SILUROID FISHES OF INDIA, BURMA AND CEYLON.

XIV.—Fishes of the Genus *MYSTUS* Scopoli*

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(Plate XIX.)

The fishes of the Bagrid genus *Mystus* Scopoli are widely distributed in the Oriental and Palaearctic regions. The nomenclature of the genus has been a subject matter of controversy and in a recent note[1] it has been shown that *Mystus* Gronow as emended by Scopoli with *Silurus pelusius* Solander as the type is the correct name for this group of fishes. In this article a systematic revision of the genus and its geographic distribution is given.

I am indebted to Dr. S. L. Hora, for his kindness in suggesting the revision, in placing the material at my disposal and also for constant guidance, supervision and encouragement.

Genus **Mystus** Gronow (*emend.* Scopoli)

1763. *Mystus*, Gronovius, *Zoophylacii Gronoviana* I, no. 388, p. 124, pl. viiia, fig. 6 (*Type-species*:—*Mystus anguillaris* Meuschen).

1777. *Mystus*, Scopoli, *Introd. Hist. Nat.* p. 451.

1781. *Mystus* (in part), Meuschen in Gronow's *Zoophylacii Gronoviana* III.

1794. *Silurus* (in part), Solander in Russell's *Nat. Hist. Aleppo* II, p. 210, pl. vii, fig. 1.

1797. *Silurus* (in part), Bloch, *Ichthyol. Hist. Nat.* XI, p. 40, pl. ccclxxi, fig. 2.

1822. *Pimelodus* (in part), Hamilton, *Fish. Ganges*, p. 160.

1839. *Bagrus* (in part), Valenciennes, *Hist. Nat. Poiss.* XIV, p. 8.

1841. *Platystoma* (in part), *Pimelodus* (in part), Sykes, *Trans. zool Soc. Lond.* II, pp. 371,374.

1841. *Bagrus* (in part), Valenciennes in Jacquemont's *Voy. Ind.* pls. xvi & xvii

1849. *Bagrus* (in part), Jerdon, *Madras J. Lit. Sci.* XV, part. 2, p. 335.

1856. *Macrones*, Duméril, *Mem. Acad. Sci. Paris* XXVII, part I, p. 484 (*Type species*:—*Bagrus lamarii* Valenciennes; name preoccupied in Coleoptera, *Entomologist* I (3), p. 33 (1841)).

1858. *Bagrus* (in part), Bleeker, *Ichthyol Archipel. Indi. Prodr.* I *Siluri.*, p. 144.

1859. *Bagrus* (in part), Bleeker, *Act. Soc. Sc. Indo-Neerl.* VI, p. 257.

1862. *Bagrus, Macrones, Hypselobagrus, Hemibagrus & Aspidobagrus*, Bleeker, *Atlas Ichthyol. Ind. Orient. Neerl.* II, pp. 9, 10.

1863. *Bagrus, Macrones, Hypselobagrus, Hemibagrus, Aspidobagrus*, Bleeker, *Ned. Tijdschr. Dierk.* I, p. 96.

*Part of thesis (condensed), approved for the M.Sc., Research degree of the University of Madras (1952).

[1]Jayaram, K. C. *Copeia*, (In press).

1864. *Macrones*, Günther, *Cat. Fish. Brit. Mus.* V, p. 74.

1865. *Hara, Hemibagrus, Hypselobagrus*, Day, *Fish. Malabar*, pp. 184, 186, 187.

1871. *Macrones*, Day, *Proc. zool. Soc. Lond.*, p. 705.

1877. *Macrones*, Day, *Fish. India*, p. 442.

1889. *Macrones*, Day, *Fauna Brit. India Fishes* I, p. 146.

1890. *Macrones*, Vinciguerra, *Ann. Mus. Stor. nat. Genova* IX, part 2, p. 211.

1901. *Hypselobagrus, Hemibagrus*, Stiendachner *Abh. Senckenb. naturf. Ges.* XXV, p. 446.

1911. *Macrones*, Regan, *Ann. Mag. nat. Hist*, (8) VIII, p. 562.

1913. *Macrones*,Weber & de Beaufort, *Fish. Indo. Austral. Archipel.* II, p. 336.

1919. *Aoria*, Jordan, *Proc. Acad. nat. Sci. Philad.* LXX, p. 341 (name preoccupied in Coleoptera, *J. ent. London* II, p. 149 (1863)).

1925. *Macrones*, Nichols, *Amer. Mus. Novit.* (185), p. 2.

1926. *Aoria*, Oshima, *Annot. zool. jap.* p. 4.

1928. *Mystus*, Fowler, *J. Bombay nat. Hist. Soc.* XXXIII, p. 105.

1929. *Aoria*, Prashad & Mukerji, *Rec. Indian Mus.* XXXI, p. 178 (foot-note).

1934. *Mystus*, Hora & Mukerji, *ibid*, XXXVI, p. 335 (foot-note).

1934. *Mystus*, Smith, *J. Siam Soc. nat. Hist.* IX, number 3, p. 294.

1937. *Mystus*, Herre & Myers, *Bull. Raffles Mus.* XIII, p. 68 (foot-note).

1939. *Sperata*, Holly, *Zool. Anz.*, CXXV, p. 43 (*Type-species :—Silurus vittatus* Bloch).

1939. *Aorichthys*, Wu, *Sinensia*, X, p. 131.

1940. *Macronoichthys*, White & Moy Thomas, *Ann. Mag. nat. Hist.* V, p. 505

1943. *Aoria*, Nichols in *Nat. Hist. Central Asia*, IX, p. 36.

Mystus, Smith, *Bull. U. S. nat. Mus.* (188), p. 382.

1948. *Mystus*, Hora, *Rec. Indian Mus.* XLVI, p. 72 (foot-note).

Description of the Genus

Body moderately elongated and naked. Head depressed or compressed and ventrally flattened. Eyes small, superior, nostrils with a free circular eyelid ; placed above angle of mouth thus being not visible from below ventral surface ; orbital rim free. Nostrils small, in two pairs, set apart before the anterior end of orbit. A pair of barbels on the anterior pair. Mouth wide and transverse, cleft of mouth not extending half-way to orbit. Jaws subequal, upper jaw slightly longer ; but in some species almost equal. Lips cutaneous and surrounding gape of mouth. Teeth numerous, villiform, in an uninterrupted semilunar band across palate and on upper jaw ; band on lower jaw interrupted in middle and deeply curved. Gill openings very wide extending forward for a considerable distance on the ventral surface. Gill membranes free but overlapping each other and free from the isthmus. Upper surface of head plain or rough, with a median longitudinal groove. Occipital process of varying length and concealed by skin or slightly naked. Interneural shield may or may not be present.

Four pairs of barbels, one pair of maxillary barbels always longer than head, one pair of thin nasal barbels, two pairs of mandibular barbels, one inner pair always shorter than head and another outer pair of varying length. Two dorsal fins, an anterior rayed dorsal with seven rays and a serrated spine ; a posterior soft adipose dorsal fin, free behind rayed dorsal fin placed nearer tip of snout than base of caudal fin.

Pectroal fin with 8-10 rays and a pungent spine, stronger than dorsal spine. Pelvic fin with six rays and not reaching base of anal fin. Paired fins almost horizontally inserted. Anal papilla may or may not be present. Anal fin with less than 15 rays, short and not reaching base of caudal fin. Caudal fin bilobed or forked, lobes being unequal and sometimes prolonged into filamentous extensions.

Alimentary canal.—Stomach usually spacious, with the oesophagus united at the right side of stomach ; intestines coiled.

Air-bladder.—Of varying shapes, placed immediately below the alimentary canal, anteriorly connected but posteriorly free. Internally a longitudinal complete or incomplete septum present.

KEY TO THE SUB-GENERA OF *Mystus* SCOPOLI

I. Interneural shield in between occipital process and basal bone of dorsal fin absent.. .. .. *Mystus* Scopoli, (p. 49).

II. Interneural shield present. .. .. .. *Osteobagrus*, nov, (p. 67).

Sub-genus **Mystus** Scopoli.

Geno-type.—Silurus pelusius Solander=*Mystus pelusius* (Solander) : *Type-locality :*—River Coic, Aleppo (Syria) ; type in British Museum, Natural History, London.

Diagnosis.—Interneural shield in between basal bone of dorsal fin and occipital process absent. Posterior extremity of air bladder not elongated ; an incomplete longitudinal septum present ; the lateral chambers communicate with each other by an anterior opening.

Distribution.—Asia, from Mesopotamia, Syria in North west to Ceylon and the Indo-Australian Archipelago in the south ; Yangtezikiang basin in the North East and Malabar coast of India in the west.

KEY TO THE SPECIES OF THE SUB-GENUS *Mystus.*

A. Occipital process 1·5 to 2 times as long as wide at base **1**

B. Occipital process 3—5 times as long as wide at base .. **5**

1. Occipital process reaching basal bone of dorsal fin .. **2**

Occipital process not reaching basal bone of dorsal fin .. **4**

2. Diameter of eyes contained 3·8 to 4·3 times in length of head, 1·25 to 1·8 times apart .. .. .. *pulcher*, (p. 52).

Diameter of eyes contained more than 4·3 times in length of head .. 3

3.	Diamter of eyes 5 times in length of head and not more than 2 times apart. (Caudal peduncle normally high)	*bleekeri*, (p. 50).
	Diameter of eyes 7 times in length of head ; 2 to 2·25 times apart. (Caudal peduncle narrow and whip like)	*vittatus horai*, sub-sp. nov, (p. 56).
4.	Interorbital width 2 times the diameter of eyes. (Occipital region of head not covered with skin but rough and rugose)	*gulio*, (p. 62).
	Interorbital width 1·5 to 1·75 times the diameter of eyes. (Occipital region of head covered with thick skin ; occipital process not visible)	*malabaricus*, (p. 64).
5.	Maxillary barbels extend beyond Pelvic fins	**6**
	Maxillary barbels do not extend beyond Pelvic fins ..	**9**
6.	Occipital process 3 times as long as wide at base. (Interorbital width 1 diameter of eyes. Maxillary barbels reaching just base of caudal fin) ..	*oculatus*, (p. 60).
	Occipital process more than 3 times as long as wide at base	**7**
7.	Occipital process 3·5 to 4 times as long as wide at base. (Interorbital width 1 to 1·5 diameter of eyes. Maxillary barbels extend even beyond caudal fin's base)	*cavasius*, (p. 52).
	Occipital process 4 to 4·5 times as long as wide at base	**8**
8.	Interorbital width 1 to 2 diameter of eyes. (Punctated marks along lateral line may be present) ..	*montanus*, (p. 62).
	Interorbital width 2·5 to 3 diameter of eyes. (Punctated marks absent)	*menoda*, (p. 64).
9.	Median longitudinal groove on head reaching base of occipital process. (Interorbital width 1 to 1·5 diameter of eyes. Height of body not more than 5 times in total length. Pectoral spine with 8 to 10 teeth)	*tengara*, (p. 58).
	Median longitudinal groove on head not reaching base of occipital process	**10**
10.	Interorbital width 1·5 to 2 diameter of eyes. (Pectoral spine with 16 teeth. Height of body more than 5 times in total length.)	*vittatus*, (p. 54).
	Height of body 5·25 to 5·5 times in total length	**11**
11.	No punctated marks along the lateral line. Diameter of eyes 5 times in length of head	*armatus*, (p. 59).
	Height of body 7 to 9 times in total length. Punctated marks along the lateral line ..	*punctatus*, (p. 66).

Mystus (Mystus) bleekeri (Day).

1846. *Bagrus keletius*, Bleeker, *Nat. & Geneesk. Arch. Ned. Ind.* III (2), p. 135 (*Type-locality.*—Bengal).

1853. *Bagrus keletius*, Bleeker, *Verh. Bat. Gen.* XXV, p. 115.

1864. *Macrones keletius*, Günther, *Cat. Fish. Brit. Mus.* V, p. 84.

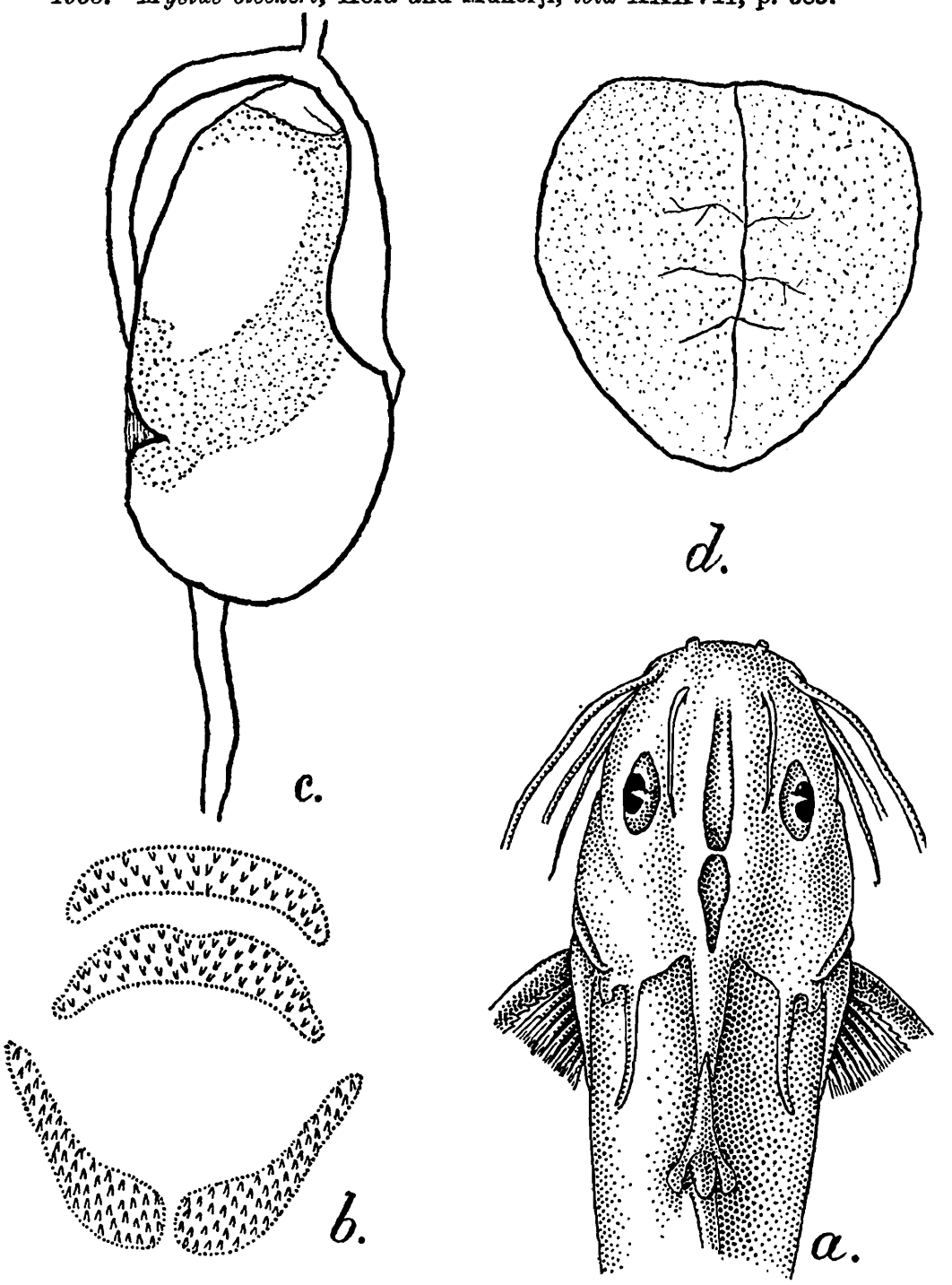
1877. *Macrones bleekeri*, Day, *Fish. India*, p. 451, pl. ci, fig. 1.

