

942. *Geronticus papillosus*.
 944. *Phanicopterus antiquorum*, very rare.
 950. *Sarcidiornis melanonota*.
 951. *Nettapus Coromandelianus*.
 952. *Dendrocygna arcuata*.
 954. *Casarca rutila*.
 961. *Chaulelasmus streperus*; and doubtless all the other common migratory ducks, but from the nature of the tanks, it is unusually difficult to get at them, and I have shot none except the gadwall and the following:
 964. *Querquedula crecca*.
 965. *Q. circa*.
 969. *Aythya nyroca*.
 975. *Podiceps Philippensis*.
 987. *Sterna javanica*. I have also, I think, seen *Seena aurantia* and one or two other species.
 1007. *Graculus javanicus*.
 1008. *Plotus melanogaster*.

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 MONOGRAPH OF INDIAN CYPRINIDÆ, (*Part II*)—  
 by Surgeon F. DAY.

[Continued from p. 143, with pl. xxi.]

Genus. CARASSIUS, Nilsson.

*Abdomen rounded: mouth anterior, arched, and rather narrow, lips thin. Snout obtuse and rounded. No barbels. Pharyngeal teeth compressed and in a single series, 4/4. Dorsal fin long, commencing opposite the ventrals and having its last undivided ray osseous and serrated: last undivided anal ray osseous and normally serrated. Scales of moderate size. Lateral line complete to the centre of the base of the caudal fin.*

*Geographical distribution.* Temperate portions of Europe and Asia; having been domesticated it has degenerated into numerous varieties.

*Synopsis of species.*

1. *Carassius auratus*, D.  $\frac{3}{16-18}$ , A.  $\frac{3}{5}$ . From rifle green to silver or orange colours. Upper Burma, Bombay?



## 1. CARASSIUS AURATUS.

*Cyprinus auratus*, Linn., Sys. Nat., vol. i, p. 527; Bl. Schn., p. 439; Lacép., vol. v, p. 553; Cuv. and Val., vol. xvi, p. 101; Richard. Ich. China, p. 293.

*Carassius auratus*, Bleeker, Atl. Ich. Cyp., p. 74; Günther, Catal., vol. vii, p. 32, (where see synom.)

? ? *Cyprinus nukta*, Sykes, Trans. Zool. Soc., vol. ii, p. 355.

B. III, D.  $\frac{3}{16-18}$ ; P. 17; V. 9; A.  $\frac{3}{5}$ ; C. 19; L. l. 27—29;  
L. tr.  $\frac{6\frac{1}{2}}{10}$ ; Vert. 18/13.

Length of head  $\frac{2}{9}$ : of caudal  $\frac{2}{11}$ : height of body  $\frac{2}{7}$ : of dorsal spine  $\frac{1}{6}$  of the total length.

Eyes. Diameter  $\frac{1}{4}$  of length of head:  $1\frac{1}{4}$  diameters from end of snout: 2 diameters apart.

Fins. Last undivided dorsal ray osseous and serrated.

Lateral line—complete, from  $5\frac{1}{2}$  to  $6\frac{1}{2}$  rows of scales between it and the base of the ventral fin.

Colours. Rifle green when in the wild state.

The gold carp is too well known to require any detailed description. Colonel Sykes records having obtained a variety of it in the Deccan, but he also remarked it had “two tendrils on the lower jaw.” Admitting this to be so, it could not have been this species to which, however, it has been referred by Yarrell, Rüppell, and Günther: Mr. Masters likewise sent three adult specimens from India to the British Museum, still I very much question if they were captured there in their wild state, the nearest point, where they are obtained in a state of nature, being high up in Upper Burma.

The almost endless deformities, into which this species has been bred, may be briefly defined as follows. Vertebral column only deformed: fins also abnormal, the dorsal being decreased or even absent: the anal spine double: caudal enlarged and with three or four lobes. Occasionally the eyes are protruding.

Col. Sykes observes the “Nukta” is found at Mahloongeh, 18 miles north of Poona in the Inderanee river, and that it has “two knobs or short horns on the nose between the eyes.” Dr. Jerdon informs me it is not *C. auratus*, its native name at Poona is *Donton-di*, whilst the knob is single not double.

*Hab.* Upper Burma.



Genus. SEMILOTUS, Bleeker. Pl. xxi, fig. 1.

*Abdomen rounded: mouth wide, transverse, slightly curved, inferior, with a knob at the symphysis. Snout thick and prominent. Intermaxillaries more or less adherent to the maxilla, and but slight powers of motion exist in the upper jaw. No barbels. Pharyngeal teeth (in S. modestus) 4, 3, 2/2, 3, 4. Dorsal fin long, its last undivided ray being strong, osseous, and either serrated or entire. Anal rather short. Scales large. Lateral line passing to the centre of the base of the caudal fin.*

*Geographical distribution.* Assam and Hill ranges on the Tenasserim coast.

*Synopsis of species.*

A. *Serrated dorsal ray.*

1. *Semilotus modestus*, D. 4/20; A. 3/6; L. l. 32—34. Last undivided dorsal ray osseous and serrated. *Akyab.*

B. *Smooth dorsal ray.*

2. *Semilotus M'Clellandi*, D. 3/25; A. 2/7; L. l. 27. Last undivided dorsal ray osseous and entire; silvery. *Assam.*

A. *Serrated dorsal ray.*

1. SEMILOTUS MODESTUS. Pl. xxi, fig. 1.

Day, Proc. Zool. Soc., 1870, p. 101.

B. III. D. 4/20; P. 15; V. 9; A. 3/6; C. 19; L. l. 32—34; L. tr.  $7\frac{1}{2}/7\frac{1}{2}$ .

Length of head 2/9: of caudal 2/9: height of body nearly 1/3 of the total length.

Eyes. Diameter 1/3 of length of head: 1 diameter from end of snout:  $1\frac{1}{2}$  diameters apart.

Snout broad, obtuse, with several open pores on either side. Mouth inferior, transverse: no horny substance on the jaws, mandible not covered by the lip, a knob at the symphysis. Slight motion between the maxillary and intermaxillary bones. The posterior extremity of the maxilla extends to beneath the middle of the orbit. Barbels absent.

Teeth, pharyngeal, 4, 3, 2/2, 3, 4,

Fins.—Dorsal fin commences anterior to the origin of the ventral and extends to above the anal, its last undivided ray is osseous and serrated.



Colours.—Silvery, darkest in the upper half of the body. Ventrals and anal tipped with orange.

*Hab.* Hill ranges near Akyab in the Tenasserim provinces; two specimens obtained up to  $5\frac{1}{2}$  inches in length.

B. *Smooth dorsal ray.*

## 2. SEMIPLLOTUS M'CLELLANDII.

*Cyprinus semiplotus*, M'Clell., Ind. Cyp., pp. 274, 346, pl. xxxvii, fig. 2. \* Cuv. and Val., vol. xvi, p. 68.

*Semiplotus M'Clellandii*, Bleeker, Atl. Ich. Cyp., p. 25.

*Sundaree and Sentoree, Assam.*

B. III. D.  $\frac{3}{25}$ ; P. 16; V. 10; A.  $\frac{2}{7}$ ; C. 19; L. 1. 27; L. tr.  $\frac{6}{5}$ .

Length of head  $\frac{1}{6}$ : of caudal  $\frac{1}{5}$ : height of body  $\frac{4}{17}$ , according to a bad skin.

Eyes. Diameters  $\frac{2}{7}$  of length of head: 1 diameter from end of snout, and 2 diameters apart.

Snout thick, prominent, with a row of pores across it.

Fins. Osseous dorsal ray, strong, smooth, its stiff portion being three quarters the length of the head.

Lateral line—rather concave.

*Hab.* Assam.

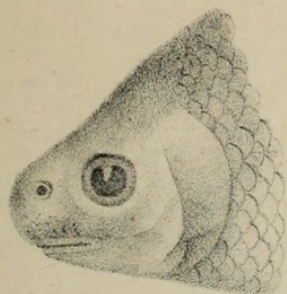
*Genus.* CATLA, Cuv. and Val. Pl. xxi, fig. 2.

GIBELION, Heckel.

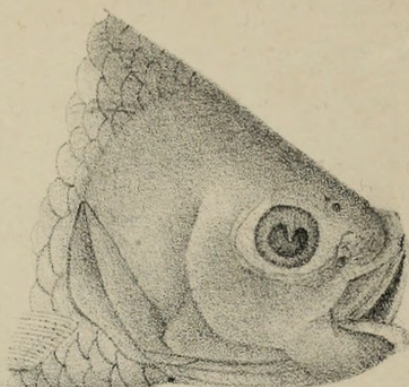
HYPSELOBARBUS, Bleeker.

*Head broad: snout with very thin integuments, and no upper lip, whilst the inferior is moderately thick, with a continuous free posterior margin. The lower jaw with a moveable articulation at the symphysis, but destitute of any prominent tubercle. No barbels. Gill rakers long, rather strong and moderately wide apart in the adult, but fine and closely set in the immature. Eyes with free orbital margins. Pharyngeal teeth plough-shaped, 5, 3,  $\frac{2}{2}$ , 3, 5. Dorsal fin rather long, without osseous ray, whilst it commences somewhat in advance of the ventrals: anal short: caudal forked. Scales of moderate size, no tiled ones along the base of the anal fin. Lateral line continuous to the centre of the base of the caudal fin.*

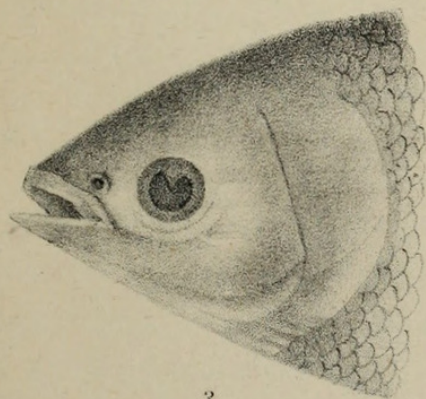




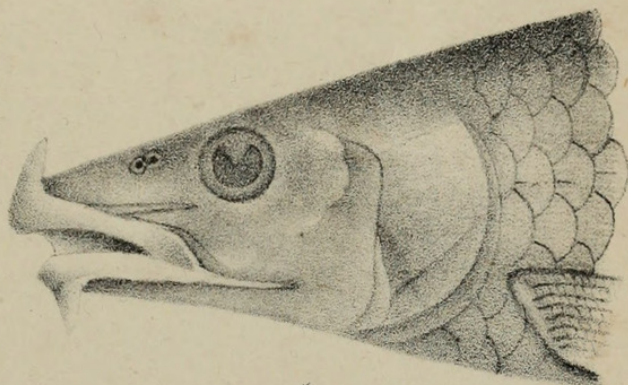
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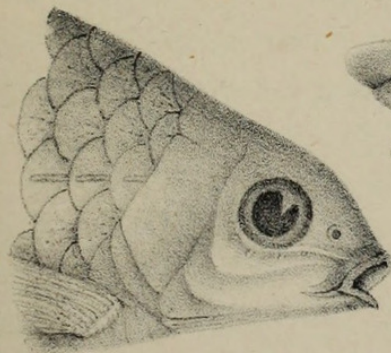
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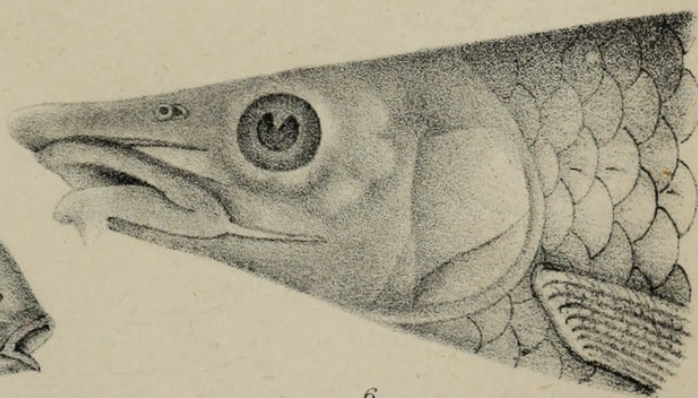
3.



5.



4.



6.

1. *Semiplotus modestus*.

2. *Catla Buchanani*.

3. *Mola harengula*.

4. *Barbus parrah*.

5. " " *tor.*

6. " " (variety)







*Geographical distribution.* This fine fish appears to be absent from Southern India; commencing to be found in the Kistna at Masulipatam it extends to the Punjáb, also the N. W. Provinces and throughout Bengal, Assam and Burma so far as the Pegu river. It is said, however, not to exist in Tenasserim. If Sykes's *Cyprinus abramioides* is this species, it is also found in the Deccan.

*Synopsis of species.*

1. *Catla Buchanani*. D.  $\frac{3-4}{13}$ ; A.  $\frac{3}{5}$ ; L. l. 40—43; L. tr.  $\frac{7\frac{1}{2}}{9}$ ; from the Kistna through Hindústán to Pegu in Burma.

1. CATLA BUCHANANI. Pl. xxi, fig. 2.

*Cyprinus catla*, Ham. Buch., Fishes of Ganges, pp. 287, 318, 387, pl. 13 f. 81; McClelland, Ind. Cyp. pp. 275, 348,\* Cuv. and Val. xvi, p. 433.

*Leuciscus catla*, Val. in Bel. Voy. Ind. Orient. p. 379, pl. 3, f. 2.

*Catla Buchanani*, Cuv. and Val., xvii, p. 411. pl. 515; Bleeker, Verh. Bat. Gen., xxv. Beng. and Hind. p. 142; Günther, Catal., vii. p. 34; Day, Proc. Zool. Soc., 1869, p. 370.

? *Cyprinus abramioides*, Sykes, Trans. Zool. Soc. ii, p. 353, pl. 61, f. 2.

*Hypselobarbus (Tambra) abramioides*,\* Bleeker, Pro. Cyp. p. 275.

*Botchee*, Telugu: *Catla*, Bengal. Hind. and Punj.: *Barkur*, Ooriah: *Nga-thaing*, Burmese: *Tambra*? Hind. in Bombay: *Boassa*, Hind. in N. W. Provinces.

B. III. D  $\frac{3-4}{14}$ , P. 21, V. 9, A  $\frac{3}{5}$ , C. 19, L. l. 40-43, L. tr.  $\frac{7\frac{1}{2}}{9}$ , Vert. 17/18.

Length of head  $\frac{1}{5}$ , of base of dorsal  $\frac{1}{5}$ , of caudal  $\frac{1}{5}$ , height of body  $\frac{1}{7}$ , of the total length.

Eyes. Diameter  $\frac{1}{6}$  of length of head: 2 diameters from end of snout: 3 diameters apart.

Body elevated.

Lower jaw longest, the posterior extremity of the upper jaw extending to below the nostrils. In large specimens some fine pores on the snout.

Teeth, pharyngeal, plough-shaped, 5, 3,  $2\frac{1}{2}$ , 3, 5.

Fins. Dorsal arises rather in advance of the ventral, caudal deeply lunated. Some males have the fins elongated.

Scales. From six to six and a half rows of scales between the lateral line and base of ventral fin.



Lateral line—complete to the centre of the base of the caudal fin.

Colours. Greyish above, more silvery below. Fins dark coloured, sometimes black. The colouration varies with the season and locality.

Grows to six feet in length; is much esteemed as food when up to two feet long, but when larger becomes coarse. "There is no species" observes McClelland "of more importance than this in an economic point of view. Buchanan informs us, it is light and wholesome food; the head he remarks is peculiarly delicious: this I can also answer for, and am at a loss to know why it should have been so long overlooked by our epicures."

*Hab.* Hindústán and the Punjáb, extending westwards to the Kistna and eastwards to the Pegu river.

It resides in brackish or fresh water, and is found within tidal influence, "but it lives and attains a great size in tanks and ponds quite unconnected with tides and currents, so that it is capable of being introduced wherever there is fresh water." (McClelland.) "It is a very strong active animal and often leaps over the seine of the fishermen, on which account when fishing for the *Catla*, they usually follow the net in canoes, and make a noise by shouting and splashing with their paddles." (Ham. Buchanan.) It is said never to take a bait, but as it rises at natural flies, it could probably be taken with artificial ones.

At Coconada exists a moderately sized tank of fresh water fed from the irrigation canal; this had not been netted for three years; at one haul 27 large fishes of this species were captured varying in size from 5 to 9 lb. each, and these were irrespective of a very large quantity of smaller fishes and younger ones of this sort. There is perhaps no carp more adapted for introducing into the Cauvery, as it could easily be sent from Masulipatam by steamer to Madras and from thence by rail to the railway station on the Madras side of Trichinopoly, and there turned direct into the Cauvery river. It is largely employed for stocking tanks, as at two years old it grows to about 10 lb. in weight.



Genus. *MOLA*, Heckel. Pl. xxi, fig. 3.

*Thynnichthys*, pt., Bleeker.

*Amblypharyngodon*, pt., Bleeker.

*Brachygramma*, pt. Day.

