, yellowish white lines, a row of cream-coloured spots encircling the umbilical area; whorls 4, finely, spirally striate above; base of shell bearing several spiral liræ which are crossed by fine, transverse striæ; sutures impressed; umbilicus deep and fairly wide; columella arched; peristome simple; aperture sub-ovate; operculum horny, multi-spiral, with a central nucleus.

Altitude	..	..	4.5 mm.
Diam., major	..	..	3.5 ,,
Aperture, alt.	..	..	2 ,,
,, diam.	..	..	1.5 ,,
Habitat—Off Port Blair, Andaman Islands, 7—10 fathoms.			

Allied to *G. phædra*, Melvill, from the Mekran Coast; the spire is, however, more obtuse and the sculpture coarser below and finer above; the whorls are also more convex than is the case in *G. phædra*.

*Gibbula cæni*, sp. nov.

Shell perforate, turbinately conical, yellowish grey; whorls 5, shouldered above, flattish below, sculptured with coarse spiral liræ crossed by transverse striæ, presenting a cancellate appearance; sutures not very well defined; umbilicus rather broad, deep; aperture sub-circular; edge of peristome acute, a thickening appearing just within the aperture.

Altitude	..	..	3.50 mm.
Diam., major	..	..	3.25 ,,
Aperture, alt.	..	..	1.25 ,,
,, diam.	..	..	1 ,,
Habitat—Off Port Blair, Andaman Islands, 7—10 fathoms.			

*Margarita ponsonbyi*, sp. nov.

Shell small, globosely depressed, pale greenish, iridescent, white, painted with oblique, interrupted bands of dark green; whorls 4, very finely, spirally striate, and transversely marked with lines of growth; sutures impressed; umbilicus narrow, partly concealed by the projection of the columella; columella arched; peristome acute; aperture almost circular.

Altitude	..	..	3.5 mm.
Diam., major	..	..	4.25 ,,
Aperture, alt.	..	..	2.25 ,,
,, diam.	..	..	2 ,,
Habitat—Off Port Blair, Andaman Islands, 7—10 fathoms.			

An extremely beautiful little species and easily distinguished from any other member of the group. Just inside the aperture appear two shelly ridges, probably the remains of the outer lip at past rest periods.

*Solariella dulcissima*, sp. nov.

Shell depressedly conoid, somewhat obtusely keeled, white, painted above with large blotches of crimson, narrow radiating bands of the white ground colour appearing at irregular intervals between these; base of shell painted with rows of dark crimson dashes and flecked with spots and blotches of a lighter shade of the same colour between the rows and towards the periphery; whorls  $4\frac{1}{2}$ , sculptured throughout with very fine, spiral liræ crossed by minute transverse striæ giving a finely granular appearance to the shell; sutures impressed; umbilicus moderately wide, bordered by two coarse whitish ribs, the lower and coarser of which is nodulous; aperture roundly ovate; peristome simple; interior of shell iridescent, spirally striate.

Altitude ..	..	4	mm.
Diam., major ..	..	6.75	„
Aperture, alt. ..	..	3	„
„ diam. ..	..	2.75	„
Habitat—Off Port Blair, Andaman Islands, 7—10 fathoms.			

A comparison may be made between this species and *S. variabilis*, A. Ad.; it is, however, thinner in texture, flatter and more keeled at the periphery; the umbilicus is also narrower and the general sculpture is much finer than in *S. variabilis*.

*Stomatella crenulata*, sp. nov.

Shell roundly auriform, somewhat depressed, pale pinkish yellow, mottled with oblique streaks and blotches of crimson fading to red and green; whorls 5, sculptured with light spiral ridges; the interstices marked with fine, wavy, spiral striæ except on the base of the shell where these last are absent, both crossed with transverse striæ presenting a slightly beaded or granular appearance; sutures crenulate above, incised below; columella descending obliquely in a rounded curve; umbilical region surrounded by a broad white callus; peristome acute; interior of shell highly iridescent.

Altitude ..	..	12	mm.
Diam., major ..	..	19.75	„
„ minor ..	..	15.25	„
Aperture, alt. ..	..	10	„
„ diam. ..	..	11.5	„
Habitat—Andaman Islands.			

*Macroschisma elegans*, sp. nov.

