

only sparingly punctured; the middle part, indeed, is almost free from punctures. Scutellum large, quite impunctate. Elytra only finely and sparingly punctured, the punctures arranged almost in lines, the sides towards the apex and the apex strigose. Pygidium strigose, but shining. Under surface green; sides of the breast with scanty pale hairs and coarsely strigose, the centre smooth and shining. The mesosternal process very short and broad, densely pubescent along its front. Front tibiæ acutely tridentate.

This species is allied to *Cetonia fulgida*, Fab. (genus *Erirhipis*, Burm.), but is larger, without pale marks, and has the head differently shaped.

Though I have examined a series of ten individuals of this species, I see no indications of any external sexual distinctions.

Geographical Distribution of Indian Freshwater Fishes.—Part I.
The Acanthopterygii, Spiny-rayed Teleostean Fishes. By
FRANCIS DAY, F.L.S., F.Z.S., &c.

[Read December 7, 1876.]

DURING comparatively recent times much interest has been manifested regarding the geographical distribution of the fauna of India, and arguments have been adduced to demonstrate the predominance in it of the Malayan or African element.

As a small contribution to the facts which are being accumulated, I propose a consideration of the distribution of the freshwater fishes, believing they must afford evidence upon which some conclusions may be based. My limits will be Hindustan proper, including the Punjab and Sind, as well as Ceylon, Assam, Burma, the Andamans, and the Nicobars.

The freshwater fishes consist:—

- (1) Of those which reside entirely in fresh water.
- (2) Of those which enter it from the sea for breeding or predaceous purposes.

The second will be briefly considered, and only when the species belongs to a genus which likewise inhabits fresh water. In such instances it will be necessary to trace out every species of which the genus is composed.

The freshwater fishes, thus circumscribed, consist of:—

(a) Hill-residents, whether entirely or occasionally.

(b) Fishes of the plains, some of which are migratory, extending their range over vast regions, whilst others are more locally distributed, such as being confined to Cutch, or Western or Southern India including Ceylon, or restricted to the deltas of large rivers.

This investigation may, for convenience, be divided into:—

I. The distribution of Acanthopterygii.

II. " " Anacanthini and Siluridæ.

III. " " Cyprinidæ, Clupeidæ, and their allies.

Restricting myself in this paper to the Acanthopterygian or spiny-rayed Teleostean fishes, we find nine families which possess true freshwater representatives in India. They are as follows:—

1. PERCIDÆ. Genus 1. *Ambassis*¹, Commerson.

a. Fresh waters throughout India, also in Malay archipelago.

b. Marine, both Malay archipelago and Africa.

2. NANDIDÆ. Genus 1. *Badis*², Bleeker.

Fresh waters of India (excluding Sind and Ceylon³) and Burma.

Genus 2. *Nandus*⁴, Cuv. & Val.

Fresh waters of India to the Malay archipelago.

Genus 3. *Pristolepis*⁵, Jerdon.

Malabar⁶, Burma, Siam, and Malay archipelago.

¹ This genus includes:—*Chanda*, pt., Ham. Buch.; *Hamiltonia*, Swainson; *Bogoda*, *Parambassis*, and *Pseudambassis*, Bleeker.

² Includes *Bedula*, Gray.

³ The fishes of Ceylon have been so little worked out, that none of this family have been as yet recorded from that island; but such is by no means conclusive evidence that they do not live there. I suspect *Nandus marmoratus* will be found in the waters of the plains, and some species of *Pristolepis* in those of the hills. Whilst writing this paper I discovered in the Indian Museum a collection of Ceylon fishes made by Dr. Kelaart, amongst which are several common to the continent of India.

⁴ Includes *Bedula*, Gray.

⁵ Includes:—*Catopra*, Bleeker; *Paranandus*, Day.

⁶ By *Malabar* I do not understand the districts so designated in Bloch's time; I only mean the western coast of India from below Mangalore. In former days the lower portion of the Coromandel coast was so termed; and even now the natives of Madras designate those residing to the south as Malabars.

3. SCIÆNIDÆ. Genus 1. *Sciæna*¹.

a. Fresh waters of India and Burma to the Malay archipelago.

b. Marine species found also in Africa and the Malay archipelago. This family does not appear to be represented in the Red Sea, doubtless due to the water being too clear, and no large rivers opening along its coasts.

4. GOBIIDÆ. Genus 1. *Gobius*², Artedi.

a. Fresh waters of India, Ceylon, Malay archipelago, and Africa.

b. Marine, in India, Ceylon, Malay archipelago, and Africa.

Genus 2. *Sicydium*³, Cuv. & Val.

a. Fresh waters of Canara⁴ and Burma to the Malay archipelago and beyond.

Genus 3. *Periophthalmus*, Schn.

Larger rivers of Bengal and Burma to the Malay archipelago and beyond, also West Africa.

¹ Includes:—*Johnius*, Bloch; *Corvina* and *Stellifer*, Cuv.; *Bola*, pt., H. B.; *Leiostomus*, Cuv. & Val.; *Coracinus*, Pall.; *Homoprion*, Holb.; *Amblyodon* (Raf.), Gill; *Cheilotrema*, v. Tsch.; *Genyonemus*, *Plagioscion*, *Sciænops*, *Bairdiella*, *Haploiodotus*, *Rhinoscion*, and *Ophioscion*, Gill; *Diplolepis*, Steind.; *Pseudo-sciæna*, Bleeker.

² For synonyms see 'Fishes of India,' p. 282.

³ Includes:—*Sicyopterus*, Gill; *Catylopus*, Guich.; *Sicydiops* and *Microsicydium*, Bleeker.

⁴ The following species was obtained from the fresh water of Canara, but having been mislaid, was omitted from the 'Fishes of India.' As, however, its existence is of importance in the geographical distribution, I describe it here.

SIKYDIUM GRISEUM, n. sp.

B. iv. D. $6\frac{1}{10}$, P. 17, V. 6, A. 11, C. 13, L. 1. 80, L. tr. ca. 25.

Length of head $5\frac{1}{2}$, of caudal fin $6\frac{1}{2}$, height of body 6 in the total length. *Eyes*, diameter 4 in the length of the head, rather above 1 diameter from the end of snout, and $1\frac{1}{2}$ apart. *Body* subcylindrical; upper surface of the head flat, and its greatest breadth equalling its width. Cleft of mouth extending to below the first third of the eye. Lower jaw horizontally placed. Lips thick, the upper with a coarsely fringed edge: snout not overhanging the mouth. No barbels. *Teeth*—in the upper jaw, small, closely set, and implanted in the gums in a single row: in the lower jaw the outer row horizontal; posterior to them, and above the symphysis, are two strong recurved canines. *Fins*—dorsal spines filiform and projecting beyond the membrane; caudal rounded. *Scales* strongly ctenoid, of irregular sizes and shapes, and in irregular rows; they extend forwards to nearly as far as the eyes; none on the head. *Colours*—brownish, with eight or nine rings of a

Genus 4. *Eleotris*¹, Gronovius.

Large rivers of India, Africa, and the Malay archipelago.

5. RHYNCHOBDELLIDÆ. Genus 1. *Rhynchobdella*, Cuv. & Val.

From Syria through Sind, India, Ceylon, Burma, to the Malay archipelago.

Genus 2. *Mastacembelus*, Cuv. & Val.

From Syria through Sind, India, Ceylon, Burma, to the Malay archipelago; also West Africa.

6. MUGILIDÆ. Genus 1. *Mugil*, Artedi.

a. Fresh waters of Sind, N.W. provinces, Bengal, Assam, Burma.

b. Marine, to the Malay archipelago and Africa.

7. OPHIOCEPHALIDÆ. Genus 1. *Ophiocephalus*, Bloch.

Fresh waters of Beluchistan, Afghanistan, throughout India and Ceylon to the Malay archipelago.

Genus 2. *Channa*, Gronov.

Ceylon and China.

8. LABYRINTHICI. Genus 1. *Anabas*, Cuvier.

India and Ceylon to the Malay archipelago.

Genus 2. *Polyacanthus*, Cuv. & Val.

Canara, Southern India, Ceylon, to the Malay archipelago.

Genus 3. *Osphromenus*², Lacép.

Eastern Bengal, Assam, to the Malay archipelago.

Genus 4. *Trichogaster*³, Bloch.

Sind, through India (except Madras and south of the Kistna, Malabar, and Ceylon) to Burma and Siam.

9. CHROMIDES. Genus 1. *Etroplus*, Cuv. & Val.⁴

Western and Southern India, also Ceylon.

If we examine the foregoing 9 families and 19 genera, we

darker tint surrounding the body and wider than the ground-colour; fins dark, most deeply so at their edges.

Hab. South Canara, where I procured two specimens in fresh water, the longest being 3 inches.

¹ For genera included see 'Fishes of India,' p. 309.

² Includes:—*Trichopus*, Lacép.; *Ctenops*, McClell.; *Trichopsis*, Kner.

³ Includes *Colisa*, Cuv. & Val.

Includes *Pseudetroplus*, Bleeker.

cannot help observing that they do not give one single instance of a freshwater genus being restricted to India and Africa, whilst the majority are common to the Indian and Malayan faunæ. In short, they may be divided as follows:—Of the 19 freshwater genera, 15 reach the Malay archipelago; of the remaining 4 genera, *Badis* exists in Burma, and may extend to Siam and beyond, *Trichogaster* is found in Siam, whilst *Channa* is common to Ceylon and China. The remaining genus, *Etrophus*, is confined to Western and Southern India, also Ceylon; whilst recently Dr. Bleeker has discovered that a nearly allied genus (*Paretrophus*, Bleeker) is present in Madagascar. This island, however, may or may not originally have been joined on to Africa. It has been observed that “Madagascar, divided from Africa by a deep channel 300 miles wide, possesses so many peculiar features as to indicate separation at a very remote antiquity, or even to render it doubtful whether the two countries have ever been absolutely united” (Wallace, ‘Malay Archipelago,’ ii. p. 11).

