THE FRESH-WATER FISHES OBTAINED BY THE GRAY AFRICAN EXPEDITION—1929. WITH NOTES ON OTHER SPECIES IN THE ACADEMY COLLECTION

BY HENRY W. FOWLER.

On his recent expedition to Equatorial Africa, Mr. Prentiss N. Gray, accompanied by Mr. W. W. Bowen representing the Academy as field collector, secured several valuable lots of fresh-water fishes. The specimens obtained number upwards of 550, representative of 25 species. They are of exceptional interest on account of the comparatively large number new to science, amounting to nearly half of those collected. These are as follows:

Micralestes	luluae	\mathbf{new}	species
Characidae			

Petersius cadwaladeri new species —Characidae

- Labeo luluae new species—Cyprinidae
- Barbus evansi new species-Cyprinidae
- Barbus luluae new species-Cyprinidae
- Barilius boweni new species—Cyprinidae

- Engraulicypris luluae new species —Cyprinidae
- Dinotopteroides new genus-Clariidae
- Dinotopteroides prentissgrayi new species—Clariidae
- Aplocheilus luluae new species-Poeciliidae
- Anabas machadoi new species— Anabantidae
- Tilapia luluae new species—Cichlidae

Of these the type selected for each one is the largest specimen. The collections are from three localities, and represent entirely different hydrographic basins; they are as follows:

1. The Serronea River, a small tributary of the Mumusi River, itself tributary to Speke Gulf of Lake Victoria. This includes some small fishes, of three species, all known, and collected July 4, 1929.

2. The Lulua River, tributary to the Kasai River in the Congo basin. Though much smaller in bulk than the third lot of material, it is far richer in apparent new forms. The specimens are a small lot obtained in the headwaters of the Lulua about 30 miles west of Katende, in the province of Katanga, district of Lulua, which lies about 15 miles north of the Angola boundary, September 7, 1929.

3. The final and bulkiest part of the materials is from the Quanza River at Chouzo village in Angola, September 15–28, 1929. This locality is about 25 miles north of where the new Benguella Railroad crosses the Quanza River.

Not only is the Academy indebted to Mr. Gray for directing that these materials be secured for us, but also to Mr. Bowen for caring for them in the field. Due to Senhor José Augusto Machado's enthusiasm some interesting and important species were obtained in the Quanza, and to Mr. J. R. Evans credit is due for his interest in arranging with the natives to secure specimens for the expedition. Mention should also be made of Lieutenant Colonel Henry Greenwood, V. C., D. S. O., M. C., for valued assistance and contributing greatly to the success of the expedition. The list follows:

PART I. SPECIES COLLECTED BY THE GRAY AFRICAN EXPEDITION

MORMYRIDAE

Gnathonemus angolensis Boulenger.

Depth $3\frac{1}{2}$ to $3\frac{4}{5}$; head $3\frac{2}{5}$ to $3\frac{3}{4}$, width 2 to $2\frac{1}{4}$; snout 4 to $4\frac{2}{3}$ in head from snout tip; eye $4\frac{7}{8}$ to $5\frac{2}{5}$, $1\frac{1}{3}$ to $1\frac{1}{2}$ in snout, $1\frac{4}{5}$ to 2 in interorbital, lids not free; mouth width $4\frac{1}{2}$ to 6 in head from snout tip; teeth very small, simple, conic, 5 above, 5 or 6 below; interorbital $2\frac{7}{8}$ to 3, convexly elevated. Gill rakers 4+4, short points, $\frac{1}{5}$ of gill filaments, which equal eye. Scales 49 or 50+3 or 4 in lateral line; 9 above, 11 or 12 below, 42 to 44 predorsal though wide median area naked, 12 around caudal peduncle; caudal with basal half scaled; 25 to 28 radiating marginal striae, circuli fine. D. III, 21, I to III, 24, I, first branched ray 2 to $2\frac{1}{4}$ in total head length; A. III, 29, I or III, 30, I, first branched ray $1\frac{3}{4}$ to 2; caudal $1\frac{1}{2}$ to $1\frac{3}{5}$, deeply forked, lobes rounded; caudal peduncle depth $4\frac{1}{8}$ to $5\frac{1}{3}$; pectoral $1\frac{1}{3}$ to $1\frac{3}{5}$; ventral $2\frac{3}{5}$ to 3. Dusky or dark brown generally, variably mottled or blotched with darker to blackish. Fins dark gray, mottled with blackish. Iris slate. Length 77 to 133 mm.

Five, Chouzo, Quanza River, Angola.

Though Boulenger describes "A feeble mental swelling" and his figure shows the mandible only very slightly protruded, all my specimens have a strongly projecting mandible which is well swollen or adipose like.

CHARACIDAE

Hydrocyonoides odoe (Bloch). Fig. 1. Variable color pattern of head.

Depth $4\frac{1}{2}$ to $5\frac{1}{5}$; head $2\frac{3}{4}$ to $3\frac{1}{2}$, width $2\frac{3}{4}$ to 3; snout $2\frac{4}{5}$ to 3; eye $5\frac{2}{3}$ to $6\frac{2}{5}$, 2 to $2\frac{1}{3}$ in snout, $1\frac{1}{2}$ to 2 in interorbital; maxillary reaches little beyond eye with age, to hind pupil edge in young, length $1\frac{3}{4}$ to $1\frac{4}{5}$ in head; lateral mandibular dermal flap much larger in young, covers notch between premaxillary and maxillary; interorbital $3\frac{7}{4}$ to $4\frac{1}{2}$, nearly level, top of head rugose striate. Gill rakers 2 or 3 + 10, besides 4 or 5 more rudimentary tubercles above and below; length $1\frac{3}{4}$ in gill filaments which $\frac{4}{5}$ of eye. Scales 47 to 54 in lateral line to caudal base and 2 or 3 more on latter; 11 or 12 above, 8 below, 33 to 35 predorsal. Scales with 3 to 7 basal and 5 to 8 apical radiating striae; circuli fine. D. II, 7, I, first branched ray $1\frac{4}{5}$ to $2\frac{1}{5}$ in head; adipose fin $3\frac{7}{8}$ to $5\frac{1}{5}$; A. III, 9, I, first branched ray $1\frac{3}{4}$ to 2; caudal $1\frac{1}{4}$ to $1\frac{2}{5}$, deeply emarginate, lobes rounded or points broad; least depth of caudal peduncle $3\frac{1}{4}$ to $3\frac{3}{4}$; pectoral $1\frac{3}{4}$ to $2\frac{1}{5}$; ventral 2 to $2\frac{1}{3}$. Olive above, mottled with dusky to blackish brown, paler on lower sides. Under surfaces of head and body uniform whitish. Large examples with about 17 underlaid narrow vertical grayish bars. Small neutral

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slate to black spot at suprascapula. Four variable dusky bands radiate backward from eye on side of head. Vertical fins largely grayish, finely spotted with slate black. Adipose fin orange basally, greater terminal part black. Paired fins pale brownish to dusky gray. Length 145 to 395 mm.



FIG. 1. Hydrocyonoides odoe (Bloch) variable color pattern of head.

Four from the Quanza River, Chouzo, Angola. Gray African Expedition. Small *Barbus* taken from the gullet of one example.

The neglected Hydrocyonoides Castelnau, 1861, has priority over Sarcodaces Günther, 1864.

Micralestes luluae new species. Fig. 2.

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Depth $3\frac{2}{5}$ to $3\frac{4}{5}$; head $3\frac{2}{3}$ to $3\frac{2}{4}$, width 2 to $2\frac{1}{4}$. Snout $3\frac{1}{4}$ to $3\frac{3}{4}$ in head; eye 2³/₄ to 3, greater than snout or interorbital; adipose lid narrow or obsolete; maxillary reaches eye, length 23 to 3 in head; mouth wide, moderate, jaws even when closed; upper teeth biserial, 10 in outer row and 3 in inner, lower teeth 8 in outer row and 2 in inner, except last most all at least tridentate; interorbital $3\frac{1}{10}$ to $3\frac{1}{8}$, broadly convex; broad suborbitals entirely cover cheek. Gill rakers 6+8 or 9, lanceolate, $\frac{2}{3}$ of gill filaments, which $\frac{1}{2}$ of eye.

Scales 24 to 27 in lateral line to caudal base and 2 more on latter; 5 above, 2 below, 11 or 12 predorsal. Pectoral axil without scaly flap, though one in ventral axil. Lateral line extends along lower side of tail and lower caudal base. Scales with single transverse vertical stria and another crossing horizontally; circuli very fine, obsolete apically.

D. 11, 8, 1, first branched ray 11 in head; A. 111, 13, 1 to 111, 15, 1, first branched ray $1\frac{1}{5}$ to 2; caudal 1 to 1 1/10, well forked with even lobes; least depth of caudal peduncle $2\frac{4}{5}$ to $3\frac{1}{5}$; pectoral $1\frac{1}{5}$ to $1\frac{1}{2}$; ventral $1\frac{1}{2}$ to $1\frac{3}{5}$. Back olive and each scale more or less dusted with dusky marginally.

Head dusky brown above and dusky line or band extends medianly on back.

Muzzle neutral gray. Under half of body whitish. Iris whitish, with neutral gray shades. Dusky brown band from shoulder, narrow at first, widens behind until wider than pupil, but not quite so wide as eye on caudal peduncle and extends to caudal base medially. Fins all more or less grayish, lower paler. Dorsal tipped with dusky to blackish. Anal deep gray basally in front. Length 73 mm.



FIG. 2. Micralestes luluae new species. Type (upper), young (lower).

Type, No. 51715 A.N.S.P., Lulua River, Belgian Congo, September 7, 1929. Also 24 paratypes, same data, down to 29 mm. in length.

Diagnosis. Differs in its coloration from most known forms, perhaps more like that of *Micralestes urotaenia* Boulenger from South Cameroon. Named for the Lulua River, in which the species was discovered.

Petersius cadwaladeri new species. Fig. 3.

Depth $3\frac{1}{5}$ to $3\frac{2}{5}$; head $3\frac{2}{5}$ to $3\frac{2}{5}$, width $2\frac{1}{4}$ to $2\frac{2}{3}$. Snout $3\frac{1}{2}$ to $4\frac{1}{2}$ in head from snout tip; eye $2\frac{1}{5}$ to $2\frac{2}{5}$, greater than snout or interorbital; maxillary reaches $\frac{2}{5}$ in snout, length $2\frac{4}{5}$ to $3\frac{1}{5}$ in head from snout tip; mouth superiorly terminal, lower jaw well protruded; upper teeth biserial, lower jaw with single row of 8 tridentate teeth; interorbital $3\frac{1}{5}$ to $3\frac{2}{5}$, but little elevated; broad suborbitals entirely cover cheek. Gill rakers 6 + 12, lanceolate, equal gill filaments or $2\frac{1}{2}$ in eye.

Scales 28 to 31 in lateral line to caudal base and 2 or 3 more on latter; 5 above, 3 below, 13 or 14 predorsal; 2 rows on caudal base; lateral line imperfect or more or less incomplete. Scales with 8 to 12 radiating striae; circuli moderate.

D. 11, 8, 1, first branched ray 1 to $1\frac{1}{5}$ in total head length; A. 111, 21, 1 to 111, 23, 1, first branched ray $1\frac{1}{5}$ to $1\frac{4}{5}$; adipose fin 4 to 5; caudal $2\frac{1}{5}$ to $3\frac{2}{5}$ in combined head and body to caudal base; caudal peduncle depth $2\frac{1}{5}$ to $3\frac{1}{5}$ in total head length; pectoral $1\frac{2}{5}$ to $1\frac{1}{2}$; ventral $1\frac{2}{5}$ to $1\frac{3}{4}$. Pale brown, whitish or with silvery tinge below. Scales on back and sides dusted with dusky marginally. Iris slaty, with neutral black blotch above and below. Muzzle dusted with dusky. Blackish vertical botch behind shoulder about opposite middle of pectoral. Large blackish clavate blotch on caudal peduncle and tail axially. Fins all pale or grayish. Length 50 mm.



FIG. 3. Petersius cadwaladeri new species. Type.

Type, No. 51748 A.N.S.P., Lulua River, Belgian Congo, September 7, 1929. Also nine paratypes, same data. Length 32 to 43 mm.

Diagnosis. Known chiefly by its coloration, which approaches Petersius major Boulenger and Petersius pulcher Boulenger, both from the Cameroons. Both these species have fewer anal rays and the blackish blotches of different form, besides the posterior blotch extended out over the median caudal rays.

Named for Mr. C. M. B. Cadwalader, Managing Director of the Academy, and to whom I am indebted for much encouragement in ichthyology.

Distichodus maculatus Boulenger.

Depth $3\frac{3}{5}$ to $3\frac{2}{3}$; head $4\frac{3}{5}$ to $4\frac{7}{4}$, width $1\frac{2}{3}$ to $1\frac{3}{4}$; snout $2\frac{3}{5}$ to $2\frac{2}{3}$ in head; eye $3\frac{1}{2}$ to 4, $1\frac{2}{5}$ to $1\frac{1}{2}$ in snout, $1\frac{1}{3}$ in interorbital; mouth width $4\frac{2}{3}$ to $4\frac{4}{5}$; maxillary reaches $\frac{2}{3}$ to eye, $3\frac{1}{5}$ to $3\frac{1}{2}$ in head; teeth compressed, narrowly cuneate, each with outer keel, bifid, biserial above with 24 to 26 outer ones; lower teeth uniserial, like upper; lower lip wide, smooth, width $2\frac{1}{3}$ in eye; interorbital $2\frac{1}{2}$ in head, broadly convex; broad suborbitals nearly cover cheek, only very narrow naked strip along preopercle keel. Gill rakers 10 + 12, short points, $\frac{1}{4}$ gill filaments, which equal eye. Scales 58 to 60 in lateral line to caudal base and 5 to 7 more on latter; 9 or 10 above, 8 below, 27 to 29 predorsal. Caudal and adipose fin entirely covered with fine close set scales. Scales without basal striae; 67 to 79 slender, fine, rather long, subequal, uniserial apical denticles; basal circuli very fine. D. III, 14, I, first branched ray 1 in head; adipose fin length $2\frac{2}{5}$ to 3; A. II, 9, I, first branched ray $1\frac{3}{5}$ to $1\frac{4}{5}$; caudal $3\frac{4}{5}$ to $4\frac{1}{4}$ in combined head and body to cau-

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dal base, forked, upper lobe little longer; least depth of caudal peduncle $1\frac{4}{5}$; pectoral $1\frac{1}{4}$ to $1\frac{2}{5}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$. Back neutral or grayish olive, sides and below paler to whitish. Iris dusky brown. Snout and upper surfaces of head dark or neutral brown. Back and sides, until level with eye, with many rounded dusky or dark gray spots (quite pale blue gray where scales have fallen), all well scattered and their diameters less than pale interspaces. Over same areas at each row of scale junctures longitudinal slightly dusky lines. Dorsals and caudal grayish and on membranes of dorsal about 8 longitudinal or horizontal dark lines. Pectoral grayish. Ventral and anal whitish, or only faint olive tinge. Length 204 to 228 mm.

Two from the Lulua River, Belgian Congo.

CYPRINIDAE

Labeo rocadasi Boulenger.

Depth 4 to $4\frac{1}{4}$; head $3\frac{3}{5}$ to $3\frac{3}{5}$, width $1\frac{1}{2}$ to $1\frac{4}{5}$; snout 2 to $2\frac{1}{3}$; eye $3\frac{3}{5}$ to $5\frac{1}{2}$, $1\frac{1}{2}$ to 3 in snout, $1\frac{2}{5}$ to 3 in interorbital; mouth width $2\frac{3}{4}$ to $3\frac{1}{5}$ in head; lower lip broad, front edge with low fringe, lower surface with fine transverse plicae, hind edge with broad fleshy points; small concealed maxillary barbel $\frac{4}{5}$ of eye; interorbital $2\frac{1}{4}$ to $2\frac{3}{5}$, nearly level; suborbitals narrow. Gill rakers 10 + 65? fine slender points, $3\frac{3}{4}$ in gill filaments, which equal eye. Teeth 2, 4, 5–0, 5, 4, 2, without hooks, grinding surfaces broad. Scales 36 to 39 + 2 or 3 in lateral line; 7 above, 5 below, 13 or 14 predorsal; chest scales small; 21 basal and 65 apical radiating striae, circuli fine. D. III, 10, I or III, 11, I, first branched ray 4 to 4²/₅ in combined head and body to caudal base, slender simple entire rays flexible; caudal $3\frac{1}{8}$ to $3\frac{1}{2}$, deeply emarginate, slender lobes pointed; A. III, 5, 1, first ray $1\frac{1}{3}$ to $1\frac{1}{2}$ in head; caudal peduncle depth 2 to $2\frac{1}{5}$; pectoral 1 to $1\frac{1}{4}$; ventral $1\frac{1}{5}$ to $1\frac{2}{5}$. Dark brown above and on sides, below whitish. Iris yellowish or light olive. Fins all with rather dusky brown on membranes, rays paler. In young base of each scale on back and sides dark brown, emphasized as dark blotch at caudal base. Young with lower fins more whitish.

Eight paratypes. Lucalla River at railway station, Angola. 1910. Length 66 to 211 mm. Dr. W. J. Ansorge. In this species scars of the pearl organs occur in the young as well as half-grown and adults. They are developed, however, only on the snout.

Also two from the Quanza River, Chouzo, Angola. Length 186 to 227 mm. Gray African Expedition.

Labeo luluae new species. Fig. 4.

Depth 5; head $3\frac{1}{8}$, width $1\frac{2}{3}$. Snout $2\frac{7}{8}$ in head; eye 4, $1\frac{2}{5}$ in snout, $1\frac{2}{5}$ in interorbital, not visible in view from under surface of head though well exposed as seen from view of upper surface; maxillary reaches $\frac{4}{5}$ to eye, length $2\frac{7}{3}$ in head; front barbel very short, less than $\frac{1}{2}$ of pupil, hind barbel largely concealed in maxillary groove, its length $\frac{2}{3}$ of eye; lips broad, fleshy, papillose; no distinct mental disk; interorbital 3 in head; suborbitals very narrow. Gill rakers 8+28, subequal, lanceolate, $\frac{1}{3}$ of gill filaments, which $1\frac{1}{2}$ in eye.

Scales 32 in lateral line to caudal base and 2 more on latter; 4 above, 3 below, 10 predorsal; few scales on caudal base nearly large as others on

body; chest and breast apparently scaleless. Scales with 20 or 21 marginal radiating apical striae, 15 or 16 short marginal basal striae; circuli moderate.



FIG. 4. Labeo luluae new species. Type.

D. 111, 9, 1, first branched ray $1\frac{1}{4}$ in head; A. 111, 6, 1, first branched ray $1\frac{4}{5}$; caudal slightly longer than head, deeply emarginate; least depth of caudal peduncle 3 1/10 in head; pectoral $1\frac{2}{3}$; ventral $1\frac{3}{5}$.

Dusky olive brown generally, under surface of both head and body whitish. Iris slate. Lips and mouth disk whitish. Blackish band around end of snout about wide as pupil, crosses eye and opercle along side of body to caudal base, where more distinct though not ending in spots; its whole extent on body rather diffuse and ill defined. Both above and below scales all more or less with dusky to blackish edges. Fins all more or less uniformly grayish or only with dusky shading terminally. Length 45 mm.

Type, No. 51740, A.N.S.P., Lulua River, Belgian Congo, September 7, 1929.

Diagnosis. Though I have no specimens for comparison a strict adherence to Boulenger's description of Labeo parvus shows that species to apparently differ. Boulenger's figure shows and his description states that the eye is "nearer gill-opening than end of snout," likewise Nichols and Griscom's colored figure shows the same, while in my specimen the eye is distinctly nearer the snout tip than the hind opercle edge. The above authors also show the upper dorsal edge concave, while my specimen has it straight. Boulenger says "a small barbel, hidden in the folds at side of mount" while my specimen distinctly shows 2 on each side of the mouth and they are not evident in Nichols and Griscom's figure. Boulenger does not mention the black lateral band shown so contrasted as well as described by Nichols and Griscom. Though according to the structural characters Boulenger's description largely agrees Boulenger's figure shows 4 scales below the lateral line to the anal origin while my fish has but 3.

Named for the Lulua River.

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Barbus trimaculatus Peters.

Thirty-three from the Serronea River. Length 24 to 49 mm. The three black lateral spots variable and though the caudal spot always present the others are quite apt to be absent, especially in small specimens. Sometimes a fourth dark spot, always obscure, may be present at the suprascapula. A dusky or blackish spot, not known or mentioned by Boulenger, present on the body each side of the base of the first anal rays, evident at least in all the small specimens.

Barbus paludinosus Peters.

Series of 111 from the Serronea River. Length 26 to 59 mm. This species is known by comparatively small scales, about 36 to 40 in the entire lateral line. All have short barbels, much shorter than the eye. Four scales below the lateral line and anal fin origin and at least one row of small basal anal scales, not shown in Peters' figure as reproduced by Boulenger. All my examples show a small blackish spot, at least smaller than the pupil at the middle of the caudal base. The terminal half of the inner edge of the dorsal spine is rather coarsely serrated. Females but 42 or 43 mm. long gravid with ova.