Shell oblong, yellowish white, rayed and blotched with rose colour, cancellated with concentric and transverse striae, the latter becoming much coarser anteriorly; fissure straight below, narrowing towards the apex, a wide, shallow, white channel leading from it to the posterior margin; peristome acute anteriorly, thick posteriorly and laterally.

Altitude	..	..	2'25	mm.
Diam., major	..	..	10	„
„ min.	..	..	4'25	„
Habitat—Andaman Islands.				

*Lucapinella gaylordæ*, sp. nov.

Shell oblong ovate, laterally contracted, posteriorly somewhat dilated, greenish white, irregularly rayed with blackish brown, roughly sculptured with scaly radiate ribs and concentric grooves; fissure ovate, contracted near both ends; peristome laterally blunt, acute at the ends; interior of shell white; callus-rim of fissure thick, crenulate.

Diam., major	..	..	10'75	mm.
„ minor	..	..	5'25	„
Altitude	..	..	3	„
Habitat—Andaman Islands.				

*Acmaea semicornea*, sp. nov.

Shell semicorneous, depressedly conical, irregularly subquadrate, pale yellowish brown, sculptured with fine radiating transverse ribs crossed by concentric striae, presenting a very finely cancellate appearance; edge of peristome finely crenulate; apex simple, placed slightly to one side; anterior end of shell shortened; posterior end broadly produced.

Altitude	..	..	2	mm.
Diam., major	..	..	9	„
„ minor	..	..	7'75	„
Habitat—Andaman Islands.				

Allied to *Sutura fluviatilis*, Blanf.,<sup>1</sup> from the delta of the Irrawady river; the apex of the present species is, however, less central, the sculpture is much finer and more cancellate, the general texture is also more horny and the peristome is crenulate, which does not appear to be the case in *S. fluviatilis*.

Of three young specimens of this species in the British Museum labelled "Andaman Islands," and presented by Colonel L. Worthington Wilmer, one bears traces of being rayed with rusty brown, a

<sup>1</sup> *Journ. Asiat. Soc. Bengal*, xxxvi, pt. 2, 1867; p. 62; pl. ii, figs. 2—4.

character which is quite absent in the remaining two and in those in the Warneford collection. There is also a note attached to the British Museum specimens stating that they were found attached to *Mytilus*, but there is no means of ascertaining how Mr. Warneford's specimens were actually obtained.

*Chlamys andamanicus*, sp. nov.

Shell ovate, nearly equilateral, bright orange colour throughout, streaked and flecked especially on the upper part of the shell with white, both valves bearing about 60 fine, closely set, scaly riblets; auriculæ small, very unequal, the anterior large, curved below, the posterior sloping obliquely, both sculptured with scaly riblets.

Long.           ..           .. 16.5 mm.  
Lat.            ..           .. 13.75 ,,  
Habitat—Andaman Islands.

*Modiola cymbula*, sp. nov.

Shell elongately trapezoidal, pale yellowish brown, except at posterior end of ventral surface where it is of a pale reddish chestnut colour, concentrically striate with lines of growth, the posterior ventral surface longitudinally wrinkled; anterior lateral margin almost straight; posterior lateral margin sloped; ventral margin contracted towards the middle; umboes small, purple; interior of shell pale flesh colour, rapidly deepening to purple and blackish purple towards the dorsal region.

Long.           ..           .. 28.25 mm.  
Lat.            ..           .. 14 ,,  
Habitat—Andaman Islands.

*Modiola zebra*, sp. nov.

Shell mytiliform, curved, red elegantly rayed with bluish black inequidistant stripes, stained and polished with rich chestnut at the posterior side of the ventral margin, concentrically striate with irregular lines of growth; posterior side short, contracted; anterior side fan shaped; umboes high, narrow, whitish.

Long.           ..           .. 55 mm.  
Lat.            ..           .. 27 ,,  
Habitat—Andaman Islands.

Allied to *M. gubernaculum*, Dunk.,<sup>1</sup> of which the habitat is unknown; it is, however, more elongately oblong, and the system of painting is quite different; the umboes also are much narrower and higher and do not show the purple colouring so conspicuous in that species.

<sup>1</sup> *Proc. Zool. Soc. London*, 1856, p. 361.



*Barbatia cancellata*, sp. nov.

