NOTES ON FISHES IN THE INDIAN MUSEUM.

XXVII.—On Two Collections of Fish from Maungmagan, Tavoy District, Lower Burma.

By Sunder Lal Hora, *D.Sc.*, *F.R.S.E.*, *F.A.S.B.*, and Dev Dev Mukerji, *M.Sc.*, *Zoological Survey of India, Calcutta.*

(Plates I & II.)

Early in January 1934, the Zoological Survey of India received for determination an extensive collection of fish from Professor F. J. Meggitt of the University College, Rangoon. It consisted of two lots: (*i*) 19 specimens collected at Rangoon comprising 11 families, 13 genera and 14 species (*vide* list on p. 18). Almost all the species represented in this lot are fairly common and do not call for any comments. (*ii*) 238 specimens collected at Maungmagan[1], Tavoy District, Lower Burma, comprising 32 families, 40 genera and 44 species (*vide* list on pp. 18, 19). Besides representatives of two new species belonging to the families Syngnathidae and Gobiidae, there were specimens of six species, *viz.*, *Ammodytes lanceolatus* Le Sauvage, *Blennius pholis* Linn., *Psenopsis anomala* (T. & S.), *Trachinus draco* Linn., *Cottus bubalis* Euphrasen, and *Lophius piscatorius* Linn., which had not been previously recorded from the Indian waters. Of these, *P. anomala* has hitherto been found in the seas of Japan and China, while the others are generally restricted to the Atlantic Ocean and had so far been recorded from the Western Coasts of Europe and the Mediterranean Sea.

The occurrence of the European species in Burmese waters seemed so remarkable that Professor Meggitt was requested to supply exhaustive notes with ecological observations about the localities in which the fish were collected. In reply Professor Meggitt wrote :—

" Most of the fish—these are the small ones—were collected in rock pools by myself with a net. Some of the small fish were caught by local fishermen, standing in the surf and casting a hand-net. The big fish were caught by a drag-net from boats, very fragile craft which did not go more than 1 mile (estimated) from shore. I saw other boats further out, but do not think we had anything from them. The bay is fairly shallow and is partly closed by a reef : sharks are absent."

" All fish caught at Maungmagan (Tavoy) were labelled."

On further enquiries, Professor Meggitt sent a rough sketch of Maungmagan which is reproduced here (text-fig. 1). He observed as follows :—

" The rock pools all contain salt water and are renewed by each tide. They may be divided into (1) sandy pools, usually round the base of a rock, free from vegetation, containing a few small prawns, numerous " puffers " and gobies. (2) algal pools of small size, in the midst of rock masses, rich in sea-weeds, containing prawns, crabs, sponges, anemones, gobies and striped fish. (3) Estuarine pools, in the course of a small valley down which the water drains, full of stones, containing chiefly crabs.

" Except (1) all are very small, only a few feet across, and even (1) are not much larger."

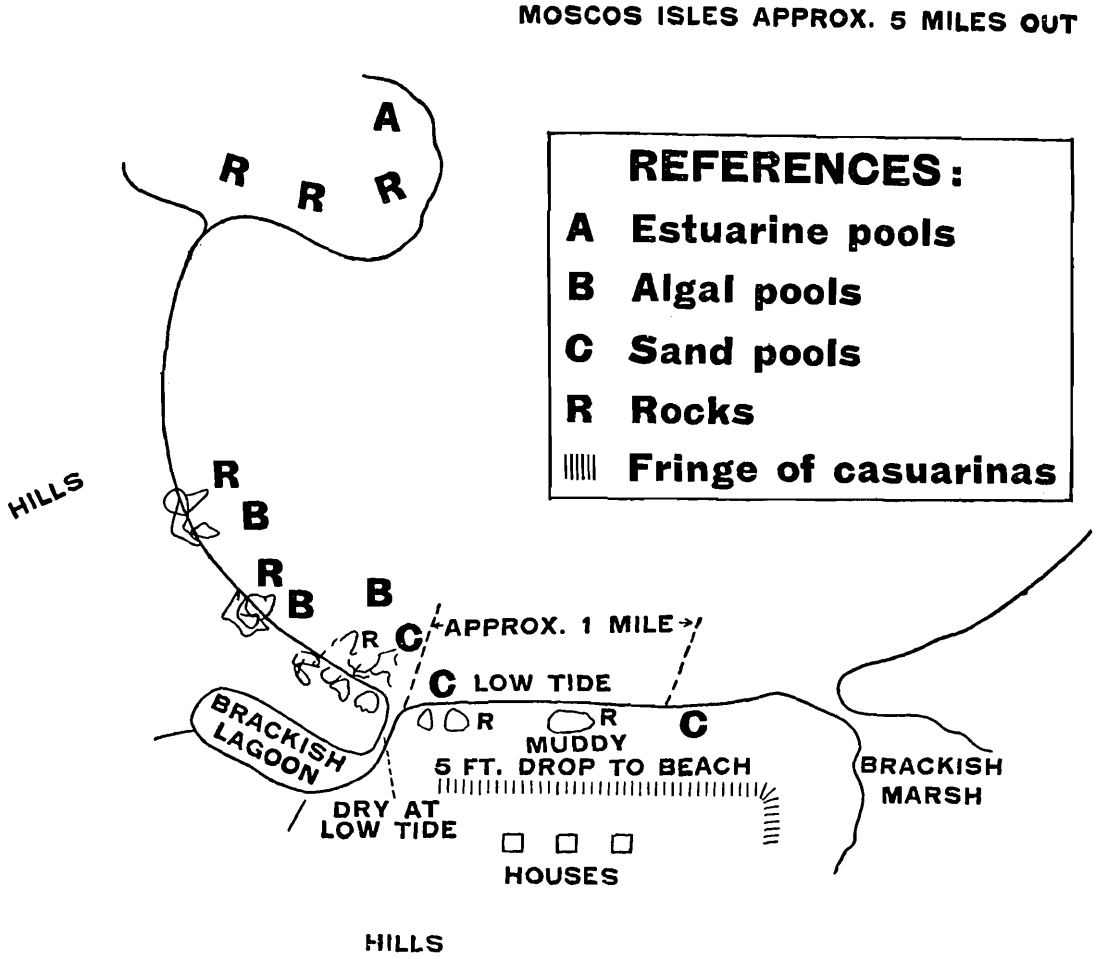
---

[1] Maungmagan (14·5 N. and 97·50 E.) is a village on the Tavoy coast north-west of Tavoy ; it has a fine sandy beach and is a popular resort for sea-bathing. In its neighbourhood there are several sandy pools, rock pools and estuarine pools.

Some of the determined material was sent to Professor Meggitt with a request to indicate the precise localities in which the species were found, but as the European forms had been sent to the British Museum for verification of our determinations they could not be included in the consignment. However, we directed Professor Meggitt's attention to the presence of certain European species in his collection from Maungmagan.

Professor Meggitt kindly arranged the species of which specimens were sent to him according to their habitats (*vide* list on p. 21) and with regard to the European species remarked :—

" I have no knowledge of having imported *Trachinus* or *Lophius* from Europe, in fact I think it extremely unlikely, nor have I had any in my private collection. About *Ammodytes* I could not be so certain. If you found the fish in a jar with a label[1] Maungmagan you may take it as certain that I personally collected it there : otherwise I should assume for safety, it is an intrusion.....I am personally of the opinion that the 3 specimens you mention (*Ammodytes, Trachinus, Lophius*) have been obtained locally as I do not see how we could have them otherwise, but in the absence of definite evidence I naturally do not wish to put this on record as a statement."



TEXT-FIG. 1.—Diagrammatic representation of the coast at Maungmagan, Tavoy District, Burma.

On hearing from Mr. J. R. Norman about the correctness of our determinations of the European species, a request was made to Professor

[1] The fish was found in a jar along with other fish and was labelled " Maungmagan". We were not dealing with any European material at the time nor were any of these species represented in the Indian Museum collection, so there was no possibility of mixing up European forms with the material from Maungmagan.

Meggitt to have further material of these forms collected so as to remove all possible chances of error. To this Professor Meggitt replied as follows :—

" I am sorry to be of so little use in the matter. I can only say I have no recollection, nor can find any record, of having obtained European fishes.

" On looking up the figures, I appear to recollect collecting the blenny (*Blennius pholis*) and *Cottus* (*C. bubalis*) but cannot be certain.

" I am writing to Tavoy to ask if further material can be sent to you, this may clear up the point. But please do not be optimistic, as there are no zoologists there."

In March 1935, more fishes (*vide* list on p. 20) were received from Tavoy without any label and on referring the matter to Professor Meggitt he wrote :—

" The fish you just received represents all which will be sent prior to October, during this last month, if all goes well, a collection of larger fish will be made and sent you. For some reason which I do not know, my collector assures me that it is now possible to obtain only small fish."

This collection contains mostly small coral fishes and it is significant that only three species, *viz.*, *Terapon jarbua*, *Sillago sihama* and *Salarias dussumieri*, are common to the above lots from Maungmagan. This suggests a marked ecological segregation in the habitats of the species represented in the two collections made at different times of the year.