Barbus evansi new species. Fig. 5.

Depth $3\frac{1}{2}$; head $3\frac{1}{2}$, width 2. Snout 4 in head; eye 4, equals snout, $1\frac{1}{3}$ in interorbital; maxillary reaches $\frac{3}{4}$ in snout; length 4 in head; closed jaws about even in front; front barbel $1\frac{2}{3}$ in eye, hind barbel $2\frac{2}{3}$ in head; interorbital $2\frac{3}{4}$, broadly convex; broad bony suborbitals entirely cover cheek to preopercle ridge. Gill rakers 1+4 short rudimentary points, barely $\frac{1}{5}$ of gill filaments, which $1\frac{2}{5}$ in eye.



FIG. 5. Barbus evansi new species. Type.

Scales 22 in lateral line to caudal base and 2 more on latter; 4 above, 3 below, 11 predorsal; dorsal with basal sheath of several large scales and

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FIG. 6. Barbus lujae Boulenger. Variation in color markings.

small scales on caudal and anal bases. Scales with 11 or 12 striae all radiating from center and 4 apical usually most distinct; circuli moderate.

D. III, 7, I, third simple ray enlarged and spinous with hind edge terminally serrate $\frac{3}{5}$ its extent, first branched ray $1\frac{1}{5}$ in head; A. III, 5, I, smaller than dorsal, first branched ray $1\frac{1}{2}$; caudal equals head, deeply emarginate or forked; least depth of caudal peduncle $2\frac{1}{5}$; pectoral $1\frac{2}{5}$; ventral $1\frac{1}{3}$, inserted opposite dorsal origin.

Back olive brown, sides below and under surface paler to whitish. Sides and back all more or less with obscure mottling of dusky to blackish, often as variable specks or blotches. An imperfect narrow dusky band or line from suprascapula to caudal base where ending in round blackish spot about size of pupil. Iris slate to whitish. Lips gray. Barbels brownish. Fins all pale, grayish to dusky terminally. Length 41 mm.

Type, No. 51780, A.N.S.P., Quanza River, Chouzo, Angola, September 15–28, 1929.

Diagnosis. Allied with *Barbus wellmani* Boulenger my species is distinguished by its very broad suborbitals covering the cheek and its large scales, also the conspicuous scaly basal dorsal and anal, besides its longer barbels. In the broad bony suborbitals it is perhaps exceptional, if not unique, among the great array of African barbels. Its color pattern, however, is somewhat suggestive of *Barbus wellmani*.

For Mr. J. R. Evans, who accompanied the Gray African Expedition while in Angola and whose knowledge of the country and its languages was invaluable to the success of the expedition.

Barbus lujae Boulenger. Fig. 6.

Seventeen from the Quanza River at Chouzo, Angola. Length 27 to 41 mm.

Barbus atromaculatus Nichols and Griscom from the Upper Congo and Barbus lineomaculatus Boulenger from southeast Africa, agree largely in coloration. Boulenger describes Barbus lujae from the lower Congo, and though its scales are given as $4\frac{1}{2}$ above and the same number below the lateral line, it is evident this latter count pertains to the middle of the belly. In no other way can I see that Boulenger's description really differs from that of Nichols and Griscom's Barbus atromaculatus. As this seems to show that my Quanza River specimens hardly differ from those of the Congo, I have identified all as one species. The accompanying figures will show some extent of the variation in color pattern.

Barbus luluae new species. Fig. 7.

Depth $4\frac{1}{3}$; head $3\frac{3}{4}$, width $1\frac{7}{3}$. Snout $3\frac{1}{2}$ in head; eye $3\frac{1}{3}$, little greater than snout, $1\frac{1}{4}$ in interorbital; maxillary reaches about $\frac{2}{3}$ in snout, length $4\frac{1}{2}$ in head; jaws nearly even or lower only very slightly shorter; front barbel $\frac{4}{5}$ of eye, hind barbel greater than eye or $2\frac{1}{4}$ in head; interorbital $2\frac{7}{5}$, broadly convex. Gill rakers 2+6 short weak points, scarcely $\frac{1}{5}$ of gill filaments, which $1\frac{2}{5}$ in eye. Scales 25 in lateral line to caudal base and 2 more on latter; 4 above, 3 below, 12 predorsal forward to occiput; little smaller scales on caudal peduncle base. Scales with 9 apical and 9 basal radiating striae, more or less reticulate on scale medially; circuli moderate.

D. 11, 8, 1, third simple ray slender and entire, first branched ray $1\frac{1}{5}$ in head; A. 111, 5, 1, first branched ray $1\frac{1}{2}$; caudal peduncle depth $2\frac{1}{5}$; pectoral $1\frac{2}{5}$; ventral $1\frac{1}{3}$; caudal $3\frac{1}{5}$ in combined head and body to caudal base.

Pale brownish, little lighter below. Opercle with silvery white reflections. Barbels pale. Back covered with pale dusky dots forming shaded appearance, scales variously with dark or dusky blotches forming mottled pattern. Along side, from side of snout, through eye to caudal base medially dusky band, made up of dusky dots and reflected on caudal base as small dusky blotch, though separated from dark lateral band on caudal peduncle. Dusky blotch on back before origin of dorsal and another opposite front of anal on adjacent portion of body. Length 44 mm.



FIG. 7. Barbus luluae new species. Type.

Type, No. 51740, A.N.S.P., Lulua River, Belgian Congo, September 7, 1929.

Diagnosis. Known among the smaller African species with slender third rudimentary dorsal ray by its long barbels and coloration. This combination with its separated blackish basal caudal spot appears unique.

For the Lulua River, where the species was obtained.

Barilius boweni new species. Fig. 8.

Depth $4\frac{2}{5}$ to 5; head $3\frac{2}{5}$ to $3\frac{3}{4}$, width 2 to $2\frac{1}{4}$. Snout $2\frac{7}{4}$ to $3\frac{1}{3}$ in head; eye $3\frac{1}{5}$ to $5\frac{1}{3}$, greater than snout in young to $1\frac{3}{4}$ with age, 1 to $1\frac{2}{3}$ in interorbital; maxillary to pupil, $2\frac{1}{4}$ to $2\frac{7}{4}$ in head; mouth moderately arched, lips narrow; interorbital $3\frac{1}{3}$ to $3\frac{3}{4}$, broadly convex; suborbitals broad, half cover cheek. Gill rakers 1+4 or 5, short, broad, low tubercles, greatly less than gill filaments, which $1\frac{1}{2}$ in eye. Pseudobranchiae small. Teeth, 1, 3, 4–5, 3, 1, hooked, with moderate grinding surfaces, at least on larger.

Scales in lateral line 42 to 44 + 2; 8 or 9 above, 3 or 4 below, 18 or 19 predorsal; each of paired fins with axillary scaly flap; cycloid, each with single basal radiating stria, 10 imperfect apically and circuli moderately fine.

D. 11, 9, 1, first branched ray $1\frac{2}{5}$ to $1\frac{1}{2}$ in head; Λ . 111, 12, 1, to 111, 15, 1, first branched ray $1\frac{1}{4}$ to $1\frac{2}{5}$; caudal 1 to $1\frac{1}{5}$, deeply and evenly forked; caudal peduncle depth $2\frac{7}{5}$ to $3\frac{1}{5}$; pectoral $1\frac{1}{5}$ to $1\frac{2}{5}$; ventral $1\frac{4}{5}$ to 2.

Adult spawning males are brilliantly olive on back, paler on sides and generally whitish below, but all of tail posteriorly, especially above anal and including same fin, brilliant rose salmon or pink. Nine broad, slate black, transverse bands, not crossing back or white of belly and interspaces beneath. First dark band includes opercle and nape; second divided or as 2 parallel dark bands, as all others, except last three on tail, though sometimes second may have dark bands joined below; third before ventral; fourth just before dorsal; fifth from middle of dorsal base; sixth just behind dorsal; seventh and eighth on caudal peduncle; ninth as large black spot on caudal peduncle just before caudal base. Iris neutral gray to whitish. Some examples with all lower surface of head, humeral region and ventrals rosy and first black transverse band on the opercle may continue below as black streak until above pectoral origin. Vertical bands variable and in smaller examples or females simply as transverse dark bands, so that in very small or young specimens blotches only slightly darker than body color and as row along median axis of body laterally. Short dark or blackish line from hind eye edge and another from lower. Dorsal with branched parts of rays, or terminally, whitish, rest of fin neutral or blackish slate. Anal white, sometimes pink, with dusky to blackish blotch always present at anterior long rays subbasally. Caudal gray dusky, median portion of each lobe slightly darker. Paired fins whitish. Length 31 to 121 mm.



FIG. 8. Barilius boweni new species. Type (upper), young (lower).

Type, No. 51764, A.N.S.P., Lulua River, Belgian Congo, September 7, 1929. Also 15 paratypes, same data.

Diagnosis. Differs at once from the related Barilius neavii Boulenger of the Zambesi Basin, in the color pattern. Boulenger shows the lower jaw longer than the upper and the pectoral reaching two scales beyond the ventral. In none of my examples is the pectoral found reaching the ventral. My specimens are all more slender than Boulenger's figure.

Spawning males have the pearl or contact organs strongly developed. A sort of frontal pad occurs all around mouth border, around snout end, preorbital region, on both mandibular rami, thickly studded with small crowded tubercles. Inner surfaces of each pectoral ray with row of numerous antrorse tubercles. On tail from opposite dorsal and anal back to caudal base each row of scales on side medially with single median small tubercle. Above base of anal fin, on lower surface of tail, a glandular area extends along parallel to anal fin base, greatly suggestive of that in *Adenapogon roseigaster* (Ramsay and Ogilby).

For Mr. W. W. Bowen, who collected this interesting species as well as several others obtained by the Gray African Expedition.

Engraulicypris luluae new species. Fig. 9.

Depth $4\frac{2}{3}$ to 5; head $3\frac{3}{5}$ to $3\frac{3}{4}$, width $2\frac{1}{3}$ to $2\frac{5}{5}$. Snout $3\frac{3}{4}$ to $3\frac{7}{4}$ in head; eye $3\frac{3}{5}$ to $3\frac{3}{4}$, subequal with snout, greater than interorbital; lower jaw slightly shorter than upper; maxillary reaches $\frac{2}{5}$ in eye, length 2 to $2\frac{1}{4}$ in head; interorbital $3\frac{2}{5}$ to $3\frac{2}{3}$, convex. Gill rakers 1+6 short rudimentary points, about $\frac{1}{3}$ of gill filaments which $\frac{3}{5}$ of eye. Teeth 3, 5-5, 3, hooked, with slight grinding surfaces.

Scales 32 or 33 in lateral line to caudal base and 2 or 3 more on latter; 6 above, 1 below, 24 or 25 predorsal forward to occiput; few scales on caudal base; lateral line mostly complete, sometimes absent from last few scales. Scales with 8 to 10 basal and 8 to 12 apical striae, transverse marginally; circuli moderately fine.

D. II, 7, I, first branched ray $1\frac{4}{5}$ to $1\frac{7}{5}$ in head; A. III, 14, I, first branched ray 19/10 to 21/10; caudal 1 to $1\frac{1}{5}$, deeply forked; caudal peduncle depth 3 to 31/10; pectoral $1\frac{1}{5}$ to $1\frac{2}{5}$; ventral 2 to $2\frac{1}{3}$.



FIG. 9. Engraulicypris luluae new species. Type.

Pale brown generally, little lighter below. Head above and ends of jaws with dusky shades, sides with bright silvery white reflection. Iris whitish and slaty. Back above with dusky shades, mostly as minute dark dots along scale edges. Dusky axial line from shoulder to caudal base medially and around this on trunk dusky shading which expands broadly on tail and caudal peduncle, where also nearly black. Fins all whitish. Length 53 mm.

Type, No. 51741, A.N.S.P., Lulua River, Belgian Congo, September 7, 1929. Also No. 51742, A.N.S.P., paratype, same data and size.

Diagnosis. Apparently allied with Engraulicypris bottegi (Vinciguerra), the genotype of the subgenus Neobola. It differs, however, in the advanced position of the anal which begins before the dorsal and but one series of scales below the lateral line above the anal. My species is surely more closely related, if not synonymous with Engraulicypris congicus Nichols and Griscom.¹ It is based on five specimens, the type 51 mm. long, which differ slightly according to the description and figure in several details perhaps specific: maxillary reaches opposite middle of eye, scales 38 to 41, anal ray 19 to 22, pectoral reaching ventral and about long as head, and caudal peduncle $1\frac{1}{2}$ times as long as deep.

Named for the Lulua River.

CLARIIDAE

Clarias gariepinus (Burchell).

Depth 5 to $6\frac{4}{5}$; head (measured to gill opening) $3\frac{7}{5}$ to $4\frac{1}{4}$, width $1\frac{1}{4}$ to $1\frac{1}{3}$; snout $2\frac{2}{3}$ to $2\frac{3}{4}$; eye 7 to 14, $2\frac{2}{5}$ to 6 in snout, 4 to $7\frac{2}{5}$ in interorbital, lids free all around; mouth width $2\frac{1}{5}$ to $2\frac{1}{5}$; nasal barbel $1\frac{2}{3}$ to $3\frac{2}{3}$ in head, maxillary 1 1/10 to $1\frac{2}{5}$, outer mental $1\frac{1}{5}$ to 2, inner $1\frac{2}{5}$ to $2\frac{2}{5}$; teeth villiform, in bands, vomero-palatine band equally wide as bands in jaws; interorbital 2 to $2\frac{1}{4}$, slightly convex. Gill rakers 7 + 52, lanceolate, equal eye; gill filaments $\frac{3}{4}$ of gill rakers. D. 60 to 64, sixth ray 2 to $2\frac{1}{5}$ in head, not reaching caudal; A. 43 to 51, fifth ray 3 to 5, not reaching caudal; caudal peduncle depth $3\frac{1}{3}$ to $3\frac{2}{3}$; caudal $1\frac{2}{3}$ to 2, convex behind; pectoral $2\frac{1}{5}$ to $2\frac{2}{5}$, spine with very small serrae on outer edge; ventral $2\frac{7}{8}$ to 3. Back mottled dark brown, gray, slaty to dusky, variable; under surface of head, belly and tail white. Barbels variably dusky, or mentals white. Iris gray.

Sixteen, 88 to 650 mm. Chouzo.

Clarias fouloni Boulenger.

Depth $7\frac{3}{4}$ to $8\frac{3}{5}$; head $5\frac{1}{2}$ to $6\frac{2}{3}$, width $1\frac{1}{4}$ to $1\frac{2}{5}$; snout $2\frac{3}{5}$ to $2\frac{3}{4}$; eye $10\frac{1}{2}$ to 12, $3\frac{1}{2}$ to $4\frac{1}{4}$ in snout, 5 to $5\frac{1}{2}$ in interorbital; mouth width $2\frac{1}{3}$ to $2\frac{2}{3}$ in head; nasal barbel $1\frac{1}{8}$ to $1\frac{1}{5}$, maxillary 1 to $1\frac{1}{8}$, outer mental $1\frac{1}{8}$ to $1\frac{1}{4}$, inner $1\frac{1}{4}$ to $1\frac{2}{3}$; teeth in villiform bands, vomero-palatine band little wider than upper jaw band; interorbital $2\frac{1}{8}$ to $2\frac{1}{5}$ in head, very slightly convex. Gill rakers 3 + 10, lanceolate, $1\frac{1}{4}$ in gill filaments, which $2\frac{3}{4}$ in snout. D. 79 to 80, fifth ray $2\frac{7}{8}$ to 3 in head, reaches caudal base; A. 65 to 67, fifth ray $3\frac{2}{3}$ to $3\frac{3}{4}$, reaches caudal base; caudal $1\frac{1}{2}$ to $1\frac{3}{4}$, convex behind; pectoral $2\frac{1}{4}$ to $2\frac{1}{2}$, spine with both edges serrated; ventral $3\frac{2}{3}$. Largely uniform dusky brown, belly and under surface of head scarcely paler. Barbels and iris dark. Length 88 to 214 mm.

Forty from Chouzo.

¹ Bull. Amer. Mus. Nat. Hist., vol. 37, art. 25, November 26, 1917, p. 703, fig. 17. Poko and Avakubi, upper Congo.

DINOTOPTEROIDES new genus

Type Dinotopteroides prentissgrayi new species.

Body elongate, well compressed, without free caudal peduncle. Head moderate, greatly depressed, upper and lateral parts osseous, formed as a bony casque. Eye small, supero-lateral, lids free. Mouth broad, with 4 pairs of barbels, all shorter than head; one nasal, one maxillary, two mental. Teeth in bands, upper outer band villiform, vomero-palatine band twice as wide and granular, mandibular band wide, largely granular though outer teeth villiform. Gill membranes free from isthmus, narrowly overlap. Gill rakers moderate, 26 lower on first arch. Frontal and occipital fontanels well developed. Dorsal with long anterior rayed portion followed by short adipose fin connected with caudal. Anal similar, only little shorter than dorsal, narrowly separated from caudal. Paired fins well developed.

Diagnosis. Only the genotype known, falling in the *Heterobranchinae* with *Heterobranchus* Geoffroy Saint-Hilaire and *Dinotopterus* Boulenger. With the former it agrees in the sides of the head furnished with bony shields, though differs in the much shorter adipose fin and shorter barbels, also the largely granular broad patches of teeth on the palate and mandible, the dentition a character apparently unique in the family. From the more modified *Dinotopterus* it further differs in the fewer gill rakers, 26 compared with 110 on the lower first arch.

Etymology. Dinotopterus; ωδος, appearance.



FIG. 10. Dinotopteroides prentissgrayi new species. Upper (head from above), median (type), lower (dentition).

Dinotopteroides prentissgrayi new species. Fig. 10.

Depth $6\frac{1}{4}$ to $6\frac{3}{5}$; head $4\frac{1}{4}$ to $4\frac{1}{3}$, width $1\frac{1}{4}$ to $1\frac{1}{3}$. Snout 3 to $3\frac{3}{4}$ in head; eye 9 to $9\frac{1}{2}$, $3\frac{1}{3}$ to $3\frac{3}{5}$ in snout, $4\frac{4}{5}$ to 5 in interorbital, lids free; nasal barbel $1\frac{3}{4}$ to $2\frac{1}{4}$, maxillary $1\frac{1}{5}$ to $1\frac{1}{4}$, outer mental $1\frac{1}{3}$ to $1\frac{1}{2}$, inner $1\frac{2}{5}$ to $2\frac{1}{5}$; upper outer band of teeth villiform, width transversely $\frac{1}{4}$ its length; vomeropalatine teeth granular, width transversely twice its length, also twice width of upper jaw band; mandibular teeth in wide band equal to vomeropalatine, with outer teeth villiform though greater inner area granular; interorbital $2\frac{1}{8}$ to $2\frac{1}{4}$, very slightly convex. Gill rakers 5 + 26, lanceolate, equal gill filaments or eye.

D. 56 or 57, fifth ray $3\frac{1}{4}$ to $3\frac{2}{3}$ in head; adipose fin $2\frac{1}{8}$ to $2\frac{1}{2}$; A. 47 or 48, fifth ray $4\frac{1}{4}$ to 5; caudal $1\frac{2}{3}$, convexly rounded behind; pectoral $1\frac{4}{5}$ to 2, spine flattened, outer edge little roughened, inner entire; ventral $2\frac{2}{5}$ to $2\frac{4}{5}$.

Back and upper surface dusky or blackish brown. Under surface of head, belly and lower edge of tail light brown to soiled whitish. Neutral dusky to mauve shade on branchiostegals. Line of demarcation sharply separates color of head above from below, extending back from mouth angle a little below eye. Iris slaty. All barbels dusky. Sides of body more or less mottled with paler. Fins all more or less dusky, bases of paired fins and anal little more brownish. Some buff shades about chest and pelvic region. Length 306 mm.

Type, No. 51798, A.N.S.P., Chouzo, Quanza River, Angola, September 15–28, 1929. Also No. 51799, A.N.S.P., paratype, length 270 mm., same data.

Diagnosis. Its distinctions are contained in those of the genus.

For Mr. Prentiss N. Gray, leader of the Gray African Expedition, 1929, to whom the Academy is indebted for extensive African collections of natural history material.

MOCHOKIDAE

Synodontis ornatipinnis Boulenger.

Depth $3\frac{1}{5}$ to 4; head $3\frac{1}{5}$ to $3\frac{1}{4}$, width $1\frac{1}{8}$ to $1\frac{1}{5}$; snout $2\frac{1}{8}$; eye $4\frac{1}{8}$ to $4\frac{3}{4}$, $2\frac{1}{3}$ to $2\frac{1}{2}$ in snout, 2 in interorbital; mouth width $2\frac{1}{2}$ to $2\frac{3}{5}$ in head; lips with rather large papillae; maxillary barbel $1\frac{1}{8}$, outer mental $1\frac{3}{5}$, inner $2\frac{2}{3}$; interorbital 3, level. Gill rakers 4 + 12, lanceolate, $\frac{1}{2}$ of gill filaments, which $1\frac{1}{3}$ in eye. D. I, 6, I, strong spine with 12 antrorse serrae along hind edge, first ray 1 in head; adipose fin $1\frac{1}{2}$ to $1\frac{4}{5}$; A. IV, 7, I, second branched ray $1\frac{1}{2}$ to $1\frac{3}{4}$; caudal 1, deeply forked, lobes pointed; caudal peduncle depth 3; pectoral 1, spine with antrorse serrae on both edges, about 14 larger on inner or hind edge; ventral $1\frac{3}{4}$ to $1\frac{4}{5}$. Neutral or gray brown generally. Everywhere variable dark to blackish spots, mostly small and many often as large blotches. On caudal dark blotches tend to form transverse bands. Length 102 to 105 mm.