Shell acuminate ovate, very inequilateral, gaping towards the anterior side, sculptured with oblique transverse ribs and somewhat distant concentric ridges, covered with a yellowish brown periostracum, a tuft of bristly hairs appearing posteriorly at the points of contact of the transverse ribs and concentric ridges; anterior side somewhat truncate; posterior side produced, roundly acuminate; dorsal margin straight; ventral margin anteriorly very oblique, posteriorly rounded; umboes broad, rather prominent.

Long.           ..           ..   13   mm.  
 Lat.            ..           ..   24'5   ,,  
 Habitat—Andaman Islands.

*Crassatella radiata*, Sow., var. *obsoleta*, var. nov.

Differing from the typical form in almost totally lacking the coloured rays which are so conspicuous a character of the species; in the present variety these only appear as indistinct spots and small blotches of a pale rusty red.

Habitat—Andaman Islands.

*Kellia mirabilis*, sp. nov.

Right valve oblong-subquadrate, rather tumid, inequilateral, yellowish white, with a broad bluish white central oblique band extending from the umboes to the ventral margin, sculptured throughout with wavy punctate ridges presenting a curious and beautifully fine, granular appearance; anterior side rather short, rounded; posterior side more angularly rounded; ventral margin straight.

Long.           ..           ..   11   mm.  
 Lat.            ..           ..   15'25   ,,  
 Habitat—Andaman Islands.

It is impossible to adequately describe the wonderful sculpture of this shell which is so striking in every way and so widely different from any hitherto described species of the genus, that I have considered the single valve represented in the Warneford collection worthy of special notice and description.

*Scintilla citrina*, sp. nov.

Shell oval, translucent, pale lemon colour, concentrically striate with lines of growth, faintly scratched with very fine transverse striæ; anterior side rounded; posterior side slightly acuminate below; lateral margin sloped; umboes small but prominent.

Long.           ..           ..   7   mm.  
 Lat.            ..           ..   10   ,,  
 Habitat—Andaman Islands.

*Scintilla elongata*, sp. nov.

Shell oblong-elongate, nearly equilateral, rather convex, gaping in the middle, concentrically striate, polished, semi-transparent white, minutely freckled throughout with opaque milk-white spots; anterior side rounded; posterior side somewhat angularly rounded; dorsal margin straight; ventral margin contracted in the middle.

Long.           ..           ..       6 mm.  
 Lat.            ..           ..       13   ,,  
 Habitat—Andaman Islands.

*Scintilla perplexa*, sp. nov.

Shell oblong, nearly closed, semi-transparent, cream colour, finely, concentrically striate and bearing traces of very fine oblique, transverse striæ; anterior side obtusely angled; posterior side rather larger than anterior side, somewhat squarely rounded, expanded above and more inflated.

Long.           ..           ..       7 mm.  
 Lat.            ..           ..       11.5   ,,  
 Habitat—Andaman Islands.

*Scintilla translucida*, sp. nov.

Shell roundly ovate, moderately compressed, very thin, transparent, marked with very minute transverse striæ and concentric lines of growth, some of which are milky white; slightly gaping at both ends; umboes small, nearly central.

Long.           ..           ..       11 mm.  
 Lat.            ..           ..       15   ,,  
 Habitat—Andaman Islands.

Allied to *S. jukesi*, Desh., from Australia; the present species is, however, much thinner, more transparent and more roundly ovate; it is also polished, whereas *S. jukesi* is quite dull and opaque.

*Hemicardium hystrix*, Reeve, var. *brevispinosa*, var. nov.

Distinguished from the typical form by its much shorter and more closely set spines, and by the absence of the scarlet lines in the interstices between the ribs; the pink colouring is also confined to the extreme umbonal region and lateral margins.

Habitat—Andaman Islands.

All the specimens examined from the Andamans are identical in these respects, and it appears to be a well-marked local variety.

*Tapes albomarginata*, sp. nov.

Shell ovate, flesh coloured, obsolete rayed with purple, sculptured with regular, prominent, raised liræ; anterior side somewhat angularly rounded; posterior side almost truncately obtuse; dorsal margins gently sloped; lateral and ventral margins creamy white; umboes small, white, stained with pale, livid purple.

Long.           ..           .. 24 mm.  
 Lat.            ..           .. 36.5 „  
 Habitat—Andaman Islands.