A new species of *Salarias* (Blenniidae) is represented in the second collection, while we have not yet been able to determine two specimens belonging to the family Platycephalidae. These are included in the list as *Platycephalus* (*s. l.*) spp. and will be dealt with later in the revision of the Indian members of this family. The range of *Chromis ternatensis* (Bleeker) has been extended from the East Indies and the Philippines and of *Pomacentrus taeniurus* Bleeker from the East Indies, Australia and Japan to Tavoy. The occurrence of *Pomacentrus notophthalmus* Bleeker and *Caranx auricoronae* Chaudhuri at Maungmagan deserves special notice.

As no further collection is expected from Professor Meggitt for some time, we take this opportunity to publish descriptions of the new species and notes on forms that need special comments. The species contained in the two collections are listed below for convenience of reference.

We offer to Professor Meggitt our warmest thanks for making collections of fishes and presenting the same to the Zoological Survey of India. The material is in a very good state of preservation and Professor Meggitt's notes have been very helpful in understanding the ecology of some of the species. To Dr. Baini Prashad, Director, Zoological Survey of India, we are indebted for reading the manuscript and for help in connection with the photographs of fishes. Babu D. N. Bagchi, Babu S. C. Mondul and Babu R. C. Bagchi, the artists of the Zoological Survey of India, have executed the drawings with their usual skill and care and we record here our thanks to them.

List of Fishes collected at Rangoon.

	No. of specimens.
Cyprinidae :	
Rasbora daniconius (Hamilton) 1822	1
Barbus sophore (Hamilton) 1822	2
Rohtee duvaucelii (Cuv. & Val.) 1844	1
Rohtee belangeri (Cuv. & Val.) 1844	1
Bagridae :	
Mystus gulio (Hamilton) 1822	2
Pangasidae :	
Pangasius pangasius (Hamilton) 1822	1
Ambassidae :	
Ambassis nama (Hamilton) 1822	2
Sciaenidae :	
Sciaena cuja (Hamilton) 1822	2
Sparidae :	
Sparus datnia (Hamilton) 1822	1
Anabantidae :	
Colisa fasciatus (Bl. & Schn.) 1801	2
Ophicephalidae :	
Ophicephalus striatus Bloch 1793	1
Notopteridae :	
Notopterus notopterus (Pallas) 1769	1
Platycephalidae :	
Platycephalus indicus (Linn.) 1766	1
Mastacembelidae :	
Mastacembelus zebrinus Blyth 1859	1

List of Fishes collected at Maungmagan during October, 1933.

	No. of specimens.
Rhinobatidae :	
Rhinobatus granulatus Schn. 1801	1
Dasybatidae :	
Dasybatus zugei (Müll. & Henle) 1841	1
Clupeidae :	
Pellona sp. juv.	2
Dussumieriidae :	
Dussumieria hasselti Bleeker 1851	33
Engraulidae :	
Engraulis dussumieri Cuv. & Val. 1848	19
Lactariidae :	
Lactarius lactarius (Bl. & Schn.) 1801	4
Chirocentridae :	
Chirocentrus dorab (Forskål) 1775	1
Ariidae :	
Arius arius (Hamilton) 1822	2
Hemirhamphidae :	
Hemirhamphus limbatus Cuv. & Val. 1846	3
Cyprinodontidae :	
Panchax panchax (Hamilton) 1822	5
Syngnathidae :	
Hippocampus histrix Kaup 1856	1
Nannocampichthys gigas, gen. *et* sp. nov.	1

List of Fishes collected at Maungmagan during October, 1933—contd.

	No. of specimens.
Ambassidae:	
Ambassis nama (Hamilton) 1822	4
Terapontidae:	
Terapon jarbua (Forskål) 1775	2
Sillaginidae:	
Sillago sihama (Forskål) 1775	6
Carangidae:	
Megalaspis cordyla (Linn.) 1758	5
Caranx (Carangoides) armatus (Forskål) 1775	2
Caranx (Carangoides) auricoronae Chaudhuri 1909	1
Caranx (Caranx) carangus Bloch 1793	2
Alectis indica (Rüppell) 1828	8
Trachinotus blochi (Lacépède) 1802	1
Leiognathidae:	
Leiognathus insidiator (Bloch) 1787	12
Gerridae:	
Gerres lucidus Cuv. & Val. 1830	9
Ammodytidae:	
Ammodytes lanceolatus Le Sauvage 1825	1
Mullidae:	
Upeneus sp. juv.	10
Gobiidae:	
Gobius ornatus Rüppell 1828	3
Ctenogobius meggitti, sp. nov.	32
Pseudapocryptes lanceolatus (Bl. & Schn.) 1801	3
Blenniidae:	
Blennius semifasciatus Rüppell 1835	3
Blennius pholis Linn. 1766	1
Petroscirtes punctatus (Cav. & Val.) 1836	7
Salarias dussumieri Cuv. & Val. 1837	2
Stromateidae:	
Psenopsis anomala (T. & S.) 1850	1
Mugilidae:	
Mugil vaigiensis (Q. & G.) 1824	13
Polynemidae:	
Polynemus plebius Broussonet 1782	2
Polynemus sexfilis Cuv. & Val. 1831	9
Trachinidae:	
Trachinus draco Linn. 1766	1
Cottidae:	
Cottus bubalis Euphr. 1786	1
Toxotidae:	
Toxotes chatareus (Forskål) 1775	1
Platacidae:	
Platax teira (Forskål) 1775	3
Drepanidae:	
Drepane punctata (Linn.) 1758	6
Lophiidae:	
Lophius piscatorius Linn. 1766	1
Triacanthidae:	
Triacanthus brevirostris T. & S. 1850	4
Tetraodontidae:	
Sphoeroides oblongus (Bloch) 1785	9

List of Fishes collected at Maungmagan during January, 1935.

	No. of specimens.
Clupeidae :	
Stolephorus indicus (Van Hasselt) 1823	Several
Plotosidae :	
Plotosus anguillaris Bloch 1794	Several
Ophichthyidae :	
Pisoodonophis boro (Hamilton) 1822	1
Serranidae :	
Serranus undulosus (Q. & G.) 1824	4
Serranus summana (Forskål) 1775	2
Teraponidae :	
Terapon jarbua (Forskål) 1775	7
Amiidae :	
Amia fraenata (Val.) 1832	3
Pomadisidae :	
Diagrama crassispinum Rüppell 1838	2
Lutjanidae :	
Lutjanus lineolatus (Rüppell) 1838	5
Sillaginidae :	
Sillago sihama (Forskål) 1775	3
Carangidae :	
Caranx (Caranx) sexfasciatus Q. & G. 1824	7
Caranx (Selar) boops Cuv. & Val. 1833	2
Leiognathidae :	
Leiognathus blochi (Cuv. & Val.) 1835	5
Leiognathus insidiatrix (Bloch) 1787	1
Lethrinidae :	
Lethrinus nebulosus (Forskål) 1775	7
Pomacentridae :	
Amphiprion percula (Lacépède) 1802	2
Abudefduf bengalensis (Bloch) 1787	1
Abudefduf biocellatus (Q. & G.) 1825	Several
Pomacentrus littoralis Cuv. 1830	Several
Pomacentrus taeniurus Bleeker 1856	5
Pomacentrus ? notopthalmus Bleeker 1853	3
Chromis ternatensis (Bleeker) 1856	1
Teuthidae :	
Teuthis oramin (Bl. & Schn.) 1801	1
Scombridae :	
Scomber microlepidotus Rüppell 1835	5
Gobiidae :	
Ctenogobius meggitti, sp. nov.	Several
Blenniidae :	
Salarias vermiculatus Cuv. & Val. 1837	2
Salarias dussumieri Cuv. & Val. 1837	1
Salarias rivulatus Rüppell 1828	1
Salarias burmanicus, sp. nov.	1
Atherinidae :	
Atherina forskali Rüppell 1838	Several
Scorpaenidae :	
Scorpaenopsis venosa (Cuv. & Val.) 1840	4
Platycephalidae :	
Platycephalus (s. l.) spp.	2
Soleidae :	
Paraplagusia blochi (Bleeker) 1851	1
Pseudorhombus triocellatus (Bl. & Schn.) 1801	2

Ecological Associations of certain species of fish collected at Maungmagan during October, 1933.

Sand Pools:
Panchax panchax (Hamilton).
Sphoeroides oblongus (Bloch).
Hemirhamphus limbatus Cuv. & Val.

Rock Pools:
Panchax panchax (Hamilton).
Mugil vaigiensis (Q. & G.) Juv.
Pseudapocryptes lanceolatus (Bl. & Sehn.).
Pellona, sp. juv.
Blennius semifasciatus Rüppell.

Estuarine Pools:
Polynemus sexfilis Cuv. & Val.
Pellona, sp. juv.