Quanza River, Angola. Dynamited September, 1929. Senhor José Augusto Machado.

POECILIIDAE

Aplocheilus luluae new species. Fig. 11.

Depth $3\frac{2}{3}$ to $4\frac{1}{3}$; head $3\frac{2}{5}$ to $3\frac{4}{5}$, width $1\frac{3}{4}$ to 2. Snout $3\frac{1}{3}$ to $4\frac{1}{4}$ in head from snout tip; eye $2\frac{3}{5}$ to 3, greater than snout, $1\frac{1}{5}$ to $1\frac{1}{2}$ in interorbital; maxillary reaches eye in younger to $\frac{3}{4}$ in snout with age, length 3 to $3\frac{1}{5}$ in head from snout tip; moderately narrow band of minute teeth in each jaw; interorbital $1\frac{3}{4}$ to $1\frac{7}{5}$, level. Gill rakers 3 + 10, minute points, about $\frac{1}{3}$ of gill filaments, which $\frac{1}{2}$ of eye. Scales 24 or 25 in median lateral series from suprascapula to middle of caudal base and 3 more on latter; 7 transversely, 17 or 18 predorsal forward to snout; apparently 2 rows on cheek; caudal and anal with small scales basally. Scales with 13 or 14 basal parallel short marginal striae; eirculi fine.

D. III, 7, 1 or III, 8, 1, first branched ray $1\frac{3}{4}$ to 2 in total head length; A. III, 8, 1 or III, 9, 1, fourth branched ray $1\frac{1}{2}$ to $1\frac{3}{4}$; caudal 1 to $1\frac{1}{5}$, convex behind; least depth of caudal peduncle $1\frac{1}{5}$ to $2\frac{1}{5}$; pectoral $1\frac{1}{3}$ to $1\frac{1}{4}$; ventral $1\frac{3}{4}$ to $1\frac{4}{5}$.

Brown, nearly uniform or scarcely paler below. Each scale on back with edge dusted with dusky. Iris slate gray. Dusky band, including end of mandible from snout, through eye and down into pectoral axil, then below median axis of body to bases of infero median caudal rays. Dorsal and caudal grayish, other fins whitish. Length 35 mm.



FIG. 11. Aplocheilus luluae new species. Type.

Type, No. 51744, A.N.S.P., Lulua River, Belgian Congo, September 7, 1929. Also three paratypes, No. 51745-51747, A.N.S.P., same data. Length 24 to 31 mm.

Diagnosis. Closely related to *Aplocheilus katangae* Boulenger, from the Katanga or southeastern headwaters of the Congo. It differs, however, in the presence of a complete dark lateral band extending on the head, also the absence of spots on the dorsal and anal basally.

Named for the Lulua River.

ANABANTIDAE

Anabas machadoi new species. Fig. 12.

Depth $3\frac{2}{5}$ to 4; head $2\frac{7}{8}$ to $3\frac{2}{5}$, width $1\frac{3}{5}$ to $1\frac{2}{3}$. Snout $4\frac{1}{2}$ to $5\frac{1}{3}$ in head from snout tip; eye 4 to 5, little greater than snout in young to subequal with age, 1 to $1\frac{1}{4}$ in interorbital; maxillary reaches $\frac{1}{2}$ to $\frac{3}{4}$ in eye, length $2\frac{1}{2}$ to $2\frac{3}{5}$ in head; teeth villiform, in bands in jaws of 4 or 5 irregular rows with outermost row very slightly larger; patch of minute teeth on each palatine; interorbital $3\frac{1}{2}$ to $4\frac{1}{3}$, slightly convex; opercle and subopercle denticulate. Gill rakers 7 lower tubercles, $2\frac{1}{2}$ in gill filaments, which $1\frac{1}{3}$ in eye.

Scales 15 to 20 in upper section of lateral line, 11 to 16 in lower section to caudal base and 0 to 2 more on latter; 2 or 3 above, 8 or 9 below, 18 to

20 predorsal, 5 to 6 rows across cheek to preopercle angle marginally; bases of soft vertical fins finely scaled. Scales with 8 to 14 basal radiating striae; sometimes with 5 or 6 more auxiliaries; 17 to 40 rather short apical denticles; circuli fine.



FIG. 12. Anabas machadoi new species. Type.

D. XVII to XIX, 7, 1 or 8, 1, sixth spine $2\frac{4}{5}$ to $3\frac{2}{5}$ in total head length, fourth ray $1\frac{7}{8}$ to 2; A. VIII or IX, 9, 1 or 10, 1, fourth spine $3\frac{2}{5}$ to 4, fourth ray $1\frac{7}{8}$ to $2\frac{1}{5}$; caudal 11/10 or $1\frac{1}{4}$, convex behind; caudal peduncle depth $2\frac{1}{3}$ to $2\frac{2}{5}$, length greater than eye or $1\frac{3}{5}$ to $1\frac{3}{4}$ in its least depth; pectoral $1\frac{3}{5}$ to $1\frac{2}{3}$ in total head length; ventral $2\frac{1}{3}$ to $2\frac{1}{2}$.

Dark or dusky brown generally, mostly with umber shade, under surfaces paler to light olive brown. Along side of body 15 vertical waved dark dusky brown to blackish streaks or bars, often broken as spots or bars variably. Often 2 or 3 dark streaks back from eye. Fins except brownish ventrals all dark or dusky gray brown, caudal base often with blackish spots. Iris dusky gray. Length 124 mm.

Type, No. 51800, A.N.S.P., Quanza River at Chouzo, Angola. September 15–28, 1929. Also paratypes Nos. 51801–51855, A.N.S.P., same data, down to 75 mm.

Diagnosis. Related to Anabas pellegrini Boulenger and Anabas nigropannosus Reichenbach, but differs from both in its coloration and fin formula. It probably replaces Anabas multispinis (Peters) of the Zambesi Basin and South Africa in the Quanza, differing from that species in its coloration, especially the soft dorsal said to be spotted with blackish.

Named for Senhor José Augusto Machado, Chef de Poste of the Quanza region, who collected Angola fishes for the Gray African Expedition 1929, besides rendering valuable assistance in many ways.

CICHLIDAE

Tilapia acuticeps (Steindachner).

Depth $2\frac{3}{4}$ to 3; head $2\frac{1}{3}$ to $2\frac{5}{3}$, width $2\frac{1}{2}$ to $2\frac{4}{5}$; snout 3 to $3\frac{1}{1}$ from snout tip; eye 4 to $4\frac{4}{5}$, $1\frac{1}{4}$ to $1\frac{3}{5}$ in snout, greater than interorbital; maxillary reaches eye, expansion $1\frac{1}{2}$ to $1\frac{3}{4}$ in eye, length $2\frac{1}{3}$ to $2\frac{3}{5}$ in head from snout tip; teeth small, subequal, biserial in jaws, rows well separated; interorbital 5 to $5\frac{4}{5}$, slightly convex. Gill rakers 3 + 10, narrowly triangular,

compressed, 1¼ in gill filaments, which little over half of eye. Scales 22 or 23 in upper section of lateral line, 13 to 15 in lower section to caudal base and 3 more on latter; 6 above, 10 below, 19 or 20 predorsal forward opposite front pupil edge; 6 or 7 rows on cheek to preopercle ridge; caudal largely covered with small scales basally. Scales with 13 to 15 basal radiating striae; circuli fine. D. XIV or XV, 12 to 14, last spine $2\frac{3}{5}$ to 2 9/10 in total head length, eighth ray 2 1/10 to $2\frac{1}{4}$; A. III, 9 or 10, third spine $2\frac{3}{5}$ to 3 1/10, fifth ray 2 1/10 to $2\frac{1}{8}$; caudal $1\frac{1}{2}$ to $1\frac{3}{5}$, little convex behind; caudal peduncle depth 3 to $3\frac{1}{8}$; pectoral $1\frac{3}{5}$ to $1\frac{2}{3}$; ventral $1\frac{2}{5}$ to $1\frac{3}{4}$. Brown above, under surface paler to whitish. About 10 or 11 transverse dark bands obscurely along side of body in young, usually less evident with age. Blackish brown blotch from lower front eye edge to end of maxillary. Opercle largely blackish brown, with round blotch of blackish less than eye at upper hind angle. Iris slate or dusky. Fins all dusky, often blackish terminally, vertical fins basally with darker spots, sometimes as bars. In small examples paired fins paler.

Thirteen. Quanza River at Chouzo, Angola. Length 106 to 170 mm.



FIG. 13. Tilapia lucullae Boulenger. Young.

Tilapia lucullae Boulenger. Fig. 13.

Depth 3 to $3\frac{1}{5}$; head $2\frac{3}{4}$ to 3, width 2 to $2\frac{1}{3}$; snout $2\frac{2}{5}$ to $3\frac{1}{4}$ from snout tip; eye $3\frac{2}{5}$ to $3\frac{1}{5}$, 1 1/10 to $1\frac{1}{2}$ in snout, greater than interorbital in young to equal with age; maxillary reaches $\frac{4}{5}$ to $\frac{1}{5}$ in snout, expansion $2\frac{2}{5}$ to $2\frac{3}{4}$ in eye, length 3 to $3\frac{2}{5}$ in head, from snout tip; jaws even or mandible little protruded; teeth with inner band of 4 or 5 irregular series well separated from outer enlarged row of bifid ones; interorbital $4\frac{3}{5}$ to $5\frac{1}{5}$, very slightly elevated. Gill rakers 3+7, short points, $\frac{1}{2}$ of gill filaments, which $\frac{1}{2}$ of eye. Scales 21 or 22 in upper section of lateral line, 10 or 11 in lower section to caudal base and 1 to 3 more on latter; 4 or 5 above, 9 or 10 below, 12 or 13 predorsal; 2 or 3 rows on cheek; caudal covered with fine scales basally. Scales with 11 to 16 basal radiating striae; circuli fine. D. XIV or XVI, 9 to 11, last spine 2 to $2\frac{2}{5}$ in total head length, sixth ray $1\frac{1}{4}$ to $1\frac{3}{4}$; A. III, 7, I to III, 9, I, third spine $2\frac{1}{4}$ to $2\frac{3}{5}$, fifth ray $1\frac{3}{5}$ to $1\frac{1}{5}$; caudal

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 $1\frac{1}{5}$ to $1\frac{1}{3}$, convex behind; caudal peduncle depth $2\frac{7}{5}$ to 3; pectoral $1\frac{1}{4}$ to $1\frac{1}{3}$; ventral 1 1/10 to $1\frac{3}{4}$. Brown above, paler to whitish below. About 8 more or less variable dark transverse bands, often broken as blotches or bars; frequently one remains as dark blotch at front of caudal peduncle in alcoholic examples. Sometimes even an obsolete dark postocular band, especially emphasized as dark opercular blotch, and this may continue axially along side of body. Iris brown. Dark bar from lower front eye edge to mouth angle. Fins all pale generally. From front of spinous dorsal broad dark submarginal band out to apex of soft dorsal and all below, especially on soft fin, many dark brown spots. Caudal with scattered dark brown spots and few on anal. Fins otherwise uniform.

Seven. Lucalla River at Railway station, Angola. 1910. Dr. W. J. Ansorge. Length 59 to 106 mm. These are apparently recorded in the materials listed by Boulenger as *Tilapia acuticeps* (Ann. Mag. Nat. Hist., Ser. 8, Vol. 6, December, 1910, p. 560).

Seventeen. Quanza River at Chouzo, Angola. Length 36 to 63 mm.

Tilapia cabrae Boulenger.

Depth $1\frac{1}{8}$ to $2\frac{1}{3}$; head $2\frac{3}{4}$ to 3, width $1\frac{4}{5}$ to 2; snout $2\frac{1}{2}$ to 3; eye $2\frac{3}{4}$ to 5, slightly greater than snout in young to 2 (with age), 1 to $2\frac{1}{2}$ in interorbital; maxillary reaches $\frac{3}{4}$ to $\frac{1}{5}$ in snout, expansion $1\frac{1}{5}$ to 2 in eye, length 3 to $3\frac{1}{3}$ in head; teeth in 3 (young) to 8 series, outer row largest and well separated from other rows; interorbital 2¹/₄ to 3, broad and very slightly convex. Scales 20 or 21 in upper section of lateral line, 7 to 10 in lower section to caudal base and 2 to 4 more on latter; 5 above, 10 below, 13 or 14 predorsal forward slightly before front eye edge; 3 rows on cheek to preopercle ridge; caudal largely covered with fine scales basally. Scales with 8 to 13 basal radiating striae, sometimes many as 6 auxiliaries incomplete with age; circuli fine. D. XV or XVI, 12, I or 13, I, last spine 1³/₄ to 2 in head, fifth ray $1\frac{1}{3}$ (young) in head to $2\frac{4}{5}$ to $3\frac{1}{2}$ in combined head and body to caudal base (with age); A. III, 9, 1 to 11, 1, third spine $1\frac{7}{8}$ to $2\frac{1}{4}$ in head, fourth ray $1\frac{1}{5}$ to $1\frac{3}{5}$; caudal 1 to 1 1/10, convex behind; caudal peduncle depth $1\frac{4}{5}$ to 2; pectoral 1 to $1\frac{1}{8}$; ventral $1\frac{1}{8}$ (young) to $2\frac{3}{4}$ in combined head and body to caudal base (with age). Brown, under surface of head and belly whitish. Young with 7 broad dark brown transverse bands, much wider than pale interspaces and faint or obsolete with age. In young dark vertical bands reflected on bases of vertical fins, also narrow dark vertical band at caudal base and black spot size of pupil basally at last dorsal spine and front rays, obsolete with age. Opercle with round black spot. Soft vertical fins in adult with spots of small size, white or dark, or may even form transverse waved dark lines. Pectoral pale. Ventral dark brown in front paler behind. Iris brown.

Three. Bengo River, Angola, 1910. Length 165 to 214 mm. Ten. N'kutu, Loango River, Chiloango, 1911. Length 45 to 197 mm. One, Lake Rumango, Cabiri, Angola, 1910. Length 199 mm. Two, Quanza River at Cunga, Angola, 1910. Length 143 to 145 mm. Dr. W. J. Ansorge.

A large series of over 100 examples secured in the Quanza at Chouzo. All ages. Gray African Expedition. Tilapia luluae new species. Fig. 14.

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Depth 3 to $3\frac{1}{5}$; head $2\frac{3}{5}$ to $2\frac{3}{4}$, width 2 to $2\frac{1}{5}$. Snout $2\frac{2}{5}$ to $2\frac{3}{4}$ in head; eye $3\frac{1}{3}$ to $3\frac{3}{4}$, $1\frac{1}{3}$ to $1\frac{2}{5}$ in snout, greater than interorbital; maxillary reaches $\frac{4}{5}$ or to eye, length $2\frac{2}{5}$ to 3 in head; outer teeth uniserial, slender basally, expanding little and bifd terminally; inner teeth in jaws form rather broad band of 4 or 5 irregular series; interorbital 4 1/10 to $4\frac{1}{5}$, very slightly convex. Gill rakers 1 + 8, short tubercles, $2\frac{2}{5}$ in gill filaments.

Scales (tubular) 17 to 19 in upper section of lateral line, 8 or 9 in lower section to caudal base and 0 or 1 more on latter; 4 or 5 above upper section, 8 or 9 below, 11 predorsal forward opposite eye center; 3 rows on cheek. Scales all small on chest, prepectoral region and breast, rather small on belly. Scales with 15 basal radiating striae; 20 to 30 short, feeble apical denticles; circuli fine basally, coarse apically.

D. XV, 9, 1, last spine $2\frac{1}{2}$ to $2\frac{2}{3}$ in head, sixth ray $1\frac{3}{5}$ to $1\frac{4}{5}$; A. III, 7, 1, third spine $2\frac{1}{4}$ to $2\frac{4}{5}$, third ray 2 to $2\frac{2}{5}$; caudal $1\frac{1}{4}$ to $1\frac{1}{3}$, convex behind; least depth of caudal peduncle $2\frac{4}{5}$ to $2\frac{7}{5}$; pectoral $1\frac{1}{5}$ to $1\frac{1}{2}$; ventral $1\frac{1}{2}$ to $1\frac{3}{5}$.



FIG. 14. Tilapia luluae new species. Type.

Brown, paler below, with dusky shades most everywhere. Broad dark obscure bar from lower front eye edge to end of maxillary. Postocular with dark bar or streak from hind eye edge, slightly down to black blotch on hind opercle edge. Dark opercular blotch with narrow gray hind edge. Blackish blotch along mandible, another at preopercle angle and also one Branchiostegals largely cream white with dusky above on interopercle. and on throat anteriorly. Iris dark neutral slate or dusky. Blackish band from just below beginning of lateral line to caudal base medially, or axial in its course. Parallel above or along lateral line another paler dark band. This gives off above 8 dark vertical bars, which also continue down below the axial dark band, from which they extend down on sides of body till at least level with base of pectoral fin. All scales on flanks and front of tail below blackish axial lateral band with deep orange centers, brightest within intervening paler areas. Dorsals largely dusky slate, crossed by about 12 vertical pale to whitish lines, which begin well forward on spinous dorsal,

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first as a series of small white spots, then gradually as continuous lines on soft dorsal. Caudal grayish, each membrane with 4 to 6 pale or whitish spots and base of fin mottled or speckled with blackish. Anals dusky gray. Paired fins grayish, though front border of each ventral broadly blackish. Length 96 mm.

Type, No. 51758, A.N.S.P., Lulua River, Belgian Congo, September 7, 1929. Also Nos. 51759–51763, A.N.S.P., paratypes, same data. Length down to 33 mm.

Diagnosis. Among the numerous species of this genus the present species seems to be distinguished chiefly by its contrasted color pattern, especially the conspicuous dark markings on the head, ventral and soft dorsal fins. Small examples differ only in having a less contrasted color pattern, doubtless due in large part to preservation in formaline.

Named for the Lulua River.

GOBIIDAE

Periophthalmus koelreuteri (Pallas).

One from Lobitos, Angola. Length 248 mm.

PART II. OTHER AFRICAN FRESH-WATER FISHES IN THE COLLECTIONS OF THE ACADEMY

The determination of the Gray collection has involved a study of the other African fresh-water fishes in the Academy collection. Chief among these are a small collection obtained by Dr. A. Donaldson Smith on his Lake Rudolph Expedition in 1894–95, and a collection from Angola and Chiloango, chiefly in the Quanza Basin, purchased from Dr. W. J. Ansorge. As most of these have been inadequately described, and many points indispensable in modern systematic work omitted, I have redescribed them according to the condensed method outlined in my South African paper.³ Cuts are given of several unfigured species. Several types of Bonaparte and Cope are similarly treated. My studies of these collections are so intimately connected with that of the Gray collection that it seems most desirable to publish them here.

POLYPTERIDAE

Polypterus bichir Lacépède. Fig. 15.

Depth 7 to $7\frac{1}{2}$; head $4\frac{1}{3}$ to $4\frac{3}{5}$, width $1\frac{2}{3}$ to $1\frac{3}{4}$. Snout $5\frac{1}{3}$ to 6 in head from snout tip; eye $8\frac{3}{5}$ to $11\frac{3}{4}$, $1\frac{1}{2}$ to $2\frac{1}{3}$ in snout, $1\frac{1}{2}$ to $2\frac{1}{2}$ in interorbital; maxillary $2\frac{2}{5}$ to $2\frac{1}{2}$ in head; interorbital $4\frac{3}{5}$ to $5\frac{1}{3}$, broadly convex. Scales 62 or 63 in lateral line; 19 to 23 transverse oblique series; 12 predorsal. D. XV; A. 16. Ventral inserted between tenth and eleventh dorsal spines. In smaller example 3 small supra-postero-orbital bony plates on right side, only one maxillary on right side and latter with also one auxiliary on right

³ Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 187.

supraocular; prefrontals, with frontals, extending well between in long isoceles triangle and their inner edges not touching.

Two examples, 348 to 592 mm., without caudal 305 to 532 mm. Africa.



FIG. 15. Polypterus bickir Lacépède. Variation in lepidosis of head.

Dr. H. C. Chapman. The accompanying figures of this and the following species show the variation in the lepidosis of the cranium.

Polypterus senegallus Cuvier. Fig. 16.

