NOTES ON FISHES IN THE INDIAN MUSEUM.

XVI.—On Fishes of the genus *Esomus* Swainson.

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While identifying a small collection of fish from Rangoon one of us found an interesting variety of the composite species, *Esomus danrica* (Ham. Buch.). On going through the literature and after consulting Ahl's[1] recent revision of the genus *Esomus* we decided to define, as far as possible, from the extensive material preserved in the Indian Museum collection, the specific limits of the various Indian species of this genus and to add notes on the Extra-Indian species as far as practicable. Efforts have also been made to get fresh material from different places in India, Burma and Ceylon and from other countries. Besides the fresh material collected from the neighbourhood of Calcutta, we have received collections from Professor F. G. Meggitt of the Rangoon University, Mr. E. A. D'Abreu, Curator of the Central Museum at Nagpur, Professor George Matthai of the Punjab University, Dr. D. R. Bhattacharya of the Allahabad University, Mr. C. R. Narayan Rao of the Mysore University, Dr. B. Sundara Raj, Director of Madras Fisheries, Dr. Joseph Pearson, Director of the Colombo Museum, and Dr. H. M. Smith, Director of the Department of Fisheries, Siam. To all these gentlemen we offer our sincere thanks for the valuable help they have rendered us by sending the material.

Genus **Esomus** Swainson.

1839. *Esomus*, Swainson, *Natural History, Fishes* II, p. 285.
1842. *Nuria*, Cuvier and Valenciennes, *Hist. Nat. Poiss.* XVI, p. 238.

Esomus is a genus of small Cyprinid Fishes (sub-family Rasborinae) in which the body is elongated and strongly compressed from side to side. The dorsal profile is more or less straight. The mouth-opening is small and obliquely directed upwards. There are two pairs of barbels at the corners of the mouth, the anterior pair or the so-called rostral barbels are short, while the maxillary barbels are long and may extend as far back as the base of the anal fin. The dorsal is situated almost above the anal fin ; it is short with six branched rays. The anal is usually short with five branched rays. The lateral line, when present, is strongly arched anteriorly and runs in the lower half of the caudal peduncle. The scales are of moderate size. The gill-openings are large and the gill-rakers are short. The pharyngeal teeth are arranged in a single row, 5—5.

Distribution.—British India, Ceylon, Nicobars, Malay Peninsula, Malay Archipelago and French Indo-China.

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[1] Ahl. *Mitt. Zool. Mus. Berlin*, XI, pp. 38-43 (1923).

As is evident from the following account there has been great confusion regarding the Indian species of this genus, for which the inadequate descriptions and poor illustrations of the earlier authors are mainly responsible. Moreover, many of the species exhibit considerable individual variability, and the lack of sufficient material from all parts of the country resulted in the authors' considering individual variations as distinct species. After a careful study of a large number of specimens from different parts of India we are able to recognise only five species from within the limits of British India. These species may be distinguished with the help of the following key :—

I. Lateral line complete or nearly so, extending to at least the base of the anal fin.	
A. Black spot above the base of pectoral ; (sides without black, broad lateral bands, depth of body proportionately greater, being contained 2·9 to 4 times in the length without the caudal) ..	*E. altus* (Blyth).
B. No black spot above the base of pectoral ; (depth of body proportionately shorter, being contained 3·7 to 4·5 times in the length without the caudal).	
i. Sides with black, broad, lateral bands, predorsal scales 19 to 20	*E. thermoicos* (C. V.)
ii. Sides without black, broad, lateral bands, predorsal scales 17	*E. barbatus* (Jerdon).
II. Lateral line absent or nearly so, piercing only 4 to 6 scales anteriorly.	
A. A well-defined precaudal spot ; sides without lateral bands ; 12 scales round caudal peduncle ..	*E. ahli*, sp. nov.
B. No precaudal spot ; sides with broad, lateral bands ; 14 scales round caudal peduncle	*E. danricus* (H. B.).

Besides the species enumerated above we have examined specimens of *E. metallicus* Ahl[1], and we take this opportunity to add a short note on the species in this paper. Attention is also drawn to a species described from Indo-China.[2] Of *E. malayensis* and *E. caudiocellatus* recently described by Ahl (*op. cit.*) we have not seen any specimens and are, therefore, unable to make any remarks on them. It seems probable, however, that the form recorded by Karoli [3] as *Nuria danrica* from Singapore is one of Ahl's species from that region, but it is difficult to be certain without authentic material.

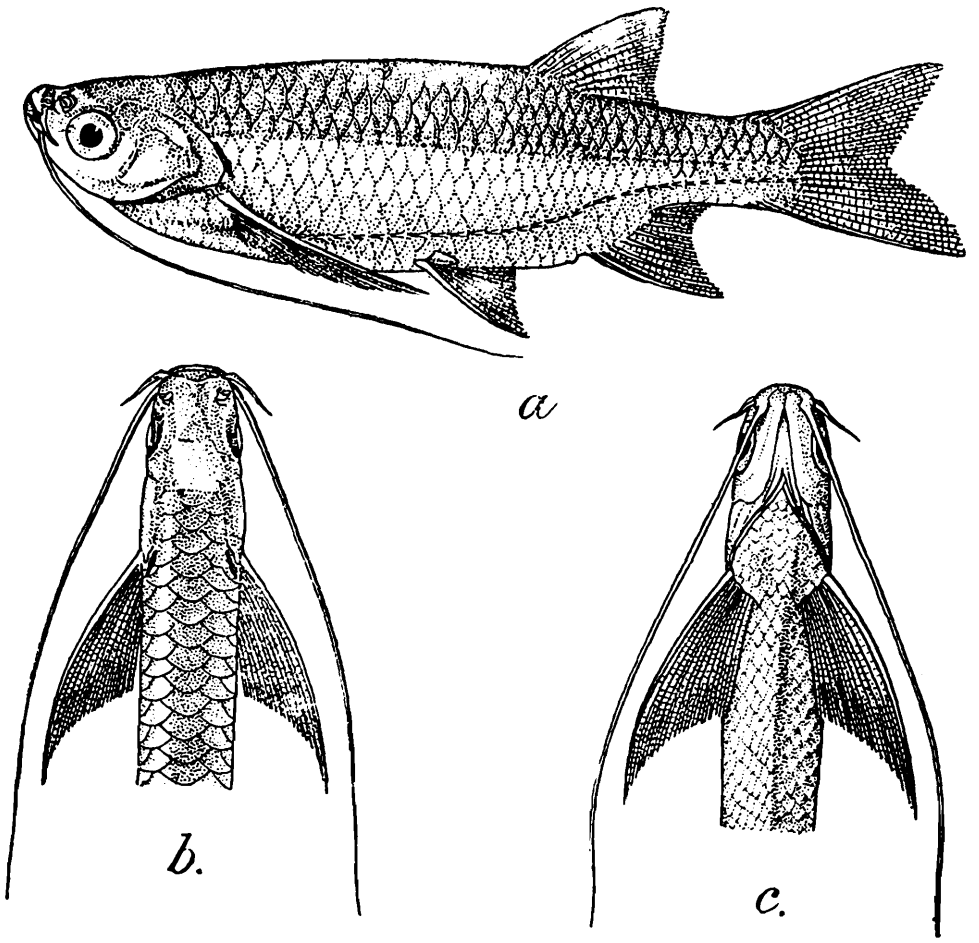
Esomus altus (Blyth).