1889. *Macrones bleekeri*, Day, *Fauna Brit. India* Fish I, p. 162.

1890. *Macrones bleekeri*, Vincigurerra, *Ann. Mus. Stor. nat. Genova* IX, part 2, p. 219.

1903 *Macrones bleekeri*, Volz. *Zool. Anz.* XXVI, p. 556.

1904. *Macrones bleekeri*, Regan, *Ann. Mag. nat. Hist.* (7) XIV, p. 194.
1910. *Macrones bleekeri*, var. *burmanicus*, Jenkins, *Rec. Indian Mus.* V, p. 138.
1911. *Macrones bleekeri*, Chaudhuri, *ibid* VI, p. 22.
1921. *Macrones bleekeri*, Hora, *ibid* XXII, p. 179.
1929. *Aoria bleekeri*, Prashad and Mukerji, *ibid* XXXI, p. 168.
1934. *Aoria bleekeri*, *Mystus bleekeri*, Hora and Mukerji, *ibid* XXXVI, pp. 124, 125.
1935. *Mystus bleekeri*, Hora and Mukerji, *ibid* XXXVII, p. 385.



TEXT-FIG. 1.—*Mystus* (*Mystus*) *bleekeri* (Day).

a. Dorsal view of head and anterior portion of body : $\times 1\frac{3}{5}$; *b.* dentition : $\times 4\frac{1}{5}$; *c.* alimentary canal : $\times 3\frac{1}{5}$; *d.* air-bladdar : $\times 3\frac{1}{5}$;

B. X ; D. 1/7 ; P. 1/9-10 ; V. 6 ; A. 9-10/(3/6-7) ; C. 17.

Length of head 4 to 5 times, width of head equalling length of head behind nostrils. Height of body 4·5 to 5 times in total length. Eyes

5 diameters in length of head, 1·25 to 1·5 from end of snout and 2 apart. Median groove on head reaching base of occipital process. Maxillary barbels reach anal fin or beyond.

Distribution.—Sind, Jumna, upper waters of Ganges, Assam, Burma and Sumatra.

Remarks.—This species is closely allied to *cavasius* from which it could be distinguished by the shorter maxillay barbels. Day includes *Bagrus tengara* Blyth with a querry under the synonymy of this species, which Hora & Law (1941)[1] have merged under *Batasio* Blyth.

Mystus (Mystus) pulcher (Chaudhuri).

1911. *Macrones pulcher*, Chaudhuri, *Rec. Indian Mus.*, VI, pp. 22-20, pl.i, fig. 4 : (*Type-locality.*—Bhamo, close to Yunnan border).

1929. *Aoria pulcher*, Prashad & Mukerji, *ibid* XXXI, p. 180.

1943. *Aoria pulcher*, Nichols, *Freshw. Fish China* in *Nat. Hist. Cent. Asia* IX, p. 37.

B. VI : D. 1/7-0 : P. 1/9 : V. 6 : A. 12 (2/10) : C. 17.

Length of head 3·3 to 3·6 times, height of body 3·8 times in total length. Eyes 3·8 to 4·3 diameters in length of head, 1·2 to 1·4 from end of snout and 1·25 to 1·8 apart. Median groove on head does not reach base of occipital process. Maxillary barbels reach beyond anal fin. Dorsal spine with 8 teeth ; pectoral spine with 10 to 12 teeth. A series of minute openings along lateral line present.

Distribution.—Bhamo, close to Yunnan border ; Indawgyi lake, Myitkyana district, Burma.

Remarks.—This species is closely allied to *M.* (*Mystus*) *bleekeri.*

Mystus (Mystus) cavasius (Hamilton)

1822. *Pimelodus cavasius*, Hamilton, *Fish. Ganges* pp. 203, 379, pl. xi. fig.67. (*Type-locality.*—Gangetic Province).

1877. *Macrones cavasius*, Day, *Fish. India*, p. 447 ; pl. c, fig. 1.

1889. *Macrones cavasius*, Day, *Fauna Brit. India* Fish I, p. 155.

1890. *Macrones cavasius*, Vinciguerra, *Ann. Mus. Stor. nat. Genova.* IX, part 2, p. 218.

1909 *Macrones cavasius*, Jenkins, *Rec. Indian Mus.* III, p. 287.

1910. *Macrones cavasius*, Jenkins, *ibid*, V, pp. 137, 140.

1911. *Macrones cavasius*, Chaudhuri, *ibid*, VI, p. 20.

1916. *Macrones cavasius*, Chaudhuri, *Mem. Indian Mus.* V, p. 434.

1916. *Macrones cavasuis*, Raj, *Rec. Indian Mus.* XII, p. 264.

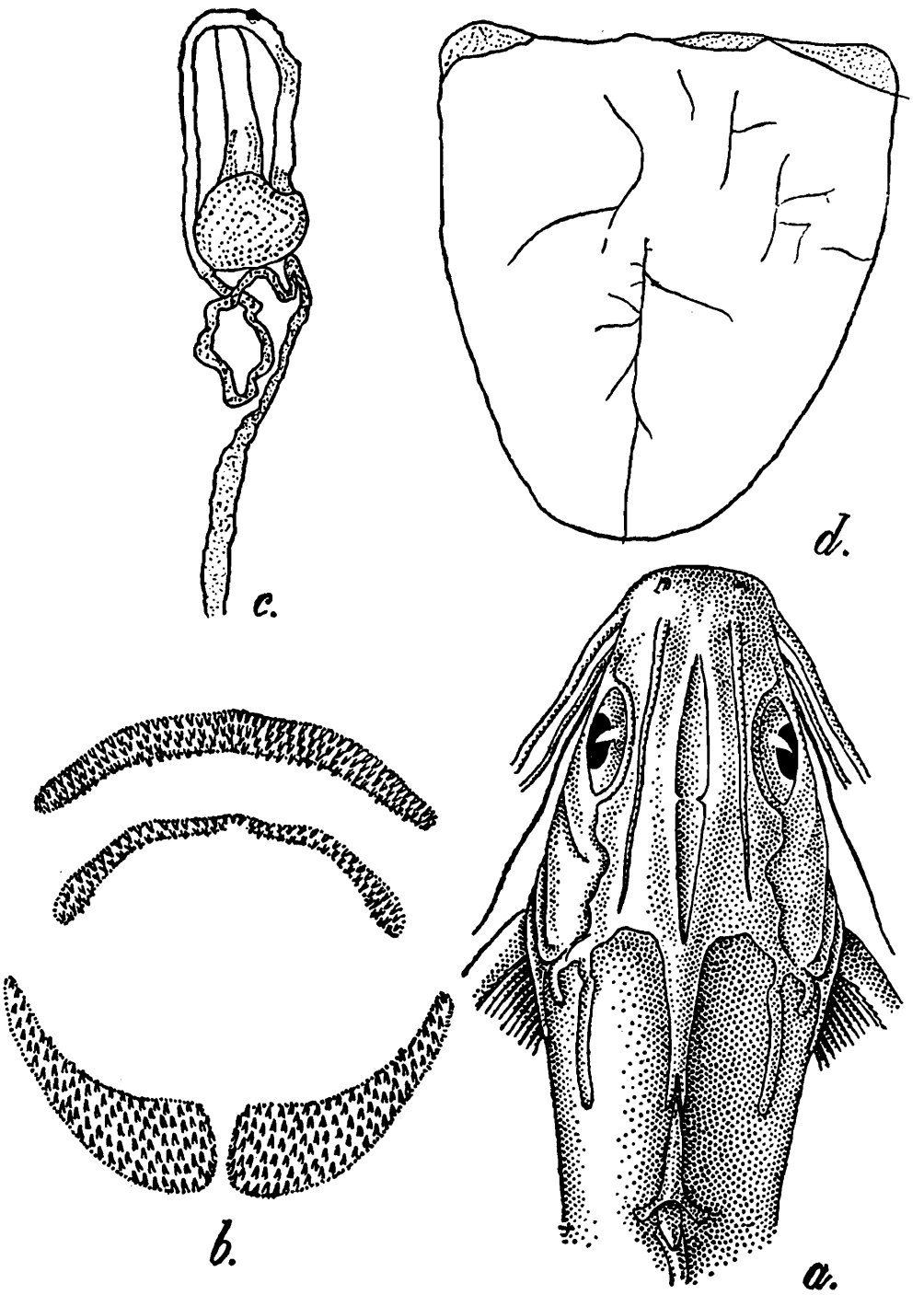
1921. *Macrones cavasius*, Hora, *ibid* XXII, p. 179.

1929. *Aoria cavasius*, Prashad & Mukerji, *Rec. Indian Mus.* XXXI, pp. 162, 179.

[1] Hora, S. L. & Law, N. C., *Rec. Indian Mus.*, XLIII, p. 36 (1941).

1934. *Mystus cavasius*, Smith, *J. nat. Hist. Soc. Siam.* IX, p. 294.

1935. *Macrones cavasius*, White, *Bull. geol. Surv. Nigeria* part 14, fig. 14. p. 54.



TEXT FIG. 2.—*Mystus* (*Mystus*) *Cavasius* (Hamilton).

a. dorsal view of head and anterior portion of body : ×1⅓ ; *b.* Dentition : ×4
c. alimentary canal : ×2 ; *d.* air-bladder : ×1⅓ .

1935. *Mystus rhegma*, Fowler, *Proc. Acad. nat. Sci. Philad.* LXXXVII, fig. 27, p. 102.

1936. *Mystus cavasius*, Hora, *Rec. Indian Mus.* XXXVIII, p. 1.

1937. *Mystus cavasius*, Hora, *ibid* XXXIX, pp. 17, 19.

1938. *Mystus cavasius*, Hora, *ibid* XI, p. 178.

1938. *Mystus cavasius*, Misra, *ibid*, XI, p. 256.

1938. *Mystus cavasius*, Hora & Misra, *J. Bombay nat. Hist. Soc.* XL, p. 23.

1940. *Mystus cavasius*, Hora, *Rec. Indian Mus.* XLII, pp. 366, 368, 370.

1941. *Mystus cavasius*, Hora & Nair, *ibid* XLIII, p. 369.

1941. *Mystus cavasius*, Hora & Law, *Rec. Indian Mus.*, XLIII, pp. 238, 254.
1942. *Mystus cavasius*, Hora, *ibid* XLIV, p. 197.
1942. *Mystus cavasius*, Hora & Misra, *J. Bombay nat. Hist. Soc.* XLII, p. 221.
1945. *Mystus cavasius*, Smith, *Bull. U. S. nat. Mus.* number 188, p. 389.
1948. *Mystus cavasius*, Hora, *Rec. Indian Mus.* XLVI, pp. 65, 72.
1949. *Mystus cavasius*, Hora, *J. Zool. Soc. India* I (1), p. 2.

B. VI : D. 1/7 : P. 1/8 : V. 6 : A. 11-13 (4/7-9) : C. 16.

Length of head 4·5 to 6·5 times, height of body 5·5 to 6 times, width of head 6·5 to 6·75 times in total length. Eyes 3·5 to 4 diameters in length of head, 1 to 2 from end of snout and 1 to 1·5 apart. Median groove on head reaches base of occipital process. Maxillary barbels extend beyond base of caudal fin. Pectoral spine with 11-12 teeth.

Distribution.—Sind, Punjab, North West Frontier Provinces, Delhi, U. P., Bihar and Bengal to Assam and Burma. It extends up to Chilka Lakes and Madras in the south.

Remarks.—2 specimens from a mixed lot, from River Jumna, collected by Malaria Medical Officer are remarkable in that the union of the gill membranes over the isthmus is more rounded instead of being very sharp. This is considered to be an artifact and within the range of variation of this species.

Mystus (Mystus) vittatus (Bloch).