Depth $7\frac{1}{4}$ to $9\frac{2}{5}$; head $5\frac{1}{4}$ to $6\frac{2}{3}$, width $1\frac{3}{4}$ to $1\frac{7}{5}$. Snout $4\frac{1}{2}$ to $4\frac{7}{5}$ in head; eye 6 to $7\frac{1}{2}$, $1\frac{1}{2}$ to $1\frac{3}{4}$ in snout, $1\frac{3}{5}$ to $1\frac{3}{4}$ in interorbital; interorbital $4\frac{1}{5}$ to $4\frac{1}{2}$ in head, broad, nearly level. Scales 58 to 60 in lateral line; 16 to 18 transverse oblique series; 15 to 19 predorsal. D. IX or X; A. 12 or 13. Length, without caudal, 153 to 286 mm.

Two from Lake Rudolf, Central Africa, obtained by Dr. A. Donaldson Smith. One labeled Africa, from Dr. H. C. Chapman. The last specimen has the pectoral reaching $\frac{2}{3}$ to dorsal origin and ventral inserted trifle before base of sixth dorsal spine.

Though the Lake Rudolf specimens were determined as P. bichir by Günther they seem to be the young of the present species. They have the frontal bones forming a sharp or nearly equilateral triangle at their anterior insertion. This is somewhat indicated by Steindachner's dorsal view of the head of a larval specimen; later he shows it asymetrically in that of an adult, or only the right frontal angular. Boulenger figures the left frontal more angular than the right.



FIG. 16. Polypterus senegallus Cuvier. Variation in lepidosis. Left and median from Lake Rudolf, right, Africa.

CLUPEIDAE

Pellonula vorax Günther.

Four, 69 to 85? mm. from the Quanza River at Dondo, Angola, 1910. Also another, 124 mm., from Mayili, Chiloango River, Chiloango, 1911.

Odaxothrissa ansorgii Boulenger.

Depth $3\frac{1}{5}$; head 3, width $2\frac{2}{3}$. Snout $3\frac{1}{5}$ in head from snout tip; eye $4\frac{1}{2}$, $1\frac{1}{3}$ in snout, greater than interorbital, adipose lid broad; maxillary reaches opposite eye center, expansion $1\frac{2}{5}$ in eye, length $1\frac{1}{5}$ in head from snout tip; front of each jaw with several rather large recurved conic teeth, much smaller each side of mouth; rather irregular recurved conic teeth on palatines, none on vomer or on maxillary edge below; tongue large, elongate, free, with double median series of small recurved teeth; mandible protrudes well before upper jaw; interorbital $5\frac{2}{3}$, slightly convex; cheek and preopercle rather feebly venulose. Gill rakers 11 + 23, lanceolate, $1\frac{9}{10}$ in eye.

Scales 41 between suprascapula and caudal base, 4 more on latter; 16 transversely between dorsal and ventral origins, 23 predorsal scales. Axillary ventral scale $\frac{1}{3}$ of fin. Scales with single median vertical stria; basal half of scale with very fine parallel vertical striae (circuli); apical half of scale entire, semi-membranous. Abdominal serrae 14 + 9.

D. III, 13, I, first branched ray 2 in total head length; A. III, 16, I, first branched ray $3\frac{2}{5}$; caudal $1\frac{1}{6}$, well forked, lobes sharply pointed; caudal peduncle depth 3; pectoral 19/10, reaches $1\frac{1}{2}$ to ventral; ventral $2\frac{2}{5}$, reaches $1\frac{1}{8}$ to anal.

Largely pale brownish, with silvery white reflections, especially on head. Lower surface of body paler than back. Brownish streak along back medianly. Silvery white band axial along side, slightly edged with brownish above and width little less than eye. Muzzle dusky brown above. Iris whitish. Fins all whitish, fork of caudal grayish, with several grayish transverse streaks on median rays. Bases of longest caudal rays dusky. Length 150 mm.

Quanza River at Cambambe, Angola.

MORMYRIDAE

Petrocephalus bane (Lacépède).

Depth 2 9/10; head $3\frac{2}{3}$, width $2\frac{1}{8}$; snout 5; eye 5, equals snout, $1\frac{1}{4}$ in interorbital, lids not free; mouth width $4\frac{1}{4}$, lips thick; teeth bicuspid, 14 above, 24 below; interorbital $4\frac{1}{4}$, convexly elevated. Gill rakers 5 + 5 short points, $4\frac{1}{2}$ in gill filaments, which $1\frac{1}{2}$ in eye. Scales 50 close along lateral line to caudal base and 5 more on latter; scales 37 in lateral line to caudal base and 3 more on latter; 12 scales above, 16 below, 35 predorsal, 12 around caudal peduncle; caudal largely scaled. Scales with 18 to 20 feeble radiating striae; circuli fine. D. III, 27, first branched ray $1\frac{1}{2}$ in head; A. III, 31, I, first branched ray $1\frac{1}{2}$; caudal $1\frac{1}{3}$, deeply emarginate; caudal peduncle depth $3\frac{3}{4}$; pectoral $1\frac{1}{3}$; ventral $2\frac{1}{2}$. Back pale brown, sides and below silvery white. Iris white. Fins pale brownish. Length 184 mm.

No locality (likely North Africa). Bonaparte Collection, No. 368.

Petrocephalus simus Sauvage.

Depth 3 to $3\frac{2}{3}$; head $3\frac{1}{3}$ to $3\frac{1}{2}$, width $2\frac{1}{5}$ to $2\frac{2}{3}$; snout $4\frac{1}{5}$ to $5\frac{1}{4}$; eye 4 to $4\frac{1}{2}$, 1 to $1\frac{1}{4}$ in snout, $1\frac{1}{3}$ to $1\frac{3}{4}$ in interorbital, adipose like, lids not free; mouth width $4\frac{1}{2}$ to $4\frac{3}{4}$ in head, lips thick and fleshy; teeth bifid, 10 to 12 series above, 18 to 20 below; interorbital $3\frac{1}{5}$ to $3\frac{1}{2}$, convexly elevated. Gill rakers 2+4, weak points, $4\frac{1}{2}$ in gill filaments, which $1\frac{1}{2}$ in eye. Scales 58 to 60 close above and along lateral line to caudal base; tubular scales, 34 to 35 in lateral line to caudal base; 12 or 13 scales above lateral line, 15 or 16 below, 37 or 38 predorsal though all median predorsal broadly naked, 12 around caudal peduncle; caudal finely scaled basally. Scales with 24 or 25 marginal radiating striae; circuli moderate. D. III, 21, I or III, 22, I, first branched ray $1\frac{2}{3}$ to $1\frac{3}{4}$ in head; A. III, 26, I to III, 29, I, first branched ray $1\frac{3}{4}$ to $4\frac{1}{5}$; ceudal $1\frac{1}{3}$ to $1\frac{2}{5}$, deeply forked, lobes pointed; caudal peduncle depth 4 to $4\frac{7}{8}$; pectoral $1\frac{1}{2}$ to $1\frac{3}{5}$; ventral $2\frac{1}{2}$ to $2\frac{7}{8}$.

Back and upper surface brown, sides and below silvery white. Iris whitish. Fins all pale, front of dorsal and anal and ends of caudal grayish. Length 59 to 122 mm.

Five. Lucalla River at Kalenge, Angola, 1910.

Petrocephalus haullevillii Boulenger.

Depth $3\frac{1}{5}$ to $3\frac{3}{5}$; head $3\frac{1}{3}$ to $3\frac{2}{3}$, width $2\frac{1}{10}$ to $2\frac{1}{5}$; snout $3\frac{7}{4}$ to 4; eye $4\frac{3}{4}$ to 5, 1 to $1\frac{1}{3}$ in snout, $1\frac{1}{2}$ to $1\frac{7}{8}$ in interorbital; lids not free; mouth width $3\frac{1}{2}$ to 4, lips thick; teeth bicuspid, about 8 to 10 above and 14 to 16 below; interorbital $2\frac{7}{8}$ to $3\frac{1}{3}$, convexly elevated. Gill rakers 3+3 short points, about $\frac{1}{4}$ of gill filaments, which equal eye. Scales 32 in lateral line to cau-

dal base and 4 more on latter; 6 or 7 above, 8 or 9 below, 27 or 28 predorsal, 12 around caudal peduncle; caudal largely scaled, other fins naked. Scales with 21 to 30 marginal radiating striae; circuli fine. D. III, 16, I, first branched ray $1\frac{1}{4}$ to $1\frac{2}{5}$ in head; A. III, 23, I or III, 24, I, first branched ray $1\frac{1}{3}$ to $1\frac{2}{5}$; caudal (damaged) apparently forked; caudal peduncle depth $3\frac{2}{5}$ to $3\frac{1}{2}$; pectoral 1 to $1\frac{1}{4}$; ventral $2\frac{1}{5}$ to $2\frac{1}{2}$. Brown generally, finely specked or dotted with darker, with silvery white reflections on head and sides. Iris gray. Fins all very pale or light brownish, front of dorsal and anal little darker. Length 55 to 60 mm. (caudal damaged).

Three examples. Luculla River, Chiloango, 1911.

Marcusenius kingsleyae Günther.

Depth $4\frac{3}{5}$; head 4, width $2\frac{1}{8}$; snout 4; eye $7\frac{1}{2}$, $1\frac{7}{8}$ in snout, $2\frac{3}{5}$ in interorbital, lids not free; mouth width $5\frac{1}{4}$ in head; teeth small, bifid, 5 above, 6 below; interorbital $3\frac{1}{2}$, convexly elevated. Gill rakers 4 + 4, short points, $\frac{1}{4}$ of gill filaments, which $1\frac{1}{4}$ in snout. Scales 52 + 5 in lateral line; 8 above, 9 below, 40 predorsal, 13 around caudal peduncle; caudal largely scaled basally; 26 marginal radiating striae, circuli moderate. D. III, 14, I, first branched ray 2 in head; A. III, 20, I, first branched ray $1\frac{1}{8}$; caudal $1\frac{2}{5}$, deeply forked, lobes broad, pointed; caudal peduncle depth $3\frac{3}{4}$; pectoral $1\frac{2}{5}$; ventral $2\frac{1}{4}$. Brown, dusted little darker on back. Fins all pale brownish. Iris slate. Length 83 mm.

Luali River, Lundo, Chiloango, 1911.

Marcusenius pappenheimi Boulenger. Fig. 17.

Depth $3\frac{3}{4}$; head $4\frac{1}{4}$, width 2; snout $3\frac{2}{5}$; eye 7, $2\frac{1}{4}$ in snout, $2\frac{1}{4}$ in interorbital; lids not free; mouth width 6 in head; teeth notched, 5 above, 8 below; hind nostril slightly below level of eye center; interorbital $2\frac{7}{8}$, convexly elevated. Gill rakers 3+3, short points, about $\frac{1}{4}$ of gill filaments, which little greater than eye. Scales 72 in lateral line to caudal base; 14



FIG. 17. Marcusenius pappenheimi Boulenger. Paratype.

above, 14 below, 54 predorsal though narrow median strip raked, 14 around caudal peduncle; caudal largely scaled, other fins naked. Scales with 32 marginal radiating striae; circuli fine. D. III, 20, I, first branched ray $1\frac{3}{4}$ in head; A. III, 25, I, first branched ray $1\frac{3}{5}$; caudal $1\frac{1}{4}$, deeply forked, lobes pointed; caudal peduncle depth $3\frac{3}{4}$ in its length or 4 in head; pectoral $1\frac{1}{4}$; ventral $2\frac{1}{10}$. Above brown, sides and below pale to whitish. Traces of

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indistinct brown bar transversely from last dorsal to last anal rays. Iris gray. Fins light brown, front of dorsal basally deeper brown. Length 154 mm.

Paratype. Quanza River at Cunga, Angola, 1910.

Marcusenius brachyistius Gill.

Depth $4\frac{3}{5}$ to 5; head $3\frac{2}{5}$ to $3\frac{3}{4}$, width $2\frac{1}{5}$ to $2\frac{1}{4}$; snout $3\frac{3}{5}$ to 4; eye 6 to $7\frac{1}{4}$, $1\frac{2}{3}$ to $1\frac{3}{4}$ in snout, $2\frac{1}{2}$ to $2\frac{3}{4}$ in interorbital, lids not free; mouth width 6 to $6\frac{1}{3}$ in head; teeth small, bicuspid, 5 above, 6 below; interorbital 3 to $3\frac{2}{3}$, convexly elevated. Gill rakers 3+3 short weak points, $\frac{1}{4}$ of gill filaments which equal eye. Scales 46 to 48 in lateral line to caudal base; 8 above, 8 or 9 below, 37 or 38 predorsal, 12 around caudal peduncle; basal $\frac{2}{5}$ of each caudal lobe covered with small scales. Scales with 27 or 28 marginal radiating striae; circuli moderate. D. II or III, 12, I or III, 13, I, first branched ray $1\frac{3}{4}$ to $1\frac{4}{5}$ in head; A. III, 21, I to III, 23, I, first branched ray $1\frac{3}{4}$ to $2\frac{1}{5}$, deeply forked, short lobes rounded; caudal peduncle depth 4 to $4\frac{1}{3}$; pectoral $1\frac{2}{5}$ to $1\frac{1}{2}$; ventral 2 to $2\frac{2}{5}$. Dark brown generally, fins all with more or less dusky. Body variably mottled or clouded with darker brown. Iris slate. Length 52 to 73 mm.

Ten, Luculla River, Chiloango, 1911.

Marcusenius ansorgii Boulenger.

Depth $3\frac{3}{4}$; head $3\frac{7}{8}$, width 2; snout $3\frac{3}{5}$; eye $6\frac{1}{4}$, $2\frac{2}{5}$ in snout, 3 in interorbital, eyelids not free; mouth width $6\frac{1}{2}$ in head; teeth notched, 7 above, 7 below; hind nostril level with lower eye edge; interorbital $2\frac{9}{10}$, convexly elevated. Gill rakers 4+4, short points, $\frac{1}{4}$ of gill filaments, which equal eye. Scales 66 in lateral line to caudal base; 13 above, 15 below, 47 predorsal which entirely scaled; caudal largely scaly, fins otherwise naked. Scales with 19 to 22 radiating striae; circuli moderate. D. III, 20, I, first branched ray $1\frac{3}{4}$ in head; A. III, 25, I, first branched ray $1\frac{3}{4}$; caudal $1\frac{1}{4}$, deeply forked, lobes pointed; caudal peduncle depth $3\frac{1}{2}$; pectoral $1\frac{1}{3}$; ventral $2\frac{1}{2}$. Brown, with white median lateral band from above middle of pectoral, including lateral line, to caudal base, bounded above and below by dark brown streaks to caudal peduncle and darker between dorsal and anal. Iris gray. Fins dull brown, front of dorsal and anal darker. Length 127 mm.

One, Quanza River, Dondo, Angola, 1910. It differs greatly in coloration from Boulenger's figure in the pale longitudinal lateral band. There is no trace, as Boulenger's figure shows, of a dark band from the front of the dorsal to that of the anal.

Gnathonemus moorii Günther.

Depth $3\frac{2}{3}$ to $3\frac{3}{4}$; head $3\frac{2}{5}$ to 4, width 2 to $2\frac{1}{10}$; snout $3\frac{3}{5}$ to $3\frac{2}{3}$; eye $4\frac{7}{4}$ to $6\frac{1}{5}$, $1\frac{2}{5}$ to $1\frac{7}{8}$ in snout, $1\frac{7}{4}$ to 2 in interorbital, lids not free; mouth width $4\frac{3}{4}$ to $5\frac{2}{3}$ in head, lips thick; teeth rather small, notched, 5 above, 6 below; lower face of mandible with thick fleshy pad; interorbital $2\frac{1}{2}$ to $3\frac{2}{5}$, convex. Gill rakers 3+3, short points, $\frac{1}{5}$ gill filaments, which equal eye. Scales 37 to 40 in lateral line to caudal base and 1 to 3 more on latter; 8 above, 8 or

9 below, 37 or 38 predorsal, 8 around caudal peduncle; caudal largely scaly. Scales with 21 to 43 radiating marginal striae; circuli moderately fine. D. III, 21, I to III, 24, I, first branched ray $1\frac{2}{5}$ to $1\frac{1}{2}$ in head; A. III, 25, I to III, 28, I, first branched ray $1\frac{2}{3}$ to $1\frac{3}{4}$; caudal $1\frac{1}{8}$ to $1\frac{1}{5}$, deeply forked, lobes pointed; caudal peduncle depth $3\frac{1}{2}$ to 4; pectoral $1\frac{1}{5}$ to $1\frac{1}{4}$; ventral $2\frac{1}{4}$ to $2\frac{2}{5}$. Brown generally, more or less with sooty or dusky appearance. Dark or dusky brown transverse band from front of dorsal to that of anal, extended out on front lobe of each fin. Often second parallel dark band from last rays of each fin, though not extended on fin. Usually dusky or blackish bar at caudal base medially, besides dark spot on caudal peduncle close before fin base. Fins all pale brownish, except as noted. Iris slaty. Length 68 to 164 mm.

Fourteen, N'Kutu, Loango River, Chiloango, 1911.

Mormyrus rume Valenciennes.

Depth $3\frac{10}{10}$; head $4\frac{1}{4}$, width $2\frac{1}{2}$; snout $2\frac{1}{2}$ in head from snout tip; eye $6\frac{3}{4}$, $2\frac{3}{4}$ in snout, $1\frac{2}{3}$ in interorbital, lids not free; mouth small, width $1\frac{4}{5}$ in eye, lips rather thick; teeth strongly bifid, 6 above, 9 below; interorbital 4, convex. Gill rakers 4+6 short feeble points, $5\frac{1}{2}$ in gill filaments, which equal eye. Scales 140 counted along close above lateral line to caudal base; tubular scales 98 in lateral line to caudal base; 22 scales above lateral line, 18 below, 35 predorsal, median predorsal narrowly naked; 22 round caudal peduncle; caudal entirely scaled. Scales with 15 to 19 radiating marginal striae; circuli moderate. D. 82, I, fourth ray $2\frac{1}{2}$ in total head; A. III, 15, I, first branched ray 2; caudal $1\frac{2}{3}$, deeply forked, lobes pointed; caudal peduncle depth $4\frac{1}{3}$; pectoral $1\frac{1}{2}$; ventral $2\frac{1}{4}$. Back pale brown, sides and lower surface silvery white. Iris whitish. Fins all pale brown. Length 213 mm.

Senegal, Dr. H. C. Chapman.

CHARACIDAE

Alestes ansorgii Boulenger.

Depth $3\frac{1}{5}$; head 4, width $2\frac{1}{5}$; snout $3\frac{2}{3}$; eye $3\frac{1}{8}$, greater than snout or interorbital, adipose lids broad; maxillary not quite reaching opposite eye. length $3\frac{1}{8}$ in head; teeth biserial, upper with 6 outer and 8 inner, lower 8 outer and 2 inner, of which all but last quincuspid; interorbital $3\frac{1}{2}$, broadly convex; suborbitals broadly cover cheek for about $\frac{4}{5}$ of space to preopercle Gill rakers 10 + 11, lanceolate, $1\frac{3}{4}$ in gill filaments, which ridge at angle. $2\frac{1}{3}$ in eye. Scales 3 in lateral line to caudal base and 2 more on latter; 6 above, 3 below, 14 predorsal; slightly smaller at chest and caudal base, also low basal sheath along anal base. Scales with rather short radiating marginal striae, 14 to 16 basally and 4 to 6 less perfect apically; circuli fine basally. D. II, 8, I, first branched ray $1\frac{1}{5}$ in head, fin inserted opposite ventral origin; A. III, 19, I, first branched ray $1\frac{4}{5}$; caudal longer than head (ends broken off), forked, with slender pointed lobes; least depth of caudal peduncle 3; adipose fin length $4\frac{1}{3}$; pectoral $1\frac{1}{4}$; ventral $1\frac{2}{5}$. Back brown, lower sides and under surface whitish, with silvery white sheen. On back many lilac reflections. Eye silvery white. Underlaid, ill defined, pale grayish axial streak defines brown of back from silvery white of lower sides. Dorsals pale brown, first fin with some darker brownish terminally. Caudal pale brownish, margin in fork little grayish. Lower fins all more or less whitish, all with more or less dusky terminally, assuming large dusky black blotch on pectoral. Length 101 mm.? (caudal ends broken).

One, Quanza River at Cunga, Angola, 1910. Paratype of Alestes ansorgii.



FIG. 18. Alestes longipinnis Günther. Upper (adult), lower (young).

Alestes longipinnis Günther. Fig. 18.

