

The following papers were read:—

1. A Revision of the Sharks of the Family *Orectolobidæ*.

By C. TATE REGAN, M.A., F.Z.S.

[Received April 1, 1908.]

(Plates XI.–XIII.*)

This revision of the *Orectolobidæ* was prepared some time ago as part of a descriptive catalogue of the Selachians in the British Museum, a work which I have had no opportunity of continuing for more than two years. I have therefore thought it best to publish some of those parts which are ready.

The suborder Galeoidei includes Sharks with an anal and two dorsal fins, without fin-spines and with five gill-openings on each side. There are five families, viz. *Odontaspididæ*, *Lamnidæ*, *Orectolobidæ*, *Scyliorhinidæ*, and *Carchariidæ*. The *Orectolobidæ* are distinguished by the presence of oro-nasal grooves †, by having the last two to four gill-openings above the base of the pectoral, and by the posterior position of the dorsal fins, the first of which is above or behind the pelvis. Anatomically they differ notably from the other Galeoidei in having the mesopterygium expanded distally and bearing nearly as many radials as the metapterygium and in the reduction or absence of the triradiate cartilaginous rostrum.

In the present revision twenty-one species are recognised and are referred to eight genera; most of the species are from the Indo-Pacific.

The considerable range of variation in physiological characters

* For explanation of the Plates, see p. 364.

† In most Selachians the nasal cavities are separate from the mouth. In three species of *Scyliorhinus* (*S. canicula*, *S. edwardsii*, and *S. marmoratum*) the nasal cavities are so near the mouth that the large anterior nasal valves overlie the edge of the upper lip, but there are no oro-nasal grooves. In the *Raiidæ* oro-nasal grooves are present, but run to the corner of the mouth and do not divide the upper lip. In the *Cestracioutidæ* and *Orectolobidæ* the oro-nasal grooves divide the upper lip into a median and two lateral portions; they thus correspond in position to the embryonic oro-nasal grooves of the Amniote Vertebrates.

Most text-books of embryology lay some stress on the presence in Amniote embryos of these grooves, which are supposed to represent an ancestral condition found in the adults of a lower group, the Selachians. There can be little doubt, however, that in the Selachians oro-nasal grooves are specialised structures which have arisen independently in different families, none of which can be regarded as in any way approximating to the ancestral type of the higher vertebrates.

It is now generally accepted that the Amniote Vertebrates are derived from the Batrachians and the latter from the Crossopterygian fishes. In all these groups the præmaxillary and maxillary bones form the upper border of the mouth and separate the external apertures of the oral and nasal cavities. In the Crossopterygians there are no internal nares; in the Batrachians internal nares are present and develop as perforations of the palate, and in the Amniota they are the persistent inner ends of the embryonic oro-nasal grooves. It seems more likely that in this case ontogeny repeats phylogeny in the Batrachians rather than in the Amniota; if communication between the oral and nasal cavities internal to the præmaxillaries and maxillaries originated as open grooves, such grooves must have been present before the development of the præmaxillaries and maxillaries, but this is improbable, as the Crossopterygians have the bones of the upper jaw fully developed, but no trace of internal nares or oro-nasal grooves.

in the sharks of this family is of some interest, and may be exemplified by comparison of two extreme types.

Rhinodon typicus is a large pelagic shark, with numerous small teeth, long gill-rakers, minute spiracles, and wide gill-openings; the pectoral fins are acutely pointed, and the axis of the caudal fin is so strongly turned upwards and the lower lobe is so much produced anteriorly as to give the appearance of a deeply forked symmetrical fin. The resemblances of this shark to the Basking Shark (*Cetorhinus maximus*), which belongs to the family Lamnidae, are very striking.

Eucrossorhinus dasypogon is a ground-shark with strong dentition, large oblique spiracles, and small gill-openings; the head and anterior part of the body is strongly depressed and fringed with dermal flaps; the pectoral fins are broad and obtuse and the axis of the caudal fin is not directed upwards nor is the lower lobe enlarged. This form shows many points of similarity to the Angel-fishes (*Squatina*), which belong to another suborder.

In some species (e. g. *Chiloscyllium punctatum*, *C. griseum*, and *Stegostoma tigrinum*) there is considerable variation in colour and markings, partly due to changes which take place during growth. The young of these species have dark cross-bars, which may become replaced by spots or may disappear, giving rise to a uniform coloration.

As a rule the pelagic forms (e. g. *Ginglymostoma*, *Rhinodon*) have no conspicuous markings; the littoral sharks (*Parascyllum*, *Brachaelurus*, *Chiloscyllium*, *Stegostoma*) are spotted, barred, or variously ornamented, the coloration being most brilliant in the tropical species; whilst the ground-sharks (*Orectolobus*, *Eucrossorhinus*) have markings which probably resemble the rocks and weeds among which they lurk.

In the Orectolobidae, as in other sharks, the dorsal and anal fins appear to be comparatively larger in the young than in the adult.

Synopsis of the Genera.

- | | |
|--|----------------------------|
| I. Spiracles very small; anal quite distinct from the caudal, wholly or partly opposed to the second dorsal. | |
| A. Origin of second dorsal behind that of the anal ... | 1. <i>Parascyllum</i> . |
| B. Origin of second dorsal above or in advance of that of the anal. | |
| Teeth tricuspid or multicuspid | 2. <i>Ginglymostoma</i> . |
| Teeth unicuspid | 3. <i>Rhinodon</i> . |
| II. Spiracles well-developed; anal either continuous with the caudal or terminating directly in front of it. | |
| A. Lower lip divided into two by a symphysial groove. | |
| 1. Sides of head and snout without dermal flaps; spiracle surrounded by a circular raised rim... | 4. <i>Brachaelurus</i> . |
| 2. Sides of head and snout more or less strongly fringed with dermal flaps; spiracles wide oblique slits. | |
| Last two gill-openings closer together than the rest | 5. <i>Orectolobus</i> . |
| Gill-openings equidistant | 6. <i>Eucrossorhinus</i> . |
| B. Lower lip not divided by a symphysial groove. | |
| Caudal fin of moderate length | 7. <i>Chiloscyllium</i> . |
| Caudal fin very elongate | 8. <i>Stegostoma</i> . |

1. PARASYLLIUM.

Parasyllium Gill, Ann. Lyc. N. York, 1861, p. 412; Günth. Cat. Fish. viii. p. 410 (1870).