*Pseudobranchiæ* present. *Abdomen* rounded. *Head* compressed: integuments over snout thin: upper lip absent: only a short labial fold on the side of the mandible. *Mouth* rather wide, antero-lateral, with the lower jaw somewhat prominent. *No barbels*. *Gill rakers* very short or absent. *Eyes* in the middle of the depth of the head, and without any adipose membrane. *Pharyngeal teeth* molar-form, close together, 5, 3 or 4, 2 or 3/2 or 3, 4 or 3, 5: or 5 or 3, 2 or 3 or 4, 2 or 1/1 or 2, 4 or 3 or 2, 3 or 5. *Dorsal fin* short without osseous ray, commencing nearly opposite the ventrals: anal short. *Scales* small. *Lateral line* complete, running to the centre of the base of the caudal fin, (*Thynnichthys* Bleeker); or incomplete (*Amblypharyngodon*, Bleeker). *Intestinal tract* narrow, and with numerous convolutions.

*Geographical distribution.* Throughout the continent of India, Burma and East Indian Archipelago.

#### Synopsis of species.

##### A. Lateral line, complete. (*Thynnichthys*.)

1. *Mola harengula*, D. 3/9. A. 3/5. L. r. 120. L. tr. 22/25. Kistna and Godavery.

##### B. Lateral line incomplete. (*Amblypharyngodon*)

2. *Mola Buchanani*, D. 2/8. A. 2/5. L. l. 55-75. Dorsal arises opposite inner ventral ray. Orissa through Bengal to Burma.

3. *Mola melettinus*, D. 2/8. A. 2/5. L. l. 50-57. Dorsal arises behind the ventrals. Southern India.

4. *Mola Atkinsonii*, D. 3/5. A. 2/5. L. l. 55. Body deep, nearly 1/3 of the total length. Burma.

##### A. Lateral line complete, (*Thynnichthys*.)

1. *MOLA* (*Thynnichthys*) *HARENGULA*, pl. xxi, fig. 3.

*Leuciscus harengula*, Cuv. and Val., xvii, p. 303, pl. 500.

*Kala-tala* and *Ahku-chappah*, Tel.

B. III. D. 3/9, P. 19, V. 9, A. 3/5, C. 19, L. r. 120, L. tr. 22/25.

Length of head 1/4: of caudal 1/4: height of body 1/4: of dorsal fin 1/5 of the total length.



Eyes. Diameter  $\frac{1}{3}$  of length of head :  $1\frac{1}{2}$  diameters from end of snout :  $1\frac{1}{2}$  diameters apart.

A small tubercle above symphysis of the lower jaw.

Teeth pharyngeal,—4, 4,  $\frac{3}{3}$ , 4, 4, the crowns somewhat resembling the inferior surface of a grain of wheat.

Fins. Dorsal commences above the ventral and slightly nearer the snout than the base of the caudal, which latter is forked and its lower lobe the longest.

Scales. Seventeen rows between the lateral line and the base of the ventral fin.

Colours. Silvery, head purplish.

*Hab.* Godavery and Kistna rivers, where it attains above a foot in length ; it also breeds in tanks.

#### B. *Lateral line incomplete.* (*Amblypharyngodon.*)

##### 2. MOLA (*Amblypharyngodon*) BUCHANANI.

*Cyprinus mola*, Ham. Buch., pp. 334, 392, pl. 38, f. 92 ;\* Cuv. and Val., xvi, p. 440.

*Leuciscus mola*, McClelland, Ind. Cypr., pp. 293, 407 ; Bleeker, Verh. Bat. Gen., Beng. en Hind., p. 140.

*Leuciscus pellucidus*, McClelland, l. c. pp. 293, 408.

*Mola Buchananii*, Blyth, J. A. S. of Beng. 1860, p. 164.

*Leuciscus microlepis*, Bleeker, Verh. Bat. Gen., xxv, Beng. en Hind. p. 141.

*Rhodeus macrocephalus* ? Jerdon, M. J. L. & S. 1849, p. 324.

*Amblypharyngodon mola*, Bleeker, Prod. Cyp. p. 409 ; Günther, Catal. vii, p. 202.

*Amblypharyngodon microlepis*, Bleeker, l. c. p. 409.

*Amblypharyngodon pellucidus*, pt. Günther, l. c. p. 202.

*Talla-maya*, Tel. : *Morara*, Ooriah : *Moah*, Assam : *Mukni*, Punj. : *Nga-beh-byoo* and *Nga-zen-zap*, Burmese.

B. III. D.  $\frac{2}{8}$ , P. 15, V. 9, A.  $\frac{2}{5}$ , C. 19, L. 1, 55-75, L. tr.  $\frac{25}{28}$ .

Length of head from  $\frac{1}{4}$  to  $\frac{2}{9}$  : height of body from  $\frac{1}{4}$  to  $\frac{1}{5}$  of the total length ; but the relative proportions vary much in different localities.

Fins. The origin of the dorsal arises in a line with the inner ventral ray.

Scales. The numbers are subject to a wide variation.



Colours. A silvery band along the middle of the side.

*Hab.* Orissa, Bengal, N. W. Provinces, Punjáb, Assam, and Burma, rarely attaining above 4 inches in length.

### 3. MOLA (*Amblypharyngodon*) MELETTINUS.

*Leuciscus melettinus*, Cuv. and Val., XVII, p. 304, pl. 501.

? „ *sandkhol* and *chitul*, Sykes, T. Z. S. ii, p. 363.

*Rhodeus Indicus*, Jerdon M. J. L. and S., 1849, p. 324.

*Brachygramma Jerdoni*, Day, Proc. Zool. Soc. 1865, p. 304.

*Amblypharyngodon Jerdoni*, Day, Fishes of Malabar, p. 217, pl. 17, f. 1.

„ *melettinus*, Günther, Catal. vii, p. 202.

*Wumboo*, Mal.; *Oolaree*, Tam.; *Kali-korafi*, Hind.; *Paraga*, Can. *Muckni*, Punj.

B. III. D  $\frac{2-3}{7}$ , P. 15, V. 9, A.  $\frac{2-3}{5}$ , C. 19, L. 1. 50-57.

Length of head  $\frac{1}{5}$ : of caudal  $\frac{1}{5}$ : height of body  $\frac{1}{4}$  of the total length.

Fins. The origin of the dorsal is behind the root of the ventral.

Colour. A silvery band along the side.

*Hab.* Southern India and the Western coast, rarely reaching 4 inches in length.

### 4. MOLA (*Amblypharyngodon*) ATKINSONII.

*Mola Atkinsonii*, Blyth, J. A. S. of Beng., 1861, p. 164.

*Nga-pan-ma* Burmese.

B. III, D.  $\frac{3}{5}$ , P. 15, V. 9, A.  $\frac{2}{5}$ , C. 19, L. 1. 55, L. tr.  $\frac{11}{11}$ .

Length of head  $\frac{1}{4}$ : of caudal  $\frac{1}{5}$ : height of body nearly  $\frac{1}{3}$  of the total length.

Eyes. 1 diameter from end of snout.

Fins. Dorsal commences midway between the anterior margin of the orbit and the base of the caudal fin.

Lateral line—ceases after 19 scales, there are six rows between it and the base of the ventral fin.

*Hab.* Burma. This is the deepest and largest of the species of this genus which have an incomplete lateral line. It is frequently obtained 6 inches in length.



*Genus.*—BARBUS, Cuv. and Val. Pl. xxi. figs. 4-6.

*Puntius*, pt. Ham. Buch.

*Labeobarbus*, *Varicorhinus*, pt. Rüpp.

*Systomus*, pt. McClell.

*Capoëta*, sp. Cuv. and Val.

*Pseudobarbus*, Bielz.

*Luciobarbus*, Heckel.

*Cheilobarbus*, sp. Smith.

*Balantiocheilus*, *Hemibarbus*, *Cyclocheilichthys*, *Siaja*, *Anematischthys*, *Hypsobarbus*, *Gonoproktopterus*, *Gnathopogon*, *Hampala*, sp. Bleeker.

*Enteromius*, sp. Cope.

*Mouth* arched, jaws closely invested by the lips which may have leathery lobes, but no inner fold or horny covering. Barbels four (*Barbodes*, Bleeker.): or two (*Capoëta*, Cuv. and Val.): or none (*Puntius*, H. Buch.). Eyes without adipose lids. Pharyngeal teeth 5 or 4, 3 or 4, 2 or 3/2 or 3, 3 or 4, 4 or 5. Dorsal fin rather short, its last undivided ray being either ossified and serrated or entire, or articulated and not osseous; it commences nearly opposite the root of the ventrals: anal rather short, in some species its second ray ossified. Scales large, of moderate or small size: anal scales not enlarged. Lateral line complete, or incomplete, when the former continued to opposite the centre of the base of the caudal fin.

This most extensive genus has been subdivided by various authors into numerous genera and sub-genera, but, passing gradually one into another, they have in the majority of instances failed to be permanently accepted. The three sub-genera of those with 4, 2, or 0 barbels is useful and apparently correct, for the occasional abnormal absence of one or more of these appendages in fish which are so extensively kept in an artificial state in tanks, does not appear sufficient reason why such natural subdivisions should be excluded from ichthyological systems. It is likewise remarkable that nearly all forming the sub-genus *Barbodes*, provided they are soberly coloured, and either have or are deficient in the lateral blotch, grow to a large size: the brilliant coloured ones are mostly residents of mountain streams, or of rivers contiguous to hills and they are generally small. Those of the sub-genus, *Capoëta*,



never grow to the size attained by the *Barbodes*: some, more especially when residing in mountain streams, have a vivid colouration. The species of the sub-genus *Puntius* are mostly of small size, whilst a few are brilliantly coloured. Amongst these sub-genera a most natural subdivision appears to be into those with the last undivided dorsal ray osseous and serrated or smooth, or others in which the bony element is absent: whilst even further subdivisions, are easily made, if desired, into whether the fin rays are elongated, and the lateral line is complete or incomplete.

*Geographical distribution.* Representatives of this genus exist in most, if not all, Indian and Burmese rivers and tanks, the larger species being generally termed Mahseers. Some attain an enormous size as 90 lb. and upwards, these are more residents in rivers along the bases of hills or large rapids, but a few have even a more extended range. In an economic point of view, this genus is very valuable as food, whilst owing to the extensive range of some, it appears, that considerable variations occur which have been defined as separate species.

#### SYNOPSIS OF SPECIES.

##### A. *With four barbels, (Barbodes.)*

##### a. *Last undivided dorsal ray, osseous and serrated.*

1. *Barbus chagunio*, D. 3/8. A. 3/5. L. l. 44-47. Pores on snout and head. Colours uniform. Orissa, Bengal and Behar.

2.\* *Barbus clavatus*, D. 11. A. 8. L. l. 42. Pores on snout. Colours uniform, Sikkim.

3. *Barbus immaculatus*, D. 3/8. A. 3/5. L. l. 32-33. No pores on snout. Colours uniform. Bengal, Assam, Sikkim, N. W. Provinces.

4. *Barbus sarana*, D.  $\frac{3-4}{8}$ . A. 3/5. L. l. 29-31. Colours uniform. Caudal stained in Burma. India, Ceylon and Burma.

5. *Barbus pinnauratus*, D. 3/8. A. 2/6. L. l. 27-29. A black lateral blotch, fins orange. Indus, Bombay, Kurnool, Malabar.

6. *Barbus pleurotænia*, D. 3/8. A. 2/6. L. l. 28. A black band from eye to middle of tail. Ceylon.

7. *Barbus goniosoma*, D. 3/8. A. 2/5. L. l. 24. Serrated dorsal ray weak. Colours uniform. Mergui.

8.\* *Barbus roseipinnis*, D. 3/8. A. 2/5. L. l. 22. Caudal, anal and ventrals red. Pondicherry.

9.\* *Barbus rodactylus*. Fins red. Assam.



b. *Last undivided dorsal ray, osseous and entire.*

10. *Barbus dubius*, D. 4/9. A. 2/5. L. 1. 42. No pores on snout. 5 rows of scales between l. l. and base of ventral fin. Dorsal spine strong. *Madras.*

11. *Barbus Mysorensis*, D. 4/9. A.  $\frac{2-3}{5}$ . L. 1. 40. Dorsal spine strong, 3 rows of scales, between l. l. and base of ventral fin. *Mysore, Madras, and Western coast.*

12. *Barbus Carnaticus*, D. 4/8. A.  $\frac{2-3}{5}$ . L. 1. 30-32. Dorsal spine strong. 2½ rows of scales between l. l. and base of ventral fin. *Madras and Western coast.*

13. *Barbus Jerdoni*, D. 3/9. A. 3/5. L. 1. 28. Dorsal spine weak, 4 rows of scales between l. l. and base of ventral fin. *Canara.*

14. *Barbus hexastichus*, D.  $\frac{3-4}{9}$ . A.  $\frac{2}{5-6}$ . L. 1. 25-27. Dorsal spine strong. 2½ rows of scales between l. l. and base of ventral fin. *Himalayas, Cashmere, Sikkim.*

15. *Barbus mosal*, D.  $\frac{3}{9}$ . A.  $\frac{2-3}{5}$ . L. 1. 25-27. Dorsal spine strong, no lobed lips, 2½ rows of scales between l. l. and base of ventral fin. *Hilly regions of India.*

16. *Barbus tor*, D. 3/9. A. 2/5. L. 1. 23-27. Dorsal spine strong. Upper jaw longest, lips lobed. 2½ rows of scales between l. l. and base of ventral fin. *Rapids throughout India.*

17. *Barbus sophore*, D. 3/9. A. 2/5. L. 1. 25. Dorsal spine weak, 2¾ rows of scales between l. l. and base of ventral fin. *Bengal.*

18. *Barbus innominatus*, D. 3/9. A. 2/5. L. 1. 24. Dorsal spine weak, 3 rows of scales between l. l. and base of ventral fin. *Ceylon.*

19. *Barbus Neilli*, D. 4/9. A. 3/5. L. 1. 24-26. Dorsal spine weak. 4½ rows of scales between l. l. and base of ventral fin. *Kurnool in Madras.*

20. *Barbus compressus*, D. 3/9. A. 3/5. L. 1. 22. Dorsal spine weak. 3½ rows of scales between l. l. and base of ventral fin. *Cashmere?*

21. *Barbus micropogon*, D. 2/8. A. 3/5. L. 1. 38. Dorsal spine weak. 2½ rows of scales between l. l. and base of ventral fin. *Assam?*

22. *Barbus chilinoides*, D.  $\frac{3-4}{7}$ . A. 2/5. L. 1. 32-35. Dorsal spine strong. 3 rows of scales between l. l. and base of ventral fin. *Ganges and Himalyas.*

23. *Barbus Stracheyi*, D. 2/9. A. 2/5. L. 1. 23. Dorsal spine strong. 2½ rows of scales between l. l. and base of ventral fin. *Tenasserim and Burma.*

c. *No osseous dorsal ray.*

24. *Barbus pulchellus*, D. 4/9. A. 3/6. L. 1. 30. 4 rows of scales between l. l. and base of ventral fins, upper half of body, dark coloured. *Canara.*

25.\* *Barbus spinulosus*, D. 3/9. A. 2/5. L. 1. 32. *Sikkim.*



26. *Barbus Stevensonii*, D. 3/9. A. 3/5. L. 1. 27,  $2\frac{1}{2}$  rows of scales between l. l. and base of ventral fin. *Akyab.*
27. *Barbus Blythii*, D. 3/9. A. 3/5. L. 1. 22.  $2\frac{1}{2}$  rows of scales between l. l. and base of ventral fin. *Tenasserim.*
28. *Barbus melanampyx*, D. 3/8, A. 2/5 L. 1. 20, 2 rows of scales between l. l. and base of ventral fin. Red with three vertical black bands. *Rivers along Western Ghauts.*

B. *With two barbels (Capoëta).*

a. *With osseous serrated dorsal ray.*

29. *Barbus hampal*. D. 4/8. A. 2/6, L. 1. 26,  $3\frac{1}{2}$  rows of scales between l. l. and base of ventral. *Tavoy.*

b. *Osseous dorsal ray, entire.*

30. *Barbus dorsalis*, D.  $\frac{3-4}{8}$ . A. 3/5, L. 1. 24. Dorsal ray moderately strong,  $2\frac{1}{2}$  rows of scales between l. l. and base of ventral fin. *Madras and Ceylon.*
31. *Barbus chola*. D. 3/8. A. 2/5, L. 1. 26. Dorsal ray moderately strong, 3 to  $3\frac{1}{2}$  rows of scales between lateral line and base of ventral fin. *India and Burma.*
32. *Barbus amphibius*. D.  $\frac{2-3}{8}$ . A. 2/5. L. 1. 23. Dorsal ray feeble, 2 rows of scales between l. l. and base of ventral fin. *Western coast of India.*
33. *Barbus parrah*. D. 3/8 A. 3/5 L. 1. 25. Dorsal ray moderately strong. *Southern India.*
34. *Barbus titius*. D. 3/8. L. 1. 25, complete. Two black spots. *Bengal and N. W. Provinces.*
35. *Barbus thermalis*. D. 3/8. A. 3/5. L. 1. 25. incomplete. Dorsal ray moderately strong,  $3\frac{1}{2}$  rows of scales between l. l. and base of ventral fin. *Mysore, Ceylon, Cachar.*
36. *Barbus tepidus*. D. 3/8 A. 2/5 L. 1. 21. Dorsal ray feeble, the divided rays elongate, 2 rows of scales between l. l. and base of ventral fin. *Southern India and Ceylon.*

c. *No osseous dorsal ray.*

37. *Barbus kolus*, D.  $\frac{3-4}{9}$ . A. 3/5. L. 1. 40—42; 4 rows of scales between l. l. and base of ventral fin. *Deccan, also Kistna river.*
38. *Barbus curmuca*. D. 3/8. A. 3/5. L. 1. 42. L. tr. 18. *Southern India.*
39. *Barbus Denisonii*. D.  $\frac{2-3}{8}$ . A. 3/5. L. 1. 28, 2 rows of scales between it and ventral fin. Body longitudinally banded. *Hill ranges of Travancore.*
40. *Barbus arulius*. D. 3/8. A. 2/5. L. 1. 23. L. l. concave. Body vertically banded. *Western Ghauts.*
41. *Barbus Puckelli*. D. 2/7. A. 3/5. L. 1. 24. *Mysore.*



C. *Without barbels (Puntius).*a. *With osseous serrated dorsal ray.*

42. *Barbus apogon*. D.  $4/8$ . L. 1. 36, complete; 4 to  $4\frac{1}{2}$  rows of scales between l. l. and ventral fin. Each scale with a dark base. *Burma*.