Depth $2\frac{1}{2}$ to 3; head $3\frac{1}{2}$ to $3\frac{2}{3}$, width 2 to $2\frac{1}{3}$; snout $3\frac{1}{4}$ to $3\frac{2}{4}$; eye $2\frac{2}{3}$ to $3\frac{1}{8}$, greater than snout, greater than interorbital in young to subequal with age; maxillary not quite reaching opposite front eye edge, length $2\frac{3}{4}$ to $2\frac{1}{4}$ in head; teeth biserial, upper with 6 in outer and 8 in inner row, lower with 8 in outer and 2 in inner row, all except last quincuspid; interorbital $2\frac{2}{3}$ to $2\frac{1}{8}$, convex; suborbitals cover cheek except narrow naked strip within angle along preopercle ridge. Gill rakers 9 or 10 + 11, lanceolate, $1\frac{2}{3}$ in gill filaments, which $\frac{1}{2}$ of eye. Scales 29 to 32 in lateral line to caudal base and 1 or 2 more on latter; 6 above, 2 or 3 below, 14 or 17 predorsal; scarcely smaller on chest and caudal base and low sheath of small scales along anal base. Scales each with median vertical and horizontal stria, crossing, besides 3 others radiating basally and 3 apically, though only former present in small scales; circuli fine, basal, few or absent apically. D. 11, 8, 1 or 11, 7, 1, adults with first 3 to 5 branched rays greatly produced as filaments, even reaching little beyond caudal base, in medium or small specimens first branched ray about long as head; A. III, 18, III, 20, I, in adults fourth branched ray $1\frac{1}{8}$ to 2 in head, in half grown or young first branched ray. $1\frac{3}{4}$ to $2\frac{1}{4}$; caudal $3\frac{1}{2}$ to $3\frac{4}{5}$ in combined head and body to caudal base, fin

well and evenly forked; least depth of caudal peduncle $2\frac{2}{5}$ to $2\frac{7}{5}$ in head; adipose fin $3\frac{2}{3}$ to $3\frac{3}{4}$; pectoral $1\frac{1}{5}$ to $1\frac{1}{3}$; ventral 1 to $1\frac{2}{5}$, $3\frac{1}{5}$ in combined head and body to caudal base with age. Brown on back, sides and below paler to white, with bright silvery white reflections. An underlaid gray band, ill defined, about $1\frac{1}{2}$ scale widths, from suprascapula to caudal base; on caudal peduncle expanding as large dusky or blackish area, then narrowing as horizontal median black band on caudal back to ends of shortest or median rays. Iris silvery white, little gray above. In alcohol many examples show a faint gray or neutral gray blotch, little smaller than eye and about level with same 2 or 3 scales behind gill opening. Dorsal pale brown, in adults upper outer terminal portion pale or whitish or lighter. Adipose fin and caudal largely pale brown. Other fins mostly whitish, outer ventral edges dusky, also lower front anal edge.

Series of 23 specimens, 58 to 116 mm. N'Kutu, Loango River, Chiloango, West Africa, 1912. Also twenty, 47 to 112 mm. N'Kutu, Chiloango River, West Africa, 1911.

Alestes kingsleyae Günther.

Depth $3\frac{1}{8}$ to $3\frac{1}{5}$; head 3 to $3\frac{2}{3}$, width $1\frac{7}{4}$ to 2; snout $3\frac{1}{8}$ to $3\frac{1}{2}$; eye $3\frac{1}{8}$ to $4\frac{1}{3}$, greater than snout in young to $1\frac{1}{3}$ with age, $1\frac{1}{3}$ to $1\frac{3}{4}$ in interorbital, adipose lids obsolete; maxillary not quite reaching eye, length 3 to $3\frac{1}{5}$ in head; teeth biserial, eight in each row above, 8 in outer lower row and 2 in inner, except latter tri to quincuspid; interorbital $2\frac{1}{2}$ to $2\frac{3}{5}$, broadly convex; broad suborbitals entirely cover cheek. Gill rakers 12 + 19, slender, lanceolate, $1\frac{1}{4}$ in gill filaments, which $1\frac{4}{5}$ in eye. Scales 25 to 27 in lateral line to caudal base and 1 or 2 more on latter; 5 above, 2 or 3 below, 11 predorsal; smaller scales at caudal base and along anal base. Scales with 1 or 2 basal striae in young, imperfect with age; scales with 5 to 6 radiating striae apically in young, with age forming large medial reticulate area and many as 20 marginal striae; circuli fine, basal. D. 11, 8, 1, first branched ray $1\frac{1}{5}$ to $1\frac{1}{3}$ in head; adipose fin 3⁴/₅ to 4¹/₄; A. III, 13, I or III, 14, I, first branched ray 1⁴/₅ to 2; caudal 1, well forked; least depth of caudal peduncle $2\frac{3}{4}$ to $3\frac{1}{8}$; pectoral $1\frac{1}{4}$ to $1\frac{1}{3}$; ventral $1\frac{2}{5}$ to $1\frac{1}{2}$. Brown on back generally, sides and below whitish, everywhere with silvery white reflections. On middle of side of tail, behind dorsal, black band half scale in width extends to caudal and over fin to ends of median rays. Two scales behind gill opening just above lateral line, small black spot. Iris silvery white. Fins all pale or whitish, narrow edges of verticals dusky. Length 83 to 183 mm.

Seven from Mayili, Chiloango River, West Africa, 1911.

Petersius ubalo Boulenger. Fig. 19.

Depth 3 to $3\frac{1}{2}$; head $3\frac{1}{5}$ to $3\frac{3}{5}$, width $3\frac{1}{8}$ to $3\frac{1}{4}$; snout $3\frac{7}{8}$ to 4 in head from snout tip; eye $2\frac{3}{5}$ to 3, greater than snout or interorbital, without adipose lids; maxillary reaches opposite front eye edge in young, little short with age, length $2\frac{7}{8}$ to 3 in head from snout tip; teeth biserial above, 4 in outer row and 8 in inner, lower 8 uniserial, all at least tricuspid; interorbital $3\frac{1}{3}$ to $3\frac{1}{2}$, broadly convex; broad suborbitals entirely cover check. Gill rakers 9 or 10 + 18, lanceolate, $1\frac{1}{4}$ in gill filaments, which $1\frac{3}{4}$ in eye. Scales 28 to

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30 in lateral line to caudal base and 1 or 2 more on latter; 8 above, 2 or 3 below, 14 to 17 predorsal. Two median lateral series of scales much deeper than others, those along body edges smallest. Scales with median vertical stria, 1 or 2 basal, sometimes one apical; circuli fine, especially basally. D. II, 8, I, first branched ray $1\frac{1}{10}$ to $1\frac{1}{8}$ in total head; adipose fin length $3\frac{1}{4}$ to $3\frac{3}{5}$; A. III, 20, I or III, 21, I, first branched ray 2 to $2\frac{1}{8}$; caudal 1, well forked; least depth of caudal peduncle $2\frac{3}{4}$ to $3\frac{1}{8}$; pectoral $1\frac{1}{4}$; ventral $1\frac{2}{5}$ to $1\frac{1}{2}$. Back pale brown, sides and below silvery white. Along side slight undefined rather broad gray axial band, becomes blackish at caudal base and out over median short rays of fin. Iris silvery white. Fins all pale or whitish, dorsal and caudal grayish terminally. Length 33 to 61 mm.



FIG. 19. Petersius úbalo Boulenger. Paratype.

Six paratypes. Lake Kilunda, Bengo River, Angola, 1910. Petersius ansorgii Boulenger.

Depth $2\frac{3}{4}$ to 3; head $3\frac{1}{3}$ to $3\frac{1}{2}$, width 2 to $2\frac{1}{3}$; snout $3\frac{4}{5}$ to 4 in head from snout tip; eye $2\frac{3}{5}$ to 3, much greater than snout or interorbital, without adipose lids; maxillary reaches opposite front eye edge, length 2⁴/₄ to 3 in head from snout tip; teeth biserial above, 4 in outer and 8 in inner row, lower 8 teeth uniserial, all at least tricuspid; interorbital 3 to $3\frac{1}{8}$, broadly convex; broad suborbitals largely cover cheek, leave only narrow naked strip along arch of preopercle ridge. Gill rakers 10 + 17, lanceolate, $1\frac{1}{2}$ in gill filaments, which $1\frac{2}{3}$ in eye. Scales 30 or 31 in lateral line to caudal base and 2 more on latter; 7 above, 3 below, 15 to 18 predorsal. Median lateral scales all rather large and narrowly imbricated. Scales with 10 or 11 marginal radiating striae; circuli fine. D. III, 7, I, first branched ray usually longer than head or 2 to 23 in combined head and body to caudal base; adipose fin length 2²/₃ to 3¹/₂ in total head length; A. III, 21, I or III, 22, I, fin height $1\frac{1}{2}$ to $1\frac{2}{4}$; caudal $3\frac{1}{3}$ to $3\frac{2}{5}$ in combined head and body to caudal base; least depth of caudal peduncle $2\frac{4}{5}$ to 3; pectoral $1\frac{1}{4}$ to $1\frac{1}{2}$; ventral $1\frac{1}{5}$ to $1\frac{1}{5}$. Back brown, sides and below pale to whitish with silvery white reflections. Grayish axial lateral band becoming black on caudal peduncle and extends over caudal medially to hind ends of shortest rays. Obscure dusky blotch about 3 scales behind head above lateral line. Iris silvery white, in some examples tinged reddish. Fins all pale or whitish, dorsal and caudal with dark gray terminally.

Six paratypes, 45 to 59 mm. Bengo River at Cabiri, Angola, March 7, 1910. Twenty examples, 34 to 68 mm. Chiloango River at Mayili, West Africa, 1911.

Nannaethiops unitaeniatus Günther.

Depth $2\frac{4}{5}$ to $3\frac{3}{5}$; head $2\frac{7}{5}$ to $3\frac{3}{5}$, width $1\frac{7}{5}$ to 2; snout $3\frac{3}{5}$ to 4; eye $2\frac{1}{2}$ to $3\frac{1}{5}$, much greater than snout, greater than interorbital in young to $1\frac{1}{4}$ in interorbital with age, without adipose lids; maxillary reaches opposite front eye edge, length $3\frac{1}{4}$ to $3\frac{2}{5}$ in head; teeth biserial, small, slender, bicuspid and several at inner base of each maxillary; interorbital $2\frac{1}{2}$ to $2\frac{4}{5}$, broadly convex; broad suborbitals entirely cover cheeks. Gill rakers 1+9, lanceolate, $\frac{1}{2}$ of gill filaments, which $1\frac{2}{3}$ in eye. Scales 33 or 34 in lateral line to caudal base and 3 or 4 more on latter; 5 above, 5 below, 15 to 17 predorsal. Small scales on chest and still smaller ones crowded on caudal basally. Scales with 50 to 54 slender uniserial, rather long, uniform apical denticles; circuli all moderately small, well marked. D. III or IV, 9, I to 11, I, first branched ray 1 to $1\frac{1}{3}$ in head; length of adipose fin $3\frac{1}{2}$ to 4; A. III, 7, I, first branched ray $1\frac{3}{4}$ to $1\frac{7}{8}$; caudal $2\frac{7}{8}$ to $3\frac{1}{2}$ in combined head and body to caudal base, well forked; least depth of caudal peduncle 1³/₄ to 2 in head; pectoral $1\frac{2}{5}$ to $1\frac{1}{2}$; ventral $1\frac{1}{5}$ to $1\frac{1}{4}$. Back light brown, lower half of body white, with silvery white reflections. Narrow dark brown band includes both lips, extends over side of snout crossing eye then median along side of body and over caudal medially to hind ends of shortest rays, at no part of its course wider than pupil. Fins all pale or whitish, front border narrowly and upper end of dorsal blackish.

Eighteen, 29 to 71 mm., Luculla River, Chiloango, West Africa, 1911.

Neolebias ansorgii Boulenger.

Depth $3\frac{1}{5}$ to $3\frac{1}{4}$; head 3, width $1\frac{4}{5}$ to 2; snout $4\frac{1}{2}$ to $4\frac{2}{3}$ in head; eye $2\frac{7}{5}$ to 3, greater than snout or interorbital, without adipose lids; maxillary reaches opposite front eye edge, length 4 to $4\frac{1}{8}$ in head; teeth biserial, minute; interorbital $3\frac{1}{5}$ to $3\frac{1}{4}$, slightly convex; broad suborbitals entirely covering cheek. Gill rakers 6 + 10? short weak points, shorter than gill filaments, which $1\frac{3}{4}$ in eye. Scales 27 or 28 from suprascapula to caudal base and 3 or 4 more on latter; lateral line with 3 tubes close behind suprascapula; 9 scales transversely above anal origin; 13 predorsal scales. Scales with apical series of fine slender nearly uniform denticles, 48 to 50; circuli coarse, well marked. D. III, 8, first branched ray 11 in head; A. II, 6, I or 11, 7, 1, first branched ray $1\frac{3}{4}$ to $1\frac{4}{5}$; caudal 1, little emarginate behind; least depth of caudal peduncle $1\frac{3}{5}$ to $1\frac{4}{5}$; pectoral $1\frac{3}{5}$ to $1\frac{4}{5}$; ventral $1\frac{1}{2}$ to $1\frac{3}{5}$. Brown generally, paler on under surfaces. Iris gray. All along side medially broad deep dusky or gray ill defined median band. Dusky brown transverse basal band on caudal. Most fins dull brownish, darker or with some dusky terminally.

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Two paratypes, 25 or 26 mm. Luculla River, Chiloango, West Africa, 1911.

Neolebias spilotaenia Boulenger.

Depth $3\frac{1}{4}$ to 4; head 3 to $3\frac{1}{4}$, width $2\frac{1}{4}$ to $2\frac{2}{5}$; snout $4\frac{1}{8}$ to $4\frac{1}{4}$ in head; eye 3 to $3\frac{1}{3}$, greater than snout, equals interorbital, without adipose lids; maxillary reaches $\frac{3}{4}$ to $\frac{4}{5}$ in snout, length $3\frac{4}{5}$ to 4 in head; teeth minute, biserial; interorbital $3\frac{2}{5}$ to $3\frac{3}{5}$, very slightly convex. Gill rakers 3+7? short points, greatly less than gill filaments, which $1\frac{2}{5}$ in eye. Scales 39 or 40 between suprascapula and caudal base and 2 or 3 more on latter; lateral line as row of 4 or 5 tubular scales behind suprascapula; 10 scales transversely above anal origin; 15 to 18 predorsal scales. Scales uniformly small. Scales with series of 11 or 12 slender apical denticles; circuli coarse. D. III, 10, I or II, 11, I, first branched ray $1\frac{1}{5}$ to $1\frac{1}{3}$ in head; adipose fin slender, $3\frac{4}{5}$ to $4\frac{1}{5}$; A. II, 6, I or II, 7, I, first branched ray 2 to $2\frac{1}{8}$; caudal $1\frac{1}{8}$ to $1\frac{1}{5}$, forked, lobes pointed; least depth of caudal peduncle $2\frac{1}{2}$ to $2\frac{4}{5}$; pectoral $1\frac{2}{5}$ to $1\frac{4}{5}$; ventral $1\frac{2}{5}$ to $1\frac{1}{2}$. Pale brown generally, under surfaces more whitish. Each scale on back with row of dark marginal dots, producing reticulated pattern. Dark brown streak or line down middle of back. Dark brown lateral band about wide as pupil, from snout through eye and reaching caudal base medially, then out over median short caudal rays to end of fin; through most of its course band intersected by pale cross bars at intervals. Sides of head and iris, except as crossed by dark band, silvery white. Lower lip edged brown. Dark brown medial band from behind ventrals, divides as narrow dark line along each side of anal base. Fins all pale or whitish, dark vertical bar on dorsal and another at caudal base.

Five paratypes, 27 to 30 mm., Lebuze River, Kuka Muno, Chiloango, 1911.

Distichodus notospilus Günther.

Depth $2\frac{1}{3}$ to $2\frac{7}{3}$; head $3\frac{3}{5}$ to 4, width $1\frac{4}{5}$ to $2\frac{2}{3}$; snout $2\frac{1}{3}$ to $3\frac{1}{2}$; eye $2\frac{1}{2}$ to $4\frac{1}{5}$, greater than snout in young to $1\frac{4}{5}$ in snout with age, greater than interorbital in young to $1\frac{3}{4}$ in interorbital with age, without adipose lids; maxillary reaches little beyond nostrils, $\frac{3}{5}$ to $\frac{4}{5}$ to eye, length $3\frac{1}{2}$ to $4\frac{1}{5}$ in head; teeth biserial, ends bifid, 18 to 20 in outer row; interorbital $2\frac{4}{5}$ to $3\frac{1}{5}$, convex; broad suborbitals broadly cover cheek, except narrow naked strip along preopercle ridge. Gill rakers 12 + 12, short points, $\frac{1}{2}$ of gill filaments, which equal eye. Scales 39 or 40 in lateral line to caudal base and 3 or 4 more on latter; 7 or 8 above, 7 below, 21 to 23 predorsal. Scales smaller on breast, along bases of dorsal and anal and especially over caudal, except hind margin. Scales with 6 to 8 basal marginal undulations, no striae; 60 to 80 apical denticles, uniserial, slender, moderate and uniform; circuli fine. D. III or IV, 13, I to 15, I, first branched ray $1\frac{1}{8}$ to $1\frac{1}{4}$ in head; adipose fin 3 to $3\frac{4}{5}$; A. III, 10, I to III, 12, I, first branched ray $1\frac{2}{3}$ to $1\frac{4}{5}$; least depth of caudal peduncle $1\frac{4}{5}$ to $2\frac{1}{4}$; caudal $3\frac{1}{5}$ to 4 in combined head and body to caudal base, well forked with lower lobe usually shorter; pectoral 11 to 12 in head; ventral $1\frac{1}{4}$. Back brown, lower sides and under surfaces white. Iris whitish. Small black spot, little less than eye, median at caudal base, less distinct with age. Dorsals and caudal brownish, dorsal with front half

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at least black. Young often with dull axial lateral narrow band of dark brown, from suprascapula to caudal base medially. Lower fins all more or less whitish.

Seven, 44 to 206 mm., Kuka Muno, Lebuzi River, Chiloango, 1911.

Nannocharax parvus Pellegrin.

Depth 4 to 5; head $2\frac{4}{5}$ to $3\frac{1}{2}$, width $2\frac{1}{5}$ to $2\frac{1}{3}$; snout $3\frac{1}{3}$ to $3\frac{1}{2}$ in head; eye $2\frac{3}{4}$ to 3, greater than snout or interorbital; maxillary reaches $\frac{2}{3}$ to eye, length $3\frac{3}{4}$ to 4 in head; teeth uniserial, small, bicuspid, about 10 in each jaw; interorbital $3\frac{1}{2}$ to $4\frac{1}{5}$, very slightly convex; suborbitals broad, cover about $\frac{2}{3}$ of cheek. Gill rakers 4+8 short points, $\frac{1}{4}$ of gill filaments, which Scales 37 in lateral line to caudal base and 2 or 3 more on $1\frac{1}{2}$ in eye. latter; 5 above, 4 below, 13 or 14 predorsal. Caudal well scaled basally (not shown in Boulenger's figure). Scales without basal striae; 15 to 12 uniserial moderate slender apical denticles; circuli coarse. D. III, 10, I, first branched ray $1\frac{1}{4}$ to $2\frac{2}{3}$ in head; adipose fin $3\frac{3}{4}$ to $4\frac{1}{8}$; A. III, 8, 1 to III, 10, 1, first branched ray 2 to $2\frac{1}{4}$; caudal $1\frac{1}{8}$, forked, lobes pointed; least depth of caudal peduncle $2\frac{3}{4}$ to 3; pectoral $1\frac{2}{5}$ to $1\frac{1}{2}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$. Light brown generally. All along upper back about 18 dark transverse saddles, also scale edges all darker in same area. Blackish band, less than eye in width, from snout tip through eye to caudal base narrowing as point behind out over caudal to ends of short rays; on trunk and tail comprises about 14 deep black blotches in its course, last at caudal base. Fins all pale or whitish. Length 20 to 38 mm. (caudal tips broken).

Six from Luculla River, Chiloango, 1911.

CYPRINIDAE

Labeo gregorii Günther.

Depth $3\frac{1}{4}$; head $4\frac{1}{3}$, width $1\frac{3}{4}$; snout $2\frac{1}{2}$; eye $4\frac{2}{5}$, $1\frac{2}{3}$ in snout, $2\frac{1}{5}$ in interorbital; mouth width $3\frac{2}{3}$ in head; small barbel $3\frac{1}{3}$ in eye; interorbital 2 in head, broadly convex; suborbitals narrow. Lower gill rakers 50? short slender points, $3\frac{1}{2}$ in gill filaments, which $1\frac{1}{6}$ in eye. Teeth 2, 4, 5–?, grinding surfaces moderate. Scales 35 + 3 in lateral line; 6 above, 5 below, 10 predorsal; small scales on chest; 12 basal radiating striae, 59 apical, circuli fine. D. III, 11, I, simple rays flexible, first branched ray 1 in head; A. III, 5, I, first branched ray $1\frac{1}{3}$; caudal peduncle depth $1\frac{4}{5}$; pectoral $1\frac{1}{5}$; ventral $1\frac{1}{5}$; caudal (damaged) $3\frac{2}{5}$ in combined head and body to caudal base, forked. Back deep brown, paler below and on fins, though dorsal and caudal with dusky. On back pale streak down each series of scales medianly and longitudinally. Length 226 mm. (caudal damaged).

Guaso Nyiro, East Africa.

Labeo lukulae Boulenger.