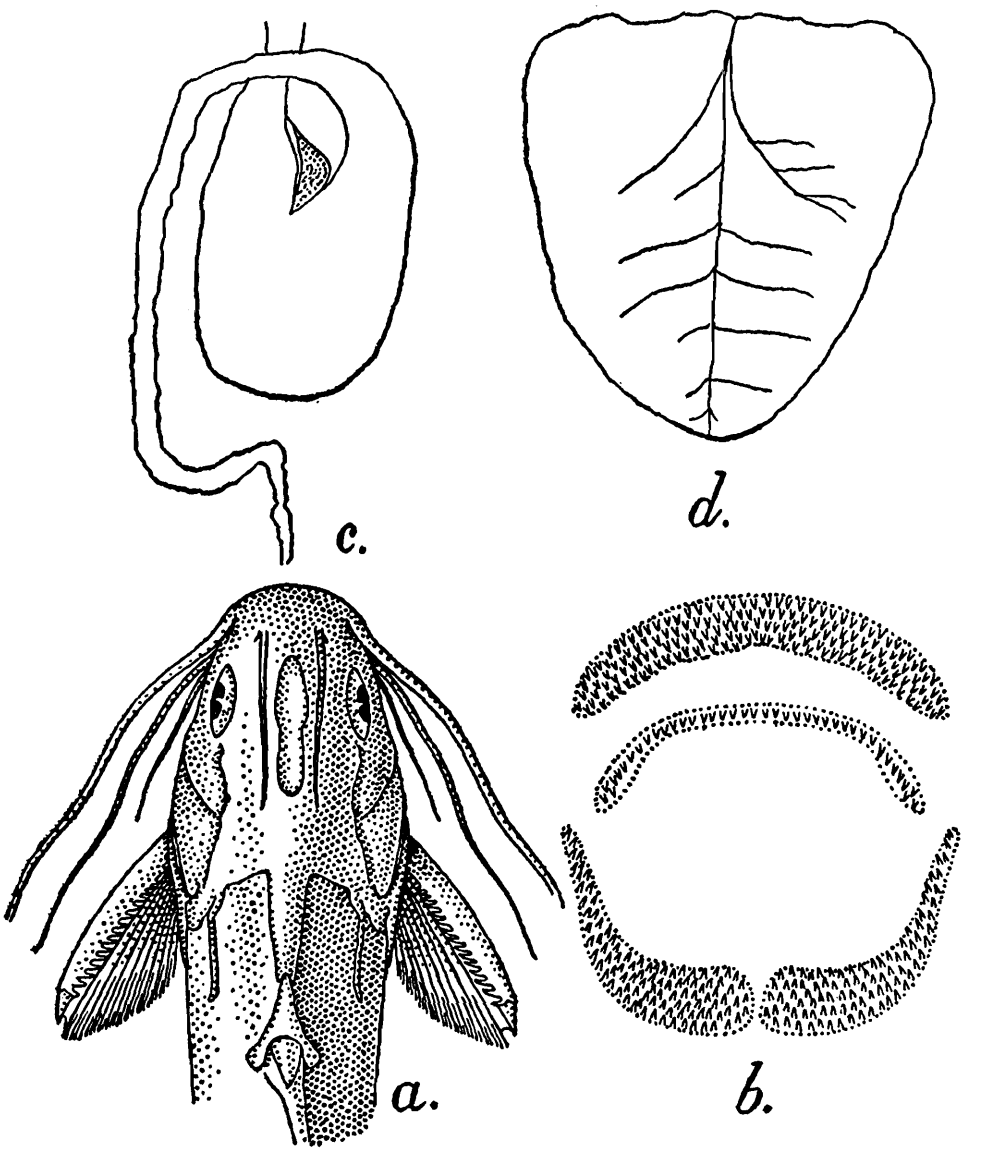
1797. *Silurus vittatus*, Bloch, *Ichthyol. Hist. nat.* XI, p.40, pl. ccclxxi, fig. 2· (*Type-locality.*—Tranquebar, S. India).
1822. *Pimelodus tengara*, Hamilton, *Fish. Ganges* pp. 183, 377, pl. iii, fig. 61.
1839. *Bagrus tengara*, Valenciennes, *Hist. nat. Poiss.* XIV, p. 414.
1849. *Bagrus vittatus*, Jerdon, *Madras J. Lit. Sci.* XV, part, 2, p. 338.
1853. *Bagrus vittatus*, Bleeker, *Verh. Bat. Gen.* XXV, p. 56, 114.
1868. *Macrones tengara*, Peters, *Mber. K. Preuss. Akad. Wiss.* p. 271.
1877. *Macrones vittatus*, Day, *Fish. India* p. 448, pls. xcxiii & xcix, figs. 3 & 4.
1883. *Macrones vittatus*, Vinciguerra, *Ann. Mus. Stor. nat. Genova* XVIII, p. 657.
1889. *Macrones vittatus*, Day, *Fauna. Brit. India* Fish I, p. 157.
1890. *Macrones vittatus*, Vinciguerra, *Ann. Mus. Stor. nat. Genova* IX, part. 2, p. 229.
1909. *Macrones vittatus*, Jenkins, *Rec. Indian Mus.* III, p. 289.
1910. *Macrones vittatus*, Jenkins, *ibid* V, p. 135.
1913. *Macrones vittatus*, Chaudhuri, *ibid* VIII, p. 255.
1916. *Macrones vittatus*, Raj, *ibid* XII, p. 250.
1916. *Macrones vittatus*, Chaudhuri, *Mem. Indian Mus.* V, p. 435.
1921. *Macrones vittatus*, Hora, *Rec. Indian Mus.* XXII, p. 173.
1923. *Macrones vittatus*, Hora, *Mem. Indian Mus.* V, p. 765.
1929. *Macrones vittatus*, Pillay, *J. Bombay nat. Hist. Soc.* XXXIII, p. 358.
1932. *Aoria vittatus*, Deraniyagala, *Spolia zeylan.* XVI, p. 283.
1936. *Mystus vittatus*, John, *J. Bombay nat. Hist. Soc.* XXXVIII, pp. 706,709.
1937. *Mystus vittatus*, *Mystus atrifasciatus*, Fowler, *Proc. Acad. nat. Sci. Philad.* LXXXIX, p. 146.
1937. *Mystus vittatus*, hora, *Rec. Indian Mus.* XXXIX, p. 19.
1938. *Mystus vittatus*, Misra, *ibid* XL, p. 256.
1940. *Mystus vittatus*, Shaw & Shebbeare, *J. roy. Asiat. Soc. Beng.* III, pp. 93, figs. 1, 93.

1940. *Mystus vittatus*, Hora, *Rec. Indian Mus.* XLII, pp. 366, 368.
1941. *Mystus vittatus*, Hora & Gupta, *J. roy. Asiat. Soc. Beng.* VI, 80.
1941. *Mystus vittatus*, Hora & Nair, *Rec. Indian Mus.* XLIII, pp. 366, 367.
1941. *Mystus vittatus*, Hora & Law, *ibid* XLIII, p. 238.
1942. *Mystus vittatus*, Hora, *ibid* XLIV, p. 197.
1945. *Mystus vittatus*, Smith, *Bull. U. S. nat. Mus.* 188, p. 385, fig. 85.
1948. *Mystus vittatus*, Hora, *Rec. Indian Mus.* XLVI, pp. 65, 70.

Length of head 4·5 to 5 times, height of body 4·5 to 5 times in total length, eyes 4 to 5 diameters in length of head, 1·5 to 2 from end of snout and apart. Median groove on head shallow and not reaching base of occipital process. Maxillary barbels reach pelvic fin. Pectoral spine with 15 to 16 teeth.

Distribution.—Throughout India, Burma, Siam and Ceylon.

Remarks.—There has been lot of confusion regarding the identity



TEXT-FIG. 3.—*Mystus* (*Mystus*) *vittatus* (Bloch).

a. dorsal view of head and anterior portion of body : × 1⅓ ; *b.* dentition ; × 5⅓ ; *c.* alimentary canal : × 4 ; *d.* air-bladder : × 2⅔.

of *vittatus* and *tengara* since the time of Day and Günther. Day (1865, pp. 190-191), describing *Hypselobagrus tengara* observed as below.—

" I have with some hesitation considered this fish to be *Hamilton Buchnan's* " Pimelodns tengara ", but it is without doubt *Dr. Günther's* " Macrones tengara " and as he has

probably described his specimen from *Hamilton Buchnan's* typical one, I conclude some mistake may have arisen in the " Fishes of the Ganges ", especially as it is there asserted that the fish is small and inhabits ponds, that its dorsal spine is smooth, and that its maxillary cirri reach to the end of the caudal fin. I should remark that this can hardly be identical as *Dr. Günther* suggests, with *Ham. Buchnan's* " Pimelodus batasius ", pl. 23, f. 60, the figure of which is incorrect, for in the description, pp. 179, 377 it is expressly stated that it has eight cirri *shorter* than head, and only grows to about three inches in length. Again it can scarcely be the " Pimelodus carcio " of the same author, which is a pond fish of about three inches in length, from North Bengal, in which the maxillary cirrus does not extend to the posterior extremity of the first dorsal fin, whilst the dorsal spine is said to have a strong prickle barbed behind, & c. & c. "

Hora (1929)[1], after examining Hamilton's manuscript drawings, remarked that " Day's presumption of Buchnan's published figure of *P. batasio* being a drawing of *P. carcio* is correct "

Smith (*op. cit*), on the basis of material in the British Museum and as well as on the basis of an examination of large material from Siam, concluded that the " true *tengara* does not occur in Siam "

Also it is of interest to observe here that *tengara* does not occur in South India, but only this widely distributed *vittatus* has been recorded even from Ceylon.

Mystus (Mystus) vittatus horai, sub-sp. nov.

Material.—4 specimens from River Indus, Kalabagh, collected by Dr. S. L. Hora on 25-7-23.

B. X.: D. I/7: P. I/8: V-6: A. 11 (3/8): C-17.

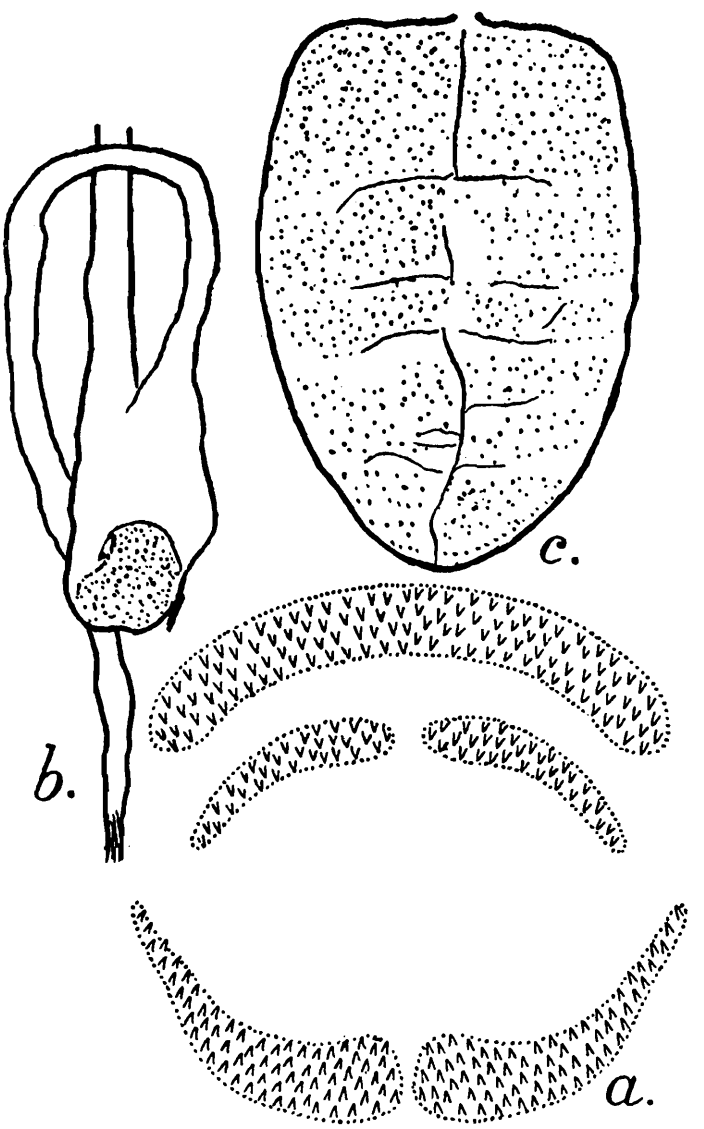
Head depressed, length of head 3 to 3·75 times, height of body about 5 times in total length or 3 and about 4 times in standard length respectively. Dorsal profile arched with a steep rise from tip of snout to base of occiput. Eyes round, placed laterally above angle of mouth, about 7 diameters in length of head, about 1·5 from end of snout and about 2·25 apart. Jaws equal; snout obtuse. Cleft of mouth not extending half way to orbit. Greatest width of head equals length of head behind angle of mouth. Teeth villiform and in bands. In 2 specimens teeth on palate interrupted whilst in other two continuous, but in a very narrow band; 3 to 4 rows on upper jaw and about 5 rows, interrupted on lower jaw. Upper surface of head rough. Median longitudinal groove on head does not reach base of occiput. Occipital process reaches basal bone of dorsal fin and is two times as long as broad at base. Maxillary barbels reaching pelvic fin; nasal barbels nearly as long as head, inner mandibular barbels short and outer pair extending to $\frac{3}{4}$th of pectoral fin.

Dorsal spine small with 5 to 6 teeth on upper half equalling half the length of head. Adipose dorsal fin commences immediately after rayed fin with no intervening space in between them; its base about 2·25 times the length of base of anal fin. Pectoral fin laterally placed and equalling twice the width of gape of mouth. Pectoral spine strong, internally serrated with about 12 strong teeth. Immediately after the

[1] Hora, S. L. *Mem. Indian Mus.* IX, p. 182, (1929).

adipose fin and anal fin, the caudal peduncle is very much constricted giving the posterior end a tapering appearance. Longest ray of anal fin 1·75 to 2 times the length of base of anal fin. No anal papilla. Caudal fin bilobed. A faint black shoulder mark present. No parallel stripes along sides. Lateral line complete. Colour in spirit brownish yellow on dorsal surface with dull grey beneath.

Type-specimens.—4 specimens collected from River Indus, Kalabagh by Dr. S. L. Hora after whom the sub-species is named. Types deposited in the Zoological Survey of India, Calcutta.



TEXT-FIG. 4.—*Mystus* (*Mystus*) *vittatus horai*, sub-sp., nov.
a. dentition : × 7½ ; *b.* alimentary canal : × 2¼ ; *c.* air-bladder : × 3.

The new sub-species is very closely allied to *Mystus* (*Mystus*) *vittatus* from which it differs in its dentition ; a constricted caudal peduncle ; an interrupted median longitudinal groove on dorsal surface of head ; eyes contained 7 diameters in length of head (*versus* 4 to 5 times in

vittatus) ; number of teeth on the pectoral spine (12 *versus* 15-16 in *vittatus*) and number of teeth on the dorsal spine (5 to 6 *versus* 3 to 5 in *vittatus*).

Measurements in Milimeters

Total length	106·0	96·0	82·0	76·0
Standard length	84·5	78·0	64·2	59·5
Length of head ..	28·5	28·5	22·8	21·0
Height of head at occiput	17·5	16·5	16·8	12·0
Width of head ..	19·0	18·2	15·0	12·8
Diameter of eyes	5·0	4·0	3·8	3·2
Length of snout	7·5	6·5	5·5	5·2
Interorbital width	9·2	9·0	6·2	6·0
Depth of body .	21·0	20·0	16·0	15·5
Length of caudal peduncle	5·2	3·0	2·0	2·0
Least height of caudal peduncle	11·0	10·0	7·0	7·0
Longest ray of dorsal fin ..	13·8	8·0	9·0	10·0
Length of pectoral fin	15·5	17·0	13·0	12·2
Length of pelvic fin .	14·0	13·2	11·0	9·0
Longest ray of anal fin	16·5	15·0	13·2	11·5
Length of base of anal fin	10·0	9·0	8·2	6·5
Length of base of adipose fin .	22·5	21·0	18·8	14·5

Mystus (Mystus) tengara (Hamilton).

1822. *Pimelodus carcio*, Hamilton, *Fish Ganges*, 377, pl. clxxxi, pl. xxiii, fig. 60 (written erroneously below the figure as *P. batasius ; Type locality* : northern parts of Bengal).

1877. *Macrones tengara*, Day, *Fish India*, p. 447, pl. ci, fig. 5.

1889. *Macrones tengara*, Day, *Fauna Brit. India* Fish I, p. 156.

1913. *Macrones tengara*, Chaudhuri, *Rec. Indian Mus.*, VIII, p. 255.

1929. *Pimelodus carcio*, Hora, *Mem. Indian Mus.*, IX, p. 187.

1934. *Mystus tengara*, Smith, *J. nat. Hist. Soc. Siam* IX, part, 3, pp. 294-295.

1936. *Mystus tengara*, Prashad & Hora, *Rec. Malaria Surv. India*, VI, p. 639, pl. ix, fig. 2.

1940. *Mystus tengara*, Hora, *Rec. Indian Mus.*, XLII, p. 367.

1948. *Mystus vittatus*, Hora, *ibid* XLVI, p. 70, number 32.