43. *Barbus ambassis*. D.  $3/8$ . L. 1. 36, incomplete, 6 rows of scales between it and ventral fin. Uniform. *Continent of India*.

44. *Barbus conchoni*. D.  $3/8$ . L. 1. 26, incomplete,  $4\frac{1}{2}$  rows of scales between it and ventral fin. A black spot on side over anal fin. *Bengal and Behar*.

45. *Barbus gelius*, D.  $3/8$ . L. 1. 25, incomplete, black band over tail, a black spot across the bases of the first 6 dorsal rays, and another over base of anal. *Orissa and Bengal*.

46. *Barbus ticto*, D.  $3/8$ . L. 1. 23, incomplete. Two black spots, one at commencement of lateral line, another at the side of the tail. *Throughout India, except Malabar coast*.

47. *Barbus punctatus*, D.  $3/8$ . L. 1. 23, complete. Two black spots, one below the commencement of lateral line, the other near its termination. *Malabar coast*.

48. *Barbus phutunio*, D.  $\frac{2-3}{8}$ . L. 1. 20—23, incomplete. Four vertical black bands on a brown body, and a dark one down the centre of the dorsal fin. *Bengal, Orissa and Ceylon*.

49. *Barbus nigrofasciatus*, D.  $3/8$ . L. 1. 20, complete. Three vertical black bands on body. *Southern Ceylon*.

50. *Barbus guganio*, D.  $2/8$ . L. 1. incomplete. *Bengal and Assam*.

51. *Barbus stoliczkanus*, D.  $2/8$ . L. 1. 25, complete. Two black marks on lateral line. *Eastern Burma*.

52. *Barbus pyrrhopterus*, D.  $2/7$ . L. 1. 22-24, complete. A dark spot near posterior end of the lateral line.

b. *Osseous dorsal ray, entire.*

53. *Barbus stigma*, D.  $3/8$ . L. 1. 25, complete. A dark mark near the posterior extremity of the lateral line, another across the base of the middle dorsal rays. *Throughout India and Burma*.

54. *Barbus chrysopterus*, D.  $3/8$ . L. 1. 23, complete. Fins black tipped. *N. India*.

55. *Barbus unimaculatus*, D.  $3/8$ . L. 1. 24, incomplete. A black mark at the base of each dorsal ray. *Tenasserim Provinces*.

56. *Barbus filamentosus*, D.  $3/8$ . L. 1. 21, complete. Branched dorsal rays elongated. A black mark near posterior end of lateral line, and each caudal lobe with a black extremity. *Malabar coast and Southern India*.



57. *Barbus terio*, D.  $3/8$ . L. 1. 21, incomplete. A black mark on side above the anal fin, sometimes continued by a band to the caudal, a second indistinct one under posterior end of dorsal. *Orissa and Bengal*.

58.\* *Barbus Duvaucelii*, D.  $2/8$ . L. 1. 27, complete. A black spot near the posterior end of the lateral line. *Bengal*.

59. *Barbus vittatus*, D.  $2/8$ . L. 1. 20—22, incomplete. Four black spots on the side, and a black streak down the dorsal fin. *Malabar and Mysore*.

c. *Without osseous dorsal ray.*

60. *Barbus Punjaubensis*, D.  $3/8$ . L. 1. 43, incomplete. A silvery band along the side, a black spot at base of caudal, and two first dorsal rays black. *Lahore in the Punjáb*.

61. *Barbus cosuatis*, D.  $3/8$ . L. 1. 22, incomplete. Uniform, a dark spot across the middle of the anterior anal rays. *Bengal*.

62.\* *Barbus presbyter*, D. 11. A. 7. L. 1. 26. Uniform. *Bombay*.

63. *Barbus puntio*, D.  $3/8$ . L. 1. 23, incomplete. A black band encircles the free portion of the tail. *Bengal and Burma*.

A. *With four barbels, (Barbodes).*

a. *Last undivided dorsal ray, osseous and serrated.*

1. BARBUS (*Barbodes*) CHAGUNIO.

*Cyprinus chagunio*, Ham. Buch., *Fishes of Ganges*, pp. 295, 387.

*Rohita chagunio*,\* Cuv. and Val., xvi, p. 257.

*Barbus chagunio*, McClelland, Ind. Cyp., pp. 272, 341; Day, Proc. Zool. Soc. 1869, p. 373.

„ *spilopholis*, McClell., l. c., pp. 272, 341, pl. 39, f. 4; \*Cuv. and Val., xvi, p. 171; Günther, Catal. vii, p. 96.

„ *Beavani*, Günther, Catal. vii, p. 96.

*Jerruah*, Beng. *Chaguni*, Behar.

B. III. D.  $3/8$ . P. 15. V. 9. A.  $3/5$ . C. 19. L. 1. 44—47.  
L. tr. 11/11.

Length of head  $1/5$ , of caudal  $1/5$ , height of body  $2/9$  of the total length.

Eyes. Diameter  $1/4$  of length of head,  $1\frac{1}{2}$  diameters from end of snout,  $1\frac{1}{2}$  diameters apart.

Suborbital region, cheeks and anterior superior margin of the orbit usually covered with numerous pores. Barbels slightly longer than the orbit. Mouth somewhat inferior but directed forwards.



Fins. Dorsal commences midway between the end of the snout and the base of the caudal fin, its last undivided ray is osseous, strong, with coarse teeth: the last few anal rays sometimes elongated, (*B. spilopholis*).

Lateral line,—complete, with from five and a half to six and a half rows of scales between it and the base of the ventral fin.

Colours. Uniform silvery, with a pinkish tinge, the scales towards the back sometimes being darkest at their bases.

McClelland considered *Barbus chagunio* and *B. spilopholis* merely as varieties of the same species, slightly differing in colour and also in the elongation of some of the last anal rays, and having seen specimens of the latter and many of the former, I certainly think him to be correct. I have taken both also at Delhi.

*Hab.* From Orissa throughout Bengal, Behar and North-West Provinces to the Punjáb, but apparently not extending into Madras or Burma. It attains a foot and a half in length.

Hamilton Buchanan has left amongst his drawings an excellent representation of this fish.

## 2. \*BARBUS (*Barbodes*) CLAVATUS.

McClelland, Calc. Journ. Nat. hist. 1845, p. 280, pl. 21, f. 2; \*Günther, Catal. vii. p. 97.

B. III. D. 11. A. 8. L. 1. 42.

Height of body more than the length of the head, and contained  $\frac{4}{15}$  in the total length without the caudal fin.

Eyes. Midway between snout and opercle.

Snout covered with small thorny tubercles. Barbels well developed, and equal in length.

Fins. Osseous dorsal ray, strong, serrated, and as high as the body, none of the anal rays prolonged.

Scales. Eleven and a half rows between the base of the ventral and the dorsal.

Colours. Uniform silvery.

*Hab.* Sikkim. Perhaps a variety of the last species.



3. BARBUS (*Barbodes*) IMMACULATUS.

*Systomus immaculatus*, McClell., Ind. Cyp., pp. 284, 380, pl. 44, f. 5.

„ *chrysosomus*, McClell., l. c. pp. 284, \*Cuv. and Val. xvi, p. 409.

*Cyprinus McClellandi*, Cuv. and Val., xvi, p. 390.

*Barbus Duvaucelii*, Cuv. and Val., xvi p. 167.

„ *immaculatus*, Günther, Catal. vii, p. 113.

B. III. D. 3/8. P. 15. V. 9. A. 3/5. C. 19. L. 1. 32-33. L. tr. 6/6.

Length of head 1/5, of caudal 1/5, height of body 3/10 of the total length.

Eyes. Diameter 1/4 of length of head, 1 diameter from end of snout.

Profile of back elevated. Barbels short.

Fins. Osseous dorsal ray of moderate strength, finely serrated posteriorly and its stiff portion being two-thirds as long as the head; the origin of the fin is midway between the end of the snout and the base of the caudal.

Scales. Four rows between the lateral line and the base of the ventral.

Colours. Greenish above, becoming white beneath; fins pale, opercles tinged with red.

*Hab.* Bengal, Assam, Sikkim and the N. W. Provinces. It is very closely allied to the *B. sarana*, H. B. McClelland appeared to consider it a variety, and he was probably correct, but more specimens are required for comparison.

4. BARBUS (*Barbodes*) SARANA.

*Kunnamoo*, *kakoo* and *kadoon*, Russell, Fish. Vizag. ii, pp. 82, 83, pl. 204.

*Cyprinus sarana*, Ham. Buch., Fish. Ganges, pp. 307, 388.

*Barbus sarana* and *deliciosus*, McClell., Ind. Cyp. pp. 272, 340, 341, pl. 39. f. 3; \*Cuv. and Val. xvi, p. 172.

„ *kakus*, \*Cuv. and Val., xvi, p. 153.

„ *gardonides*, Cuv. and Val., xvi, p. 156, pl. 456; Bleeker, Verh. Bat. Gen. Ned. Ind., xxv, p. 126; \*Jerdon, M. J. L. and S., 1849, p. 313.

„ *chrysopoma*, Cuv. and Val. xvi, p. 165, pl. 466; Day, Fishes Malabar, p. 208; Günther Catal. vii, p. 113.

„ *subnasutus*, Cuv. and Val., xvi, p. 154; \*Jerdon M. J. L. and S. 1849, p. 313.



*Barbus gibbosus*, Cuv. and Val., xvi, p. 155 ; \*Jerdon, M. J. L. and S. 1849, p. 313.

„ *rubripinnis*, Cuv. and Val., xvi, p. 194 ; Bleeker, Nat. Tyd. Ned. Ind. ix, p. 193 ; Günther, Catal. vii, p. 116.

„ *orphoides*, Cuv. et Val., xvi, p. 193.

„ *saramanella*, Bleeker, Verh. Bat. Gen. xxiii, Oost—Java, p. 16.

*Puntius (Barbodes) rubripinna*, Bleeker, Prod. Cyp., p. 338, and Atl. Ich. Cyp. p. 100, t. 33, f. 3.

*Systomus chrysopoma*, Jerdon, M. J. L. and S. 1849, p. 314.

*Barbus sarana*, Cuv. and Val., xvi, p. 151 ; Jerdon, M. J. L. and S. 1849, p. 312 ; Günther, Catal. vii, p. 121 ; Day, Proc. Zool. Soc. 1869, p. 374.

*Barbus caudimarginatus*, Blyth, J. A. S. of B. 1860, p. 157.

*Puntius chrysopoma*, Bleeker, Cobit. et Cyprin. Ceylon, in Mem. Soc. Harl. 1864, p. 15, t. 3, f. 1.

„ *sarana*, Stein., Sitz. Ak. Wiss. Wien. lvi.

*Barbus spilurus*, Günther, Catal. vii, p. 114.

*Munduttee*, Mal. ; *Pungella*, Tamil. ; *Giddi kaoli*, Durhie and Potah, Hind. ; *Gid-pakke*, Can. ; *Kannaku*, Tel. ; *Sarana*, Ooriah and Beng. *Jundoori*, Punj. ; *Nga-khon-mah-gyee* and *Nga-chong*, Burmese.

B. III. D.  $\frac{3-4}{8}$ . P. 15. V. 9. A.  $\frac{3}{5}$ . C. 19. L. l. 29—31. L. tr.  $\frac{5\frac{1}{2}}{5\frac{1}{2}}$ .

Length of head  $\frac{1}{5}$ , of caudal  $\frac{1}{5}$ , height of body  $\frac{2}{7}$  of the total length.

Eyes. Diameter in the immature  $\frac{2}{7}$ , in the adult  $\frac{1}{4}$  of the length of head, from 1 to  $1\frac{1}{4}$  diameters from end of snout, 2 diameters apart.

A considerable rise to the base of the dorsal fin : body compressed. Head moderately broad, with the interorbital space convex. Barbels about as long as the eye.

Fins. Origin of dorsal nearly opposite ventrals, and midway between the end of snout and base of caudal ; its last undivided ray osseous and serrated posteriorly, the strength of which varies with age and sex, its osseous portion is two-thirds as long as the head, but subject to slight variation either way.

Scales. There are from three to three and a half rows between the lateral line and the base of the ventral fin.

Colours. These vary considerably ; in some, more especially when not in the breeding season, they are uniform with or without a lateral blotch on the side of the tail generally darkest in the



immature. Occasionally, more especially amongst the young and breeding fish, each scale has a darkish base, which in Burma becomes almost black, as are also the lateral margins of the caudal fin: whilst some have a dark mark over the shoulder behind the opercles.

In one female specimen at Trichinopoly I found about 410,745 eggs.

*Hab.* This fish has a very extensive range, being found throughout India, Burma and Ceylon. In this extensive district, and subject to domestication, variations to a slight extent are perceptible, but not I think sufficient to form species, any more than are the varieties of the gold carp. But this is a matter of individual opinion, apparently not shared in by Bleeker or Dr. Günther. However I have personally examined at the British Museum the following specimens and the foregoing is the conclusion arrived at: The specimen of *B. rubripinnis*, C. V., received from Bleeker is identical with the variety termed *R. caudimarginatus*, Blyth. The *B. spilurus*, Günther, from Ceylon has the head a little sharper than other specimens and the barbels a trifle longer.\* I possess specimens from Malabar on the Western coast of India, to almost the extreme limits of British Burma, and from the intermediate districts, in all of which places this fish, which grows to upwards of two feet in length, is highly esteemed as food, and much employed for stocking tanks.

##### 5. BARBUS (*Barbodes*) PINNAURATUS.

? *Barbus Polydori*, Cuv. & Val, xvi, p. 170: \* Günther, Catal., vii, p. 122.

*Cyclocheilichthys pinnauratus*, Day, Proc. Zool. Soc. 1865, p. 300.

*Puntius pinnauratus*, Day, Fish. Malabar, p. 209. pl. 15, f. 2.

*Barbus pinnauratus*,\* Günther, Catal, vii, p. 114.

„ *Russellii*, Günther, Catal., vii, p. 121.

B. III. D. 3/8. P. 17. V. 9. A. 2/6. C. 21. L. 1. 27-29. L. tr. 6/5.

Length of head above 1/4, of caudal 1/4, height of body 1/3 of the total length.

Eyes. Diameter 1/4 of length of head, 1 diameter from end of snout: upwards of 1 diameter apart.

\* *Russell* described and figured the *B. sarana*; his other two species are doubtless identical, the first from a tank near Tartoor, the other from the Ankapilly tank.



Body compressed, dorsal profile elevated. Rostral barbels not so long as maxillary which nearly equal one diameter of the orbit.

Fins. Dorsal commences midway between the end of the snout and the base of the caudal, its last undivided ray being osseous, strong, finely serrated posteriorly with its stiff portion as long as the head without the snout.

Lateral line—complete.

Scales.  $3\frac{1}{2}$  rows between lateral line and base of ventral fin.

Colour. Silvery with a dark spot on the 24th to 28th scales of the lateral line. Opercles and fins orange except the caudal which is stained darkish at its margin.

*Hab.* Indus, Kurnool, and Malabar. It appears to be a small species, the largest I have taken was 5 inches in length.

#### 6. BARBUS (*Barbodes*) PLEUROTÆNIA.

*Puntius* (*Barbodes*) *pleurotænia*, Bleeker, Cobit. et Cypr. Ceylon, in Nat. Verh. Holl. Maatsch. Harl. 1864, p. 13, t. 8, f. 2.

*Barbus pleurotænia*, Günther, Catal., vii, p. 120.

B. III. D.  $\frac{3}{8}$ . P. 14. V. 9. A.  $\frac{3}{5}$ . C. 19. L. 1. 28. L. tr.  $5\frac{1}{2}$ .

Length of head about  $\frac{1}{5}$  ( $\frac{4}{21}$ ), of caudal  $\frac{1}{5}$ , height of body  $\frac{1}{4}$ , of dorsal fin  $\frac{2}{9}$  of the total length.

Eyes. Diameter  $\frac{2}{7}$  of length of head,  $1\frac{1}{4}$  diameters from end of snout, and slightly more apart.

Body compressed and elevated: upper jaw slightly the longest.

Barbels somewhat longer than the orbit.

Fins. Dorsal commences over the ventral, and midway between the end of the snout and the base of the caudal; its last undivided ray is osseous, very strong, serrated posteriorly, and as long as the head, the upper margin of the fin concave; caudal forked.