Head rather elongate; body very elongate, subcylindrical. Mouth slightly arched, near the end of the snout; teeth small, pointed, with or without accessory cusps; lower lip not divided by a symphysial groove. Nasal valves separate, each with an obtuse cirrus. Eye small; a longitudinal fold below the eye. Spiracles very small, below the level of the eyes and posterior to them. First four gill-openings of moderate width; last considerably wider; last two close together and above the base of pectoral. Dorsal fins subequal, the first behind the pelvics, the second in part posterior to the anal, which terminates at a considerable distance from the caudal. Caudal of moderate length; axis scarcely directed upwards; lower lobe notched posteriorly. Pectorals broad, rounded.

Two species from Australia.

1. PARASYLLIUM COLLARE.

Parasyllium variolatum (non Duméril) Günth. Cat. Fish. viii. p. 410 (1870).

Parasyllium collare Ramsay & Ogilby, Proc. Linn. Soc. N. S. Wales, (2) iii. 1889, p. 1310; Waite, Mem. Austral. Mus. iv. 1899, p. 32, pl. ii. fig. 2.

No dorsal keel. Mouth near the end of snout; fold of lower lip broadly interrupted; nasal cirrus short. First dorsal originating above the posterior edge of pelvics; free edge of the fin straight or convex; length of base $\frac{3}{5}$ the distance from second dorsal, which originates above the posterior part of anal. Anal longer than deep, its base rather longer than that of either dorsal, but shorter than its distance from the caudal. Brownish above, yellow below; back with some broad dark transverse bars; upper parts of body and fins with round dark spots.

Coasts of New South Wales, Victoria, and Tasmania.

1. (860 mm.).
2. (750 mm.).

Tasmania.
Tasmania.

M. Allport, Esq.

2. PARASYLLIUM VARIOLATUM.

Hemiscyllium variolatum Duméril, Rev. et Mag. Zool. 1853, p. 121, pl. iii. fig. 1, and Elasmobr. p. 327 (1865).

Parasyllium nuchale MacCoy, Ann. Mag. N. H. (4) xiii. 1874, p. 15, pl. ii.

A broad blackish transverse band extending from behind the eye to the root of the pectoral, covered with small white spots; numerous white spots on the body; along the side a series of six white semicircles, which may unite to form an undulating stripe, extending from pectoral to caudal; each fin with a pair of dark spots at its free edge and one at its base. In structural characters apparently very similar to *P. collare*, but evidently distinct.

Coasts of Victoria and Tasmania.

2. GINGLYMOSTOMA.

Ginglymostoma Müll. & Henle, Arch. f. Naturgesch. 1837, i. p. 395, and Plagiost. p. 22 (1841); Günth. Cat. Fish. viii. p. 407 (1870).

Nebrius Rüpp. Neue Wirbelth., Fische, p. 62 (1840).

Head broad, obtuse; body elongate, subcylindrical. Mouth transverse, near the end of the snout; teeth small, tricuspid or multicuspid; lower lip not divided by a symphysial groove. Nasal valves separate, each with a cirrus. Eye small; no longitudinal fold below the eye. Spiracle very small, behind the eye. Gill-openings of moderate width; last two close together; last two or three above the base of the pectoral. First dorsal above or partly behind the pelvics; second dorsal above or partly in advance of the anal, which is free from the caudal. Caudal of moderate length; axis directed upwards; lower lobe notched posteriorly.

Four species.

Synopsis of the Species.

- | | |
|--|---------------------------|
| I. Each dorsal and anal fin with the anterior angle broadly rounded; lower caudal lobe not produced anteriorly; teeth tricuspid or pentacuspid, the middle cusp the strongest. | |
| Origin of first dorsal opposite to that of the pelvics | 1. <i>cirratum</i> . |
| Origin of first dorsal slightly in advance of posterior end of base of pelvics | 2. <i>brevicaudatum</i> . |
| II. Each dorsal and anal fin with the anterior angle pointed; lower caudal lobe somewhat produced anteriorly. | |
| Teeth with a strong median cusp and 3 or 4 small cusps on each side | 3. <i>ferrugineum</i> . |
| Teeth with the cusps graduated to the strongest, which is not median | 4. <i>concolor</i> . |

1. GINGLYMOSTOMA CIRRATUM.

Squalus cirratus Gmelin, Linn. Syst. Nat. p. 1492 (1788); Schneid. Bloch's Syst. Ichth. p. 128 (1801).

Squalus punctatus Schneid. t. c. p. 134.

Squalus punctulatus Schneid. t. c. p. 549.

Squalus argus Bancroft, Zool. Journ. v. 1834, p. 82.

Ginglymostoma cirratum Müll. & Henle, Plagiost. p. 13 (1841); Duméril, Elasmobr. p. 334 (1865); Günth. Cat. Fish. viii. p. 408 (1870); Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1896, p. 26, and 1900, pl. iv. fig. 13.

Ginglymostoma fulvum Poey, Mem. ii. p. 342 (1861).

Ginglymostoma caboverdianus Capello, Jorn. Sci. Phys. Lisbon, 1867, p. 167.

Nasal cirrus extending to or beyond the oral edge of the nasal valve. Lower labial folds separated by a considerable interspace. Teeth bicuspid or pentacuspid, the middle cusp much the strongest. First dorsal a little larger than the second and considerably larger

than the anal; origin of first dorsal opposite to that of the pelvics; free edge of the fin straight or convex, anterior angle broadly rounded, posterior angle nearly rectangular; length of base greater than the distance from second dorsal. Anal beginning below the middle of second dorsal; free edge of the fin evenly convex. Caudal fin $\frac{2}{5}$ the length of the rest of the fish or rather more; lower lobe moderately deep and with the edge forming an obtuse angle anteriorly. Pectoral with nearly straight free edge and rounded angles, a little longer than broad, its length nearly equal to its distance from the mouth or $\frac{2}{3}$ of the distance from its origin to that of the pelvics. Brownish; young with small, scattered, round, blackish spots.

Tropical Atlantic; Pacific Coast of Mexico.

1-2. (530 and 400 mm.)	St. Croix.	
3. (390 mm.)	Cuba.	Zool. Soc.
4. (280 mm.)	Jalisco, Mexico.	Dr. A. C. Buller.
5. (230 mm.)	S. America.	Sir R. Schomburgk.
6-8. (740-2400 mm.) stuffed.	W. Indies.	

2. GINGLYMOSTOMA BREVICAUDATUM.

Ginglymostoma brevicaudatum Günth. & Playfair, Fish. Zanzibar, p. 141, pl. xxi. (1866); Günth. Cat. Fish. viii. p. 408 (1870).