1860. *Nuria alta*, Blyth, *Journ. As. Soc. Bengal* XXIX, p. 162.
1868. *Nuria alta*, Günther, *Cat. Fish, Brit. Mus.* VII, p. 201.
1869. *Nuria alta*, Day, *Proc. Zool. Soc. London*, p. 558.
1878. *Nuria danrica* var. *alta*, Day, *Fish. India*, p. 583, pl. cxlv, fig. 8.
1885. *Nuria danrica*, Vinciguerra, *Ann. Mus. Civ. Genova* (2) II, p. 93.
1889. *Nuria danrica* var. *alta*, Day, *Faun. Brit. Ind. Fish.* I, p. 234, fig. 106.
1890. *Nuria danrica*, Vinciguerra, *Ann. Mus. Civ. Genova* (2) IX, p. 173.
1910. *Nuria danrica* var. *alta*, Jenkins, *Rec. Ind. Mus.* V, p. 138.
1923. *Esomus altus*, Ahl, *Mitt. Zool. Mus. Berlin* XI, p. 39.

Esomus altus is a Burmese species and can be readily distinguished by the possession of a complete lateral line and the characteristic black

[1] Ahl, *Mitt. Zool. Mus. Berlin*, XI, p. 42 (1923).
[2] Lunel, *Mem. Soc. Phys. Hist. Nat. Genève*, XXVII, pp. 296-299, pl.—, fig. 2 (1881).
[3] Karoli, *Természetrajzi Fuzetek Budapest*, V, p. 180 (1881).

mark above the base of the pectoral. The absence of a broad, black lateral band is also a good diagnostic character. Day in 1878 recognised it only as a variety of *E. danrica* on account of the greater height of its body which, according to him, is $4\frac{1}{2}$ instead of $5\frac{1}{2}$ in the length, and " on its anal fin being a little lower " According to Blyth's original description the height of the body is about one-fourth of the total length. A rigid observance of this diagnostic character is responsible for a certain amount of confusion as is evident from Vinciguerra's remarks in the works cited above. We have taken measurements of 19 examples and find a great deal of individual variability; the height of the body is



Text-fig. 1.—*Esomus altus* (Blyth).

a. Lateral view $\times 1\frac{1}{8}$; *b.* Dorsal view of head and anterior part of body $\times 1\frac{1}{8}$; *c.* Ventral view of head and anterior part of body $\times 1\frac{1}{8}$

contained from 2·9 to 4 times in the length without the caudal. The type-specimen is, however, very remarkable in this respect, for only in this specimen is the height of the body 2·9 times in the length without the caudal. The length of the head is about one-fourth of the body length, though the proportion varies from 3·7 to 5·1. The diameter of the eye is contained from 3 to 3·7 times in the length of the head. The snout is usually shorter than or equal to the diameter of the eye, but in exceptional cases it may be slightly longer. The caudal peduncle is 1·5 times its least height and is encircled by 14 scales. There are 31 to 33 scales in a longitudinal series and they are arranged on the body in 7 transverse rows. The number of predorsal scales varies from 16 to 19.

None of the pectoral fin-rays are produced beyond the membrane; the pectoral reaches the base of the ventral. The maxillary barbels vary as regards their length, usually they extend as far as the base of the ventral, but in certain cases they reach the end of the anal fin. The lateral line is complete; it is sometimes interrupted above the base of the anal fin (see Day's figures of the species).

The colouration according to Blyth is as follows:—" ruddy, with a broad yellow lateral band surmounted by a nearly obsolete black streak: gill-covers silvery; and a black spot above the base of the pectorals: fins pale and yellowish, more or less tinged with dusky in the young "

Esomus altus was originally described from Tenasserim, but it seems to be fairly common even in northern Burma. The late Dr. N. Annandale purchased a fine series of specimens from the Mandalay market. There are altogether 38 examples of this species in the Indian Museum. The following table gives the localities of these specimens:—

832 Cat.	Tenasserim (Type)	Maj. Berdmore	2
2451	Moulmein	F. Day	1
824 Cat.	Pegu	F. Day	6
825 Cat.	Prome	F. Day	5
822 Cat.	Mandalay	Maj. Haden	2
823 Cat.	"	F. Day	1
1764, 1768, 1771, 1773-6, 1779-80, 1785-6, 1788, 1791-4.	"	N. Annandale	16
828 Cat.	No locality	?	2
F $\frac{10775}{1}$	Chaungwa, Myitkyna Dist.	B. N. Chopra	3

In our opinion Vinciguerra's examples of "*Nuria danrica*" from Rangoon and Bassein are probably to be referred to this species.