Lateral line—complete,  $2\frac{1}{2}$  rows of scales between it and the root of the ventral.

Colour. A black band extends from the eye to the termination of the central caudal rays.

*Hab.* Ceylon.



7. \* BARBUS (*Barbodes*) GONIOSOMA.

*Puntius* (*Barbodes*) *goniosoma*, Bleeker, Prod. Cyp., p. 349, and Atl. Ich. Cyp. p. 105, t. 31, f. 1.

*Barbus goniosoma*, Günther, Catal. vii, p. 124.

B. III. D. 3/8. P. 15. V. 8. A. 2/5. C. 19. L. 1. 24. L. tr.  $4\frac{1}{2}/4\frac{1}{2}$ .

Length of head nearly  $1/5$ , of caudal  $2/11$ , height of body nearly  $1/3$ , of dorsal fin  $1/5$  of the total length.

Eyes. Diameter  $2/7$  of length of head,  $1\frac{1}{4}$  diameters from end of snout, and the same distance apart.

Body rather elevated to the base of dorsal fin, whilst it is strongly compressed.

Rostral barbels extend to below the middle of the eye; the maxillary ones to opposite the posterior margin of the orbit.

Fins. Dorsal commences slightly posterior to the ventrals, and midway between the anterior margin of the orbit and the base of the caudal; its spine is osseous, strong, as long as the head without the snout, and finely serrated posteriorly in its whole extent; the divided rays are longer than the osseous ones. Caudal forked, the lower lobe the longest.

Lateral line.  $2\frac{1}{2}$  to  $3\frac{1}{2}$  rows between it and the base of the ventral fin.

Colour. Silvery, fins orange.

*Hab.* Mergui to Sumatra. I have obtained specimens at the first place up to 6 inches in length.

8. \* BARBUS (*Barbodes*) ROSEIPINNIS.

*Barbus roseipinnis*, Cuv. and Val. xvi, p. 169.

B. III. D. 3/8. A. 2/5. C. 20. L. 1. 22.

Dorsal profile elevated.

Eyes large: four barbels.

Fins. Dorsal with its last undivided ray osseous, of moderate length and serrated.

Colour. Silvery: ventral, anal and caudal fins reddish, the lower border of the last tinged with black.

*Hab.* Pondicherry, from whence M. Belanger brought specimens  $4\frac{1}{2}$  inches in length. It would be worth while re-examining



the typical specimens, should they still exist. I have been at Pondicherry and collected as many species of fresh water fish as I was able, but could only find one *Barbus* (*Barbodes*), and that was *sarana* of which *roseipinnis* may possibly be a variety.

9. \* *BARBUS* (*Barbodes*) *RODACTYLUS*.

*Barbus rodactylus*, McClell., Ind. Cyp. pp. 273; \*Cuv. & Val. xvi, p. 173.

Four barbels.

Fins. Dorsal ray serrated, ten rays in the fin.

Colour. "Fins red and orange, except the dorsal and upper lobe of the caudal."

*Hab.* Lower Assam. Usual size about five inches in length.

b. *Last undivided ray, osseous and entire.*

10. *BARBUS* (*Barbodes*) *DUBIUS*.

*Puntius* (*Barbodes*) *dubius*, Day, Proc. Zool. Soc. 1867, p. 291.

*Barbus dubius*, \*Günther, Catal. vii, p. 127.

B. III. D. 4/9. P. 17. V. 9. A. 2/5. L. 1. 42. L. tr. 9/7.

Length of head nearly 1/5, of caudal a little above 1/4, height of body nearly 1/4 of the total length.

Eyes. Diameter 2/7 of length of head, 1½ diameters apart, and from end of snout.

Dorsal profile more convex than that of the abdomen. Barbels rather short, its two pairs being of about the same length and equal to half the diameter of the orbit. Snout somewhat elevated.

Fins.—Dorsal spine osseous, smooth, and strong, it is nearly as long as the head, commencing midway between the end of the snout and the base of the caudal.

Lateral line—complete; five rows of scales between it and the base of the ventral fins.

Colour. Uniform silvery.

*Hab.* Bowany river at the foot of the Neilgherries.

I have elsewhere expressed a doubt whether this may not eventually prove to be *B. Mysorensis*, Jerdon, there are, however rather smaller scales in this species.



11. BARBUS (*Barbodes*) MYSORENSIS.

*Barbus gracilis*, Jerdon, M. J. L. and S. 1849, p. 313, (not Schleg.)

„ *Mysorensis*, Jerdon, l. c.

*Puntius gracilis*, Day, Proc. Zool. Soc. 1867, p. 290 ; 1870, p. 290.

*Barbus conirostris*, Günther, Catal. vii, p. 127.

*Coatee candee*, Tamil.

B. III. D. 4/9. P. 17. V. 9. A.  $\frac{2-3}{5}$ . C. 19. L. 1. 40. L. tr. 7/7.

Length of head 1/5, of caudal 1/5, height of body 2/7, of dorsal fin 2/7 of the total length.

Eyes. Diameter 2/7 of length of head,  $1\frac{1}{4}$  diameters apart, and from end of snout.

Dorsal profile more convex than abdominal.

Snout conically pointed. Cleft of mouth extending scarcely half the distance to below the anterior margin of the orbit ; upper jaw slightly the longest. Rostral barbels extend to below the anterior third of the orbit, the maxillary ones to below its posterior margin.

Teeth, pharyngeal—crooked, pointed, 4, 3, 2/2, 3, 4.

Fins. Dorsal commences over the ventrals, its osseous ray is strong, smooth and somewhat compressed, its stiff portion being slightly longer than the head. Caudal deeply forked.

Lateral line—complete, with a slight downward bend in the first portion of its course ; 3 rows of scales between it and the base of the ventral fin.

Colours. Cheeks golden, body with a greenish tinge superiorly, becoming white below the lateral line, the base of each scale somewhat the darkest.

*Hab.* Rivers around the base of the Neilgherries, and Wynaad range of hills. It attains a large size, some were introduced by me into the Ootacamund lake.

12. BARBUS (*Barbodes*) CARNATICUS.

*Barbus Carnaticus*, Jerdon, M. J. L. S. 1849, p. 311 ; Günther, Catal. vii, p. 128.

*Puntius (Barbodes) Carnaticus*, Day, Proc. Zool. Soc. 1867, p. 292.

*Poaree candee*, *Saal candee*, *Shellee*, Tamil., *Giddi-kaoli*, Hind.

*Gid-pakke*, Can.

B. III. D. 4/8, P. 15, V. 9, A.  $\frac{2-3}{5}$ , C. 19, L. 1. 30—32, L. tr. 5/5.



Length of head  $2/11$ , of caudal  $1/6$ , height of body rather more than  $1/4$ , of dorsal  $1/7$  of the total length.

Eyes. Diameter  $1/4$  of length of head ;  $1\frac{1}{4}$  diameters from end of snout.

Body oblong and compressed. Dorsal profile more convex than the abdominal. Cleft of mouth extending to nearly below the anterior margin of the orbit. In adults the summit of the head is rugose, with a slight depression across the snout. Rostral barbels thin, they reach to the anterior margin of the orbit, the maxillary are shorter and thicker.

Teeth, pharyngeal—pointed and uncinatæ, 5, 3,  $2/2$ , 3, 5.

Fins. Dorsal nearly square, commencing midway between the snout and the base of the caudal fin ; osseous ray broad, strong, its stiff portion being as long as the head without the snout. Anal when laid flat reaches as far as the base of the caudal which last is deeply forked.

Lateral line—complete, first slightly descending ;  $2\frac{1}{2}$  rows of scales between it and the base of the ventral fins.

Colours. Brownish, dashed with green along the back, silvery white abdomen. Fins greyish. Eyes golden.

*Hab.* Rivers along the bases of the Neilgherries and Wynaad range of Hills. It grows to 25 lb. in weight. Some have been introduced by me into the lake at Ootacamund.

### 13. BARBUS (*Barbodes*) JERDONI.

Day, Proc. Zool. Soc. 1870, p. 372.

B. III. D.  $3/9$ , P. 15, V. 9, A.  $3/5$ , C. 19, L. 1. 28, L. tr.  $6/4$ .

Length of head  $1/6$ , of caudal  $1/4$ , height of body  $1/4$  of the total length.

Eyes. Diameter  $1/3$  of length of head ; 1 diameter from end of snout.

A considerable rise to the commencement of the dorsal fin ; body compressed.

The maxilla extends to below the anterior margin of the orbit. Barbels thin, the maxillary being as long as the orbit, the rostral slightly shorter.

Fins. Last undivided dorsal ray osseous but weak and not



enlarged, its stiff portion being as long as the head without the snout : the fin commences midway between the snout and the base of the caudal which last is forked.

Lateral line—complete, 4 rows of scales between it and the base of the ventrals.

Colours. Silvery, fins tipped with black.

*Hab.* Rivers in Canara below the Gháts. H. E. Thomas, Esq., gave me one specimen.

#### 14. BARBUS (*Barbodes*) HEXASTICHUS.

*Barbus hexastichus*, McClelland, Ind. Cyp. pp. 269, 333, pl. 39, f. 2; Günther, Catal vii, p. 129.

*Barbus hexagonolepis*, McClell., l. c. pp. 270, 336, pl. 41, f. 3.

*Lobura* and *Bokar*, Assam.

B. III. D.  $\frac{3-4}{9}$ , P 17, V. 9, A.  $\frac{2}{5-6}$ , C. 19, L. l. 25-27, L. tr.  $\frac{4-4\frac{1}{2}}{4-5}$ .

Length of head  $\frac{1}{6}$ , of caudal  $\frac{1}{5}$ , height of body  $\frac{2}{9}$  of the total length.

Eyes. Diameter  $\frac{1}{5}$  of length of head;  $1\frac{1}{2}$  diameters from end of snout; 2 diameters apart.

Interorbital space slightly convex; opercle higher than wide. Lips moderately thick, the lower one without a lobe, but having a shallow and continuous transverse fold. Mouth rather inferior, directed anteriorly; the upper jaw slightly the longest. Some pores on the cheeks.

Fins. Dorsal fin with its osseous ray, strong, smooth, and as long as the head without the snout; it commences somewhat nearer the snout than the base of the caudal, the latter being deeply forked, with the lower lobe the longest.

Lateral line—complete,  $2\frac{1}{2}$  rows of scales between it and the base of the ventral fin.

Colours—uniform silvery.

*Habitat.* Rivers around Himalayas, Cashmere, Sikkim and Assam. Growing to  $2\frac{1}{2}$  feet in length.

#### 15. BARBUS (*Barbodes*) MOSAL.

*Cyprinus mosal*, and *putitora*? Ham. Buch., Fish. Gang. pp. 303, 306, 388; Gray and Hard. Ind. Zool.; McClelland, Ind. Cyp. pp. 271, 303, 337, 388, pl. xli, f. 3; Cuv. and Val. xvi, p. 197; Jerdon M. J. L. and S. 1849, p. 311.



*Barbus megalepis*, McClelland., Ind. Cyp. pp. 271, 337.

„ *mussulah* ? Sykes, Trans. Zool. Soc. ii, pp. 356.

„ *Malabaricus et tristis*, Jerdon, M. J. L. and S. 1849, p. 312.

„ *macrocephalus*, McClell., Ind. Cyp. pp. 270, 335, pl. 55, f. 2 ; \*Cuv. and Val. xvi, p. 201 ; \*Günther, Cat. vii, p. 131 ; Day, Proc. Z. S. 1869, p. 556.

*Barbus mosal*, \*Cuv. and Val. xvi, p. 200 ; Day, Proc. Z. S. May, 1870, p. 372.

*Burapatra*, Assam.

B. III. D.  $\frac{3}{9}$ , P. 19, V. 9, A.  $\frac{2-3}{5}$ , C. 19, L. 1. 25-27, L. tr.  $\frac{3\frac{1}{2}-4}{4}$ .

Length of head  $\frac{2}{9}$ , of caudal  $\frac{1}{5}$ , height of body  $\frac{1}{5}$  of the total length.

Eyes. Diameter  $\frac{1}{4}$  of length of head ; nearly one diameter from end of snout, and apart.

Snout rounded and not compressed ; jaws of equal length ; mouth not deeply cleft ; no lobed cartilaginous lips. Four barbels.

Fins. As in *B. tor*.

Lateral line—complete, 2 to  $2\frac{1}{2}$  rows of scales between it and the base of the ventral fins.

Colours. Uniform silvery.

*Habitat*. Mountain streams or those which are rocky and not far distant from high lands. It occurs in Canara and generally throughout India in the localities specified. It attains 3 feet and more in length.

#### 16. BARBUS (*Barbodes*) TOR, pl. xxi, 5-6.

*Cyprinus tor*, Ham. Buch., Fishes of Ganges, pp. 305, 388.

*Barbus (Labeobarbus) Hamiltonii*, Gray and Hardwicke, Ind. Zool. pl. ; Jerdon M. J. L. and S. 1849, p. 311.

*Barbus progeneius*, McClell., Ind. Cyp. pp. 270, 334, pl. 56, f. 3 ; \*Cuv. and Val. xvi, p. 208.

? *Labeobarbus macrolepis*, Heckel, Fish. Kashmir, p. 60, t. 10, f. 2, \*Cuv. and Val. xvi, p. 209,

*Labeobarbus tor*, Bleeker, Cobit et Cyp. Ceylon in Nat. Verh. Holl. Maat. Haar. 1864, p. 10, f. 2. Day, Proc. Zool. Soc. 1867, p. 290 ; 1870, p. 372.

*Barbus khudree*, Sykes, T. Z. S. ii, p. 57.

*Barbus tor*, \*Cuv. and Val. xvi, p. 199.

*Barbus (Barbodes) tor*, Day, l. c. 1869, pp. 270, 334.

„ *mosal*, Günther, Catal. vii, p. 130.

„ *macrolepis*, \*Günther, Catal. vii, p. 131.

„ *longispinis*, Günther, Catal. vii, p. 132.



*Poo-meen-candee*, Tamil. ; *Naharm* Hind. ; *Kukkiah*, Punjáb.

B. III. D. 3/9, P. 18, V. 9, A. 2/5, C. 19, L. 1. 23-27, L. tr. 4/4.  
Vert. 20/21.

Length of head  $2/9$ , of caudal  $1/5$ , height of body  $1/5$  of the total length.

Eyes. Diameter  $1/4$  of length of head ; about 1 diameter from end of snout, and rather less apart.

Snout pointed and compressed, the lower jaw being the shortest ; mouth somewhat deeply cleft, whilst thick cartilaginous lips generally exist in both jaws forming a lobe above and below,\* the summit of the head being nearly flat. These lobes may be larger or smaller, but only designating varieties not distinct species ; and the same I consider with regard to the relative length of the dorsal spine (*B. longispinis*), and even in this last, besides the slight development of the lower lobe, the snout is rather pointed. Maxillary barbels longer than the rostral ones.

Teeth, pharyngeal—crooked, with sharp extremities 5, 3,  $2/2$ , 3, 5.

Fins. Dorsal spine strong, entire, and from half to as long as the head, varying in different localities, and amongst specimens in the same locality ; upper margin of fin slightly concave. Caudal deeply forked.

Lateral line—complete, 2 rows of scales between it and the base of the ventral fins.

Colours. Uniform silvery.

*Hab.* Mountain streams, or those which are rocky and not far removed from high land, throughout India. It has been taken from the Himalayas to the Neilgherries. In the Punjáb and N. W. Provinces it descends rivers and canals during the cold season, re-ascending when practicable towards their sources as the hot months set in. They appear to breed also in the vicinity of or on the hills, attaining 3 feet or more in length. The largest specimen I heard of weighed 92 lb., at which size the fish becomes coarse, oily and very inferior as food. Up to 20 lb. weight or

\* Amongst 20 specimens all of about 10 inches in length and taken the same day in the *Chukkee*, a hill affluent of the Sutlej, I found in two the snout elongated overhanging the upper jaw, in several the middle of the upper lip elongated, but to varying lengths, and in a smaller number no elongation of the upper lip. The median lobe of the lower lip was very variously produced, but apparent in all.



thereabouts they are excellent eating. A noted sportsman in the N. W. Provinces writing to me says, his largest fish taken with a rod and line was captured "in the river Poonch 24 miles from Jhelum, it measured from snout to bifurcation of tail 3 feet 11 inches and weighed 62 lb." \*\* "the cube of a fish's length gives his weight in pounds ; fish may vary a pound or two according to condition, but the test is wonderfully correct."

#### 17. BARBUS (*Barbodes*) SOPHORE.

*Cyprinus sophore*, Ham. Buch, Fish. Ganges, pp. 310, 389, pl. 19, f. 86.

? *Barbus micropogon*, Cuv. and Val., xvi, p. 188.

„ *sophore*, Day, Proc. Zool. Soc. 1869, p. 376, (not Günther).

B. III. D.  $3/9$ , P. 15, V. 9, A.  $2/5$ , L. l. 25, L. tr.  $3\frac{1}{2}/4\frac{1}{2}$ .

Length of head  $1/4$  of length of body, height of body slightly more.

Eyes. Rather more than  $1/3$  of length of head, 1 diameter from end of snout and apart.