Nasal cirrus short, not nearly reaching the oral edge of the nasal valve. Lower labial folds separated by a considerable interspace. Teeth tricuspid or pentacuspoid, the middle cusp much the strongest. Dorsal and anal fins subequal, each with broadly rounded anterior angle, straight or slightly convex free edge, and obtuse posterior angle. First dorsal originating a little in advance of end of base of pelvics; length of base less than the distance from second dorsal. Anal beginning and ending respectively a little behind the origin and end of the base of second dorsal. Caudal fin rather less than $\frac{2}{7}$ of the length of the rest of the fish; lower lobe deep and with the edge forming an obtuse angle anteriorly. Pectoral with nearly straight free edge and rounded angles, as broad as long, its length equal to its distance from the eye or $\frac{1}{2}$ the distance from its origin to that of the pelvics.

Zanzibar: Seychelles.

1. (580 mm.), stuffed, type of the species.	Zanzibar.	Lient.-Col. Playfair.
2. Skull.	Seychelles.	Swinburne Ward, Esq.
3. Jaws.		

3. GINGLYMOSTOMA FERRUGINEUM.

Syllum ferrugineum Less. Voy. Coquille, Zool. ii. p. 95 (1830).
Ginglymostoma concolor Müll. & Henle, Plagiost. p. 22, pl. vi. (1841).

Ginglymostoma muelleri Günth. Cat. Fish. viii. p. 408 (1870);
Proc. Zool. Soc.—1908, No. XXIII. 23

Klunz. Fisch. Roth. Meer. p. 230 (1870); Day, Fish. India, p. 725 (1878).

Nasal cirrus extending to or nearly to the oral edge of the nasal valve. Lower labial folds separated by a considerable interspace. Teeth with a strong median cusp and with 3 or 4 smaller accessory cusps on each side. First dorsal a little larger than the second or than the anal; all three with slightly concave free edge and acutely pointed anterior angle; base of first dorsal opposite to that of the pelvis, its length a little more than the distance from the second. Anal beginning below the anterior part of second dorsal. Caudal fin nearly $\frac{1}{2}$ the length of the rest of the fish; lower lobe produced and acutely pointed anteriorly. Pectoral with slightly concave free edge and acutely pointed anterior angle, nearly twice as long as broad, its length nearly equal to its distance from the end of snout or $\frac{2}{3}$ of the distance from its origin to that of the pelvis. Brownish.

Tropical Indo-Pacific.

Attains a length of 2400 mm.

4. GINGLYMOSTOMA CONCOLOR.

Nebrius concolor Rüpp. Neue Wirbelth., Fische, p. 62, pl. xvii. fig. 2 (1840).

Ginglymostoma concolor Cant. Cat. Mal. Fish. p. 395 (1850); Günth. Cat. Fish. viii. p. 409 (1870); Klunz. Fisch. Roth. Meer. p. 232 (1870); Day, Fish. India, p. 811 (1878).

Ginglymostoma rüppellii Bleek. Verh. Bat. Gen. xxiv. 1852, Plagiost. p. 91, and Nat. Tijds. Ned. Ind. iii. 1852, p. 83; Duméril, Elasmobr. p. 334 (1865).

Nasal cirrus extending to the oral edge of the nasal valve. Lower labial folds separated by a considerable interspace. Teeth multicuspid, the cusps subequal or graduated to the strongest, which is not the median one. First dorsal a little larger than the second or than the anal; all three with straight or slightly concave free edge and acutely pointed anterior angle; base of first dorsal opposite to that of the pelvis, its length greater than the distance from the second. Anal beginning below the anterior part of second dorsal. Caudal fin $\frac{1}{2}$ the length of the rest of the fish; lower lobe produced anteriorly. Pectoral with slightly concave free edge and pointed anterior angle, $1\frac{1}{2}$ as long as broad, its length equal to its distance from the mouth or $\frac{2}{3}$ of the distance from its origin to that of the pelvis. Brownish.

Indian Ocean; Malay Archipelago.

1. (660 mm.)
2. (700 mm.) stuffed.

Java.
Pinang.

Dr. P. Bleeker.
Dr. Cantor.

3. RHINODON.

Rhineodon (Smith) Müll. & Henle, Arch. f. Naturgesch. 1838, i. p. 84.

Rhinodon (Smith) Müll. & Henle, Plagiost. p. 77 (1841); Günth. Cat. Fish. viii. p. 396 (1870).

Micristodus Gill, Proc. Acad. Philad. 1865, p. 177.

Head broad, obtuse; body elongate, subcylindrical. Mouth transverse, subterminal; teeth very small, unicuspid, pointed, subconical, recurved; lower lip not divided by a symphyseal groove. Nasal valves separate; no nasal cirri. Eye small; no longitudinal fold below the eye. Spiracle very small, behind the eye. Gill-openings wide; last two above the base of pectoral. First dorsal above the pelvics; second dorsal above the anal, which is free from the caudal. Caudal of moderate length; axis strongly directed upwards; lower lobe considerably produced anteriorly and without posterior notch.

This genus comprises a single species, which has generally been placed in more or less close proximity to *Cetorhinus maximus*, a shark which it appears to resemble in habits and in its large size, small teeth, long gill-rakers, and wide gill-openings, as well as in the form of the caudal fin and the keeled tail. There can be little doubt, however, that *Rhinodon* is allied to *Ginglymostoma*, from which it differs in a few features of specialisation. The curious dermal keels are like those met with in other Sharks of this family, i. e. *Stegostoma*, *Chiloscyllium*.

1. RHINODON TYPICUS.

Rhinodon typicus Smith, Müll. & Henle, Plagiost. p. 77, pl. xxxv. fig. 2 (1841); Smith, Ill. Zool. S. Afr. Fish. pl. xxvi. (1845); Duméril, Elasmobr. p. 428 (1865); Günth. Cat. Fish. viii. p. 396 (1870); Haly, Ann. Mag. N. H. (5) xii. 1883, p. 48; Thurston, Bull. Madras Mus. 1884, No. 1, pl. iii. A; Gill, Science, (2) xv. 1902, p. 824.

Micristodus punctatus Gill, Proc. Ac. Philad. 1865, p. 177; Günth. Cat. Fish. viii. p. 396 (1870); Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1896, p. 52.

Rhinodon pentalineatus Kishinouye, Zool. Anz. xxiv. 1901, p. 694, fig.

