XXXIII. ON SOME NEW OR RARE SPECIES OF FISH FROM THE EASTERN HIMALAYAS

By SUNDER LAL HORA, *M.Sc., Assistant Superintendent, Zoological Survey of India.*

(Plate XXIX.)

The fish on which the following notes are based formed part of a collection recently made by Mr. G. E. Shaw in the foot-hills of the Eastern Himalayas below Darjiling. Mr. Shaw has taken great pains to make his collection of the fishes of this area complete and I am greatly indebted to him for the opportunity of examining it. Among the specimens I have found examples of *Psilorhynchus sucatio* and *Erethistes clongata* which were hitherto known only from the original descriptions of Hamilton Buchanan and Day, while there are three species which appear to be new. Mr. Shaw has very kindly presented specimens of the species he collected to the collection of the Zoological Survey of India.

Psilorhynchus sucatio (Ham. Buch.).

(Pl. XXIX, figs. 1, 1*a*.)

1822. *Cyprinus sucatio*, Hamilton Buchanan, *Fish. Ganges*, pp. 347 and 393.
1839. *Psilorhynchus sucatio*, McClelland, *Asiatic Res.* XIX pp. 300 and 428, pl. 50, figs. 1 and 1*a*. [343.
1868. *Psilorhynchus sucatio*, Günther, *Faun. Brit. Ind. Fish.* VII, p.
1871. *Psilorhynchus sucatio*, Day, *Journ. As. Soc. Bengal* XL., p. 107, pl. ix, fig. 1.

This species has hitherto been known only from Hamilton Buchanan's description published in 1822 and from the manuscript drawing preserved in the library of the Asiatic Society of Bengal. In 1871 Day, in the work cited above, remarked : "it does not appear at all impossible that the other, *P. sucatio*, H. Buch., may be destitute of an air-bladder and would thus form a distinct genus appertaining to the subfamily Homalopterinae," but in his later work [1] he suggested that it was synonymous with *Homaloptera bilineata*.

I have found three specimens in Mr. Shaw's collection which agree with the description and figure of Hamilton Buchanan's *Cyprinus sucatio*. The species possesses a fairly well-developed bladder of the cyprinid type and is destitute of barbels. In its

[1] Day, *Fish India* II p. 526 (1878).

elongate snout it closely resembles certain species of the genus *Homaloptera*, but it can be readily distinguished by the absence of barbels and by the presence of a free air-bladder in the abdominal cavity.

Buchanan found the species in "the rivers of Northern Bengal," while his second species, *P. balitora*, was "found in the rivers towards the north-east of Bengal." McClelland (*op. cit.*), who had examined only a single specimen of *P. balitora* forwarded to him from "Upper Assam" by Capt. Hannay, gave the habitat of both the species as "north-eastern parts of Bengal." Günther (*op. cit.*) who followed McClelland made the same mistake. The specimens of *P. balitora* in our collection enable me to confirm Buchanan's statement that the species occurs in the Khasi Hills (north-east of Bengal), while *P. sucatio* is found at the base of the Darjiling Himalayas (Northern Bengal). I [1] referred some young specimens collected by Dr. Annandale at Siliguri in the Mahanadi River to *P. balitora*, but on further examination I find that they are the young of *P. sucatio*. The mistake was due to the immaturity of the specimens.

The genus *Psilorhynchus* comprises three Indian species, one of which was recently described by myself (*op. cit.*, p. 208) from immature specimens found in the Naga Hills. The new species is readily distinguished from those previously known by its straight profile, by the absence of any grooves on the under surface of the head and by the position of the eye, which is considerably nearer to the tip of the snout than to the posterior limit of the operculum. *P. sucatio* differs from *P. balitora* in possessing a long depressed snout and a greatly elevated back fin.

Annandale [2] described a species of fish from the Bombay Presidency under this genus, but quite recently I [3] have referred it to a separate genus for which I have proposed the name *Parapsilorhynchus*.