Cleft of mouth extending to below the orbit. The rostral barbels reach the anterior margin of the eye, the maxillary ones to below its centre.

Fins. Dorsal ray weak, osseous, entire, and as long as the head without the snout : the fin arises slightly before the ventral, and midway between the end of the snout and the root of the caudal.

Lateral line— $2\frac{1}{2}$  rows between it and the base of the ventral.

There is an old bleached specimen in the Calcutta Museum\*  $3\frac{1}{2}$  inches long to the base of the caudal fin, which last is injured from pressure. Specimens in bottles should rest on their heads not on their more fragile tails. *Systomus sophore*, McClelland, is the same as *Barbus stigma*, C. V.

#### 18. BARBUS (*Barbodes*) INNOMINATUS.

*Leuciscus binotatus*, Blyth, J. A. S. of B., 1858, p. 290, (not K. and v. H.)

*Barbus innominatus*, Day, Proc. Zool. Soc. 1869, p. 556.

B. III. D.  $3/9$ , P. 15, V. 9, A.  $2/5$ , C. 17, L. l. 24, L. tr.  $4\frac{1}{2}/4\frac{1}{2}$ .

Length of head  $2/7$ , of caudal nearly  $2/7$ , height of body  $2/7$  of the total length.

\* Since the above was written the Museum has received about a dozen more small specimens from the Khasi Hills.



Eyes. Diameter  $\frac{2}{7}$  of length of head, 1 diameter from end of snout and apart.

Barbels four, the rostral nearly reach the orbit, the maxillary are shorter.

Fins. Last undivided dorsal ray weak, osseous, and smooth, the fin commences midway between the snout and the base of the caudal which last is forked in its posterior-two thirds.

Lateral line,—3 rows between it and the base of the ventral.

Colours. A black spot at the base of the caudal fin, none now apparent at the base of the dorsal.

*Hab.* Ceylon, the specimens in Calcutta are only  $1\frac{1}{10}$  inches in length.

#### 19. BARBUS (*Barbodes*) NEILLI.

*Barbus Neilli*, Day, Proc. Zool., Soc. 1868. p. 581.

B. III. D.  $\frac{4}{9}$ , P. 15, V. 10, A.  $\frac{3}{5}$ , L. l. 24-26, L. tr.  $\frac{4\frac{1}{2}}{4}$ .

Length of head  $\frac{2}{9}$ , of caudal  $\frac{1}{5}$ , height of body  $\frac{1}{3}$  of the total length.

Eyes. Rather high up. Diameter from  $\frac{2}{9}$  to  $\frac{1}{5}$  of the length of head,  $1\frac{1}{2}$  diameters apart and from end of snout.

Head somewhat conical at the snout. Cleft of mouth extending more than half way to beneath the anterior margin of the orbit. Upper jaw slightly the longest. Rostral barbels extend to below the anterior margin of the eye: the maxillary equal  $1\frac{1}{2}$  diameters of the orbit in length.

Teeth, pharyngeal, short, curved, 5, 3,  $\frac{2}{2}$ , 3, 5.

Fins. Dorsal osseous ray weak, entire, with its extremity articulated, the upper margin of the fin concave. Anal laid flat reaches the base of the caudal, the latter fin lunate.

Lateral line—complete,  $4\frac{1}{2}$  rows of scales between it and the base of the ventral.

Colours. Silvery above the lateral line, with a dash of yellow below it. Fins with a bluish tinge. Eyes golden.

*Hab.* Kurnool on the Tamboodra river. This splendid carp, one of the Mahseers of India, is said to attain 50 or 60 lb weight. One of 38 lb was personally examined.



20. BARBUS (*Barbodes*) COMPRESSUS.

Day, Proc. Zool. Soc. 1869, p. 555.

B. III. D.  $3/9$ , P. 15, V. 9, A.  $3/5$ , C. 17, L. 1. 22, L. tr.  $4/5$ .

Length of head  $1/5$ , of caudal  $1/5$ , height of body  $1/4$ , height of dorsal fin  $1/8$  of the total length.

Eyes. Diameter  $2/9$  of length of head,  $1\frac{1}{2}$  diameters from end of snout and apart.

Head much compressed; the whole of the cheeks covered with pores; the posterior extremity of the maxilla extends to below the anterior margin of the orbit. Rostral barbels reach to beneath the centre of the orbit, the maxillary to the angle of the pre-opercle. Mouth inferior, upper jaw the longest.

Fins. Dorsal arises midway between the snout and the base of the caudal, commencing slightly in advance of the ventrals, its last undivided ray is osseous, not enlarged, and entire. Upper caudal lobe longest.

Lateral line—complete,  $3\frac{1}{2}$  rows of scales between it and the base of the ventral fin.

Colours. Silvery, fins stained darker.

*Hab.* Probably Cashmere.

21. BARBUS (*Barbodes*) MICROPOGON.

Cuv. & Val., xvi, p. 188; Günther, Catal. vii. p. 126.

B. III. D.  $2/8$ , P. 15, V. 9, A.  $3/5$ , C. 19, L. 1. 38, L. tr.  $4\frac{1}{2}/5$ .

Length of head (in a stuffed specimen)  $2/13$ , of caudal  $1/6$ , height of body  $1/6$  of the total length.

The species is elongated; snout rather conical, with the mouth, though somewhat on the inferior surface, directed anteriorly, whilst the upper jaw is the longest.

Barbels apparently short.

Fins. Osseous dorsal ray strong, entire, its stiff portion being three quarters as long as the head, the fin commences opposite the ventrals, and midway between the end of the snout and the base of the caudal, the latter being deeply forked, and its lower lobe the longest. Pectoral extends half way to the base of the ventral.



Lateral line—complete,  $2\frac{1}{2}$  rows of scales between it and the root of the ventral fin.

*Hab.* ? Mysore. I have left this species under the above heading, but am very doubtful respecting its being Cuvier's fish. The specimen in the British Museum appears more like one of McClelland's and probably comes from Assam or Sikkim.

## 22. BARBUS (*Barbodes*) CHILINOIDES.

McClelland, Ind. Cyp., pp. 271, 340, pl. 57, f. 5; Günther, Catal. vii, p. 127.

*Barbus chelynoides*, \*Cuv. and Val., xvi, p. 201.

*Labeobarbus mosal*, Steind., Sitz. Ak. Wiss., Wien, lvi, t. 3.

B. III. D.  $\frac{3-4}{7}$ , P. 17, V. 9, A.  $\frac{2}{5}$ , C. 19, L. l. 32-35, L. tr.  $5\frac{1}{2}/5$ .

Length of head  $\frac{2}{11}$ , of caudal  $\frac{2}{11}$ , height of body  $\frac{2}{11}$ , of dorsal fin  $\frac{2}{13}$  of the total length.

Eyes. Diameter  $\frac{1}{5}$  of length of head,  $1\frac{2}{3}$  diameters from end of snout, and two diameters apart.

Mouth somewhat on the inferior surface, directed forwards, with the upper jaw slightly the longest; the snout overhangs the mouth. There are numerous fine glands over the cheeks and opercles; lips moderately thick, the lower without a lobe, but with a continuous transverse fold.

Fins. Osseous dorsal ray very strong, entire, its stiff portion being about three-fifths of the length of the head. Caudal deeply forked.

Lateral line—complete, there are three rows of scales between it and the base of the caudal fin.

Colours. Uniform, the scales in the upper half of the body with dark edges.

*Hab.* Ganges and Himalayas. Attains 8 inches in length.

## 23. BARBUS (*Barbodes*) STRACHEYI.

*Barbus Malabaricus*, Day, Proc. Zool. Soc. 1869, p. 619., (not Jerdon).

B. III. D.  $\frac{2}{9}$ , P. 17, V. 9, A.  $\frac{2}{5}$ , C. 17, L. l. 23, L. tr.  $3\frac{1}{2}/5$ .

Length of head  $\frac{1}{2}$  to  $\frac{2}{9}$ , of caudal  $\frac{1}{6}$ , height of body  $\frac{2}{7}$  of the total length.

Eyes. Diameter  $\frac{1}{5}$  of length of head,  $1\frac{1}{2}$  diameters from end of snout,  $2\frac{1}{2}$  diameters apart.



Mouth without enlarged lips ; upper jaw somewhat the longest. Summit of head flat. Barbels long, the rostral pair reaching to below the centre of the orbit, and the maxillary pair to beneath its posterior margin.

Fins. Dorsal osseous ray strong, smooth, and as long as the head without the snout, it commences midway between the end of the snout and the base of the caudal fin.

Lateral line,—complete,  $2\frac{1}{2}$  rows of scales between it and the base of the ventral fins.

Colours. Uniform silvery.

*Hab.* Akyab and Moulmein.

I have named this species after General Strachey, C. B., F. R. S., from whom I have received every assistance in prosecuting my enquiries into the fish and fisheries of India.

*c. No osseous dorsal ray.*

#### 24. BARBUS (*Barbodes*) PULCHELLUS.

Day, Proc. Zool. Soc. 1870, p. 372.

B. III. D.  $\frac{4}{9}$ , P. 17, V. 10, A.  $\frac{3}{6}$ , C. 19, L. 1. 30, L. tr.  $\frac{6}{5}\frac{1}{2}$ .

Length of head  $\frac{2}{9}$ , of caudal  $\frac{1}{5}$ , height of body  $\frac{2}{7}$ , of dorsal fin  $\frac{2}{9}$  of the total length.

Eyes. Diameter  $\frac{2}{7}$  of length of head,  $1\frac{1}{4}$  diameters from the end of the snout.

There is a very gradual rise from the snout to the base of the dorsal fin. Interorbital space nearly flat. Mouth of moderate width. The anterior two-thirds of the pre-orbital covered with large mucous pores. Four fine barbels, the maxillary pair being the longest, equalling one-third of the length of the head.

Teeth, pharyngeal,—crooked, pointed, 4, 3,  $\frac{2}{2}$ , 3, 4.

Fins. Dorsal arises slightly anterior to the ventral and rather nearer to the snout than the base of the caudal fin, its upper border is concave, it is two-thirds the height of the body, having its last undivided ray weak, smooth, and articulated. Anal of moderate size. Caudal deeply forked.

Scales. Four rows between the lateral line and the base of the ventral.

Lateral line—nearly straight.



Colours. All the scales above a line going direct from the eye to the centre of the caudal fin, are of a deep grey with dark bases ; below or in the inferior half of the body all are silvery grey.

*Hab.* Canara, frequenting the inland streams. One specimen  $17\frac{1}{2}$  inches long was given me by H. E. Thomas, Esq.

25. \*BARBUS (*Barbodes*) SPINULOSUS.

*Barbus spinulosus*, McClelland, Cal. Journ. Nat. Hist. 1845, p. 280, pl. 21, f. 3 ; \*Günther, Catal. vii, p. 128.

B. III. D.  $3/9$ , P. ? V. 9, A.  $2/5$ , L. 1. 32.

Length of head  $1/4$ , height of body nearly  $1/4$  of the total length.

Eyes. below the middle of the length of the head.

Dorsal profile but slightly arched. Snout short.

Fins. Dorsal without osseous ray, commencing midway between the end of the snout, and the base of the caudal.

Colours. Uniform silvery.

*Hab.* Sikkim.

26. BARBUS (*Barbodes*) STEVENSONII.

Day, Proc. Zool. Soc. 1870, p. 100.

B. III. D.  $3/9$ , P. 17, V. 9, A.  $3/5$ , C. 19, L. 1. 27, L. tr.  $4\frac{1}{2}/5$ .

Length of head  $2/9$ , of caudal nearly  $1/4$ , height of body  $2/9$  of the total length.

Eyes. Diameter  $2/7$  of length of head, 1 diameter from end of snout and apart.

Body elongated and compressed ; dorsal profile but little arched. Upper jaw the longest. Maxillary barbels extend to below the posterior extremity of the orbit, whilst the rostral are shorter.

Fins. Dorsal without an osseous ray ; it is slightly lower than the body, arising midway between the end of the snout and the base of the caudal, whilst it is slightly in advance of the ventrals.

Lateral line—complete ; there are  $2\frac{1}{2}$  rows of scales between it and the base of the ventral fin.

Colours. Silvery, with a black spot at the base of the caudal fin.

*Hab.* Hills near Akyab. I named this species after Col. Stevenson, Commissioner at Akyab, who procured me several new species of fish.



27. BARBUS (*Barbodes*) BLYTHII.

Day, Proc. Zool. Soc. 1869, p. 555.

B. III. D.  $3/9$ , P. 15, V. 9, A.  $3/5$ , C. 17, L. 1. 22, L. tr.  $4/5$ .

Length of head  $1/4$ , of caudal  $1/4$ , height of body  $2/7$  of the total length.

Eyes. Diameter  $2/5$  of length of head,  $3/4$  of a diameter from the end of snout and apart.

Pre-orbital covered with pores; opercle two-thirds as high as long. Barbels well developed, the rostral reaching the eye, and the maxillary to below the centre of the orbit.

Fins. Dorsal arises midway between the snout and the base of the caudal, its last undivided ray articulated; it commences slightly in advance of the ventrals. Caudal deeply forked.

Lateral line—complete.

Scales. Two and a half rows between the lateral line and the base of the ventral fin.

Colours. Uniform silvery in spirit.

*Hab.* Tenasserim provinces. Specimen two inches long.

28. BARBUS (*Barbodes*) MELANAMPYX.

*Cirrhinus fasciatus*, Jerdon, M. J. L. and S. 1849, p. 305, (not Bleeker.)

*Labeo melanampyx*, Day, Proc. Zool. Soc. 1865, p. 317.

*Puntius melanampyx*, Day, Fishes of Malabar, p. 210, pl. 16, f. 1.

*Barbus Grayi*, Day, Proc. Zool. Soc. 1867, p. 293.

*Barbus arulius*, Günther, Catal. vii, p. 133. (not Jerdon).

B. III. D.  $3/8$ , P. 15, V. 8, A.  $2/5$ , C. 15, L. 1. 20, L. tr.  $3\frac{1}{2}/3\frac{1}{2}$ .

Length of head  $2/9$ , of caudal  $1/4$ , height of body  $1/3$  of the total length.

Eyes. Diameter  $1/3$  of length of head, from  $3/4$  to 1 diameter from end of snout; 1 diameter apart.

Dorsal profile much more convex than that of the abdomen.

Cleft of mouth extends to below the anterior edge of the orbit. Rostral barbels short, the maxillary equal in length to one diameter of the orbit.

Teeth, pharyngeal,—in three rows, curved sharp, 5, 3,  $2/2$ , 3, 5.

Fins. Dorsal scarcely higher than long, no osseous ray; it com-



mences midway between the end of the snout and the base of the caudal fin, which latter is deeply forked.

Lateral line—complete and straight; two rows of scales between it and the base of the ventral.

Colours. Of a deep dull red with three black cross bands, the first from below the whole of the base of the dorsal to just beneath the lateral line, the second commences four scales beyond the posterior extremity of the base of the dorsal and descends to one scale below the lateral line, whilst the last is just before the base of the caudal and often wanting. Fins pinkish edged with black.

*Hab.* The Wynaad, Neilgherry and Travancore ranges of Hills and streams along their bases. It rarely attains three inches in length.

B. *With two barbels (Capoëta).*

a. *With osseous, serrated dorsal ray.*

29. BARBUS (*Capoëta*) HAMPAL.

*Capoëta macrolepidota*, Cuv. and Val., xvi, p. 280, pl. 477; Cantor, Mal. Fishes, p. 267; Bleeker, Verh. Bat. Gen. xxiii, Oost-Java, p. 21.

*Hampala macrolepidota*, (Kuhl and Van Hass.), Bleek., Prod. Cyp. ii, p. 308, and Atl. Ich. Cyp. p. 112, t. 38, f. 2.

*Barbus hampal*, Günther, Catal. vii, p. 139.

B. III. D. 4/8, P. 17, V. 9, A. 2/6, C. 19, L. 1. 26, L. tr. 5/5.

Length of head 2/9, of caudal nearly 2/9, height of body 1/4, of dorsal fin 2/11 of the total length.

Eyes. Diameter 1/5 of length of head, 1½ diameters apart, 1 diameter from end of snout.

Snout pointed, upper jaw slightly the longest; head compressed with its upper surface nearly flat. The posterior extremity of the maxilla extends to below the anterior edge of the orbit. No pores on the snout. The maxillary barbels as long as the orbit.

Fins. Dorsal commences slightly nearer the snout, than the base of the caudal, and a little in advance of the ventrals, its last undivided ray is weak, (scarcely osseous,) and finely serrated in nearly its whole extent. Caudal deeply forked.

Lateral line—with 3½ rows of scales between it and the base of the ventral fin.



Colours. Silvery, fins orange, anterior edge of the dorsal and margins of the caudal black. A badly developed darkish band from the dorsal to the ventral fin.

*Hab.* Tavoy to the Malayan Peninsula; a fine specimen, 9 inches long, was obtained by me from the first locality.

*b. Osseous dorsal ray entire.*

30. BARBUS (*Capoëta*) DORSALIS.

*Systomus dorsalis*, Jerdon, M. J. L. and S. 1849, p. 314.

*Barbus dorsalis*, Günther, Catal. vii, p. 142.

„ *tetraspilus*, Günther, Catal. vii, p. 142.