Out of the foregoing 19 freshwater genera existing in India, only 3 have as yet been recorded from Africa, but 15 from the Malay archipelago, whilst all the marine genera common to Africa and India extend to the Malay archipelago.

It may therefore be fairly assumed that amongst the freshwater Acanthopterygian fishes of India and Ceylon a well-marked Malayan character is present, whereas an African element is but slightly apparent.

Having thus briefly disposed of the families and genera, it becomes necessary to show where the various species reside, and the range within which they are limited, in order to attempt to evolve whether any, and, if so, what subregions exist.

Fam. PERCIDÆ.

Genus AMBASSIS.

1. *A. NANA*¹, Ham. Buch.

Sind, the entire plains of India (excluding the Malabar coast and Assam), to Burma.

2. *A. RANGA*², Ham. Buch.

¹ Includes:—*Chanda phula* and *C. bagoda*, Ham. Buch.; *Ambassis oblonga*, Cuv. & Val.; *A. indica*, McClelland.

² Includes:—*Chanda lala*, Ham. Buch. (young); *C. ruconius*, McClelland; *Ambassis Barlovi*, Sykes; *A. alta*, Cuv. & Val.

Sind, the entire plains of India (excluding the Malabar coast and Assam), to Burma.

3. *A. BACULIS*, Ham. Buch.

From the Punjab to Bengal, Orissa, and Burma.

4. *A. THOMASSI*, Day.

Western coast of India, from South Canara, certainly as low as Cochin.

5. *A. DAYI*¹, Bleeker.

Malabar coast of India, especially its more southern portions.

The representatives of this genus in India are divisible into three classes:—

A. Marine.—1. *A. Commersonii*, Cuv. & Val., from the Red Sea and east coast of Africa, throughout the Indian Ocean. 2. *A. interrupta*, Bleeker, from the Andamans to the Malay archipelago. 3. *A. gymnocephalus*², Lacép., from the east coast of Africa, through the seas of India, to the Malay archipelago. 4. *A. urotænia*³, Bleeker, from (? Red Sea,) Seychelles and Andamans to the Malay archipelago.

Out of the foregoing 4 marine species, 3 appear to be common to both the African and Malayan faunæ, and 1 to the Andamans as well as to the Malay archipelago.

B. Estuary.—This comprises species concerning which it is very difficult to decide whether they mostly prefer brackish water or extend their range downwards to the sea or upwards into the rivers. Thus we have *A. nalua*, H. B., which appears to frequent the entire coast of India, the Andamans, and the Malay archipelago.

C. Freshwater.—There are 5 species at present recognized: 2 are generally distributed throughout Sind, India, and Burma, excluding the Malabar coast; 1 appears to be absent from Sind and Southern India, but is otherwise distributed as the other two species. The remaining 2 species are found from Canara down the western or Malabar coast of India.

The deduction from the foregoing must be that South Canara and Malabar possess distinct species of this genus from those distributed elsewhere throughout Sind, India, and Burma;

¹ Includes ?*A. malabaricus*, Jerdon.

² Includes:—*A. Dussumieri*, C. & V.; *Priopsis argyrozona*, C. & V.; *Ambassis Vachelli*, Peters.

³ Includes ?*A. denticulata*, Klunzinger.

whereas those in the latter wide extent of country appear to be generally diffused. The Malabar¹ are local races, whereas the Hindustan forms are widely spread.

Family NANDIDÆ.

Genus BADIS.

1. B. BUCHANANI, *Bleeker*.

From the N.W. Provinces to Bengal, Orissa, and Western India; also found in Assam and Burma certainly as high as Mandalay.

2. B. DARIO, *Ham. Buch.*

Northern portions of Bengal, Behar, and along the western ghats of India.

Genus NANDUS.

N. MARMORATUS², *Cur. & Val.*

Throughout the whole of India and Burma (excluding Ceylon and Sind) to Siam.

Genus PRISTOLEPIS.

1. P. MARGINATUS³, *Jerdon*.

Western ghats of India and rivers along their bases.

2. P. MALABARICUS, *Günther*.

The same localities as the last, of which it may be merely a variety.

3. P. FASCIATUS⁴, *Bleeker*.

Fresh waters of Burma, Siam, and the Malay archipelago.

The species of the three Nandioid genera found in India give the following results:—*Nandus* is generally distributed except in Sind and elevated regions, extending eastward at least to Siam. It is a widely diffused fish. *Badis* shows species (perhaps the two are varieties of one) extending from the plains on to moderately elevated hills, and having a wide distribution to the east. *Pristolepis* is more confined to hilly regions or their bases in India proper, or, rather, Malabar; and then a wide hiatus exists, as it has not been discovered nearer than Burma, where it is found in the plains. There is, however, a slight difference in these fishes, which

¹ I have omitted allusion to *A. thermalis*, C. & V., from the warm springs of Cania, in Ceylon, and which may be one of those mentioned as found in India. Anyhow it proves the existence of this genus in the fresh waters of Ceylon,

² Includes *Bedula Hamiltonii*, pt., Gray & Hardw.,

³ Includes *Catopra tetracanthus*, Günther.

⁴ Includes *Catopra siamensis*, Günther.

should be remarked. The Malabar form or forms have villiform teeth on the vomer; those in Burma and to the east have globular ones.

Fam. SCIÆNIDÆ.

Genus SCIÆNA.

*S. COITOR*¹, Ham. Buch.

Throughout the larger rivers of India and Burma, descending to the sea at certain seasons. It has been taken in the Malayan peninsula by Dr. Cantor.

Estuary and marine examples of this genus are found both along the coasts of Africa, through the sea of India, to the Malay archipelago and beyond.

The following species inhabit the seas and estuaries of India:—

1. *Sciæna Bleekeri*, Day, Beluchistan to Bombay.
2. *S. miles*², Lacép., seas of Africa to the Malay archipelago.
3. *S. Vogleri*, Bleeker, seas of India to the Malay archipelago.
4. *S. sina*, Cuv. & Val., from Beluchistan through the seas of India to the Malay archipelago.
5. *S. cuja*³, Ham. Buch., estuaries of the Ganges and Japan.
6. *S. axillaris*, Cuv. & Val., seas of India.
7. *S. albida*⁴, Cuv. & Val., seas and estuaries of India and Burma.
8. *S. diacanthus*⁵, Lacép., seas and estuaries of India to the Malay archipelago and China.
9. *S. aneus*⁶, Bloch, seas of India to the Malay archipelago.
10. *S. maculata*⁷, Bl. Schn., seas of India.
11. *S. Belengeri*⁸, Cuv. & Val., seas of India to the Malay archipelago and beyond.
12. *S. semiluctuosa*, Cuv. & Val., from Be-

¹ *Sciæna (Corvina) nasus*, Steind., from Calcutta, is probably this species; also *Johnius Dussumieri*, Cantor, from Pinang, the Malayan peninsula, and Singapore.

² Includes:—*Labrus tella katchelee*, Russell; *Corvina soldado*, Cantor; *C. Wolfii*, *sampitensis*, and *celebica*, Bleeker; *C. dorsalis*, Peters,—from the Mozambique through the seas of India to the Malay archipelago.

³ *Scienoides asper*, Blyth (young).

⁴ Includes:—*Bola coitor*, Ham. Buch.; *Johnius anei*, Blyth; *Corvina Neilli*, Day.

⁵ Includes:—*Labrus nella katchelee*, Russell; *Bola chaptis*, H. B.; *Johnius cataleus* and *Corvina platycephala*, Cuv. & Val.; *Sciæna maculata*, Gray & Hardw.; *Johnius Valenciennesi*, Eyd.

⁶ Includes *Otolithus macrophthalmus*, Bleeker.

⁷ Includes *Perca sari-kullah*, Russ.

⁸ Includes:—*Sparus*, Russell, fig. cxi.; ? *Corvina lobata*, Cuv. & Val.; *C. Kuhl'i*, Cuv. & Val.

luchistan through the seas of India to China. 13. *S. glaucus*, Day, seas of India. 14. *S. carutta*¹, Cuv. & Val., seas of India to the Malay archipelago. 15. *S. osseus*, Day, Malabar coast of India.

The foregoing 15 species of marine and estuary Sciænas can be divided thus:—6 as yet recorded only from India; 8 India to the Malay archipelago, or China, or Japan; 1 from India and Africa to the Malay archipelago. But the fact must not be overlooked that there has been no worker along the African coast as Bleeker has worked the fish-fauna of the Malay archipelago.

Fam. GOBIIDÆ.

Genus GOBIUS.

*G. GIURIS**, Ham. Buch.

Fresh water throughout the plains of India, Sind, Ceylon, and Burma to the Malay archipelago and east coast of Africa; also found along the coast.