*Batissa capillata*, sp. nov.

Shell sub-trigonal, inequilateral, thick, rather inflated, covered with a dark, brownish black periostracum except in the umbonal region where erosion has taken place, sculptured with coarse, irregular, concentric growth-lines which are obliquely crossed posteriorly with coarse hair-like ridges; anterior side somewhat angularly rounded; posterior side slightly produced, obscurely angled; ventral margin rounded; ligament large, prominent; cardinal teeth broad and very coarse; anterior lateral teeth elongated, finely striate; interior of shell purplish white, the purple staining deepening posteriorly.

Long.           ..           .. 74 mm.  
 Lat.            ..           .. 72 „  
 Habitat—Andaman Islands.

*Diplodonta insulsa*, sp. nov.

Shell obliquely sub-ovate, yellowish white, marked with fine, concentric growth-lines; anterior side obliquely rounded; posterior side rounded; dorsal margins gently sloped; ventral margin rounded; umboes small, not prominent.

Long.           ..           .. 8.5 mm.  
 Lat.            ..           .. 10 „  
 Habitat—Andaman Islands.

*Donax nuxjagus*, sp. nov.

Shell elongately oblong, yellowish flesh coloured, sculptured with fine, closely set transverse striæ and posteriorly with irregular, concentric grooves disappearing towards the middle of the shell; anterior side produced, rounded; posterior side acuminate rounded; anterior lateral margin gently sloped; posterior lateral margin more abruptly sloped; ventral margin undulately rounded; umboes rather large, livid purple.

Long.           ..           .. 8 mm.  
 Lat.            ..           .. 13.25 „  
 Habitat—Andaman Islands.

*Donax tiesenhauseni*, sp. nov.

Shell wedge shaped, yellowish, rayed with greyish purple, sculptured with very fine, concentric striæ and fine nearly obsolete transverse striæ, both becoming so much coarser posteriorly as to give that part of the shell a cancellate appearance; anterior side produced, obtusely rounded; posterior side abruptly truncate; anterior lateral margin gently, concavely sloped; posterior lateral margin arched; ventral margin straight; umboes white.

Long.           ..           ..   8.5 mm.  
 Lat.            ..           ..   13    ,,  
 Habitat—Andaman Islands.

*Donax trigonalis*, sp. nov.

Shell almost trigonal, convex, very truncate, pale bluish flesh colour, tinged posteriorly with livid purple, partly covered with a thin, yellowish periostracum, sculptured with fine concentric lines of growth and posteriorly with fine longitudinal striæ which become gradually coarser, giving to this part of the shell a cancellate appearance; anterior lateral margin sloped; posterior margin descending very abruptly; ventral margin rounded; umboes large, but not prominent; interior of shell pale flesh colour, changing to blackish purple in places.

Long.           ..           ..   9.5 mm.  
 Lat.            ..           ..   11    ,,  
 Habitat—Andaman Islands.

This species differs from *Donax incarnatus*, Chem., to which it appears to be most nearly related, by its more truncate form, more rounded ventral and straighter posterior margins.

*Psammobia obtusa*, sp. nov.

Shell ovately transverse, pale mauve, blotched and mottled with a darker shade of the same colour and rayed with interrupted bands of reddish violet, sculptured throughout with fine, concentric striæ and oblique ridges which appear as irregular, waved plications posteriorly; posterior side obtusely angled; anterior side rounded; umboes central; interior of shell mauve throughout.

Long.           ..           ..   24.5 mm.  
 Lat.            ..           ..   42    ,,  
 Habitat—Andaman Islands.

The present species at first sight recalls *P. ornata*, Desh.; it is, however, broader, shorter and more blunt on both sides than is that species, the mauve colour also easily distinguishes it from *P. ornata*, which is of a yellowish white colour; the coloration of the interior is also remarkable.

*Novaculina andamanensis*, sp. nov.

Shell oblong, elongate, inequilateral, constricted towards the middle, pure white, bearing traces of having been covered with a yellowish brown periostracum, concentrically striate; dorsal margin slightly sloped anteriorly; ventral margin excavated in the middle, anterior side rounded; posterior side produced, somewhat angled below; umboes small.

Long.           ..           .. 16.5 mm.  
 Lat.            ..           .. 37.5 ,,  
 Habitat—Andaman Islands.