Lower labial folds separated by a wide interspace. A median dorsal keel and on each side 2 or 3 lateral keels, the lowest of which is continued along the middle of the tail to the caudal fin. First dorsal considerably larger than the second or than the anal, its base opposite to that of the pelvics; free edge of first dorsal slightly concave, anterior angle rounded, posterior angle pointed. Second dorsal and anal equal and opposite. Lower caudal lobe strongly produced and acutely pointed. Pectoral much longer than broad, with slightly concave free edge and acutely pointed anterior angle. Head and body with round whitish spots.

This large pelagic shark has been recorded from Florida, the Cape of Good Hope, the Seychelles, Ceylon, Madras, Japan, California, Panama, and Peru.

1. Large stuffed specimen.
2. Upper jaw and snout.

Ceylon.
Seychelles.

Colombo Mus.
Prof. E. P. Wright.

4. BRACHÆLURUS.

Brachælurus Ogilby, Proc. Roy. Soc. Queensland, xx. 1906, p. 27.

Head broad, depressed; body elongate, somewhat depressed anteriorly, subcylindrical posteriorly. Dermal denticles small, imbricated, more or less distinctly keeled. Mouth transverse; teeth small, tricuspid; lower lip divided by a symphyisial groove. Nasal valves separate, each with a cirrus. Eye small; a longitudinal fold below the eye. Spiracles moderately large, below the level of the eyes and posterior to them; each is surrounded by a raised circular rim. Gill-openings of moderate width; last three above the base of pectoral; last two a little closer together than the others. Dorsal fins subequal, the first above or behind the pelvis, the second in advance of the anal, which terminates directly in front of the caudal. Caudal of moderate length; axis not directed upwards; lower lobe notched posteriorly. Pectorals broad, with straight or convex edges and rounded angles.

A single species from Australia.

1. BRACHÆLURUS MODESTUS.

Chiloscyllium modestum Günth. Proc. Zool. Soc. 1871, p. 654, pl. liv.

Chiloscyllium furvum Macleay, Proc. Linn. Soc. N. S. Wales, vi. 1881, p. 364.

Hemisicyllium modestum Waite, Rec. Austral. Mus. iv. 1901, p. 88, fig. 9, and pl. iv. fig. 1.

No dorsal keel. Mouth nearer to level of eyes than to end of snout; fold of lower lip not continuous; nasal cirrus long, extending to posterior edge of lower lip. First dorsal originating above posterior part of base of pelvis; free edge of the fin straight; length of base greater than the distance from second dorsal. Origin of anal below the end of base of second dorsal; length of base of anal less than $\frac{1}{3}$ that of the caudal. Pectoral extending a little more than $\frac{2}{3}$ of the distance from its origin to that of the pelvis. Brownish, with more or less distinct darker cross-bars and, in the young, with light spots.

Coasts of Queensland and New South Wales.

- | | | |
|----------------------------|-----------------|----------------|
| 1. (550 mm.) stuffed, type | Queensland. | |
| | of the species. | |
| 2. (580 mm.). | Port Jackson. | Imperial Inst. |

5. ORECTOLOBUS.

Orectolobus Bonap. Faun. Ital. Pesc. 7 fasc. (1834); Gill, Proc. U.S. Nat. Mus. xviii. 1895, p. 212.

Crossorhinus Müll. & Henle, Arch. f. Naturgesch. 1837, i. p. 396, and Plagiost. p. 21 (1841).

Crossorhinus (part.) Günth. Cat. Fish. viii. p. 413 (1870).

Head broad, depressed; body elongate, more or less depressed anteriorly, subcylindrical posteriorly. Dermal denticles small, imbricated or juxtaposed. Mouth slightly arched, wide, sub-

terminal; teeth slender, pointed, the median ones enlarged and unicuspid, the lateral teeth smaller, with small accessory cusps; lower lip divided by a symphysial groove. Nasal valves separate, each with a cirrus. Eye small; a more or less distinct longitudinal fold below the eyes. Spiracles large, oblique, extending forward to below the eyes. Gill-openings of moderate width, the last a little wider than the rest; last three or four above the base of pectoral; last two closer together than the others. Dorsal fins subequal, the first above or behind the pelvics, the second in advance of the anal, which terminates directly in front of the lower caudal lobe or is continuous at the base with the latter. Caudal of moderate length; axis not directed upwards; lower lobe notched posteriorly. Pectorals broad, with straight or convex edges and rounded angles.

Synopsis of the Species.

I. Nasal cirrus with a short branch at about the middle of its length.

A. Branch of nasal cirrus bifid; on each side 3 to 5 dermal lobes above the upper lip, followed by 4 or 5 near the angle of the mouth and these by 2 (each notched distally) at the side of the head 1. *barbatus*.

B. Branch of nasal cirrus simple.

On each side 2 or 3 dermal lobes above the upper lip, followed by 3 or 4 (the first and last of which are bifid) near the angle of the mouth and these by 2 (each notched distally) at the side of the head 2. *japonicus*.

Dermal lobes all simple; on each side 2 above the upper lip, 2 near the angle of the mouth, and 2 at the side of the head 3. *ornatus*.

II. Nasal cirrus simple; dermal lobes simple; on each side one above the upper lip, another near the angle of the mouth, and a third at the side of the head 4. *tentaculatus*.

1. ORECTOLOBUS BARBATUS.

Squalus barbatus Gmelin, Linn. Syst. Nat. p. 1493 (1788);
Schneid. Bloch's Syst. Ichth. p. 128 (1801).

Squalus lobatus Schneid. t. c. p. 137.

Squalus appendiculatus Shaw, Nat. Misc. pl. DCCXXVII.

Crossorhinus barbatus (part.) Duméril, Elasmobr. p. 338 (1865);
Günth. Cat. Fish. viii. p. 414 (1870).

Crossorhinus barbatus McCoy, Prodr. Zool. Vict. v. 1880,
pl. xliii. fig. 1; Macleay, Proc. Linn. Soc. N. S. Wales, vi.
1881, p. 365.

A papilliform projection above the posterior part of each eye (and in the adult another above the anterior part). Nasal cirrus long, with a short bifid branch at about the middle of its length. On each side a series of 3 to 5 simple tentacle-like dermal lobes above the upper lip, followed by 4 or 5 near the angle of the mouth, the first and last of which are ramose and by 2, short, broad, and distally notched, at the side of the head. First dorsal

originating above the posterior part of base of pelvics; free edge of the fin straight, posterior angle acute or rectangular; length of base more than the distance from second dorsal, which terminates a little in advance of the origin of anal. Pectoral extending $\frac{1}{2}$ to $\frac{2}{3}$ of the distance from its origin to that of the pelvics. Brownish, with numerous white spots and markings, many of which form circles or enclose irregular areas.