The following species inhabit the seas and estuaries, some ascending up tidal rivers:—

1. *G. bynoensis*², Richardson, sea at Andamans and Malay archipelago. 2. *G. sexfasciatus*, Day, sea, Madras. 3. *G. brevirostris*, Günther, sea at Kurrachee in Sind, also China. 4. *G. griseus*, Day, estuaries, Madras. 5. *G. polynema*, Bleeker, seas of India and Malay archipelago. 6. *G. macrostoma*, Steind., sea, Bombay. 7. *G. viridipunctatus*³, Cuv. & Val., from Sind through the seas of India to the Malay archipelago. 8. *G. ocellatus*, Day, sea, Sind and Bombay. 9. *G. Masoni*, Day, sea, Bombay. 10. *G. cyanomos*⁴, Bleeker, seas of India to the Malay archipelago. 11. *G. criniger*⁵, Cuv. & Val., seas of east coast of Africa, India, to the Malay archipelago. 12. *G. puntang*⁶, Bleeker, estuaries

¹ Includes *S. carouna*, C. & V.

* Includes:—*G. korah mottah*, koku, and *bullee kokah*, Russell; *G. kurpah*, Sykes; *G. kokijs*, *catebus*, and *kora*, Cuv. & Val.; *G. platycephalus*, Peters; *G. spectabilis*, Günther.

² Includes *G. stethophthalmus*, Bleeker.

³ Includes:—*G. nuna mottah*, Russell; *G. venenatus*, Cuv. & Val.; *G. chlorostigma*, Bleeker.

⁴ Includes *G. setosus*, Jerdon (not Cuv. & Val.).

⁵ Includes:—*G. brevifilis*, Cuv. & Val.; *G. Kreffii*, Steind.; *G. caninus*, Günther and Playfair, Fish. Zanz. (not Cuv & Val.).

⁶ Includes *G. andamanensis*, Day.

and the sea from the Andamans to the Malay archipelago. 13. *G. Bleekeri*, Day, estuaries, Madras. 14. *G. zonalternans*, Day, brackish water, Madras. 15. *G. biocellatus*¹, Cuv. & Val., coasts of Sind, India to the Malay archipelago. 16. *G. madraspatensis*, Day, estuaries, Madras. 17. *G. Neilli*, Day, sea and estuaries, Madras. 18. *G. melanosticta*, Day, estuaries of Madras. 19. *G. cristatus*, Day, coasts of India. 20. *G. tentacularis*², Cuv. & Val., seas of India to the Malay archipelago. 21. *G. acutipennis*³, Cuv. & Val., seas of India to the Andamans. 22. *G. striatus*, Day, estuaries of Madras and Canara, ascending rivers. 23. *G. personatus*⁴, Bleeker, estuaries and seas of India to the Malay archipelago. 24. *G. malabaricus*, Day, estuaries of Madras, and ascending rivers in Malabar. 25. *G. planifrons*, Day, sea, Bombay. 26. *G. elegans*, Cuv. & Val., sea, Bombay and Malay archipelago. 27. *G. ornatus*⁵, Rüpp., Red Sea, seas of India, to the Malay archipelago. 28. *G. gutum*, Ham. Buch., estuaries of the Hooghly. 29. *G. albo-punctatus*⁶, Cuv. & Val., Red Sea, seas of India, Andamans, to Feejee and beyond. 30. *G. semidoliatus*, Cuv. & Val., Red Sea, Andamans. 31. *G. magniloquus*, Day, sea, Madras. 32. *G. planiceps*, Day, sea, Madras. 33. *G. sadanundio*, Ham. Buch., estuaries of Ganges and sea along the coast of Burma. 34. *G. melanosoma*⁷, Bleeker, Andamans and Nicobars to the Malay archipelago. 35. *G. nunus*, Ham. Buch., estuaries of the Hooghly and Burma, ascending rivers.

The foregoing 35 species of marine and estuary Gobies (*Gobius*) can be divided thus:—21 as yet only recorded from India; 11 common to India and the Malay archipelago; 2 common to India and China or beyond; 1 common to Africa, India, and the Malay archipelago.

¹ Includes *G. celebicus*, Cuv. & Val.; *G. subtilis*, Cantor.

² Includes *G. macrurus*, Bleeker.

³ Includes *G. setosus*, Cuv. & Val.

⁴ Includes:—*G. melanocephalus* and *grammepomus*, Bleeker; *G. litturatus*, Steind.; *G. Stoliczkae*, Day.

⁵ Includes:—*G. ventralis*, Cuv. & Val.; *G. interstinctus*, Richardson; *G. periphthalmoides*, Bleeker.

⁶ *G. punctillatus*, Rüpp.; *G. Padangensis*, Bleeker; *G. breviceps*, Blyth.

⁷ Includes *G. gobiodon*, Day.

Genus SICYDIUM.

1. *S. FASCIATUM*, Day.

Fresh water of Burma.

2. *S. GRISEUM*, Day.

Fresh water of Canara.

Genus PERIOPHTHALMUS.

*P. SCHLOSSERI*¹, Pallas.

This little fish is found in fresh water and also in estuaries from Bengal to the Malay archipelago.

The following species likewise inhabits the sea and estuaries :—*P. Koelreuteri*², Pallas. It extends from India to the Malay archipelago.

Genus ELEOTRIS.

*E. FUSCA*³, Bl. Schn.

This fish is found far inland in fresh water ; it also inhabits the west coast of Africa, seas of India to the Malay archipelago and beyond.

The following species of this genus inhabit the seas and estuaries, some ascending tidal rivers :—1. *E. macrolepidota*, Bloch, said to have come from India. 2. *E. muralis*, Cuv. & Val., seas of India to the Malay archipelago. 3. *E. sexguttata*, Cuv. & Val., Ceylon to the Malay archipelago. 4. *E. feliceps*, Blyth, Andamans. 5. *E. macrodon*, Bleeker, estuaries of Lower Bengal and Burma. 6. *E. porocephalus*⁴, Cuv. & Val., seas and estuaries of Burma, and the Andamans to the Malay archipelago. 7. *E. ophiocephalus*⁵, Cuv. & Val., coasts of Africa, Andamans, to the Malay archipelago. 8. *E. cavifrons*, Blyth, Andamans. 9. *E. canarensis*, Day, Canara. 10. *E. lutea*, Day, Andamans. 11. *E. scintillans*, Blyth, Akyab and Andamans. 12. *E. litoralis*, Day,

¹ Includes :—*G. tredecem-radiatus*, *septem-radiatus*, and *novem-radiatus*, Ham. Buch. ; *Periophthalmus Freycineti*, Cuv. & Val.

² Includes :—*Periophthalmus papilio*, Bl. Schn. ; *P. argentilineatus*, C. & V. ; *P. kalolo*, Less. ; *P. modestus*, Cantor ; *P. dipus*, Bleeker ; *P. fuscatus*, Blyth.

³ Includes :—*Cobitis pacifica*, Forst. ; *Cheilodipterus culius*, Ham. Buch. ; *Eleotris nigra*, Quoy & Gaim. ; *E. mauritanus*, Bennett ; *E. incerta*, Blyth ; *E. soaresi*, Playfair.

⁴ Includes *Eleotris Cantoris*, Günther.

⁵ Includes :—*E. margaritacea*, Cuv. & Val. ; *E. viridis*, Bleeker.

Andamans. 13. *E. caperata*¹, Cantor, coasts of India, Andamans, to the Malay archipelago. 14. *E. butis*², Ham. Buch., seas and estuaries of India to the Malay archipelago. 15. *E. amboinensis*³, Bleeker, seas and estuaries of India to the Malay archipelago.

The foregoing 15 species of marine and estuary *Eleotres* can be divided thus:—8 as yet only recorded from Indian localities; 6 common to India and the Malay archipelago; 1 common to India, Africa, and the Malay archipelago.

Fam. RHYNCHOBDELLIDÆ.

Genus RHYNCHOBDELLA.

R. ACULEATA⁴, Bloch.

Estuaries, brackish waters, and deltas of large rivers throughout the Indian (? Ceylon) district, and extending to Borneo and beyond.

Genus MASTACEMBELUS.

1. M. UNICOLOR, Cuv. & Val.

Fresh waters of Burma to Java.

2. M. ZEBRINUS, Blyth.

Fresh waters of Burma.

3. M. PANCALUS⁵, Ham. Buch.

Bombay Presidency (inland), deltas of large rivers (excluding those of the Malabar coast and Madras south of the Kistna), also Assam.

4. M. ARMATUS⁶, Lacép.

This freshwater fish is found throughout the Indian region referred to, both on the plains and even the hills; it extends to China.

5. M. GUENTHERI⁷, Day.

Fresh waters along the Malabar coast of India.

The 5 species show the following distribution:—2 throughout

¹ Includes *E. koiomatodon*, Bleeker.

² Includes:—*E. humeralis*, Cuv. & Val.; *E. prismatica*, Bleeker.

³ Includes *E. buccata*, Blyth.

⁴ Includes:—*Rhynchobdella orientalis* and *aral*, Bl. Schn.; *R. ocellata*, Cuv. & Val.; *Mastacembelus pentophthalmus*, Gronov.

⁵ Includes *Mastacembelus punctatus*, Cuv. & Val.

⁶ Includes:—*M. ponticerianus* and *marmoratus*, Cuv. & Val.; *Macrognathus caudatus*, *undulatus*, and *Hamiltonia*, M'Clelland.

⁷ Includes ?*Mastacembelus malabaricus*, Jerdon.

India to China; 1 India, excluding the west and south coasts, also Assam; 1 locally in the Malabar coast; 1 locally in Burma.

Family MUGILIDÆ.

Genus MUGIL.

1. *M. CORSULA*, *Ham. Buch.*

Rivers and estuaries of Bengal and Burma.

2. *M. HAMILTONII*, *Day.*

Rivers of Burma.

3. *M. CASCASIA*, *Ham. Buch.*

Ganges and Jumna rivers; also in the Brahmaputra, in Assam.

Of the foregoing three species of Mulletts¹ from the fresh waters of India and Burma, none has been recognized either in Africa or the Malay archipelago.