Depth 4; head 4, width $1\frac{1}{2}$; snout 2; eye 6, $2\frac{4}{5}$ in snout, $2\frac{3}{4}$ in interorbital; mouth width $2\frac{1}{2}$ in head; lips moderately wide, lower width $\frac{1}{2}$ eye, its front edge with fringe of papillae, also hind edge, surface with papillae laterally and medially with weak transverse fine plicae; concealed maxillary barbel $1\frac{3}{5}$ in eye; interorbital $2\frac{1}{4}$, very slightly convex; suborbitals narrow. Gill rakers $8 + 60^{\circ}$, fine, slender, lanceolate, $3\frac{1}{2}$ in gill filaments, which equal

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eye. Teeth 2, 5, 5-5, 5, 2, without hooks, compressed, grinding surfaces moderate. Scales 32+2 in lateral line; 6 above, 5 below, 12 predorsal; small scales on chest and breast; 22 basal and 64 apical radiating striae; circuli fine. D. III, 10, I, simple slender rays flexible, first branched ray 1 in head; A. III, 5, I, first branched ray $1\frac{1}{3}$; caudal peduncle depth 2; pectoral 1; ventral $1\frac{1}{5}$; caudal $2\frac{1}{3}$ in combined head and body to caudal base, forked, slender lobes pointed. Back dusky brown, also sides, each scale with darker margins and under surfaces white. Iris grayish. Dorsal and caudal brownish, their membranes with dark brownish, lower fins whitish. Length 178 mm.

N'Kutu, Loango River, Chiloango, West Africa, 1911. This example with muzzle thickly studded with pearl organs, also entire rest of head with more or less obsolete papillae.

Labeo ansorgii Boulenger.

Depth $4\frac{1}{5}$ to $4\frac{1}{4}$; head $3\frac{3}{5}$ to $3\frac{7}{4}$, width $1\frac{3}{5}$ to $2\frac{2}{5}$; snout $2\frac{1}{3}$ to 3; eye $3\frac{1}{4}$ to 4, $1\frac{1}{5}$ to $1\frac{3}{4}$ in snout, $1\frac{1}{2}$ to 2 in interorbital; mouth width $2\frac{3}{4}$ to $3\frac{1}{4}$; lips moderately wide, subequal; two small barbels each side, posterior longer, $1\frac{1}{4}$ in eye; interorbital $2\frac{1}{2}$ to $2\frac{2}{3}$, broadly convex; suborbitals narrow. Gill rakers 10 + 36, very fine, slender, $\frac{1}{3}$ of gill filaments, which $\frac{7}{8}$ of eye. Teeth 2, 4, 5-5, 4, 2, without hooks, grinding surfaces wide. Scales 34 or 35 + 2 or 3 in lateral line; 6 above, 5 below, 10 or 11 predorsal; chest scales small; 13 to 20 basal radiating striae, 30 to 33 apical, circuli fine. D. III, 10, I, slender simple rays entire, first branched ray $3\frac{2}{3}$ to 4 in combined head and body to caudal base; caudal $2\frac{3}{4}$ to $2\frac{7}{8}$, deeply forked, long slender lobes pointed; A. III, 5, I, first branched ray $1\frac{1}{8}$ to $1\frac{1}{5}$ in head; caudal peduncle depth $1\frac{7}{4}$ to 2; pectoral 1 to 1 1/10; ventral $1\frac{1}{8}$ to $1\frac{1}{5}$. Back and sides brown, under surface white. On trunk and tail medial lateral gray streak. Iris whitish. Fins all pale brownish, lower ones whitish. In some examples cheeks and sides of head dusky. Length 53 to 105 mm.

Eight, Bengo River, Angola, 1910. Small examples also with pearl organ scars on snout.

Varicorhinus ensifer Boulenger.

Depth $3\frac{1}{4}$ to $3\frac{1}{2}$; head 4 to 5, width $1\frac{3}{5}$ to $1\frac{4}{5}$; snout $2\frac{2}{5}$ to $2\frac{4}{5}$; eye $2\frac{4}{5}$ to $3\frac{2}{5}$, 1 to $1\frac{3}{5}$ in shout, $1\frac{1}{5}$ to $1\frac{3}{5}$ in interorbital; mouth width 3 to $3\frac{4}{5}$ in head; upper lip studded with rather large round papillae and small papillae rather narrowly behind edge of lower jaw; front barbel $\frac{1}{2}$ of hind barbel, which $1\frac{1}{4}$ in eye; lateral and front surfaces of snout, also preorbital and cheeks studded with close set pearl organs; interorbital $2\frac{1}{4}$ to $2\frac{1}{3}$, broadly convex; suborbitals narrow. Gill rakers 5+20, short points, $3\frac{1}{4}$ in gill filaments, which $1\frac{1}{2}$ in eye. Teeth 1, 3, 5-4, 3, 2, with slight hooks, grinding Scales 29 to 30+2 in lateral line; 5 above, 4 or 5 below, surfaces broad. 13 predorsal; small scales on chest; 13 or 14 basal and 21 to 24 apical radiating striae, circuli fine. D. IV, 10, I, straight spines entire, first branched ray $2\frac{2}{3}$ to $2\frac{7}{8}$ in combined head and body to caudal base; caudal $2\frac{7}{5}$ to $3\frac{2}{5}$, deeply forked, slender lobes pointed; A. III, 5, I, first branched ray $4\frac{3}{5}$ to $5\frac{1}{2}$, shorter than head in young; caudal peduncle depth $1\frac{7}{8}$ to 2 in head; pectoral 1; ventral 1 to $1\frac{1}{8}$. Brown on back and above, under surfaces white. Usually each pocket of scales on upper surfaces dusky or dark brown. Iris pale or whitish. Fins all dull brownish, membranes all with more or less dusky brown. Length 111 to 168 mm.

Eight paratypes, Lucalla River at railway station, Angola, 1910.

Varicorhinus steindachneri Boulenger.

Depth $3\frac{1}{5}$ to $3\frac{1}{4}$; head 4 to $4\frac{1}{8}$, width $1\frac{3}{5}$ to $1\frac{7}{4}$; snout $2\frac{3}{4}$ to $2\frac{4}{5}$; eye 4 to $4\frac{1}{4}$, $1\frac{3}{5}$ to $1\frac{4}{5}$ in snout, $1\frac{1}{2}$ to $1\frac{4}{5}$ in interorbital; mouth width $2\frac{3}{5}$ to $2\frac{3}{4}$ in head; lip and chin smooth; no evident barbel; preorbital and front side of snout with few scattered pearl organs; interorbital $2\frac{4}{5}$ to 3, broadly convex; suborbitals narrow. Gill rakers 7+22, short points, $\frac{1}{3}$ of gill filaments, which $1\frac{2}{3}$ in eye. Teeth 1, 2, 3, 5-4, 3, 2, 1, truncate, with broad grinding surfaces. Scales 30 to 32+3 in lateral line; 6 above, 4 below, 10 or 11 predorsal; small scales on chest; 7 to 9 basal and 27 to 29 apical radiating striae; circuli fine. D. IV, 9, I, spines slender, straight and entire, first branched ray $2\frac{4}{5}$ to $2\frac{3}{5}$ in combined head and body to caudal base; caudal $2\frac{7}{5}$ to 3, deeply forked, slender lobes pointed; A. III, 5, I, first branched ray $1\frac{1}{4}$ to $1\frac{1}{3}$ in head; caudal peduncle depth $1\frac{4}{5}$ to 2; pectoral $1\frac{1}{10}$ to $1\frac{1}{8}$; ventral $1\frac{1}{4}$. Brown above, whitish beneath. Each scale on back with dark brown basal pocket. Fins all dull brownish, membranes largely dark brown. Length 183 to 195 mm.

Two paratypes, Lucalla River at railway station, Angola, 1910.

Varicorhinus latirostris Boulenger.

Depth $3\frac{1}{5}$; head $4\frac{1}{3}$, width $1\frac{1}{2}$; snout 3; eye 3, 1 in snout, $1\frac{2}{5}$ in interorbital; mouth width $2\frac{3}{5}$ in head; lip and chin entire; minute maxillary barbel $3\frac{1}{3}$ in eye; small tubercles or pearl organs all around front and sides of snout and cheeks; interorbital $2\frac{1}{3}$, broadly convex; suborbitals narrow. Gill rakers 3 + 17, slender short points, $3\frac{1}{2}$ in gill filaments, which $1\frac{1}{2}$ in eye. Teeth 2, 3, 5-5, 3, 2, hooked, with grinding surfaces. Scales 34+3in lateral line; 7 above, 5 below, 11 predorsal; small scales on chest; 11 basal and 19 apical radiating striae, circuli fine. D. IV, 10, I, spines slender, straight, entire, first branched ray $3\frac{1}{5}$ in combined head and body to caudal base; caudal 3, deeply forked, slender lobes pointed; A. III, 5, I, first branched ray $1\frac{1}{5}$ in head; caudal peduncle depth $1\frac{4}{5}$; pectoral 1; ventral $1\frac{1}{10}$. Brown above, whitish beneath. Each scale above with darker basal pocket. Dorsal and caudal brownish, other fins whitish. Some dark brown on medial portions of dorsal membranes. Iris whitish. Length 130 mm.

Paratype, Lucalla River at railway station, Angola, 1910.

Barbus bynni (Forskål).

Depth $3\frac{1}{5}$ to $3\frac{4}{5}$; head $3\frac{1}{4}$ to $4\frac{2}{3}$, width $1\frac{2}{3}$ to 2; snout 3 to $3\frac{2}{5}$; eye $3\frac{2}{7}$ to 5, $1\frac{2}{5}$ to 2 in snout, 1 to 2 in interorbital; maxillary to eye in young, $\frac{4}{5}$ to eye in adult, length $3\frac{1}{4}$ to $3\frac{2}{7}$ in head; lips moderate, in young flap on chin $1\frac{3}{4}$ in eye; front barbel $1\frac{1}{4}$ in hind barbel, which $1\frac{1}{4}$ in snout; interorbital $2\frac{1}{4}$ to $3\frac{1}{4}$ in head, broadly convex; suborbitals very narrow. Gill rakers 6+14, short points, $2\frac{1}{2}$ in gill filaments which $1\frac{1}{2}$ in snout. Teeth 2, 3, 4-4, 3, 2, vary 2, 3, 5-5, 3, 2, grinding surfaces broad, in larger row molar

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like. Scales 29 to 32+3 or 4 in lateral line; 6 or 7 above, 4 or 5 below, 13 or 14 predorsal; small on chest and breast; 6 to 19 basal and 19 to 76 apical radiating striae, circuli fine. D. IV, 9, 1, long slender straight fourth spine entire, first branched ray equals head in young to $2\frac{1}{2}$ in combined head and body to caudal base with age; caudal 3 to $3\frac{1}{2}$, deeply forked, lobes pointed; A. III or IV, 5, I, first branched ray 1 to $1\frac{1}{2}$ in head; caudal peduncle depth $1\frac{3}{5}$ to $2\frac{3}{5}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{4}$; ventral $1\frac{1}{5}$ to $1\frac{2}{5}$. Back and upper half of body olive brown, lower half paler. Iris light brownish. Fins dull brown, membranes of vertical fins often darker. Length 98 to 427 mm.

Large example from Thebeti and two small ones from stony brook in Erer River, East Africa. Dr. A. Donaldson Smith.

Barbus ensis Boulenger.

Depth $3\frac{1}{3}$ to 4; head $3\frac{2}{5}$, width $1\frac{1}{5}$ to $2\frac{3}{5}$; snout $2\frac{3}{4}$ to $3\frac{2}{5}$; eye $2\frac{1}{5}$ to $3\frac{1}{5}$, greater than snout in young to equal with age, greater than interorbital; maxillary to eye in young, $\frac{4}{5}$ with age, length $3\frac{1}{4}$ to $3\frac{2}{5}$ in head; lower lip broader, width of fold across chin $\frac{1}{3}$ of eye; front barbel $\frac{1}{4}$ of hind barbel, which nearly equals snout; interorbital $3\frac{2}{5}$ to $3\frac{3}{5}$ in head, nearly level; suborbitals very narrow. Gill rakers 5 + 14, short points, $2\frac{1}{3}$ in gill filaments, which $1\frac{2}{3}$ in eye. Teeth 2, 3, 5-5, 3, 2, but slightly hooked, some with grinding surfaces. Scales 31 or 32+3 or 4 in lateral line; 7 above, 5 below, 12 or 13 predorsal; chest scales small; no basal striae, 11 to 16 feeble apically, circuli fine basally. D. IV, 9, 1, fourth spine very long and smooth, first branched ray $2\frac{1}{8}$ to $2\frac{3}{4}$ in combined head and body to caudal base; caudal $2\frac{1}{2}$ to $2\frac{3}{4}$, deeply forked, narrow lobes slenderly pointed; A. III, 5, I, first branched ray $1\frac{1}{4}$ to $1\frac{2}{5}$ in head; caudal peduncle depth $2\frac{1}{3}$ to $3\frac{1}{5}$; pectoral $1\frac{1}{5}$ to $1\frac{1}{5}$; ventral $1\frac{1}{4}$ to $1\frac{2}{5}$. Back brown, below whitish with silvery white reflections. Each scale on back narrowly bordered with deeper brown. Iris silvery white. Barbels whitish. Fins pale, dorsal little gray terminally. Length 59 to 139 mm.

Two paratypes, Lucalla River at railway station, Angola, 1910.

Barbus rocadasi Boulenger. Fig. 20.

Depth $3\frac{1}{5}$ to $3\frac{1}{2}$; head $3\frac{1}{3}$ to $3\frac{7}{5}$, width $1\frac{7}{5}$ to 2; shout 3 to $3\frac{1}{5}$; eye $3\frac{1}{3}$ to 5. 1 to 14 in snout, greater than interorbital in young to 14 with age; maxillary to eye, length 3 to $3\frac{1}{5}$ in head; lower lip without lobe, moderately wide; barbels subequal, hind one equals snout; interorbital 3 to 31 in head, broadly convex; suborbitals very narrow. Gill rakers 6 + 12, short points, $\frac{1}{3}$ of gill filaments, which $1\frac{1}{5}$ in eye. Teeth 2, 3, 5-5, 3, 2, without hooks, grinding surfaces broad, one of larger row enlarged molar. Scales 28 or 29+3 in lateral line; 5 above, 4 or 5 below, 11 or 12 predorsal; small scales on chest; 19 to 30 basal radiating striae, 20 to 52 apical, circuli fine. D. IV, 9, 1 to IV, 10, 1, fourth spine smooth, first branched ray 3²/₅ to 4 in combined head and body to caudal base; A. III, 5, I, first branched ray $1\frac{1}{3}$ to $1\frac{2}{3}$ in head; caudal peduncle depth $2\frac{1}{5}$ to $2\frac{1}{4}$; caudal $2\frac{2}{5}$ to $3\frac{1}{4}$ in combined head and body to caudal base, deeply forked, lobes pointed; pectoral 1_{10}^{1} to $1\frac{1}{5}$; ventral $1\frac{1}{4}$ to $1\frac{2}{5}$. Brown above, whitish below. On back and sides scales all margined narrowly with darker brown than body color. Iris silvery white. Dorsal brownish, each membrane with dusky brown

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medially, fin with broad pale or gray terminal border. Caudal brownish. Lower fins whitish in young, with age dark gray terminally. Length 85 to 210 mm.



FIG. 20. Barbus rocadasi Boulenger. Paratype.

Six paratypes, Lucalla River, tributary of Quanza River, 365 kilometers from Loando, Angola, 1910.

Barbus cardozoi Boulenger.

Depth 3 to $3\frac{2}{5}$; head $3\frac{2}{3}$ to $4\frac{1}{3}$, width $1\frac{3}{4}$ to 2; snout $2\frac{3}{4}$ to $2\frac{4}{5}$; eye 4 to 5, $1\frac{1}{2}$ to $1\frac{3}{4}$ in snout, $1\frac{2}{5}$ to $2\frac{1}{5}$ in interorbital; maxillary reaches hind nostril, length $3\frac{1}{5}$ to $3\frac{1}{2}$ in head; lips broad, width of lower $\frac{1}{5}$ of eye; front barbel $\frac{1}{5}$ hind barbel, which long as snout; interorbital $2\frac{3}{4}$ to 3, broadly convex; suborbitals very narrow. Gill rakers 7 + 12, short points, $\frac{1}{3}$ gill filaments, which equal eye. Teeth 2, 3, 5-5, 3, 2, broad, robust, without hooks, with broad grinding surfaces. Scales 24 or 25+2 or 3 in lateral line; 5 above, 4 below, 10 or 11 predorsal; 25 to 34 basal radiating striae, 27 to 30 apical, circuli very fine. D. III, 9, 1, simple third spine entire, equals head; A. III, 5, 1, third simple ray $1\frac{1}{4}$ to $1\frac{2}{5}$; caudal deeply forked, lobes pointed, $2\frac{1}{5}$ to $3\frac{1}{4}$ in combined head and body to caudal base; caudal peduncle depth $1\frac{9}{10}$ to $2\frac{1}{5}$ in head; pectoral $1\frac{1}{5}$ to $1\frac{2}{5}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$. Brown above, pale to whitish below. Iris silvery white. Each scale on back with pockets show ing slightly deeper brown than body color. Fins all light gray brown and all with dark or dusky gray terminally or marginally. Length 170 to 245 mm.

Three paratypes, Boma Vonde, Lebuzi River, Chiloango, West Africa, December, 1912.

Barbus roylii Boulenger.

Depth $3\frac{2}{5}$; head $3\frac{3}{5}$, width 2; snout $2\frac{2}{5}$; eye $5\frac{4}{5}$, $2\frac{2}{5}$ in snout, $2\frac{1}{5}$ in interorbital; maxillary reaches hind nostril, length $2\frac{3}{4}$ in head; lips greatly lobate, width of lower $1\frac{2}{5}$ in snout; front barbel $1\frac{1}{2}$ in hind barbel, which $1\frac{3}{5}$ in snout; interorbital $2\frac{7}{5}$ in head, widely convex; suborbitals narrow. Gill rakers 8 + 20, lanceolate, $1\frac{4}{5}$ in gill filaments, which equal eye. Teeth 2, 3, 5-5, 3, 2, without hooks, grinding surfaces wide. Scales 27+3 in lateral line; 5 above, 4 below, 9 predorsal; 37 basal and 40 apical radiating striae; circuli fine. D. III, 9, 1, third spine smooth, $1\frac{1}{4}$ in head; A. III, 5, 1, first branched ray $1\frac{2}{5}$; caudal forked, lobes pointed, $3\frac{1}{3}$ in combined head and body to caudal base; caudal peduncle depth $2\frac{1}{3}$ in head; pectoral $1\frac{1}{3}$; ventral $1\frac{3}{5}$. Brown above, whitish beneath. Pockets of scales on back all darker than general body color. Iris whitish. Fins brownish, little darker terminally and paired ones paler or whitish basally. Length 333 mm.

Paratype, Buco Zau, Luali River, Chiloango, West Africa, 1911.

Barbus girardi Boulenger. Fig. 21.

Depth $2\frac{7}{5}$; head $3\frac{3}{4}$, width $1\frac{4}{5}$; snout $3\frac{1}{2}$; eye 3, greater than snout, equals interorbital; maxillary to eye, 3 in head; lips narrow, no fold on chin; hind barbel little shorter than front one, which 2 in head; interorbital 3, broadly convex; suborbitals very narrow. Gill rakers 2+9, short points, $\frac{1}{3}$ of gill filaments, which $\frac{1}{2}$ of eye. Teeth 2, 3, 5-4, 3, 1, with small hooks, grinding surfaces broad. Scales 35+3 in lateral line; 8 above, 6 below, 14 predorsal; scales small on chest and breast; 5 to 9 basal radiating striae, 17 apically. D. IV, 10, I, long fourth spine entire, first branched ray $2\frac{2}{5}$ in combined head and body to caudal base; caudal $2\frac{3}{5}$, deeply forked, long slender lobes pointed; A. III, 5, I, third ray $1\frac{1}{5}$ in head; caudal peduncle depth $2\frac{1}{5}$; pectoral $1\frac{1}{10}$; ventral $1\frac{1}{8}$. Back brown, sides and below silvery white. Each scale on back and sides with dark brown basal pocket. Iris silvery white. Fins pale to whitish, some dilute brownish on dorsal and caudal, also on anal medially. Length 118 mm.



FIG. 21. Barbus girardi Boulenger. Paratype.

Paratype, Lucalla River at railway station, Angola, 1910.

Barbus aureus Cope.

Depth $3\frac{1}{3}$ to $3\frac{2}{5}$; head $3\frac{3}{5}$ to $3\frac{3}{4}$, width $1\frac{3}{4}$ to $1\frac{7}{5}$; snout 3; eye 4 to $4\frac{2}{3}$, $1\frac{2}{5}$ to $1\frac{2}{3}$ in snout, $1\frac{1}{2}$ to $1\frac{3}{4}$ in interorbital; maxillary reaches $\frac{4}{5}$ to eye, length

 $3\frac{1}{5}$ to $3\frac{1}{5}$ in head; lower lip as narrow fold over chin, width $2\frac{1}{5}$ in eye; front and hind maxillary barbels subequal, $\frac{7}{5}$ to equal to eye; interorbital 3 to $3\frac{1}{5}$ in head, broadly convex; suborbitals very narrow. Gill rakers 4 + 11, short points, $3\frac{1}{2}$ in gill filaments, which nearly equal eye. Teeth 2, 3, 5 – 5, 3, 2, little hooked, with broad grinding surfaces. Scales 34 + 3 in lateral line; 6 or 7 above, 4 or 5 below, 13 predorsal; 18 to 23 basal radiating striae, 38 to 42 apical, circuli very fine. D. IV, 8, I, third simple ray $1\frac{1}{6}$ to $1\frac{1}{4}$ in head; A. III, 5, I, third simple ray $1\frac{2}{5}$ to $1\frac{1}{2}$; caudal deeply forked, lobes pointed, 3 in combined head and body to caudal base; caudal peduncle depth 2 to $2\frac{2}{5}$; pectoral $1\frac{1}{4}$; ventral $1\frac{2}{5}$. Brown above, paler to whitish below. Iris brownish. Fins all uniformly dull brown. Length 197 to 223 mm.