Open sea between mainland and Moskos Island:
Mugil vaigiensis (Q. & G.).
Alectis indicus (Rüppell).
Caranx armatus (Linn.).
Platax teira (Forskål).
Toxotes chatareus (Forskål).
Drepane punctata (Linn.).
Sillago sihama (Forskål).
Upenoides, sp. juv.
Lactarius lactarius (Bl. & Schn.).
Chirocentrus dorab (Forskål).
Triacanthus brevirostris T. & S.
Arius arius (Hamilton).

RHINOBATIDAE.

Rhinobatus granulatus Cuvier.

(Plate II, fig. 1.)

1913. *Rhinobatus granulatus*, Garman, *Mem. Mus. Comp. Zool. Harvard College*, XXXVI, p. 272.

There is a young specimen of *Rhinobatus granulatus* about $12\frac{1}{2}$ inches in length in Professor Meggitt's collection from Maungmagan. The usual colour of the species is " Greenish gray; lower surfaces, and sides of snout, white." In the young specimens almost the whole of the snout is whitish and the edges of the body including the outer margin of the fins are of a lighter colour. The dorsal surface is light gray while the ventral surface is of a dull pink colour.

R. granulatus is found off the coasts of India.

SYNGNATHIDAE.

Hippocampus histrix Kaup.

1922. *Hippocampus histrix*, Weber and de Beaufort, *Fish. Indo-Austral. Archipel.*, IV, pp. 109, 110.
1928. *Hippocampus histrix*, Fowler, *Mem. Bernice P. Bishop Mus.*, X, p. 115.

In Professor Meggitt's collection *Hippocampus histrix* is represented by a single, weather-beaten specimen taken at Maungmagan. The snout is straight and almost twice in the length of the head. The eyes are situated in the middle of the head and their diameter is contained a little less than 7 times in the length of the head. As usual, the coronet is provided with a cluster of 4 spines. The opercula have indistinct radiating ridges. The two spines on the occipital keel behind the coronet are not well defined.

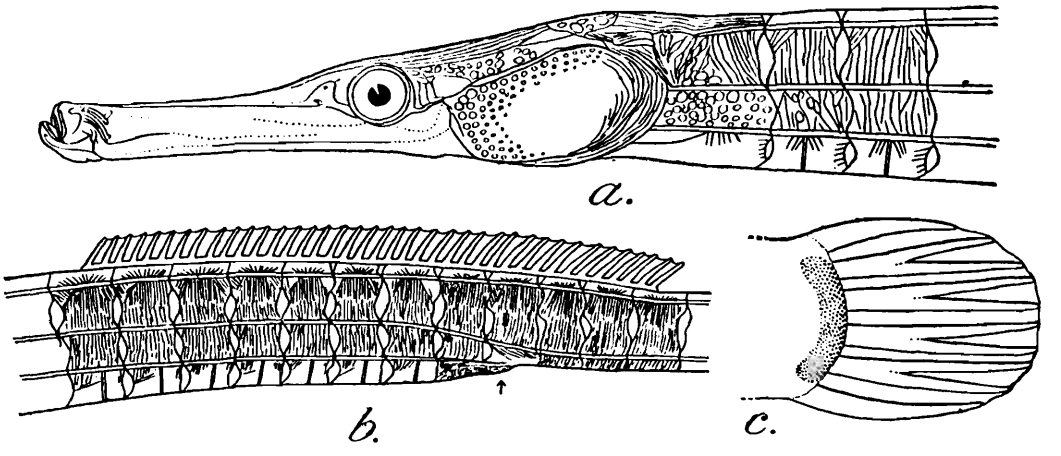
The colouration of the specimen is uniformly light brown. The characteristic dark transverse lines on the snout are not discernible.

Hippocampus histrix is widely distributed in the Indian and Pacific Oceans.

Nannocampichthys, gen. nov.

The genus *Nannocampichthys* is proposed in the family Syngnathidae and may be defined as follows :—

It comprises long and narrow fishes in which the body is smooth ; the ridges, though not very prominent, are fairly well defined. The shields are finely striated transversely, but the striae gradually become indistinct posteriorly and vanish altogether after the 8th shield behind the vent. The operculum is devoid of any prominent ridge but is finely pitted or ridged in the peripheral region. The snout is long and slender ; it is much longer than the remaining part of the head and its ventral profile almost forms a straight line with the ventral profile of the head. The snout is marked with a few low, sharp ridges on the dorsal surface, otherwise it is entirely smooth. The dorsal profile of the head is horizontal anteriorly but from a short distance in front of the eyes it rises gradually to the occiput. The eyes are dorso-lateral in position and are situated entirely in the posterior half of the head. The occipital and nuchal shields are only faintly indicated. The supra-orbital ridge is not well marked. The superior cristae of the trunk and tail are continuous. The median cristae of the trunk are continuous with the inferior cristae of the tail. The inferior cristae of the trunk become obsolete slightly in front of the anal opening. The intermedial shields or scutellae are fairly well marked ; they are more developed in the tail region and are faintly marked in the trunk region. The tail is considerably longer than the trunk. The dorsal fin is placed on an elevated ridge and con-



TEXT-FIG. 2.—*Nannocampichthys gigas,* gen. *et* sp. nov.

a. Lateral view of head and anterior part of body. ×1½.
b. Lateral view of body below dorsal fin, showing position of anus and nature of cristae Nat. Size.
c. Caudal fin. × 14.

tains 39 rays ; it extends over 12 rings of the body (8 trunk+1 anal+ 3 caudal). The anal and the pectoral fins are absent. The caudal fin is very small but distinct. The characters of the brood-pouch and the eggs are not known.

Genotype.—*Nannocampichthys gigas*, gen. *et* sp. nov.

Locality.—Maungmagan, Tavoy District, Burma. Professor Meggitt informs us that " The large pipe fish was obtained from a fishing boat, *i.e.*, was probably caught between the Moscos Islands and the mainland."

Remarks.—There are several remarkable features of the genus *Nannocampichthys*[1] and we have not succeeded in tracing its close allies from among the genera known to us in the family. If the absence of the pectoral fins is taken into consideration, there are two other genera, *Penetopteryx* and *Nannocampus*, known from the Indian and Indo-Australian regions in which these fins are absent. *Penetopteryx* is further characterised by the absence of the dorsal fin, while *Nannocampus* is insufficiently known and its species are mostly small and ill-defined. So far as is known, in *Nannocampus* the body is short, the snout is usually of the size of the diameter of the eye, the dorsal fin is short and the inferior cristae of the trunk and the tail are continuous. There are two other genera, *Entelurus* and *Nerophis*, in which the pectoral fins are absent and the positions of the various cristae correspond with those described for *Nannocampichthys*. In *Entelurus* the shields are covered with skin and there are adipose folds of skin both along the dorsal and the ventral surfaces ; while *Nerophis* has a smooth and rounded body with indistinct ridges, and is mostly confined to the Atlantic Ocean and the coasts of Europe.

Nannocampichthys gigas, sp. nov.

D. 39 ; C. 6 ; Rings 28+63-64 ; sub-dorsal rings 3+9.

Most of the specific characters of *Nannocampichthys gigas*[2] have been included in the description of the genus.

The length of the trunk is contained 1·18 times in the length of the tail. The length of the head is contained 11·5 times and the depth of the body 32·8 times in the total length of the fish. The snout is long and slender ; it is contained 1·9 times in the length of the head. The diameter of the eye is contained 9·5 times in the length of the head and 5 times in the length of the snout. The caudal fin is only half as long as the diameter of the eye. The anal opening is situated in a shallow depression and the folds of skin in front of it are studded with fine papillae.

The specimen is uniformly pale-brown. The rays of the dorsal fin are somewhat deeper in colour and at the base of each ray there is a black spot.

The species is known from a single specimen, 443 mm. in total length.

Type-specimen.—F. 11870/1, *Zoological Survey of India* (Ind. Mus.), *Calcutta.*

---

[1] The name *Nannocampichthys* is employed to indicate the absence of pectoral fins which this genus shares with *Nannocampus*, an Indo-Australian genus ; it should not, however, be interpreted to indicate any close affinity between the two genera.

[2] The specific name *gigas* has been proposed to indicate the very large size of the unique specimen.

Measurements in millimetres.

Total length	443·0
Length of trunk (tip of snout to vent)	203·0
Length of tail	240·0
Length of head	38·0
Depth of body	13·5
Length of snout	20·0
Diameter of eye	4·0
Length of caudal fin	2·0
Length of base of dorsal	56·0

CARANGIDAE.

Alectis indica (Rüpp.).

1931. *Alectis indica*, Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, VI, pp. 271, 272, fig. 53.

Alectis indica is represented in Professor Meggitt's collection from Maungmagan by 8 half-grown specimens varying from 65 to 75 mm. in length excluding the caudal fin. The specimens are well preserved and closely agree with Weber & Beaufort's description of the species.

In addition to the 6 small and slender predorsal spines, there is, in some specimens, a very fine procumbent spine inserted in front of the first spine. Two pre-anal spines are present. The straight part of the lateral line, that is, the portion below and behind the 10th dorsal ray is destitute of distinct keels, and of scutes in the region of the caudal peduncle. Apparently these characters begin to develop at a much later stage of growth of the fish. The prolongations of the two outer rays of the ventrals extend beyond the caudal. The filiform terminations of the dorsal, anal and ventrals are black in colour.