*Tellina cancellata*, sp. nov.

Shell white, roundly ovate, sculptured with fine, radiate ribs and concentric ridges presenting a delicately cancellate appearance; posterior side slightly acuminate; anterior side rounded.

Long.           ..           .. 9.5 mm.  
 Lat.            ..           .. 12 ,,  
 Habitat—Andaman Islands.

This species may be separated from *S. pretiosa*, Desh. (= *costata*, Sow.), its nearest relation, by its more oval form, less pointed posterior side and much finer and more delicate sculpture.

*Tellina incisa*, sp. nov.

Shell elongately oval, white, discoloured towards the umbona region with reddish yellow, shining, slightly iridescent, sculptured with concentric lines of growth and indistinct, irregular transverse striæ; anterior side somewhat acuminate; posterior side bluntly beaked below, concavely truncate above, a notch appearing just above the termination of the beak which is stained a ferruginous brown; umboes small, inconspicuous.

Long.           ..           .. 12 mm.  
 Lat.            ..           .. 20.75 ,,  
 Habitat—Andaman Islands.

*Tellina jousseaumei*, sp. nov.

Shell roundly ovate, sub-equilateral, nearly equivalve, the left valve somewhat compressed, chalky white, bearing traces of a pale, greenish brown periostracum, marked with rather coarse concentric lines of growth and very fine, transverse striæ; anterior side rounded; posterior side more sharply rounded, flexuous, obtusely angled above; umboes small, central.

Long.           ..           .. 32.5 mm.  
 Lat.            ..           .. 39 ,,  
 Habitat—Andaman Islands.

*Tellina magnifica*, sp. nov.

Shell oblong ovate, white, polished, shining, inequilateral, concentrically striate with lines of growth crossed by fine, transverse oblique striæ, presenting a very finely cancellate appearance, especially in those regions which border on the lower and lateral margins of the right valve; anterior side acuminately rounded; posterior side produced, flexuous, rostrate; ventral margin slightly rounded; umboes small, rose coloured.

Long.        ..        .. 47 mm.  
 Lat.         ..         .. 73°75 „  
 Habitat—Andaman Islands.

*Strigilla densestriata*, sp. nov.

Shell sub-trigonal, slightly inequivalve, cream coloured, slightly flexuous posteriorly, sculptured on both valves anteriorly with concentric grooves, centrally with very fine, concentric striæ, crossed by fine oblique transverse grooves, and posteriorly with very fine, transverse striæ, and concentric grooves, the latter becoming much coarser near the margin; posterior margin descending obliquely and rather abruptly; anterior margin less abrupt; ventral margin rounded; umboes small.

Long.        ..        .. 14.5 mm.  
 Lat.         ..         .. 17 „  
 Habitat—Andaman Islands.