Nos. 7669 and 7670 A.N.S.P., Umvooti Mission, near the boundary between Zululand and Natal, South Africa. Rev. S. A. Grout. Cotypes of *Labeobarbus aureus* Cope.

Barbus leptopogon Bonaparte.

Depth $3\frac{1}{6}$; head 4, width $1\frac{7}{8}$; snout $2\frac{7}{8}$; eye $4\frac{3}{4}$, $1\frac{3}{5}$ in snout, $1\frac{2}{3}$ in interorbital; maxillary to hind nostril, length $3\frac{1}{2}$ in head; lips moderately narrow; front barbel $\frac{4}{5}$ of posterior, which equals snout; interorbital 3 in head, broadly convex; suborbitals narrow. Gill rakers 3 + 8, short points, $2\frac{1}{2}$ in gill filaments, which $1\frac{2}{5}$ in eye. Teeth lost? Scales 40 + 2 in lateral line; 7 above, 6 below, 24 predorsal; small on anterior predorsal, chest and breast; 16 basal and 35 apical radiating striae. D. III, 8, I, slender spine with hind edge well serrate (broken), first branched ray $1\frac{1}{3}$ in head; A. III, 5, I, first branched ray $1\frac{2}{5}$; caudal (damaged) well emarginate, lobes broad; caudal peduncle depth 2; pectoral $1\frac{1}{4}$; ventral $1\frac{4}{5}$. Dull brownish, back little darker. Along each series of scales in junctures, slightly darker narrow lines longitudinally. Iris pale or yellowish white. Fins light brown. Length 153 mm.

No. 6182 A.N.S.P., Algeria. Bonaparte Collection (281). Dr. T. B. Wilson. Type of *Barbus leptopogon* Bonaparte.

There is but little doubt *Barbus callensis* Valenciennes, of later date, is synonymous.

Barbus mattozi Guimaraes.

Depth 3 to $3\frac{1}{3}$; head $3\frac{1}{2}$ to $3\frac{3}{4}$, width $2\frac{1}{10}$ to $2\frac{1}{8}$; snout $3\frac{1}{4}$ to $3\frac{4}{5}$; eye $3\frac{2}{5}$ to 5, 1 to $1\frac{2}{5}$ in snout, 1 to $1\frac{1}{4}$ in interorbital; maxillary to eye, length 3 to $3\frac{1}{8}$ in head; lips narrow, without fold; front barbel $\frac{3}{4}$ of hind barbel, which equals eye; interorbital $3\frac{1}{10}$ to $3\frac{1}{4}$ in head, broadly convex; suborbitals very narrow. Gill rakers 3+5, short points, $2\frac{1}{5}$ in gill filaments, which $1\frac{3}{4}$ in eye. Teeth 2, 3, 5-5, 3, 2, without hooks, grinding surfaces moderate. Scales 31 or 32+2 in lateral line; 6 above, 4 below, 12 or 13 predorsal; breast and caudal base with rather small scales; 5 or 6 basal radiating striae, 7 to 9 apical, circuli fine. D. IV, 8, I, fourth spine with hind edge serrate to about $\frac{1}{4}$ from base, first branched ray 1 to $1\frac{1}{10}$ in head; A. III, 5, I, first branched ray $1\frac{3}{5}$ to $1\frac{3}{5}$; caudal deeply forked, lobes pointed, $3\frac{1}{5}$ to $3\frac{2}{5}$ in combined head and body to caudal base; caudal pedun-

cle depth 2 to $2\frac{1}{5}$ in head; pectoral $1\frac{1}{3}$ to $1\frac{2}{5}$. Back brown, sides and below silvery white. Iris silvery white. Dorsal and caudal slightly brownish, other fins whitish. Length 82 to 182 mm.

Six, Lucalla River at railway station, Angola, 1910.

Barbus eutaenia Boulenger.

Depth $2\frac{4}{5}$; head $3\frac{7}{8}$ to 4, width $1\frac{3}{5}$ to $1\frac{3}{4}$; snout 3 to $3\frac{1}{2}$; eye $3\frac{1}{2}$ to $3\frac{3}{5}$, $1\frac{1}{4}$ in snout, $1\frac{1}{2}$ in interorbital; maxillary $\frac{1}{8}$ to eye, length 3 to $3\frac{1}{8}$ in head; lips moderate, no fold on chin; front barbel $1\frac{1}{4}$ in hind barbel, which $2\frac{1}{4}$ in head; interorbital $2\frac{2}{5}$ to $2\frac{2}{5}$, convex; suborbitals narrow. Gill rakers 2+7, short points, $\frac{1}{3}$ of gill filaments, which $1\frac{1}{4}$ in eye. Teeth 2, 3, 5-4, 3, 2, little hooked, grinding surfaces broad. Scales 23 to 25+2 in lateral line; 5 above, 3 below, 10 or 11 predorsal; caudal well covered basally with small scales; 6 to 11 basal and 5 to 7 apical radiating striae, basal circuli fine. D. III, 7, 1, terminal hind edge of third spine with fine serrae, its length $3\frac{1}{4}$ to $3\frac{1}{3}$ in combined head and body to caudal base; caudal $2\frac{4}{5}$ to 3, forked, lobes pointed; A. III, 5, I, first branched ray $1\frac{1}{4}$ to $1\frac{1}{3}$ in head; caudal peduncle depth $1\frac{2}{3}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{5}$; ventral $1\frac{1}{8}$. Back brown, sides and below whitish. Dark brown lateral band from snout tip through eye to caudal, wide as pupil, medially out over median rays; on trunk and tail appears as if obscurely bordered with whitish both above and below in equal width. Fins pale or whitish, dorsal tip dusky, caudal little gray marginally behind. Length 128 to 131 mm.

Two, Quanza River at Dondo, Angola, 1910.

Barbus kessleri Steindachner.

Depth $3\frac{1}{8}$ to $3\frac{2}{5}$; head $3\frac{3}{4}$ to 4, width $1\frac{7}{8}$ to 2; snout 3 to $3\frac{1}{3}$; eye $3\frac{1}{5}$ to $3\frac{1}{8}$, 1 to $1\frac{2}{8}$ in snout, $1\frac{1}{5}$ to $1\frac{1}{4}$ in interorbital; maxillary to eye, length $2\frac{1}{8}$ to 3 in head; front barbel $1\frac{1}{5}$ in hind barbel, which $2\frac{1}{2}$ in head; interorbital $2\frac{1}{5}$ to 3, slightly convex; suborbitals narrow. Gill rakers 1+5, short points, $\frac{1}{3}$ of gill filaments, which $1\frac{3}{5}$ in eye. Teeth 2, 3, 5-5, 3, 2, little hooked, grinding surfaces moderate. Scales 25 or 26+1 or 2 in lateral line; 5 above, 3 or 4 below, 9 or 10 predorsal; 5 basal and 7 or 8 apical radiating striae, circuli fine. D. III, 7, 1, third spine with hind edge serrate down to basal third, $1\frac{1}{5}$ to $1\frac{1}{5}$ in head; A. III, 5, I, first branched ray $1\frac{1}{2}$ to $1\frac{3}{4}$; caudal well emarginate, lobes pointed, $3\frac{1}{4}$ to $3\frac{1}{2}$ in combined head and body to caudal base; caudal peduncle depth $1\frac{4}{5}$ to 2 in head; pectoral $1\frac{1}{3}$ to $1\frac{1}{4}$; ventral $1\frac{1}{4}$ to $1\frac{2}{5}$. Back brown, lower sides and under surfaces paler to whitish. Along middle of sides each scale with dark brown basal pocket. Axial narrow leaden line from little before dorsal, along side of body, to caudal base. Basal scale of caudal medially deep brown. Iris silvery white. Vertical fins pale basally, grayish or brownish terminally. Other fins whitish, pectoral with light brown above and anal terminally so. Length 61 to 92 mm.

Six, Lucalla River, Angola, 1910.

Barbus holotaenia Boulenger. Fig. 22.

Depth $2\frac{4}{5}$ to $3\frac{2}{5}$; head $3\frac{1}{5}$ to $3\frac{3}{4}$, width $1\frac{4}{5}$ to 2; snout $3\frac{1}{5}$ to $3\frac{1}{2}$; eye $2\frac{2}{5}$ to 4, little longer than snout in young to $4\frac{1}{5}$ with age, 1 to $1\frac{1}{2}$ in interorbital; maxillary to eye in young, $\frac{7}{5}$ to eye in adult, length 3 to $3\frac{2}{5}$ in head; lips

narrow, without fold over chin; front barbel $1\frac{1}{3}$ in hind barbel, which $1\frac{1}{90}$ to $2\frac{1}{3}$ in head; interorbital $2\frac{1}{90}$ to 3, broadly convex; suborbitals narrow. Gill rakers 1+7, short points, $\frac{1}{4}$ of gill filaments, which $1\frac{1}{4}$ in eye. Teeth 2, 3, 5-5, 3, 2, grinding surfaces moderate, little hooked, 3 of longest row enlarged, robust and compressed. Scales 22 to 24+2 or 3 in lateral line; 5 above, 3 or 4 below, 8 or 9 predorsal; scales little small on chest, more so well over caudal base; 4 basal and 4 apical radiating striae, circuli fine. D. III, 8, 1, third spine with hind edge serrate except about basal third, length 3 to $3\frac{1}{2}$ in combined head and body to caudal base; A. III, 5, 1, first branched ray $1\frac{1}{2}$ to $1\frac{3}{5}$ in head; caudal deeply emarginate, lobes pointed, $2\frac{3}{5}$ to $2\frac{4}{5}$ in combined head and body to caudal base; caudal peduncle depth 2 to $2\frac{1}{5}$ in head; pectoral $1\frac{1}{5}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$. Brown, paler to whitish below. Each scale on back and sides with narrow dark brown edge, forming reticulate appearance. Chin whitish. Front barbel brownish, hind barbel largely



white terminally. Dusky brown band, about wide as pupil, from snout tip through eye to caudal medially often over short median rays to ends, sometimes indistinct or absent from caudal in young. Dorsal creamy, upper edge broadly blackish. Anal similar. Caudal gray brown. Paired fins whitish, though usually tipped with black in adults. Length 21 to 120 mm.

Ten, Mayili, Chiloango River, West Africa, 1911. One, Lucalla River at railway station, Angola, August 4, 1910.

The black bordered dorsal and anal, as well as the black-tipped paired fins, do not seem to have been noticed by Boulenger. 1930]

Barbus ablabes (Bleeker).

Depth $2\frac{1}{5}$ to 4; head $3\frac{3}{5}$ to $3\frac{3}{4}$, width $1\frac{3}{5}$ to $1\frac{3}{4}$; snout $3\frac{1}{5}$ to $3\frac{1}{3}$; eye $3\frac{1}{5}$ to $4\frac{1}{3}$, little greater than snout in young to $1\frac{1}{3}$ with age; maxillary reaches eye, $2\frac{1}{2}$ to $3\frac{1}{8}$ in head; front barbel $\frac{3}{4}$ of posterior, latter equals snout; interorbital $2\frac{4}{5}$ to $3\frac{1}{5}$, broadly convex; suborbitals narrow. Gill rakers 1+4, short points, $\frac{1}{5}$ of gill filaments, latter $1\frac{1}{2}$ in eye. Teeth 2, 3, 5-5, 3, 2, vary 1, 3, 5-5, 3, 1, or 1, 3, 5-4, 3, 2, or 2, 3, 5-5, 3, 0, or 2, 3, 5-5, 3. Scales 21 to 25 + 2 or 3 in lateral line; 5 above, 3 or 4 below, 8 to 10 predorsal; 6 or 7 basal and 7 or 8 apical radiating striae, basal circuli fine. D. III, 8, I, first branched ray $1\frac{1}{8}$ to $1\frac{1}{3}$ in head; A. III, 5, I, first branched ray $1\frac{3}{3}$ to $1\frac{2}{3}$; caudal forked, lobes pointed, 3 to $3\frac{1}{5}$ in combined head and body to caudal base; caudal peduncle depth $1\frac{7}{8}$ to 2 in head; pectoral $1\frac{1}{4}$ to $1\frac{3}{5}$; Brown, paler below. From snout tip through eye to ventral $1\frac{1}{3}$ to $1\frac{1}{3}$. caudal base medially broad deep brown band, width little less than eye, margined narrowly above and below with grayish lines. Each scale base of lower costal region with slightly browner tinge. Fins uniformly pale, top of dorsal dusky or blackish. Length 40 to 105 mm.

Nos. 7607 to 7621, A.N.S.P. Streams and rivulets fifty to sixty miles north of the equator and the same distance from the ocean, French Congo. P. B. Du Chaillu. Cotypes of *Enteromius potamogalis* Cope.

Barbus unitaeniatus Günther. Fig. 23.

Depth $3\frac{2}{5}$ to $3\frac{2}{3}$; head $3\frac{1}{2}$ to $3\frac{4}{5}$, width $1\frac{4}{5}$ to 2; snout $3\frac{1}{3}$ to $3\frac{3}{5}$; eye 3 to $3\frac{1}{5}$, greater than snout, greater than interorbital in young to $1\frac{1}{5}$ with age; maxillary $\frac{4}{5}$ to eye, length $3\frac{1}{3}$ to $3\frac{1}{2}$ in head; lips narrow, without fold over



FIG. 23. Barbus unitaeniatus Günther.

chin; front barbel $1\frac{1}{4}$ in hind barbel which slightly greater than eye; interorbital $2\frac{3}{4}$ to 3 in head; suborbitals nearly cover half naked cheek to preopercle ridge, little narrower in young. Gill rakers 2+7, short points, $\frac{1}{4}$ gill filaments which $1\frac{1}{4}$ in eye. Teeth 2, 3, 5-5, 3, 2, very small, little hooked. Scales 30 or 31+2 in lateral line; 6 above, 3 below, 11 or 12 predorsal; small scales on chest and caudal base; 13 or 14 basal and 16 or 17 apical radiating striae, circuli fine. D. III, 8, I, simple rays slender and smooth, first branched ray $3\frac{1}{3}$ to $3\frac{1}{2}$ in combined head and body to caudal base; A. III, 5, I, first branched ray $1\frac{1}{4}$ to $1\frac{3}{5}$ in head; caudal forked, lobes pointed, $2\frac{3}{4}$ to 3 in combined head and body to caudal base; caudal peduncle depth $2\frac{1}{3}$ to $2\frac{1}{4}$; pectoral $1\frac{1}{4}$ to $1\frac{2}{5}$; ventral $1\frac{1}{8}$ to 2. Back brown, paler below and under surface whitish. On sides each scale with dark brown basal pocket. Iris silvery white. Dark brown on snout and on postocular. Axial streak or line of dusky to caudal base, often broken as blotches and always last as small dark spot at caudal base medially. At front base of anal, on tail, a dusky spot. Dark brown band down middle of back and another behind anal on caudal peduncle. Dorsal and caudal brownish, other fins whitish. Length 50 to 73 mm.

Six, Lucalla River, railway station, Angola, 1910.

Barbus mussumbi Boulenger. Fig. 24.

Depth $3\frac{1}{5}$ to $3\frac{1}{4}$; head $3\frac{1}{4}$ to $3\frac{1}{2}$, width $1\frac{4}{5}$ to 2; snout $3\frac{1}{2}$ to $3\frac{4}{5}$; eye $2\frac{1}{2}$ to $3\frac{1}{5}$, greater than snout, 1 to $1\frac{1}{5}$ in interorbital; maxillary not quite to eye, 3 to $3\frac{1}{5}$ in head; lips narrow, little developed; 2 barbels each side, hind one longer or $\frac{1}{3}$ of eye; interorbital $2\frac{3}{5}$ to 3 in head, slightly convex; suborbitals very narrow. Gill rakers 2 + 10 short points, $\frac{1}{4}$ of gill filaments, which $1\frac{1}{5}$ in eye. Teeth 2, 3, 5-5, 3, 2, hooked, grinding surfaces broad. Scales 19 or 20 + 1; 4 above, 3 below, 8 to 10 predorsal; 5 to 12 basal and 10 to 13 apical radiating striae, circuli fine. D. III, 8, I, first branched ray 1 to $1\frac{1}{5}$ in head; A. III, 5, I, first branched ray $1\frac{1}{2}$ to $1\frac{3}{5}$; caudal forked, lobes pointed, $2\frac{3}{4}$ to $2\frac{4}{5}$ in combined head and body to caudal base; caudal peduncle depth 2 to $2\frac{1}{5}$ in head; pectoral $1\frac{1}{5}$ to $1\frac{1}{5}$; to $1\frac{1}{4}$. Light brown, paler below, sides and especially head with silvery white reflections; scales on sides and back often narrowly edged with dusky brown. Dark brown bar on shoulder girdle behind gill opening. Dorsal and caudal brownish, other fins paler. Length 35 to 53 mm.



FIG. 24. Barbus mussumbi Boulenger. Paratype. Eight paratypes, Lake Kilunda, Bengo River, Angola, 1910.

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Barbus trispilomimus Boulenger.

Depth $3\frac{1}{5}$ to $3\frac{2}{5}$; head 3 to $3\frac{2}{5}$, width $1\frac{3}{5}$ to $1\frac{3}{4}$; snout $3\frac{1}{5}$ to $3\frac{1}{2}$; eye $2\frac{1}{2}$ to $2\frac{1}{6}$, greater than shout or interorbital; maxillary not quite to eye, $3\frac{3}{4}$ to 4 in head; mouth small, subinferior; narrow lips without fold across chin; no barbels; interorbital $2\frac{4}{5}$ to $3\frac{1}{8}$, broadly convex; suborbitals narrow. Gill rakers 2 + 11, robust points, $\frac{1}{2}$ gill filaments, which $1\frac{4}{5}$ in eye. Teeth 2, 3, 5 -5, 3, 2, little hooked. Scales 20 or 21 + 1 or 2 in lateral line; 4 above, 3 below, 8 to 10 predorsal; 3 or 4 basal and 4 apical radiating striae, circuli moderate. D. III, 8, 1, first branched ray 1 to 11/8 in head; A. III, 5, 1, first branched ray 1 to $1\frac{1}{6}$; caudal $2\frac{3}{4}$ to $2\frac{1}{6}$ in combined head and body to caudal base, forked lobes pointed; caudal peduncle depth $2\frac{2}{5}$ to 3 in head; pectoral $1\frac{2}{5}$ to $1\frac{1}{2}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$. Brown above, white with silvery shades below, on back each scale bordered darker, on sides each pocket dark brown. Small median dark spot on predorsal, another at origin of dorsal and third opposite middle of dorsal base on edge of back. Three black spots about size of pupil along lateral line, first above middle of pectoral, second behind dorsal base and third at caudal base. Fins pale or whitish. Length 38 to 40 mm.

Four from Mayili, Chiloango River, Chiloango, 1911.

Barbus carens Boulenger.

Depth $3\frac{1}{2}$ to $3\frac{2}{3}$; head $3\frac{1}{3}$ to $3\frac{1}{2}$, width $1\frac{4}{5}$ to 2; snout $3\frac{1}{2}$ to $4\frac{3}{5}$; eye $2\frac{2}{3}$ to 3, greater than snout, greater than interorbital in young to equal with age; maxillary to eye in young, little short of eye with age, $3\frac{1}{3}$ to 4 in head; mouth very small, subterminal; lips narrow, no barbels; interorbital 2⁴/₅ to 3; suborbitals narrow. Gill rakers 8+13, lanceolate, $\frac{2}{3}$ of gill filaments, which $1\frac{3}{4}$ in eye. Teeth 2, 3, 5-5, 3, 2, little hooked. Scales 20 or 21 between suprascapula and caudal base and 1 or 2 more on latter; 7 transversely above anal base; 10 or 11 predorsal; 3 to 6 basal and 5 to 7 apical radiating striae, circuli fine. D. III, 8, 1, first branched ray $3\frac{2}{5}$ to $3\frac{1}{2}$ in combined head and body to caudal base; A. III, 5, I, first branched ray 13 to 2 in head; caudal $1\frac{1}{8}$ to $1\frac{1}{5}$, emarginate, lobes pointed; caudal peduncle depth 2 to $2\frac{3}{4}$; pectoral $1\frac{2}{5}$ to $1\frac{3}{5}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$. Brown, little paler below. Sides of head and iris bright silvery white. Down middle of back scales broadly dusted marginally with deeper brown. Narrow axial lateral slate dusky line not quite to caudal base. Black blotch at front of vent. Narrow dark brown line along base of anal on tail, continues behind fin as median line to caudal base. Fins all pale or whitish. Length 27 to 32 mm.