Alectis indica is very widely distributed in the tropical and sub-tropical parts of the Indo-Pacific region.

Caranx (Caranx) carangus Bloch.

1931. *Caranx* (*Caranx*) *carangus*, Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, VI, pp. 257, 258.

In the collection under report this species is represented by two well preserved specimens, taken at Maungmagan; they are 97 and 105 mm. long excluding the caudal fin.

The head is somewhat higher than long. In grown-up specimens the snout is almost equal to the diameter of the eye, while in immature examples it is slightly shorter. The maxillaries extend as far as the centre of the eye. One or two teeth near the symphysis are caniniform. The squamation is rather indistinct. The keeled scutes of the straight part of the lateral line are broadest in the middle. The anterior rays of the dorsal as also of the anal are long and form a falciform lobe. Usually the falciform pectorals are much longer than the head but in some specimens they may be almost equal in length. The ventrals are half as long as the head; they extend beyond the vent and just reach the anal fin.

The colouration of the specimens is darker above with a golden sheen, and is silvery below. There are faint indications of four broad, dark, complete vertical bands. A dark opercular patch is present. The margin of the second dorsal and the inner edge of the caudal are blackish.

As already indicated by Weber & Beaufort, *Caranx carangus* is a very widely distributed species.

Caranx (Carangoides) armatus (Forskål).

1931. *Caranx (Carangoides) armatus,* Weber & de Beaufort, *Fish. Indo-Austral. Archipel.*, VI, pp. 233-235.

Caranx armatus is represented in the collection from Maungmagan by two specimens, about 105 mm. long excluding the caudal fin.

The snout is somewhat shorter than the diameter of the eye. The interorbital space is almost equal to the length of the snout. The maxillaries reach to almost below the centre of the eye. The anterior rays of the dorsal and of the anal form elevated falcate lobes; those of the former are considerably prolonged and when adpressed almost reach the middle of the caudal fin.

The colouration in alcohol is dark greyish above and silvery below. The opercular spot is very faint. The spinous dorsal, the produced rays of the second dorsal, the ventrals and the inner edge of caudal are black.

Weber & Beaufort have already remarked on the very wide distribution of *C. armatus.*

Caranx (Carangoides) auricoronae Chaudhuri.

1907. *Caranx auricoronae,* Chaudhuri, *Rec. Ind. Mus.*, III, p. 142, fig. 2.

Caranx auricoronae was described by Chaudhuri from two examples, 1 male and 1 female, caught by the steam trawler " Golden Crown " off the coast of Chittagong. There is a single, half-grown, female specimen about 95 mm. in total length in Professor Meggitt's collection from Maungmagan. Except for slight variations in proportions, the specimen agrees with the typical examples of the species.

C. auricoronae has so far been found only in the Bay of Bengal.

GERRIDAE.

Gerres lucidus Cuvier.

1875. *Gerres lucidus,* Day, *Fish. India,* p. 99, pl. xxv, fig. 5.
1933. *Gerres lucidus,* Fowler, *Bull. U. S. Nat. Mus.*, XII, No. 100, p. 229, fig. 13.

Gerres lucidus is represented by 9 specimens in Professor Meggitt's collection from Maungmagan. The vertical, narrow, colour bands are more marked in the young specimens though they are fairly distinct in specimens up to 112 mm. in total length. The membrane near the tip of each dorsal spine is deeply coloured. In every other respect the specimens under report agree with Fowler's description of the species.

Gerres lucidus is the most common Indian species of the genus, and, as stated by Day, visits the coasts in enormous numbers. Its range extends from the seas of India to the Malay Archipelago and China.

Family AMMODYTIDAE.

Ammodytes lanceolatus Le Sauvage.

(Plate II, fig. 4.)

1880-1884. *Ammodytes lanceolatus*, Day, *Fish. Great Brit. & Ireland*, I, p. 329, pl. xcii, fig. 1.

Professor Meggitt collected a single specimen of *Ammodytes lanceolatus*, about 13½ inches in length from Maungmagan. The specimen is a gravid female with ripe eggs. The longitudinal and oblique transverse folds on the body are well marked ; the number of transverse folds being approximately 183. The colour is dark brown above and pale below.

Day gives the habitat of the species as follows : " from the Atlantic shores of northern Europe and coasts of the German Ocean, and very rarely found in the Mediterranean." In view of the above distribution the discovery of the species in Burmese waters is of special interest. We have compared the Burmese specimen with examples of *A. lanceolatus* obtained from Dr. Oscar Sund of the Norwegian Fisheries. Mr. J. R. Norman of the British Museum has also confirmed our identification.

The genus *Ammodytes* is known to occur in Indian waters, though only a single specimen of the Madras species—*A. kallolepis* (Günther)[1]—is known so far. Probably on geographical grounds Günther proposed the genus *Bleekeria* for the Madras species. Jordan[2] remarked that " In the tropical genera there is a much smaller number of vertebrae and the body is covered with ordinary scales instead of delicate, oblique cross-folds of skin. These tropical species must probably be detached from the Ammodytidae to form a distinct family, Bleekeriidae." The occurrence of the typically European *A. lanceolatus* in the Indian waters shows that the tropical waters are not inimical to the Ammodytidae.

Though *Ammodytes* is essentially a genus of the northern Pacific and Atlantic, one species is known from India (*op. cit.*), and another from South Africa.[3]

Family POMACENTRIDAE.

Abudefduf biocellatus (Quoy & Gaimard).

1877. *Glyphidodon antjerius*, Day, *Fish. India*, p. 387, pl. lxxxi, figs. 4 and 5.
1928. *Abudefduf biocellatus*, Fowler, *Bull. U. S. Nat. Mus.*, VII, No. 100, p. 166.

There is a fine series of 20 well preserved specimens of *Abudefduf biocellatus* from Maungmagan. The dorsal surface is considerably lighter. The pectoral fins are white, the ventrals black and the vertical fins deep gray. There is a prominent, backwardly inclined, oval, dark mark at the bases of the posterior dorsal rays. The upper lobe of the caudal fin is longer and better developed than the lower.

---

[1] Günther, *Cat. Fish. Brit. Mus.*, IV, p. 387 (1862).
[2] Jordan, *Guide to the Study of Fishes*, II, p. 521 (1905) ; *Classification of Fishes*, p. 230 (1923).
[3] Barnard, A Monograph of the Marine Fishes of South Africa, Part II, *Ann. South African Mus.*, XXI, p. 430 (1927).

In the collection of the Zoological Survey of India there are specimens in which two black blotches are present on the posterior rays of the dorsal fin.

A. biocellatus is widely distributed in the Indo-Pacific region.

Abudefduf bengalensis (Bloch).

1877. *Glyphidodon bengalensis*, Day, *Fish. India*, p. 387.
1928. *Abudefduf bengalensis*, Fowler, *Bull. U. S. Nat. Mus.*, VII, No. 100, p. 128.

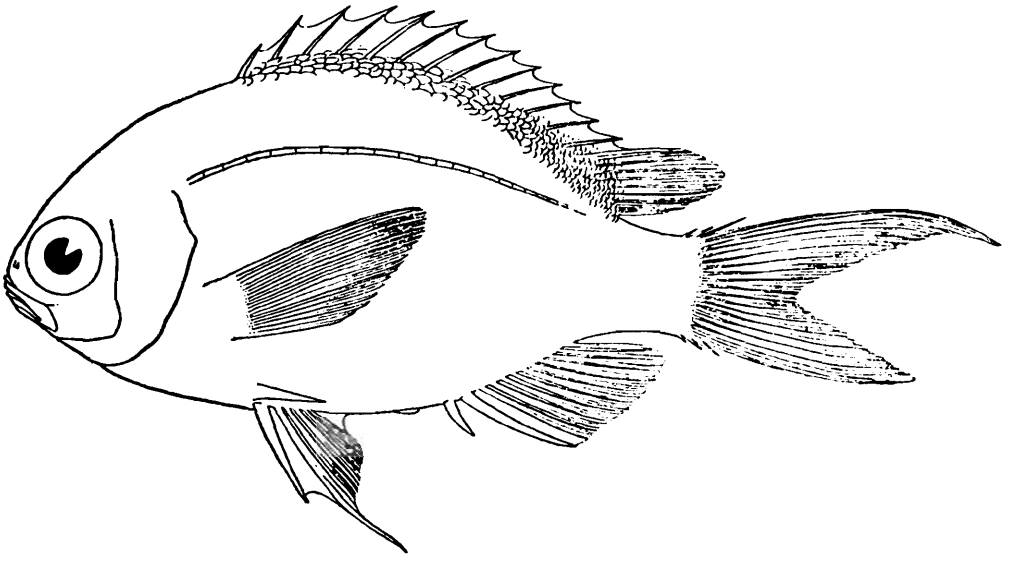
Abudefduf bengalensis is represented by a single specimen in Professor Meggitt's second collection from Maungmagan. The colour bands are much narrower than the interspaces between them. As pointed out by Fowler, Day's illustration of this species (pl. lxxxiii, fig. 3) is either highly inaccurate or is that of another species. A specimen purchased from Day and now preserved in the collection of the Zoological Survey of India, however, is correctly identified and shows the characteristic colour marking.