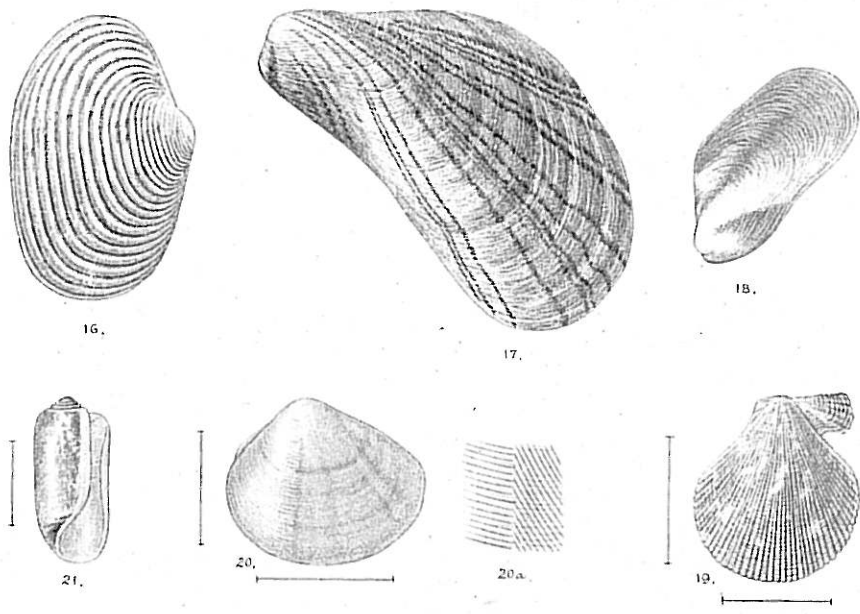
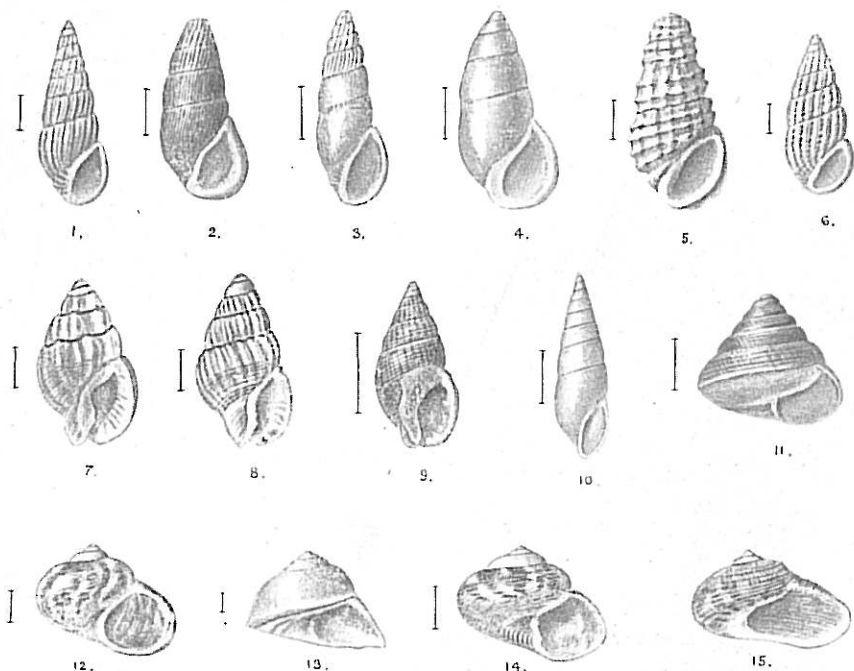




EXPLANATION OF PLATE XIV.

- |         |                               |          |                                |
|---------|-------------------------------|----------|--------------------------------|
| FIG. 1. | <i>Rissoina angusta.</i>      | FIG. 12. | <i>Margarita ponsonbyi.</i>    |
| „ 2.    | <i>Rissoina cylindrica.</i>   | „ 13.    | <i>Risella balteata.</i>       |
| „ 3.    | <i>Rissoina læta.</i>         | „ 14.    | <i>Solariella dulcissima.</i>  |
| „ 4.    | <i>Rissoina pupiniformis.</i> | „ 15.    | <i>Stomatella crenulata.</i>   |
| „ 5.    | <i>Rissoina sculpturata.</i>  | „ 16.    | <i>Tapes albomarginata.</i>    |
| „ 6.    | <i>Rissoina warnefordiæ.</i>  | „ 17.    | <i>Modiola zebra.</i>          |
| „ 7.    | <i>Nassa gerstenbrandti.</i>  | „ 18.    | <i>Modiola cymbula.</i>        |
| „ 8.    | <i>Nassa jucunda.</i>         | „ 19.    | <i>Chlamys andamanicus.</i>    |
| „ 9.    | <i>Nassa tristis.</i>         | „ 20.    | <i>Strigilla densestriata.</i> |
| „ 10.   | <i>Styloptygma andaman-</i>   | „ 20A.   | <i>Strigilla densestriata</i>  |
|         | <i>ensis.</i>                 |          | (sculpture magnified).         |
| „ 11.   | <i>Sitala denselinata.</i>    | „ 21.    | <i>Tornatina conspicua.</i>    |





ANDAMAN SHELLS.

EXPLANATION OF PLATE XV.

