

II.—On the Fresh Water Fishes of Southern India. By
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lishment. (Continued from p. 149.)

[I beg to observe that in my measurements of the relative proportions of head and depth of fish to the length, I take the length only as far as the base of the caudal fin. I believe that Currier and McLelland measure to the end of the caudal fin, but as this is apt to vary somewhat, and moreover very liable to injury, I think the other mode is preferable.]

ORD. MALACOPTERYGII.

Fam. Cyprinidae.

Dorsal fin single, of few rays; maxillary teeth minute, or wanting; mouth (typically) small.

In this numerous family I shall follow nearly the arrangement given by McLelland in his most valuable Monograph of the group, (Asiatic Researches, vol. 19th,) which I consider infinitely superior to that of Valenciennes.

Gen. *Cyprinus*.

Body elevated; dorsal fin usually long, preceded by spinous rays; no cirri; lower jaw short.

Cyprinus kontius. (New Species.)

Muzzle blunt, truncated; snout with mucous pores, head small; profile rising abruptly to front of dorsal, thence gradually drooping; dorsal fin high in front, low behind, with spines, the third strong, broad, simple. D. 3-12, A. 2-6. Colour dusky greenish, brighter beneath; fins dashed with reddish—38 or 39 scales along the lateral line in 13 rows.

I have found this fish (which is the only one appertaining to true *Cyprinus* in S. India) in the Cavery and its tributaries, growing, it is said, to a considerable size; my specimens were only a foot long.

* *C. potail*. Sykes.

"Deep and fleshy, slightly compressed, dorsal fin of 13 rays, pectoral of 14, and anal of 9—scales large and silvery, length 10 or more inches, height $3\frac{1}{4}$ inches."

This fish, judging from the above brief description, appears to me to be a true *Cyprinus*—I have great doubts where to place the next.

* *C. ? nukta*. Sykes.

"Two tendrils on under jaw, and two short horns on the space between the eyes, which, together with the deflected upper lip, are tuberculated; large scales. Found in the Inderance river 18 miles north of Poona."

Gen. *Cirrhinus*.

Dorsal fin usually long, without spinous rays; lips with 4 cirri (generally.)

This genus, as above defined, includes the *Kohita* and *Dangila* of Valenciennes; the *Cirrhina* of the same author appears to belong partly to this genus, and partly to *Gobio*.

Cirrhinus rubro-punctatus. (New Species.)

Cirri minute; head is to the body as 1 to $4\frac{1}{2}$; the height is to the total length as 1 to 3; 40 scales along the lateral line in 15 rows.

D. 15, A. 8, greenish above, dusky silvery beneath, many of the scales in the centre of the body red spotted; fins red tipped.

I procured this handsome fish in the upper portion of the Cavery river, and in several of its tributaries. My specimens are about a foot long. It is said to grow to a larger size however.

Cirrhinus Belangeri?

Rohita Belangeri, Val., olim *Cirrhina micropogon*.

Cirri rather small; head is to the body as 1 to $4\frac{2}{3}$; its height is to its total length as 1 to $3\frac{1}{2}$; 45 or 46 scales along the body in 15 or 16 rows; D. 2-15, A. 2-5, &c. Color dusky green throughout, many of the scales red spotted; fins dark.

I have found this fish in most of the rivers and large tanks of the Carnatic; my specimens are about 14 inches long, but it is said to grow much larger. It answers so nearly to the description of Valenciennes' fish that I have for the present retained it under that name, though his fish was said to be procured from Bengal. If so it can hardly have escaped Buchanan and McLelland, yet I can find none in the latter author that answer to it, so the locality given is probably erroneous.

Cirrhinus affinis. (New Species?)

Nearly allied to the last; cirri long; 39 scales along the body in 12 rows; snout very warty; D. 17, A. 7. Dusky green through-

out. I procured a single specimen of this fish in the Cavery at Seringapatam, but do not now possess it. It is called *Kum-min* by the fishermen there.

† *Cirrhinus Cuvierii*.

Dangila Leschenaultii. Val.

Labial cirrus fine, maxillary one fleshy; both short; body elongated; head short, one-sixth of total length of body; height $5\frac{1}{4}$ times in length; eye large; 40 scales along the body; greenish above, silvery beneath; D. 3-13, A. 3-5—fins yellowish.

I procured what I imagine to be this fish from the neighbourhood of Madras. Valenciennes' specimens were from Pondicherry. He places it as a *Dangila*, a genus he characterizes as having an edging of conic papillæ on the upper lip.

* *Cirrhinus Dussumierii*.

Rohita Dussumierii. Val.

Body elongated, its height being $4\frac{3}{8}$ in its total length; head one-sixth of length; muzzle rounded, with a few large pores; cirri small; lips fringed; 60 scales along the body. D. 3-13, A. 3-5—greenish yellow above, silvery beneath, fins with a greenish tinge, $10\frac{1}{2}$ inches long.

I have not yet seen this fish, which is said to have been brought from the neighbourhood of Alipey in Travancore. It has smaller scales than most of the genus.

* *Cirrhinus Roulei*. Val. *Rohita*. Val.

Cirri very short; caudal much forked, 46 scales along the body; D. 3-12, A. 3-5. Steel blue on the back; silvery iron grey beneath, fins dusky—6 inches long. Said to have been brought from Bombay. I have not seen it.

* *Cirrhinus fimbriatus*. Bloch.

Rohita. Val.

Cirri very minute; head short, broad, five times and one-third in the total length; many mucous pores on the snout, which is rounded; height of body one quarter its length; 45 scales along the body. D. 3-16, A. 2-8, from Pondicherry.

I do not know this fish.

+ Name changed in consequence of there being also a *Rohita Leschenaultii*, which is a *Cirrhinus* apud nos

I imagine that the following fish of Sykes' list should be placed in this genus:

* *Cyprinus Abramioides*. Sykes.

20 rays in dorsal, 8 in anal, 18 in pectoral fins, without tendrils, with tuberculated nose, red edged fins and a red lunule on each scale; attains the length of 21 inches and height of 7—excellent eating; called *Tambora* by the natives, from the general prevalence of a copper colour.

* *Cirrhinus Blochii*. C. V.

Cyp. cirrhosus, Bloch. 411.

Cirri rather long; dorsal pointed; scales rather large; lateral line straight; of a dark violet colour above, silvery beneath, fins transparent. D. 18, A. 13, up to $1\frac{1}{2}$ feet long.

From the rivers and lakes of the Malabar Coast.

There is another fish, which is described by Valenciennes, whose locality is not mentioned, but as it was procured by Leschenault, who collected much in the South of India, it may be from Pondicherry, or the Malabar Coast.

* *Cirrhinus Leschenaultii*.

Rohita Leschenaultii. Val.

Cirri very short; height one-third of length; head $5\frac{1}{2}$ times in total length; end of muzzle round, thick, covered with mucous pores; dorsal fin low; 45 scales on body—7 inches long D. 3-16, A. 3-5.

The next species to be mentioned is one of Sykes', which may either belong to this genus or be a *Gobio*. Colonel Sykes places it as *Varicorhinus Bobree*. "Nose tuberculated; no tendrils—D. 17, A. 8, form of a tench; lips thick, fleshy, frequently crenated, 6 inches long, $1\frac{1}{6}$ high."

The last of this genus, if indeed it belong here, is a small fish that appears somewhat allied to *C. jodinus*, *C. morala*, *C. dero*, &c. by its dark bands. It, with some of these, will probably form a subdivision.

Cirrhinus fasciatus. (New Species.)

Snout covered with mucous pores; cirri very long and thin, head large, being to the body as 1 to $4\frac{1}{2}$; height $2\frac{3}{4}$ of total length; scales 20 along the sides, in 6 rows. D. 11, A. 6 or 7— $2\frac{1}{2}$ to 3

inches long. Color reddish yellow, with 4 black bands, sometimes interrupted, on the sides; viz., one behind eye, one beneath the dorsal fin, another between the dorsal and caudal fins, and the fourth close to the tail.

This is an active little fish found in small shoals in all the streams of Malabar beyond the reach of the tides, and in the higher branches of the streams that run into the Cavery. It lives chiefly on vegetable matter, but will also take worms, &c. I have kept it alive for some months, and I observed it to be extremely active and pugnacious.

Gen. *Gobio*.

Dorsal fin short, placed opposite the ventral, without spines; lips thin; lower jaw shortest; some have 2 cirri, others entirely without them.

Gobio curmuca. (Buch.)

Head very long, being one-fourth of the length of the whole body, furnished with some mucous pores on its snout; 2 long cirri; eye distant from muzzle; 40 scales along its body, with 12 rows in its depth, D. 11, A. 8. Color green above, silvery beneath. Dorsal and pectoral fins, reddish white; ventral colourless, with the two first rays reddish; anal colourless; tail greenish, lips bright orange, ended and margined with black.

My specimens correspond so exactly with Buchanan's figure that I cannot doubt their identity; but I imagine that he has either made some error about its locality, or has confounded two allied species. My specimens are from the rivers of Palghat, and Ariacode in South Malabar, where it is very common, and I have as yet seen it in no other locality, and certainly it is not a common fish in Mysore or I must have seen it. Buchanan I may mention passed over the very locality whence my specimens were obtained in his journey through Mysore, &c. and might probably have had his drawing taken there, and made his description from some other species. The orange and black tipped caudal seems to be a permanent mark, as I have seen it in fish 2 inches long, and in all up to a foot and more.

Gobio Canaracensis. (New Species.)

Very closely allied to the last; appears to differ in its shorter head, which is to the whole length as 1 to $4\frac{1}{2}$; its depth is as 1 to $3\frac{1}{2}$. The distance of eye from muzzle is less. Color green above, golden

on the sides, silvery beneath; dorsal, ventral and anal fins yellow orange; tail yellow, margined with orange above and below, and with a broad fringe of black on its posterior margin; pectoral pale yellowish.

D. 12, A. 7.—My specimen was destroyed before I counted the number of its scales, but the points noted above, and the difference in the colours have induced me to consider it distinct from the last. I found it in rivers in Canara, and my specimen was about 8 inches long.

Gobio Hamiltonii. (New Species?)

Head to whole length of body as 1 to $4\frac{3}{4}$, D. 11, A. 7, 40 scales along the body and 10 or 11 in its depth. Green above, silvery beneath; snout concave between eye and muzzle. Dorsal and anal fins colorless; pectoral and ventrals, orange margined; caudal pale yellow.

This fish, of which I procured some small specimens, 5 or 6 inches long, in the Cavery and its tributaries, is also very closely allied to *C. curmuca*, and may have been mistaken for the Malabar fish by Buchanan, and the description taken from it. I did not notice any cirri in this or the last, but they may exist notwithstanding, as my only specimen of the first was destroyed, and my present one is in such bad order that I cannot make them out. I am strengthened in the supposition of my present species not having cirri by having lately obtained in the Bhowany, a tributary of the Cavery, a large *Gobio* which may be identical with it, but of which unfortunately I lost my only specimen. It was of large size 20 inches long, head small, being to the rest of the body as 1 to 5; height to length as 1 to $3\frac{1}{2}$; 39 or 40 scales along the body in 11 rows D. 11, two first rays quite simple. A 7, green above, silvery on the sides and beneath; all the fins dusky, edged with red. Should, on a further comparison, this be found a distinct one I propose the name of *Gobio Bovanus*—either this or the last however are possibly *Gobio ariza*, Buch., described as having snout and under lip smooth, 12 rays in dorsal, in other respects like the last, (*C. pargusia*). Another allied form is one I shall provisionally call,

Gobio augraoides. (New Species.)