A. bengalensis is found in the Red Sea, Mozambique, India, East Indies and China.

Chromis ternatensis (Bleeker).

1877. *Chromis ternatensis*, Bleeker, *Atlas Ich. Ind. Nèerl.*, IX, pl. ccciii (4), fig. 4.
1928. *Chromis ternatensis*, Fowler, *Bull. U. S. Nat. Mus.*, VII, No. 100, p. 31.

Chromis ternatensis is represented by a single specimen, about 90 mm. in total length, in Professor Meggitt's second collection from Maungmagan. It agrees fairly closely with Bleeker's figure and Fowler's description of the species. According to Fowler " The obtuse head and strongly ovoid contour of this species are quite distinctive. It is one of the most compact in form of the genus, or in fact of the family. The



Text-fig. 3.—Lateral view of a specimen of *Chromis ternatensis* (Bleeker) from Maungmagan. ×1⅛.

black bordered caudal and pale paired fins will distinguish it from the related species." In the Burmese example the black border of the caudal

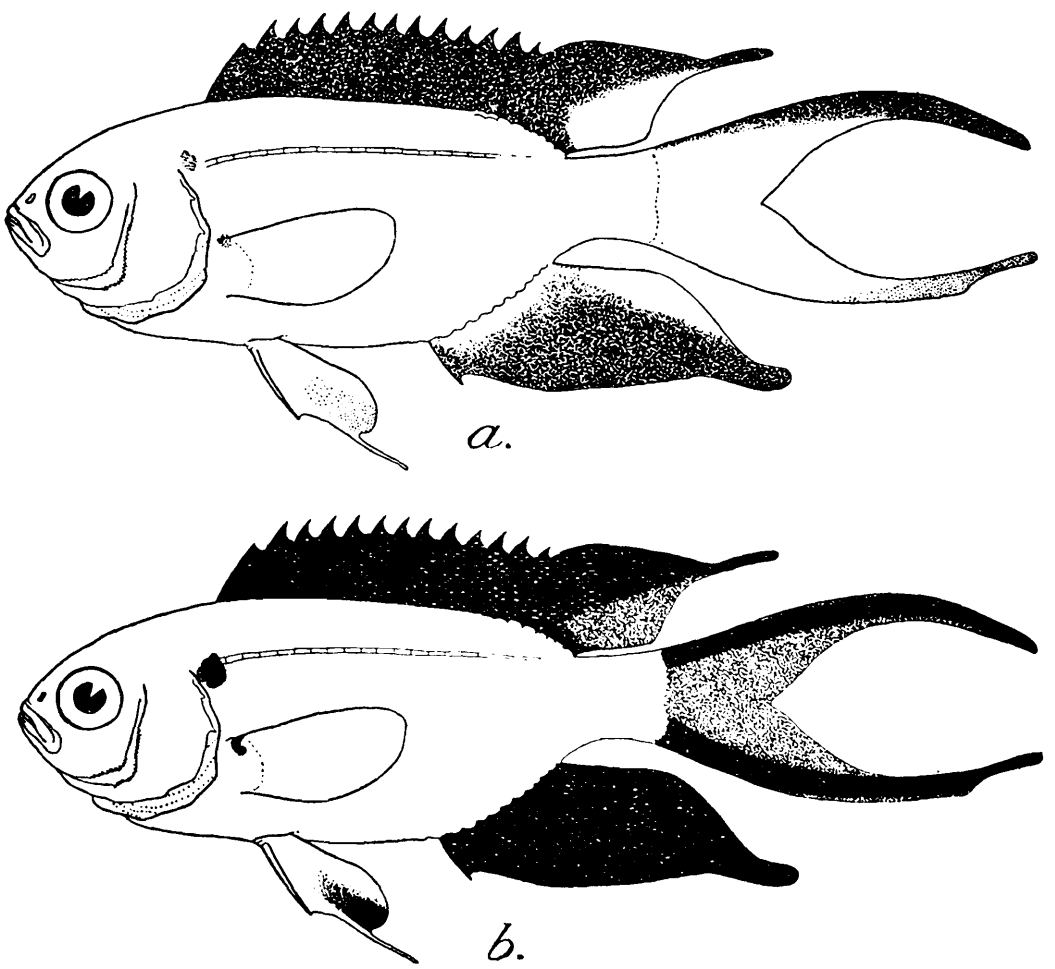
fin is diffuse but fairly well defined. The outer rays of the upperlobe of the caudal fin and the first ray of the ventrals are greatly produced. Attention may also be directed to the precaudal spines which form a very characteristic feature of the species. In front of the caudal fin, both above and below, there is a series of three spines of varying lengths, the last one being the longest.

C ternatensis has hitherto been found in the East Indies and the Philippines, and is recorded here from the Burmese waters for the first time.

Pomacentrus taeniurus Bleeker.

1877. *Pomacentrus taeniurus*, Bleeker, *Atlas Ich. Ind. Nèerl.*, IX, pl. ccccviii (9), fig. 2.
1877. *Pomacentrus cyanomos*, Bleeker, *Atlas Ich. Ind. Nèerl.*, IX, pl. ccccviii (9), fig. 3.
1928. *Pomacentrus taeniurus*, Fowler, *Bull. U. S. Nat. Mus.*, VII, No. 100, p. 72.

Pomacentrus taeniurus is represented by five examples, ranging in length from 54 to 68 mm. in total length (including the filamentous rays of the caudal fin), in Professor Meggitt's second collection from



Text-fig. 4.—Colour variation in two specimens of *Pomacentrus taeniurus* Bleeker from Maungmagan. × 1½.

a. Abnormal specimen ; *b*. Normal specimen.

Maungmagan. Except for one specimen, the colouration of the other examples agrees with Bleeker's figure and Fowler's description. In

the exceptional specimen, the whitish blotch on the last dorsal rays is more extensive, while a similar, but narrower, blotch is also present on the last rays of the anal fin. The upper dark border of the caudal fin is very narrow and almost indistinct near the base, while the lower border is restricted to the filamentous portion of the prolonged rays. The distal half of the caudal peduncle and a greater part of the caudal fin is white. The general colour of the body is also lighter than that of the other specimens.

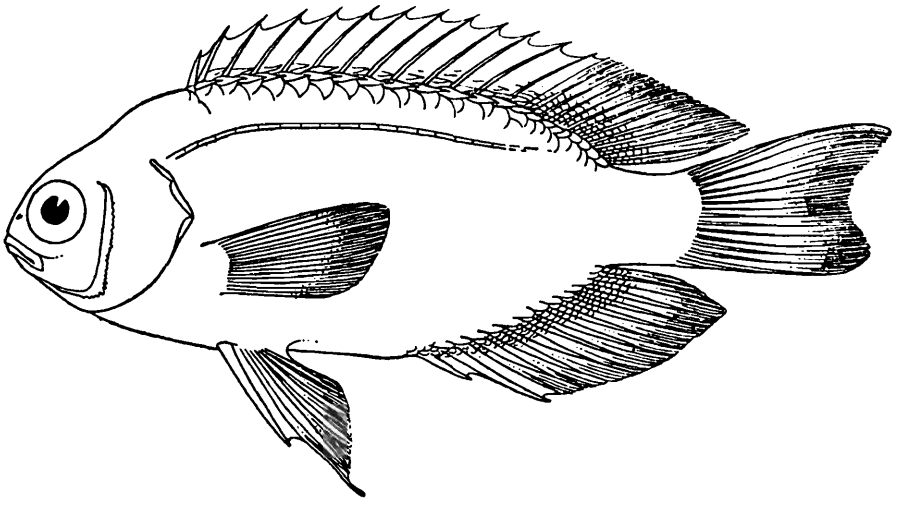
P. taeniurus has hitherto been known from the East Indies, Australia and Japan, and is recorded here from the Burmese waters for the first time.

Pomacentrus ? notophthalmus (Bleeker).

(Plate I, fig. 7.)

1877. *Dischistodus notophthalmus*, Bleeker, *Atlas Ich. Ind. Nèerl.*, IX, pl. cccci (2), fig. 4.
1928. *Pomacentrus notophthalmus*, Fowler, *Bull. U. S. Nat. Mus.*, VII, No. 100, p. 107.

There are three specimens in Professor Meggitt's second collection from Maungmagan which we refer to *Pomacentrus notophthalmus* Bleeker with some hesitation. According to Fowler's description, it is a " very handsome species, showing a fairly constant design in the white blotches on the head. These, together with its other combinations, especially in the large deep brown blotch at the vent, will easily distinguish the species." In the specimens before us the white blotches on the head are faintly marked and there is no deep brown blotch at the vent. The general colour is deep gray, somewhat lighter on the ventral surface. The pectoral and ventral fins are white whereas the dorsal and anal fins are black. The caudal peduncle and the caudal fin are pinkish white with the distal end of the lower lobe of the caudal fin dusky.