- |                                      |                                     |
|--------------------------------------|-------------------------------------|
| FIG. 22. <i>Melania charon</i> .     | FIG. 30. <i>Columbella suavis</i> . |
| „ 23. <i>Melania expatriata</i> .    | „ 31. <i>Hamina callosa</i> .       |
| „ 24. <i>Melania multistriata</i> .  | „ 32. <i>Lucapinella gaylordæ</i> . |
| „ 25. <i>Mangilia obtusa</i> .       | „ 33. <i>Macroschisma elegans</i> . |
| „ 26. <i>Mangilia andamanensis</i> . | „ 34. <i>Drillia fraga</i> .        |
| „ 27. <i>Mangilia exasperata</i> .   | „ 35. <i>Drillia sikesi</i> .       |
| „ 28. <i>Conus edwardi</i> .         | „ 36. <i>Eulima balteata</i> .      |
| „ 29. <i>Clathurella selli</i> .     | „ 37. <i>Gyrineum wilmeriana</i> .  |
| FIG. 38. <i>Menestho acuminata</i> . |                                     |



22.



24.



25.



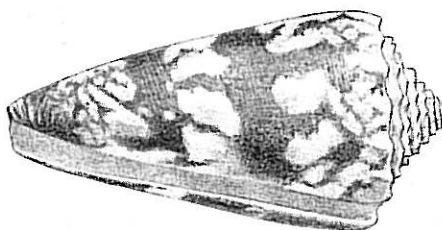
26.



27.



23.



28.



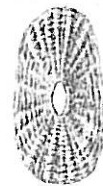
29.



30.



31.



32.



33.



34.



35.



36.



37.

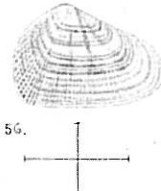
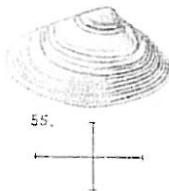
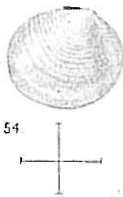
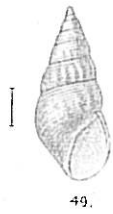
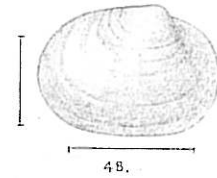
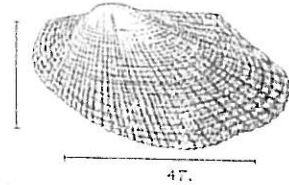
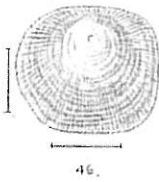


38.

ANDAMAN SHELLS.

EXPLANATION OF PLATE XVI.