Head small, no cirri; length of head to body as 1 to $5\frac{1}{4}$ —depth to total length as 1 to 3; 44 scales along the body and 12 across;

D. 13, A. 7. Colors dark blueish above, golden on the sides, with a dark streak from eye to tail; all the fins dark; pectoral, ventral, and anal, tinged reddish yellow; profile rising rapidly to the dorsal; eye near the snout; mouth quite inferior. Its mode of colouring reminds one of *Gobio auagra* of Buchanan, and also of *G. bicolor* of McLelland, but it is very distinct.

Gobio bangon. Buch.?

Head is to the body as 1 to $4\frac{1}{2}$; height to total length as 1 to 4; 38 scales along the body and 11 or 12 across; D. 10, A. 7. Yellowish green above, with greenish longitudinal lines; silvery beneath; fins greyish yellow, sometimes tinged reddish, snout porous. This is undoubtedly the *arja* or *arija* of the Mysore fishermen, from which Buchanan must have taken the name *ariza*, but the species he has called by that name is very evidently distinct from this form. Whether my fish be identical with *G. bangon* or not, must be determined hereafter. It is very abundant in the Cavery and its tributaries, and becomes more so as the river becomes more sluggish.

Gobio limnophilus. McLelland.

Very closely allied to the last, and perhaps indeed identical, as McLelland has hinted. 36 scales along the sides and 12 across; 2 small cirri; D. 10, A. 6; reddish yellow above, silvery beneath; fins dusky greenish yellow—head little more than a sixth of total length of body; depth to length as 1 to $4\frac{1}{2}$ or 5. From tanks and rivers near Madras, and other parts of the Carnatic. I am not very certain about the cirri, but I think that they exist.

Gobio Dussumieri.

Cirrhinus Dussumieri. C. V.

Head small, 6 times in the total length, height of body 4 times; muzzle thick truncated, 2 short cirri; line of back almost straight; abdomen much rounded; eye 4 times in the head—D. 8-8, A. 2-4—39 scales along the sides in 15 rows—from Mysore. This is perhaps the same as my *G. bangon*, or very closely allied to it.

I cannot help imagining that the following fishes of Colonel Sykes' list belong to the present genus.

* *Chondrastoma kaerus*. Sykes.

No lateral line, no tubercles no cirri—sub-cylindrical—D. 12, A. 8,—up to 1 foot in length—Beema river.

* *Ch. fulungec*.

Elongated, not much compressed, D. 10, A. 6, length 1 foot, height 4 inches.

* *Ch. boggut*.

No tendrils, nor tubercles, body elongated, D. 12, A. 8, length 11 inches.

* *Ch. mallya*.

Short obtuse head, sub-cylindric body, and a red process on snout. D. 11, A. 8, length 6.

* *Ch. wattanah*.

Body elongated, dorsal high, form sub-cylindric. D. 11, A. 8, length $4\frac{1}{2}$ inches.

Gen. *Oreinus*. McLelland.

Head fleshy, mouth vertical, lower jaw shorter than the upper; snout muscular and projecting, furnished with cirri; dorsal preceded by a serrated spinous ray; scales small.

I have not seen any fish in Southern India that appertains to this genus, but I apprehend that one of Colonel Sykes' list may belong to it, viz., *Rohitee paugut*—Sykes, of which the following are the characteristics—compressed, deep, angular-backed,—D. 12, A. 8; first 3 or 4 rays of dorsal black tipped; length 5 inches, height $1\frac{1}{2}$. In Baum and Beema rivers. Colonel Sykes' genus *Rohitee* is described as having longish dorsal and anal fins, the 1st complete ray serrated posteriorly, scales minute, &c. but includes two fish that I think must be breams, and one *Opsarius* apparently.

Gen. *Gonorrhynchus*.

Mouth beneath; head covered with thick integuments; snout perforated by numerous mucous pores; body sub-cylindrical; dorsal and anal short, no spines.

G. Gotyla, Gray.

4 small cirri; snout thick, divided by a deep transverse fissure, covered with prominent mucous pores; head is to the whole body as 1 to $5\frac{1}{2}$; the height of the body is $4\frac{1}{2}$ times in its length; 34 scales along the body in 7 rows; colour dark olive green above, yellowish beneath, some of the scales red edged; fins yellowish green, tipped with orange. D. 2-8, A. 7—length about 8 or 9 inches.

I cannot of course be certain that my fish is the same as the one figured in Gray and Hardwicke's Illustrations, said to be from the mountains of India, but which McLelland does not appear to have met with. Should the fish figured by Gray be from the North of India, mine is probably distinct, but it is possible that Buchanan may have obtained it, and had a drawing taken, from the same locality as I did, whence Mr. Gray might have obtained his copy. The only point of difference of any note is the fleshy pendulous point said to exist at each corner of the mouth, which I do not observe in mine, and which may be an exaggerated defect of the original drawing. My fish was obtained in the Bhowany river, at the foot of the Neilgherries, and also in the Manantoddy river, both tributaries of the Cavery. It is only found where the bed of the river is stony, and keeps always close to the bottom, living apparently on the vegetable matter adhering to the stones. This and the other species are called *Kul korave* by the Telingas.

Gonorhynchus McLellandi. (New Species.)

Snout covered with numerous pores; profile rising to the dorsal, slightly concave from that to the tail,—head is to the whole body as 1 to $4\frac{1}{2}$, height is $3\frac{3}{4}$ in its total length; 2 longish cirri, head depressed in front, dorsal fin rather high. D. 10, A. 7, &c.—colour dusky green above, golden on sides, and greenish white beneath; caudal fin green in the centre, reddish above and below; other fins yellow, edged with red; cheeks golden, 36 scales along the body in 9 rows. Length 10 inches.

Found in the same localities as the last.

Gonorh. stenorhynchus. (New Species.)

Muzzle more acute than in the last, ending in a blunt rounded projection studded with large and prominent mucous pores; 4 longish cirri; head is to the whole body as 1 to $4\frac{1}{2}$, height is 4 times in the length; 34 scales along the body in 7 rows; D. 10, A. 9, &c. About 10 inches long. Colours much as in the last.

I have only found this well marked species in the Bhowany river at the foot of the Neilgherry hills.

I have got some small specimen of a species of this group from the streams of Malabar, which I cannot at present separate from *G.*

McLellandi by sufficiently specific characters, but of the distinctness of which I entertain little doubt, and hope to settle the question shortly.

Gen. *Barbus.*

Dorsal short, preceded by a strong spine; 4 cirri.

Barbus (Labeobarbus) Hamiltoni. (Gray.)

Barbus progenieus. McLell.

Head to the whole body as 1 to $3\frac{1}{2}$; cirri long; a fleshy projection on both upper and lower lips; body compressed; its height is to total length as 1 to $3\frac{1}{2}$ —26 scales along the lateral line, in 6 rows; green above, cheeks golden, silvery beneath; fins tinged with orange red; D. 3-9, 3d spine simple, very strong; A. 2-5, &c.

This fine fish is one which in the South of India most nearly resembles the *Mahseers* of Bengal, but I am not aware of its having been taken by fly here. It is found in the Cavery and all its tributaries, and grows to a size I am told, of 2 to 3 feet. It is a very handsome fish. I am not certain of its being McLelland's fish, which appears to differ somewhat in colouring, in the size of the head, and in wanting the projection on the upper lip. The drawing in Gray and Hardwicke gives a very fair representation of our southern fish.

Barbus Megalepis. McLell.?

Cyprinus mosal. Ham.

Head is to the body as 1 to 3; 25 scales along the side in 6 rows; D. 12, A. 7.

I obtained a single small specimen of what I consider may be this fish in the Cavery at Seringapatam. It was only a few inches long, but the fishermen, who call it *kiche*, said that it grew to an enormous size.

Barbus Carnaticus. (New Species.)

Head small, being rather more than one-fifth of whole body; obtuse; body not much compressed, eye about one-fourth the length of the head. It has about 32 scales along the sides in 8 rows, cirri of moderate length; profile of back ascending to the dorsal; dark glassy olive green above, silvery beneath; fins yellowish dusky; D. 4-8, A. 7, spine stout, simple.

I cannot find the description of this fish among those of McLell-

land or Hamilton, and accordingly have named it as new. It is found in the Caverry and all its tributaries, frequenting the streams, and rising to the fly.

I have heard of some fine fish of this species having been taken in the Bhowany at the foot of the Neilgherries, and in other parts of the country. It is called *gendé* by the Seringapatam fishermen. It grows to 3 feet and more in length, and is then a very heavy fish.

Barbus sarana. C. and V.

Head is to the whole body as 1 to $4\frac{1}{2}$; height is to the length as 1 to 3; head blunt, cirri slender; 28 scales along the sides in 8 or 9 rows; D. 2-8, A. 7; 2d dorsal fin finely serrated behind, and ending in a soft point; blueish above, rest of the body yellowish; cheeks golden, fins yellowish.

I have very little doubt but that this fish is Russell's *kunamoo* as Buchanan suggests, but which McLelland appears to doubt. It is extensively distributed over Southern India, being found in all the rivers, and most of the larger tanks of South India. It grows to the length of about 2 feet, and is called *panjiri* by the fishermen of Seringapatam. I have not seen it from the rivers of the West coast. It appears not to have been seen by McLelland.

Barbus Malabaricus. (New Species.)

Head to whole body as 1 to 4; height $3\frac{1}{2}$ times in its length; 4 long cirri; 23 scales along the body in 6 rows. D. 3-8, A. 2-8; pale brownish olive above, silvery beneath; fins tinged with red.

I would have considered this fish without doubt as *B. roseipinnis* of C. V., but that is said to have the dorsal spine serrated, &c. I have taken this handsome barbel only in mountain streams in Malabar. It rises to the fly sometimes, and will also take a bait of boiled rice. I have not seen it more than 10 inches long, but from the rapid growth of one I have kept alive for some months I imagine it attains a much larger size.

Barbus Mysorensis. (New Species.)

Head is one-fourth the length of the whole body, height is $3\frac{1}{2}$ times in its length; snout prominent, raised, covered with mucous pores; 4 long cirri, 38 scales along the lateral line and 9 rows; D. 4-9, A. 7, &c.; dark dusky greenish above, golden on the cheeks and sides,

and the fins stained with red. I have found this barbel in the Caverry and its tributaries, and it is said to grow to a large size.

Barbus gracilis. (New Species.)

Head one-fourth of body; height $4\frac{1}{2}$ times in its length; snout smooth, very protractile, 4 long cirri, 42 scales along the sides in 12 rows; D. 4-9, A. 7, &c.; 4th dorsal spine very ending in a soft point; pale greenish yellow above, silvery on the sides and beneath; fins yellowish.

This is a very well defined species found in the same localities as the last, it is said not to grow larger than 12 or 15 inches.

Colonel Sykes has 2 barbels which may be identical with some of the foregoing supposed new species, but in the absence of more detailed information, I must place them as distinct.