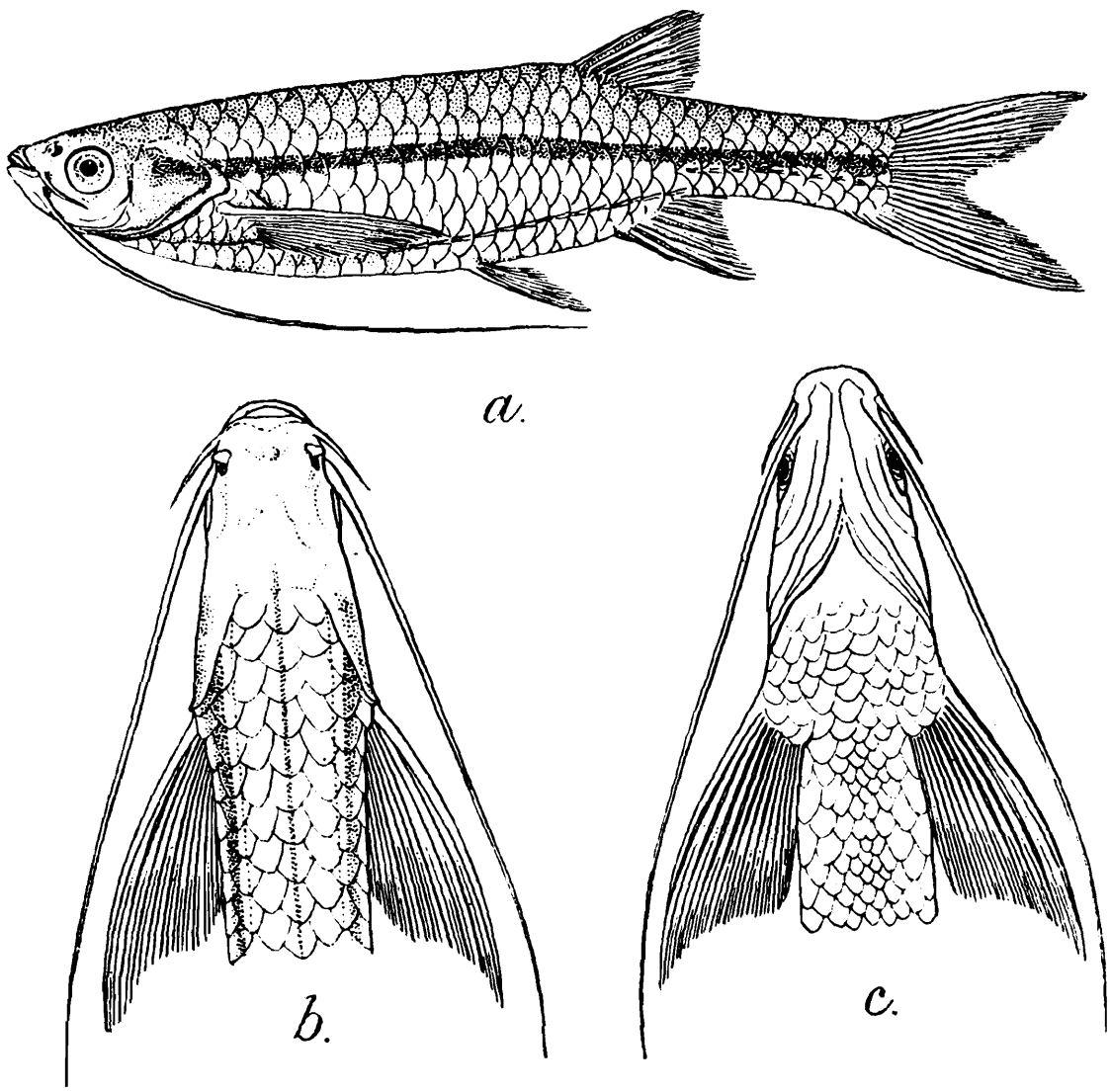
Measurements in millimetres.

	Chaungwa			Pegu		Manda-lay		Tenas-serim	Moul-mein	Prome	
Total length without caudal	66	71	73	50·5	65	78	81	80	87	64·5	76
Length of head	16	17	17	13·5	15	17	18	19·5	19	15·5	78
Height of body	18·5	20	21	14	18·5	22	24	27	24	17	19
Diameter of eye	5	5	5	4	4·5	4·5	5	5·5	5	4·5	5
Interorbital width	7	8	8	4·5	5	5·5	6	6·5	7	5·5	6
Length of snout	4	4	4	3·5	4	5	5	4·5	5·5	4·5	5
Length of caudal peduncle	9·5	12	11	10	12	14	16	14	15	12·5	14·5
Least height of caudal peduncle	8	8	8·5	6	8	9	10	11	10·5	8	9·5

Esomus thermoicos (Cuv. & Val.).

1842. *Nuria thermoicos*, Cuvier and Valenciennes, *Hist. Nat. Poiss.* XVI, p. 238, pl. 472.
1868. *Nuria danrica* (in part), Günther, *Cat. Fish. Brit. Mus.* VII, p. 200,
1923. *Esomus thermoicos*, Ahl, *Mitt. Zool. Mus. Berlin* XI, p. 40,

Through the kindness of Dr. Joseph Pearson, the Director of the Colombo Museum, we have received 5 specimens of an *Esomus* collected from different localities in Ceylon. He informs us that, " Mr. P. E. P. Deraniyagala of this department has collected several specimens from different parts of Ceylon, but he has been able to distinguish only one variety " In this form the lateral line is more or less complete, but Dünker [1] has recorded from Ceylon " *Nuria danrica* Buch. var. *malabarica* Day ", a form in which the lateral line is absent. We are unable