Eastern and Southern Coasts of Australia.

- | | | |
|------------------------|------------------|-----------------|
| 1. (750 mm.) | New South Wales. | G. Krefft, Esq. |
| 2. (600 mm.) | Sydney. | Imperial Inst. |
| 3. (460 mm.) | Tasmania. | Haslar Coll. |
| 4. (2000 mm.) stuffed. | South Australia. | |

2. ORECTOLOBUS JAPONICUS.

Crossorhinus barbatus (non Gmelin) Müll. & Henle, Plagiost. p. 21, pl. v. (1841); Schleg. Faun. Japon., Poiss. p. 301 (1850).

Crossorhinus barbatus (part.) Duméril, Elasmobr. p. 338 (1865); Günth. Cat. Fish. viii. p. 414 (1870).

Orectolobus barbatus Jord. & Fowler, Proc. U.S. Nat. Mus. xxvi. 1903, p. 606.

Orectolobus japonicus Regan, Ann. Mag. Nat. Hist. (7) xviii. 1906, p. 435.

Closely allied to *O. barbatus*, but differing in the following characters:—No papilliform projections above the eye. Nasal cirrus with a simple branch. On each side 2 or 3 simple dermal lobes above the upper lip, followed by 3 or 4 near the angle of the mouth, the first and last of which are bifid, and by 2, short, broad and distally notched, at the side of the head. Free edge of dorsal fins straight or slightly concave. Pectoral extending at least $\frac{2}{3}$ of the distance from its origin to that of the pelvics. Yellowish, upper surface with brownish vermiculations or reticulations; back with broad dark-brown cross-bars, with yellow vermiculations.

Coasts of Japan and China.

- 1, 2. (1000 and 780 mm.) types of the species. Japan.

3. ORECTOLOBUS ORNATUS. (Plate XI. fig. 2.)

Crossorhinus ornatus De Vis, Proc. Linn. Soc. N. S. Wales viii. 1883, p. 289.

Differs from *O. barbatus* as follows:—Nasal cirrus with a short simple branch. Dermal lobes all simple, on each side 2 above the upper lip, 2 at the angle of the mouth, and 2 at the side of the head. Dorsal fins each with slightly convex free edge and rounded posterior angle. Greyish; back with dark brown cross-bars; a bar at the level of the pectorals and one in front of the first dorsal have irregular edges and each encloses a pair of ocelli; the posterior bars nearly meet in the mid-ventral line; fins with large dark spots.

Queensland.

1. (180 mm.) Australia.

4. *Orectolobus tentaculatus*. (Plate XII. fig. 2.)

Crossorhinus tentaculatus Peters, Monatsb. Ak. Berl. 1864, p. 123; Günth. Cat. Fish. viii. p. 414 (1870); Macleay, Proc. Linn. Soc. N. S. Wales, vi. 1881, p. 365.

A papilliform projection above the posterior part of each eye. Nasal cirrus long, simple. On each side a small simple dermal lobe above the upper lip, a larger one at the angle of the mouth, and a third at the side of the head. First dorsal originating a little in advance of the posterior end of base of pelvis; free edge of the fin straight or convex, posterior angle rounded or obtusely pointed; length of base considerably more than the distance from second dorsal, which terminates nearly above the origin of anal. Pectoral extending $\frac{1}{2}$ – $\frac{2}{3}$ of the distance from its origin to that of the pelvis. Yellowish, back greyish; on the back, in front of the first dorsal fin, three large dark areas edged with white, continuous or subcontinuous with dark vertical bars on the sides; tail completely encircled by 3 dark vertical bands, corresponding to the two dorsal and the anal fins; fins with large dark spots.

Queensland.

1-2. (430 and 240 mm.)
3. (220 mm.)

Cape York.

Haslar Coll.

6. *Eucrossorhinus*, gen. nov.

Crossorhinus (part.) Günth. Cat. Fish. viii. p. 413 (1870).

Very closely allied to *Orectolobus*, but with broader and more depressed head, smaller eyes, and wider spiracles than in any species of that genus. No longitudinal fold below the eye. Gill-openings rather small and of equal width, equidistant; last four above the base of pectoral.

A single species from Waigiou.

EUCROSSORHINUS DASYPGON.

Crossorhinus dasypogon Bleek. Arch. Néerland. 1867, p. 400, pl. xxi. fig. 1; Günth. Cat. Fish. viii. p. 414 (1870).

Nasal cirrus ramose. Head margined by a nearly continuous series of ramose dermal flaps, extending on each side from the nasal opening to the pectoral fin; a transverse series of similar flaps behind the mouth. First dorsal originating slightly in advance of the posterior end of base of pelvis; free edge of the fin straight or slightly convex, angles rounded; length of base scarcely more than the distance from second dorsal, which terminates above the origin of anal. Pectoral extending $\frac{1}{3}$ of the distance from its origin to that of the pelvis. Upper parts of head, body, and fins covered with a brownish network enclosing small round whitish spots; a few small dark spots on the tail, 2 or 3 on each of the pectoral and ventral fins, one on each side

at the end of the base of both dorsals and the anal, one on the anterior part of the lower caudal lobe.

Waigiou.

1. (210 mm.) type of the species.

Waigiou.

Dr. P. Bleeker.

7. CHILOSCYLLIUM.

Chiloscyllium Müll. & Henle, Arch. f. Naturgesch. 1837, i. p. 395, and Plagiost. p. 17 (1841); Günth. Cat. Fish. viii. p. 410 (1870).

Hemiscyllium Müll. & Henle, Arch. f. Naturgesch. 1838, i. p. 83, and Plagiost. p. 16.

Synchismus Gill, Ann. Lyc. N. York, 1861, p. 413.

Head obtuse; body elongate, subcylindrical. Mouth transverse; teeth small, pointed, usually with one or two pairs of small accessory cusps; lower lip not divided by a symphyseal groove. Nasal valves separate, each with a cirrus. Eye small; no longitudinal fold below the eye. Spiracles moderately large, below the level of the eyes, and usually extending forward beneath them. Gill-openings of moderate width; last three above the base of pectoral; last two very close together. Dorsal fins subequal, the first above or behind the pelvics, the second in advance of the anal, which is continuous at the base with the lower caudal lobe. Caudal of moderate length; axis not directed upwards; lower lobe notched posteriorly. Pectorals broad, with straight or convex edges and rounded angles.

Seven species from the Indo-Pacific.

Synopsis of the Species.