**Barbus massalaha*. Sykes.

4 short cirri, nose tuberculated; D. 12, A. 8, up to 3 feet long and 1 foot high. In the Goreh river.

**Barbus khudree*. Sykes.

4 cirri, large hexagonal scales, body elongated, D. 14, A. 7, fins blood stained. In Mota Mola river.

If Colonel Sykes had not given 14 rays to the dorsal fin I might have considered it the same as *B. Hamiltonii*.

**Barbus subnasutus*. C. V.

Head one-fifth of total length; eyes small; muzzle smooth; height three times and a third on the total length; 29 scales along the side in 12 rows; D. 3-8, spine serrated; A. 8, &c.; said to be from Pondicherry, nearly 6 inches long.

**B. gibbosus*. C. V.

Head small, one-sixth of total length; height three and a half times in its length, eye one-fourth of head; 29 scales along the body in 12 rows; D. 4-8, A. 3-5, spine serrated; from Alipey, brought by M. Dussumier.

**Barbus gardonides*. Val.

Head five and a half times in total length; height not quite three and a half times in the same; eye $3\frac{1}{2}$ times in length of head; cirri

small; 31 scales along the sides in 12 rows; D. 4-8, A. 8, &c.; dorsal ray serrated—from Bombay and Calcutta, &c.

The three preceding fish appear to be somewhat similar to one another, and most probably belong to the genus *Systomus* of McLelland.

I cannot identify them however with any of mine.

**Barbus roscipinnis.* C. V.

Cirri long, thin; toothed dorsal ray slightly bent, of moderate size; eye large; 22 scales along the side; D. 3-8, A. 2-5, &c.; caudal, anal, and ventral fins strongly tinged with red—4½ inches long—from Pondicherry.

**Barbus Polydori.* C. V.

Dorsal spine very finely serrated, slender; 27 scales along the sides. D. 3-9, A. 2-5. Steel blue on the back, silvery beneath, fins greyish; 4½ inches long, from Bombay.

It is probable that these two belong also to the *Systomi*.

Genus *Systomus*. McLelland.

Dorsal and anal fins short, the former usually preceded by a spinous ray; intermaxillaries protractile; spots on body, or fins.

Systomus chrysopoma. Val.

Head 4½ times in total length; height 3½ times in the same; 4 cirri; 27 scales along the sides in 10 or 11 rows; D. 10, A. 8. Green above silvery beneath, cheeks golden, a black spot on each side of the tail—up to 1 foot long.

This fish, placed as a *Barbus* by Valenciennes, is probably nearly allied to the *S. immaculatus* of McLelland. It sometimes wants the black spot on the tail. It is very abundant in most of the rivers of Malabar, entering the ditches and paddy fields during the monsoon in great numbers, and is caught by the boys with a hook baited with worm. It is more nearly allied to the *Barbels* perhaps than most of the *Systomi*. I have kept it in confinement for many months and it grows very rapidly.

Systomus dorsalis. New Species.

Head is 3½ times in total length; height is 3 times in the same; snout irregular, 26 scales along the sides in 8 rows; 2 labial cirri; profile rising to dorsal and descending rapidly to the end of that fin,

thence nearly straight; blueish above, yellowish on the sides, silvery beneath, a black spot on each side of the tail occasionally; fins with a yellowish tinge; D. 3-8, A. 7, &c. Dorsal fin with a black spot on its base behind; 4 to 5 inches long.

This fish is common in all the tanks and rivers in the neighbourhood of Madras, and I have not seen it elsewhere. It is probably a *Capoeta* of Valenciennes.

Systomus amphibius. Val.?

Height one quarter of total length; a pair of very small labial cirri; 25 scales along the sides. D. 3-8, A. 7, &c.; 4½ inches long; color green above, silvery beneath, with a fine rosy streak from eye to the tail along the centre of the body over the lateral line; fins with a yellowish tinge; sometimes has a black spot on each side of the tail.

This fish, or what I take to be it, has been placed by Valenciennes in his genus *Capoeta*, which he separates from the *Barbels* on account of having only 2 cirri. They form in Southern India a group of very nearly allied fish, difficult to distinguish *inter se*, and too closely joined to other species of *Systomus* without cirri, to permit us to retain them distinct. Our present fish I have procured in the Cavery, and also in tanks in Mysore and the Carnatic.

In some tanks it is found in great numbers. Cuvier's figure is defective, inasmuch as it shows the spine serrated, which, however, in the letter press is said to be entire. As to its being said to inhabit the sea at Bombay, only coming into the paddy fields during the inundations, I cannot help thinking there must be some mistake. It is mentioned by Valenciennes as being found even one foot long. If this is the case I imagine our southern fish will prove distinct. I have seldom seen it above 3 or 4 inches.

Systomus Carnaticus. (New Species.)

Very closely allied to the last. Differs in having much longer cirri, in its dorsal fin being lower, and having only 2 instead of 3 entire rays; lateral line more curved, scales 24 along the sides in 7 rows; blueish green above, yellowish on the cheeks and sides, and reddish beneath, a large black spot on each side of the tail; dorsal fin reddish, stained with black; other fins pale yellow. Length about 3½ to 4 inches.

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I obtained specimens of this fish in the Bhowany river at the foot of the Neilgherries and also in the Cavery.

Systomus sophone. (Buch.?)

No cirri; dorsal spine smooth; head is 4 times in body and its height is 2 times and two-thirds its total length—D. 10, A. 7—dusky green above, cheeks orange, silvery beneath; a streak of fine red along the sides; dorsal fin sometimes stained with black; usually a black spot on the tail; ventral and anal fins often tinged with red; dorsal spine smooth; 23 scales along the sides in 9 rows.

Common in tanks and rivers in the Carnatic not exceeding usually $3\frac{1}{2}$ or 4 inches.

Systomus chola. (Buch.?)

2 cirri; 24 scales in 9 rows—D. 10, A. 7—dorsal spine smooth, green above, silvery beneath. Dorsal fin reddish, stained and spotted with black; other fins yellowish; a large black spot on the root of the tail; cheeks golden; height about $2\frac{1}{2}$ times in the length; head $3\frac{1}{2}$ times in body, length about $3\frac{1}{2}$ to 4 inches.

Although my fish, which is from tanks in the Carnatic, has some points of resemblance to *C. chola*, I have little doubt that it is distinct, and in that case propose the name of *Hamiltonii*. Its chief points of difference are the less depth, large head, &c. It differs from *sophone* chiefly in having cirri; I possess notes of another allied species which differs from *S. sophone* in its more elongated body. 24 scales in 7 or 8 rows; and usually no spot on the tail; but as I have lost my specimen, I shall only allude to it here. It was from Madras.

Systomus tristis. (New Species.)

2 cirri; 24 scales along the sides in 7 rows; D. 4-8, A. 7, &c.; body compressed; plain olive green above, silvery beneath; fins plain, 3 inches long.

I procured a single specimen of this fish in the Cavery, which I at first took to be a *Barbus*, and indeed it resembles one so much in habit, dorsal spines, plain colours, &c., that I may yet be mistaken, but I could only detect 2 cirri.

Systomus tripunctatus. (New Species.)

No cirri, head about $3\frac{1}{2}$ times in length of body; height about $3\frac{1}{2}$ times in the length; 23 scales along the sides in 7 rows. Green

above, golden beneath; 2 black spots under end of dorsal, and another at base of tail; length about 2 inches. D. 10, A. 7, &c.

I procured specimens of this little species in a small stream near the coast in Canara, and have seen it no where else.

Systomus conchoniis. (Buch.?)

Body rather arched beneath, its depth $2\frac{1}{2}$ times in the length; head 5 times in total length; 2nd dorsal spine strongly serrated, not so long as the next soft ray; green above, silvery beneath, fins yellowish; 25 scales along the body in 8 or 9 rows. D. 2-8, A. 7, 2 inches long.

This little fish from tanks near Madras answers so nearly to the description of *C. conchoniis*, that I have retained it under that name, although that species is from the Northern parts of Bengal.

Systomus arūius. (New Species.)

Head $3\frac{1}{2}$ times in length; depth $2\frac{1}{2}$ times in the same; eye large; 20 scales along the sides in 6 rows—D. 10, A. 7—green above, silvery beneath; a large diffused black spot on side beneath the commencement of the dorsal, another over the anal, and another at base of caudal; dorsal, caudal and anal fins red; P. and V. colourless; in the older subjects the spots extend more over the sides, length 4 inches.

Found in the Cavery, called *arūi* at Seringapatam.

Systomus rubro-tinctus. (New Species.)

No cirri; head about 4 times in total length; depth about $2\frac{1}{2}$ times; scales 20 along the sides in 7 rows—D. 2-8, A. 7—green above, cheeks golden, silvery beneath; 3 small black spots on sides, one under dorsal, the 2nd over the anal and the 3rd near base of caudal, between the 1st and 2nd spots a series of bright red spots; dorsal, anal, and caudal fins red, the latter edged externally with yellow.

About 5 inches long. I procured this fish in the Manantoddy river, a tributary of the Cavery.

Systomus stigma. (Val.)?

Head about 4 times in length; height $3\frac{1}{2}$ times in the same. 23 scales along the sides in 5 rows—D. 10, A. 7—green, with a yellow

streak along the sides; belly, as far as vent, bright silvery; 2 black spots on the dorsal, and another at base of caudal, 2 inches long. From tanks in Mysore.

It appears to me very probable that this is the *Leuciscus stigma* of Valenciennes. Should it prove distinct I would propose the name of *S. vittatus*.

* *Systomus ticto*. (Buch.)

Rohitee ticto. Sykes.

"A Rohitee 1½ inch long, with 4 to 6 black spots on the body; 2nd ray of the dorsal toothed behind, with sharp incurved teeth, with 10 rays in the dorsal, 8 in the anal; pectoral fin narrow, acuminate.

Found in the Mota Mola near Poona."

This may be an *Opsarius*.

* *Systomus sulphureus*. (Val.):

Profile of back and abdomen regular, very slightly arched; height one-third of length; spinous ray of dorsal not toothed; eye nearly one-third of length of head—D. 10, A. 7—pale sulphur colored with silvery reflections. From Mysore. 4 inches long. I have not identified this species, which, placed by Valenciennes among his *Leucisci* near *L. stigma*, appears certainly to be a *Systomus*.

Systomus filamentosus. (Val.)

Head 4½ times in body; height about 2½ times; eye 3½ times in the length of the head; 2nd dorsal spine simple, strong; 1st, 2nd, 3rd and 4th soft rays prolonged to nearly double the height of the others; 5th not quite so long—D. 2-8, A. 2-5—21 scales along the sides in 8 or 9 rows; greenish above, reddish silvery beneath; large black spot on the tail, on the lateral line, over the end of the anal fin; fins tinged with rosy yellow; tail with a fine light red spot at the tip, ended with black. Length about 4 to 5 inches.

The fish described by Valenciennes was from Alipey. I have procured specimens in the river running past Canote in Malabar, which appear to be identical with those from Alipey. It frequents streams in small shoals, and is a very handsome fish. I have taken it with the fly, though not readily.

Systomus assimilis. (New Species.)