Text-fig. 2.—*Esomus thermoicos* (Cuv. & Val.).
a. Lateral view ×1⅛; *b*. Dorsal view of head and anterior part of body ×1½; *c*. Ventral view of head and anterior part of body ×1½.

to comment on this record in the absence of authentic material, but it may safely be presumed that the commonest species of the genus in Ceylon is *E. thermoicos*. This species is characterized as follows :—

D. 2/6 ; A. 3/5.

Esomus thermoicos is a well built species in which the length of the head is nearly equal to the depth of the body and is contained from 3·8 to 4·5 times in the total length without the caudal, but the length of the head and the depth of the body become proportionately smaller

[1] Dünker, *Mitt. Zool. Mus. Berlin* XXIX, p. 266 (1912).

with age. The diameter of the eye is contained from 3·2 to 3·8 times in the length of the head. The snout is equal to or slightly shorter than the diameter of the eye. The interorbital region is flat and its width is 1·5 times the diameter of the eye. The maxillary barbels reach the end of the pectoral fin or extend slightly beyond it. The lateral line is well marked and more or less complete ; it is interrupted above the base of the anal fin in certain examples. There are 19 or 20 predorsal scales. The pectoral rays are not drawn out and, except in young individuals, do not reach the ventrals, which are separated from the anal by a considerable distance. The caudal peduncle is slightly shorter than the head and is twice its minimum height ; it is encircled by 14 scales. There are 32 to 34 scales along the lateral line and there are 7 transverse rows of scales on the body.

The upper half of the fish is darker in colour. There is a broad, black lateral band between the eye and the base of the caudal, and a black streak along the dorsal surface.

Esomus thermoicos is found in Ceylon. It was originally described from the hot springs at Kanniya. Mr. P. E. P. Deraniyagala of the Colombo Museum informs us " that no *Esomus danrica* is to be found within the radius of 300 yards of the hot springs at Kanniya, judging from two collections of fishes from these springs. Other fishes also said to be found in these springs are absent, including the famous (*Barbus*) *Puntius thermalis* "

Measurements in millimetres.

Total length without caudal	37	40	56	56	72·5
Length of head	9·5	10	13	12·5	16
Height of body	10	10·5	14	13	17
Diameter of eye	2·5	3	4	3·5	4·2
Interorbital width	4	4	5	5·5	6·8
Length of snout	2·5	2·5	3	3	4
Length of caudal peduncle	8	9·5	13	12	13
Least height of caudal peduncle	3·5	4	6·5	5·5	7·5

Esomus barbatus (Jerdon).

1849. *Leuciscus barbatus*, Jerdon, *Madras Journ. Litt. Sci.* XV, p. 322.
1865. *Esomus thermoicos*, Kner, *Novara-Exped.-Zool. Fische.*, p. 363.
1867. *Esomus* (*Nuria*) *maderaspatensis*, Day, *Proc. Zool. Soc. London*, p. 300.
1868. *Nuria danrica* (in part), Günther, *Cat. Fish. Brit. Mus.* VII, p. 200.
1878. *Nuria danrica* (in part), Day, *Fish. India*, p. 583.
1889. *Nuria danrica* (in part), Day, *Faun. Brit. Ind. Fish*, I, p. 334.
1916. *Nuria danrica*, Sundara Raj, *Rec. Ind. Mus.* XII, p. 259.
1916. *Esomus danrica*, Weber and Beaufort, *Fish. Indo-Austral. Archipel.* III, p. 83, fig. 30.
1923. *Esomus maderaspatensis*, Ahl, *Mitt. Zool. Mus. Berlin* XI, p. 40.
1927. *Nuria danrica*, Narayan Rao and Seshachar, *Half-yearly Journ. Mysore University* I, No. 2, p. 16.

Through the kindness of Dr. B. Sundara Raj and Mr. C. R. Narayan Rao we have received a large number of specimens of *Esomus barbatus* from different localities in South India. The species is closely allied to *E. thermoicos* from Ceylon, but can be readily distinguished by its characteristic colouration and by the possession of 17 predorsal scales.

D. 2/6 ; A. 3/5.

The length of the head is contained from 4·1 to 4·5 times and the depth of the body from 4 to 4·4 times in the total length without the caudal. The head becomes proportionately shorter with age. The diameter of the eye is contained from 3·4 to 4·2 times in the length of the head. The snout is equal to or slighly longer than the diameter of the eye. The interorbital width is somewhat greater than the diameter of the eye. The maxillary barbels usually extend up to the middle of the pectoral, but they may be slightly longer or shorter. The lateral line is complete and well defined. There are 30 to 32 scales along the lateral line and 7 transverse rows on the body. There are 17 predorsal scales. The pectoral rays are slightly produced in young individuals only. Except in young specimens the pectorals do not reach the ventrals and the latter do not extend to the anal. The caudal peduncle is slightly shorter than the head in young individuals, but in full grown speci mens it is slightly longer ; its least height is about half of its length. There are 14 scales round the caudal peduncle.

In *Esomus barbatus* the body is silvery white, darkish above and lighter below. On the sides there are broad but indistinct silvery bands with a streak of a darker colour running along the middle of the body and becoming quite prominent behind the ventral fin. The fins are diaphanous.

The species is quite common in South India, and is represented in the Indian Museum collection from the following localities :—

2591	Madras	F. Day	1
F $\frac{10796}{1}$	Mopad, Nellore Dist., Madras	Madras Fisheries	19
F $\frac{10797}{1}$	Verkaipudie, Nellore Dist., Madras	Ditto	106
F $\frac{10798}{1}$	Porpandal, Chenglepet Dist., Madras	Ditto	72
F $\frac{10799}{1}$	Mysore	C. R. Narayan Rao	2

Measurements in millimetres.