Text-fig. 5.—Lateral view of a specimen of *Pomacentrus? notophthalmus* (Bleeker) from Maungmagan. $\times 1\frac{1}{2}$.

There is a black, vertical, oval spot at the upper corner of the operculum. The upper lobe of the caudal fin is longer and better developed than the lower. Our figures show some of the salient features of the Burmese examples.

It may be mentioned that Bleeker's illustration of *Dischistodus notophthalmus* on plate 402, fig. 4 appears to represent a different form and not this species. The colour markings are very different in the two illustrations reproduced under the same specific name by Bleeker.

P. notophthalmus has so far been recorded from Ceylon and the East Indies.

Family GOBIIDAE.

Gobius ornatus Rüppell.

1927. *Gobius ornatus*, Herre, *Monograph Bur. Sci. Manila*, No. 23, p. 108, pl. vii, fig. 4.
1928. *Gobius ornatus*, Fowler, *Journ. Bombay Nat. Hist. Soc.*, XXXIII, p. 118.

Gobius ornatus, which is represented by a single specimen in Professor Meggitt's collection from Maungmagan, is readily distinguished by its characteristic colouration.

Day[1] pointed out that, according to Bleeker's system of classification, *G. ornatus* should be included in the genus *Acentrogobius*, but this genus is so closely allied to *Gobius* that it has not been possible to evaluate the differentiating characters of the two genera in the case of *G. ornatus*. Koumans[2] has stated that in *Acentrogobius* the outer row of teeth in the mandible " extends only to half of the jaw, the last teeth are recurved canines ; in both jaws some caninoid teeth larger than the rest." In *G. ornatus* there are enlarged teeth in both the jaws, but even an examination under a microscope has not revealed the presence of recurved canines in the mandible.

Gobius ornatus was originally described from the Red Sea ; its range is now known to extend as far east as the Malay Archipelago and the Philippine Islands.

Ctenogobius meggitti, sp. nov.

(Plate I, figs. 3-4.)

D. VI, 1/6-9 ; V. 5 ; A. 1/8 ; P. 14+silken rays ; C. 14 ; L. l. 42-44 ; L. tr. 13.

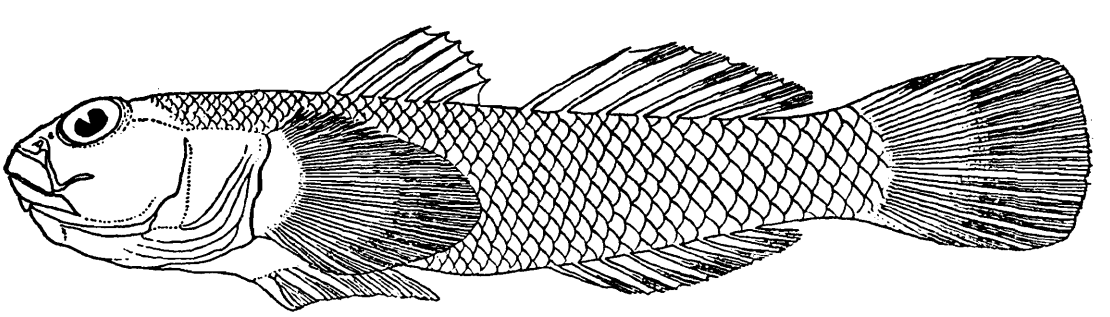
Ctenogobius meggitti is a small, well-built species in which the body is greatly compressed, especially in the tail region and the head is markedly depressed. The dorsal profile behind the eyes is almost straight and horizontal, while the ventral profile is slightly arched. The head is broadly pointed ; its length is contained from 4 to 4·3 times in the total length and from 3·2 to 3·4 times in the length without the caudal fin. The width of the head is contained 1·1 times and the height of the head at the occiput from 1·3 to 1·5 times in its length. The eyes are situated entirely in the anterior half of the head and are dorso-lateral in position ; the diameter of the eye is contained from 3·2 to 3·8 times in the length of the head. The snout is usually shorter than or equal to the diameter of the eye. The bony interorbital is about $\frac{1}{3}$ the diameter of the eye and in young specimens it is still

[1] Day, *Fish. India*, p. 294, (1876).
[2] Koumans, Pre. Rev. Genera Gobioid Fishes. *Proefschrift Lisse*, p. 94, (1931).

shorter. The nostrils are situated wide apart, the anterior nostril lies in a short, conical tube placed slightly behind the upper jaw, while the posterior nostril is situated just in front of the anterior border of the orbit. The mouth is small, semicircular and oblique. The jaws are subequal. There are many rows of teeth in both jaws, those of the outer row being enlarged. In certain specimens a number of teeth in the outer row of the upper jaw, especially in the middle, are greatly enlarged.[1] The tongue is slightly emarginate.

The body is elongate ; its depth is contained from 5·7 to 6·6 times in the total length and from 4·5 to 5·2 times in the length without the caudal. The body is covered with small, firmly-set, ctenoid scales but those on the anterior part of the body, on the chest and the belly are embedded in the skin and are cycloid. The head is entirely naked with the exception of a small, longitudinal patch of indistinct scales behind the eyes. The lateral line is absent. From below each nostril begins a mucous canal which curves to the angle of the mouth where it bends sharply backwards and runs over the preoperculum for a short distance. There is also a canal which runs along the lower jaw and encircles the posterior margin of the preoperculum and ends in a wide, open pore. The gill-openings are restricted to the sides and are separated by a broad isthmus. There are 4 branchiostegal rays. The caudal peduncle is almost as deep as long.

The pectoral fin is fan-shaped ; it is provided with a muscular base devoid of scales, and a number of free silken rays. The pelvic fins are well developed and are united anteriorly by a strong basal membrane. The two dorsals are close together. The second dorsal and the anal are of a similar nature. The caudal fin is more or less rounded.



Text-fig. 6.—Lateral view of a specimen of *Ctenogobius meggitti*, sp. nov. from Maungmagan. ×2⅔.

In young specimens about 27 mm. in total length the body is marked with four dark, broad bands separated by narrow, pale-olivaceous interspaces. About the middle of the body this arrangement is replaced by an alternate series of dark and pale spots. The upper surface of the head is dusky while the ventral surface of the body is pale-olivaceous. The two dorsals, pectorals, anal, and the caudal are banded with rows of spots or sometimes they are grayish. With the growth of the fish, the bands gradually disappear and only a row of elongated, longitudinal spots is left along the lateral line. In fully grown specimens all the fins become dusky or the spots on the fins become large

[1] In certain specimens the enlarged teeth are almost caninoid and may be, as Gill believed, a sexual character.

and more prononnced. The general colouration also tends to become dusky.

Locality :—Rocky pools, Maungmagan, Tavoy District, Lower Burma, October 1933. In the collection of the Zoological Survey of India there is a young goby collected by Mr. H. Abdulali from an ebb-pool at Kihim, Kolaba District, Bombay Presidency, which seems to belong to this species. Its colouration, however, is much lighter than that of the Burmese examples.

Type-specimen :—F. 11871/1, *Zoological Survey of India* (Ind. Mus.), *Calcutta.*

Remarks :—*Ctenogobius meggitti* judged by the characters of the genus, as given by Koumans[1], is distinguished from all other species of the genus in the possession of free silken rays of the pectoral fins. This character, though useful in distinguishing species, does not merit generic recognition, for in *Acanthogobius* Gill and *Acentrogobius* Bleeker Koumans has characterised the pectorals as " without or with free silk-like rays." By an emendation of the diagnosis of *Ctenogobius* along similar lines our new species can be included in it. *Ctenogobius meggitti* further differs from the description of the genus in having an inner row of enlarged teeth in the lower jaw, in the bases of the pectoral fins being devoid of scales, and the presence of four branchiostegals. These characters do not appear to us of much significance in this widely distributed genus. If, however, later researches establish a correlation between the characters of the pectoral fins, teeth, and branchiostegals, it may be desirable to separate the group as a subgenus of *Ctenogobius*, but the material now available does not justify such a separation.

Measurements in millimetres.

Total length including caudal	54·0	49·0	45·0	37·0
Length of caudal	10·0	10·0	9·0	7·0
Length of head	13·5	11·5	10·3	9·0
Width of head	12·0	10·2	10·0	8·0
Height of head at occiput	9·5	8·0	7·3	6·0
Depth of body	9·2	7·4	7·2	6·5
Length of snout	3·0	3·0	3·0	2·8
Diameter of eye	3·5	3·2	2·8	2·8
Bony interorbital	1·2	1·0	1·0	0·9

Family BLENNIIDAE.

Blennius semifasciatus Rüppell.

1935. *Blennius semifasciatus*, Mukerji, *Rec. Ind. Mus.*, XXXVII, pp. 273-275, pl. vi, fig. 5.