In *Psilorhynchus sucatio* the dorsal profile is greatly arched. It is highest near the base of the dorsal fin, whence it slopes considerably towards both ends. The ventral profile is only slightly arched. The caudal peduncle is narrow and elongated. The head is much depressed and both the upper and the lower surfaces are greatly flattened; it is one and a quarter times as long as broad. The length of the head is contained about 5 times in the length of the body excluding the caudal fin. The depth of the body in full grown specimens is slightly less than the length of the head and is contained 5·5 times in the length of the body. The snout is broad and evenly rounded; the interorbital space is somewhat concave. The eyes are large and globular and are situated in the posterior half of the head; they are only slightly visible from below. The diameter of the eye is contained almost

---

[1] Hora, *Rec. Ind. Mus.* XIX, p. 210 (1920).
[2] Annandale, *Rec. Ind. Mus.* XVI, p. 128 (1919).
[3] Hora, *Rec. Ind. Mus.* XIX, p. 209 (1920).

3 times in the length of the head and the snout is 1·5 times the diameter of the eye in length. The interorbital width is greater than the diameter of the eye. The mouth is situated on the under surface of the head considerably behind the tip of the snout and is bordered by thick lips. The lower lip and the skin immediately behind it is somewhat papillated. There are two curved grooves running from the angle of the mouth to the tip of the snout. The nostrils are situated considerably nearer to the eye than to the tip of the snout.

The dorsal fin commences in advance of the ventrals, and its origin is much nearer to the tip of the snout than to the base of the caudal fin; its free margin is truncate and oblique. The longest ray of the dorsal fin is considerably higher than the depth of the body below it; its shortest ray equals the longest ray of the anal fin in length. There are two spines and 7 or 8 branched rays in the dorsal fin. The pectoral fins are greatly expanded and are horizontally placed. They contain 13 or 14 rays, of which the first four are not branched. It is separated from the base of the ventral fins by half its own length. The ventrals are only slightly shorter than the pectorals, they are expanded and horizontally placed. They contain 9 or 10 rays, of which the first two are not branched. The ventrals extend considerably beyond the anal opening. The anal fin is short and rounded and is placed nearer to the base of the caudal than to that of the ventral fin. It contains seven rays, of which five are branched. The caudal fin is as long as the length of the head and is deeply forked. Both the lobes are pointed; the upper is slightly longer than the lower.

The lepidosis is quite normal except on the chest, where the scales are either absent or greatly reduced. There are 38 scales along the lateral line from the angle of the operculum to the base of the caudal fin, and six series of longitudinal rows of scales between the bases of the dorsal and the ventral fins. A scale from near the base of the dorsal fin is semicircular in outline with an almost flat base and an arched apex. The nucleus is eccentric and is situated close to the base. There are about 5 or 6 radii to the apex and the circular striae are indefinite and closely packed together.

The air-bladder has undergone a certain amount of degeneration from the normal cyprinid type. The anterior chamber is laterally flattened and covered with a thick fibrous coat. The posterior chamber is narrow and elongated and is of uniform thickness throughout; its walls are greatly thickened. It is displaced from its original position and comes to lie on one side of the anterior chamber.

Hamilton Buchanan describes the colour of the species as follows: "Above the *colour* is greenish, with scattered dots; on the sides these are collected into clouds, and below the body is whitish and diaphanous. The fins of the back, breast and tail, are dotted. The eyes are brown, with a narrow golden circle round the pupil." The specimens before me possess five broad,

clouded vertical bands on the body and a number of stripes on the caudal fin. The membranes between the first few rays of the dorsal fin are black, and here and there are a number of black patches on the head and on the body. The under surface of the head and body are pale white.

Locality.—Psilorhynchus sucatio is found in rapids at the base of the Darjiling Himalayas. Four young specimens were collected by Dr. Annandale in the Mahanadi River at Siliguri (alt. 200 ft.) Mr. Shaw's specimens are from the Mahanadi River and the Sivoke River of the Darjiling District.

Measurements in millimetres.