	Verkaipudie				Mopad			
Total length without caudal	50·5	55	58	60·5	67	71	77	87
Length of head	12	13	14	14	15	16	17·5	19
Height of body	12	13	14	13·7	15·2	17	19	21
Diameter of eye	3·5	3·5	4	3·5	4	4·2	4·5	4·5
Interorbital width	3·7	3·7	4·5	4	5	5	6	6·7
Length of snout	3·2	4	4	4	4·2	4·7	5·2	5·7
Length of caudal peduncle	11	12·5	13	13·7	16	16·5	16·5	20
Least height of caudal peduncle.	6	6·5	6·7	7	7·5	7·7	8·5	9·5

Esomus ahli, sp. nov.

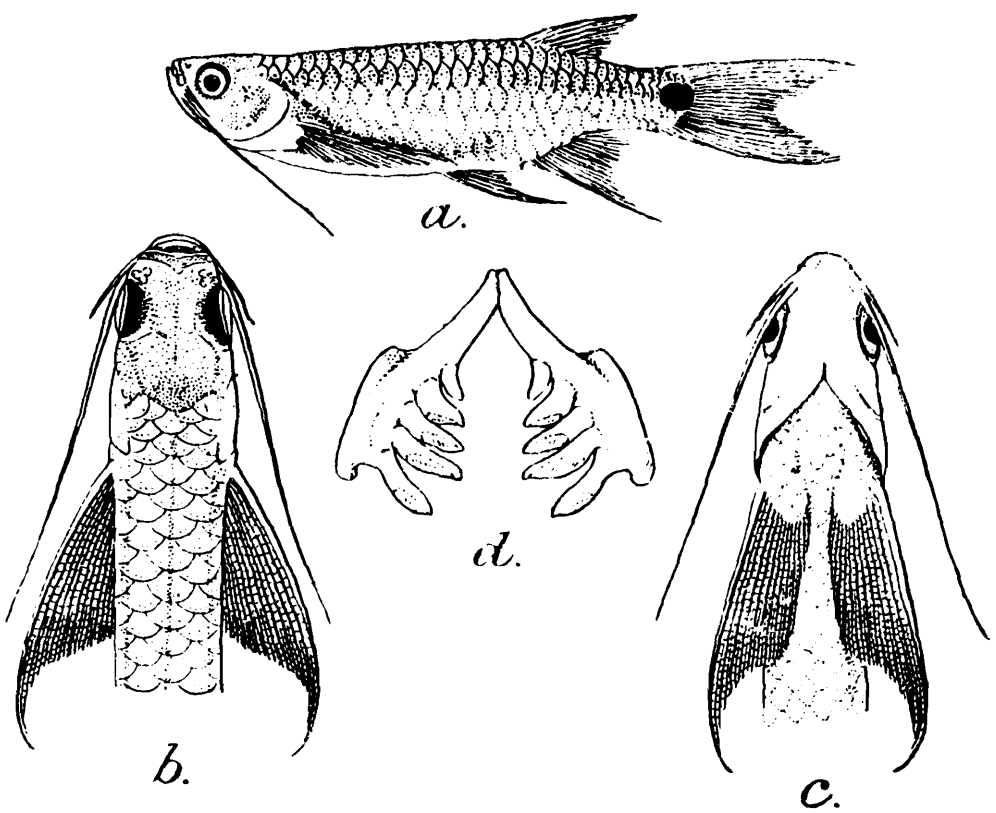
1869. *Nuria malabarica* (in part), Day, *Proc. Zool. Soc. London*, p. 559.
1878. *Nuria danrica* var. *malabarica* (in part), Day, *Fish. India*, p. 583.
1889. *Nuria danrica* (in part) Day, *Faun. Brit. Ind. Fish.* I, p. 334.
1923. *Esomus malabaricus*, Ahl (*nec* Day), *Mitt. Zool. Mus. Berlin* XI, p. 42.

The absence of the lateral line has been considered to be the chief characteristic of Day's *Esomus malabaricus*, and it was probably this

assumption that led Day in 1869 to confuse the Irrawaddi specimens with the Malabar examples without the lateral line. From an examination of a large series of specimens from India and Burma we have come to the conclusion that the Burmese form described as *malabaricus* by Ahl is quite distinct from Day's *malabaricus* from Trichur. We consider the former to be a hitherto undescribed form and have great pleasure in associating it with the name of Dr. Ernst Ahl. *Esomus ahli* may be described as follows :—

D. 2/6 ; A. 3/5 ; P. 13 ; V 7 ; C. 20.

Esomus ahli is a small species which does not grow to more than 2·5 inches in length. The head is contained from 4·1 to 4·4 times and the depth of the body from 3·7 to 4 times in the total length without the caudal. The head is proportionately longer and the body is deeper in



TEXT-FIG. 3.—*Esomus ahli*, sp. nov.

a. Lateral view ×2 ; *b*. Dorsal view of head and anterior part of body ×3 ; *c*. Ventral view of head and anterior part of body ×3 ; *d*. Phryngeal bones with teeth ×12.

young individuals. The diameter of the eye is about one-third the length of the head. The interorbital width and the snout are considerably shorter than the diameter of the eye. The maxillary barbels are very variable. In some they extend up to the middle of the pectoral fin only, while in certain other specimens they reach beyond the base of the anal fin. The dorsal fin commences opposite the 18th longitudinal scale and there are 15 to 16 predorsal scales. The lateral line pierces from 4 to 6 scales only. There are 27 to 28 scales in a longitudinal series and they are arranged on the body in 6 transverse rows. The pectoral fin is long and reaches the base of the ventral which extends to the base of the anal fin. The outermost rays of the paired fins and the third spine of the anal fin are greatly drawn out. In the Moulmein

examples this condition is better marked than in those from Rangoon. The least height of the caudal peduncle is contained from 1·5 to 2 times in its length. There are 12 scales round the caudal peduncle.

The colouration in spirit is silvery with a well marked black pre-caudal spot.

Type-specimen :—F 10794/1, *Zoological Survey of India* (*Ind. Mus.*).