B. X. : D. I/7 : P. I/8 : V-6 : A. 11-13(2-3/9-10) : C. 19.

Length of head 4 to 4·5 times, height of body 4·5 to 5·5 times in total length. Eyes 4 to 4·5 diameters in length of head, 1 to 1·5 from end of snout and 1·5 to 2 apart. Median groove on head reaches base of occipital process. Maxillary barbels extend to base of pelvic fin. Dorsal spine with 3 to 4 teeth ; pectoral spine with 8-10 teeth.

Distribution.—Northern India up to Assam in the east and Madhya Pradesh in the south.

Remarks.—This species is allied to *M.* (*Mystus*) *vittatus* from which it is distinguished by the anteriorly serrated teeth in the dorsal spine; 8 to 10 teeth in the pectoral spine; median groove reaching base of occipital process and the length of caudal fin contained 4·3 times in total length (*versus* 5·5 times in *M.* (*Mystus*) *vittatus*).

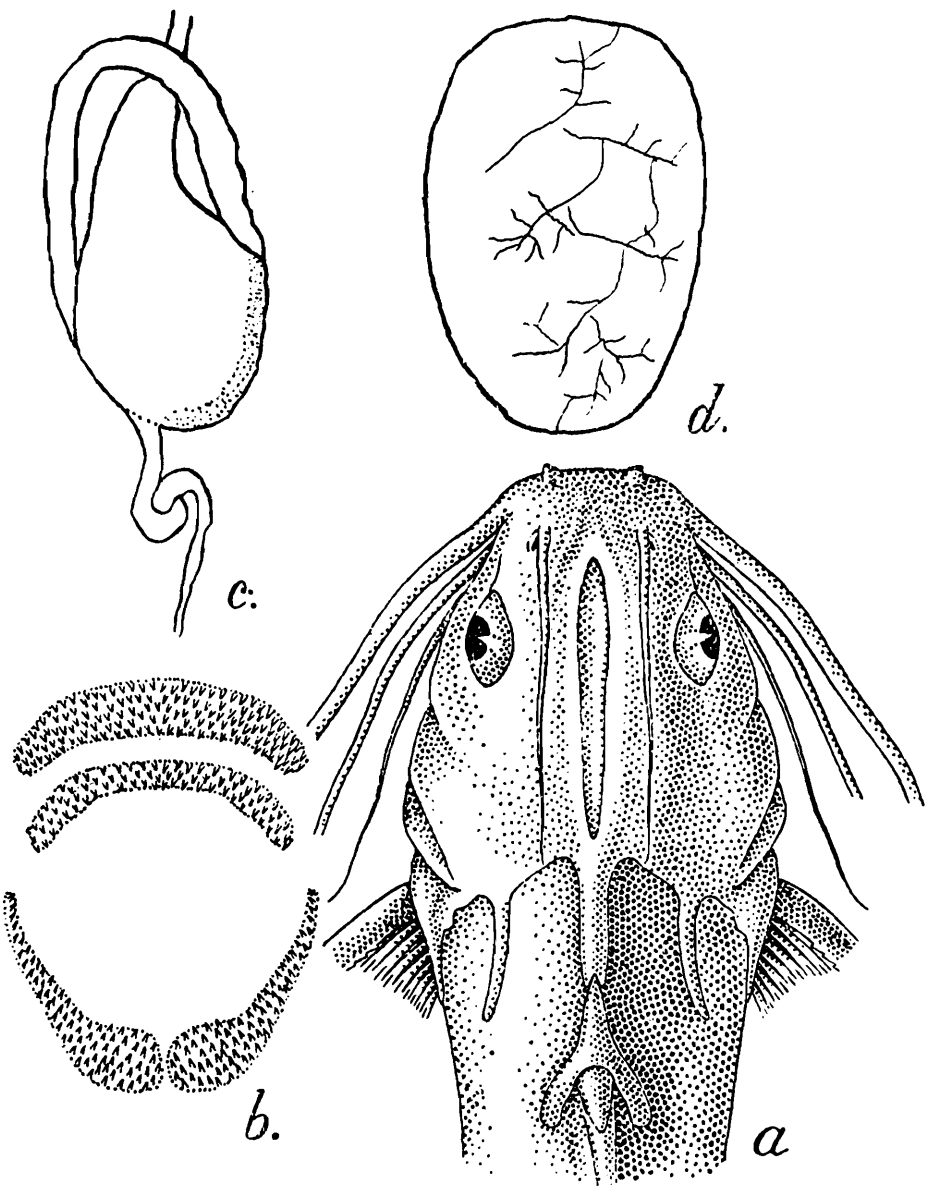
Mystus (Mystus) armatus (Day).

1865. *Hypselobagrus armatus*, Day, *Proc. zool. Soc. London* p. 289; (*Type-locality*:—Cochin, Malabar); *Fish Malabar*, p. 187.

1877. *Macrones armatus*, Day, *Fish India*, p. 450, pl. ci, fig. 3.

1889. *Macrones armatus*, Day, *Fauna British India* Fish I, p. 161.

1931. *Aoria armatus*, Hora, *Rec. Indian Mus.*, XXXII, p. 1.



TEXT-FIG. 5.—*Mystus* (*Mystus*) *armatus* (Day).
a. dorsal view of head and anterior portion of body: ×2⅔; *b*. dentition: ×5½; *c*. alimentary canal: ×1⅓; *d*. air-bladder: ×1⅓.

B. X.: D. I/7: P. I/9 : V-6: A/11(3/8); C. 17.

Length of head 5 to 5·5 times, height of body 5·25 to 5·5 times in total length. Eyes 5 diameters in length of head, 1·25 from end of snout

and 1·5 to 2 apart. Median groove on head does not reach base of occipital process. Maxillary barbels extend to base of pelvic fin. Pectoral spine with 10-14 teeth.

Distribution :—Malabar and Wynaad range of hills ; ? Burma.

Remarks.—Hora (*op. cit*) recorded without any comment a single specimen (F.11150/1) from Kyenchong river in Cinchona Reserve, 10 miles off La-poke-chong, Mergui district, Lower Burma and collected by K. Biswas. The specimen on thorough examination proves to belong to this species as has been rightly registered under this name. Subsequent literature reveals no further evidence of its occurrence in Burma. Although it is too presumptuous to state definitely that the species occurs in Burma also, it is worthwhile recording this remarkable zoogeographic locality record. A further collection may settle this problem. The specimen measures 202·5 mm. in total length.

This species is closely allied to *M.* (*Mystus*) *malabaricus* from which it differs in its darker colouration, an arched dorsal profile, a longer occipital process and in the denticulation of the pectoral spine (10-14 teeth *versus* 8-10).

Mystus (Mystus) keletius (Valenciennes).

1839. *Bagrus keletius*, Valenciennes, *Hist. nat. Poiss.* XIV, p. 411 (*Type locality* :—Pondicherry, S. India).

1877. *Macrones keletius*, Day, *Fish India*, p. 449, pl. xviii, fig. 5 ; (number of figure is stated as 3 in the text erroneously).

1889. *Macrones keletius*, Day, *Fauna Brit. India* Fish I, p. 160.

1916. *Macrones keletius*, Raj, *Rec. Indian Mus.*, XII, p. 265.

1932. *Aoria keletius*, Deraniyagala, *Spolia zeylan.* XVI, p. 284.

1942. *Mystus keletius*, Hora, *Rec. Indian Mus.*, XLIV, p. 197.

B. X. ; D. I/7 ; P. I/10 ; V. 6 ; A. 9-10(2-3/7-8) ; C. 17

Length of head 4 to 4·5 times, height of body about 6 times in total length. Eyes 4·75 to 5 diameters in length of head, 1·5 to 1·75 from end of snout and 1·75 to 2 apart. Median groove on head indistinct extending to a little distance beyond eyes. Maxillary barbels reach nearly end of pelvic fin. Dorsal spine smooth ; pectoral spine with 12-13 teeth.

Distribution.—Madras, Pondicherry, Coimbatore, Mysore and Ceylon.

Remarks.—The species is very closely allied to *M.* (*Mystus*) *cavasius* from which it differs in its shorter maxillary barbels, in the median groove not reaching base of occipital process and in the brighter colouration. Günther[1], doubtfully included Valenciennes' *Bagrus keletius* under *Macrones keletius*. It is to be noted that Valenciennes' *keletius* is the south Indian species described above, whereas Günther's doubtful *keletius* is *M.* (*Mystus*) *bleekeri* from Hooghly.

Mystus (Mystus) oculatus (Valenciennes).

1839. *Bagrus oculatus*, Valenciennes, *Hist. nat. Poiss.* XIV, p. 424 (*Type-locality* :—Malabar).

1877. *Macrones oculatus*, Day, *Fish. India*, p. 448, pl. XCVIII, fig. 4.

1889. *Macrones oculatus*, Day, *Fauna Brit. India* Fish I, p. 156.

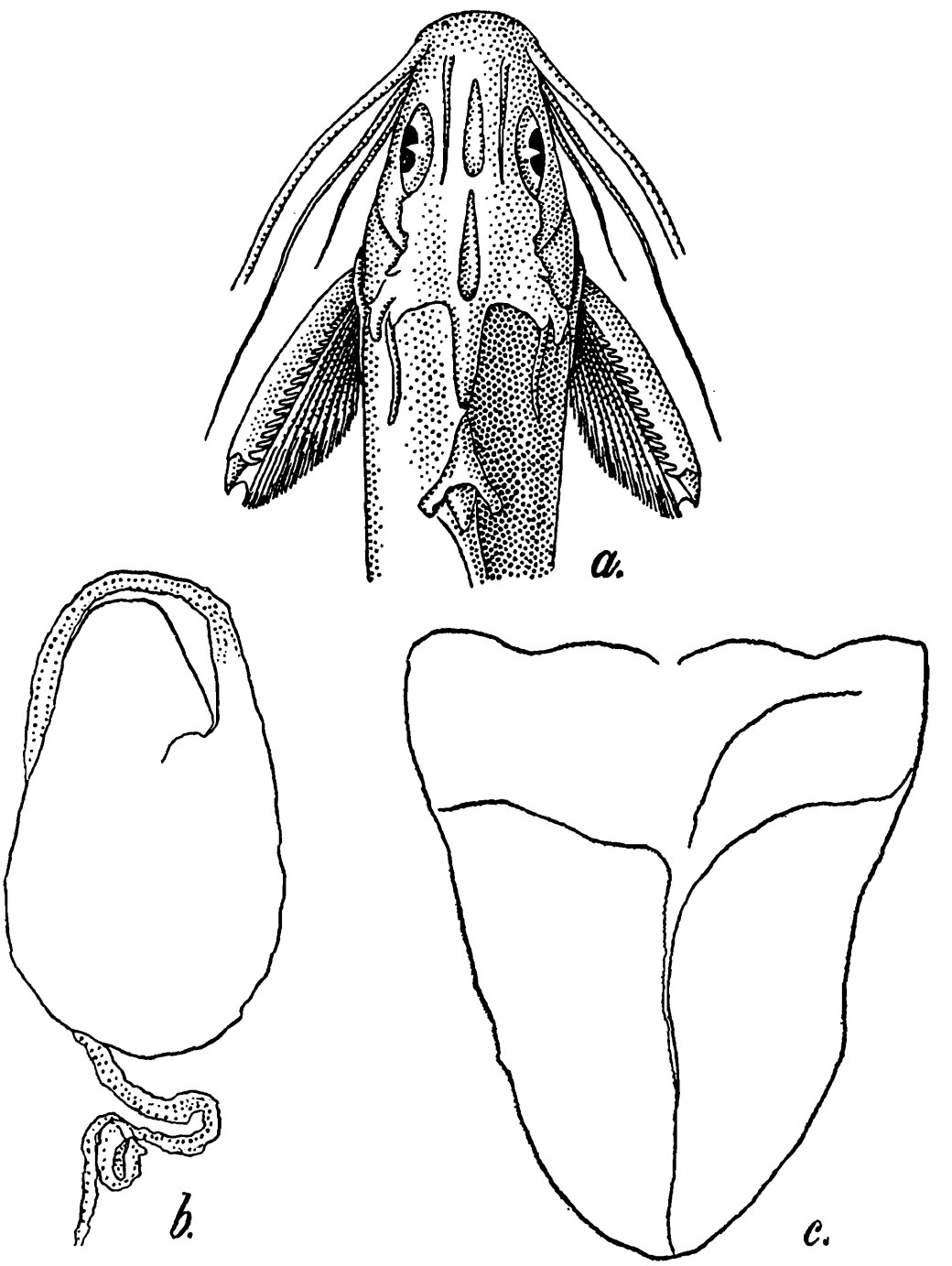
1929. *Macrones oculatus*, Pillay, *J. Bombay nat. Hist. Soc.* XXXIII, p. 358.

[1] Gunther, A. *Cat. Fish. Brit. Mus.*, V, p. 84 (1864).

1936. *Macrones oculatus*, John, *ibid* XXXVIII, pp. 706, 709.
1941. *Mytus oculatus*, Hora and Law, *Rec. Indian Mus.*, XLIII, p. 238.
1942. *Mytus oculatus*, Hora, *ibid* XLIV, p. 197.

B. X ; D. I/7 ; P. I/6 ; V. 6 ; A. 11-13(3-4/8-9) ; C. 15.

Length of head 4 to 5 times, height of body 4·5 to 5 times in total length. Eyes 3·75 to 4 diameters in length of head, 1 to 1·5 from end of snout and about 1 apart. Width of head nearly twice the length of snout. Median groove on head interrupted in middle, reaching base of occipital process. Maxillary barbels reach base of caudal fin. Dorsal spine with 5 to 6 teeth ; pectoral spine with 10-13 teeth.



TEXT-FIG. 6.—*Mystus* (*Mystus*) *oculatus* (Val.)

a. dorsal view of head and anterior portion of body : × 1½ ; *b*. alimentary canal. ×3¾ ; c. air-bladder : ×4½.

Distribution.—Malabar coast and Coimbatore district.

Remarks.—The species is very closely allied to *M.* (*Mystus*) *montanus* from which it is distinguished by the larger eyes, and denticulation on the dorsal spine (2-3 teeth in *montanus versus* 5 to 6).

Mystus (Mystus) montanus (Jerdon).

1849. *Bagrus montanus*, Jerdon, *Madras J. Lit. Sci.* XV, part 2, p. 337 (*Type-locality* :—Manantoddy, Wynaad).

1877. *Macrones montanus*, Day, *Fish India*, p. 449, pl. ci, fig. 4.

1889. *Macrones montanus*, Day, *Fauna Brit. India* Fish, I, p. 159.

1929. *Macrones montanus*, Pillay, *J. Bombay nat. Hist. Soc.* XXXIII, p. 358.

1936. *Macrones montanus*, John, *ibid* XXXVIII, pp. 706, 709.

1937. *Mystus montanus*, Hora, *Rec. Indian Mus.* XXXIX, p. 19.

1941. *Mystus montanus*, Hora & Law, *ibid*, XLIII, pp. 254, 255.