Very closely allied to the last, the same general proportions, number of scales, &c.; 1st, 2nd, 3rd and 4th soft rays of the dorsal prolonged, the 3rd the longest, the 4th the shortest, and the rest rapidly diminishing to the 7th; 2nd dorsal spine short, not more than half the length of the membrane; green above, reddish silvery beneath; black spot on the tail more diffuse than in the last. Cheeks golden orange; dorsal fin with the membrane yellow; 2nd dorsal spines red, other rays blueish. Caudal pale reddish yellow, with a bright red spot at each tip, and black at the base and sides. Pectoral rosy, ventral and anal transparent, tinged black at the base—D. 10, A. 7, &c. I procured this fish in a river in Canara. It appears to differ from *S. filamentosus* in the formation of the dorsal fin, colors, &c.

Systomus Maderaspatisensis. (New Species.)

Also very closely allied. Differs in its colors chiefly, and in wanting (occasionally) the prolongation of the dorsal rays.

Dorsal fin reddish, stained with black; caudal edged broadly with fine red, and a black tip to each lobe; anal red; other fins reddish; I procured this fish from tanks near Madras; its usual length about 4 inches. I lately procured one specimen in the tank at Streeperna-toor, not far from Madras, which had the dorsal rays prolonged, but which appeared to belong to this species. D. 3-8, A. 3-5, &c.

Genus *Abramis*.

Body short, elevated; a short dorsal; and long anal.

* *Abramis Vigorsii*. (Sykes.)

I think it very probable that Sykes' *Rohitee Vigorsii* must belong to this genus. He describes it as D. 11, A. 28, body compressed; high in the middle, sloping to each end; head slightly recurved, eyes very large, 6 to 8 inches long. From the Beema river.

* *Abramis Ogilbii*. (Sykes.)

"A *Rohitee* with 12 rays in the dorsal, 17 in the anal fins; body very compressed, and very high, with the back sloping to each end from the centre; head sharpish; pectoral fins narrow, acuminate; 1st complete dorsal ray a strong bone, serrated behind. 4½ inches long, height 1½. From the Beema river." This, if it be a true

breem, is certainly not a typical one, and may perhaps be a *Perilampus* of McLelland.

Gen. *Leuciscus*.

Dorsal and anal small, without spinous rays; head horizontal; mouth moderate.

Leuciscus Malabaricus. New Species.

Head one-fourth of the length; height much the same; body somewhat cylindric; dorsal medial—D. 10, A. 7—green above, silvery beneath; a leaden blue stripe from the eye to the tail, with a yellow line above it; length $3\frac{1}{2}$ inches. 32 scales along the sides in 6 or 7 rows.

This fish is one of a small group in Southern India which appears allied in form and colouring to *C. mola*, and *C. daniconius* of Buchanan, though these species have smaller scales. My fish abounds in Malabar, in all the rivers and small streams, and even in ditches and tanks; takes both fly and worm greedily; it does not exceed 4 inches in length.

I have reason to believe that a distinct species exists in the Canarese streams, having a shorter body and larger head than the Malabar one; and also another in the streams that run into the Canarese, characterized by its smaller head, and lengthened body; but not having authentic specimens from the different localities at hand, I shall not at present attempt to characterize them.

Leuciscus Caverii. New Species.

Head about one-fourth length of body; height one-fifth of length; eye nearly one-fifth of length of head; dorsal placed a little behind the middle of back, nearly opposite the anal; 30 scales along the sides in 7 rows—D. 9, A. 6—green above, silvery beneath; cheeks golden; a blue stripe from opercle to tail, with a narrow yellow one above it; lateral line concave—usually about 3 inches long.

Very common in the Cavery and all its branches. Called *Neddoocha* by the Seringapatam fishermen.

Leuciscus flavus. New Species.

Head equal to the height of the body, one-fourth of the total length; eye rather large, about $3\frac{1}{2}$ times in the head; dorsal medial; scales about 30, very caducous, greenish yellow above, silvery

beneath; a yellow streak along the sides, fins yellowish; caudal tipped with black; lateral line straight—D. 9, A. 6.

From tanks in the Carnatic, about 3 inches long.

Leuciscus xanthogramme.

Head rather smaller than the last, being about $4\frac{1}{4}$ times in the length of body; height $4\frac{1}{2}$ times in the length; dorsal a very little behind the middle of the body; lateral line curved; about 30 scales along the sides in 11 or 12 rows—D. 8, A. 6—lower lobe of caudal longer than the upper one; eye rather small, about 5 times in head; green above, silvery beneath; a yellow stripe on the side from opercle to tail.

From tanks and rivers in Mysore and the Carnatic 3 to 4 inches long.

I possess a sketch of another *Leuciscus* from the Cavery of which I have lost my specimen, which appears to differ from any of these. It is nearly allied to *L. Caverii* in form, but has a much larger eye, and the depression in the crown more marked, muzzle in front of the depression continuing straight, parallel with the back; profile of abdomen a good deal arched; lateral line much curved. I am unable to give the number of fin rays or scales.

Leuciscus microcephalus. New Species.

Head small, one-fifth of length of body; eye close to muzzle; opercle large, pointed; profile of back rising from the crown, and gently arching to the dorsal, thence concave to the tail; abdomen much curved to the anal, nearly straight thence; height is $3\frac{1}{2}$ times in the length; dorsal fin behind the middle, over the interval of ventral and anal; 30 scales along the body in 7 rows, lateral line curved; yellow green above, silvery beneath with a bright burnished silver streak along the sides, fins pale yellowish.

From tanks and rivers near Madras. Rare.

* *Leuciscus presbyter*. (Val.)

Head $4\frac{1}{2}$ times in total length of body, height the same; profile of back straight; that of abdomen slightly curved; dorsal fin advanced; anal small; 26 scales along the body in 8 rows—D. 11, A. 7—back greenish, silvery beneath; dorsal edged with blackish, $3\frac{1}{2}$ inches long—from Bombay, allied to my *L. flavus*.

I am at a loss whereabout to place the following fish.

* *Leuciscus medittina*. (Val.)

Head equal to the depth, and one-fifth of total length of body; eye one-fourth of head; lower jaw with a small tubercle on its symphysis; 50 and more scales along its body; lateral line concave; cheeks burnished silver, which extends along the sides of the body in a line distinct from the silver of the abdomen—D. 11, A. 8, &c.— $3\frac{1}{2}$ inches long. From Bombay.

* *Leuciscus Mahacola*. (Val.)

Head shorter than the height of the body which is 4 times in total length; muzzle somewhat pointed, eye rather large, profile of back, and that of abdomen, similar and regular; scales large, 22 along the sides; lateral line slightly concave, on the 5th range, and two scales lower are observable, a series of small depressions, which are probably pores; greenish above, silvery beneath; dorsal reddish, pectoral and caudal greenish, the latter with a little black at the point of the lobes; ventral and anal colourless—D. 11, A. 7, &c.—3 inches long. From Mahi on the Malabar coast; appears allied in form to my *L. flatus*.

Leuciscus barbatus. New Species.

2 cirri on each side of its mouth, the posterior long, reaching to the ventral fin; head four times and two-thirds in its total length; profile nearly straight to the dorsal fin, which is placed well behind, slightly concave thence to tail; abdomen arching regularly to the anal; height is about 4 times in its length, lateral line near the abdomen and parallel with it; 32 scales along the body in 7 rows; dorsal fin small, not so long as anal; caudal fin large; green above, silvery beneath; a yellow stripe along the body— $2\frac{1}{2}$ to 3 inches long. Found in rivers and tanks all over Mysore and the Carnatic, rather common.

This fish very closely resembles the one described by Valenciennes as *Nuria thermocos*, but appears to differ in some particulars of form, color, and remarkably so in its habit, the latter being found in hot springs of the temperature of above 100° Fahr. Buchanan has also an allied species, his *C. dourna*. Valenciennes places his *Nuria* between his genera *Dangila* and *Kohita*; a most unfortunate position, and one which shows how little idea of natural affinities he possesses. Were it not for its cirri it would barely differ from some of the *Leuciscus* just described. McLelland places another very

nearly allied species in his genus *Perilampus*. It also inhabits hot springs at Pooree of 112 Fahr. I prefer however keeping those with short anal fins in the genus *Leuciscus*, especially when combined with an elongated body.

My next fish belongs to a very distinct form from any of the *Leuciscus* previously mentioned. It is however closely allied to *L. dysotomus*, and *L. branchiatus*, McL., which are considered by McLelland to be true *Leuciscus*.

Leuciscus rubripes. New Species.

2 cirri; head equal to the depth of body, and $4\frac{1}{2}$ times in total length; eye about $3\frac{1}{2}$ times in length of head; profile of back slightly convex; dorsal fin nearly medial; lateral line descending at first, then nearly parallel to the abdomen which is nearly straight; mouth very slightly oblique; green above, golden on the sides, silvery beneath; dorsal fin yellow, edged with black; pectoral yellow; ventral and anal white, tipped with vermilion; caudal pink in the centre, yellow externally; 45 scales along the body in 12 rows—6 inches long.

I procured a single specimen of this pretty fish in the Bhowany river near Matypolliam.

I shall now give such of Sykes' fishes as appear to me to belong to this genus.

* *Leuciscus morar*. Buch.

Dorsal a little behind the centre of the back; with 10 rays, and 12 in the anal, edge of the belly smooth. Length $4\frac{3}{4}$.

Leuciscus landkol. Sykes.

Body nearly cylindrical, head gibbous; D. 12, a little before the centre of the back; eyes with narrow whitish sides, 10 inches long. In the Goreh river, at Kullumb.

Leuciscus chital. Sykes.

D. 14, A. 8. Head rounded, body sub-cylindrical; reddish grey color; 5 inches long, height $1\frac{1}{2}$ inches.

In the Inderanee river near Chakur.

Leuciscus jorah. (Sykes.)

A *cheila* with straight back, convex belly, dorsal far behind; size of a large minnow; with 10 rays in the dorsal, and 8 in the anal

fin. About 4 inches long; height $\frac{1}{10}$ of an inch. In the Beema river.

* *Leuciscus alkootee*. (Sykes.)

An elongated silver white, slightly compressed, minute *chela*, with the dorsal fin of 8 rays, very far back; anal about 10 rays; with bur-nished silver gill covers, and black orbits; rarely more than an inch long, and not much thicker than a good sized crow quill.

Gen. *Rhodeus*. Agassiz.

Body somewhat broad, compressed; dorsal medial.

Rhodeus Indicus. New Species.

Muzzle pointed, head 4 times in the length of body; profile of back angular, rising to the dorsal, falling thence to the caudal; abdomen arched; height $3\frac{1}{2}$ times in length; lateral line curving downwards; continuing only for about one-third of the body, as in the European *R. amarus*; about 50 scales along the sides in 16 rows, eye large, near the muzzle; green above, silvery beneath, a yellow streak along the sides, fins colourless; length about 3 inches, D. 2-7, A. 7.

I have found this curious species only in the Palghat river, in sandy bottom.

Rhodeus macrocephalus. New Species.

Nearly allied to the last; differs in its larger head, more fusiform body, gradually thinning from the pectoral fin backwards; head about $3\frac{1}{2}$ times in length of body; height the same; scales minute, lateral line interrupted, as in the last; eye large—D. 9, A. 7—green above, silvery beneath; length about 2 inches. Common in the Cavary and its tributaries, and in the Carnatic in tanks.