- I. Mouth nearer to the end of the snout than to the vertical from the eyes; origin of first dorsal behind the base of pelvics; dorsal fins with concave free edges.
 - A. A large ocellus above the pectoral fin.
 - Base of first dorsal $\frac{2}{3}$ to $\frac{3}{4}$ its distance from the second; body with scattered rounded dark spots 1. *ocellatum*.
 - Base of first dorsal $\frac{1}{2}$ its distance from the second; body with numerous close-set dark spots 2. *trispeculare*.
 - B. No ocellus above the pectoral fin 3. *freycineti*.
- II. Mouth nearer to the vertical from the eyes than to the end of the snout; fold of the lower lip continuous.
 - A. Origin of first dorsal above the anterior part of base of pelvics; dorsal fins with concave free edges 4. *punctatum*.
 - B. Origin of first dorsal above the posterior end of base of pelvics; dorsal fins with straight or convex free edges.
 1. A single more or less distinct median dorsal keel.
 - Anal as deep as lower caudal lobe, its length $\frac{2}{3}$ to $\frac{3}{4}$ that of the latter in front of the notch; no white or pale spots 5. *griseum*.
 - Anal usually deeper than lower caudal lobe, its length from less than $\frac{2}{3}$ to nearly $\frac{3}{4}$ that of the latter in front of the notch; body with round or oval white or pale spots..... 6. *plagiosum*.
 2. Three dorsal keels 7. *indicum*.

1. CHILOSCYLLIUM OCELLATUM.

Squalus ocellatus Gmelin, Linn. Syst. Nat. p. 1494 (1788);
Schneid. Bloch's Syst. Ichth. p. 129 (1801).

Hemiscyllium ocellatum Müll. & Henle, Plagiost. p. 16 (1841);
Duméril, Elasmobr. p. 326 (1865).

Scyllium ocellatum Blyth, Journ. As. Soc. Bengal, 1847, p. 726,
pl. xxvi. fig. 2.

Chiloscyllium ocellatum Günth. Cat. Fish. viii. p. 410 (1870).

No dorsal keel, except between the dorsal fins. Mouth nearer to the end of snout than to the vertical from the eyes; fold of lower lip not continuous; nasal cirrus extending to edge of nasal valve. Nearly the whole of the spiracle below the eye. First dorsal originating well behind the base of pelvics; free edge of the fin concave; length of base $\frac{3}{5}$ to $\frac{3}{4}$ the distance from second dorsal. Origin of anal at a distance from the vertical from the end of base of second dorsal greater than the length of the latter; length of base of anal about $\frac{2}{3}$ of that of lower caudal lobe in front of the notch. Pectoral extending $\frac{3}{5}$ to $\frac{3}{4}$ of the distance from its origin to that of the pelvics. Scattered round dark spots on the body; a large ocellus above the pectoral fin; indistinct cross-bars on the back; two large spots on the anterior edge of each dorsal fin.

New Guinea and Northern Australia to the Kermadec Islands.

1. (630 mm.).		
2. (590 mm.).	Cape York.	Herr Dämel.
3-4. (410 and 420 mm.).	Sunday Is.	J. B. Jukes, Esq.
5. (400 mm.).	Solomon Isds.	
6. (360 mm.).	N.W. Australia.	Haslar Coll.

2. CHILOSCYLLIUM TRISPECULARE.

Hemiscyllium trispeculare Richards. Ic. Pisc. p. 5, pl. i. fig. 2 (1843), and Erebus & Terror, Fish. p. 43, pl. xxviii. (1844).

Chiloscyllium trispeculare Günth. Cat. Fish. viii. p. 411 (1870).

Scarcely specifically distinct from *C. ocellatum*, but with somewhat larger fins and with a different coloration. Length of base of first dorsal $\frac{4}{5}$ its distance from the second; pectoral extending $\frac{1}{2}$ of the distance from its origin to that of the pelvics. Body densely covered with brownish spots, the larger of which are studded with several small darker spots; a large ocellus above the pectoral fin, followed by one or two smaller ones; indistinct cross-bars on the back; two large spots on the anterior edge of each dorsal fin.

North-west Australia.

1. (550 mm.) type of the species.	N.W. Australia.	Sir J. Richardson.
--------------------------------------	-----------------	--------------------

3. CHILOSCYLLIUM FREYCINETI.

Scyllium freycineti Quoy & Gaim. Voy. Uran., Poiss. p. 182 (1824).

Scyllium malaisianum Less. Voy. Coquille, Zool. ii. p. 94, pl. vi. (1830); Günth. Cat. Fish. viii. p. 411 (1870).

Chiloscyllium malaianum Müll. & Henle, Plagiost. p. 20 (1841); Duméril, Elasmobr. p. 332 (1865).

Apparently closely allied to the two preceding species, but without the ocellus above the pectoral fin; spots on the body as in *C. ocellatum*, but more numerous; indistinct cross-bars on the back and spots on the dorsal fins as in the two preceding species.

Waigiou.

4. CHILOSCYLLIUM PUNCTATUM.

Chiloscyllium punctatum Müll. & Henle, Plagiost. p. 18, pl. iii. (1841); Bleek. Verh. Bat. Gen. xxiv. 1852, Plagiost. p. 22; Duméril, Elasmobr. p. 330 (1865); Günth. Cat. Fish. viii. p. 413 (1870).

Chiloscyllium griseum Müll. & Henle, t. c. pl. iv.

No dorsal keel, except between the dorsal fins. Mouth much nearer to the vertical from the eyes than to the end of snout; fold of lower lip continuous; nasal cirrus extending well beyond the edge of nasal valve. Nearly the whole of the spiracle below the eye. First dorsal originating above the anterior part of base of pelvics; free edge of the fin concave; length of base not much less than the distance from second dorsal. Origin of anal at a distance from the vertical from the end of base of second dorsal equal to less than $\frac{1}{2}$ the length of the latter; length of base of anal from a little more than $\frac{2}{5}$ to nearly $\frac{3}{4}$ of that of the lower caudal lobe in front of the notch. Pectoral extending $\frac{3}{4}$ to $\frac{7}{8}$ of the distance from its origin to that of the pelvics. Body with or without small dark spots; young with broad dark cross-bars, one across the head, one at the level of the pectorals, one just in front of and another at the posterior end of each of the dorsal fins, and three behind the second dorsal.

Malay Archipelago.

1. (640 mm.) ♀, uniformly greyish. Thursday Is., Torres Str. Earl of Crawford.
2. (600 mm.) ♂, with scattered Singapore. Fisheries Exhib.
dark spots, without cross-bars.
3. (340 mm.) ♀, with cross-bars, Java. Dr. P. Bleeker.
without spots.