1942. *Mystus montanus*, Hora, *ibid* XLIV, p. 197.

B. X : D. I/7 : P. I/6 : V 6 : A. 12(3/9) : C. 19.

Length of head 4·5 times, height of body 5 to 6 times in total length. Width of head 2·5 times the length of snout. Eyes oval, 4 to 6 diameters in length of head, 1 to 2 from end of snout and 1·5 to 2 apart. Median groove on head extends to midway between eye and base of occiput. Maxillary barbels extend beyond hind edge of eyes. Dorsal spine with 2 to 3 teeth ; pectoral spine with 7-8 teeth.

Distribution.—Wynaad range of hills, Manantoddy. The range is extended by 3 specimens from Hoshangabad district (Madhya Pradesh).

Remarks.—This species is closely allied to *M.* (*Mystus*) *malabaricus* from which it differs in having a more steep dorsal profile.

Mystus (Mystus) montanus var. **dibrugarensis** (Chaudhuri).

1913. *Macrones montanus* var. *dibrugarensis*, Chaudhuri, *Rec. Indian Mus.*, VIII, p. 254, pl. ix, figs. 2, 2*a*, 2*b*, (*Type-locality* :—Dibrugarh, Assam).

B. X. : D. I/7 : P. I/6 : A. 9(2/7) : C. 20.

This variety differs from the *forma typica* in having the length of head 3·75 times in total length *versus* (4·5 times in *montanus*) ; height of body 4·2 times in total length (*versus* 5 to 6 times) ; dorsal spine smooth (*versus* 2 to 3 teeth) ; and pectoral spine with 12 teeth (*versus* 7-8 teeth).

Not so far recorded from any other locality excepting Dibrugarh Assam. Type F.7795/1, total length 68 mm., very much damaged.

Mystus (Mystus) gulio (Hamilton).

1822. *Pimelodus gulio*, Hamilton, *Fish Ganges*, pp. 201, 379, pl. xxiii, fig. 66. (*Type-locality* :—Gangetic estuaries, upper parts).

1877. *Macrones gulio*, Day, *Fish India*, p. 445, pl. xcix, fig. 2.

1889. *Macrones gulio*, Day, *Fauna Brit. India* Fish I, p. 151, fig. 64.

1890. *Macrones gulio*, Vinciguerra, *Ann. Mus. Stor. nat. Genova*, IX, part 2, p. 229.

1904. *Macrones gulio*, Volz, *Zool. Jb.* Abt. I, XIX, p. 387.

1913. *Macrones gulio*, Weber & Beaufort, *Fish. Indo-Austrl. Archipel.* II, p. 344.

1916. *Macrones gulio*, Chaudhuri, *Mem. Indian Mus.* V, p. 434.

1917. *Macrones gulio*, Kemp, *Rec. Indian Mus.*, XIII, p. 234.

1923. *Macrones gulio*, Hora, *J. nat. Hist. Soc. Siam* VI, p. 171.

1929. *Aoria gulio*, Prashad & Mukerji, *Rec. Indian Mus.*, XXXI, pp. 162, 179.

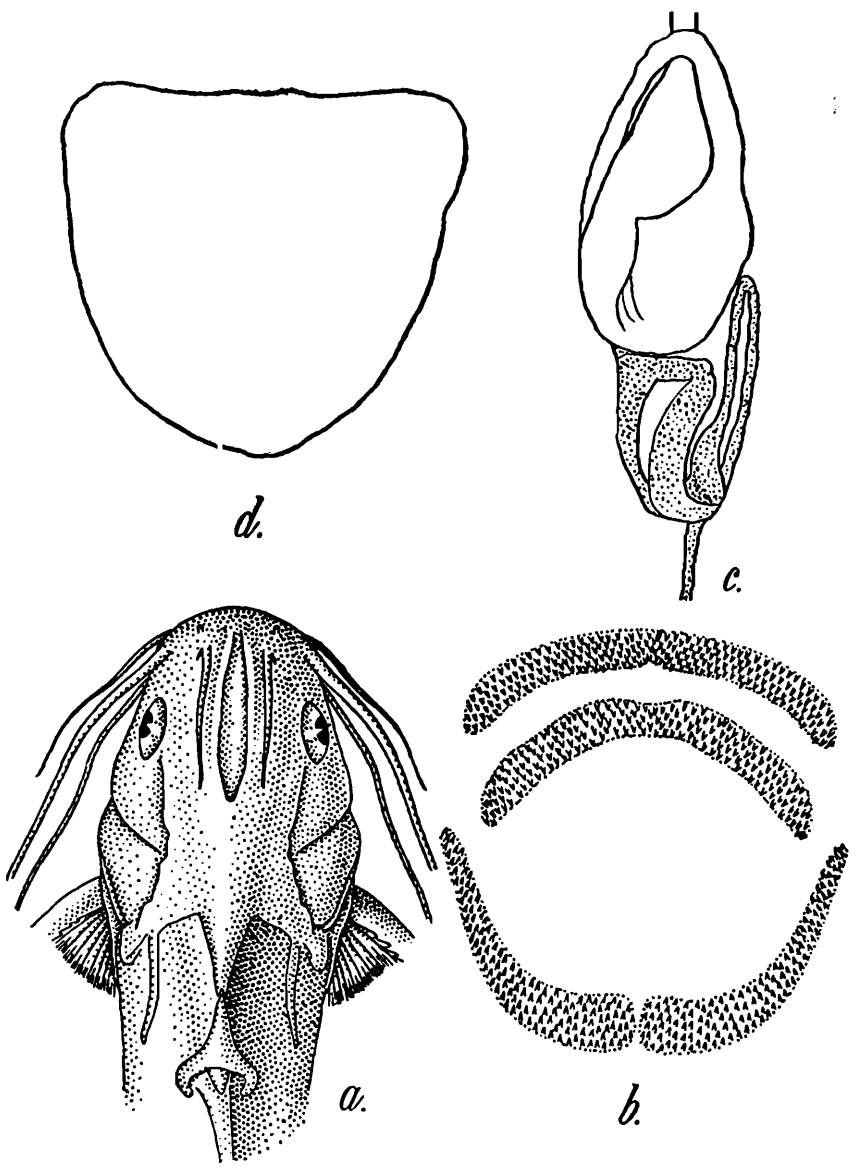
1932. *Aoria gulio*, Deraniyagala, *Spolia zeylan.* XVI, p. 285.

1933. *Aoria gulio*, Hora, *Curr. Sci.* I, p. 382.

1934. *Mystus gulio*, Smith, *J. nat. Hist. Soc. Siam* IX, p. 294.
1936. *Macrones gulio*, John, *J. Bombay nat. Hist. Soc.* XXXVIII, pp. 706, 709.
1937. *Mystus gulio*, Herre & Myers, *Bull. Raffles Mus.* XIII, p. 68.
1939. *Mystus gulio*, Herre, *Rec. Indian Mus.*, XLI, p. 111.
1941. *Mystus gulio*, Hora & Gupta, *Bull. Raffles Mus.* XVII, p. 22.
1941. *Mystus gulio*, Hora & Law, *Rec. Indian Mus.*, XLIII, pp. 255, 238.
1942. *Mystus gulio*, Hora & Misra, *J. Bombay nat. Hist. Soc.* XLIII, p. 222.
1945. *Mystus gulio*, Smith, *Bull. U. S. nat. Mus.* (188), p. 384.
1948. *Mystus gulio*, Hora, *Rec. Indian Mus.*, XLVI, pp. 65, 72.

B. IX : D. I/7 : P. I/8-9 : V. 6 : A. 12-15 (4/9-11) : C. 17.

Length of head about 4·5 times, height of body 5 to 5·75 times in total length. Eyes 5 to 6 diameters in length of head, 1·5 to 2 from end of snout and 2 apart. Upper surface of head rough and granulated. Median groove on head shallow, lanceolate, extending to opposite hind edge of orbit. Maxillary barbels reach middle or nearly end of pelvic fin.



TEXT-FIG. 7.—*Mystus* (*Mystus*) *gulio* (Hamilton).

a. dorsal view of head and anterior of body : × 3 ; *b.* dentition : × 1 ; *c.* alimentary canal : × 2 ; *d.* air-bladder : × 1½.

Distribution.—Seas, estuaries and tidal waters from Sind, India, Burma to the Malay Archipelago and Ceylon as also Sumatra and Siam.

Mystus (Mystus) malabaricus (Jerdon).

1849. *Bagrus malabaricus*, Jerdon, *Madras J. Lit. Sci.* XV, p. 338 (*Type-locality* :—Mountain streams in Malabar).

1869. *Hara malabarica*, Day, *Proc. zool. Soc. London* p. 524.

1877. *Macrones malabaricus*, Day, *Fish India*, p. 450, pl. ci. fig. 2.

1889. *Macrones malabaricus*, Day, *Fauna Brit. India* Fish I, p. 160.

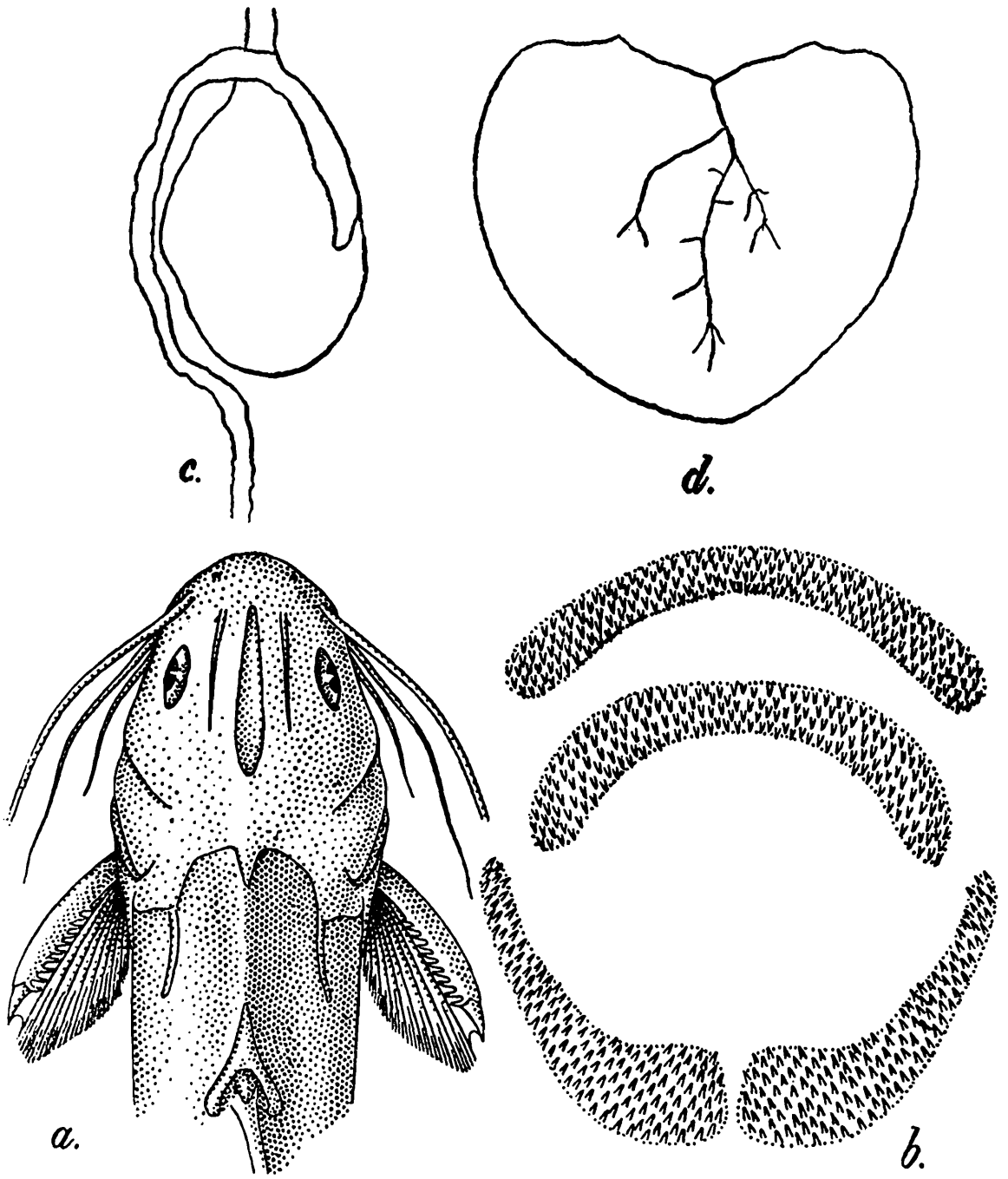
1929. *Macrones malabaricus*, Pillay, *J. Bombay nat. Hist. Soc.* XXXIII, p. 359.

1936. *Macrones malabaricus*, John, *ibid.* XXXVIII, pp. 706, 709.

1937. *Macrones malabaricus*, Hora, *Rec. Indian Mus.* XXXIX, p. 19.

1941. *Mystus malabaricus*, Hora & Law, *ibid*, XLIII, pp. 254, 255, fig. 3.

1942. *Mystus malabaricus*, Hora, *ibid.*, XLIV, p. 197.



Text-Fig. 8.—*Mystus* (*Mystus*) *malabaricus* (Jerdon).

a. dorsal view of head and anterior portion of body : ×1⅓ ; *b*. dentition : ×5⅓ ; *c*. alimentary canal : ×2⅔ ; *d*. air-bladder : ×2⅔.