Following out the sea and estuary species of this genus would lead to no conclusions. Mulletts extend their range through vast regions; and those found in India and Africa appear, with but few exceptions, to be also present in the Malay archipelago. It is curious, however, that the freshwater species in India have strongly ctenoid scales, such in the marine forms being usually cycloid or feebly ctenoid.

Fam. OPHIOCEPHALIDÆ.

Genus OPHIOCEPHALUS.

1. *O. MARULIUS*², *Ham. Buch.*

Fresh waters throughout India and Ceylon to China.

2. *O. LEUCOPUNCTATUS*³, *Sykes.*

Deccan, Coromandel and western coasts of India, China.

3. *O. PSEUDOMARULIUS*, *Günther.*

? Mysore, probably a hybrid.

4. *O. BARCA*⁴, *Ham. Buch.*

Large rivers of Bengal, N.W. Provinces, and Assam.

¹ Great errors occur in the distribution of Indian fishes, due to mistakes originating with European museum-naturalists, who, transposing labels, still adhere to their original statements. Thus *M. nepalensis*, Günther, is evidently a skin of *M. dussumieri*, Cuv. & Val., erroneously labelled Nepal instead of Calcutta.

² Includes ?*Ophiocephalus Theophrasti*, Val., and *O. aurolineatus*, Day (young).

³ Includes Russell's pl. 173, *O. grandinosus*, C. & V.

⁴ Includes ?*O. nigricans*, C. & V., and *O. amphibius*, McClelland.

5. *O. MICROPELTES*¹, Cuv. & Val.

Canara and Malabar, also Siam to the Malay archipelago.

This fish is very peculiar in its colour; having obtained one at Cochin of a bright scarlet with two black bands along the body, in 1863, I naturally concluded it could not be the immature of *O. micropeltes*, described in the 'Catalogue of Fishes of the British Museum' as "brown with lighter longitudinal stripes." Returning to that coast ten years subsequently, I discovered the *O. micropeltes* at Trichoor, about 40 miles north of Cochin; and a few months subsequently I was enabled to collect in Canara adult and young. At Berlin, and subsequently at Dr. Bleeker's, I have convinced myself of their identity. But it is very peculiar that this fish has such a local distribution in India, reappearing in Siam.

6. *O. STRIATUS*², Bloch.

Fresh waters of the plains in the Indian and Ceylon region, Burina, to the Malay archipelago and beyond.

7. *O. STEWARTII*, Playfair.

Cachar and Assam.

8. *O. GACHUA*³, Ham. Buch.

Fresh waters of the plains, and also some of the hilly ranges of Beluchistan, Afghanistan, the Indian and Ceylon region, Burma, and the fresh waters of the Andamans.

9. *O. PUNCTATUS*⁴, Bloch.

Fresh waters of the plains in the Indian and Ceylon region, Burma.

The 9 foregoing species show the following distribution:—2 throughout India to the Malay archipelago or China; 1 the Indian region, including Ceylon, Burma, and the Andamans; 1 the Indian region, including Ceylon and Burma; 1 Deccan, Western and Coromandel coast and China; 1 perhaps Mysore; 1 large rivers of Bengal, N.W. Provinces, and Assam; 1 Malabar coast, then absent until Siam, whence it extends to the Malay archipelago; 1 Cachar and Assam.

The distribution of the *Ophiocephali* deserves particular attention, one species, identical with *O. gachua* of India, being found in the Andamans. Reasons will be subsequently adduced favour-

¹ Includes *O. serpentinus*, C. & V., and *O. diplogramme*, Day (young).

² Includes *O. wrahl*, Lacép., and *O. chena*, Ham. Buch.

³ Includes:—*O. kora molta*, Russell; *O. aurantiacus*, Ham. Buch.; *O. fuscus*, *marginatus*, and *limbatus*, Cuv. & Val.; *O. montanus*, M'Clelland; *O. Kelaartii*, Günther.

⁴ Includes:—*O. karrouvei*, Lacép.; *O. latus*, Ham. Buch.; *O. indicus*, M'Clelland; *O. affinis*, Günther. Fresh waters of the plains of the Indian region and Ceylon.

ing the belief that the freshwater fishes of the Andamans and Nicobars are identical with those of India. But as freshwater fishes cannot live in the sea, they are unable to pass from the mainland to distant islands; consequently there must at some anterior period have been a land connexion to make the continuity of the fresh waters possible. Admit such to be a fact, there arises the question, Are the aborigines to be considered African whilst the freshwater fish are Indian? or are we to look to the remnants of the aboriginal races of the hills of Hindustan to find the relatives of these people? Does not the presence of these Indian fishes at the Andamans afford another link in the evidence that those coral islands are sinking? for were they rising from the ocean, how could we expect to find *Ophiocephalus gachua*, H. B., and *Haplochilus panchax*, H. B., in existence in their fresh waters? Introduced the latter one could not have been; for it to cross the intervening seas is an impossibility,—leaving us to believe either in a former land connexion or a new creation, and that not of new species but of fishes identical with those on the mainland of India. Again the *O. leucopunctatus* appears in the Deccan and around the coasts, reappearing in China. But the *O. micropeltes* is still more extraordinary: it appears to be confined to Canara and Malabar nearly as far south as Cochin; then it is entirely absent until Siam is reached, whence it extends eastwards.

Genus CHANNA.

C. ORIENTALIS¹, Bl. Schn.

This species has only been found in Ceylon. It is very similar to *Ophiocephalus gachua*, which is frequently found with one of its ventrals deficient.

Fam. LABYRINTHICI.

Genus ANABAS.

A. SCANDENS² Dald.

Throughout Bengal, Assam, throughout Southern India, the Malabar coast, and Ceylon; also Burma to the Malay archipelago and beyond.

Genus POLYACANTHUS.

1. P. CUPANUS, Cuv. & Val.

Southern India on the Malabar and Coromandel coasts.

¹ Includes *Channa indica*, Gronov. ed. Gray.

² Includes:—*Anthias testudineus*, Bloch; *Cojus cobojus*, Ham. Buch.; *Anabas spinosus*, Gray & Hardw.; *A. trifolatus*, Kaup; *A. oligolepis*, Günther.

2. *P. SIGNATUS*, *Günther*.

Ceylon and Java.

Genus *OSPHROMENUS*.*O. NOBILIS*, *M^cClelland*.

Rivers of N.E. Bengal and Assam, extending to those of the hills.

Genus *TRICHOGASTER*.1. *T. CHUNA*¹, *Ham. Buch.*

Deltas of the Ganges and its branches, and the Brahmaputra.

2. *T. LABIOSUS*, *Day*.

Irawaddi.

3. *T. FASCIATUS*², *Bl. Schn.*

Coromandel coast of India as far south as the river Kistna, Sind, Punjab, N.W. Provinces, estuaries of the Ganges, Orissa and Assam, also throughout Burma.

4. *T. LALIUS*³, *Ham. Buch.*

Sind, Jumna, and Ganges rivers as low as Calcutta.

Fam. *CHROMIDES*.Genus *ETROPLUS*.1. *E. CANARENSIS*⁴, *Day*.

Fresh waters of South Canara, not extending down Malabar.

2. *E. MACULATUS*⁵, *Bloch*.

From Canara down the Malabar coast, Madras, and Mysore.

3. *E. SURATENSIS*⁶, *Bloch*.

From Canara down the western coast, extending inland on to the Ghauts; along the Coromandel coast as high as the Kistna; also Ceylon.

It is now necessary to examine the foregoing species as a whole, showing where they are found, and to where they extend, as only by doing so can one ascertain the tendencies shown towards either the African or Malayan fish-fauna.

¹ Includes ?*Trichopodus sota*, *Ham. Buch.*² Includes *T. colisa*, *bejeus*, and *cotra*, *Ham. Buch.*, and *Colisa ponticeriana*, *Cuv. & Val.*³ Includes *Colisa unicolor*, *Cuv. & Val.*⁴ D 22 | 8, A $\frac{15-16}{6}$. L. 1. 31, L. tr. 22. Yellowish buff, with about 8 vertical bluish-black bands. See 'Fishes of India,' p. 414, pl. 89. fig. 5.⁵ Includes *Chaetodon kakaitzel*, *Lacép.*, and *Etroplus corucki*, *Cuv. & Val.*⁶ Includes *Etroplus meleagris*, *C. & V.*

Indian region* to Africa and the Malay archipelago.....	2
„ to the Malay archipelago.....	5
„ (excluding Malabar and Assam) to Burma ..	2
„ (excluding Malabar, Assam, and Burma) ..	1
„ (excluding Ceylon and Sind) to Burma ..	1
„ Ceylon and Burma	1
„ Ceylon, Burma, and Andamans	1
„ (excluding Southern India and Malabar coast).....	2
N.W. Provinces and regions to the south, Western India, Assam, and Burma	1
Bengal, Burma, and Malay archipelago	1
Burma, Siam, and Malay archipelago	2
Burma	4
Bengal and Burma	1
N.E. Bengal and Assam	1
Cachar and Assam	1
Sind, Jumna, and Ganges	1
Ganges, Jumna, and Assam	3
Deccan, coasts of India, China	1
Western coast of India, Siam, Malay archipelago	1
Western coast of India	5
Canara.....	2
Southern India and Malabar.....	3
Ceylon	1
Ceylon and Java.....	1
Mysore	1

It is remarkable that I am unable to find a single Acanthopterygian freshwater fish restricted to Africa and India: there are two found in both regions; but they also extend to the Malay archipelago.