	A.	B.	C.
Total length of body (excluding caudal) ...	69·7	55·5	51·2
Length of head	15·0	12·0	10·5
Width ,, ,, ...	10·2	9·2	8·0
Depth of body	13·2	12·8	11·6
Diameter of eye	4·5	4·3	3·5
Length of snout	7·7	5·6	5·0
Interorbital width	6·9	4·8	4·3
Length of caudal peduncle	12·7	7·8	6·2
Least height of caudal peduncle	5·0	4·8	4·2
Distance from tip of snout to anterior origin of dorsal fin	30·0	26·5	24·2
Distance from base of caudal fin to anterior origin of dorsal fin	39·7	29·7	27·0
Distance from tip of snout to anal opening ...	38·0	32·6	30·8
,, ,, base of caudal fin to anal opening ...	31·0	22·9	20·4
Longest ray of dorsal	17·4	11·6	11·2
,, ,, ,, anal	9·8	8·8	8·3
Length of pectoral fin	14·0	13·5	12·3
,, ,, ventral ,, ...	12·2	12·0	10·2

Oreinus molesworthi, Chaudhuri.

1913. *Oreinus molesworthi*, Chaudhuri, *Rec. Ind. Mus.* VIII, p. 243, pl. vii, figs. 2, 2*a*, 2*b*.

This species was described by Chaudhuri (*op. cit.*) from a single specimen from Yembung at an altitude of 1100 ft. in the Abor Hills. There is one specimen in Mr. Shaw's collection which I refer to this species after having compared it with the type-specimen and with the description and figures given by Chaudhuri.

Chaudhuri says that "the width of the mouth is nearly two and a half times the length of the head." Probably he meant to say that the width of the mouth was contained nearly two and a half times in the length of the head; this is very nearly correct. I find that the so-called scaleless portion of the body, which is situated behind the opercle and below the lateral line, possesses rudimentary scales which in the type-specimen are mostly hidden by the slime of the skin. In the specimen from the Darjiling Himalayas, which is 185 mm. in length including the caudal, there are only a few small conical warts on the snout and the body is comparatively less deep. The caudal fin is deeply forked with both the lobes pointed, the upper longer than the lower.

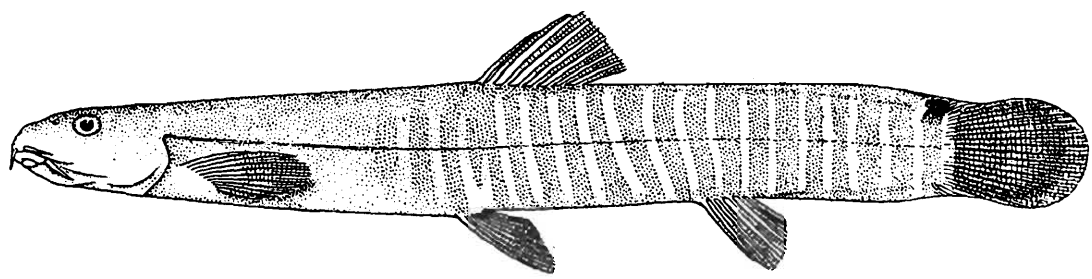
Mr. Shaw collected his specimen in the Reang River at an altitude of 2000 ft. in the Darjiling District.

Aborichthys elongatus, sp. nov.

This species is represented in Mr. Shaw's collection by three specimens, two of which are young and one adult in a bad state of preservation. It can, however, be readily distinguished from the only other known species of the genus, *Aborichthys kempi*, Chaudhuri,[1] in the points tabulated below :—

A. kempi, Chaudhuri.	*A. elongatus*, sp. nov.
1. The snout is a little shorter than the post-orbital part of the head.	The snout is almost equal to the post-orbital part of the head.
2. There are 7 branched rays in the dorsal fin.	There are only six branched rays in the dorsal fin.
3. The dorsal is equidistant between the tubular nostrils and the root of the caudal.'	The dorsal is equidistant from the tip of the snout and the base of the caudal fin in the adult specimen ; in younger specimens it is somewhat nearer to the tip of the snout than to the base of the caudal.

Besides these points the proportions and the colouration are totally different in the two species.



Lateral view of *Aborichthys elongatus*, sp. nov. Slightly enlarged.