Esomus ahli is found in pools and ditches and has so far been recorded from Rangoon, Moulmein and Akyab in Burma. The following table gives the exact localities of the specimens in the Indian Museum collection :—

F $\frac{10794}{1}$	Rangoon (Type-series)	F. G. Meggitt .	11
829 Cat.	Rangoon . .	F. Day . .	2
F $\frac{6344\text{-}5}{1}$.	Rangoon	S. A. Harris .	2
F $\frac{7448\text{-}72}{1}$.	Outside Farm caves near Moulmein	F. H. Gravely	25
F $\frac{10795}{1}$.	Akyab	E. S. Feegrade .	1
F $\frac{10810}{1}$.	Lashio, N. Shan States, Burma	Director, Harcourt Butler Institute of Public Health	4

Measurements in millimetres.

	Moulmein.				Rangoon.			
Total length without caudal .	29	31·5	33	35	28	30	31·5	45
Length of head	7	7·5	7·5	8	6·5	7	7	9·5
Height of body .	7·5	8·5	8·5	8·7	7	8	9	12
Diameter of eye .	2·5	2·5	2·5	2·5	2	2	2	2·5
Interorbital width .	2	2	2	2	2·5	3	2	2·5
Length of snout	2	2	2	2	1·5	2	2	2
Length of caudal peduncle	6	6	6	6·5	6	6·5	6	8
Least height of caudal peduncle.	3·2	3·7	4	4	3·5	4	3·5	5

Esomus danricus (Ham. Buch.)

1822. *Cyprinus danrica, C. jogia, C. sutiha,* Hamilton Buchanan, *Fish. Ganges* pp. 325-327, 390, 391, pl. xvi, fig. 88.
1839. *Perilampus recurvirostris, P. macrouru, P. thermophilus,* McClelland, *As. Res.* (Ind. Cyprinidae), XIX, pp. 290, 291, 398, 399 ; pl. xlvi, figs. 2B, 3B, pl. liv, fig. 19.
1839. *Esomus vittatus,* Swainson, *Nat. Hist. Fish.* II, p. 285.
1842. *Nuria thermophylos, Cuvier* and *Valenciennes, Hist. Nat. Poiss.* XVI, p. 240.
1853. *Nuria danrica,* Bleeker, *Verh. Bat. Gen.* XXV, p. 130.
1863. *Esomus danrica,* Bleeker, *Atl. Ichthyol.* III, p. 32.
1867. *Esomus malabaricus,* Day, *Proc. Zool. Soc. London,* p. 299.
1868. *Nuria danrica* (in part), Günther, *Cat. Fish. Brit Mus.* VII, p. 200.
1869. *Nuria malabarica* (in part), Day, *Proc. Zool. Soc. London,* p. 559.
1878. *Nuria danrica* (in part), Day, *Fish. India,* p. 583, pl. cxlv, fig. 7.

1889. *Nuria danrica* (in part), Day, *Faun. Brit. Ind. Fish.* I, p. 334.
1907. *Nuria danrica*, Annandale, *Rec. Ind. Mus.* I, p. 41.
1909. *Nuria danrica*, Jenkins, *Rec. Ind. Mus.* III, p. 287.
1912. *Nuria danrica* var. *malabarica*, Dunker, *Mitt. Zool. Mus. Berlin* XXIX, p. 266.
1912. *Nuria danrica* var. *grahami*, Chaudhuri, *Rec. Ind. Mus.* VII, p. 44, pl. xxix, fig. 3.
1913. *Nuria danrica*, Chaudhuri, *Rec. Ind. Mus.* VIII, p. 253.
1915. *Nuria danrica*, Southwell, *Rec. Ind. Mus.* XI, p. 315.
1915. *Nuria danrica* var. *grahami*, *id.*, *ibid.*, XI, p. 315.
1923. *Esomus thermophylus*, *E. sutiha*, *E. jogia*, *E. danricus*, *E. lineatus*, Ahl, *Mitt. Zool. Mus. Berlin* XI, pp. 40-42.

Esomus danricus is the most widely distributed Indian species of the genus, and we have examined a very large series of specimens from all parts. The species exhibits a great range of individual variability, especially as regards the length of the maxillary barbels, the structure of the paired fins and the composition of the lateral band on the body. From a very careful study of the extensive material at our disposal we are led to conclude that the various forms described from Bengal, Assam, the United Provinces and Orissa are synonymous with one another. We have also included Day's *malabaricus* in the above synonymy, but not without some hesitation. The specimens identified by Day as *E. malabaricus* are not in a good state of preservation, but as far as can be judged from these specimens they do not differ materially from the common Bengal species. Dünker's *Nuria danrica* var. *malabarica* from Ceylon probably belongs to this species, but we cannot express a definite opinion without examination of authentic material. In view of the great confusion that has hitherto prevailed about *Esomus danricus* we propose to give below a short description of the species :—

The length of the head is contained from 3·5 to 5 times and the depth of the body from 3·3 to 4·8 times in the total length without the caudal. The diameter of the eye is contained from 3 to 4 times in the length of the head. The interorbital width is usually slightly greater than the diameter of the eye, but in some examples it is equal to or even shorter. The snout is invariably shorter than the diameter of the eye. The length of the maxillary barbels is variable ; usually they extend to the middle of the pectorals but may reach their base or extend even a little further. There are 16 to 17 predorsal scales. The lateral line pierces from 4 to 6 scales only anteriorly. There are 27 to 30 scales in a longitudinal series and these are arranged on the body in 6 transverse rows. The pectoral reaches the base of the ventral, which extends to the base of the anal. The outer rays of the paired fins usually extend for a considerable distance beyond the fin membrane, but their length varies considerably. The minimum height of the caudal peduncle is contained from 1·2 to 2 times in its length. There are 14 scales round the caudal peduncle.

There is a broad lateral band of a black colour extending from behind the eye to the base of the caudal fin. This band is very variable, and in certain examples is represented as a silvery band only. The body is silvery, the upper half being slightly darker.