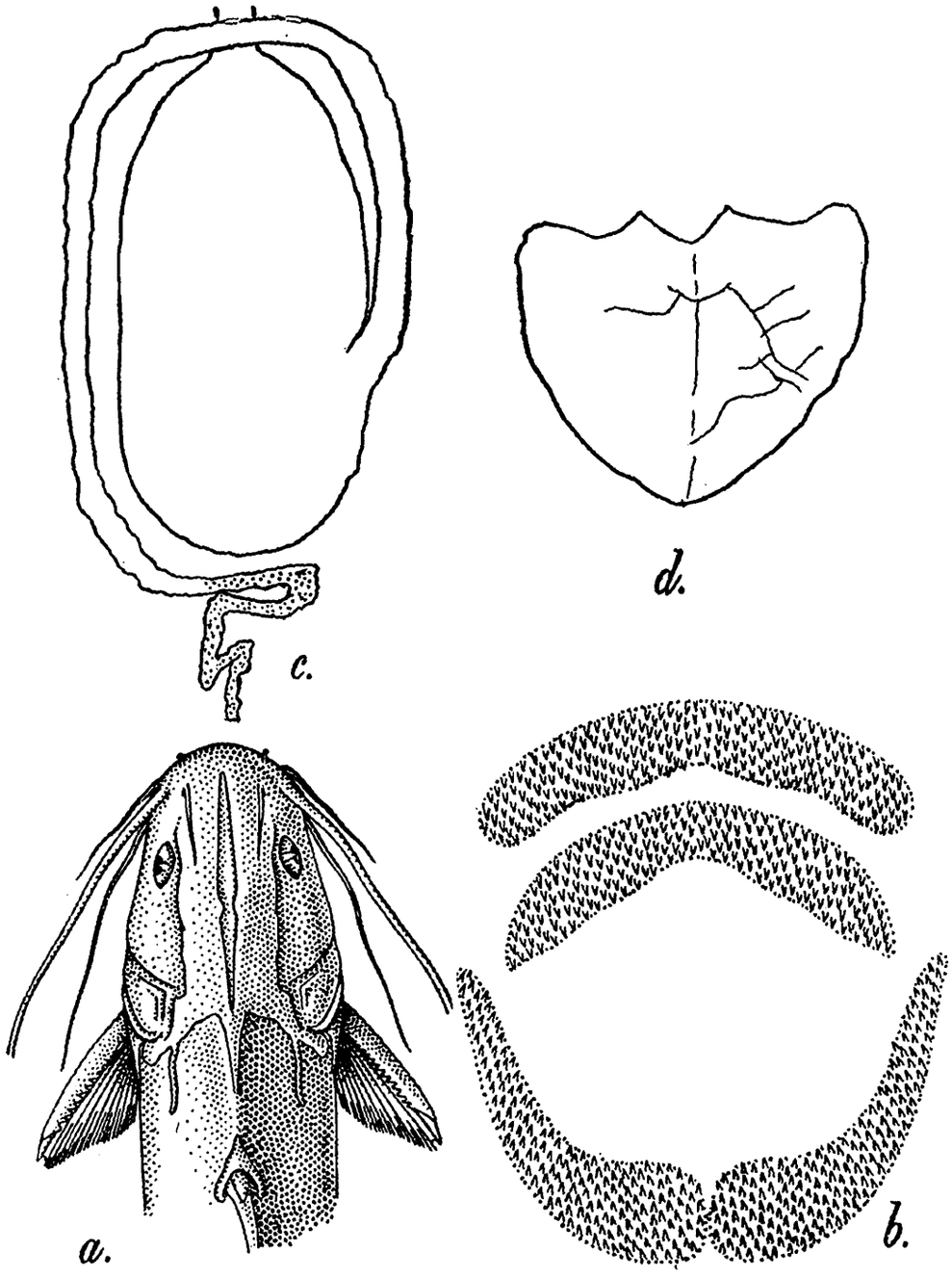
B. X : D. I/7 : P. I/9 : V. 6 : A. 10-11 : C. 18.

Length of head 4·5 to 5 times, height of body 6 to 7 times in total length. Eyes 4·5 to 5 diameters in length of head, 1·5 to 2 from end of

snout and 1·5 to 1·75 apart. Median groove on head extends to hind edge of eye or slightly beyond. Maxillary barbels reach middle or end of pelvic fin.

Distribution.—Malabar coast of India and Wynaad hills and hill ranges of Travancore. The range is now extended by 3 specimens from Palgad, Ratnagiri district (Bombay state), and one specimen from Poona (F. 12141/1).

Remarks.—The species is closely allied to *M.* (*Mystus*) *montanus* from which it differs in the nature of the occipital process and serratiosn of the pectoral spine.



TEXT-FIG. 9.—*Mystus* (*Mystus*) *menoda* (Hamilton).

a. dorsal view of head and anterior portion of body : × 2/3 ; *b.* dentition : × 2⅔ ; *c.* alimentary canal : × 1⅓ ; *d.* air-bladder ; × 1⅓.

Mystus (Mystus) menoda (Hamilton).

1822. *Pimelodus menoda*, Hamilton, *Fish Ganges*, pp. 203, 379, pl. i, fig. 72 (*Type-locality.*—Kosi, Mahanada, North Bihar & Bengal).
1839. *Bagrus corsula*, Valenciennes, *Hist. Nat. Poiss.* XIV, p. 408.
1853. *Bagrus corsula*, Bleeker, *Verh. Bat. Gen.* XXV, p. 56.
1864. *Pimelodus menoda*, Günther, *Cat. Fish. Brit. Mus.* V, p. 74 (foot-note).
1877. *Macrones corsula*, Day, *Fish India*, p. 446, pl. ci, fig. 5.
1889. *Macrones corsula*, Day, *Fauna Brit. India* Fish I, p. 153.
1890. *Macrones menoda*, Vinciguerra, *Ann. Mus. Store nat, Genova* IX, p. 223.
1911. *Macrones corsula*, Chaudhuri, *Rec. Indian Mus.*, VI, p. 24.
1912. *Macrones menoda*, Chaudhuri, *ibid.*, VII, p. 211.
1929. *Pimelodus menoda*, Hora, *Mem. Indian Mus.*, IX, p. 183, 188.
1938. *Mystus menoda*, Shaw & Shebbeare, *J. roy. Asiat. Soc. Beng.* III, p. 92, fig. 91, pl. ii, fig. 2.
1948. *Mystus menoda*, Hora, *Rec. Indian Mus.*, XLVI, pp. 65, 72.

B. X : D. I/7 : P. I/9 : V 6 : A. 11-13 (3-5/8) : C. 17

Length of head 3·75 to 4·25 times, height of body 5 to 6 times in total length. Eyes 7 to 8 diameters in length of head, 2 to 4 from end of snout and 2·5 to 3 apart. Median groove on head do not reach base of occipital process. Maxillary barbels reach base of anal fin. Dorsal spine with 2 to 3 teeth ; pectoral spine with 20-23 teeth.

Distribution.—From Orissa to Bengal, Assam and Burma.

Remarks.—Attention is invited to the note published by Chaudhuri in 1912 (*op. cit.*) which cleared the confusion regarding the name *corsula* and *menoda*.

Day (1877, p. 446), described *M.* (*Mystus*) *microphthalmus* from the Irrawady valley (Burma) as a new species and observed that " possibly all these last forms are local races of one species ". The differences between *M.* (*Mystus*) *menoda* and *M.* (*Mystus*) *microphthalmus* being of a very minor nature, I have treated the latter species as a second subspecies of the former one. The two subspecies of *M. menoda* now known, could be distinguished by the following key :—

1. Caudal fin's lower lobe prolonged into a filament .. *M.* (*Mystus*) *menoda* var. *trachacanthus*.
2. Caudal fin's upper lobe prolonged into a filament .. *M.* (*Mystus*) *menoda* var. *microphthalmus*.

Mystus (Mystus) menoda trachacanthus (Valenciennes).

1839. *Bagrus trachacanthus*, Valenciennes, *Hist. nat. Poiss.* XIV, p. 419 (*Type-locality*:—Bengal).
1864. *Bagrus trachacanthus*, Günther, *Cat. Fish. Brit. Mus.* V, p. 75
1912. *Macrones menoda*, var. *trachacanthus*, Chaudhuri, *Rec. Indian Mus.*, VII, p. 210.

B. X : D. I/7 : P. I/9 : A. 12 : C. 17.

Length of head 4 times, height of body about 4·4 times in total length. Eyes 4·6 diameters in length of head, 2 from end of snout and also apart. Median groove on head not reaching base of occipital

process. Maxillary barbels extending to middle of pelvic fin. Pectoral spine with 12-13 teeth. Lower lobe of caudal fin filamentous.

Distribution.—Bombay, Bengal.

Mystus (Mystus) menoda microphthalmus (Day).

1877. *Macrones microphthalmus*, Day, *Fish India*, p. 446, pl. ci, fig. 4 (*Type-locality.*—Irrawaddy, Burma).

1889. *Macrones microphthalmus*, Day, *Fauna Brit. India* Fish I, p. 154.

1890. *Macrones microphthalmus*, Vinciguerra, *Ann. Mus. Stor. nat. Genova* IX, p. 225.

B. X : D. I/7 : P. 1/9 : V 6 : A. 12 (3/9) : C. 17.

Length of head 3·5 to 4 times, height of body 7 to 8 times in total length. Eyes 6 to 8 diameters in length of head, 2 to 3 from end of snout and about 2·5 apart. Median groove on head reaches base of occipital process. Maxillary barbels reach anal fin or beyond. Pectoral spine with 9-10 teeth. Upper lobe of caudal fin filamentous.

Distribution.—Burma along the valley or Irrawady.

Mystus (Mystus) punctatus (Jerdon).

1849. *Bagrus punctatus*, Jerdon, *Madras J. Lit. Sci.* XV, p. 339 (*Type-locality* —Cauvery River, W. Ghats).

1877. *Macrones punctatus*, Day, *Fish India*, p. 445, pl. c, fig. 3.

1889. *Macrones punctatus*, Day, *Fauna Brit. India Fish* I, p. 153.

1937. *Mystus punctatus*, Hora, *Rec. Indian Mus.*, XXXIX, p. 19.

1942. *Mystus punctatus*, Hora, *ibid.*, XLIV, p. 197.

B. XI : D. I/7 : P. I/7-8 : V. 6 : A. 11-13 (3-4/8-9) : C. 17.

Length of head 4·5 to 5 times, height of body 7 to 9 times in total length. Eyes 6 to 6·5 diameters in length of head, about 2·5 from end of snout and about 2·25 apart. Width of head nearly 1·5 times height of head at occiput. Median groove on head shallow, broad, reaching halfway between occipital process and eyes. Maxillary barbels extend upto pelvic fin. Pectoral spine with 15 to 16 teeth.

Distribution.—Coorg, Nilgiris, Mysore, Malabar and Travancore. The range is extended by a specimen from Bombay (Cat. 426).

Sub-genus **Osteobagrus,** nov.

Geno-type.—Pimelodus aor Hamilton-*Mystus aor* (Hamilton) : *Type-locality.*—Ganges river.

Diagnosis.—A distinct interneural shield between basal bone of dorsal fin and occipital process present ; posterior extremity of

air-bladder elongated and pyriform ; a longitudinal complete septum in air-bladder present ; two lateral chambers of air-bladder not communicating with each other.

Day as early as 1871[1] realised the necessity of creating a subgenus for *Macrones aor* and *M. lamarrii* (Valenciennes), but did not do so either that year or in his subsequent work on the *Fishes of India*. In the earlier work, however, he stated :

> " The subgenera, or those with a separate interneural shield on the nape and those destitute of such, appear, at least sometime to denote other internal structural differences in those which I have examined. Amongst the former are *M. aor* and *M. lamarri* in which the anterior portion of the air-vessel is attached to the under surface of the bodies and expanded processes of the anterior vertebrae, but its posterior extremity is elogonated and pyriform ; internally it has a longitudinal septum. On the contrary in those not having this separate shield, the posterior extremity of the air-vessel is not elongated, the longitudinal septum (as in all those of this genus whichI have examined) has a communicating opening anteriorly ; and sometimes there are transverse partitions forming chambers which freely communicate with those on the same and by means of the anterior one with those on the opposite side as in *M. cavasius*, *M. tengara* *M. carcio.* "

In 1877[2], he stated as below :—

> " Whether *M. aor* or *M. seenghala* which have a separate interneural shield and an air-vessel with a posterior elongated extremity, should not be separated from the remainder which have no such distinct shield and no prolongation of the air-vessel, may be open to question. "

From the above it would appear that this subgenus would include *M. seenghala* (Sykes) also besides the geno-type. *Bagrus leucophasis* Blyth should also fall under this subgenus in view of the presence in it of the above-noted characters.

Key to the species of the sub-genus **Osteobagrus.**

1.	Snout spatulate	**2.**
	Snout non-spatulate ..	**3.**
2.	Width of gape of mouth 2/5ths to 3/7ths length of head	*M.* (*Osteobagrus*) *aor* (Hamilton).
	Width of gape of mouth 1/3rd length of head	*M.* (*Osteobagrus*) *seenghala* (Sykes).
3.	Snout rounded. Width of gape of mouth less than 1/3rd length of head ..	*M.* (*Osteobagrus*) *leucophasis* (Blyth).

Mystus (Osteobagrus) aor (Hamilton).

1822. *Pimelodus aor*, Hamilton, *Fish Ganges*, pp. 205, 379, pl. xx, fig. 68 (*Type-locality.*—Rivers of Bengal and upper parts of Gangetic estuaries).

1877. *Macrones aor*, Day, *Fish India*, p. 444.

1886. *Macrones aor*, Lydekker, *Palaeont. indica* (10) III, p. 250, pl. xxxvi, fig. 5.

1889. *Macrones aor*, Day, *Fauna Brit. India* Fish I, p. 149.

1890. *Macrones aor*, Vinciguerra, *Ann. Mus. stor. nat. Genova* IX, part 2, p. 217.

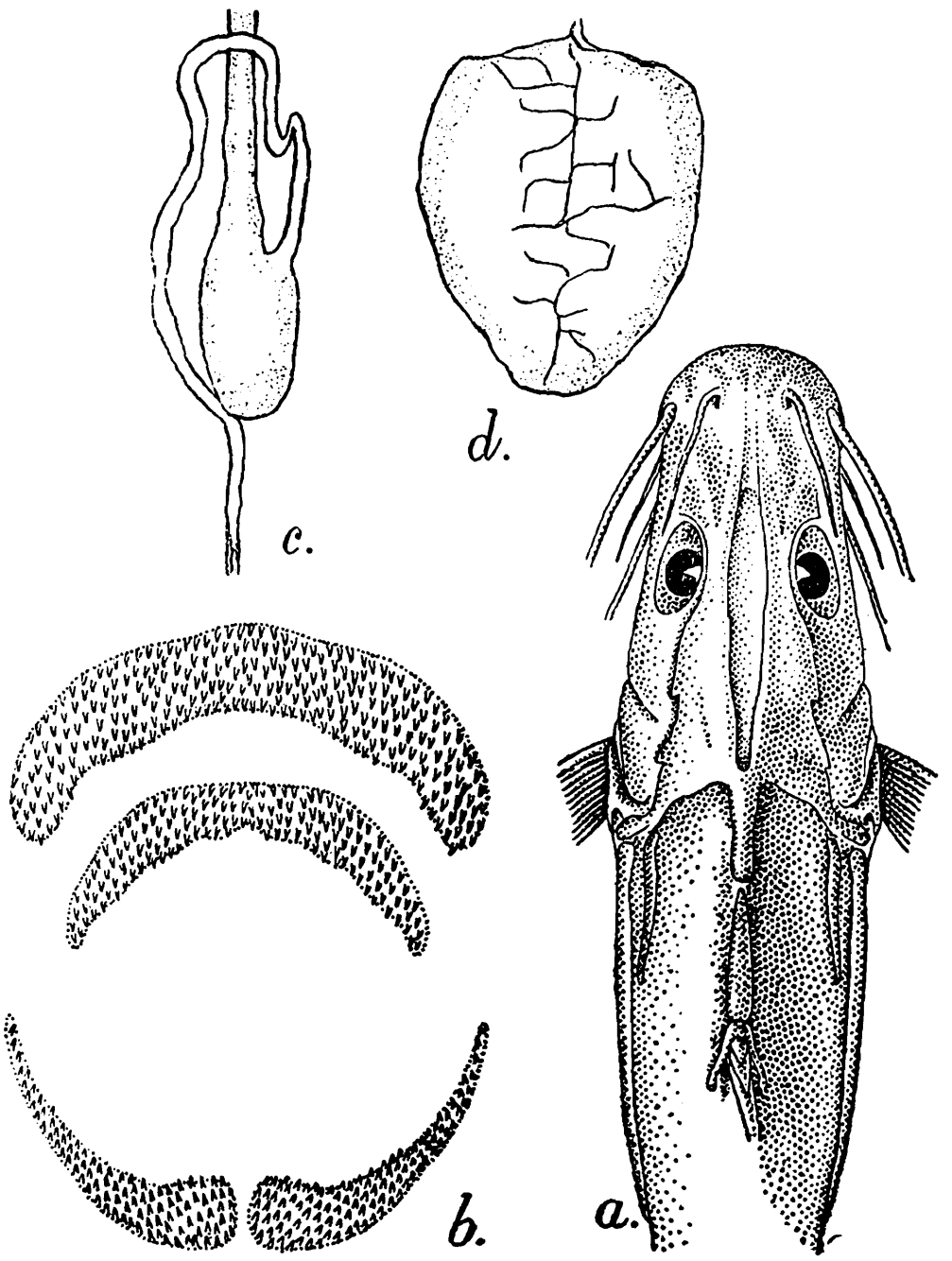
1910. *Macrones aor*, Jenkins, *Rec. Indian Mus.*, V, p. 140.