A. elongatus is greatly elongated and compressed from side to side. Both the dorsal and the ventral profiles are straight and horizontal behind the pectoral fins and run almost parallel to each other to the base of the caudal fin. The head is rounded and cylindrical; its length is contained 6·1 times, the depth of the body 8·6 times and the length of the caudal fin 6·5 times in the total length including that of the caudal fin. The eyes are situated on the dorsal side in the middle of the head and are not visible from below; their diameter is contained 7·6 times in the length of the head and 3·2 times in that of the snout. The mouth is situated on the under surface a short distance behind the tip of the snout and is bordered with thick lips; the lower lip is interrupted in the middle. The lips are not fringed. The nostrils are close together and are situated nearer to the eye than to the tip of the snout; the membranous fold between the two is produced into a barbel-like outgrowth on either side. The dorsal fin commences

[1] Chaudhuri, *Rec. Ind. Mus.* VIII, p. 245, pl. vii, figs. 1, 1*a*, 1*b* (1913).

behind the ventrals and its origin is almost equidistant from the tip of the snout and the base of the caudal fin; it contains six branched rays besides two unbranched rays anteriorly. The pectorals are shorter than the head and are separated from the ventrals by a distance equal to their length. The ventrals extend considerably beyond the vent and are separated from the anal by a considerable distance. The anal fin is likewise short and contains six rays. It is separated from the root of the caudal fin by a distance almost equal to its length. The caudal fin is slightly shorter than the length of the head and its free posterior border is convex. The caudal peduncle is long and broad; it is 1·7 times as long as high.

Colour.—The sides and the upper surface of the head and body in front of the dorsal fin are dusky, while the under surface in the same region is either white or dull pale-olivaceous. From behind the origin of the dorsal fin to the base of the caudal fin the body is marked by a number of broad black bands alternating with narrow bands of a yellowish-orange colour. The bands form almost complete rings with slight interruptions on the extreme dorsal and the ventral sides. The pectoral, ventral and the anal fins are dull white while the dorsal fin is streaked with black along the rays. The caudal fin is dusky with a whitish margin. In the middle of the fin there are two short whitish bands. There is an intensely black ocellus at the upper corner of the root of the caudal fin.

In young specimens the bands on the body extend forward to the middle of the pectoral fins. The caudal fin is marked by a number of black blotches forming three bands.

Type-specimen.—F10087/1, *Zool. Surv. Ind.* (*Ind. Mus.*)

Locality.—Two young specimens and one adult were collected by Mr. Shaw in the Reang River at an altitude of 2000 ft. in the Darjiling District. The only other species of the genus, *A. kempi*, has been recorded from the Abor country, the Garo Hills and the Putao Plains in Upper Burma.[1]

Measurements in millimetres.

Total length excluding caudal fin	74
Length of caudal fin	13
Depth of body	9·8
Length of head	13·6
,, ,, snout	6
Diameter of eye	1·8
Length of pectoral fin	11·2
,, ,, ventral ,, ...	9·5
Longest ray of anal fin	9·0
,, ,, ,, dorsal ,, ...	6·8

Macrones (Macronoides) merianiensis, Chaudhuri.

1913. *Macrones merianiensis*, Chaudhuri, *Rec. Ind. Mus.* VIII, p. 253, pl. ix, figs. 1, 1*a*, 1*b*.

[1] Chaudhuri, *Rec. Ind. Mus.* XVI, p. 278 (1919).

This interesting species has so far been known from a single specimen in our collection found in a pond at Mariani junction, Assam. In Mr. Shaw's collection there are three specimens from the Sivoke River (alt. 500 ft.) in the Darjiling District, which agree in almost all respects with Chaudhuri's description of the species. They are 70, 60 and 56 millimetres in length respectively.

Quite recently[1] I have separated this species along with *Macrones affinis* (Blyth)[2] and *M. dayi*, Vinciguerra,[3] into a distinct subgenus *Macronoides*. The fishes of this subgenus are readily distinguished by their short barbels which do not exceed the length of the head, by the possession of pores on the under surface of the head and by the fact that the mandibular pairs of barbels are placed in an almost horizontal line.

Macrones marianiensis is known from the Abor Hills and the base of the Darjiling Himalayas.

Olyra kempi, Chaudhuri.

1912. *Olyra kempi*, Chaudhuri, *Rec. Ind. Mus.* VII, p. 443, pl. xl, figs. 4, 4*a*, 4*b*.