Although out of the foregoing 45 species only 2 are residents of Africa, we find 9 of them in the Malay archipelago which are also in India proper, and 2 coexistent in Burma and the Malay archipelago. Another species is common to Ceylon and Java. Or they may be thus divided:—

Restricted to the Indian region	33
Indian region to the Malay archipelago	9
Burma to the Malay archipelago	2
Ceylon to the Malay archipelago	1

* This is intended to mean India, Sind, and the Punjab only.

Of the marine and estuary species, I find:—common to India,

Africa, and the Malay Archipelago... 5

Africa only 1

Malay archipelago 30

India only 35

Acanthopterygian forms of freshwater fishes in India are most numerous in maritime districts, next in the deltas of large rivers, whilst they decrease as we proceed far inland. The Himalayas appear to be their boundary; but on some of the lower ranges the ubiquitous *Ophiocephalus gachua* manages to exist. It is remarkable, however, that the family having the widest distribution is that of the amphibious *Ophiocephalidæ*, whilst it also is the one in which true spines are the least developed.

I propose deferring my general remarks until after the completion of my analysis of the remaining orders of the freshwater fishes, which must be done by following out the range of each individual species. By such means only can we fairly consider it proved whether the African or Malayan fish-fauna most predominates in India: it will show us distinctly the relationship of Ceylon to Southern India; and likewise by such the former continuity between India and the Andamans and Nicobars may be proved or disproved.

Description of a new Hornbill from the Island of Panay. By R. BOWDLER SHARPE, M.A., F.L.S., F.Z.S., &c., Senior Assistant, Zoological Department, British Museum.

[Read December 21, 1876.]

IN my paper on the birds of the Philippine Islands, which the Society is about to publish in the 'Transactions,' I have noticed an apparently new species of Hornbill from the Island of Panay; but as Mr. Elliot is at the present time engaged on a Monograph of this family of birds (*Bucerotidæ*), I have permitted him to figure this interesting species; and as it is possible that the part of his Monograph containing a description of the bird may appear before my own memoir in the 'Linnean Transactions,' I think it but due to Professor Steere, myself, and the Society, herewith to furnish a short description.

Professor Steere has given me the following notes respecting its habits:—"I shot this Hornbill on the highest ridge of the

Geographical Distribution of Indian Freshwater Fishes. —
Part II. The Siluridæ. By FRANCIS DAY, Esq., F.L.S.

[Read April 19, 1877.]

IN the first part of this paper¹ I gave an outline of the geographical distribution of the Acanthopterygian Freshwater fishes as existing in Sind, India, Burma, Ceylon, and the Andaman Islands. I now propose giving a similar sketch of the Sheat-fishes or Siluridæ², which form a large family amongst the Physostomi of Asia. Mostly scaleless, their mouths are provided with sensitive feelers, which, serving as organs of touch, assist them when seeking for their prey in turbid waters. Vision in such localities would be but of slight service; and, as might be anticipated, their eyes are comparatively small, whilst with advancing age these organs atrophy, not increasing so rapidly as the remainder of the body.

In addition to augmented facilities for feeling about in muddy water, they have a considerable development of the auditory organs, which doubtless must be of essential service.

The air-vessel or swim-bladder in fishes is found possessing two distinct functional offices. In the Acanthopterygians, destitute of a pneumatic duct, its use (excluding the question of its connexion with the internal ear) appears primarily to be a mechanical one, viz. for the purpose of maintaining a required level in the water and permitting the fish to rise or fall as desired.

In the majority of Carps (Cyprinina), in addition to the foregoing function, a pneumatic tube connects it with the pharynx, or upper portion of the alimentary canal, and also a chain of ossicles with the internal ear. In fact, it is employed both for hearing and flotation.

But in the Sheat-fishes (Siluridæ) the power of employing the air-vessel as a float appears to be subservient to that of hearing. Living, as they do, a life of ground feeders, this organ is more usefully restricted to acoustic purposes.

If we briefly consider where these fishes are found in Asia, it assists us in understanding this. Almost absent from the clear waters of the Red Sea³, they commence being numerous at the

¹ Journal Linnean Society, Zoology, vol. xiii. p. 138.

² The Anacanthini, having no solely freshwater representatives, do not call for remark.

³ *Arius thalassinus* and *Plotosus arab* are the only two species of Siluroids that have been recorded from the Red Sea.

more turbulent coasts of Beloochistan, at the mouths of the larger rivers and marine mud-flats off Sind and India, more especially Bengal and Burma. They are comparatively rare in the open sea; in fact at the Andamans they become scarce, except such species as reside where small streams empty themselves into muddy creeks. On the other hand, in the turbid sea near Moulmein and amongst the islands of the Mergui archipelago they abound.

In short, they resort to muddy waters; and in such places their feelers permit them to move about with ease, whilst their organs of hearing enable them to ascertain the vicinity of any enemy or the approach of some incautious prey.

We perceive the same thing amongst those inhabiting the fresh; the larger and muddier the rivers the more are they resorted to by Siluroids. Siluroids are found from the sea-coast to the base of the Himalayas; but as they generally deposit their ova in the waters of the plains, and not (like many Carps) in the rivers of the Subhimalayan range, they very sensibly diminish on nearing the hills. Still one or two species of *Callichrous* and a *Macrones* find their way into the hill-waters, where an *Amblyceps* and *Silurus*, as well as the mountain-torrent genera of *Pseudecheneis*, *Glyptosternum*, *Euglyptosternum*, and *Exostoma* find a congenial home. Those genera which are almost exclusively found in hill-streams are provided with an adhesive apparatus on the thorax, which, enabling them to adhere to stones, prevents their being carried away by the stream. As might be anticipated, their barbels are short, whilst in all the air-vessel is more or less enclosed in bone.

Reverting again to the air-vessel, we find it in Siluroids in two ways. In the marine forms it has an outer thick fibrous layer, and is attached to the lower surface of the bodies and transverse processes of some of the anterior vertebræ, whilst from it a chain of ossicles passes to the internal ear. As, however, we proceed inland or towards mountains a difference occurs, and in many genera the air-vessel becomes partially or entirely surrounded by bone. This may be effected by a trumpet-shaped extension of the lateral processes of the first or second vertebra, or else by an expansion of the most posterior of the auditory ossicles; but in either case the chain of bones is continued to the internal ear. The majority of those forms which have the air-vessels enclosed in a bony capsule being adapted to a mountain-torrent life leads me to conjecture that such may have some connexion with sound;

certainly such an organ, being almost incapable of expansion, would scarcely be of much service as a compressible float.

These fishes are generally well provided with weapons of offence¹ or defence; they have mostly strong dorsal and pectoral spines, often serrated and with which they can inflict dangerous wounds. This spinal armature is invariable in the marine and estuary forms, as there they are most called upon to resort to offensive or defensive measures. The auditory apparatus is more developed in the inland genera, where, instead of having to battle for their existence, they become the tyrants of the waters they inhabit.

Whether any East-Indian genera of Siluroids possess a distinct poison-apparatus or gland connected by a duct to a wound-inflicting-spine has not as yet been proved. But that most dangerous symptoms are occasioned by their dorsal and pectoral spines, is known not only to men but even to the lower animals.

On June 18th, 1869, I was present in Burma when the famous *Ken-gay-gyee* lake was fished, which is done by placing a stationary weir across the water (which is a sort of river encircling an island); and a movable one is with great labour dragged up to it by large gangs of men, whose labours are continued for months. The final point had now been reached; and all round this enclosure nets were reared to about ten feet above the water to prevent the fish escaping², and which the captives, wild with alarm, were trying to

¹ Laws have been enacted in several countries rendering it penal to bring these fishes to the markets for sale with their spines intact. Omitting any consideration of the state of the health of the individual wounded, we find fishes occasion three distinct varieties of wounds:—

a. Punctured wounds inflicted by a spine destitute of a poison-gland or duct, as seen in the European Weevils (*Trachinus*) or the East-Indian *Polyacanthus*. But as distinct irritating effects extend for some distance from the wounded spot, and remain for a considerable period, it seems questionable whether some mucous or other substance causing these symptoms may not be present on the spine.

β. Lacerated wounds, such as may be caused by the dorsal or pectoral spines of Siluroids or the serrated spine on the tail of the Skates. In these cases also irritation may be occasioned by some mucous secretion.

γ. Poisoned wounds. The Siluroid *Thalassophryne* has been shown to have a distinct poison-gland leading up a canal existing in a serrated spine by which the wound is inflicted (Günther, P. Z. S. 1864, p. 155). The *Synanceia verrucosa* has also been shown to have a tube at each of its dorsal spines and a poison-gland at its base. The wounds, as might be anticipated, are very venomous.

² Salt for preserving them had not arrived.

jump over. Pelicans and cormorants were numerous and constantly devouring the spoil; but it was very curious to see how when fish sprang out of the water the birds opened their mouths, but sheered off to a respectful distance, evidently dreading the fall of the spined Siluroids on themselves. I have taken the sea-snake (*Enhydrina*) with the pectoral spine of an *Arius* projecting through its integuments from the intestinal canal.

There is also a difference perceptible in the manner in which some at least of Siluroids deposit their eggs. The marine and estuary *Arius* and its allies have large eggs; and as they are frequently found in the mouths of the males, whilst their intestines are destitute of food, it appears probable that they either carry them about in that manner for protection until hatched, or else remove them from what they consider to be a dangerous locality¹. In the freshwater species, on the contrary, we find the eggs very small; and the difference between those of the marine *Arius* and freshwater *Macrones* is very striking.

Regarding their respiration, I have already pointed out² that some, as *Saccobranchus* and *Clarias*, are truly amphibious, whereas I have no reason for believing that any of the other genera of Siluroids in India are so.