Esomus danricus is very common in the ponds and ditches of Bengal, Bihar, Orissa, Assam, United Provinces, Central Provinces and the

Punjab. It is also found in South India. In the Indian Museum collection the species is represented from the following localities :—

F $\frac{10776}{1}$	Madhopur, Punjab	Punjab Fisheries	3
F $\frac{10786}{1}$	Punjab	,, ,,	3
F $\frac{10777}{1}$	Chawas Nallah, Punjab	G. C. Howell	3
F $\frac{10778}{1}$	Lahore, Punjab	George Matthai	4
F $\frac{10782}{1}$	Puranapokra, Kon, Mirzapur, U. P.	Mrs. Johnston	2
F $\frac{6208-11}{1}$	Hazratgunge, Lucknow, U.P.	S. W. Kemp	4
F $\frac{10781}{1}$	Agra, U. P.	Zool. Dept., Allahabad University	3
F $\frac{7701}{1}$	Kalinaddi, Meerut, U. P. (Type of var. *grahami*)	Capt. J. D. Graham	1
F $\frac{7283}{1}$	Delhi, U. P.	Mus. Coll.	1
F $\frac{6143}{1}$	,, ,,	Malaria Officer, Lahore	1
F $\frac{7714}{1}$	Bhagmati R., Champaran Dist., Bihar	M. Mackenzie	1
F $\frac{7685}{1}$	Ditto	,, ,,	1
F $\frac{10791}{1}$	Gandak R., Siripur, Saran Dist.	,, ,,	1
F $\frac{3759}{1}$, F $\frac{3763}{1}$, F $\frac{4211-12}{1}$, F $\frac{5366-70}{1}$	Siripur, Saran Dist.	,, ,,	9
F $\frac{10779}{1}$	Nerbudda R., Mandla Dist C. P.	E. A. D'Abreu	1
F $\frac{10780}{1}$	Carlsingeon Panchmarhy, C. P.	?	1
F $\frac{10783}{1}$	Nawegaon Lake, Bhandara Dist., C. P..	E. A. D'Abreu	5
F $\frac{10788}{1}$	Champadanga, near Calcutta	R. Hodgart	21
F $\frac{10789}{1}$	Khardah, 24-Pergs. Dist., Bengal	D. D. Mukerji	20

F $\frac{6756\text{-}62}{1}$	Gatigarh, Hughly Dist., Bengal	A. Rahman .	7
F $\frac{6592\text{-}6601}{1}$	Khanpur, Hughly Dist., Bengal . .	„ „ .	10
F $\frac{4886}{1}$, F $\frac{4889}{1}$	Berhampur Court, Bengal	S. W. Kemp	2
F $\frac{1468\text{-}73}{1}$	Port Canning, L. Bengal .	N. Annandale .	6
13918-13930	Jessore Bheels, E. Bengal .	Wood-Mason & Alcock	13
F $\frac{6374}{1}$, F $\frac{6377\text{-}88}{1}$	Khulna, E. Bengal . .	J. Caunter . .	13
F $\frac{2027}{1}$.	Manbhum . . .	A. K. Hallowes .	1
F $\frac{10790}{1}$.	Amlabad, near Jharia, Manbhum Dist. .	D. D. Mukerji	20
827 (Cat.) .	Calcutta Bazaar	F. Day . .	12
F $\frac{7118\text{-}22}{1}$.	Nomati, Darrang Dist., Assam . .	S. W. Kemp	5
F $\frac{7135\text{-}38}{1}$	Ditto	„ „ „ .	4
F $\frac{10793}{1}$	Between Chittagong and Sultan Bagu Bastan	N. Annandale & S. W. Kemp .	2
F $\frac{10792}{1}$	Drummondgunge Tank (Daman)	? .	2
F $\frac{7745}{1}$	Dibrugarh, N. E. Assam	S. W. Kemp	1
F $\frac{7173}{1}$.	Sur Lake, Puri, Orissa .	N. Annandale	1
F $\frac{10784}{1}$.	Nellore Dist., Madras	„ „ .	1
F $\frac{10785}{1}$.	Colair Lake, Kistna Dist. .	„ „ . .	2
2450 . .	? . .	F. Day	1
830 (Cat.) .	? . . .	? . .	1
F $\frac{9922}{1}$.	? . .	R. B. Seymour Sewell .	3
F $\frac{10787}{1}$.	? . .	? . . .	8