Chaudhuri (*op. cit.*) described this species from five young specimens, the largest measuring 54 mm., which were collected by Dr. S. W Kemp in the Darrang District (Assam-Bhutan Frontier). There is one specimen in Mr. Shaw's collection which measures 78 mm. in length and which closely resembles the type-series except in colour. The Darjiling example is dusky with a black caudal fin. The under surface of the head is pale olivaceous while the belly is white. The longitudinal stripes on the body, which Chaudhuri described, are lacking.

In the specimen both the pectoral spines are broken which shows that the fish is regarded as poisonous by the local fishermen.

The species closely resembles *Olyra longicauda*, McClell., but in the absence of specimens from the Khasi Hills, it is impossible to make a detailed comparison between the two forms. They can, however, be distinguished by the number of rays in the anal fin. In *O. longicauda* there are said to be 23, while in *O. kempi* there are only 17–19.

Mr. Shaw collected his specimen in the Sivoke River at an altitude of 500 ft. at the base of the Darjiling Himalayas. This is only the second record of this genus from the Eastern Himalayas.

Pseudecheneis sulcatus (McClell.).

1842. *Glyptosternon sulcatus*, McClelland, *Calcutta Journ. Nat. Hist.* II, p. 587, figs. 1, 2 and 3.

---

[1] Hora, *Rec. Ind. Mus.* XXII, pp. 179, 180 (1921).

[2] Blyth, *Journ. As. Soc. Bengal* XXIX, p. 150 (1860).

[3] Vinciguerra, *Ann. Mus. civ. Stor. Nat. Genova* XXIX, p. 230, pl. vii, fig. 3 (1889).

1860. *Pseudecheneis sulcatus*, Blyth, *Journ. As. Soc. Bengal* XXIX, p. 154.
1919. *Pseudecheneis sulcatus*, Chaudhuri, *Rec. Ind. Mus.* XVI, p. 278 (see references).

Of all the hill-stream fishes with which I am personally acquainted, this species has the widest range. McClelland (*op. cit.*) described it for the first time from the "Kasyah mountains." Day[1] recorded it from the Darjiling District and Chaudhuri[2] extended its range to the Abor Hills. Vinciguerra[3] found some specimens of this species in Fea's collection from Khakhyen (Kachin) Hills and Chaudhuri (*op. cit.*) has recently recorded it from Upper Burma. It is interesting to find that a fish so highly specialized for life in rapid running waters should be distributed over so wide an area.

The only specimen in Mr. Shaw's collection measures 75 mm. including the caudal fin. It was procured by him in the Reang River at an altitude of 2000 ft. in the Darjiling District.

Amblyceps mangois (Ham. Buch.).

1919. *Amblyceps mangois*, Chaudhuri, *Rec. Ind. Mus.* XVI, p. 275 (see references).

There is only one specimen of this species from the Sivoke River (alt. 500 ft.) in the Darjiling District. It measures 68 mm. in length without the caudal fin and is a ripe female. The eggs are large and I have been able to count about 36 in this specimen. The diameter of the mature egg was found to be 2·2 mm.

This species is widely distributed in the fresh waters of Northern India and Burma and usually occurs along the bases of the hills.

Erethistes elongata (Day).

1871. *Hara elongata*, Day, *Proc. Zool. Soc. London*, p. 704.
1878. *Erethistes elongata*, Day, *Fish. Ind.* II, p. 453, pl. cii, fig. 5.
1889. *Erethistes elongata*, Day, *Faun. Brit. Ind. Fish.* I, p. 207.

Erethistes elongata has hitherto been known from a single specimen found in "a stream near the Garraw Hills." Day in his later works gives the Naga Hills, probably in error. Mr. Shaw's example was procured in the Mahanadi River near Siliguri, at the base of the Darjiling Himalayas; it is 50 mm. in length without the caudal fin and is longer than the type-specimen figured by Day. I give below the measurements of the two specimens for comparison.

Measurements in millimetres.

	A (type).	B.
Total length of body (excluding caudal)	45·0	50·?
Length of head	9·5	9·6
Width ,, ,, ...	7·0	7·8

[1] Day, *Fish. Ind.*, II, p. 500, pl. cxvi, fig. 1 (1878); *Faun. Brit. Ind. Fish.* I, p. 107, fig. 44 (1889).
[2] Chaudhuri, *Rec. Ind. Mus.* VIII, p. 255 (1913).
[3] Vinciguerra, *Ann. Mus. civ. Stor. Nat. Genova* XXIX, p. 252 (1889-90).