„ *Layardi*, Günther, Catal. vii, p. 144.

*Lambi kaoli*, Hin., *Saal candee*, Tam.; *Mar-pakke*, Can.

B. III. D.  $\frac{3-4}{8}$ , P. 15, V. 9, A.  $\frac{3}{5}$ , C. 19, L. 1. 24, L. tr.  $4\frac{1}{2}/4$ .

Length of head  $\frac{2}{9}$ , of caudal  $\frac{2}{9}$ , height of body  $\frac{2}{13}$  of the total length.

Eyes. Diameter about  $\frac{1}{4}$  of length of head, from  $1\frac{1}{4}$  to  $1\frac{1}{2}$  diameters from end of snout,  $1\frac{1}{2}$  diameters apart.

Body compressed, a considerable rise to the base of the dorsal fin, and a concavity slightly behind the occiput. The head is rather sharp anteriorly, the snout being somewhat pointed, and the upper jaw the longest. The posterior extremity of the maxilla only extends two-thirds of the distance to below the orbit. Barbels do not reach to beneath the eye.

Teeth, pharyngeal, 5, 3,  $\frac{2}{2}$ , 3, 5.

Fins. Dorsal commences over the ventral, and nearly midway between the end of the snout and base of the caudal, its last undivided ray is osseous, smooth, moderately strong, and its stiff portion as long as the head without the snout. Caudal forked.

Lateral line—complete.

Scales. About 8 rows between occiput and base of dorsal fin;  $2\frac{1}{2}$  rows between lateral line and base of ventrals.

Colours. Uniform silvery frequently dark grey. A black spot at the posterior portion of the base of the dorsal, which more or less disappears after maceration.

*Hab.* Kurnool, Mysore, Madras and Ceylon, but apparently not extending into Bengal. It does not attain a large size.



The body of *B. tatraspilus* differs from that of *B. dorsalis* in being less deep.

### 31. BARBUS (*Capoëta*) CHOLA.

*Cyprinus chola*, Ham. Buch., Fish. Gang. pp. 312, 389; \*Cuv. and Val. xvi, p. 410.

*Systomus chola*, McClelland, Ind. Cyp. pp. 286, 384, pl. 58, f. 3; Jerdon, M. J. L. and S. 1849, p. 316.

*Systomus immaculatus*, Blyth, J. A. S. of B. 1860, p. 157.

*Puntius (Capoëta) Javanica*, Bleek., Nat. Tyd. Ned. Ind. ix, p. 412.

„ „ *leiacanthus*, Bleek., Prod. Cyp., and Atl. Ich. Cyp. p. 109, t. 36, f. 1.

*Systomus sophore*? Bleeker, Verh. Bat. Gen. Ned. Ind. 1853, xv, Beng. p. 127.

? „ *Hamiltonii*, Jerdon, M. J. L. and S. 1849, p. 316.

*Puntius perlee*, Day, Malabar fish, p. 211.

? „ *Hamiltonii*, Day, l. c. p. 213.

*Barbus liacanthus*, Günther, Catal. vii, p. 141.

„ *chola*, \*Günther, Catal. vii, p. 143; Day, Proc. Zool. Soc. 1869, p. 374.

„ *sophoroides*, Günther, Catal. vii. p. 144.

*Koroon*, Tam.; *Kerrundi*, Beng.; *Nga-khon-ma*, and *Nga-lowah*, Burmese. *Pittha-kerrundi*, "bitter carp" Ooriah; *Chaddu paddaka*, Tel.; *Katcha karawa*, Hind.

B. III. D.  $\frac{3}{8}$ , P. 15, V. 9, A.  $\frac{2}{5}$ , C. 19, L. 1. 26, L. tr.  $5\frac{1}{2}/5$ .

Length of head  $\frac{2}{9}$ , of caudal  $\frac{2}{9}$ , height of body  $\frac{1}{3}$  of the total length.

Eyes. Diameter above  $\frac{1}{4}$  of length of head, 1 diameter from end of snout,  $1\frac{1}{4}$  diameters apart.

Maxillary barbels not so long as one diameter of the orbit. Jaws equal in front.

Fins. Dorsal commences slightly before the ventrals, and midway between the end of the snout and the base of the caudal, its last undivided ray is osseous, smooth, with the stiff portion moderately strong, and nearly as long as the head without the snout.

Lateral line—complete, from 3 to  $3\frac{1}{2}$  rows of scales between it and the base of the ventrals.

Colours. A dark blotch on the side of the tail, near the posterior end of the lateral line; generally a dark mark at the base of the



four first branched dorsal rays, and a row of black spots along its centre.

*Hab.* From Malabar throughout India and Burma. It attains to about 5 inches in length. Is bitter as food, but is used in places during the breeding season for obtaining oil from.

### 32. BARBUS (*Capoëta*) AMPHIBIUS.

*Barbus* (*Capoëta*) *amphibia*, Cuv. and Val. xvi, p. 282, pl. 478.

*Systomus amphibius*, Jerdon, M. J. L. and S. 1849, p. 315.

„ *Carnaticus*, Jerdon l. c. p. 315.

*Barbus amphibius*, Günther, Catal. vii, p. 144; Day, Proc. Zool. Soc. 1870, p. 373.

B. III. D.  $\frac{2-3}{8}$ , P. 15, V. 9, A.  $\frac{2}{5}$ , C. 19, L. 1. 23, L. tr.  $4\frac{1}{4}$ .

Length of head  $\frac{3}{14}$ , of caudal  $\frac{3}{14}$ , height of body  $\frac{3}{11}$  of the total length.

Eyes. Diameter  $\frac{2}{7}$  of length of head, 1 diameter from end of snout.

Mouth narrow, snout somewhat pointed, the upper jaw slightly the longest. Barbels small.

Fins. Dorsal fin  $\frac{2}{3}$  as high as body, with its osseous ray feeble, smooth, and half as long as the head, it arises somewhat in advance of the ventrals, and midway between the end of snout, and base of the caudal.

Lateral line—complete, there are two rows of scales between it and the base of the ventral fin.

Colours. Silvery, with a black spot on either side of the tail anterior to the caudal fin, this becomes indistinct after specimens have been long macerated, but is very apparent in fresh ones from the Western coast: it is not well marked and often absent in those taken in Bombay.

*Hab.* Bombay and the Western coast of India attaining about 6 inches in length.



33. BARBUS (*Capoëta*) PARRAH, pl. xxi, fig. 4.

*Puntius parrah*, Day, Proc. Zool. Soc. 1865, p. 301, and Malabar Fishes, p. 211, pl. 7, f. 3; Günther, Catal. vii, p. 142, (*passim*).

*Parrah perlee*, Mal.; *Katcha-karawa*, Hind.

B. III. D.  $\frac{3}{8}$ , P. 15, V. 9, A.  $\frac{3}{5}$ , C. 19, L. 1. 25, L. tr.  $\frac{5}{4}$ .

Length of head  $\frac{1}{5}$ , of caudal  $\frac{1}{5}$ , height of body  $\frac{1}{4}$  of the total length.

Eyes. Diameter nearly  $\frac{1}{3}$  of length of head, 1 diameter from end of snout,  $1\frac{1}{4}$  diameters apart.

Dorsal profile slightly more convex than that of the abdomen. Height of body  $\frac{4}{11}$  of its length, excluding the caudal fin. Barbels equal to two-thirds the length of the orbit.

Fins. Dorsal commences midway between the end of the snout and the base of the caudal fin, its last undivided ray is osseous, weak in the young but strengthening with age, and as long as the head without the snout.

Scales. At the fourth scale on the row above the lateral line two rows commence.

Lateral line—complete.

Colours. Back greenish, divided from a silvery abdomen by a dark bluish line. Cheeks golden red. Pectoral, ventral and anal tinged with yellow; dorsal and caudal dusky. A diffused black spot on the lateral line extending from the twentieth to the twenty-second scale. Eyes golden.

*Hab.* Malabar, Mysore and Madras, growing to 6 inches in length.

Regarding some specimens of *B. parrah* and *B. perlee* presented by me to the British Museum, Dr. Günther observes in his Catalogue "the fish given us as *P. perlee* agrees much more with the description and figure of *P. parrah*, than with that of the species to which the specimen is said to belong." Having re-examined the two fish, both  $3\frac{1}{2}$  inches long, I find they have been transposed, an accident which might easily occur, but which could have been as easily rectified by any Ichthyologist, had he felt inclined to do so, when examining the specimens. As only one bottle (*c*) appears to have



contained the specimens when Dr. Günther drew up his Catalogue, judging by both fish being under one and the same heading (*c*) it seems questionable whether the error of misplacement was mine. However, as Dr. Günther was disinclined to correct an evident transposition (by whomsoever made), it accounts for his statement that my figure of *P. parrah* is "not good," because he compared it with a specimen of another species, *P. perlee*, which it was not intended to represent.

The reason why the specimen of  $3\frac{1}{2}$  inches long, which I gave to the British Museum, has "its osseous dorsal ray very feeble and much less strong than that in *P. parrah*," as observed by Dr. Günther, is evidently owing to its being an "immature example;" therefore his suggestion that "it is possible the specimen belongs to a distinct species not recognised by Mr. Day" is unnecessary.

#### 34. BARBUS (*Capoëta*) TITIUS.

*Cyprinus titius*, Ham. Buch., Fish. Ganges, pp. 315, 389; \*Cuv. and Val. xvi, p. 399.

*Systomus tetrarupagus*, McClell., Ind. Cyp. pp. 285, 381, pl. 44, f. 3.

*Barbus titius*, \*Günther, Catal. vii, p. 154.

*Tit pungti*, Bengali: *Borajalee*, Assamese.

B. III. D.  $2/8$ , P. 17, V. 9, A.  $2/5$ , C. 19, L. 1. 25.

Length of head  $1/4$ , of caudal  $2/9$ , height of body  $1/3$  of the total length.

Eyes. Diameter  $2/7$  of length of head, 1 diameter from end of snout.

Body equally convex on its dorsal and abdominal profiles.

The barbels not so long as one diameter of the orbit.

Fins. Dorsal commences opposite the ventral, and midway between the snout and the base of the caudal; osseous dorsal ray weak, entire.

Lateral line—complete,  $3\frac{1}{2}$  rows of scales between it and the base of the ventral fin.

Colours. A round black spot on the lateral line behind the gill openings, and a second midway between the end of anal and base of the caudal fins. Dorsal and anal tipped with black, sometimes the upper half of the former stained darkish.



*Hab.* Bengal, Assam, N. W. Provinces and Punjáb, attaining nearly 5 inches in length. Is very common at Hurdwar and Roorkee.

### 35. *BARBUS* (*Capoëta*) *THERMALIS*.

*Leuciscus thermalis*, Cuv. and Val. xvii, p. 94, pl. 490.

*Barbus thermalis*, Günther, Catal. vii, p. 143.

B. III. D.  $\frac{3}{8}$ , P. 15, V. 9, A.  $\frac{3}{5}$ , C. 19, L. 1. 25, L. tr.  $5\frac{1}{2}/5\frac{1}{2}$ .

Length of head nearly  $\frac{1}{4}$  ( $\frac{4}{17}$ ), of caudal nearly  $\frac{1}{4}$  ( $\frac{4}{17}$ ), height of body about  $\frac{1}{5}$  ( $\frac{4}{21}$ ) of the total length.

Eyes. Diameter  $\frac{2}{7}$  of length of head, 1 diameter from end of snout.

Body very compressed. Jaws of about equal length: interorbital space convex. Barbels shorter than the eye.

Fins. Dorsal commences midway between the end of snout and base of caudal fin, it is only two-thirds as high as the body, its osseous ray moderately strong, rather longer than the head without the snout.

Lateral line—incomplete, extending for the first eight scales:  $3\frac{1}{2}$  rows of the scales between it and the base of the ventral fin.

Colours. Silvery, a round black finger mark on either side of the free portion of the tail, anterior to the base of the caudal fin.

*Hab.* Mysore, Ceylon, Cachar: attaining 3 inches or more in length.

### 36. *BARBUS* (*Capoëta*) *LEPIDUS*.

*Puntius* (*Capoëta*) *lepidus*, Day, Proc. Zool. Soc. 1868, p. 196.

*Barbus filamentosus*, Günther, Catal. vii, p. 145, (not Cuv. and Val.)

B. III. D.  $\frac{3}{8}$ , P. 15, V. 9, A.  $\frac{2}{5}$ , C. 19, L. 1. 21, L. tr.  $\frac{5}{3}$ .

Length of head  $\frac{1}{5}$ , of caudal  $\frac{1}{4}$ , height of body  $\frac{2}{7}$ , of dorsal fin  $\frac{1}{5}$  of the total length.

Eyes. Diameter  $\frac{2}{5}$  of length of head, nearly  $\frac{2}{3}$  of a diameter from end of snout, 1 diameter apart.

Body strongly compressed. Lower jaw the shortest. Maxillary barbels thin and extending to below the centre of the orbit.

Fins. Last undivided dorsal ray osseous, smooth, feeble; the branched rays are elongated in the adult. Caudal deeply lobed.



Lateral line—complete, slightly concave to opposite the end of the dorsal fin, whence it is straight.  $2\frac{1}{2}$  rows of scales between it and the base of the ventral.

Colours. Silvery white, with a deep black oval mark on the lateral line from about the 14th to the 18th scale. Caudal red tipped with black.

*Hab.* From Canara down the Western coast and along the base of the Neilgherries, also in Ceylon. It grows to 6 inches in length.

Dr. Günther described specimens of *B. lepidus* from Ceylon as *Barbus filamentosus*, which though very similar I hold to be distinct species. He remarks that the barbels of *B. filamentosus* have been overlooked by previous observers, but the reason is that the latter species is destitute of them.

*c.* No osseous dorsal ray.

### 37. BARBUS (*Capoëta*) KOLUS.

*Barbus kolus*, Sykes, Trans. Zool. Soc. ii, p. 357, pl. 62, f. 1; Günther, Catal. vii, p. 136.

*Hypselobarbus*, (*Gonoproktopterus*) *kolus*, \*Bleeker, Prod. Cyp. p. 275, (name only).

*Barbus Guentheri*, Day, Proc. Zool. Soc. 1868, p. 582.

*Nilusu*, Telugu.

B. III. D.  $\frac{3.4}{9}$ , P. 15, V. 9, A.  $\frac{3}{5}$ , C. 19, L. 1. 40—42. L. tr.  $\frac{10}{8}$ .

Length of head slightly above  $\frac{1}{5}$ , of caudal  $\frac{2}{7}$ , of height of body  $\frac{1}{4}$ , of dorsal fin  $\frac{1}{4}$  of the total length.

Eyes. Upper margin near the profile, diameter  $\frac{1}{3}$  of length of head, 1 diameter from end of snout and apart.

Body compressed, a considerable rise in the profile from the occiput to the dorsal fin. Upper jaw slightly the longest, the posterior extremity of the maxilla extends to below the anterior margin of the orbit. The pair of maxillary barbels extends rather beyond the middle of the eye.

Teeth, pharyngeal,—pointed, uncinatè, 5, 3,  $\frac{2}{2}$ , 3, 5.

Fins. No osseous dorsal ray, the fin commences slightly in advance of the ventrals, and midway between the end of the snout and the base of the caudal fin, which last is deeply lobed.

Lateral line—complete, 4 rows of scales between it and the base of the ventral fin.



Colours. Silvery, with a tinge of yellow.

*Hab.* Deccan, and throughout the Kistna and Tamboodra rivers. It attains upwards of a foot in length.

38. \**BARBUS* (*Capoëta*) *CURMUCA*.

*Cyprinus curmuca*, Buchanan's Journey Mysore, III. p. 334, pl. xxx; Fishes of Ganges, pp. 294, 387; \*McClelland, Ind. Cyp. pp. 276, 353.

*Gobio curmuca* et *Canarensis*, Jerdon, M. J. L. and S. 1849, p. 306.

„ *curmuca*, \*Cuv. and Val. xvi, p. 317.

B. III. D.  $\frac{3}{8}$ , P. 16, V. 9, A.  $\frac{3}{5}$ , C. 18.

Dr. Jerdon obtained in the Arriacode river near Paulghaut a fish apparently the same as Buchanans, and which he considered to be closely allied to, if not identical with the *Barbus kolus*, Sykes. Having seen his sketches, I must coincide as to suspecting the two to be identical, but unfortunately his specimens have been lost, whilst the *B. kolus* has not been recorded south of the Kistna, so the question must be still left open. There were 42 rows of scales along the lateral line and 18 obliquely, in Dr. Jerdon's specimens from which the drawings were made. The form of the body and head were the same, with some open glands on the snout and below the eyes.

Fins. No osseous dorsal ray.

Lateral line—complete.

*Hab.* Fresh waters of Southern India, attaining three feet in length. Dr. Jerdon observes as to locality that it is “from the rivers of Palghaut, and Arriacode in south Malabar where it is very common, and I have as yet seen it in no other locality and certainly it is not a common fish in Mysore, or I must have seen it. Buchanan, I may mention, passed over the very locality whence my specimens were obtained in his journey through Mysore.”

39. *BARBUS* (*Capoëta*) *DENISONII*.

*Labeo Denisonii*, Day, Proc. Zool. Soc. 1865, p. 299.

*Puntius Denisonii*, Day, Fish. Malabar, p. 212, pl. 16, f. 2.