It is possible that this may be the *Leuciscus sulphureus* of Valenciennes which I have previously given as a *Systomus*, as he places it close to the *C. amarus*, but without giving the number of its scales, or any thing about the interrupted lateral line, and as he places near it another fish with large scales, it is impossible to be certain to what subdivision his fish belongs.

Gen. *Perilampus*. McLelland.

Body deep, compressed, dorsal behind, placed opposite a long anal; apices of jaws raised nearly to a line with the dorsum; ventral margin much arched.

Perilampus Malabaricus. New Species.

Head is nearly 5 times in total length; height of body is 3 times in the same; about 35 scales along the sides in 10 rows; lateral line parallel to the abdomen—D. 15, A. 17—green above, silvery beneath, sides blue with 2 or 3 longitudinal streaks, and several vertical streaks and spots of yellow; dorsal, anal and caudal, pink; the latter with the central rays blackish; pectoral and ventral fins colourless; length about 4 inches; common in all the streams of Malabar out of reach of the tides, taking both fly and bait readily. It is a very pretty fish, and appears closely allied to the *P. asteoglyphus*, *P. perseus*, &c. of McLelland.

Perilampus Canarensis. New Species.

Very closely allied to the last, head larger, being about $4\frac{1}{4}$ times in length of body; height rather more than $2\frac{1}{2}$ times in the same; D. 15, A. 20. Color similar, to the last, but with the vertical streaks of yellow less developed, and the horizontal ones more so; dorsal fin greenish, tipped orange; anal and caudal yellowish orange, the former with a greenish mark on the base of central rays; pectoral and ventral fins greenish; about 3 inches long.

Found in the streams of Canara.

Perilampus Mysoricus. New Species.

Head $4\frac{1}{2}$ times in total length of body; height $3\frac{1}{2}$ times; lateral line bending down rapidly from top of opercle till on a line with the base of the pectoral fin; thence parallel with the abdomen—D. 11, A. 15—green above, silvery beneath; yellow and blue stripes on the sides. Dorsal, anal, and caudal fins yellow, tipped with orange; the caudal with the central rays yellow; pectoral and ventral fins colourless; usual length about $2\frac{1}{2}$ inches.

Found in the Cavary, and all its tributaries; most abundant, like the two last species, in the rapid mountain streams.

Perilampus macropodus. New Species.

Head small, recurved, $4\frac{1}{2}$ times in total length of body; height $3\frac{1}{2}$ times in the same; profile of back rising gently to the dorsal, falling thence to the tail; abdomen regularly arched—D. 9, A. 21. Pectoral fin long; ventral fin with the 1st ray larger than pectoral; green above, silvery beneath, fins yellowish; 2 inches long. I have only seen this little fish from the Cavary near its source in Coorg.

* *Perilampus tekaneae*. (Sykes.)

A small *chela* with nearly straight back, snout in continuation of line of back; belly arched—D. 10, A. 14. Length 2½ inches, height ¾. In the Beema river.

Gen. *Pelecus*. Agassiz.

Body much compressed, elongated, belly cutting; dorsal opposite anal, which is longish; gape wide.

McLelland has placed the fishes of this genus among his *Opsarii*, but they are very distinct in general habit, structure, and mode of coloration, and are I think worthy of forming a distinct genus, which Agassiz assigns to them.

Pelecus cultellus. (Val.)

Head 5½ times in total length of body, equal to the height of the body; eye one-fifth of head; profile slightly rising from the nape to the middle of the body, thence gently concave; abdomen slightly curved; lateral line very little bent, dorsal small, placed slightly in front of anal; pectoral large; ventral and caudal small—D. 9, A. 17—above 100 scales along the sides; greenish with a tinge of red above, silvery beneath; fins yellowish; 6 to 7 inches long.

Common in tanks and rivers in the Carnatic.

* *Pelecus clupeoides*. (Val.)

Head one-fifth of total length of body, equal to the height; eye rather large; dorsal with the 1st ray inserted, not far behind the middle of the back; lateral line concave; 70 scales along the body. 4½ inches long—D. 9, A. 14—from Mysore.

I am not acquainted with this fish, unless the following be identified with it.

Pelecus affinis. New Species.

Head about 4½ times in the total length of body; height about 4½ times in the same; eye one-fourth of length of head; profile of back slightly curved, similar to that of abdomen—D. 9, A. 15—scales small (apparently about 90 along the sides, but my specimens are nearly denuded); pectoral fin long, lateral line slightly concave; coppery green color above, silvery beneath; fins yellowish. Length about 5 to 6 inches. Found in tanks and rivers in Mysore and part of the Carna-

tic. Very similar in form and coloration to *P. cultellus*. It appears very similar to McLelland's *Opsarius leucurus*.

Pelecus flavipinnis. New Species.

Head 5½ times in total length of body; height about 4½ times in the same; eye nearly one-fourth of length of head; profile of back rising very gently from the nape, nearly straight afterwards; abdomen much arched; lateral line descending rapidly to near the ventrals, thence parallel to the abdomen, rising again when close to the caudal; hook on the apex of the lower jaw very prominent; from 60 to 65 scales along the sides—D. 9, A. 17—greenish above, silvery beneath, dorsal, anal and caudal fins white, edged with orange yellow; 6 to 8 inches long.

I have hitherto taken this fish in the Cavery only. It is very closely allied to Valenciennes' *Leuciscus novacula*, which however is from the north of India.

Pelecus diffusus. New Species?

Head 5½ times in total length of body; height the same; eye large, barely one-third of length of head, profile of back perfectly straight, that of abdomen regularly arched; lateral line descending at first, afterwards parallel to the abdomen, but more distant than in the last species; about 50 scales along the sides, in 9 or 10 rows; green above, silvery beneath, with a bright yellow line intervening; dorsal, anal and caudal fins yellow, with black edging; other fins pale yellowish, pectoral fin not quite so long as in last; length 4 to 6 inches—D. 9, A. 17—found in the Cavery and all its tributaries, very abundant. Takes fly readily. Is somewhat allied to *Leuc. scapellus* of Valenciennes, and also to *Opsarius pholicephalus* of McLelland, but appears to differ from both.

* *Pelecus acinaces*. (Val.)

Allied to *L. scapellus*; height of body one-fifth of total length; profile of back perfectly straight; eye 2½ times in the length of the head which is 4 times in total length; scales very caducous—D. 9, A. 13—a silvery band separates the green of the back from the brilliant silver of the belly,—3 inches long. From Mysore.

This is very nearly allied apparently to the last, but appears to differ in its larger head, number of rays of anal fin, &c., and the number of its scales are not mentioned.

**Pelecus balookei*. (Sykes.)

A *chela* the size of a minnow; back straight; body elongated; dorsal fin situated far back, and having 8 rays, 14 in the anal, &c. length 3 inches. Common in all the rivers. Similar to the last.

**Pelecus Oreni*. (Sykes.)

"A *chela* with straight back, elongated and vertically compressed body; dorsal fin situated far back, with 11 rays, and 19 in the anal fins, with minute scales, 5 to 7 inches long. In most of the rivers." Is this *P. cultellus*?

Gen. *Opsarius*. McLell.

Mouth widely cleft; dorsal moderate, usually placed behind the middle; anal generally longer than the dorsal; lower margin of body more arched than the upper; usually marked with streaks or spots.

Opsarius bendelisis. (Buch.)

No cirri; head is three times and two-thirds in the total length of body; height 3 times; dorsal D. 10, A. 16; color green above, silvery beneath with 10 to 12 vertical blue streaks on the sides of the body; in old subjects the cheeks and abdomen become fine red; dorsal fin blackish, with a border of crimson, edged with white; anal the same, P. and V. with a reddish tinge; caudal black with a white margin; 40 scales along the body in 10 rows; up to 6 inches long. Found in the Caverry and all its tributaries; most abundant towards their sources in rapid streams. Takes fly very readily. In small specimens the stripes are green, and the dorsal (and sometimes the anal) are without any red. It is the *aguskiti* of the Seringapatam fishermen.

**Opsarius gatusensis*. (Val.)

Body compressed, rather broad, abdomen much arched, height one quarter of total length, head 4 times and $\frac{2}{3}$ in the same; eye large, mouth much cleft; dorsal not very much thrown back, anal long—D. 10, A. 17—38 scales along the sides; lateral line bent; dark above, silvery beneath; sides traversed by 9 small vertical bands—3 inches long. From the streams of the western ghats.

This fish is evidently an *opsarius*, and I cannot help thinking may be identical with *O. bendelisis*. The chief points of difference are the larger head of my species, 2 scales more along the side, and one ray

less in the anal. If distinct, it is probably from some of the streams of South Malabar, and I remember taking a fish in a stream at the foot of the Khoondah ghaut which appeared to be at first sight identical with *O. bendelisis*, and which circumstance surprised me not a little, as I had never seen that fish except in the tributaries of the Cavery: unfortunately my fish was destroyed by ants before I had thoroughly examined it.

Opsarius Malabaricus. New Species.

Head one-fourth of total length, height $3\frac{1}{2}$ times in length, profile of back similar to that of abdomen, gently arched; lateral line not much bent, dorsal with 1st ray inserted exactly in the middle of the body—D. 14, A. 16—40 scales along the sides in 13 rows; 1. l. in the 9th. Dusky green above with crimson reflections, sides golden, with a row of 10 beautiful blue round spots; silvery on the cheeks and beneath; dorsal fin blackish, edged with bright orange, rays glittering small blue; caudal blackish, edged with white; anal as dorsal but with some white mixed with the orange; pectoral and ventral nearly colourless, with blue rays, and sometimes tipped with orange; 5 or 6 inches long, usually smaller.

This very beautiful fish is found in most of the streams that run from the western ghats into North Malabar, not descending far from the base of the hills, and keeping chiefly to the streams. It takes fly very readily.

Opsarius Canarensis. New Species.

Head is about one-fourth of the total length, and the depth is two times and two-thirds in the same, eye large; lateral line gently bent; dorsal fin nearly medial; 36 scales along the sides in 10 rows—D. 12, A. 14—green above with purple reflections, golden on sides and beneath, with a double row of green spots on the sides; dorsal, anal, and caudal fins black at the base, white externally; pectoral orange tipped; ventral colourless—about 5 inches long. Found in all the streams that run from the ghats into Canara. Takes the fly readily.

The two last *Opsarii*, and *O. bendelisis*, form a peculiar group marked, among other points, by the black stained fins. My next species differs much in form and habit.

Opsarius dualis. New Species.

Head $4\frac{1}{2}$ times in the length of body and height $3\frac{1}{2}$ in the same; eye small; profile of back barely arched to the dorsal; thence concave; that of abdomen regularly arching; dorsal fin behind the middle; 42 scales along the sides in 11 rows—D. 9, A. 10—green above, golden on the sides with transverse bars; silvery beneath; fins white, tipped with orange; all the scales with a small black spot on the middle—about 4 to 5 inches long. I have found this fish in tanks and the rivers at Coimbatoor, and also in the river at Palghat. This is one of the few fish which I have found in rivers running both to the east and west coast, and it occurs just in that part of the country where the two districts are most nearly connected without the intervention of hills, viz., in the gap of Coimbatoor. This is an interesting subject on which much speculation might be advanced, but it would be out of place here.

It is by no means a typical *Opsarius*, though its mode of coloration allies it to them, its mouth being much more horizontal; and it appears very closely allied to the *Leuciscus coeca*, (Buch.) which however is said to have 4 cirri, and moreover is from the north of India.