Professor Meggitt collected four half-grown specimens of *Blennius semifasciatus* at Maungmagan varying in length (excluding the caudal fin) from 19 to 32 mm. One of us (*op. cit.*) has redescribed this interesting species recently from specimens collected along the Orissa Coast and at Ross Island, Andamans. We have nothing to add to this description except to record the occurrence of the species along the coast of Burma.

[1] Koumans, Pre. Rev. Genera Gobioid Fishes. *Proefschrift Lisse*, p. 88, (1931).

Blennius pholis Linn.

(Plate I, fig. 2.)

1880-84. *Blennius pholis*, Day, *Fish. Great Brit. & Ireland* I, p. 203, pl. lx, fig. 2.

A large blenny about 120 mm. in length excluding the caudal fin was obtained by Professor Meggitt from Maungmagan. It did not agree with the descriptions of any of the species known to us from India, but showed certain affinities with an Australian species—*Blennius victorae*—described by Fowler.[1] The specimen was sent to Mr. J. R. Norman of the British Museum for favour of identification and he has very kindly informed us that it is *Blennius pholis* Linn., the common Shanny of Great Britain.

Day gives the habitat of the species as : " From Scandinavia and the Atlantic coasts of Europe, but it does not appear to extend far, if at all, into the Mediterranean." The present record of the species from the Burmese waters is of interest.

Salarias dussumieri Cuv. & Val.

1927. *Salarias dussumieri*, Barnard, *Ann. S. African Mus.*, XXI, pt. ii, p. 846.
1928. *Salarias dussumieri*, Fowler, *Mem. Bernice P. Bishop Mus.*, X, p. 439.

Professor Meggitt's first collection from Maungmagan contains two specimens, one male and one female, of *Salarias dussumieri*. They are 62 mm. and 58 mm. long respectively excluding the caudal fin. In the second collection from the same locality there is a young female specimen.

The head is deeper than wide and its length is contained about 5·5 times in the length of the body excluding the caudal. The depth of the body is nearly equal to or slightly shorter than the length of the head. The eye is fairly large, and superior ; its diameter is contained about 3·5 times in the length of the head. The interorbital space is narrow, concave and less than half the diameter of the eye. The gape of the mouth is wide and equal to the postorbital part of the head. The maxilla reaches almost below the hind edge of the eye. The lips are not crenulate. There are no canines. Both the nasal and the supra-orbital tentacles are fringed. A fairly low occipital crest is present in males only.

The dorsal fin is separated by a distinct notch. The first dorsal is almost half as high as the body below it ; while the second, which may be slightly higher, is continuous with the caudal. The pectorals, which are longer than the head, are rather broad and semi-ovate. The caudal fin is nearly equal to the head and rounded.

The colouration of the specimens is dark brownish above and greenish yellow below. The entire body is more or less banded with irregular and often discontinuous cross-bars and stripes, sometimes in pairs. The dorsal, caudal and anal fins are provided with dark spots

[1] Fowler, *Proc. Acad. Nat. Sci. Philad.*, pp. 442-444, fig. 10, 1907 (1908) ; McCulloch, *Mem. Austral. Mus.*, V, p. 346, (1927).

which may be arranged in regular bands. The anal is dark edged. A dark spot is present between the first and the second dorsal spine.

The species is distributed along the east coast of Africa and in the Indian seas.

Salarias burmanicus, sp. nov.

(Plate I, fig. 1.)

D. 28 ; A. 20 ; P. 13 ; V 2 ; C. 13.

Salarias burmanicus is a greatly compressed and slender species in which the body is broadest anteriorly and tapers gradually towards the posterior end. The head is almost rounded ; its length is contained 6·6 times in the total length and 4·8 times in the length without the caudal. The head is almost as high as long, and its width is about half its length. The eyes, which are dorso-lateral in position, are directed forwards ; they are not visible from the ventral surface. The antero-superior border of the eye projects beyond the dorsal profile of the head. The diameter of the eye is contained about 3·1 times in the length of the head. The anterior border of the eye is in line with the tip of the upper jaw. The interorbital space is almost flat in front and convex behind ; its width is slightly less than half the diameter of the eye. The nostrils, which are just in front of the eyes, are situated about the middle of the level of the eyes ; the anterior nostril is provided with a pair of simple tentacles which are united at the base forming a small tube round the nostril. The posterior tentacle is longer than the anterior and is almost as long as the diameter of the eye. There are no supraorbital or other tentacles. There are open pores round the eyes, on the snout, along the mandible and the border of the preoperculum. The series of pores on the head are continued backwards into the lateral line, which consists of a few, short, prominent tubes and ends abruptly below the base of the 13th ray of the dorsal fin. There is a low, median ridge along the head ; it commences above the middle of the eyes and becomes continuous with the dorsal fin. The body is smooth and its greatest depth is somewhat greater than the length of the head. The caudal peduncle is about one and a half times as long as deep.

The dorsal fin commences at the level of the superior angle of the gill-opening and contains 28 rays arranged in a continuous series. The 2nd to the 4th dorsal rays are the longest, their length being equal to the head behind the eyes. The anal fin is similar to the dorsal but its longest ray is about half the length of the longest ray of the dorsal fin. The pectoral fin is short, rounded and lateral in position ; it is shorter than the head and is provided with a muscular base. The ventral fin consists of two rays which are united at the base. The caudal fin is longer than the head and two of its outer rays are greatly produced.

The dorsal surface and sides of the body are of a purplish brown colour which becomes lighter on the head and towards the posterior part of the body. In the region of the caudal peduncle the colour is pale-olivaceous. The bases of the dorsal and anal fins are grayish while the margins and the distal half of the caudal fin are grayish. The

filamentous rays are somewhat darker. The pectorals are whitish while the ventrals are covered with minute black dots. The regions of the operculum, interoperculum, subopercular and the bases of the pectorals are white.

Locality :—Maungmagan, Tavoy District, Lower Burma.

There is only one specimen of this interesting species in Professor Meggitt's second collection from Maungmagan.

Type-specimen :—F. 11872/1, *Zoological Survey of India* (Ind. Mus.), *Calcutta.*

Remarks :—This remarkable blenny appears to be well adapted for living among corals. The greatly compressed head and body, elongated caudal rays, forwardly directed eyes near the tip of the snout and colouration are very distinctive features of the species. We are not familiar with any similar species in the genus *Salarias*, but attention may be directed to *S. anomalus* Regan[1] described from the Persian Gulf and the Mekran Coast. Though the outer rays of the caudal fin are somewhat produced in this species also, the dorsal fin and the colouration are very different. Moreover, the number of rays in the dorsal and anal fins is greater in *S. anomalus*.

Measurements in millimetres.

Total length including caudal	77·0
Length of caudal	21·3
Depth of body	12·0
Length of head	11·6
Width of head	6·0
Height of head	11·0
Diameter of eye	3·7
Interorbital width	2·0
Longest ray of dorsal	8·5
Longest ray of anal	4·5
Length of pectoral fin	9·5
Length of ventral fin	5·5
Length of caudal peduncle	4·5
Least height of caudal peduncle	6·3

Petroscirtes punctatus (Cuv. & Val.).

1836. *Blennechis punctatus*, Cuvier & Valenciennes, *Hist. Nat. Poiss.*, XI, p. 287.
1861. *Petroscirtes punctatus*, Günther, *Cat. Fish. Brit. Mus.*, III, p. 231.
1878. *Petroscirtes punctatus*, Day, *Fish. India*, II, p. 326.
1889. *Petroscirtes punctatus*, Day, *Faun. Brit. Ind., Fish.*, II, p. 308.
1929. *Petroscirtes punctatus*, McCulloch, *Mem. Austral. Mus.*, V, pt. iii, p. 342.

In Professor Meggitt's collection from Maungmagan there are seven half-grown specimens of *Petroscirtes punctatus*, varying from 20 to 32 mm. in length excluding the caudal fin. The existing description of *P. punctatus*, although short, agrees fairly well with these specimens, and we have, therefore, little hesitation in referring them to this species. There are, however, certain differences in body proportions etc., which

[1] Regan, *Journ. Bombay Nat. Hist. Society*, XVI, p. 327, pl. ii, fig. 4, (1905).

are almost certainly due to the specimens being immature. For convenience of reference in future a short description of the specimens is given below :

D. XII-XIII/19-21 ; A. 21-23 ; P. 14 ; C. 13.

The head and the body are greatly compressed laterally. The head is considerably higher than broad and its length is contained from 5 to 5·5 times in the length of the body excluding the caudal fin. The depth of the body is nearly equal to the length of the head excluding the snout. The anterior profile of the snout is subvertical. The snout is short and obtuse and is equal to the diameter of the eye. The eye is circular and moderate ; it is situated close to the upper profile and in the anterior half of the head. Its diameter is contained about 4·5 times in the length of the head. The dorsal fins are almost equal in length ; the rayed dorsal is comparatively higher than the fairly low spinous. The insertion of the dorsal is almost vertically above the upper base of the pectorals, which are equal to the length of the head excluding the snout. Posteriorly the dorsal just meets the root of the caudal. The ventrals are much shorter than the pectorals. The insertion of the anal is midway between the root of the caudal and the anterior margin of the eye. The anal rays are subequal ; the posterior ones, however, are the longest. The caudal is shorter than the head and is rounded. In most specimens all the fin rays have free fleshy tips.