	A (type).	B.
Depth of body	6·7	7·8
Diameter of eye	1·3	1·3
Length of snout	5·0	5·6
Interorbital width	3·2	3·7
Length of caudal peduncle	10·8	13·5
Least height of caudal peduncle	2·7	2·2
Distance from tip of snout to anterior origin of dorsal fin	17·0	18·2
Distance from base of caudal fin to anterior origin of dorsal fin	28·5	32·0
Distance from tip of snout to anal opening	24·0	26·8
Distance from base of caudal fin to anal opening ...	21·5	23·4
Length of dorsal spine	11·2	13·5
,, ,, pectoral spine	11·6	12·8
Length of ventral fin	6·8	7·0
,, ,, anal fin	7·0	8·0

Erethistes elongata is abundantly distinct from the remaining species of this genus and is easily recognised by its elongate form and short scapular processes. It also possesses a well-marked tubercle in the middle of the upper jaw. In other species of the genus the scapular processes are long and the skin covering the belly is smooth, but in *E. elongata* the scapular processes are short and the skin on the under surface is thrown into grooves and ridges. These longitudinal folds of skin extend from between the bases of the pectoral fins to the ventrals; they appear to have a definite biological significance, and are probably used by the fish in adhering to rocks and stones in rapid running waters.

The fish is black in colour throughout with the exception of the chest, which is dirty white. The fins are marked with white bands.

Laguvia, gen. nov.

The genus *Laguvia* may be characterized as follows :—

The head and body are slightly depressed and the skin covering the belly is corrugated, suggesting an adherent function. The pectoral fins are provided with strong denticulated spines; the dorsal spine is strong and bony and may or may not be serrated anteriorly. The adipose dorsal is short but well marked. The mouth is subterminal and is surrounded by thick lips. There are eight barbels, one pair of nasal, one pair of maxillary and two pairs of mandibular. The nostrils are situated close together and are separated by a flap bearing the nasal barbel. The gill-openings are wide and almost meet each other in the middle on the under surface. The occipital and cubito-humeral process are present. There is a short scapular process which may or may not be followed by bony tubercles posteriorly. The eyes are minute and are situated on the dorsal surface of the head. The air-bladder is divided into two lateral chambers which are not enclosed in bone.

The new genus comprises small fish inhabiting rapid running waters at the base of mountains. It closely resembles *Erethistes*, Müll. and Trosch., from which it can be readily distinguished by the nature of its gill-openings which are very wide. From the genus *Glyptothorax* it differs in the possession of scapular, pro-

cesses, the presence of free bony tubercles on the sides of the body and in the absence of a well-marked adhesive apparatus on the chest. In most respects the genus is intermediate between *Erethistes* and *Glyptothorax*.

I refer to this genus *Pimelodus asperus*, McClell.,[1] besides two new species from the base of the Darjiling Himalayas described below. McClelland's species was described from Chusan in China; it has been referred to the genus *Hara*, Blyth, both by Günther[2] and Bleeker,[3] while Chaudhuri[4] has quite recently recorded it as *Erethistes asperus* from Upper Burma (N. Frontier).

Laguvia shawi, sp. nov.

(Pl. XXIX, fig. 2).

This species comprises small subcylindrical fish in which the head is slightly depressed and the body arched both above and below. The dorsal profile rises considerably from the tip of the snout to the base of the dorsal, beyond which it slopes down to the root of the caudal. The belly bulges somewhat downwards. The head is long and broad; its length is contained about 3·3 times in the length of the fish without the caudal fin. It is 1·2 times as long as broad. The snout is broad and almost semicircular in outline; it is as long as the post-orbital part of the head. The eyes are minute and are situated on the dorsal surface of the head in the middle; they are not visible from below. The mouth is a wide transverse slit on the under surface of the head a short distance behind the tip of the snout. The nostrils are situated close together and are separated from each other by a membranous flap bearing the nasal barbel; they are situated at an equal distance from the tip of the snout and the anterior margin of the eye. There are eight barbels; those of the maxillary pair are broad at their bases and reach the bases of the pectoral fins. The outer mandibular barbels are longer than the inner and are slightly shorter than the maxillary barbels. The nasal barbels are as long as the distance between the nostrils and the middle of the eye; they are short and thin and are apt to be overlooked. The dorsal fin commences greatly in advance of the ventrals and its origin is much nearer to the tip of the snout than to the base of the caudal fin; its first divided ray is the longest but is not so high as the depth of the body below it, it contains 5 or 6 branched rays and two spines anteriorly. The dorsal spine is strong and bony; it is smooth anteriorly but somewhat roughened posteriorly. The pectoral fin is almost as long as the head and is provided with a strong spine which is serrated externally but internally it possesses about 7 hooked spines. The ventrals are not