I procured some small specimens, about $1\frac{1}{2}$ inches long, of what I imagine is the young of this species, in a river in the Salem district.

Gen. *Aplocheilus*. McLelland.

Head flattened at the top, broad obtuse; intermaxillaries fixed; mouth large oblique; teeth large; dorsal fin behind, small; anal fin large; ventrals small.

Aplocheilus vittatus. New Species.

Head large, opercula somewhat scaly; profile of back straight; dorsal with a black spot at base, another on the opercula; olive brown above, silvery beneath; a series of vertical indigo blue bands on the posterior half of the body, 7, 8 or 9 in number; dorsal, anal and caudal fins blue spotted, and red edged; pectoral and ventral fins colourless; a silver spot on the occiput—D. 8, A. 17—up to $2\frac{1}{2}$ inches long. Found in ditches, ponds and rivers in Malabar. This and the other species of the genus are insectivorous, keeping almost entirely to the very surface of the water, and darting with great rapidity on any insects that drop into the water.

Aplocheilus rubrostigma. New Species.

A silver spot on the occiput; body rather more compressed than in the last, not much less in depth towards the tail than in front, dorsal with a black spot at its base; it, the anal, and caudal fins, pale sulphur yellow, red spotted; body olive green above, yellowish on the sides, and silvery beneath, with a series of longitudinal lines of red dots along the sides—D. 7, A. 14—ventral with the first very elongated, small. Length barely 2 inches. Still more common and abundant than the last in the same localities.

Aplocheilus affinis. New Species.

Very similar to the last; differs in the dorsal and caudal being nearly colourless unspotted, and the anal being unspotted orange, and having 16 rays instead of 14, being at the same time of less extent, body also not spotted. About $1\frac{1}{2}$ inch in length. Found in the same localities as the last.

Aplocheilus Carnaticus. New Species.

Abdomen more arched than in the three last species; body much narrowed behind; dorsal small, anal long; head small; yellowish green above, silvery on the sides and beneath; caudal edged with orange; dorsal and anal pale yellowish, with dark edges. Ventral minute—D. 8, A. 22— $1\frac{1}{2}$ inch long. I procured specimens of this minute fish in the river that passes by Waniambaddy in the Carnatic. It is very nearly allied in form, number of fin rays, &c. to *A. mcclastigma* McL., but that is said not to exceed an inch in length, and, being from Calcutta, is probably distinct.

Gen. *Cobitis*.

Body elongated, cylindrical, head conical, with a thick fleshy covering; snout fleshy with small cirri; mouth small; caudal entire, or slightly lobed.

Cobitis Carnaticus. New Species.

Caudal with small pointed lobes; head depressed, equal to the depth, and $5\frac{1}{2}$ times in total length; 6 longish cirri; dorsal rather in front of the middle; body olive green above, with dark blotches; dorsal and caudal spotted, the former yellowish, the latter reddish—D. 9, A. 6.

Found in sandy rivers in the Carnatic up to 3 inches in length.

Cobitis Mysorensis. New Species.

Muzzle rounded, head less depressed; 6 short cirri; greenish above with a few irregular dark spots—D. 8, A. 6—caudal nearly square, barred, with a black spot at its base above. About 3 inches long. Found in the tanks and rivers throughout Mysore.

Cobitis rubripinnis. New Species.

Dorsal with 2 rows of spots, the lower ones red; caudal unspotted; of a reddish yellow colour, with olive green back, descending in pointed bars to middle of body—D. 9, A. 6—a black stripe on tail just before the caudal fin. Found in sluggish streams in Malabar. Caudal fin nearly square.

Cobitis montanus. New Species.

Head short muzzle raised rounded; dorsal long, with two rows of black spots, a streak of black at insertion of caudal; body reddish pink with 6 large greenish bands descending to the belly; caudal with two rounded lobes; about 2½ inches long. Found in a small stream in Coorg.

I believe that several other species of Loach exist in the South of India, but I have not materials at present for their description.

Colonel Sykes has several which I shall here give.

Cobitis Rüppellii. Sykes.

Nearly cylindrical, 2 to 3 inches long; lateral line marked with short brown bars, and rays of dorsal and anal fins similarly barred; D. 13.

From the Beema and Mota Mola rivers.

**Cobitis moorei*. Sykes.

Smaller than the last, head more obtusely pointed; bars differently arranged—D. 12, A. 7.

**Cobitis maya*. Sykes.

"Differs from the first in having a spine under each eye, and in having a blunter head—D. 9. &c."

My species appear to belong to McLelland's subgenus *Schistusa* which has the caudal lobed.

Gen. *Platyacara*. McLelland.

Head flat with the eyes above; ventral fins large, rounded; body not compressed; caudal bifid, mouth beneath, (with short cirri,) small, without teeth.

Platyacara Australis. New Species.

Muzzle depressed, snout somewhat pointed; eyes approximated; body greenish with irregular spots and blotches of brown and red, and a series of white spots along the sides; fins greenish, tinged with sienna red and spotted; caudal with the lobes pointed, lower one much the longest; 4 minute cirri at end of snout, and 2 somewhat fleshy short cirri, one in front of and the other behind the mouth. Length about 2½ inches—D. 7, A. 6.

I procured a single specimen of this interesting addition to Indian Ichthyology in the small mountain stream that passes close by the bungalow in the Walliar jungle.

This concludes the numerous family of carps. Some of my supposed new species of *Aplocheilichthys* and *Cobitis* may have been described by Valenciennes in the 18th volume of the great work on Fish by Cuvier and Valenciennes which I have not myself yet seen.

Fam. *Silurida*.

No true scales; body sometimes mailed; strong spines frequently on the dorsal and pectoral fins; 2nd dorsal (often) adipose.

Gen. *Silurus*.

One dorsal fin, small, advanced, not spiny; anal fin very long; cirri usually long; teeth fine, crowded.

Silurus ruallagoo.

Head about 5 times in total length; eye one-seventh of length of head, and with 5 diameters between them; muzzle depressed, parabolic; maxillary cirri reach nearly to the anal fin; lower cirri minute—D. 5, A. 92, to 93—caudal lobed deeply; the upper the lowest; of a leaden color throughout, darkest above; dorsal and caudal fins greenish dusky; pectoral, ventral and anal reddish yellow, the latter edged with dusky; up to 3 feet and upwards.

Found in the rivers and tanks throughout all the south of India. It is the *tété* of the Tamools.

It is much esteemed by the Natives and is by no means a bad fish. It is very voracious, and is often taken with a fish or frog for a bait. It is a sluggish fish in its habits, and when taken does not afford much sport to the angler. It may be considered as the pike of Indian fishing. If it is identical, as Valenciennes asserts, with Buchanan's *S. realis*, that name will have the preference.

Silurus Mysoricus. Val.

Head about 6 times in total length of body; eye about $5\frac{1}{2}$ times in the length of head; height at the pectorals 5 times in its total length; caudal lobed, the lobes nearly of equal length, but the upper one the most rounded of the two; dorsal very narrow; pectoral spine moderate, smooth; maxillary cirrus reaches little beyond the pectoral; muzzle very obtuse—D. 4, A. 75.

Greenish above, iridescent on the sides and beneath; fins glossy. Length up to 12 or 14 inches.

Found in the Caverry and most of its tributaries; also in tanks throughout Mysore. It is most excellent eating. It is called *God-za* by the Canarese fishermen of Mysore.

Silurus Malabaricus. C. V.

Lower jaw much longer than the upper; pectoral spine of moderate strength, toothed—D. 4, A. 62-64—ending very near the caudal, which is deeply lobed; of a yellowish colour throughout, except on the abdomen which is white; fins edged with black; up to 12 or 14 inches long. I have only seen this *Silurus* from rivers in Malabar.

* *Silurus bimaculatus.* Bl., C. V.

Head equal to the depth at the vent, and $5\frac{1}{2}$ times in the total length of the fish; breadth of head two-thirds of its length; maxillary cirrus nearly $\frac{1}{2}$ the length of the body; inferior cirri short and slender; pectoral fin rounded—D. 4, A. 62-65—lateral line straight, 6 to 8 inches long.

The specimens whence Valenciennes' full description of this species is taken, were brought from Java. M. Valenciennes is inclined to identify it with the fish sent from Tranquebar and described under this name by Bloch. This is however, I think, very improbable, as so very few fresh water fish, common to the Peninsula and the isles, are at present known, and I should be inclined to imagine it either to

be *L. Malabaricus*, or an allied species peculiar to the Carnatic, if it was procured from that side of India.

* *Silurus pabo.* Ham. ? Sykes.

"Tail with two unequal lobes, both pointing downwards; 4 cirri shorter than the head, and 68 to 70 rays in the anal fin. Length 12-15 inches, height $2\frac{1}{2}$ to 3. Found in most of the rivers, differs slightly from Hamilton's *S. pabo*."

* *Silurus boalis.* Ham. ? Sykes.

"Fin of the tail with two unequal lobes; with 4 cirri, of which 2 extend to the middle of the fish; all the fins unarmed—D. 5, P. 15, V. 9, A. 84. Attains the length of 3 feet and the weight of 8 lbs. Found in the Mota Mola at Poona. Differs slightly from the *S. boalis* of Hamilton."

Gen. *Schilsee.* Cuvier.

One dorsal fin, with the spine strong and toothed; body much compressed; anal fin rather long; teeth large.

Schilsee Sykesii. New Species.

Head one-fifth of whole length of body; much compressed, its width being about half its length; eye large, being $3\frac{1}{2}$ times in the head; maxillary cirri reach the ventral fin, all the other (6) cirri longer than the head; dorsal and pectoral spines serrated, the latter strongly so; anal fin about one-third of length of body—D. 1-6, A. 36—colour greenish above, silvery on the sides and beneath.

I obtained some small specimens about 6 inches long in the Caverry, and I do not know to what size the species attains.

There is hitherto but one species of *Schilsee* recorded from India, viz., *S. Garua* of Buchanan, from which my species differs in many particulars, more especially in the compression of the head, larger eyes, serrated dorsal spine, &c. &c.

Gen. *Bagrus.*

2d dorsal fin adipose; a double row of intermaxillary teeth; cirri, and relative size of adipose and anal fins, variable.

A. with 8 cirri.

* Adipose short and anal fin long.

Bagrus atherinoides. Bloch.

Head $6\frac{1}{2}$ times in total length; depth $4\frac{1}{2}$ times in the same; maxillary cirri reach beyond the ventrals; the others all longer than the head; eye small; dorsal spine finely serrated; pectoral spine with 10 or 11 strong teeth—D. 1-5, A. 36—reddish yellow above; white abdomen, and a broad silver streak from head to the tail; dorsal, pectoral, and ventral fins colour of back; caudal and anal pale yellow, the former with a black spot at its base—length about 4 inches.

I have obtained this pretty little fish from tanks in the neighbourhood of Madras. It does not appear to have been sent home by the French collectors.

**Bagrus goonguaree*. (Sykes.)

"An *Hypophthalmus* with 8 cirri, all longer than the head, but not extending to the middle of the fish; with 7 rays on the dorsal, and 52 in the anal fin; with an extremely minute second dorsal; first ray in the pectoral, and first in the dorsal, spinose, and serrated behind; greatest length 28 inches, body vertically compressed. Found in the Mota Mota near Poona."