*Barbus Denisonii*, Günther, Catal. vii, p. 146.

B. III. D.  $\frac{2-3}{8}$ , P. 15, V. 9, A.  $\frac{3}{5}$ , C. 19, L. 1. 28, L. tr.  $4\frac{1}{2}/3\frac{1}{2}$ .

Length of head  $\frac{1}{6}$ , of caudal  $\frac{1}{5}$ , height of body  $\frac{1}{5}$  of the total length.



Eyes. Diameter  $\frac{1}{3}$  of length of head, rather above 1 diameter apart and from end of snout.

Dorsal and abdominal profiles slightly and about equally convex. Mouth small, directed forwards and rather downwards, with upper jaw slightly the longest. Maxillary pair of barbels one-third longer than the orbit.

Teeth, pharyngeal,—pointed and curved at their extremities, 4, 3,  $2\frac{1}{2}$ , 3, 4.

Fins. Dorsal arises rather before the ventrals, and midway between the end of the snout, and above the posterior extremity of the base of the anal fin, none of its rays osseous. Caudal deeply forked.

Lateral line—complete, 2 rows of scales between it and ventral fin.

Colours. Silvery, with a black band passing from the snout to the centre of the base of the caudal fin, above it runs a horizontal scarlet band. Caudal with an oblique black band crossing the posterior third of each lobe.

*Hab.* Mundikyum in the Hill ranges of Travancore, where the Rev. H. Baker, procured me several specimens. It attains six inches in length. I named the species after the late Sir W. Denison, K. C. B., then Governor of Madras.

#### 40. BARBUS (*Capoëta*) ARULIUS.

*Systomus arulius*, Jerdon, M. J. L. and S. 1849, p. 319.

*Puntius arulius*, Day, Proc. Zool. Soc. 1867, p. 294.

*Barbus arulius*, Day, l. c. 1868, p. 585. and 1870, p. 373, (not Günther).

B. III. D.  $\frac{3}{8}$ , P. 15, V. 9, A.  $\frac{2}{5}$ , C. 18, L. 1. 23, L. tr.  $5\frac{1}{2}$ .

Length of head  $\frac{1}{5}$ , of caudal  $\frac{1}{8}$ , height of body  $\frac{1}{4}$  of the total length.

Eyes. Diameter  $\frac{2}{5}$  of length of head, rather above  $\frac{1}{2}$  a diameter from end of snout, and  $\frac{3}{4}$  of a diameter apart.

Dorsal and abdominal profiles about equally convex. Cleft of mouth extending to nearly below the anterior edge of the orbit. A pair of moderately sized maxillary barbels.

Teeth, pharyngeal,—5, 3,  $2\frac{1}{2}$ , 3, 5, sharp and curved at their extremities.



**Fins.** No osseous dorsal ray, the fin commences midway between the snout and the base of the caudal, which last is deeply emarginate.

**Lateral line**—complete, at first somewhat concave, but in its last three-fourths passing straight to the centre of the base of the caudal.

**Colours.** Olive green on the back, becoming silvery white dashed with reddish green over the abdomen. A black band, about two scales in width, passes from below the origin of the dorsal fin as low as the lateral line : a second from just below the posterior extremity of the dorsal to the base of the anal : and a third across the free portion the tail before the caudal fin. Dorsal caudal and anal pinkish with a black bar across the summit of the first, whilst the caudal is stained at its edges.

**Hab.** Wynaad and Neilgherry range of hills and the rivers at their bases, attaining four inches or even more in length.

#### 41. BARBUS (*Capoëta*) PUCKELLI.

*Puntius (Capoëta) Puckelli*, Day, Proc. Zool. Soc. 1868, p. 197.

B. III. D.  $2/7$ , P. 15, V. 9, A.  $3/5$ , C. 19, L. 1. 24, L. tr.  $4/3$ .

Length of head  $1/5$ , of caudal  $1/6$ , height of body  $2/9$ , of dorsal fin  $1/6$  of the total length.

**Eyes.** Diameter  $1/4$  of length of head, 1 diameter from end of snout, and  $1\frac{1}{2}$  diameters apart.

Dorsal and abdominal profiles both equally and slightly convex, whilst the thickness of the fish equals its height. Mouth almost anterior, upper jaw slightly the longest. The posterior extremity of the maxilla reaches to half way below the orbit. Maxillary barbels thick, reaching to beneath the anterior edge of the eye. No pores on the head, its summit rather convex.

**Teeth**, pharyngeal, plough-shaped, 5, 3,  $2/2$ , 3, 5.

**Fins.** Last undivided dorsal ray cartilaginous, the fin commences before the ventral, and midway between the end of the snout and the base of the caudal, which last is lobed in its posterior half.

**Lateral line.** First descends for three scales, then proceeds direct to the centre of the base of the caudal.



**Colours.** Greenish yellow along the back, with a red mark on the opercle, and a scarlet stripe extending along the middle of the side. A deep black mark on the dorsal from the base of the third to that of the sixth branched rays. Very fine dark spots over the scales especially at their bases. An indistinct black mark on the lateral line from the nineteenth to the twenty-first scales.

**Hab.** Bangalore, where it is said to be common. Major Puckell sent me one specimen, 3 inches in length.

*C. Without barbels, (Puntius).*

*a. Last undivided ray, osseous and serrated.*

42. *BARBUS (Puntius) APOGON.*

*Barbus apogon*, (Kuhl) Cuv. and Val. xvi, p. 392; Günther, Catal. vii, p. 150.

*Systomus apogon*, Bleeker, Nat. Tyds. Ned. Ind. iii, p. 428.

„ *apogonoides*, Bleeker, l. c. ix, p. 150.

*Cyclocheilichthys (anemathichthys) apogon*, Bleeker, Prod. Cyp. p. 378, and Atl. Ich. Cyp. p. 88, t. 29, f. 2.

„ „ *apogonoides*, Bleeker, l. c. p. 379 and Atl. Ich. p. 89, t. 30, f. 3.

*Systomus macularius*? Blyth, J. A. S. of B. 1860, p. 159.

*Barbus macularius*, \*Günther, Catal. vii, p. 150; Day, Proc. Zool. Soc. 1869, p. 557.

*Nga-ta-zee* and *Nga-lay-toun*, Burmese.

B. III. D. 4/8, P. 17, V. 11, A. 3/5, C. 19. L. l. 36, L. tr. 8/7.

Length of head  $1/4$  to  $1/5$ , of caudal  $2/9$ , height of body  $1/3$ , of dorsal fin  $1/4$  of the total length.

**Eyes.** Diameter  $2/7$  of length of head, 1 diameter from end of snout,  $1\frac{1}{4}$  diameters apart.

Body compressed, a great rise from the occiput to the base of the dorsal fin.

**Fins.** Dorsal commences over the ventral and midway between the end of the snout and the base of the caudal, its last undivided ray is strong, serrated, and rather shorter than the head. First three anal rays somi-osseous. Caudal deeply lobed.

Lateral line—complete, 4 to  $4\frac{1}{2}$  rows of scales between it and the root of the ventral.

**Colours.** Silvery, each scale with a black spot at its base.

**Hab.** Tenasserim and throughout Burmah to the East Indian Archipelago. It attains 8 inches in length.



43. BARBUS (*Puntius*) AMBASSIS.

*Barbus ambassis*, Day, Proc. Zool. Soc. 1868, p. 583.

*Bunkuai*, Ooriah.

B. III. D.  $\frac{3}{8}$ , P. 11, V. 9, A.  $\frac{2}{5}$ , C. 19, L. 1. 36.

Length of head  $\frac{2}{11}$ , of caudal  $\frac{1}{4}$ , height of body  $\frac{2}{7}$ , of dorsal fin  $\frac{2}{11}$  of the total length.

Eyes. Diameter nearly  $\frac{2}{5}$  of length of head,  $\frac{1}{2}$  a diameter from end of snout, 1 diameter apart. Upper jaw slightly the longest, no barbels.

Teeth, pharyngeal, sharp, crooked, 5, 3,  $\frac{2}{2}$ , 3, 5.

Fins. Dorsal spine osseous, strong, and posteriorly serrated, having about 15 teeth, the fin commences slightly anterior to the ventral and midway between the end of the snout and base of the caudal, which last is deeply lobed.

Scales. Small and deciduous.

Lateral line—incomplete, becoming indistinct in the posterior two-thirds of the body, 6 rows of scales between it and the base of the ventral fin.

Colours. Light with a silvery streak along the side. A small black spot at the base of the anterior dorsal rays, and a finger mark at the side of the tail.

*Hab.* Madras, Orissa and Bengal. It attains about 3 inches in length.

44. BARBUS (*Puntius*) CONCHONIUS.

*Cyprinus conchoni*us, Ham. Buch., Fish. Gang. pp. 317, 389; Cuv. and Val. xvi, p. 394.

*Systomus conehoni*us, \*McClell. Ind. Cyp. pp. 286, 384, pl. 44, f. 8. (from Ham. Buch. Mss.); \*Jerdon M. J. L. and S. 1849, p. 317.

*Puntius conchoni*us, Stein. Sitz. Ak. Wiss. Wein. lvi,

*Barbus conchoni*us, \*Günther, Catal. vii p. 153.

*Kunchon pungti*, Bengali.

B. III. D.  $\frac{3}{8}$ , P. 11, V. 9, A.  $\frac{2}{5}$ , C. 19, L. 1. 26, L. tr.  $5\frac{1}{2}/6\frac{1}{2}$ .

Length of head  $\frac{1}{5}$ , of caudal  $\frac{2}{9}$ , height of body  $\frac{1}{3}$  of the total length.

Eyes. Diameter  $\frac{1}{3}$  of length of head, nearly 1 diameter from end of snout.



**Fins.** Osseous dorsal ray moderately strong and serrated, as long as head without the snout: the fin commences midway between the anterior extremity of the orbit and the base of the caudal, which latter is forked in its last half.

**Lateral line**—incomplete,  $4\frac{1}{2}$  rows of scales between it and the base of the ventral fin.

**Colours.** A round black spot on the lateral line above the posterior portion of the anal fin.

**Hab.** Lower Bengal, Behar and N. W. Provinces, attaining 5 inches in length.

#### 45. BARBUS (*Puntius*) GELIUS.

*Cyprinus gelius*, Ham. Buch., Fish. Gang. pp. 320, 390; \*Cuv. and Val. xvi, p. 397.

„ *canius*, Ham. Buch., l. c.; \*Cuv. and Val. xvii, p. 397.

*Systomus gelius*, McClell., Ind. Cyp. pp. 286, 386, pl. 44, f. 4, (from Ham. Buch. Mss.)

„ *canius*, McClell., l. c. pp. 287, 387, pl. 44, f. 6, (from H. B.'s Mss.)

„ *gelius*, Bleeker, Verh. Bat. Gen. Ned. Ind. xxv, 1853, Bengal, p. 129.

*Barbus gelius*, Günther, Catal. vii, p. 154 Day, Proc. Zool. Soc. 1869, p. 374.

*Cutturpoh*, Ooriah; *Geli pungti*, Beng.

B. III. D.  $\frac{3}{8}$ , P. 15, V. 9, A.  $\frac{3}{5}$ , C. 19, L. 1. 25, L. tr. 9.

Length of head  $\frac{2}{9}$ , of caudal  $\frac{1}{4}$ , height of dorsal  $\frac{2}{9}$ , of body  $\frac{1}{3}$  of the total length.

**Eyes.** Diameter  $\frac{2}{5}$  of length of head,  $\frac{2}{3}$  of a diameter from end of snout, 1 diameter apart.

Dorsal profile rather elevated. Barbels absent.

**Fins.** Dorsal arises slightly in advance of the ventrals, its osseous ray is strong and rather coarsely serrated: caudal deeply forked.

**Lateral line**—incomplete, ceasing after 5 or 6 scales.

**Colours.** Reddish brown, with a black band over the tail a little anterior to the base of the caudal fin, and another less distinct over the base of that fin. The peritoneum being black appears like a dark band. A black spot passes across the base of the anterior half of the dorsal, extending one-third the distance up the rays. A black band over the base of the anal, highest in front. Occiput also black.

**Hab.** Orissa and Bengal, attaining 2 inches in length.



46. BARBUS (*Puntius*) TICTO.

*Cyprinus ticto*, Ham. Buch., pp. 314, 389, pl. 8, f. 87; \*Cuv. and Val. xvi, p. 393.

*Systomus ticto*, McClell., Ind. Cyp. p. 382; Bleeker, Verh. Bat. Gen. Ned. Ind. xxv, 1853, p. 128; \*Jerdon, M. J. L. and S. 1849, p. 318.

*Rohtee ticto*, Sykes, Trans. Zool. Soc. 1841, p. 365.

*Systomus tripunctatus*, Jerdon, M. J. L. and S. 1849, p. 316.

? *Systomus rubrotinctus*, Jerdon, l. c. p. 317.

*Barbus ticto*, Günther, Catal. vii, p. 513.

*Kaoli* and *Kotree*, Hind.

B. III. D.  $\frac{3}{8}$ , P. 15, V. 9, A.  $\frac{2}{5}$ , C. 19, L. 1. 23, L. tr.  $\frac{5}{6}$ .

Length of head  $\frac{1}{5}$ , of caudal  $\frac{1}{4}$ , height of body  $\frac{1}{4}$ , of dorsal fin  $\frac{1}{3}$  of the total length.

Eyes. Diameter  $\frac{1}{3}$  of length of head,  $\frac{1}{2}$  a diameter from end of snout, 1 diameter apart.

Body strongly compressed. Upper jaw slightly the longest, the posterior extremity of the maxilla reaching to under the anterior margin of the orbit.

Teeth, pharyngeal, crooked, pointed, 5, 3,  $\frac{2}{2}$ , 3, 5.

Fins. Osseous dorsal ray strong and serrated, three quarters as long as the body is high. Caudal deeply forked.

Lateral line—incomplete, ceasing after 6 or 8 scales.

Colours. Silvery, sometimes stained with red, a black spot on the side of the tail before the base of the caudal fin and immediately behind the anal: a smaller one (frequently absent) at the commencement of the lateral line. Fins often black, sometimes orange.

*Hab.* Throughout India, except along the Malabar coast. *B. Stoliczkanus* takes its place in Burma. It rarely exceeds 4 inches in length.

47. BARBUS (*Puntius*) PUNCTATUS.

*Puntius punctatus*, Day, Proc. Zool. Soc. 1865, p. 302, and Fishes of Malabar, p. 214, pl. vii, f. 1.

*Putter perlee*, Mal.

B. III. D.  $\frac{3}{8}$ , P. 15, V. 9, A.  $\frac{2}{5}$ , C. 18, L. 1. 23, L. tr.  $\frac{6}{4}$ .

Length of head  $\frac{1}{6}$ , of caudal  $\frac{1}{6}$ , height of body  $\frac{1}{3}$ , of dorsal fin  $\frac{1}{5}$  of the entire length.



Eyes. Diameter nearly  $1/2$  of length of head,  $1/3$  of a diameter from end of snout, 1 diameter apart.

Fins. Dorsal osseous ray strong, serrated, the fin commences over the ventrals, and midway between end of snout and base of the caudal; its upper border slightly concave. Caudal emarginate.

Lateral line—complete, slightly concave in the first part of its course.

Colours. Olive green superiorly, becoming white on the abdomen. A diffused black spot on the twentieth and twenty-first scales of the lateral line. The anterior half of the fourth scale from the opercle, in the row next below the lateral line, black. Fins yellowish, dorsal and anal tipped with orange. Dorsal with two rows of black spots, and anteriorly a short intermediate one.

*Hab.* Malabar, it does not appear to exceed three inches in length.

#### 48. BARBUS (*Puntius*) PHUTUNIO.

*Cyprinus phutunio*, Ham. Buch., Fish. Gang. pp. 319, 390; \*Cuv. and Val. xvi, p. 395.

*Systomus leptosomus*, McClell. Ind. Cyp. pp. 287, 387, pl. 44, f. 2, (from Ham. Buch. MSS.)

*Systomus phutunio*, Bleeker, Verh. Bat. Gen. Batav. xxv, Bengal, p. 128, and Cyp. and Cobit. in Nat. Verh. Holl. Maatsch. Haarl. 1864-65, p. 12, t. 4. f. 4.

*Barbus* „ \*Günther, Catal. vii, p. 154; Day, Proc. Zool. Soc. 1869, p. 375.

*Barbus Cumingii*, Günther, Catal. vii, p. 155.

*Kudji-kerundi*, Ooriah; *Phutuni pungti*, Beng.

B. III. D.  $\frac{2-3}{8}$ , P. 15, V. 9, A.  $3/5$ , C. 19, L. 1. 20—23, L. tr. 8—10.

Length of head  $1/4$ , of caudal  $1/4$ , height of body  $1/3$  of the total length.

Eyes. Diameter  $2/5$  of length of head,  $3/4$  of a diameter from end of snout, 1 diameter apart.

Dorsal profile more elevated than the abdominal. Mouth small. Barbels absent.

Fins. Dorsal osseous ray serrated, the serratures often becoming indistinct in the adult: the fin commences opposite the ventrals, and midway between the end of the snout and the base of the



caudal, which latter is rather deeply forked.

Lateral line—incomplete, only extending along 3 or 4 scales, from it to the base of the ventral are 3 rows.