---

[1] McClelland, *Calcutta Journ. Nat. Hist.* IV, p. 404, pl. xxiv, fig. 2 (1844).
[2] Günther, *Cat. Brit. Mus. Fish.* V, p. 189 (1864).
[3] Bleeker, *Ned. Tijdschr. Dierk.* IV p. 105 (1873).
[4] Chaudhuri, *Rec. Ind. Mus.* XVI, p. 276, pl. xxii, figs. 2, 2*a*, 2*b*.

separated from the pectorals by any great distance; their origin is distinctly nearer to the root of the caudal fin than to the tip of the snout. The ventrals almost reach the base of the anal fin which contains 9 rays, the anteriormost of which is not branched. The caudal fin is long and its free posterior border is almost semicircular; the two extremities are sharp and pointed.

The air-bladder has receded inwards towards the vertebral column and consists of two chambers, one on either side of the basioccipital process of the skull. The occipital, cubito-humeral and the scapular processes are finely tuberculated and there is a bony nodule covered by skin below the base of the dorsal spine.

Colour.—The sides and dorsal surface of the head are black; the ventral surface is dull white. The general colouration of the body is pale yellow, but the sides are marked with two broad black bands formed by an aggregation of black dots. The anterior band is below the bases of the anterior dorsal fins and the posterior band is situated below the bases of the adipose dorsal and the anal fins. The fins are indistinctly marked with black bands.

Type-specimen.—F 10085/1, *Zool. Surv. Ind.* (*Ind Mus.*).

Locality.—There are three specimens in Mr. Shaw's collection, two from the Mahanadi River and one from the Sivoke River. Both these rivers flow at a very low altitude at the base of the Darjiling Himalayas.

Measurements in millimetres.

Total length including caudal fin	30·0
Length of caudal fin	5·4
Depth of body	5·0
Length of head	8·0
Width ,, ,,	6·5
Length of snout	4·0
Interorbital width	2·5
Height of dorsal spine	4·2
Length of pectoral spine	5·5

One of the specimens on dissection was found to be full of eggs. The eggs are small in this species.

Laguvia ribeiroi, sp. nov.

Pl. XXIX, fig. 3.

This species differs from the preceding in several respects and was obtained by Mr. Ribeiro in an adjacent locality. The following table shows some of the salient points in which the two species differ:—

L. shawi, sp. nov.	*L. ribeiroi*, sp. nov.
1. The nostrils are equidistant from the tip of the snout and the anterior margin of the eye.	The nostrils are nearer to the tip of the snout than to the anterior margin of the eye.
2. The origin of the ventral fin is distinctly nearer to the base of the caudal than to the tip of the snout.	The origin of the ventral fin is almost equidistant from the tip of the snout and the base of the caudal fin.

3. The dorsal spine is almost smooth along both the borders.	The dorsal spine is finely serrated along the whole of its anterior border and also along the upper one-third of the posterior border.
4. The skin covering the belly is smooth.	The skin covering the belly is corrugated to form a kind of rudimentary adhesive apparatus.

Besides these points the two species differ in proportions and colouration. Moreover the eggs of *L. shawi* are minute whereas those of *L. ribeiroi* are much larger.