1934. *Macrones aor*, Bhimachar, *Half-yrly. J. Mysore Univ.* VII, pp. 253-254 pl. v, fig. 14 (Skull).

[1] Day, F. *Proc. Zool. Soc. Lond*, p. 705.

[2] Day, F. *Fish India*, p. 442 (1877).

1937. *Mystus aor*, Hora, *Rec. Indian Mus.*, XXXIX, p. 19.
1940. *Mystus aor*, Hora, *ibid.*, XLII, p. 368.
1948. *Mystus aor*, Hora, *ibid.*, XLVI, p. 72.



TEXT-FIG. 10.—*Mystus* (*Osteobagrus*) *aor* (Hamilton).

a. dorsal view of head and anterior portion of body : × 1⅓ ; *b.* dentition : × 4 ; *c.* alimentary canal ; × 1⅓ ; *d.* air-bladder ; × 1⅓.

B. XII : D. I/7 : P. I/9-10 : V 6 : A. 12-13 (3-4/8-9) : C. 17.

Length of head 4·5 to 5 times, width of head about 8 times, height of body 6·5 to 7·5 times in total length. Eyes 4·5 to 5·5 diameters in head, 1·5 to 2 from end of snout, and same in interorbital width. Median groove on head reaches base of occipital process. Maxillary barbels reach nearly caudal fin or even beyond. Dorsal spine with 4 to 5 teeth ; pectoral spine with 20 to 25 teeth.

Distribution.—Throughout Sind, Punjab, Delhi, Assam and Burma.

Remarks.—This is closely allied to *seenghala* from which it differs in the height of body (5 to 6 times in total length *versus* 7·5 to 8 times in *seenghala*); width of gape of mouth (2/5ths to 3/7ths of length of head *versus* 1/3rd length of head).

Mystus (Osteobagrus) seenghala (Sykes).

1839[1] (May). *Platystoma seenghala*, Sykes, *Trans. zool. Soc. Lond.* II, p. 371, pl. lxv, fig. 2 (*Type-locality.*—Mota Mala river, Poona).

1839. *Bagrus lamarrii*, Valenciennes, *Hist. nat. Poiss.* XIV, p. 407, pl. cxlv.

1849. *Bagrus seenghala*, Jerdon, *Madras J. Lit. Sci.* XV, part 2, p. 337.

1853. *Bagrus lamarrii*, Bleeker, *Verh. Bat. Gen.* XXV, p. 56.

1856. *Bagrus lamarrii*, Dumeril, *Mem. Acad. Sci. Paris* XXVII, part 1, p. 484 (Dumeril's genotype for genus *Macrones*).

1863. *Macrones lamarrii*, Bleeker, *Ned. Tijdschr. Dierk.* I, p. 96.

1864. *Macrones lamarrii*, Günther, *Cat. Fish Brit. Mus.* V, p. 79.

1871. *Macrones lamarrii*, Day, *Proc. zool. Soc. Lond.* p. 705.

1877. *Macrones seenghala*, Day, *Fish India*, p. 444, pl. xcix, fig. 1.

1889. *Macrones seenghala*, Day, *Fauna Brit. India Fish* I, p. 150.

1911. *Macrones seenghala*, Chaudhuri, *Rec. Indian Mus.*, VI, p. 20.

1942. *Mystus seenghala*, Hora & Misra, *J. Bombay nat. Hist. Soc.* XLIII, p. 222.

1943. *Aoria seenghala*, Nichols, *Freshw. Fish China* in *Nat. Hist. Cent. Asia* IX, p. 37.

1949. *Mystus seenghala*, Hora, *J. zool. Soc. India* I, p. 2.

B. XII : D. I/7 : P. I/9 : V. 6 : A. 11-12 (3/8-9) : C. 19-21.

Length of head 4 to 4·5 times, width of head 7 to 8 times, height of body 7·5 to 8 times in total length. Eyes 6 to 7 diameters in head, about 2 from end of snout and 1·5 to 2 apart. Median groove on head reaches base of occipital process. Maxillary barbels extend to middle of dorsal fin or slightly beyond. Dorsal spine with 2 to 3 teeth; pectoral spine with about 20 teeth.

Distribution.—Punjab, Delhi, U. P., Bengal and Burma. In the south it extends upto Kistna river and its termination. Recorded from Yunnan also.

Remarks.—Sykes in describing this species mentions that " this fish is remarkable for having the first ray of the ventral as well as that of the pectoral serrated posteriorly, and the first dorsal spine *not* serrated ". His drawing on plate lxv, fig. 2 also, clearly depicts this. I have not met with any such instance of a serrated first ray of the pelvic fins in any species of the genus *Mystus*.

Mystus (Osteobargus) leucophasis (Blyth).

1860. *Bagrus leucophasis*, Blyth, *J. Asiat. Soc. Beng.* XXIX, p. 148 (*Type-locality.*—Sittang and other Burmese rivers).

1864. *Macrones leucophasis*, Günther, *Cat. Fish Brit. Mus.* V, p. 78.

1877. *Macrones leucophasis*, Day, *Fish India*, p. 449, pl. c, fig. 2.

1883. *Macrones leucophasis*, Vinciguerra, *Ann. Mus. Stor. nat. Genova*, XVIII, p. 659.

[1] Although Sykes' work is often quoted as of 1841, Sherborn gives the actual date of publication as May, 1839, thus giving priority to Sykes' work over Valenciennes' which was published in January, 1840. Prior to 1877 earlier workers seem to have been unaware of this and have used *lamarrii* instead of *seenghala* for the trivial name.

1889. *Macrones leucophasis*, Day, *Fauna Brit. India Fish* I, p. 158.

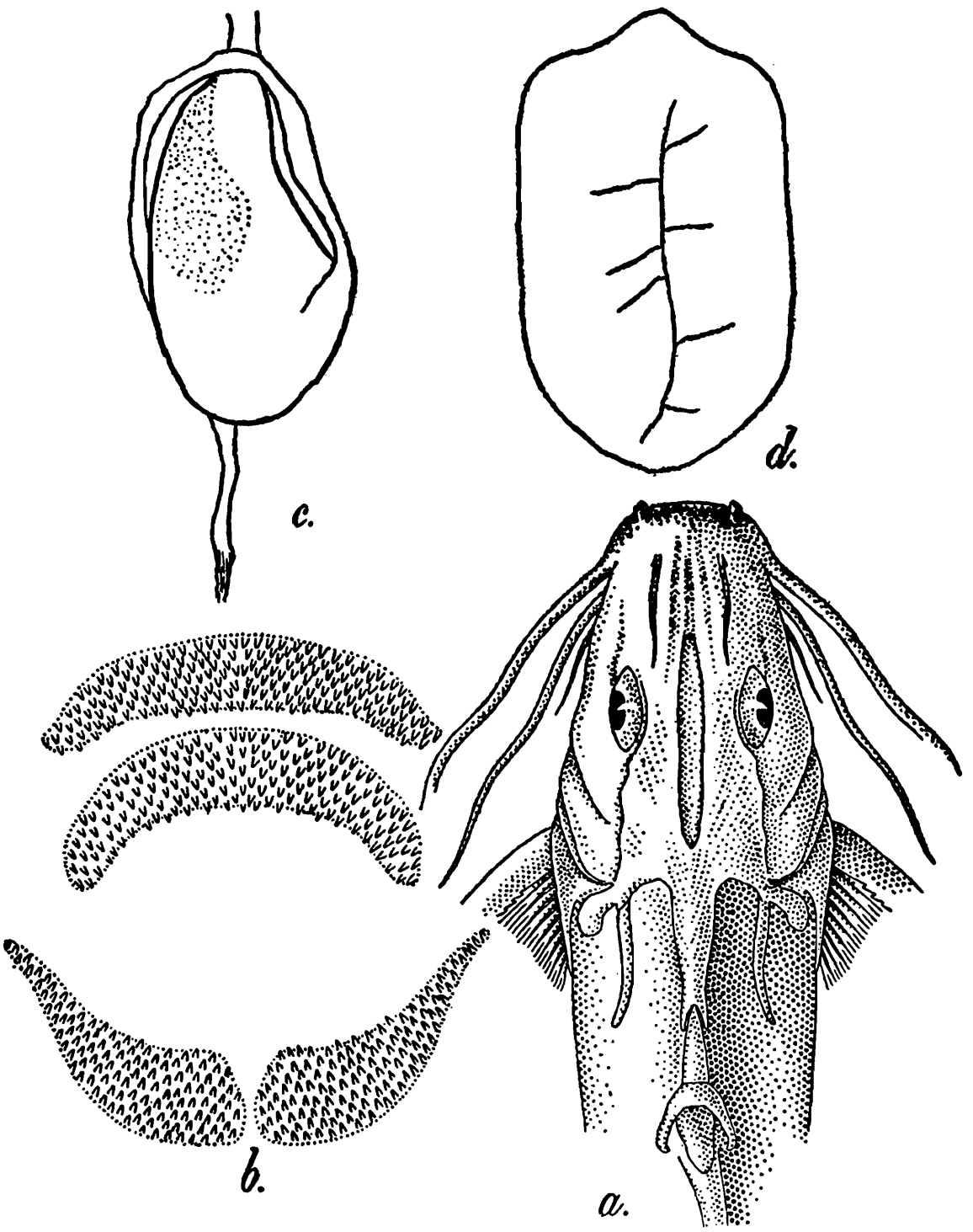
1890. *Macrones leucophasis*, Vinciguerra, *Ann. Mus. Stor. nat. Genova*, IX, p. 220.

1921. *Macrones leucophasis*, Hora, *Rec. Indian Mus.* XXII, p. 179.

1929. *Aoria leucophasis*, Prashad & Mukerji, *ibid.*, XXXI, p. 179

B. XI : D. I/7 : P. I/8-10 : V. 6 : A. 9-10 (2-3/7-8) : C. 17.

Length of head 4·5 times, width of head 5 to 5·5 times, height of body 5·5 times in total length. Eyes about 6 diameters in length of head, 2 from end of snout and about 2·5 apart. Median groove on head not reaching base of occipital process. Maxillary barbels reach anal fin. Dorsal spine serrated posteriorly.



TEXT-FIG. 11.—*Mystus* (*Osteobagrus*) *leucophasis* (Blyth).

a. dorsal view of head and anterior portion of body : × 1⅓ ; *b*. dentition : × 4 *c*. alimentary canal : × 1½ ; *d*. air-bladder : × 2.

Distribution.—Rivers of Burma.

SPECIES NOT LISTED ABOVE.

Macrones chryseus (Day).

The systematic position of this south Indian species has been elucidated in a note published by the writer[1]. Further examination of the allied *Pseudobagrus* material have proved this to be warranting a generic status. The species is not a *Mystus* but allied to *Pelteobagrus* Bleeker. Description of the new genus is being published separately.

Mystus (Mystus) peguensis (Boulenger).

1894. *Macrones peguensis*, Boulenger, *Ann. Mag. nat. Hist.* (6) XIV, p. 196.

Distribution.—Sittang river near Toungoo (Burma).

Remarks.—This species is not represented in the Z. S. I.[2] collection. This has not also been recorded subsequently.

Mystus (Mystus) rufescens (Vinciguerra).

1890. *Macrones rufescens*, Vinciguerra, *Ann. Mus. Stor. nat. Genova*, IX (2), p. 226.

Distribution.—Meetan (Burma).

Remarks.—This species also is not represented in Z. S. I. collection nor it has been recorded subsequently from Burma.

Mystus (Mystus) pelusius var. **colvillii** (Günther).

1794. *Silurus pelusius*, Solander in Russell's *Nat. Hist. Aleppo* II, p. 210. pl. vii, fig. 1.

1841. *Bagrus halepensis*, Heckel in Russegger's *Reisen Europa, Asien und Africa*, I, p. 1091, pl. viii, fig. 2.

1864. *Macrones aleppensis*, Günther, *Cat. Fish. Brit. Mus.* V, pp. 75, 431.

1874. *Macrones Colvilli*, Günther, *Ann. Mag. nat. Hist.* (4) XIV, p. 36, pl. viii,

1943. *Mystus halepensis colvilli*, Hora and Misra, *J. roy. Asiat. Soc. Beng.* IX, p. 8, fig. 4.

Distribution.—Bagdad, River Tigris.

Remarks.—This species is also neither represented in Z. S. I. collection nor it has been subsequently recorded after 1943.

Mystus (Mystus) pelusius (Solander).

1794. *Silurus pelusius*, Solander *in* Russell's *Hist. Aleppo* II, p. 210, pl. vii, fig. 1.

1864. *Bagrus aleppensis, haleppensis*, Günther, *Cat. Fish. Brit. Mus.* V, pp.75, 431.

Distribution.—River Coic, Aleppo, Syria.

Remarks.—This species is the geno-type of the genus *Mystus*. This is also not represented in Z. S. I. collection, nor it is subsequently recorded.

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[1] Jayaram, K. C. *Ann. Mag. nat. Hist.* V (12), pp. 980-983 (1952).

[2] Z.S.I. =Zoological Survey of India, Calcutta.

SPECIES FOUND IN SIAM, MALAY PENINSULA AND ARCHIPELAGO.

Mystus (Mystus) wolffi (Bleeker).

1858. *Bagrus wolffi*, Bleeker, *Ichth. Arch. Ind. Prodr.* I, *Siluri*, p. 160.

1913. *Macrones wolffi*, Weber & Beaufort, *Fish Indo. Austral. Archeipel*, II, p. 340.

1945. *Mystus wolffi*, Smith, *Bull. U. S. nat. Mus.* (188), p. 383.

Distribution.—Thailand, Perak, Malacca, Borneo and Sumatra.