The incisiform teeth are short, slender, sharp and closely set. In the upper jaw there are from 24 to 26 teeth, while in the lower from 20 to 22. Both the jaws are provided with sharp canines ; those in the lower jaw are larger and stronger.

The general colour of the specimens is grayish. In addition, there are from 7 to 9 pairs of longitudinally arranged blackish specks below the base of the dorsal fin. Two other similar longitudinal rows of paired specks are present along the sides. Both the dorsal and the anal fins are tipped with black.

The range of *Petroscirtes punctatus* is stated by Day to extend from the " seas of India to Australia ", though we have not seen many records of the species from the Indian waters. So far as we are aware it is here recorded from the Burma coast for the first time.

Family STROMATEIDAE.

Psenopsis anomala (Temm. & Schgl.).

(Plate II, fig. 2.)

1850. *Trachynotus anomalus,* Temminck & Schlegel, *Faun. Japon. Pisces,* p. 107, pl. lvii, fig. 2.

1860. *Psenes anomalus,* Günther, *Cat. Fish. Brit. Mus.,* II, p. 495.
1862. *Psenopsis anomalus,* Gill, *Proc. Acad. Nat. Sci. Philad.,* p. 127.
1902. *Psenopsis anomala,* Regan, *Ann. Mag. Nat. Hist.* (7) X, p. 131.
1929. *Psenopsis anomala,* Fowler, *Proc. Acad. Nat. Sci. Philad.,* LXXXI, p. 604.

Psenopsis anomala is represented in Professor Meggitt's collection from Maungmagan by a single specimen about 70 mm. in length without

the caudal fin. We have compared it with a specimen of about the same size collected at Tonkin, China, and now preserved in the collection of the Zoological Survey of India. The Burmese example is much darker in colour, otherwise the two specimens are almost identical.

The species has hitherto been known from the seas of Japan. Fowler (*op. cit.*) recorded it from Hong Kong, China and the present record extends its range to the Burmese waters.

Family MUGILIDAE.

Mugil vaigiensis (Q. & G.).

1922. *Mugil vaigiensis*, Weber and de Beaufort, *Fish. Indo-Austral. Archipel.*, IV, pp. 244, 245.
1933. *Mugil Vaigiensis*, Pellegrin, *Mem. Acad. Malgache*, XIV, pp. 180, 181, fig. 98.

Three specimens of *Mugil vaigiensis*, nearly 105 mm. long excluding the caudal fin, were obtained by Professor Meggitt from Maungmagan. They agree in all essential characters with the description of the species given by Weber and de Beaufort.

Six dark, fairly broad longitudinal bands are characteristic of the species. The upper half of the pectorals is deep black. The dorsals as well as the anal are also blackish. The ventrals are whitish with indistinct dusky patches.

Besides the three examples referred to above, ten immature specimens of a species of *Mugil* were also collected by Professor Meggitt from Maungmagan. The specimens vary from 22 to 45 mm. in length, excluding the caudal fin. Although they differ in certain body proportions from the adults of *M. vagiensis*, in view of the characteristic colouration of the fins it seems probable that these immature Mullets should be referred to *M. vagiensis*. The general facies, lepidosis and the longitudinal bands on the body also indicate the very close affinity of these examples with *M. vagiensis*.

Mugil vaigiensis is widely distributed in the Indian Ocean where it is generally found in seas and estuaries. Sometimes, however, it ascends fresh waters also.

Family TRACHINIDAE.

Trachinus draco Linn.

(Plate II, fig. 3.)

1880-1884. *Trachinus draco*, Day, *Fish. Great Brit. & Ireland*, I, pp. 79-81, pl. xxx.
1927. *Trachinus draco*, Barnard, *Ann. S. African Mus.*, XXI, pt. ii, pp. 439, 440.

Trachinus draco is represented in Professor Meggitt's collection by a single specimen taken at Maungmagan, Lower Burma. The specimen is in a good state of preservation and is about 8½ inches long, excluding the caudal fin. According to Day (*op. cit.*) the species "attains at

least 17 inches in length " The specimen under report agrees in all respects with the descriptions of the species given by Day and other authors.

The spines at the antero-superior angle of the orbit are fairly stout and sharp. There are no flat spines on the preopercle. The opercular spines are long, very sharp and strong and have the usual loose skin covering. Both the supra-scapulars and scapulars are flat plates and have serrated free margins.

The third spine of the first dorsal is the longest. There is a low membraneous attachment between the first and the second dorsal. The caudal fin is slightly emarginate.

The colouration of the specimen is uniformly greyish, or slightly darker on the back. There are some dusky oblique stripes irregularly arranged on the body and the head. The first dorsal is black in its upper three-fourths ; the black patch extends posteriorly as far as the fourth spine. The caudal fin is dusky. The rest of the fins are yellowish with dark edges.

T draco is distributed on the west coast of Europe, Mediterranean, the west coast of Africa as far south as Guinea Coast, Madeira. Barnard (*op. cit.*) records it from the Cape seas on the authority of Günther.

Remarks :—Hithertofore, no species of the genus *Trachinus* has been reported from any of the Indian seas, and the present record of *T draco* from the Burmese waters is, therefore, of extraordinary interest. The specimen under report was sent to Mr. J. R. Norman of the British Museum who confirmed our identification.

COTTIDAE.

Cottus bubalis Euphrasen.

(Plate I, figs. 5 and 6.)

1880-84. *Cottus bubalis*, Day, *Fish. Great Brit. & Ireland*, I, p. 51, pl. xx, fig. 2.

Not being able to determine specifically a Cottid fish in the collection of Professor Meggitt from Maungmagan, the specimen was sent to Mr. J. R. Norman of the British Museum for favour of identification. He has very kindly informed us that " it agrees almost exactly with specimens of the European *Cottus bubalis*, Euphr. in our collection." According to Day, its habitat is : " From the Artic region in both hemispheres, the Baltic, North Sea, British Isles, and coasts of France and Spain." The occurrence of the species in Burmese waters is, of unusual interest.

Our specimen, which is 135 mm. in total length, differs from Day's figure of the species in the form of the head, depth of the body, proportions, etc. These differences are clearly shown in our figures of the Burmese specimen.

Family LOPHIIDAE.

Lophius piscatorius Linn.

(Plate II, fig. 5.)

1880-1884. *Lophius piscatorius*, Day, *Fish. Great Brit. & Ireland*, I, p. 73, pl. xxix.
1903. *Lophius piscatorius*, Regan, *Ann. Mag. Nat. Hist.* (7), XI, p. 283.
1927. *Lophius piscatorius*, Barnard, *Ann. South African Mus.*, XXI, p. 999.

Professor Meggitt's collection from Maungmagan contains a single specimen of *Lophius piscatorius*, 6½ inches long without the caudal. It entirely agrees with Regan's description of the species. Mr. J. R. Norman very kindly examined the specimen and has confirmed our determination.

The humeral spine is very strong and ends in three short and blunt spines. The rays of the spinous dorsal are fairly well marked. The first ray ends in a simple flap. The second ray is nearly as long as the first but the third is much shorter.

According to Regan, *L. piscatorius* is found on "Coasts of both sides of the North Atlantic, Mediterranean", but Barnard extended its range to the coasts of the South Atlantic also. Its present record from the Burmese waters is of interest, as all the species of the genus *Lophius* hitherto described from the Indian waters have been transferred by Regan (*loc. cit.*, p. 279) either to the genus *Chirolophius* Regan or to *Lophiomus* Gill.

Family TETRAODONTIDAE.

Sphoeroides[1] **oblongus** (Bloch).

1878. *Tetrodon oblongus*, Day, *Fish. India*, p. 702, pl. clxxxii, fig. 3.
1924. *Sphoeroides oblongus*, Hora, *Mem. Asiat. Soc. Bengal*, VI, p. 498.
1927. *Spheroides oblongus*, McCulloch, *Mem. Austral. Mus.* V, p. 431.
1928. *Sphoeroides oblongus*, Fowler, *Mem. Bernice P. Bishop Mus.*, X, p. 467.

There are nine specimens of *Sphoeroides oblongus* in the collection of Professor Meggitt from Maungmagan; of these some are young. The specimens agree almost in every respect with Day's description and figure of the species. The young specimens vary slightly in colouration and in the form and arrangement of the spines.

The teeth of the upper jaw are slightly smaller than those of the lower jaw. The interorbital space becomes broader with age. The back and the belly are covered with double-rooted small and sharp spines; the snout and the tail are devoid of spines. The areas covered with spines are equally well marked in the young individuals.

Sphoeroides oblongus is a widely distributed Indo-Pacific species.

---

[1] Often written *Spheroides* as adopted by Dumeril (1806), but originally spelt by Lacépède (1798) as *Sphoeroides*. *Sphoeroides* replaces *Spheroides* (Jordan, *Classification of Fishes*, p. 24, 1923).