L. ribeiroi is a small subcylindrical fish with the head and body slightly depressed. The dorsal profile rises gradually from the tip of the snout to the base of the dorsal fin, beyond which it falls to the root of the caudal fin. The ventral profile is somewhat arched. The head is short and broad; its length is contained about 3·7 times in the length of the fish without the caudal fin. The eyes are minute and are situated almost in the middle of the head on the dorsal surface; they are not visible from below. The mouth is situated on the under surface slightly behind the tip of the snout and is bordered by moderately thick lips. The nostrils are situated close together, they are nearer to the tip of the snout than to the anterior margin of the eye. The gill-openings are very wide. There are 8 barbels, the maxillary barbels are provided with broad bases and do not reach the base of the pectoral fins. The skin covering the belly is thrown into oblique grooves and ridges which form a **V**-shaped adhesive apparatus similar to that found in the genus *Glyptothorax* but not so well-developed. The dorsal fin commences somewhat in advance of the ventrals and its origin is much nearer to the tip of the snout than to the root of the caudal fin; it is provided with a strong spine and six rays. The dorsal spine is not so high as the depth of the body below it; it is serrated along the whole of its anterior border and along the upper part of its posterior border. The pectoral is slightly shorter than the head and is separated from the ventrals by a short distance. The pectoral spine is flat and strong; externally it is serrated but internally it is provided with eight curved spines. The ventrals just extend beyond the anus but do not reach the base of the anal fin which contains 10 rays. The caudal fin is long and its free posterior border is semicircular; the two extremities are sharply pointed, the lower is slightly longer than the upper.

The scapular process is small and there are a number of bony tubercles behind the gill-opening in a horizontal line. The bones of the head and the various processes are slightly corrugated but not distinctly tuberculate.

Colour.—The sides and the dorsal surface of the head and body are dark; the ventral surface is dull white, speckled with black dots. There are two broad yellowish bands on the body; the anterior is between the rayed dorsal and the adipose dorsal fins and the second is below the posterior half of the base of the

adipose fin. The adipose dorsal is dusky, while the other fins are distinctly banded.

Type-specimen.—F 10086/1, *Zool. Surv. Ind.* (*Ind. Mus.*).

Locality.—There is a single specimen collected by Mr. Ribeiro in the Khoila River, a tributary of the Tista at Jalpaiguri in the Darjiling District.

Measurements in millimetres.

Total length including caudal	31·5
Length of caudal fin	6·4
Depth of body	5·8
Length of head	7·5
Width ,, ,, ...	6·5
Length of snout	3·6
Interorbital width	2·5
Height of dorsal spine	5·3
Length of pectoral spine	6 5

The specimen is a female and was found on dissection to be full of eggs. The eggs are large; the longest diameter being 1·4 mm.

Besides the ten species of fish discussed in the foregoing pages the following species were also represented in Mr. Shaw's collection:—

Callichrous pabda (Ham. Buch.).
Macrones vittatus, Bloch.
Pseudeutropius murius (Ham. Buch.).
Garra gotyla (Gray).
Garra annandalei, Hora.
Semiplotus semiplotus (McClell.).
Barbus stigma (Ham. Buch.).
Barbus conchonius (Ham. Buch.).
Danio aequipinnatus (McClell.).
Danio rerio (Ham. Buch.).
Rasbora daniconius (Ham. Buch.).
Nemachilus botius (Ham. Buch.).
Nemachilus multifasciatus, Day.
Lepidocephalichthys guntea (Ham. Buch.).
Ophiocephalus gachua (Ham. Buch.).
Glossogobius giuris (Ham. Buch.).
Dorichthys deocata (Ham. Buch.).

In addition there are some specimens of the genus *Nemachilus* which I have not been able to refer to any known species.

Quite recently Dr. Murray Stuart of the Geological Survey of India has brought back a small collection of fish from the North-Eastern border of Burma and the Naga Hills. He has very kindly presented this collection to the Indian Museum. I have been able to identify the following fish in this collection:—

Garra gotyla (Gray).
Crossochilus latia (Ham. Buch.).
Barbus clavatus (McClell.).

Barbus ticto (Ham. Buch.).
Barbus conchonius (Ham. Buch.).
Barbus chrysopterus (McClell.).
Danio aequipinnatus (McClell).
Rasbora rasbora (Ham. Buch).
Barilius vagra (Ham. Buch.).
Nemachilus botius (Ham. Buch.).
Ambassis nama (Ham. Buch.).