5. CHILOSCYLLIUM GRISEUM. (Plate XI. fig. 1, and Plate XIII. fig. 1.)

Chiloscyllium plagiosum, var. 1, Müll. & Henle, Plagiost. p. 18 (1841).

Chiloscyllium griseum Müll. & Henle, t. c. p. 19.

Chiloscyllium plagiosum (part.) Cantor, Cat. Mal. Fish. p. 392 (1850).

Chiloscyllium plagiosum Bleek. Verh. Bat. Gen. xxiv. 1852, Plagiost. p. 17; Duméril, Elasmobr. p. 328 (1865); Day, Fish. Malabar, p. 267 (1865).

Chiloscyllium indicum, vars. γ and ζ (part.) Günth. Cat. Fish. viii. p. 412 (1870).

Chiloscyllium indicum Day, Fish. India, p. 726, pl. clxxxviii. fig. 3 (1878).

A single more or less prominent dorsal keel. Mouth much nearer to the vertical from the eyes than to the end of snout; fold of the lower lip continuous; nasal cirrus extending to the edge of nasal valve or slightly beyond. Anterior part of spiracle below the posterior part of eye. First dorsal originating above the posterior end of base of pelvics; free edge of fin straight or convex; length of base from $\frac{2}{3}$ to as long as the distance from second dorsal. Origin of anal at a distance from the vertical from end of base of second dorsal a little less than the length of the latter; anal as deep as lower caudal lobe, $\frac{2}{3}$ to $\frac{5}{8}$ the length of the latter in front of the notch. Pectoral extending $\frac{3}{4}$ to $\frac{7}{8}$ of the distance from its origin to that of the pelvics. Young with very distinct, broad, dark cross-bars, which become somewhat narrower on the sides and broaden out again and unite below, the lower surface being uniformly dark; interspaces between the bars in great part occupied by oblong or oval spots; bars about 12 in number, one across the snout, four more anterior to the first dorsal; one at the end of the base of each dorsal and one in front of the second dorsal; three or four behind the second dorsal. Half-grown examples with bars less distinct and not united below, sometimes edged with darker lines or series of spots; interspaces and lower surface uniformly pale. Adults uniformly greyish or brownish.

Coasts of India to the Malay Archipelago.

I. Adults, without cross-bars.

- | | | | |
|----|--|------------|----------------------|
| 1. | (580 mm.) ♂, type of
<i>C. hasseltii</i> . | Moluccas. | Dr. P. Bleeker. |
| 2. | (550 mm.) ♀. | Kurrachee. | F. W. Townsend, Esq. |
| 3. | (460 mm.) ♂, <i>C. ob-</i>
<i>securum</i> Gray. | Moluccas. | |

II. Half-grown specimens, with more or less distinct cross-bars.

A. Cross-bars without darker edges.

- | | | | |
|------|---------------|--------------|-----------------|
| 1-3. | (140-245 mm.) | Vizagapatam. | Capt. Mitchell. |
| 4-6. | (120-340 mm.) | Madras. | F. Day, Esq. |
| 7-9. | (120-270 mm.) | Malabar. | F. Day, Esq. |

B. Cross-bars edged with darker lines or series of spots.

- | | | | |
|------|-------------------|---------|-------------|
| 1. | (245 mm.) | Pinang. | Dr. Cantor. |
| 2-3. | (170 and 190 mm.) | | |

III. Young, with cross-bars very conspicuous and united below.

- | | | | |
|----|-----------|------------------|------------|
| 1. | (122 mm.) | Malay Peninsula. | Mr. Evans. |
|----|-----------|------------------|------------|

Müller and Henle's typical specimen, from Malabar, evidently belongs to this species. The discrepancies which they observe between their specimens and the figure which they reproduce is due, not to the inaccuracy of the latter, as they supposed, but to its representing another species, viz. *C. punctatum*.

6. *CHILOSCYLLIUM PLAGIOSUM*. (Plate XII. fig. 1.)

Scyllium plagiosum Bennett, in Life of Raffles, p. 694 (1830).

Scyllium ornatum Gray, Ill. Ind. Zool. i. pl. xxviii. fig. 2 (1832).

Chiloscyllium plagiosum, vars. 2, 3 and 4, Müll. & Henle, Plagiost. p. 18 (1841).

Chiloscyllium plagiosum (part.) Cantor, Cat. Mal. Fish. p. 392 (1850).

Chiloscyllium margaritiferum Bleek. Ned. Tijds. Dierk. i. 1863, p. 243; Duméril, Elasmobr. p. 329 (1865).

Chiloscyllium indicum, vars. α and β , Günth. Cat. Fish. viii. p. 412 (1870).

Chiloscyllium indicum Jord. & Fowler, Proc. U.S. Nat. Mus. xxvi. 1903, p. 605, fig. 2.

Very closely allied to *C. griseum*, but with quite a different coloration. Dorsal fins usually shorter and more elevated, the length of the base of the first $\frac{2}{3}$ to $\frac{4}{5}$ its distance from the second. Anal usually shorter and deeper, its depth usually distinctly greater than that of the lower caudal lobe, its length from less than $\frac{2}{3}$ to nearly $\frac{3}{4}$ that of the latter in front of the notch. Dark cross-bars arranged as in *C. griseum*, but much narrower and persistent in the adult; edges of the bars crenate; numerous round or oval white spots on the cross-bars and at their edges, as well as on the lower parts of the body; dark spots either few, large, and definitely arranged in the mid-dorsal line and at the edges of the bars, or small, numerous, and irregularly arranged on head, body, and fins.

Coasts of China and Japan to the Malay Peninsula and Archipelago.

1, 2-5, 6-7. (650 mm., 370-540 mm., 125 and 245 mm.)	Japan.	
8. (580 mm.)	Formosa.	R. Swinhoe. Esq.
9. (450 mm.)	Singapore.	Fisheries Exhib.
10. (250 mm.)	Manado.	Dr. B. Meyer.
11. (220 mm.)	Amoy.	
12. (170 mm.)	Manilla.	'Challenger.'
13. (150 mm.)	China.	J. R. Reeves, Esq.

7. *CHILOSCYLLIUM INDICUM*. (Plate XIII. fig. 2.)

Squalus indicus Gmelin, Linn. Syst. Nat. p. 1503 (1788); Schneid. Bloch's Syst. Ichth. p. 137 (1801).

Squalus tuberculatus Schneid. l. c.