Amongst the Siluridæ, we know of thirty-one genera represented in India, Burma, and Ceylon; and of these we have twenty-six wholly or entirely confined to fresh water.

1. **MACRONES**³, *Dumeril*. The fishes of which this extensive genus is comprised extend through most parts of Asia, more especially in the tropics. They are numerous in the fresh waters of Sind, the whole of Hindustan, Ceylon, and Burma, and are common through Siam to the Malay archipelago.

2. **LIOCASSIS**⁴, *Bleeker*. Eastern Bengal and Assam to the Malay archipelago.

3. **ERETHISTES**⁵, *Müller & Henle*. These small fishes are found from Orissa and Bengal, through Assam and Burma. M'Clelland also records a species from Chusan.

4. **RITA**⁶, *Bleeker*. These fishes are found in the Indus and

¹ See paper by Prof. Turner, Camb. Jour. of Anat. and Zool. vol. i. p. 78.

² Journal Linn. Soc. Zool. vol. xiii. No. 68, p. 198.

³ Includes:—*Bagrus*, pt., Cuvier & Valenciennes; *Hypselobagrus*, *Hemibagrus*, *Pseudobagrus*, and *Aspidobagrus*, Bleeker.

⁴ Includes *Rama*, Bleeker; and see note to species.

⁵ Includes *Hara*, Blyth.

⁶ Includes *Gogrius*, Day.

its affluents, in the Jumna and Ganges, also in the Irawaddi in Burma to far above Mandalay.

5. *PANGASIVS*¹, *Cuvier & Valenciennes*. Larger rivers and estuaries of India and Burma to the Malay archipelago.

6. *PSEUDEUTROPIUS*², *Bleeker*. These fishes are common in the waters of Sind, India, Ceylon, and Burma, but at the Malay archipelago appear to be represented by a single species.

There is a very similar genus (*Eutropius*) separated from the foregoing owing to the position of its two pairs of mandibular barbels, the pair on either side being anterior to the inner ones, whereas in *Pseudeutropius* they arise on a transverse line.

All authenticated specimens of *Eutropius* are African; but one species, said to have come from India, was purchased in Liverpool and is in the British Museum. There is no other record of this one having been found in Africa, neither has it been brought from India by any other party; and, until rediscovered, the land which gave it birth may fairly be considered an open question.

Pseudeutropius, on the contrary, has not been found in Africa; and I believe that our present knowledge only warrants our considering the one genus African, the other Asiatic. I should mention here that a fossil fish has been discovered in the tertiary formation at Sumatra (deficient of its head), and has been assigned to this genus (Günther, Geol. Mag., Oct. 1876).

7. *OLYRA*³, *McClelland*. These small fishes appear to be restricted, so far as we know, to the hills in Upper Assam and Pegu.

8. *CALlichrous*⁴, *Hamilton Buchanan*. Sind, India, Ceylon, Burma to the Malay archipelago and China.

9. *WALLAGO*, *Bleeker*. Sind, India, Ceylon, Burma to the Malay archipelago.

10. *SILURUS*⁵, *Artedi*. From Eastern Europe and Turkestan, along the Himalayas to Akyab, Tenasserim, Cochin China, the Malay archipelago, and China; also along the hills of the Malabar coast of India.

¹ Includes *Pseudopangasius* and *Helicophagus*, *Bleeker*.

² Includes *Chupisoma*, *Swainson*, *Schilbeichthys*, *Bleeker*.

³ Includes *Branchiosteus*, *Gill*.

⁴ Includes:—*Ompok*, *Lacépède*; *Kryptopterus*, *Kryptoptericthys*, *Micronema*, *Phalacronotus*, *Hemisilurus*, *Silurodes*, *Pseudosilurus*, and *Silurichthys*, *Bleeker*; *Pterocryptes*, *Peters*.

Parasilurus, pt., *Bleeker*.

11. CHACA, *Cuvier & Valenciennes*. Bengal, Assam, and Burma to the Malay archipelago.

12. CLARIAS¹, *Gronovius*. These amphibious fishes are found throughout Africa and Western Asia to India, Ceylon, Burma, Siam, the Malay archipelago, Hongkong, the Philippines, and beyond.

A nearly allied genus (*Heterobranchus*) is found in Africa; and Bleeker has discovered a species of it in the Malay archipelago.

13. SACCOBRANCHUS², *Cuvier & Valenciennes*. These are likewise amphibious fishes, but not found in Africa. They frequent the fresh waters of India, Ceylon, Burmah, to Cochin China, but have not been recorded from the Malay archipelago.

14. SILUNDIA, *Cuvier & Valenciennes*. These fishes frequent the large rivers of India and Burma.

15. AILIA, *Gray*. Sind, the larger rivers of the Punjab, N.W. Provinces, Bengal, Orissa, and Assam.

16. AILICHTHYS, *Day*. Indus and Punjab rivers, also Ganges and Jumna.

17. EUTROPICHTHYS, *Bleeker*. Large rivers of India and Burma.

18. AMBLYCEPS, *Blyth*. Himalayas, valley of the Ganges, Eastern Bengal, to Burma.

19. SISOR, *Hamilton Buchanan*. Indus, Jumna, and Ganges rivers.

20. GAGATA³, *Bleeker*. Sind, India (except its northern portion), Assam, and Burma.

21. NANGRA, *Day*. Sind, Deccan, N.W. Provinces, and Bengal.

22. BAGARIUS, *Cuv. & Valenciennes*. Larger rivers of India and Burma to Java.

23. GLYPTOSTERNUM⁴, *McClelland*. Hill-streams and rapid rivers of the plains of the Himalayan region, and India, to the Malay archipelago. Fishes of this genus are provided with an adhesive apparatus consisting of longitudinal folds of skin and placed between the bases of the pectoral fins on the thorax.

24. EUGLYPTOSTERNUM⁵, *Bleeker*. Syria, upper portions of

¹ Includes:—*Macropteronotus*, Lacépède; *Cossyphus* and *Phagorus*, McClelland.

² Includes *Heteropneustes*, Müller.

³ Includes:—*Batassio*, pt., Blyth; *Callomystax*, Günther.

⁴ Includes *Glyptothorax*, Blyth.

⁵ Includes *Aglyptosternon*, Bleeker.

the Jumna, and Upper Assam. This genus possesses an adhesive thoracic sucker, as in the last.

25. *PSEUDECHENEIS*, *McClelland*. Head waters of the Ganges and on the Himalayas, also the Khasya hills. Fishes of this genus have a very well-developed adhesive sucker on the chest, composed of transverse folds of skin.

26. *EXOSTOMA*¹, *Blyth*. Head waters of Indus, along the Himalayas and hilly districts to Assam, Pegu, Tenasserim, and the confines of China. Although these fishes have no adhesive sucker on their tuberculated chest, it is flattened, while the pectoral and ventral fins are evidently adapted for adhesion.

Examining the foregoing genera composing the freshwater Siluroids of India, we find that, of the 26 genera, 10 reach the Malay archipelago, 6 are restricted to India on the west, 6 to India and Burma, whilst *Erethistes* extends to China, *Saccobranchus* to Cochin China; and *Clarias* ranges from Africa, through Syria and India, to the Malay archipelago and beyond.

In short, out of 26 genera, 11 have Malayan and Chinese representatives, whilst only 1 has African; and this genus is common to the Malay archipelago.

I will now follow out the geographical distribution of each species, so far as such have been as yet recorded or have fallen under my own observation.

Genus MACRONES.

1. *MACRONES CHRYSÆUS*, *Day*. Rivers in Canara and Malabar.

2. *M. AOR*², *Hamilton Buchanan*. Throughout the fresh waters of Sind, India, Assam, and Burma.

3. *M. SEENGHALA*³, *Sykes*. Sind, Salt range of Punjab, the Jumna and Ganges rivers, certainly as low as Delhi; the Deccan and Kistna river to its termination.

4. *M. BLYTHII*⁴, *Day*. Tenasserim.

5. *M. GULIO*⁵, *Hamilton Buchanan*. This is the only Indian species of this genus recorded as from the sea; it frequents estu-

¹ Includes *Chimarrichthys*, Sauvage.

² Includes:—? *Bagrus aorinus*, Val.; *B. aorides*, Jerdon.

³ Includes:—*Bagrus Lamarrii*, Cuv. & Val.; *B. aorellus*, Blyth.

⁴ Includes *Batasio affinis*, Blyth.

⁵ Includes:—*Bagrus albilabrus*, *fuscus*, *Birmannus*, and *abbreviatus*, Cuv. & Val.; *B. gulioides*, *melas*, *Schlegelii*, and *rhodopterygius*, Bleeker.

aries and tidal pieces of water as far as the Malay archipelago. Its ova are small, and like what obtain in the rest of the genus, and not similar to the large ova of the marine *Arius* and its allies.

6. *M. PUNCTATUS*, *Jerdon*. Bowany river at base of the Neilgherries in Madras.

7. *M. CORSULA*¹, *Hamilton Buchanan*. From Orissa, through Bengal and Assam.

8. *M. MICROPTHALMUS*, *Day*. Burma, along the course of the Irrawaddi.

9. *M. CAVASIUS*², *Hamilton Buchanan*. From Sind, throughout India, Assam, and Burma.

10. *M. TENGARA*³, *Hamilton Buchanan*. Northern India, Punjab, and Assam.

11. *M. OCULATUS*, *Jerdon*. Malabar coast and Coimbatore district.

12. *M. VITTATUS*⁴, *Block*. Sind, Indian Assam, Burma, Siam, and also Ceylon.