I have not seen this fish which appears nearly allied to *Bagrus tacha* of Buch.

Bagrus taakree. (Sykes.)

"An *Hypophthalmus* with 8 cirri, 2 of which reach to the ventral fins, 2 very minute near the nostrils, and 4 in the chin, nearly as long as the head; with the first dorsal and pectoral rays serrated on the posterior edge, with 8 rays in the dorsal and 50 in the anal fin; length 9 inches, height 2 inches.

** Adipose fin long, anal fin short.

Bagrus aorides. New Species.

Head is $3\frac{1}{2}$ times in the body, flat, depressed, narrow, its width being $3\frac{1}{2}$ times in its length, eye $4\frac{1}{4}$ times in the length of head, so situated that its posterior edge is more than half the length of the head from the muzzle; not quite one diameter between the two eyes; maxillary cirri long, reaching to the tail; posterior, lower cirri equal to the head; 2d dorsal spine with very fine serræ posteriorly, and 2 or 3 in front; pectoral spine strongly serrated posteriorly; adipose fin reaching from rear the 1st dorsal to beyond the posterior edge of the anal—D. 2-7, A. 12—length about 1 foot. Colour greenish, iridescent

above, silvery iridescent beneath; upper fins greenish, with a black spot on the posterior edge of the adipose fin (as in *B. aor.*); lower fins glossy.

I procured some specimens of this remarkable looking fish in the Cavery river at Erode. It is nearly allied to *B. aor.*; whence my name, but differs both from it and one or two allied species.

**Bagrus seenghala*. (Sykes.)

"A *Platyostoma* with the tail fin crescent shaped, lobes unequal; with 8 cirri, 2 of which only are longer than the head, reaching to two-thirds of the length of the fish; the first ray of the pectoral fins serrated behind; head long, flat, spatulate, covered with a granulated long plate. Dorsal fin of 8 rays; high; ventral fins far back, of 6 rays. Grows to a great size; flesh heating and soft." I have very little doubt that this fish of Sykes is also closely allied to *B. aor.*, no Indian *Platyostoma* being known at present.

Bagrus Caracas. (Ham. Buch.) C. V.

Head about one-fourth of length of body, dorsal spine one-third shorter than next soft ray, without teeth; pectoral spine strongly toothed, adipose fin reaching from the dorsal close to the caudal; upper lobe of caudal somewhat longer than the lower; maxillary cirri as long as body—D. 1-7, A. 11—from 4 to 6 inches long; light plumbeous above; whitish or yellowish beneath; fins leaden; about 6 inches long. This fish is spread throughout all India from the north of Bengal to the south of the Carnatic, being found in rivers and tanks. I have not however as yet procured it from Malabar.

Bagrus keletius. C. V.

Nearly allied to the last; differs in the point of its occipital crest being longer and not so sharp, in its 1st dorsal fin being rounder, the trunk of the tail being higher; and its maxillary cirri only reaching to the middle of the anal—D. 1-7, A. 1-12, &c. I have procured this fish from Mysore.

Bagrus montanus. New Species.

Head about 4 times and one-eighth in the length of body; height 5 times in the same; eye about 4 times in the length of head and with $1\frac{1}{2}$ diameter, between them; maxillary cirrus reaches to the anal fin; 2nd dorsal about one fourth of total length; dorsal spine very slightly

toothed; pectoral spine with 7 or 8 strongish teeth on its terminal half; occipital spine very short, almost linear. Colour greenish above and on the fins; yellow on the cheeks and beneath; length about 6 inches. I have only found it in the river at Manantoddy in Wynaad.

Bagrus Malabaricus. New Species.

Very closely allied to the last; differs in its head being slightly shorter, being nearly $4\frac{1}{2}$ times in the length of body, height much the same; pectoral spine with 15 teeth, maxillary cirri reach beyond the ventrals only—D. 1-7, A. 11—colours blueish leaden above, silvery beneath; fins yellowish. Habitat. Mountain streams in Malabar.

Bagrus vittatus. (Bloch.) C. V.

Head about 4 times in the length of body; height not quite so much; eye $4\frac{1}{2}$ times in the head, and with two diameters between them, occipital spine moderate, approaching to the dorsal, dorsal spine with 2 or 3 fine teeth in front and 7 or 8 very fine ones behind; pectoral spine, strong, flat with about 13 strong teeth; maxillary cirri reach to end of ventrals; adipose fin about $\frac{1}{4}$ of total length—D. 1-7, A. 10—colour coppery brown above, yellowish beneath, with two longitudinal whitish stripes on the sides of the body. Length about 4 inches.

I have only found this *Bagrus* in the neighbourhood of Madras where it is tolerably common. I think that it is most probably the species so named by Bloch, who received it from Tranquebar.

Bagrus affinis. New Species.

Very nearly allied to the last; differs in its more depressed head; eye if any thing, smaller; occipital spine more triangular; dorsal spine barely toothed; pectoral spine less strongly toothed, and only 12 teeth; broader; head, about $3\frac{1}{2}$ times in the body; maxillary cirri reach to the ventrals; colour pale blueish above, yellowish on the sides, whitish beneath; fins yellowish—D. 1-7, A. 9—length about 4 inches. I procured this fish from the neighbourhood of Madras. It may perhaps be Bloch's *vittatus*.

* * * With short adipose, and short anal fins.

Bagrus albilabris. C. V.

Head $4\frac{1}{2}$ times in length of body; height 5 times in the same; eye one-sixth of length of head, and 3 diameters distance between the two; dorsal spine moderately strong, short, toothed; first and se-

cond soft rays much longer, pectoral spine strongly toothed; adipose fin opposite the anal—D. 1-7, A. 14—maxillary cirri reach somewhat beyond the ventrals; olive brown above; yellowish beneath; lower fins tinged red—length about 5 inches.

I have procured this fish at Madras from the rivers and backwaters, living both in fresh and brackish waters. I do not think that Valenciennes' *B. fuscus* differs specifically from this. It is common in the rivers and backwaters of Malabar.

Bagrus punctatus. New Species.

Head one-fourth of body; height $4\frac{1}{2}$ times in the same; eye 7 times in the length of head, and with 4 diameters between the two eyes; occipital spine ends in a narrow line; dorsal spine, weak, not toothed; pectoral spine serrated, of no great strength; maxillary cirri reach to end of ventrals, other cirri all shorter than head; adipose fin nearly two-thirds of length of 1st dorsal—D. 1-7, A. 12—colours pale olive above, yellowish on the sides, and white beneath; a row of black spots along the sides; lower fins yellow. Length up to 18 inches and more.

This fish, which is considered good eating, is found in the Caverry and its principal tributaries, not descending however to any great distance.

Bagrus ocellatus. C. V.

Eye one-third of length of head, and with only one diameter between the two, maxillary cirri beyond anal, adipose fin about equal in length to the anal; green above, whitish beneath, fins edged with black; 3 inches long—D. 1-7, A. 12.

I have only procured this *Bagrus* in the river that runs near Palghat in South Malabar.

Bagrus agricola. New Species.

Head 4 times in length of body; eye 4 times in head and with two diameters between the two; dorsal spine short, very finely toothed; pectoral spine strong with large teeth—D. 2-7, A. 10—maxillary cirri reach the ventrals. Length 2 inches; colour greenish leaden above, whitish beneath.

I found this small *Bagrus* in ditches and inundated paddy fields in the Wynaad.

B. with 6 cirri.

Bagrus? kuturnec. (Sykes.)

"A *Phractocephalus* with 6 cirri, 2 of which only are longer than the head; the first pectoral spine serrated on both edges; the 1st dorsal spine on the posterior edge only; these two spines ending in a filament; the shoulder bone elongated into a point behind; greatest length 6 inches; dorsal fin of 7 rays, pectoral of 9; ventral fin small, of 7 rays; second dorsal replaced by a small adipose fin."

I have placed this fish, described by Col. Sykes as a *Phractocephalus*, among the *Bagri*, but with great doubt, as I do not find any *Bagri* with 6 cirri to be true fresh water fishes.

Gen. *Pangasia*.

4 short cirri; 10 branchial rays; anal fin rather long; adipose small; head depressed.

* *Pangasia? gogra.* (Sykes.)

"A *Phractocephalus* with 4 shortish cirri, the plates of the shoulder elongated into acute, angular, broad spines, with a dorsal fin of 8 rays, first ray a bone, serrated behind; pectoral fin of 10 rays, the first ray a broad compressed bone, serrated on both edges; head flat and broad; second dorsal small fleshy, size 6 inches, but grows larger."

I have placed this fish of Col. Sykes' list as a *Pangasia* with the characters of which it appears to correspond better than those of any other Indian Genus.

Gen. *Silundia*. Val.

Head small, smooth; adipose very small; anal fin long; 2 very minute cirri.

* *Silundia Childreni.* (Sykes.)

"An *Ageneiusus* without cirri, with the first ray of the dorsal and pectoral fins serrated on the anterior edge only, with 8 rays on the dorsal and 42 in the anal fin; with two sharp lobes to the tail, the upper being somewhat the smallest. Length of fish 18 inches; height $4\frac{1}{2}$ inches, but grows to a larger size. Second dorsal adipose, minute."

I have very little doubt that this is a true *Silundia*, and perhaps the *S. Gangetica*, though Sykes says there are no cirri, for it appears

that the 2 small cirri which are present in that fish are made out sometimes with difficulty.

Gen. *Pimelodus*.

Palate without teeth; maxillary cirri (often) thick, fleshy; otherwise similar to *Bagrus*; frequently marbled or blotched.

* *Pimelodus Yarrelli.* (Sykes.)

"A *Bagrus* with the first rays of the pectoral and dorsal fins terminating in long fleshy tendrils and serrated behind; with 8 cirri, two of which are as long as the head, thick, fleshy, and being lateral elongations of the upper lip; other cirri very short, head broad, covered with a granulated bony plate; the fish olive brown, marked with black blotches like a Dalmatian dog; 2d dorsal fleshy, triangular. Length 18 inches, but attains a very great size; body not vertically compressed. Found in the Mota Mola at Poona."

Seems nearly allied to *P. bargarius* of Bengal.

Pimelodus lonah. (Sykes.)

"A *Bagrus* with 8 small cirri, flat, granulated head; first dorsal of 7 rays, and pectoral of 10 rays, the first ray of which is furnished on the posterior edge with long sharp teeth; anal fin of 10 rays; 2d dorsal of a triangular form, fleshy; something resembling the preceding in colour."

Pimelodus itchkeea. (Sykes.)

"A *Phractocephalus* with 8 cirri, 2 of which from the upper lip extend to the end of the pectoral fins; the other 2 very minute, with the 4 on the chin nearly as long as the head; with the 1st ray in the pectoral fins only serrated; with 8 rays in the dorsal and 12 in the anal fins; with a sharp prolongation of the scapula. Fish handsomely marked on the back with dark colours; length 2 inches."

Pimelodus Carnaticus. New Species.

Head broad, muzzle blunt, eye small, situated far back; dorsal spine smooth; pectoral spine strongly toothed; maxillary cirri barely as long as the head, all the others short, slender—D. 1-6, A 12—colour yellow ochre, blotched and marbled with brown about 4 to 5 inches long.

I have only found this curious fish in the Bowany river. It is said not to exceed 6 inches or so in length.