Remarks.—This species is not represented in Z. S. I. collection.

Mystus (Mystus) pahangensis Herre.

1940. *Mystus pahangensis*, Herre, *Bull. Raffles Mus.* (16), p. 14.

Distribution.—Pahang (Malay Peninsula). Not further Recorded.

Mystus (Mystus) nemurus (Valenciennes).

1839. *Bagrus nemurus*, Valenciennes, *Hist. nat. Poiss.* XIV, p. 423.

1913. *Macrones nemurus*, Weber & Beaufort, *Fish. Indo-Austral. Archipel.* II, p. 341.

1945. *Mystus nemurus*, Smith, *Bull. U. S. nat. Mus.* (188), p. 386.

Distribution.—Thailand, Malay Archipelago.

Remarks.—This species is represented in Z. S. I. collection.

Mystus (Mystus) nigriceps (Valenciennes).

1839. *Bagrus nigriceps*, Valenciennes, *Hist. nat. Poiss.* XIV, p. 412.

1913. *Macrones nigriceps*, Weber & Beaufort, *Fish. Indo-Austral. Archipel.* II, p. 337.

1945. *Mystus nigriceps*, Smith, *Bull. U. S. nat. Mus.* (188), p. 389 (merged under *M. cavasius*).

Distribution.—Thailand, Malay Peninsula, Java, Sumatra and Borneo.

Remarks.—This species is very closely allied to *M. cavasius* but distinct enough to warrant a specific rank. This species is also represented in Z. S. I. collection.

Mystus (Mystus) planiceps (Valenciennes).

1839. *Bagrus planiceps*, Valenciennes, *Hist. nat. Poiss.* XIV, p. 421.

1913. *Macrones planiceps*, Weber & Beaufort, *Fish. Indo. Austral. Archeipel.* II, p. 342.

1945. *Mystus planiceps*, Smith, *Bull. U. S. nat. Mus.* (188), p. 387.

Distribution.—Thailand, Java, Sumatra, Borneo and Malay Peninsula.

Remarks.—I have examined the collection in Z. S. I.

Mystus (Mystus) wyckii (Bleeker).

1858. *Bagrus wyckii*, Bleeker, *Ichth. Arch. Ind. Prodr.* I, *Siluri*, p. 156.

1913. *Macrones wyckii*, Weber & Beaufort, *Fish. Indo. Austral. Archiepel.* II, p. 343.

1945. *Mystus wyckii*, Smith, *Bull. U. S. nat. Mus.* (188), p. 388.

Distribution.—Thailand, Perak, Malay Peninsula, Sumatra and Java.

Remarks.—This species is not represented in the Z. S. I. collection.

Mystus (Mystus) johorensis Herre.

1940. *Mystus johorensis*, Herre, *Bull. Raffles Mus.* (16), p. 13.

Distribution.—Johore (Malay Peninsula). Not subsequently recorded.

Mystus (Mystus) micracanthus (Bleeker).

1846. *Bagrus micracanthus*, Bleeker, *Nat. & Geneesk. Arch. Ned. Ind.* III (2), p. 151.

1913. *Macrones micracanthus*, Weber & Beaufort, *Fish. Indo. Austral. Archipel.* II, p. 454.

1945. *Mystus micracanthus*, Smith, *Bull. U. S. nat. Mus.* (188), p. 391.

Distribution.—Thailand, Malay Peninsula, Java, Sumatra and Borneo.

Remarks.—This species is not represented in Z. S. I. collection.

Species restricted to the Indo-Australian Archipelago.

Mystus (Mystus) baramensis (Regan).

1906. *Macrones baramensis*, Regan, *Ann. Mag. nat. Hist.* XVIII, p. 68.

1913. *Macrones baramensis*, Weber & Beaufort, *Fish. Indo. Austral. Archeipel.* II, p. 338.

1937. *Mystus baramensis*, Herre & Myers, *Bull. Raffles Mus.* (13), p. 19.

Distribution.—Baram river (Borneo), Malacca.

Remarks.—This species is not present in Z. S. I. collection.

Species of Chinese Region.

Mystus (Mystus) argentivittata (Regan).

1905. *Macrones argentivittata*, Regan, *Rev. Suisse. Zool.* XIII, p. 390, pl. v, fig. 2.

1943. *Aoria argentivittata*, Nichols, *Freshw. Fish. China* in *nat. Hist. Cent. Asia* IX, p. 37.

Distribution.—China.

Mystus (Mystus) henryi (Herre).

1942. *Aoria henryi*, Herre, *Lingnan Sci. J.* XI, p. 342.

1943. *Aoria henryi*, Nichols, *Freshw. Fish. China* in *nat. Hist. Cent. Asia* IX, p. 37.

Distribution.—Canton, S. China.

Mystus (Mystus) cornula (Chu).

1931. *Aoria cornula*, Chu, *Biol. bull. St. John's Univ.* 76.

1943. *Aoria cornula*, Nichols, *Freshw. Fish. China* in *nat. Hist. Cent. Asia* IX, p. 36.

Distribution.—China. Nichols has recorded this as a doubtful Chinese species.

Mystus (Mystus) hoi (Pellegrin & Fang).

1940. *Mystus hoi*, Pellegrin and Fang, *Bull. Soc. Zool. France* LXIV, p. 338.

Distribution.—Yangtse basin (China). Nichols has not recognised this species in his work.

Mystus (Mystus) pluriradiatus (Vaillant).

1892. *Macrones pluriradiatus*, Vaillant, *Bull. Soc. Phil.* IV (8), p. 126.

1904. *Macrones pluriradiarus*, Vaillant, *Rech. Hist. Indo-China* III, p. 462, pl. xxiii, fig. 2.

Distribution.—Tonkin (South China).

Mystus (Mystus) rendahli (Pellegrin & Fang).

1940. *Mystus rendahli*, Pellegrin & Fang, *Bull. Soc. Zool. France*, LXIV, p. 338.

Distribution.—Yangtse basin (China).

The following is the systematic position of some of the other species formerly described under this genus from China (Nichols, 1943).

Aoria virgatus Oshima	*Pseudobagrus virgatus.*
Macrones medianlis Regan	*Pseudobagrus medianalis.*
Macrones pratti Günther	*Leiocassis pratti.*
Macrones taeniatus Günther	*Leiocassis taeniatus.*
Macrones tenuis Günther	*Leiocassis tenuis.*
Aoria macroptera Chu	*Hemibagrus macropterus.*
Aoria amemiyae Kimura	*Hemibagrus amemiyae.*
Macrones elongatus Günther	*Hemibagrus elongatus.*
Macrones chinensis Steindachner	*Hemibagrus elongatus.*
Macrones sinensis Bleeker	*Unidentifiable.*
Macrones ussuriensis Her. Warp.	*Leiocassis ussuriensis.*

GEOGRAPHIC DISTRIBUTION.

Fishes of the genus *Mystus* are widely distributed from Asia Minor in the west to southern China in the east. They live in marshy and sluggish rivers generally, with the exception of certain peninsular species like *M.* (*Mystus*) *punctatus*, *M.* (*Mystus*) *montanus*, etc., which live in hill streams. Amongst the living species *Mystus* (*Osteobagrus*) *aor* is known[1] from the Pliocene Siwalik beds of India and *Mystus* (*Mystus*) *cavasius*[2] from Eocene Nigeria of Africa.

[1] **Lyddekkar, R.** *Palaeont. indica* (10) III, p. 250, pl. xxxvi, fig. 5 (1886).

[2] **White, E. I.** *Bull. Geol. Surv. Nigeria* (14), pp. 53-55, fig. 14 (1935).

The table of distribution of the speices given below leads to the following conclusions. Out of the 39 species and subspecies of *Mystus*, 2 are endemic in Asia Minor, 1 in East Indies, 6 in China, 3 in Malay Peninsula, 4 in Burma,1 in Assam, 4 in Peninsular India and 1 in Northern India. Seven species are widely distributed while the rest 10 species are found in two areas together. Of the last mentioned 10 species, excepting *Mystus* (*Mystus*) *armatus*, *M.* (*Mystus*) *montanus*, *M.* (*Mystus*) *menoda* var. *trachacanthus*, rest are distributed homogeneously in adjacent areas. The above cited species are discontinuous in distribution and their pattern of distribution is interesting.

M. (*Mystus*) *montanus* has been recorded from Hoshangabad (Madhya Pradesh), far from its range of Peninsular India. Similarly *M.* (*Mystus*) *armatus* is recorded from Burma. In the case of *M.* (*Mystus*) *menoda*, another peninsular species, two geographic races are known. Thus there seems to be a particular east to west spread of these fishes which has resulted in such anomalies.

No.	Name of species.	1	2	3	4	5	6	7	8
1.	*M.* (*Mystus*) *bleekeri* (Day) ..	—	X	X	X	—	X	—	—
2.	*M.* (*Mystus*) *pulcher* (Chaudhuri) ..	—	—	—	X	—	—	X	—
3.	*M.* (*Mystus*) *cavasius* (Hamilton) ..	X	X	X	X	—	—	—	—
4.	*M.* (*Mystus*) *vittatus* (Bloch) ..	X	X	X	X	X	—	—	—
5.	*M.* (*Mystus*) *vittatus horai* Jayaram	—	X	—	—	—	—	—	—
6.	*M.* (*Mystus*) *armatus* (Day)	X	—	—	X	—	—	—	—
7.	*M.*(*Mystus*) *keletius* (Valenciennes) ..	X	—	—	—	—	—	—	—
8.	*M.* (*Mystus*) *tengara* (Hamilton)	—	X	X	—	—	—	—	—
9.	*M.* (*Mystus*) *oculatus* (Valenciennes) ..	X	—	—	—	—	—	—	—
10.	*M.* (*Mystus*) *montanus* (Jerdon)	X	X	—	—	—	—	—	—
11.	*M.* (*Mystus*) *montanus* var. *dibrugarensis* (Chaudhuri).	—	—	X	—	—	—	—	—
12.	*M.* (*Mystus*) *gulio* (Hamilton)	X	X	—	X	X	X	—	—
13.	*M.* (*Mystus*) *malabaricus* (Jerdon)	X	—	—	—	—	—	—	—
14.	*M.* (*Mystus*) *menoda* (Hamilton)	X	X	X	X	—	—	—	—

The eight distribution regions (artificial) here recognised are :—

1.—Peninsular India and Ceylon ; 2.—Northern India ; 3.—Assam ; 4.—Burma ; 5.—Siam and Malay Archipelago ; 6.—East Indies ; 7.—China ; 8.—Asia Minor.

No.	Name of species.	1	2	3	4	5	6	7	8
15.	*M.* (*Mystus*) *menoda* var. *trachacanthus* (Valenciennes).	X	X	—	—	—	—	—	—
16.	*M.* ((*mystus*) *menoda microphthalmus* (Day).	—	—	—	X	—	—	—	—
17.	*M.* (*Mystus*) *punctatus* (Jerdon)	X	—	—	—	—	—	—	—
18.	*Mystus* (*Osteobagrus*) *aor* (Hamilton)	—	X	X	X	—	—	—	—
19.	*Mystus* (*Osteobagrus*) *seenghala* (Sykes)	X	X	—	X	—	X	—	—
20.	*Mystus* (*Osteobagrus*) *leucophasis* (Blyth)	—	—	—	X	—	—	—	—
21.	*M.* (*Mystus*) *peguensis* (Boulenger)	—	—	—	X	—	—	—	—
22.	*M.* (*Mystus*) *refescens* (Vinciguerra)	—	—	—	X	—	—	—	—
23.	*M.* (*Mystus*) *pelusius* (Solander)	—	—	—	—	—	—	X	—
24.	*M.* (*Mustus*) *pelusius* var. *colvilli* (Gunther)	—	—	—	—	—	—	X	—
25.	*M.* (*Mystus*) *wolffi* (Bleeker)	—	—	—	—	X	X	—	—
26.	*M.* (*Mystus*) *pahangens is* Herre	—	—	—	X	—	—	—	—
27.	*M.* (*Mystus*) *nemurus* (Valenciennes)	—	—	—	X	—	—	—	—
28.	*M.* (*Mystus*) *nigriceps* (Valenciennes)	—	—	—	X	X	—	—	—
29.	*M.* (*Mystus*) *planiceps* (Valenciennes)	—	—	—	X	X	—	—	—
30.	*M.* (*Mystus*) *wyckii* (Bleeker)	—	—	—	X	X	—	—	—
31.	*M.* (*Mystus*) *johorensis* Herre	—	—	—	—	X	—	—	—
32.	*M.* (*Mystus*) *micracanthus* (Bleeker)	—	—	—	X	X	—	—	—
33.	*M.* (*Mystus*) *baramensis* (Regan)	—	—	—	—	X	—	—	—
34.	*M.* (*Mystus*) *argentivittatus* (Regan)	—	—	—	—	X	—	—	—
35.	*M.* (*Mystus*) *henryi* (Herre)	—	—	—	—	X	—	—	—
36.	*M.* (*Mystus*) *cornula* (Chu)	—	—	—	—	X	—	—	—
37.	*M.* (*Mystus*) *hoi* (Pellegrin & Fang)	—	—	—	—	X	—	—	—

No.	Name of species.	1	2	3	4	5	6	7	8
38.	*M.* (*Mystus*) *pluriradiatus* (Vaillant)	—	—	—	—	—	—	X	—
39.	*M.* (*Mystus*) *rendahli* Pellegrin & Fang	—	—	—		—	—	X	—

To account for such an east to west dispersal, Hora (1937) [1] propounded the Satpura Hypothesis and since then it has been enlarged with interesting results. From the available Palaeontological evidence, it is known that the invasion of Siluroid fishes to India took place in the Pliocene period, which fact is evidenced by the presence of fishes like *M.* (*Osteobagrus*) *aor* in the Siwalik beds (Hora, 1952,[2] 1953[3] for details). Peninsular India would seem to have received its fauna during the Pluvial periods of the Pleistocene Glaciation.[4] The fauna that migrated along the Western Ghats was also aided into fast rate of speciation by the physiographic change & undergone by the Peninsula (Menon, 1952[5]). The presence of hill-stream inhabiting species like *M.* (*Mystus*) *punctatus* *M.* (*Mystus*) *montanus* would seem to be the resultants of such a physiographic change.

M. (*Mystus*) *pelusius* and *M.* (*Mystus*) *pelusius* var. *colvilli* which are related to *M.* (*Mystus*) *vittatus*, would appear to have spread along a cis-Himalayan watershed from an eastern place of origin.

[1] Hora, S. L., *Rec. Indian Mus.*, XXXIX, pp. 251-259 (1937).

[2] Hora, S. L., *Proc. Nat. Inst. Sci. India*, XVIII, (1952).

[3] Hora, S. L., *Sci. Progress*, XLI, pp. 245-255 (1953).

[4] Silas, E. G., *Proc. Nat. Inst. Sci. India*, XVIII, pp. 423-446 (1952)

[5] Menon, A. G. K., *Ibid.*, XVII, pp. 475-497 (1951).