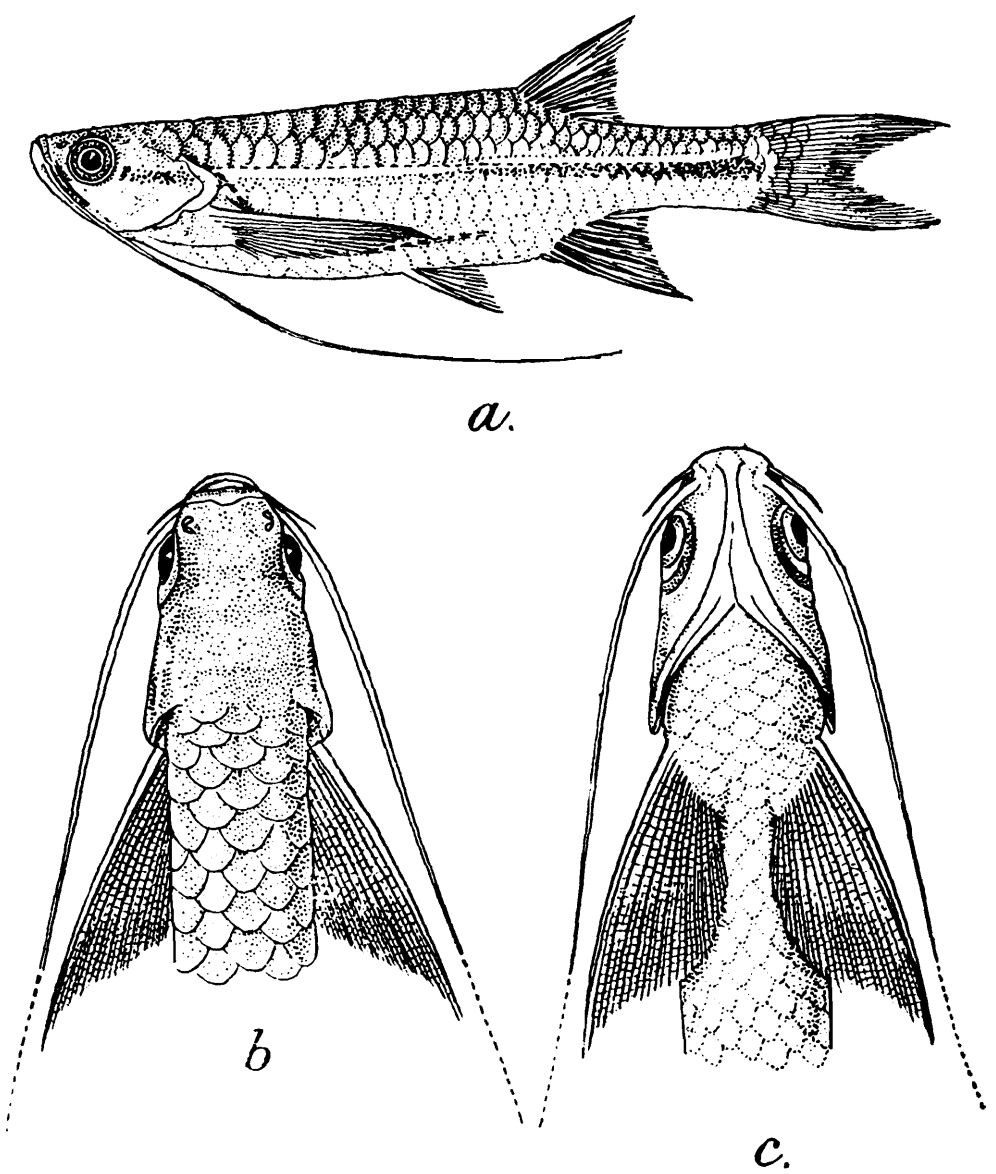
Measurements in millimetres.

	Punjab.			United Provinces.			Bihar.			Central Provinces.			Bengal.			Assam.			Orissa.	Madras.
Total length without caudal.	44	50	52·5	25	29	30	35	38	42	30	32	36	37	41	45	26	35	39	33	43
Length of head	11	12·5	12·5	7	7·5	7·5	9	10	10	7·5	7·5	7·5	9	10	9·5	7	9	9·5	8	8·5
Height of body	11	13	13	5·75	6·5	6·5	9	9·5	10	7·5	7·5	7·5	9	10	10·5	7	9	10	8·5	11
Diameter of eye	3·5	3·5	3·5	2	2·5	2·25	2·75	3	3	2	2	2	3	3	3	2	3	3	2·25	3
Interorbital width	5	5	5	3	3·25	3·25	4	4	4	2	2	2	2	2	2·5	3	3·5	4	2	3
Length of snout	3	3·5	3·5	2	2	2	2·25	2·5	2·5	2	2	2	2	2	2·5	1·75	2	2	2	2·5
Length of caudal peduncle.	9	10	10	5	5·75	6	7	8	8	6	6·5	7	7	9	9	5·75	6·25	7	6·5	8
Least height of caudal peduncle.	5	6	6	2·5	3	3	3·5	4	4	3·5	3·5	4	4·5	5	5	3	4	5	4	5

Esomus metallicus Ahl.

1923. *Esomus metallicus*, Ahl, *Mitt. Zool. Mus. Berlin* XI, p. 42.

Through the kindness of Dr. H. M. Smith, Director, Department of Fisheries, Siam, we have received a number of specimens of the genus *Esomus* from Nontaburi in Central Siam and from Nong-Khor in the south-eastern part of Siam. Though these examples differ in certain respects from Ahl's description of *E. metallicus*, we have little doubt that they belong to the same species. The species was described from seven specimens collected at Petchaburi.



TEXT-FIG. 4.—*Esomus metallicus* Ahl.

a. Lateral view ×2; *b*. Dorsal view of head and anterior part of body ×3; *c*. Ventral view of head and anterior part of body ×3.

The lateral line in all the specimens examined by us does not extend to the anal fin; in some cases it does not even reach the base of the ventral. The maxillary barbels vary considerably as regards their length, generally they reach the base of the anal fin or extend beyond it, but in some specimens they do not extend beyond the base of the ventral.

Usually there is a distinct lateral band commencing from behind the eye and extending to the base of the caudal fin. In some specimens

it becomes indistinct in the anterior half of the body, but is prominent in the tail region.

Esomus metallicus is distinguished by its long maxillary barbels, by the presence of the lateral line at least to the base of the ventral and by its characteristic colouration.

Specimens from the following localities are represented in the Indian Museum collection :—

$F\frac{10800}{1}$	Nontaburi, Central Siam .	H. M. Smith . .	8
$F\frac{10801}{1}$	Nong-Khor, South-east Siam	„ „ „ . .	19

Measurements in millimetres.

	Nontaburi				Nong-Khor.			
Length without caudal . .	37·5	39	40	46	31	34	35	38
Length of head . .	8·5	9	9	10	9	8·2	8·5	9
Height of body . . .	9	10	10·5	13	9·5	9	9	11
Diameter of eye	3	3	3	3	3	2·5	2·5	2·8
Interorbital width . . .	3·5	4	3·5	4·5	3	3	3	3
Length of snout . . .	2	2	2	2·5	2·2	2·2	2·2	2·3
Length of caudal peduncle .	9	9	9·5	10	7·5	7	7·5	8
Least height of caudal peduncle	4	4·5	5	5·5	4·2	4	4	4·5

The form of the fish as shown in the figure is the result of preservation. The figure of the head region shows a prominence in the middle of the lower jaw. Such prominence is absent in *Esomus*. We are unable to add anything further about this form and only include it here for convenience of reference.