Chiloscyllium tuberculatum Müll. & Henle, Plagiost. p. 19 (1841); Bleek. Verh. Bat. Gen. xxiv. 1852, Plagiost. p. 17; Duméril, Elasmobr. p. 331 (1865); Kner, 'Novara' Fische, p. 412 (1865).

Squalus caudatus Gronov. Syst. p. 8 (1854).

Chiloscyllium phymatodes Bleek. t. c. p. 21; Duméril, l. c.

Synchismus tuberculatus Gill, Ann. Lyc. N. York, 1861, p. 408.

Chiloscyllium indicum, vars. δ , ϵ , and ζ (part.), Günth. Cat. Fish. viii. p. 412 (1870).

Three prominent dorsal keels. Mouth much nearer to the

vertical from the eyes than to the end of snout; fold of lower lip continuous; nasal cirrus extending to the edge of nasal valve. Anterior edge of spiracle vertically below the posterior edge of eye. First dorsal originating above the posterior end of base of pelvics; free edge of the fin straight or convex; length of base $\frac{1}{2}$ to $\frac{2}{5}$ the distance from second dorsal. Origin of anal at a distance from the vertical from end of base of second dorsal considerably greater than the length of the latter; length of base of anal equal to or a little greater than that of the lower caudal lobe in front of the notch. Pectoral extending about $\frac{2}{3}$ of the distance from its origin to that of the pelvics. Head and body with dark reddish spots or vermiculations, some of which may unite to form pairs of transverse stripes.

From the Cape of Good Hope to China.

1. (275 mm.) skin, type of the species*.		Gronow Coll.
2. (270 mm.) type of <i>C. phymatodes</i> .	Java.	Dr. P. Bleeker.
3. (380 mm.)	China.	Sir J. Richardson.
4, 5. (250 and 290 mm.)		
6. (430 mm.) stuffed.	Cape of Good Hope.	Sir A. Smith.

8. STEGOSTOMA.

Stegostoma, Müll. & Henle, Arch. f. Naturgesch. 1837, i. p. 395, and Plagiost. p. 24 (1841); Günth. Cat. Fish. viii. p. 409 (1870).

Head obtuse; body elongate, compressed posteriorly. Mouth transverse; teeth small, tricuspid, in many series, occupying in each jaw a flat, four-sided area; lower lip not divided by a symphyseal groove. Nasal valves separate, each with a cirrus. Eye small; no longitudinal fold below the eye. Spiracles moderately large, nearly vertical, behind the eyes. Gill-openings of moderate width, last three above the base of the pectoral; last two very close together. First dorsal partly above and partly in advance of the pelvics, somewhat larger than the second, which is partly above and partly in advance of the anal, which terminates immediately in front of the caudal. Caudal very long; axis not directed upwards; lower lobe notched posteriorly. Pectorals broad, with straight or notched edges and rounded angles.

A single species from the Indo-Pacific.

STEGOSTOMA TIGRINUM.

Squalus tigrinus Gmelin, Linn. Syst. Nat. p. 1493 (1788); Forst. Zool. Ind. p. 24, pl. xiii. fig. 2 (1795).

Squalus longicaudus Gmelin, t. c. p. 1496.

* I am unable to understand Dr. Günther's statement that the anal fin is cut away in this specimen. It is true the species was described by Gronow as lacking an anal fin, but this was because he made the very natural mistake of regarding the anal fin as part of the caudal, as is evident from his description:—"Lobis qui subtus caudam occupant bini lineares, longi, aequales, convexi."

Squalus fasciatus Bloch, Ausl. Fische, pl. cxiii. (1795);
Schneid. Bloch's Syst. Ichth. p. 130 (1801).

Scyllium heptagonum Rüpp. Neue Wirbelth., Fische, p. 61,
pl. xvii. fig. 1 (1840).

Stegostoma fasciatum Müll. & Henle, Plagiost. p. 25, pl. xvii.
(1841); Cantor, Cat. Mal. Fish. p. 396 (1850); Bleek. Verh. Bat.
Gen. xxiv. 1852, Plagiost. p. 23; Duméril, Elasmobr. p. 336
(1865); Günth. & Playfair, Fish. Zanzibar, p. 140 (1866); Klunz.
Fische Roth. Meer. p. 672 (1870).

Stegostoma carinatum Blyth, Journ. As. Soc. Bengal, xvi.
1847, p. 725, pl. xxv. b, fig. 1.

Squalus cirrosus Gronov. Syst. p. 6 (1854).

Stegostoma tigrinum Günth. Cat. Fish. viii. p. 409 (1870);
Day, Fish. India, p. 725, pl. clxxxvii. fig. 4 (1878).

Three dorsal keels, as in *Chiloscyllium indicum*, more prominent
in the adult than in the young; adults also with a pair of lateral
keels. Mouth a little nearer to the vertical from the eyes than
to the end of snout; fold of lower lip broadly interrupted; nasal
cirrus extending to the edge of nasal valve. First dorsal rather
elongate, gradually increasing in height posteriorly and ter-
minating above the end of base of pelvis; free edge convex,
angles rounded; second dorsal originating directly behind the
first, terminating above the middle of anal. Caudal as long as
the rest of the fish. Pectoral nearly reaching the origin of
pelvis. Young with broad dark brown cross-bars with blackish
margins, wider than the pale yellowish interspaces; during
growth the bars become paler and dark spots appear on them,
whilst the dark edges of the bars break up into spots; adults
without bars, with numerous vertical series of dark rounded
spots.

Indian Ocean; East Indian Archipelago; China.

1-2. (1120 and 750 mm.)	Zanzibar.	Lieut.-Col. Playfair.
3-4. (650 and 420 mm.)	Formosa.	R. Swinhoe, Esq.
5. (300 mm.)	Rejang R., Sarawak.	B. Low, Esq.
6. (200 mm.)	N.W. Australia.	Capt. D. Le Sauvage.

In addition to the specimens listed above, on which my de-
scription is based, there are some large stuffed examples from
India (*Jerdon*), Ceylon (*Zool. Soc.*), and Zanzibar (*Playfair*).

EXPLANATION OF THE PLATES.

PLATE XI.

- Fig. 1. *Chiloscyllium griseum*.
2. *Orectolobus ornatus*; 2 a, head seen from below.

PLATE XII.

- Fig. 1. *Chiloscyllium plagiosum*.
2. *Orectolobus tentaculatus*; 2 a, head seen from below.

PLATE XIII.

- Fig. 1. *Chiloscyllium griseum*.
2. *C. indicum*; 2 a, head seen from above; 2 b, from below.