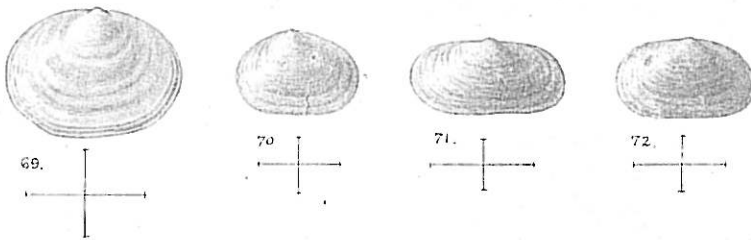
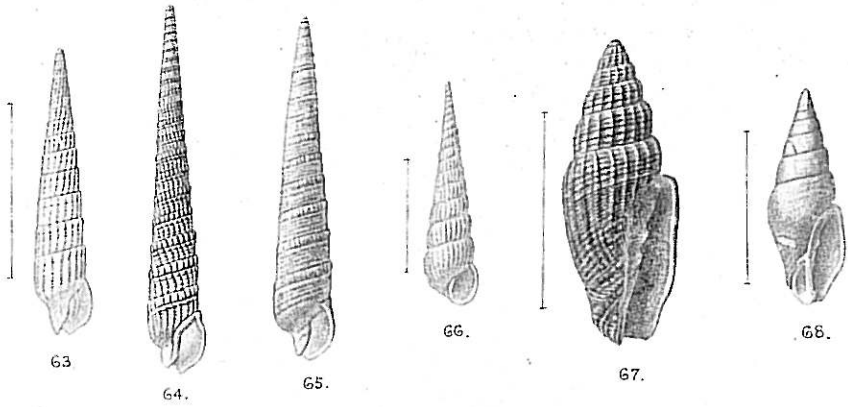
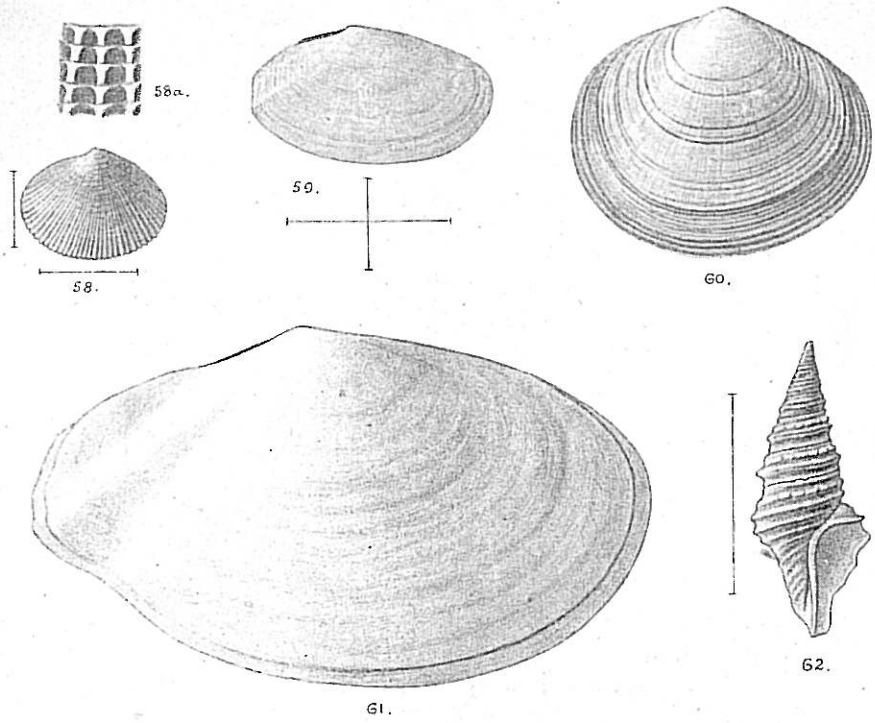
- |                                     |                                    |
|-------------------------------------|------------------------------------|
| FIG. 39. <i>Batissa capillata</i> . | FIG. 48A. <i>Kellia mirabilis</i>  |
| „ 40. <i>Novaculina andaman-</i>    | (sculpture magnified).             |
| <i>ensis</i> .                      | „ 49. <i>Alaba warnefordiana</i> . |
| „ 41. <i>Psammobia obtusa</i> .     | „ 50. <i>Atys convexa</i> .        |
| „ 42. <i>Gibbula cœni</i> .         | „ 51. <i>Atys neglecta</i> .       |
| „ 43. <i>Gibbula ahena</i> .        | „ 52. <i>Atys pacei</i> .          |
| „ 44. <i>Leptothyra solida</i> .    | „ 53. <i>Atys vixumbilicata</i> .  |
| „ 45. <i>Narica depressa</i> .      | „ 54. <i>Diplodonta insulsa</i> .  |
| „ 46. <i>Acmaea semicornea</i> .    | „ 55. <i>Donax nuxfagus</i> .      |
| „ 47. <i>Barbatia cancellata</i> .  | „ 56. <i>Donax tiesenhauseni</i> . |
| „ 48. <i>Kellia mirabilis</i> .     | „ 57. <i>Donax trigonalis</i> .    |



ANDAMAN SHELLS.

EXPLANATION OF PLATE XVII.

- |  |  |
|--|--|
| FIG. 58. <i>Tellina cancellata</i> .                       | FIG. 64. <i>Terebra rubrobrunnea</i> . |
| „ 58A. <i>Tellina cancellata</i><br>(sculpture magnified). | „ 65. <i>Terebra unicolor</i> .        |
| „ 59. <i>Tellina incisa</i> .                              | „ 66. <i>Turbonilla foveolata</i> .    |
| „ 60. <i>Tellina jousseaumei</i> .                         | „ 67. <i>Mitra warnefordiana</i> .     |
| „ 61. <i>Tellina magnifica</i> .                           | „ 68. <i>Mitra emiliae</i> .           |
| „ 62. <i>Pleurotoma rimata</i> .                           | „ 69. <i>Scintilla translucida</i> .   |
| „ 63. <i>Terebra carnicolor</i> .                          | „ 70. <i>Scintilla citrina</i> .       |
|  | „ 71. <i>Scintilla elongata</i> .      |
|  | FIG. 72. <i>Scintilla perplexa</i> .   |



ANDAMAN SHELLS.