13. *M. LEUCOPHYSIS*, *Blyth*. Rivers of Burma.

14. *M. MONTANUS*⁵, *Jerdon*. Wynaad range of hills in Madras.

15. *M. KELETIUS*, *Cuv. & Val*. Madras and inland to Mysore and Coimbatore; also Ceylon.

16. *M. MALABARICUS*, *Day*. Malabar coast of India.

17. *M. ARMATUS*, *Day*. Malabar coast and western Ghauts.

18. *M. BLEEKERI*⁶, *Day*. Sind, Jumna, Ganges, and Burma.

Of the foregoing 18 species of *Macrones*, 2 have barbels not longer than the head, one (No. 1) is restricted to the Malabar coast, the second (No. 4) to Tenasserim. In all of the others the feelers reach at least to the ventral fin.

The following shows their distribution :—3 Malabar and west-

¹ Includes :—*Pimelodus menoda*, Ham. Buch. ; *Bagrus trachacanthus*, Cuv. & Val.

² Includes *Pimelodus seengtee*, Sykes.

³ Includes :—*Pimelodus batasius*, Ham. Buch. (figure, not description) ; ? *P. anisurus*, M'Clelland.

⁴ Includes :—*Pimelodus carcio*, Ham. Buch. ; ? *P. indicus*, M'Clelland ; *Bagrus affinis*, Jerdon.

⁵ Includes ? *Bagrus agricolus*, Jerdon.

⁶ Includes :—*Bagrus keletius*, Bleeker ; ? *B. tengara*, var., Blyth.

ern Ghauts; 4 western Ghauts or their bases, or through Mysore to Madras; 3 Sind, India, Assam, and Burma (1 also in Ceylon); 1 Deccan, Jumna, and Ganges rivers; 1 Sind, Jumna, Ganges, and Burma; 1 Northern India and Assam; 1 Bengal, Orissa, and Assam; 2 Burma; 1 Tenasserim; 1 coasts of Sind, India, Ceylon, and Burma.

Thus, if we exclude the half-marine *Macrones gulio*, we find 7 restricted to Malabar and Madras; 1 to the Deccan, Jumna, and Indus; 4 Indus, Ganges, Jumna. Brahmaputra, and Burma rivers; 2 locally in Bengal and Assam; 3 Burma.

Genus LEOCASSIS.

1. L. RAMA¹, *Hamilton Buchanan*. Eastern Bengal and Assam.

Genus ERETHISTES.

1. E. HARA², *Hamilton Buchanan*. Orissa, Bengal, Assam, and Burma.

2. E. CONTA³, *Hamilton Buchanan*. Eastern Bengal, Assam, and Burma.

3. E. JERDONII, *Day*. Sylhet.

4. E. ELONGATA, *Day*. Naga hills.

These four species have a somewhat confined distribution, 2 extending from Orissa throughout Bengal, Assam, and Burma, and 2 being confined to the hills in the vicinity of Assam.

Genus RITA.

1. R. BUCHANANI⁴, *Bleeker*. Indus, Jumna, and Ganges rivers and their affluents, Burma.

2. R. PAVIMENTATA⁵, *Val*. Deccan and Kistna river to its termination.

3. R. CHRYSEA, *Day*. Orissa.

4. R. HASTATA⁶, *Val*. Deccan and Kistna river to its termination.

¹ Includes:—? *Pimelodus chandramara*, Ham. Buch.; *Silonia diaphina*, Swainson; *Rama Buchananii*, Bleeker.

² Includes:—*Erethistes pusillus*, Müller & Troschel; *Hara Buchananii*, Blyth.

³ Includes *Hara filamentosa*, Blyth.

⁴ Includes:—*Pimelodus rita*, Ham. Buch.; *Arius ritoides*, Cuv. & Val.; *Rita crucigera* (Owen), Günther.

⁵ Includes:—*Phractocephalus gogra*, Sykes; *Gogrius Sykesii*, Day.

⁶ Includes:—*Arius pumilus*, Val. (young); *Phractocephalus kuternce*, Sykes.

1 species is spread through the region of the Indus, Jumna, and Ganges rivers to Burma, 2 through the Deccan and Kistna river, and 1 appears to be restricted to Orissa.

Genus PANGASIUS.

1. *P. BUCHANANI*¹, *Cuvier & Valenciennes*. Large rivers of India, Assam, Burma, and perhaps the Malay archipelago.

Genus PSEUDEUTROPIUS.

1. *P. GOONGWAREE*², *Sykes*. Deccan, upper waters of Ganges and Jumna, Burma.

2. *P. TAAKREE*³, *Sykes*. Rivers of the Deccan and the Jumna.

3. *P. ACUTIROSTRIS*, *Day*. Rivers of Burma.

4. *P. MURIUS*⁴, *Hamilton Buchanan*. Rivers of Sind, Jumna, and rivers of Bengal and Orissa; also Assam.

5. *P. SYKESII*⁵, *Jerdon*. Malabar coast of India.

6. *P. ATHERINOIDES*⁶, *Bloch*. Sind, India (excluding the western coast and Assam).

7. *P. GARUA*⁷, *Hamilton Buchanan*. Throughout the larger rivers of Sind, India (except its most southern portion and the western coast), Assam, and Burma.

Of the foregoing seven species, 1 is spread through the Indus, Jumna, and Ganges to Bengal, Orissa, and Assam; 1 the same, but continued to Burma; 1 Sind, India (excluding the western coast), and Assam; 1 Deccan, Ganges, and Jumna, also Burma; 1 locally in Malabar; 1 restricted to Burma; and 1 restricted to the Malabar coast.

Thus 2 Indian forms are found in Burma; 1 Burman form appears to be restricted to that country, but to be a representative of an Indian form which does not extend to Burma.

Genus OLYRA.

1. *O. LONGICAUDA*, *McClelland*. Khasya hills.

¹ Includes:—*Pimelodus pangasius*, Cuv. & Val.; ? *P. djambal*, Bleeker.

² Includes *Eutropius macrophthalmus*, Blyth.

³ Includes *Pseudeutropius longimanus*, Günther.

⁴ Includes:—*Pachypterus melanurus*, Swainson; ? *Pseudeutropius megalops*, Günther.

⁵ Includes *Pseudeutropius Mitchelli*, Günther.

⁶ Includes:—*Pimelodus anguis* and *urua*, Ham. Buch.; *Pachypterus trifasciatus*, Swainson; *Bagrus exodon*, Bleeker.

⁷ Includes *Clupisoma argentata*, Swainson.

2. *O. BURMANICA*, *Day*. Pegu hills.

3. *O. LATICEPS*, *McClelland*. Khasya hills.

2 of these species are locally restricted to Assam and 1 to Pegu.

- Genus *CALlichthous*.

1. *C. GANGETICUS*, *Peters*. Ganges.

2. *C. SINDENSIS*, *Day*. River Indus.

3. *C. BIMACULATUS*¹, *Bloch*. Fresh waters of Sind, India, Ceylon, Assam, and Burma, to the Malay archipelago and beyond.

4. *C. PABO*², *Hamilton Buchanan*, Jumna and Ganges rivers, and Burma.

5. *O. MACROPHthalmus*³, *Blyth*. Madras, Assam, and Burma.

6. *O. MALABARICUS*, *Cuvier & Valenciennes*. Malabar coast of India.

7. *O. PABDA*⁴, *Hamilton Buchanan*. Indus and its affluents, Ganges, Jumna, Brahmaputra, and also Orissa.

These 7 species have a peculiar distribution: 1 is found from Sind through India and Ceylon to the Malay archipelago and beyond; 1 Indus, Ganges, Jumna, and Brahmaputra to Burma; 1 Ganges and Jumna and to Burma; 1 Madras, Assam, and Burma; 1 locally to Sind; 1 Malabar; 1 Ganges.

Genus *WALLAGO*.

1. *W. ATTU*⁵, *Bloch*. Throughout Sind, India, Ceylon, Assam, and Burma.

Genus *SILURUS*.

1. *S. WYNAADENSIS*, *Day*. Western Ghauts of India.

2. *S. AFGHANA*⁶, *Günther*. From Afghanistan along the Himalayas to Darjeeling.

¹ Includes:—*Ompok siluroides*, Lacépède; *Silurus checkra*, *canius*, and *duda*, Ham. Buch.; *S. microcephalus* and *mysoricus*, Cuv. & Val.; *Callichrus immaculatus*, *nebulosus*, and *affinis*, Swainson; *Silurus indicus*, McClelland; *Schilbe pabo*, Sykes; *Phalacronotus siluroides*, Bleeker; *Callichrous ceylonensis*, Günther.

² Includes *Callichrous nigrescens*, Day. ³ Includes *Callichrous notatus*, Day.

⁴ Includes:—*Silurus anastomus*, Cuv. & Val.; *S. lamghur*, Heckel; *Callichrus vittatus*, Swainson; *Cryptopterus latovittatus*, Playfair; *Callichrous Egertonii*, Day.

⁵ Includes:—*Silurus boalis*, Hamilton Buchanan; *S. wallago* and *asotus*, Cuv. & Val.; *Callichrus macrostomus*, Swainson; *Silurus Mülleri*, Bleeker; *Wallagoo Russellii*, Bleeker.

⁶ Includes *Silurus Dukai*, Day.

3. *S. COCHINCHINENSIS*¹, *Cuv. & Val.* Hills above Akyab, also Tenasserim to Cochin China.

Of these three species, 1 appears to be found along the Himalayas from Afghanistan to at least Darjeeling; 1 is spread from the hills above Akyab to Tenasserim and Cochin China; whilst the third is confined to the western Ghauts on the Malabar coast up to about 2500 feet elevation.