Gen. *Clarias*.

Dorsal fin single, very long; caudal fin rounded; eyes small; anal fin long.

Clarias marpus. C. V. *Marpoo*.

Russell, 168.

Head one-sixth of total length; sides of head but slightly arched; casque very rough; maxillary cirri reach to the end of the pectorals—D. 68, A. 48—up to 1 foot long. Colour purplish black or brown, paler beneath. Found in rivers and tanks throughout the country. It is called *yerri valé* in Tamool, and is said to be good eating.

* *Clarias magur*. Buch. Ham.

Sides of the head more convex than in the last, giving it a broader head; casque smooth; pectoral spine almost smooth—D. 70, A. 52—up to 12 inches.

Said to have been brought from Malabar as well as from Bengal where it is very common.

Clarias Dussumerii. C. V.

Head as in the last, pectoral spine distinctly toothed; blackish green above, grey beneath; 7 to 8 inches long—D. 69, A. 50. Found in tanks and ditches in Malabar.

* *Clarias batrachus*. Bloch.

Maxillary cirri reach the ventrals, and lower cirri the pectorals; covered with white spots—D. 67, A. 45—said to have been brought from Tranquebar, where it is called *tali*. It is most probably *C. marpus*, badly delineated.

Gen. *Saccobranchus*. Cuv.

A single small dorsal; anal fin very long; all the cirri moderately long; eye minute; tail rounded, distinct from the anal.

Saccobranchus fossilis. (Bloch.)*S. singio*. Buch., Cuv.

Very deep chesnut colour, almost black—D. 6, A. 74—up to 1 foot long. Found in tanks and ditches all over the South of India.

I possess a drawing of a species of *Plotosus* of a dark chesnut or maroon colour throughout, which, I was told, at the time, was a fresh

water fish, but I have not had an opportunity again of verifying this. It is however quite possible, as Bengal possesses one or two fresh water *Plotosi*.

Fam. *Clupeidae*.

Dorsal fin single, central; mouth small oblique; teeth minute; body compressed, aperture of gills large; scales large deciduous.

Gen. *Notopterus*. Lacep.

Ventral fins minute; dorsal fins small, nearly central; anal very long, united to the caudal.

Notopterus kapirol. Lac.

I have only observed one species of this genus in South India which I presume to be the one named as above, but as I have no access to any description of the species shall not attempt to characterize it.

Colonel Sykes has one species of this genus which he has named *Mystus badgee*—D. 8, A. 105—length 11 inches, height 3; all his other characters are generic, so that it must remain at present uncertain if his species be identical, or not, with the one of S. India.

Gen. *Butirius*. Commerson.

Body lanceolate, not much compressed; belly rounded, smooth; dorsal and anal fins both short; ventral under the dorsal; jaws and tongue armed with numerous fine teeth; those in the palate blunt.

Butirius argenteus. Forster, Bloch.

Head about $4\frac{1}{2}$ times in the whole length of body; eye near the muzzle; and elongated scale at the base of the dorsal (on each side), pectoral and anal fins; and 2 at the base of the caudal; green above, white beneath, the whole fish silvery; fins glossy; up to 3 feet long, about 82 scales along the sides in 22 rows—D. 14, A. 8.

I have hitherto only seen this very handsome fish in a fresh water tank at Coondapoor in North Canara. They abound here, and are supposed to have been introduced by Hyder Ali.

At present they are protected by the officers of government from being caught by any one, but a stranger passing through the place is permitted, on his requisition to the authorities, to have a fish hunting, which takes place in this wise. A line of boats is formed at one end of the tank (which may be about 250 yards long by 150 broad) and a long deep net is carried along the line of boats pulled at either end

by a few men on shore. This net is gradually pulled towards the spectator, the line of boats advancing slowly along, and now and then a fine fish is seen jumping out of the water—when half the tank is drawn and the fish consequently are accumulated towards the lither end of the tank, they begin to attempt to force the line; many succeed by jumping over the net, held as high as the fishermen's hands can reach; some come plump upon the fishermen and knock them over, making their escape thus; and others are caught by the net and fall into the boats where they are quickly despatched. It is indeed a most curious sight; 40 or 50 fish, many of them of large size, being often seen in the air at once. It is not uncommon for 50 or 60 fish from $1\frac{1}{2}$ to 3 feet long to be taken at one haul. The flesh, to the taste of a European, is rank and disagreeable, but the natives esteem it most highly as a restorative and aphrodisiac. It is called *Poo meen* by the natives.

Butirus Maderaspatisensis. New Species.

Palap Contak, Russell 207.

Head one-fourth of whole body; no elongated scales at base of dorsal, anal or caudal fins; 75 scales along the sides in 21 rows; body deeper than in the last; green above, white beneath, silvery throughout, fins tinged with yellowish—D. 14, A. 8, &c.

I possess some small specimens of this fish which appears to differ from the west coast one described above. It was procured at Madras from tanks, I was informed, but I believe it is chiefly an estuary fish. It is called *moram kerdac* at Madras.

Gen. *Megalops.* Lac.

Mouth very oblique; body moderately compressed; eye very large; dorsal and anal fins falcate.

Megalops filamentosus.

Kundinga. Russell, 203.

Head $3\frac{3}{4}$ in length of body; eye 3 times in the head; last ray of the dorsal prolonged to a filament; 40 scales along the lateral line in 11 or 12 rows—D. 19, A. 25—up to 2 feet and upwards.

This is chiefly an estuary fish, but it is to be found in many tanks of fresh water on the Malabar Coast; introduced, I suppose.

I have taken it with fly, from a small stone built tank at Mahé, upwards of two pounds weight.

Gen. *Alosa.* Cuv.

Mouth moderately large, upper lip notched; dorsal medial; anal moderately long.

Alosa palasah. Cuv. Probably the same as *Chupanodon ilisha*, Buch., and *Clupea Indica* of Gray, Hardwickes' Ill. Ind. Zool.

Palasah. Russell, 198.

I have every reason to believe that this is the so called sable fish of Trichinopoly, which ascends the Cavery during the freshes for the purpose of spawning, and is caught for the sake of its roe, which is highly esteemed.

It is called *Oolan-min* at Madras.

Another small clupeoid fish is sometimes taken in ponds and ditches in Malabar during the monsoon. It is closely allied to the *Chupanodon chachunda* of Buch. Hamilton.

I have no specimen at present to describe it from.

Fam. *Esocidae.*

Dorsal fin single, near the tail; mouth large; teeth numerous, large, acute.

Gen. *Belone.*

Body linear sub-cylindrical; jaws excessively long, pointed, with acute teeth; scales minute.

Belone Graii. Sykes.

Tail nearly square; head is two and a half times in the body; dorsal fin about 6 times in the length—D. 16, A. 17—Pale green above, with a tinge of fine red on the back, silvery beneath, caudal reddish—length up to 14 inches.

This fish is found in most of the rivers of the west coast up to the base of the mountains. It is very voracious, and devours large quantities of the little *Aplocheilii*. I cannot be certain if it is Sykes' species or not. He says of his, "D. 16, A. 16—closely allied to *E. cancella* of Buchanan, Hamilton."

ORD. APODES.

Fam. *Muraenida.*

Body serpent like; scales very minute, enveloped in a mucous skin; no ventral; branchial spiracles two, lateral.

Gen. *Anguilla*. L.

Dorsal, anal and caudal fins united into one; pectorals oval; spiracles placed just beneath the base of the pectoral.

A. bicolor. McLelland?

Cheniloo pamoo, Russell, pl. 31.

I have not a specimen of the common eel of the south of India by me at present, to compare with McLelland's description of his fish which was from Arracan. He suggests that it may be the same as Russell's species, but I should think this very doubtful. Our eel is not a very common, nor abundant fish, being found chiefly in large tanks, and deep holes in the larger rivers. It is of a dark olive colour above, yellowish beneath, length up to 4 feet. It is very good eating. It is taken in nets, or by a night line.

I add McLelland's description of his Malay fish, so that any one who has the opportunity may compare our fish with it. "The dorsal occupies rather more than half the entire length, and commences exactly over the anus. The jaws are depressed, the upper rather shorter, and narrower than the lower jaw. The breadth of the head about equal to that of the body. The distance from the base of the pectorals to the end of the nose, equal to one-third of the interval from the nose to the commencement of the caudal. The teeth are fine, like the pile of velvet, consisting of a broad band on either side of the jaws, and another on the lower. The fin rays are,

P. 18, D. 245, A. 221.

The colour above is dark olive green or brown, and white below. One of the specimens examined was about 2 feet in length.

* *Anguilla Elphinstonei*. Sykes.

"An *anguilla*, with the lower jaw the longest; with the back, tail and anal fins united, and with a broadish, flat head; body dark green, blotched with black; with 2 short tubular processes, one on each side of the upper jaw. Attains the length of 3 feet, and diameter of 3 inches."

This description is insufficient to distinguish it very exactly from other allied species.

III. — *Remarks on the Word Tersai.* By MR. SAMUEL MARCAR.

[We have much pleasure in giving insertion to the following philological observations of a young Armenian friend who has diligently devoted himself to the study of his national history and literature; both on account of its general interest in connection with the ancient people to which it refers, and of its particular bearing on the Syrian Sasanians which were so ably expounded by Dr. Gundert in our 14th vol.]

In the thirty-second number of the *Madras Journal of Literature and Science*, an extract is inserted at page 199 from the letter of the Rev. Dr. Gundert, respecting the name *Tarsa*, which is said to signify a "Christian" in the Persian language. This word occurs likewise in the forms of *Tersai* and *Terzai* in several productions of early times. Various explanations have been offered by learned writers regarding the origin and signification of that epithet: the subject on the whole leads to interesting historical and philological inquiries. I trust, therefore, I shall be excused, if I produce in this place, some passages out of those authors, in reference to the present purpose, accompanying them with a few cursory remarks of my own, by way of illustration.

In a book printed at Rome in 1618 under the title of "De Christiana Expeditione apud Sinas"—a compilation from the *Memoirs* or *Commentaries* of Father Matthæus Ricci, a Jesuit, who visited China about the year 1600—the word *Terzai* is found as an appellation given to Christians. The editor of that work, one Nicholas Trigautius, or Trigault, a Dutchman, in speaking of the religion of the Chinese and of the introduction of Christianity among them, has the following curious particulars. "Saraceni porrò Crucis adoratores præter vulgare gentis vocabulum, quo Christianos omnes *Isai*, id est, Jesuinos vocant, etiam in hoc regno antiquos illos Crucis professores *Terzai* appellant, cujus appellationis causam nescio, nisi quod ex Armenio quodam audivi, Armenios Christianos in Perside eodem nomine nuncupari. Unde fortasse conjicere licet hos Crucis veneratores ex Armenia originem traxisse, et ab casu variis fortasse temporibus, et eo maxime quum Tartari magnis exercitiis in Sinarum regnum irrupissent, penetrassent, quo etiam tempore Marcum Paulum Venetum constat huc pervenisse." A distinguished oriental scholar of Germany, Andreas Muller, in an ingenious Disquisition "De Chataja," appended to his edition of Marco Polo and Hauthon, Berlin, 1671, has investigated the source of the appellative *Tersai*, with great erudition and research. He ascribes, with Trigautius, the employment of that term to Armenian medium, and adduces sundry