Colours. Reddish brown, with a black band passing from the back to opposite the middle of the pectoral fin: a second from the back to the posterior end of the base of the anal: two other lighter bands pass downwards, one from the anterior, the other from the posterior extremity of the dorsal. A dark band down the centre of the dorsal, another at the base of the caudal.

*Hab.* Orissa and through Bengal and Ceylon, attaining 3 inches in length.

49. BARBUS (*Puntius*) NIGROFASCIATUS.

*Barbus nigrofasciatus*, Günther, Catal. vii, p. 155.

B. III. D.  $3/8$ , P. 15, V. 9, A.  $2/5$ , C. 19, L. 1. 20.

Length of head  $1/5$ , of caudal  $1/4$ , height of body  $1/4$  of the total length.

Eyes. Diameter  $1/3$  of length of head, nearly 1 diameter from the end of snout and apart.

Body oval, strongly compressed: interorbital space convex.

Mouth small, upper jaw the longest. Barbels absent.

Fins. Dorsal lower than the body, it commences opposite the ventrals, its osseous ray is of moderate strength and finely serrated. Caudal deeply forked.

Lateral line—complete, 3 rows of scales between it and the base of the ventrals.

Colours. Reddish, (this however may be a *post mortem* appearance, as seen in *B. filamentosus*), with a black band passing from eye to eye; body with three vertical black bands, the first across the middle of the trunk, the second between the anterior portion of the dorsal to behind the base of the ventral, and the third on the free portion of the tail. Dorsal, anterior portion of ventral and anal black.

*Hab.* Southern Ceylon attaining  $2\frac{1}{2}$  inches in length.

Its form much resembles that of *B. ticto*, which has not been recorded from Ceylon. It, however, entirely differs from it in colouration and in having a complete lateral line.



50. \*BARBUS (*Puntius*) GUGANIO.

*Cyprinus guganio*, Ham. Buch. Fishes, Ganges, pp. 338, 339, 392 ; \*Cuv. and Val. xvi, p. 445.

*Gugani*, Beng.

B. III. D.  $2\frac{8}{8}$ , P. 12, V. 9, A. 7.

“ Head oval, small, blunt and dotted. Mouth small. The jaws protrude in opening, the upper is the longest. \* \* The eyes are far forwards on the sides of the head and large.”

Fins. The dorsal is near the middle, its osseous ray is strong and serrated.

Scales. Large and firmly adherent.

Lateral line—incomplete.

Colours. The back dotted.

*Hab.* Gangetic provinces and Assam. It scarcely exceeds an inch and a half in length.

51. BARBUS (*Puntius*) STOLICZKANUS.

*Barbus McClellandi*, Day, Proc. Zool. Soc. 1869, p. 619, (not Cuv. and Val.)

B. III. D.  $2\frac{8}{8}$ , P. 14, V. 9, A.  $2\frac{5}{5}$ , C. 19, L. 1. 25, L. tr.  $5\frac{6}{6}$ .

Length of head  $\frac{1}{6}$ , of caudal  $\frac{1}{5}$ , height of body  $\frac{1}{3}$  of the total length.

Eyes. Diameter nearly  $\frac{1}{3}$  of length of head, 1 diameter from end of snout,  $1\frac{1}{2}$  diameters apart.

Mouth small. Barbels absent.

Teeth, pharyngeal—crooked, 5, 3,  $2\frac{2}{2}$ , 3, 5.

Fins. Osseous dorsal ray serrated but less strongly than in *B. ticto*, the serratures are likewise rather irregular, the fin commences midway between the snout and the base of the caudal, which latter is lunate.

Lateral line—complete, there are  $3\frac{1}{2}$  rows of scales between it and the base of the ventral fin.

Colours. Silvery, a black mark on the lateral line about the third scale, and a deep black mark above and a little behind the posterior extremity of the anal fin, superiorly it extends almost to the back, whilst it is yellow anteriorly. Fins orange.

*Hab.* Eastern Burma, where it entirely supersedes *B. ticto*. It attains four inches in length.



52. BARBUS (*Puntius*) PYRRHOPTERUS.

*Systomus pyrrhopterus*, McClell., Ind. Cyp. pp. 285, 383, pl. 44, f. 1; \*Cuv. and Val. xvi, p. 395.

*Barbus pyrrhopterus*, Günther, Catal. vii, p., 57.

B. III. D.  $2/7$ , P. 12, V. 9, A. 7, C. 19, L. l. 22-24, L. tr.  $4\frac{1}{2}/4\frac{1}{2}$ .

Length of head  $1/4$ , height of body rather above  $1/3$  of the total length. No barbels.

Fins. Osseous dorsal ray of moderate strength, serrated.

Lateral line—complete, 2 rows of scales between it and the base of the ventral fin.

Colours. A dark spot at the end of the lateral line just before the base of the caudal fin.

Hab. Upper Assam.

b. *Osseous dorsal ray entire*.

53. BARBUS (*Puntius*) STIGMA.

*Systomus sophore*, McClell., Ind. Cyp. pp. 285, 382; Jerdon, M. J. L. and S. 1849, p. 316, (not Ham. Buch.)

*Leuciscus stigma*, Cuv. and Val. xvii, p. 93, pl. 489; Jerdon, l. c. p. 317.

„ *sulphureus*, Cuv. and Val. xvii, p. 96.

*Cyprinus sophore*,\* Cuv. and Val. xvi, p. 388.

*Barbus sophore*, Günther, Catal. vii, p. 152.

*Puntius modestus*, Kner, Novara Fische, p. 348, t. 15, f. 3.

*Barbus modestus*, \*Günther, Catal. vii, p. 156.

*Barbus stigma*, Day, Proc. Zool. Soc. 1868, p. 198, 1869, p. 375.

*Chadu-perigi*, Tel.; *Patia-kerundi*, Ooriah; *Katcha-karawa* and *Pottiah*, Hin.; *Katch karawa*, Can.; *Nga-kkoon-ma*, Burm.

B. III. D.  $3/8$ , P. 17, V. 9, A.  $3/5$ , C. 19, L. l. 25, L. tr.  $5/4$ , Vert. 15/14.

Length of head  $1/5$ , of caudal  $1/5$ , height of body  $1/4$  of the total length.

Eyes. Diameter  $1/4$  of length of head,  $1\frac{1}{2}$  diameters from end of snout, 2 diameters apart.

Jaws equal in front. No barbels.

Teeth,—pharyngeal, crooked, 5, 3,  $2/2$ , 3, 5.

Fins. Osseous dorsal ray of moderate strength, entire, as long as the head without the snout; it commences over the



ventrals, and midway between the end of the snout and the base of the caudal.

Lateral line—complete, 3 to  $3\frac{1}{2}$  rows of scales between it and the base of the ventral fin.

Colours. Silvery, with a scarlet lateral band at some seasons, and a dark mark across the base of the middle dorsal rays, this last being occasionally absent. A round black blotch, more or less distinct at the root of the caudal fin.

*Hab.* Throughout India and Burma. As food it is bitter.

In January 1868 I found 1850 developed ova in one female fish at Madras.

#### 54. BARBUS (*Puntius*) CHRYSOPTERUS.

*Systomus chrysopterus*, McClell., Ind. Cyp. pp. 285, 383.

*Barbus chrysopterus*, Günther, Catal. vii, p. 152.

*Pottiah*, Punj.

B. III. D.  $\frac{3}{8}$ , P. 17, V. 9, A.  $\frac{2}{5}$ , C. 19, L. 1. 23, L. tr.  $\frac{5}{5}$ .

Length of head and caudal fin each nearly  $\frac{2}{9}$ , height of body  $\frac{1}{3}$  of the total length.

Eyes. Diameter  $\frac{1}{3}$  of length of the head,  $\frac{3}{4}$  of a diameter from end of snout.

Upper profile slightly concave over the nape, rising considerably to the base of the dorsal fin, and much more convex than that of the abdomen. Body compressed.

Mouth narrow, horse-shoe shaped, the upper jaw very slightly the longest, when the mouth is closed.

Fins. Dorsal arises slightly in advance of the ventral, and midway between the end of the snout and the base of the caudal, its smooth osseous ray is not strong and as long as the head without the snout; upper margin of the dorsal fin slightly concave, its height is only slightly above one-half of that of the body. The pectoral extends to the ventral, and the latter to the anal. Lower caudal lobe slightly the longest.

Lateral line—complete,  $3\frac{1}{2}$  rows of scales between it, and the base of the ventral.

Colours. Dirty silvery, darkest along the back, and each scale having a dark base formed by fine black dots. Dorsal, ventral,



and anal fins stained with black spots at their extremities. A dark mark at the base of the 4th and 6th divided dorsal rays, sometimes a dark mark at base of the tail.

*Hab.* Assam, N. W. Provinces and Punjáb.

55. *BARBUS (Puntius) UNIMACULATUS*.

*Systomus unimaculatus*, Blyth, J. A. S. of Bengal, 1860, p. 159. Day, Proc. Zool. Soc. 1869, p. 557.

B. III. D.  $\frac{3}{8}$ , P. 11, V. 8, A.  $\frac{2}{5}$ , C. 19, L. l. 24, L. tr.  $4\frac{1}{2}/4\frac{1}{2}$ .

Length of head  $\frac{2}{7}$ , height of body  $\frac{1}{3}$  of the total length.

Eyes. Diameter  $\frac{1}{3}$  of length of head, 1 diameter from end of snout and apart.

Mouth small, extending half the distance to below the orbit. No barbels.

Fins. Dorsal with an osseous, entire and weak, ray: it commences midway between the snout and the base of the caudal fin.

Lateral line, incomplete, becoming lost opposite the posterior extremity of the dorsal fin.

Colours. Silvery, a black mark at the base of each dorsal ray.

A number of fry up to  $1\frac{8}{10}$  inches in length from the Tenasserim Provinces are in the museum; what they would be, when adults, it is difficult to determine, but probably (as the lateral line is incomplete) they never would grow large fish.

56. *BARBUS (Puntius) FILAMENTOSUS*.

*Leuciscus filamentosus*, Cuv. and Val. xvii, p. 95, pl. 492.

*Leuciscus Mahecola*, Cuv. and Val. xvii, p. 305, pl. 502 (young).

*Systomus assimilis, filamentosus, et Maderaspatensis*, Jerdon, Madr. Journ. Lit. and Sc., xv, pp. 318, 319.

*Puntius filamentosus*, Day, Fish. Malabar, p. 215.

*Barbus filamentosus*, Günther, (? synom.) Catal. vii, p. 145.

B. III. D.  $\frac{3}{8}$ , P. 15, V. 9, A.  $\frac{2}{5}$ , C. 19, L. l. 21, L. tr.  $\frac{5}{3}$ .

Length of head  $\frac{1}{5}$ , of caudal  $\frac{1}{4}$ , height of body  $\frac{1}{3}$  of the total length.

Eyes. Diameter  $\frac{2}{5}$  of length of head,  $\frac{2}{3}$  of a diameter from end of snout.

Body strongly compressed. Generally large pores over the snout. No barbels.



Fins. Osseous dorsal ray smooth and feeble, whilst the divided ones are all more or less elongated in the adult.

Lateral line—complete, 2 rows of scales between it and the base of the ventral.

Colours. Silvery, each scale having a metallic green edging, whilst a more or less distinct black blotch exists on the lateral line before the base of the caudal fin. A very curious change occurs in this fish immediately after death, the whole of its body becoming scarlet. Caudal red, tipped with black.

*Hab.* Western coast and Southern India, attaining 6 inches in length.

Dr. Günther remarked “Valenciennes and other naturalists have overlooked the barbels in this species,” but I consider the Ceylon fish from which he drew up his description as belonging to *B. lepidus*, for *B. filamentosus* is destitute of barbels.

#### 57. BARBUS (*Puntius*) TERIO.

*Cyprinus terio*, Ham. Buch., Fish. Gang. pp. 313, 389; \*Cuv. and Val. xvi, p. 398.

*Systomus gibbosus*, \*McClell., Ind. Cyp. pp. 286, 385, pl. 44, f. 7, (from Ham. Buch. MSS.)

*Barbus terio*, \*Günther, Catal. vii, p. 153; Day, Proc. Zool. Soc. 1869, p. 376.

*Kakachia-kerundi*, Ooriah; *Teri pungti*, Beng.

B. III. D.  $\frac{3}{8}$ , P. 15, V. 9, A.  $\frac{3}{5}$ , C. 19, L. l. 21, L. tr.  $\frac{5}{5}$ .

Length of head  $\frac{1}{4}$ , of caudal  $\frac{1}{4}$ , height of body  $\frac{1}{3}$ , of dorsal  $\frac{1}{4}$  of the total length.

Eyes. Diameter  $\frac{1}{3}$  of length of head, 1 diameter from end of snout,  $1\frac{1}{4}$  diameters apart.

Body compressed, dorsal profile more convex than the abdominal one, there being a considerable rise from the snout to the base of the dorsal fin. Upper jaw slightly the longest. No barbels.

Fins. Osseous dorsal ray moderately strong and entire; it arises slightly in advance of the ventrals, and midway between the end of snout and base of the caudal.

Lateral line—incomplete, ceasing after 3 or 4 scales.

Colours. Silvery, greenish along the back, and each scale having a number of fine black spots most numerous at the anterior



margin. A large black blotch in the middle of the side, over the posterior extremity of the anal, which sometimes is extended in the median line as far as the tail. A very indistinct black blotch under the posterior extremity of the dorsal passing downwards to the middle of the fish. Fins with a yellowish tinge, stained at their margins.

*Hab.* Orissa and Bengal, attaining 3 or 4 inches in length.

58. \*BARBUS (*Puntius*) DUVAUCELII.

*Leuciscus Duvaucelii*, Cuv. and Val. xvii, p. 95, pl. 491.

*Systomus Duvaucelii*, \*Bleeker, Prod. Cyp. p. 278, (no description).

*Barbus Duvaucelii*, \*Günther, vii, p. 151.

B. III. D.  $2/8$ , A.  $2/5$ , L. l. 27.

According to the figure the length of the head is  $1/5$ , of caudal about  $2/9$ , height of body  $1/3$  of the total length.

Eyes. About  $1/4$  of length of head, 1 diameter from end of snout.

Fins. Dorsal commences rather nearer the base of the caudal than to the end of the snout, its osseous ray entire. Caudal forked.

Lateral line—complete.

Colours. A black spot at the end of the lateral line just anterior to the base of the caudal fin.

*Hab.* Bengal.

59. BARBUS (*Puntius*) VITTATUS.

*Puntius vittatus*, Day, Proc. Zool. Soc. 1865, p. 303; Fish. Malabar, p. 215, pl. 13, f. 1.

*Barbus vittatus*, Günther, Catal. vii, p. 156.

*Kooli*, Hind.

B. III. D.  $2/8$ , P. 12, V. 9, A.  $2/5$ , C. 20, L. l. 20-22, L. tr.  $4/3$ .

Length of head  $2/9$ , of caudal  $2/7$ , height of body  $1/3$  of the total length.

Eyes. Diameter  $1/2$  of length of head,  $2/3$  of a diameter from end of snout, 2 diameters apart.

Fins. Dorsal ray osseous, weak, and entire; it commences somewhat in advance of the ventrals, and midway between the snout and the base of the caudal fin, the latter being forked.

Lateral line—incomplete, ceasing after about five scales.



**Colours.** Silvery, generally with four black spots in the adult, one just before the dorsal, one below its posterior margin, another at the base of the caudal and a fourth at the base of the anal. The dorsal has a vertical black streak, and a black tip with orange markings. In the immature the colours vary; when the fish is about eight-tenths of an inch long, a vertical stripe begins to show itself in the posterior third of the dorsal fin, the summit of which also becomes edged with black, whilst there is some irregular orange colouration about the fin; a black spot shows itself at the base of the caudal and anal fins, and in very young specimens the line of demarcation between the green of the back, and the silvery abdomen, appears like a white band running from the eye to the middle of the tail.

*Hab.* Mysore and Malabar, attaining  $1\frac{1}{2}$  inches in length.

*c. Without osseous dorsal ray,*

60. BARBUS (*Puntius*) PUNJAUBENSIS.

B. III. D.  $\frac{3}{8}$ , V. 9, A.  $\frac{2}{5}$ , C. 19, L. l. 43, L. tr. 8/?

Length of head  $\frac{2}{11}$ , of caudal  $\frac{1}{4}$ , height of body  $\frac{2}{7}$  of the total length.

**Eyes.** Rather large, situated in the anterior half of the head,  $\frac{1}{3}$  of a diameter from end of snout.

Mouth small, horse shoe shaped, with the upper jaw slightly over-hanging the lower. Abdominal profile more convex than that of the back. Barbels absent.

**Fins.** Dorsal two-thirds as high as the body below it, arising midway between the snout and the base of the caudal fin, its last undivided ray is weak and articulated. Caudal deeply forked, with pointed lobes.

Lateral line—incomplete.

**Colours.** Silvery, with a burnished silvery stripe along the side, and a black spot at the base of the caudal fin. Two first dorsal rays and intermediate membrane deep black.

*Hab.* Ravi river at Lahore; it is a small species, attaining about 2 inches in length. Rapidly putrifying, nearly all my specimens were spoiled before I was able to put them into spirit.





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