Genus CHACA.

1. *C. LOPHIOIDES*², *Cuvier & Valenciennes.* Ganges, Brahmaputra, and Irrawaddi rivers.

Genus CLARIAS.

1. *C. TEYSMANNI*³, *Bleeker.* Ceylon, Java.

2. *C. DUSSUMIERI*⁴, *Cuv. & Val.* Coasts of India and the Malay archipelago.

3. *C. MAGUR*⁵, *Hamilton Buchanan.* Throughout India and Burma to the Malay archipelago.

4. *C. ASSAMENSIS*, *Day.* Assam.

Of the 4 species of *Clarias*, 1 is generally distributed through India and Burma to the Malay archipelago; 1 Malabar and Madras to the Malay archipelago; 1 Ceylon and the Malay archipelago; 1 restricted to Assam.

Genus SACCOBRANCHUS.

1. *S. MICROPS*, *Günther.* Ceylon.

2. *S. FOSSILIS*⁶, *Bloch.* Fresh waters of Sind, India, Ceylon, Assam, Burma, and Cochin China.

Genus SILUNDIA.

1. *S. SYKESII*⁷, *Day.* Rivers of Deccan and throughout the Kistna and Godavery.

¹ Includes *Silurichthys Berdmorei*, Blyth.

² Includes:—*Platystacus chaca*, Hamilton Buchanan; *Chaca Buchananii*, Günther.

³ Includes? *Clarias brachysoma*, Günther.

⁴ Includes *Clarias melanosoma*, Bleeker.

⁵ Includes:—*Silurus batrachus*, Bloch; *S. anguillaris*, Russell; *Clarias marpus* and *punctatus*, Cuv. & Val.

⁶ Includes:—*Silurus singio*, Ham. Buch.; *S. laticeps* and *biserratus*, Swainson; *Saccobranhus microcephalus*, Günther.

⁷ Includes? *Ageneiosus childreni*, Sykes.

2. *S. GANGETICA*¹, *Cuv. & Val.* .Larger rivers of India and Burma.

Of these two species, 1 appears to be restricted to the Deccan rivers, the other is spread through the larger rivers of India and Burma.

Genus *AILIA*.

1. *A. COILA*², *Hamilton Buchanan*. Sind, the large rivers of the Punjab, N.W. Provinces, Bengal, Orissa, and Assam.

Genus *ALLIICHTHYS*.

1. *A. PUNCTATA*, *Day*. Indus, rivers of the Punjab, and upper portions of the Ganges and Jumna.

Genus *EUTROPICHTHYS*.

1. *E. VACHA*³, *Hamilton Buchanan*. From the Punjaub, through the large rivers of Sind, Bengal, and Orissa; whilst a variety (*E. Burmanicus*) is found in Burma.

Genus *AMBLYCEPS*.

1. *A. MANGOIS*⁴, *Hamilton Buchanan*. Along the Himalayas commencing at the Punjaub, in the Jumna for some considerable distance from the hills, also through Burma to Moulmein.

Genus *SISOR*.

1. *S. RHABDOPHORUS*, *Hamilton Buchanan*. Indus, Ganges, and Jumna rivers, as low as Bengal and Behar.

Genus *GAGATA*.

1. *G. CENIA*⁵, *Hamilton Buchanan*. Indus, Ganges, and Jumna rivers; also rivers of Orissa and Burma.

2. *G. ITCHKEEA*, *Sykes*. Rivers of the Deccan.

3. *G. BATASIO*, *Ham. Buch.* River Testa.

4. *G. TENGANA*, *Ham. Buch.* Assam.

¹ Includes;—*Pimelodus silondia*, Ham. Buch.; *Silonia lurida*, Swainson.

² Includes:—*Silurus Cuvieri*, Gray; *Malapterus bengalensis*, Gray; *Acanthonotus Hardwickii*, Gray; *Ailia affinis*, Günther.

³ Includes *Pachypterus punctatus*, Swainson.

⁴ Includes:—*Amblyceps cæcutiens* and *A. tenuispinus*, Blyth; *Akysis Kurzii*, Day.

⁵ Includes:—*Pimelodus gagata*, Ham. Buch.; *Gagatatypus*, Bleeker.

Genus NANGRA.

1. *N. BUCHANANI*¹, Day. Indus, Ganges, and Jumna rivers.
2. *N. PUNCTATA*, Day. Sone river.
3. *N. IRIDESCENS*, Ham. Buch. North Bengal and Deccan.

Genus BAGARIUS.

1. *B. YARRELLII*², Sykes. Large rivers of Sind, India, and Burma to the Malay archipelago.

Genus GLYPTOSTERNUM.

1. *G. LONAH*³, Sykes. Poona and rivers of Deccan, also the Jumna near its upper portion.
 2. *G. TRILINEATUM*⁴, Blyth. Nepaul, Burma, and Tenasserim.
 3. *G. CONIROSTRE*, Steindachner. Himalayas from affluents of the Indus and Jumna, as at Kangra and Simla.
 4. *G. BOTIA*, Hamilton Buchanan. From the Jumna after it leaves the Himalayas; common about Delhi.
 5. *G. TELCHITTA*, Hamilton Buchanan. Ganges and Jumna rivers from the Himalayas as low as Bengal and Behar.
 6. *G. STRIATUM*, M'Clelland. Khasya hills in Assam.
 7. *G. MADRASPATANUM*⁵, Day. Bowany river at the foot of the Neilgherry hills.
 8. *G. PECTINOPTERUM*⁶, M'Clelland. Himalayan region from affluents of the Indus, Jumna, and Ganges; found from Nangra and Simla to certainly as far as Darjeeling.
 9. *G. CAVIA*, Hamilton Buchanan. Rivers of northern Bengal.
- These fishes appear to have a somewhat local distribution, 1 species being restricted to the Jumna and Deccan, one to southern Madras, 3 to the Himalayas (one of which is likewise found in Burma), 1 to the Khasyas in Assam, and 3 to the Jumna, Ganges and rivers of northern Bengal.

¹ Includes *Pimelodus nangra*, Ham. Buch.

² Includes:—*Pimelodus bagarius*, Ham. Buch.; *P. platespogon*, Val.; *P. carinatus*, Jerdon; *Bagarius Buchananii*, Bleeker.

³ Includes *G. dekkanense*, Günther.

⁴ Includes *G. gracile*, Günther.

⁵ I cannot detect any air-vessel in this species.

⁶ *G. Stoliczkae*, Steindachner (adult); *G. modestum*, Day (young)

Genus EUGLYPTOSTERNUM.

1. *E. LINEATUM*, *Day*. Head waters of the Jumna. Upper Assam, from the neighbourhood of the Himalayas.

Genus PSEUDECHENEIS.

1. *P. SULCATUS*, *McClelland*. Darjeeling and Khasya hills.

Genus EXOSTOMA.

1. *E. LABIATUM*, *McClelland*. Mishmee Mountains in East Assam.

2. *E. BLYTHII*, *Day*. Darjeeling.

3. *E. BERDMOREI*, *Blyth*. Tenasserim.

4. *E. STOLICZKÆ*, *Day*. Head waters of Indus.

The foregoing 85 species of Indian freshwater Siluroid fishes are thus distributed.

Indian region ¹	1
" to Malay archipelago	5
" (excluding Sind) to Burma	5
" Ceylon and Burma	1
" (excluding Southern India and Malabar)	
to Burma	2
" (excluding Southern India and Malabar)	
to Assam	1
" (excluding Southern India and the Deccan)	
to Assam	3
" (excluding Southern India and the Deccan)	
to Burma	2
" to Cochin-China	1
Indus, Ganges, and Jumna rivers	3
Indus	1
Ganges, Jumna, and the Deccan	4
" " to Burma	1
Deccan	4
Bengal	6
Bengal, Orissa, and Assam	1
" " to Burma	1
Bengal, and Assam to Burma	3
" " " "	1
" " " " and Burma	2
Himalayan region	6
" " and Burma	1

¹ This includes India, Sind, and the Punjab only.

Burma	1
„ and Cochin-China	1
Assam	8
Orissa	1
Madras, Assam, and Burma	1
Base of Neilgherry hills in Madras	2
South India and Malabar	1
„ Ceylon	1
Ceylon	1
„ and Java	1
West coast of India and Malay archipelago	1
„ „	6
„ „ and Coimbatore	1

The foregoing shows that the 78 species are restricted to the Indian region (including Burma and Ceylon); 6 are distributed from the Indian region (excluding Ceylon) to the Malay archipelago, and 1 extends from Ceylon to the Malay archipelago. Consequently we find no species of Indian freshwater Siluroid extending its range to Africa, whereas 6 do to the Malay archipelago.

Of the genera, as I have already remarked, only 1 is common to India and Africa, whilst that is also found in the Malay archipelago, which possesses 10 more Indian genera.

So far, results would appear to show us that the present race of freshwater fishes of India is much more closely related to a Malayan than it is to an African fish-fauna.

Notes on the Genus *Alveolites*, Lamarck, and on some allied Forms of Palæozoic Corals. By Prof. H. ALLEYNE NICHOLSON, M.D., D.Sc., F.R.S.E., F.L.S., and ROBERT ETHERIDGE, Jun., F.G.S.

[Read May 3, 1877.]

(PLATES XIX. & XX.)

WE have recently had occasion to examine a large series of specimens of that group of corals to which the name of "*Alveolites*" is generally given, as well as of various allied forms, from the Carboniferous rocks of the north of England and south of Scotland, the Devonian rocks of Devonshire and North America, and