Twelve paratypes, Kuka Muno, Lebuzi River, Chiloango, West Africa, 1911.

Barilius ubangensis Pellegrin.

Depth 4 to $4\frac{1}{4}$; head $3\frac{4}{5}$, width 2; snout $3\frac{1}{2}$; eye $3\frac{2}{5}$ to $3\frac{1}{2}$; $1\frac{1}{8}$ to $1\frac{1}{5}$ in snout, $1\frac{1}{5}$ in interorbital; maxillary $1\frac{1}{5}$ to $1\frac{1}{4}$ in eye, length $2\frac{2}{5}$ to $2\frac{2}{3}$ in head; no barbels; minute tubercles on snout and mandible; interorbital $2\frac{7}{4}$ to 3, broadly convex; suborbitals cover $\frac{2}{3}$ of cheek to preopercle ridge. Gill rakers 1+7, short points, $2\frac{1}{4}$ in gill filaments, which $1\frac{1}{2}$ in eye. Teeth 2, 3, 6-5, 3, 2, hooked. Scales 39 or 40+2 in lateral line; 9 above, 3 below, 19 to 21 predorsal; 6 to 11 basal radiating striae, 9 to 12 apical, circuli fine.

D. II, 8, I or II, 9, I, first branched ray $1\frac{1}{4}$ to $1\frac{2}{5}$ in head; A. III, 12, I to III, 14, I, first branched ray $1\frac{1}{4}$ to $1\frac{1}{3}$; caudal $3\frac{1}{4}$ to $3\frac{1}{3}$ in combined head and body to caudal base; caudal peduncle depth $2\frac{1}{3}$ to $2\frac{1}{2}$ in head; pectoral $1\frac{1}{4}$ to $1\frac{2}{5}$; ventral $1\frac{3}{4}$ to 2. Back brown, sides and below silvery white. Each scale on back with slightly darker brown edge. Eight deep neutral gray transverse bands, broader than pale interspaces. Iris silvery white. Dorsal whitish, front edge, median membranes terminally and ends of last rays blackish. Caudal whitish, lower lobe dusky medianly. Other fins all whitish. Length 68 to 70 mm.

Two paratypes of *Barilius ubangensis* var. *chiloangae* Boulenger, Buco Zau, Luali River, Chiloango.

Barilius ansorgii Boulenger.

Depth $3\frac{7}{8}$ to 4; head $3\frac{3}{5}$ to $3\frac{2}{3}$, width $2\frac{1}{10}$; snout $2\frac{1}{2}$ to $3\frac{1}{4}$; eye $3\frac{1}{2}$ to $3\frac{7}{8}$, 1 to $1\frac{1}{4}$ in snout, $1\frac{1}{10}$ to $1\frac{2}{5}$ in interorbital; maxillary $\frac{3}{4}$ to $\frac{4}{5}$ in eye, $1\frac{4}{5}$ to $1\frac{7}{8}$ in head; no barbels; interorbital $3\frac{1}{8}$ to $3\frac{1}{5}$, very slightly convex; suborbitals cover $\frac{4}{5}$ of cheek to preopercle ridge. Gill rakers 3+6, short points, $\frac{1}{3}$ of gill filaments, which $1\frac{3}{5}$ in eye. Teeth 3, 5-5, 3, hooked, grinding surfaces broad. Scales 37 or 38+2 in lateral line; 8 above, 3 below, 20 or 21 predorsal; scales small on chest and breast; 7 basal and 10 to 20 apical radiating striae, circuli fine. D. II, 7, I, first branched ray $1\frac{3}{4}$ in head; A. III, 12, I or III, 11, I, first branched ray $1\frac{3}{5}$ to $2\frac{7}{8}$; pectoral $1\frac{1}{10}$; ventral $1\frac{3}{5}$ to 2. Back lilac brown, sides and below silvery white. Above lateral line along side 12 or 13 narrow neutral gray or slate vertical short bars, last as dark blotch on caudal base medially, all others greatly narrower than pale interspaces. Iris silvery white. Dorsal and caudal pale brownish, other fins white. Length 98 to 112 mm. (caudal broken).

Three paratypes, Quanza River at Dondo, Angola, 1910. In all the dark vertical bars are quite variable.

CLARIIDAE

Clarias mossambicus Peters.

Depth $7\frac{1}{4}$ to $7\frac{1}{5}$; head $3\frac{3}{4}$ to $3\frac{4}{5}$, width $1\frac{1}{3}$ to $1\frac{1}{2}$; snout 3 to $3\frac{2}{5}$; eye 8 to $8\frac{1}{2}$, $2\frac{3}{5}$ to $3\frac{3}{4}$ in snout, 4 to 5 in interorbital, edge of lids free; mouth width $2\frac{3}{5}$ to $2\frac{2}{3}$ in head; nasal barbel $1\frac{2}{3}$ to $1\frac{3}{4}$, outer mental $1\frac{1}{5}$ to $1\frac{1}{4}$, inner $1\frac{3}{5}$, maxillary 3 to $3\frac{1}{5}$ in combined head and body to caudal base; interorbital $2\frac{1}{5}$, very slightly convex. Gill rakers 10 + 48, lanceolate, equal eye; gill filaments $\frac{3}{4}$ of gill rakers. D. 68 to 70, fifth ray $2\frac{1}{2}$ to 3 in head, dorsal not to caudal; A. 52 or 53, median rays 4 to 5, not reaching caudal; caudal $1\frac{3}{5}$ to $1\frac{2}{3}$, convex behind; caudal peduncle depth $4\frac{3}{4}$ to 5; pectoral 2, about 15 serrae along outer edge of spine; ventral $1\frac{4}{5}$ to $2\frac{2}{5}$. Brown generally, paler to whitish below. Dark brown streak from below eye along side of head backwards. Iris gray. Barbels all dull brown. Dorsal and caudal brownish, other fins paler. Length 153 to 175 mm.

Two, Shebeli River, East Africa, February 1, 1895. Dr. A. Donaldson Smith.

Clarias angolensis Steindachner.

Depth $5\frac{3}{4}$ to $7\frac{1}{5}$; head $4\frac{3}{4}$ to $5\frac{1}{5}$, width $1\frac{1}{8}$ to $1\frac{1}{5}$; snout $2\frac{1}{2}$ to $2\frac{3}{5}$; eye 8 to $10\frac{3}{4}$, $3\frac{1}{2}$ to $4\frac{1}{2}$ in snout, 5 to 6 in interorbital, lids free; mouth width $2\frac{1}{8}$ to $2\frac{1}{4}$ in head; nasal barbel $3\frac{1}{8}$ to $4\frac{1}{2}$ in combined head and body to caudal base, maxillary $2\frac{2}{5}$ to $3\frac{3}{4}$, outer mental $3\frac{1}{8}$ to $4\frac{1}{4}$, inner mental $4\frac{1}{4}$ to $6\frac{1}{4}$; teeth in villiform bands, vomero-palatine band little wider than jaw teeth, which 4 times long as broad; interorbital $1\frac{4}{5}$ to 2, very slightly convex. Gill rakers 4+12 to 17, lanceolate, subequal with gill filaments and eye. D. 69 to 74, fifth ray $1\frac{4}{5}$ to $2\frac{1}{3}$; caudal $1\frac{1}{2}$ to $1\frac{3}{5}$, convex behind; caudal peduncle depth $3\frac{1}{3}$ to $3\frac{3}{4}$; pectoral $1\frac{2}{5}$ to $1\frac{3}{5}$, both spine edges serrated; ventral $2\frac{1}{4}$ to $2\frac{2}{3}$. Brown, variably darker to uniform, or head and belly below whitish. Barbels pale to brownish. Iris gray. Length 71 to 125 mm.

Eight, Lundo, Luali River, Chiloango, 1911.

Clarias liberiensis Steindachner.

Depth 6 to $6\frac{1}{2}$; head $4\frac{1}{3}$ to 5, width $1\frac{1}{8}$ to $1\frac{1}{5}$; snout $2\frac{3}{4}$ to 3; eye $8\frac{1}{2}$ to 9, 3 to $3\frac{1}{3}$ in snout, 5 to 6 in interorbital, edges free; mouth width 2 to $2\frac{1}{4}$; nasal barbel $3\frac{7}{5}$ to 4 in combined head and body to caudal base, maxillary $2\frac{7}{8}$ to $3\frac{1}{2}$, outer mental $3\frac{1}{2}$ to 5, inner mental $1\frac{1}{5}$ to $1\frac{1}{3}$ in head; vomeropalatine teeth continuous, subequal in size with jaw teeth, which $\frac{1}{4}$ wide as long; interorbital $1\frac{3}{4}$ to $1\frac{4}{5}$, very slightly convex. Gill rakers 4 + 12 to 16, lanceolate, little longer than gill filaments which slightly greater than eye. D. 66 to 74, fifth ray 2 in head, nearly reaches caudal; A. 46 to 52, fifth ray $1\frac{7}{8}$ to $2\frac{1}{5}$; caudal $1\frac{1}{4}$ to $1\frac{2}{5}$, convex behind; caudal peduncle depth $2\frac{1}{2}$ to $3\frac{1}{3}$; pectoral $1\frac{2}{5}$ to $1\frac{3}{4}$, spine with outer edge rough or serrate, hind edge also serrate; ventral 2 to 3. Brown, belly and under surface of head paler to whitish. Length 94 to 140 mm.

Five examples, Monrovia, Liberia. Dr. S. M. E. Goheen. Though I identified these all previously as *Clarias angolensis* they appear to properly belong to the present species.

Clariallabes melas (Boulenger).

Depth $7\frac{1}{3}$; head $6\frac{1}{4}$, width $1\frac{1}{4}$; snout 3; eye 13, $4\frac{3}{4}$ in snout, 6 in interorbital, lids not free; mouth width $2\frac{1}{2}$ in head; nasal barbel $1\frac{3}{5}$, maxillary $1\frac{1}{10}$, outer mental $1\frac{1}{3}$, inner $1\frac{1}{2}$; teeth villiform, upper band 4 times wider than long, vomero-palatine band little narrower; interorbital $2\frac{1}{2}$, slightly convex. Gill rakers 3+9, lanceolate, $1\frac{1}{5}$ in gill filaments, which $3\frac{1}{2}$ in snout. D. 91, fifth ray $2\frac{3}{5}$ in head, last ray fully joined with caudal; A. 70, fifth ray $2\frac{2}{5}$, last ray fully joined with caudal; caudal $1\frac{2}{5}$, convex behind; pectoral $2\frac{1}{3}$, both edges of spine serrated; ventral $4\frac{3}{4}$. Dark brown above, little paler on under surface of head and belly. Barbels brownish. Iris grayish. Length 157 mm.

Lundo, Luali River, Chiloango, 1911.

Channallabes apus Günther.

Depth 19⁴/₂ to 20¹/₂; head 12¹/₂ to 12⁴/₅, width 1²/₅ to 1³/₅; snout 3 to 3¹/₈; eye 13³/₄ to 14, 4¹/₂ to 5¹/₂ in snout, 5 in interorbital; lids not free; mouth width 3

in head; nasal barbel $1\frac{3}{5}$ to $1\frac{2}{3}$, maxillary 1 to $1\frac{1}{5}$, outer mental $1\frac{1}{5}$, inner $1\frac{7}{5}$ to $2\frac{1}{5}$; villiform teeth in bands, upper jaw bands 3 times longer than transverse, vomero-palatine band equally wide; interorbital $2\frac{4}{5}$ to 3, nearly level. Gill rakers 2+7, lanceolate, little longer than gill filaments or $\frac{1}{4}$ of interorbital. D. 135? to 150, height $2\frac{2}{5}$ to $2\frac{3}{4}$; A. 128 to 130, height $2\frac{7}{5}$ to $3\frac{1}{4}$; caudal $1\frac{3}{5}$ to $1\frac{2}{3}$, convex behind; no trace of paired fins; predorsal to occipital point $1\frac{1}{4}$ to $1\frac{2}{5}$ in head. Uniform dark brown. Barbels dusky. Iris slate. Length 275 to 305 mm.

Two, Lubuzi River, Kuka Muno, Chiloango, 1911.

SCHILBEIDAE

Eutropius depressirostris (Peters).

Depth $3\frac{4}{5}$ to 4; head $4\frac{1}{2}$ to $4\frac{3}{4}$, width $1\frac{1}{2}$ to $1\frac{3}{5}$; snout $2\frac{1}{2}$ to $2\frac{2}{3}$ in head from snout tip; eye $5\frac{1}{4}$ to $6\frac{3}{4}$, $1\frac{4}{5}$ to $2\frac{1}{4}$ in snout, $2\frac{3}{4}$ to 3 in interorbital; maxillary $\frac{4}{5}$ to eye, length $2\frac{1}{4}$ to $2\frac{2}{3}$ in head from snout tip; mouth width $1\frac{2}{3}$ to 2; teeth villiform, vomero-palatine band continuous and narrower than bands in jaws; nasal barbel $1\frac{1}{4}$ to $2\frac{1}{3}$ in total head, maxillary $1\frac{1}{10}$ to $1\frac{1}{4}$, outer mental 2 to $2\frac{1}{10}$, inner mental $\frac{1}{2}$ to $\frac{3}{5}$ of outer; interorbital $1\frac{4}{5}$ to 2 in head from snout tip, very broadly convex. Gill rakers 9 + 19, lanceolate, equal gill filaments or $1\frac{1}{4}$ in eye. D. I, 6, I, slender straight spine smooth, first ray $4\frac{1}{5}$ to 5 in combined head and body to caudal base; A. III or IV, 51, I to 56, I, first branched ray 2 to $2\frac{1}{5}$ in total head length; adipose fin $4\frac{1}{5}$ to $4\frac{1}{3}$; caudal peduncle depth $2\frac{3}{5}$ to $2\frac{3}{4}$; pectoral about long as head, spine $1\frac{2}{5}$, about 30 small antrorse serrae along hind edge; ventral 2; caudal (damaged) deeply forked. Body light brown above, lower sides and under surfaces silvery white. Iris whitish. Fins all pale. Length 312 to 325 mm.

Three, Shebeli River, East Africa. Dr. A. Donaldson Smith.



FIG. 25. Entropius seraoi Boulenger. Paratype.

Eutropius seraoi Boulenger. Fig. 25.

Depth $4\frac{2}{3}$; head $4\frac{1}{2}$, width $1\frac{1}{2}$; snout $2\frac{1}{10}$; eye $3\frac{1}{3}$, $1\frac{1}{3}$ in snout, 2 in interorbital; maxillary $\frac{1}{3}$ to eye, length $2\frac{3}{4}$ in head; mouth width $2\frac{1}{5}$; nasal barbel $1\frac{3}{5}$, maxillary 1, outer mental $1\frac{1}{2}$, inner $2\frac{7}{3}$; teeth villiform, continuous vomero-palatine band narrower than bands in jaws; interorbital $1\frac{3}{4}$, broadly convex. Gill rakers 5 + 10, lanceolate, equal gill filaments, which

 $2\frac{1}{2}$ in eye. D. I, 6, spine rather large, compressed, terminally with 4 or 5 feeble serrae on both edges, first ray $1\frac{1}{3}$ in head; adipose fin $3\frac{1}{4}$; A. III, 50, first branched ray 2; caudal (damaged) little longer than head, forked; caudal peduncle depth $2\frac{1}{2}$; pectoral $1\frac{1}{4}$, spine moderate, with 5 feeble serrae along hind edge; ventral $2\frac{1}{10}$. Back brown, sides and below pale gray to white, with silvery reflections. Everywhere, except belly and head below, with dark brown specks. Fins all pale. Gray brown blotch behind upper end of gill opening. Length 78 mm. (caudal damaged).

Paratype, Lucalla River, 365 kilometers from Loando, Angola, 1910.

Schilbe mystus (Hasselquist).

Depth $3\frac{2}{3}$; head $4\frac{1}{3}$, width $1\frac{1}{2}$; snout $2\frac{1}{2}$ in head from snout tip; eye 7, $2\frac{3}{5}$ in snout, 4 in interorbital; maxillary $\frac{2}{3}$ to eye in profile, length $2\frac{9}{10}$ in head from snout tip; mouth width $1\frac{4}{5}$; nasal barbel $2\frac{7}{5}$, maxillary barbel $2\frac{1}{3}$, outer mental $1\frac{3}{4}$, inner 4; teeth villiform, vomero-palatine band narrower than bands in jaws; interorbital $1\frac{3}{4}$, broadly convex. Gill rakers 4 + 10, lanceolate, equal gill filaments, which equal eye. D. I, 5, 1, slender spine with 15 antrorse serrae along hind edge, first ray $1\frac{1}{4}$ in head; A. III, 58, 1, third ray 2; caudal $1\frac{1}{4}$?, forked (damaged); caudal peduncle $2\frac{4}{5}$; pectoral $1\frac{1}{2}$, spine slender, 24 weak antrorse serrae on its inner edge; ventral $1\frac{9}{10}$. Back pale brown, lower sides and under surface silvery white. Iris and barbels pale or whitish. Fins pale brown. Length 225 mm.? (caudal damaged).

One labeled Nile?, from the Bonaparte Collection (No. 368). Dr. T. B. Wilson.

Ansorgia vittata Boulenger.

Depth $4\frac{3}{5}$ to 5; head $4\frac{4}{5}$ to 5, width $1\frac{1}{2}$ to $1\frac{3}{5}$; snout 3; eye $3\frac{4}{5}$ to 4, $1\frac{2}{5}$ to $1\frac{1}{2}$ in snout, 2 in interorbital; mouth width $2\frac{2}{5}$ to $2\frac{1}{2}$ in head; nasal barbel $1\frac{9}{10}$ to $4\frac{1}{2}$ in head, maxillary 1 to $1\frac{2}{5}$, mental $1\frac{1}{5}$ to $2\frac{1}{4}$; teeth villiform, continuous vomero-palatine band equally wide as jaw teeth; interorbital 2 to $2\frac{1}{10}$, convex. Gill rakers 2+6, lanceolate, $\frac{1}{2}$ of gill filaments, which $1\frac{1}{4}$ in eye. D. I, 5, spine rather slender with 5 or 6 weak serrae along its hind edge, first ray 1 to $1\frac{1}{10}$ in head; adipose fin 3 to $4\frac{3}{4}$; A. IV, 39 to 41, first branched ray $1\frac{4}{5}$ to $1\frac{7}{8}$; caudal peduncle depth $2\frac{3}{4}$ to 3; pectoral 1 to $1\frac{1}{5}$, spine moderate, with about dozen low antrorse serrae along hind edge, fewer along front edge; ventral $1\frac{4}{5}$ to $1\frac{7}{8}$; caudal $4\frac{1}{5}$ to $4\frac{7}{8}$ in combined head and body to caudal base. Brown above, below whitish, with yellowish tinge. Sides with silvery white and median dusky gray lateral band to base of lower caudal lobe, slightly bent down as brown blotch on latter. Parallel above pale area equally wide, separates dark band from back. Iris whitish. Barbels pale. Fins whitish. Length 91 to 119 mm.

Two paratypes, N' Kutu, Loango River, Chiloango, 1911.

Physailia villiersi Boulenger.

Depth $4\frac{3}{5}$ to $4\frac{3}{4}$; head $4\frac{4}{5}$ to 5, width 2 to $2\frac{1}{10}$; snout $3\frac{1}{5}$ to $3\frac{1}{4}$ in head from snout tip; eye 3 to $3\frac{1}{2}$, greater to subequal with snout, $1\frac{1}{5}$ to $1\frac{1}{2}$ in interorbital, without free edge; mouth width $2\frac{3}{5}$ to $2\frac{3}{4}$; maxillary barbel 2 to

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 $3\frac{1}{5}$ in combined head and body to caudal base, nasal 2 to $2\frac{1}{2}$, outer mental barbel $2\frac{1}{5}$ to $2\frac{1}{5}$, inner 2 to $2\frac{2}{5}$; interorbital $2\frac{1}{3}$ to $2\frac{3}{5}$, broadly convex. Gill rakers 8 + 20, lanceolate, $1\frac{2}{5}$ in eye; gill filaments $\frac{3}{5}$ of gill rakers. Adipose fin $2\frac{2}{5}$ to $2\frac{3}{5}$ in total head length; A. 48 to 54, third ray $2\frac{1}{5}$ to $2\frac{2}{5}$; caudal (damaged) forked; caudal peduncle depth $2\frac{1}{2}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{4}$, slender spine entire; ventral $2\frac{3}{5}$ to 3. Pale or light yellowish brown, back above with close set dark brown dots, scattered all along lower side. Blackish axial line along side, expands little at caudal base. Dusky brown blotch size of eye behind suprascapula. Iris gray. Barbels pale brown. Under surface of head and belly whitish. Anal whitish basally, outer half of fin with dark dots, also dark dot at base of each ray. Other fins pale. Length 51 to 65 mm. (caudal damaged).

Three paratypes, Luculla River, Chiloango.

MYSTIDAE

Porcus bayad (Forskål).

Depth $4\frac{2}{3}$ to 6; head $3\frac{1}{3}$ to $3\frac{3}{4}$, width $1\frac{7}{3}$; snout $2\frac{3}{4}$ to $2\frac{4}{5}$; eye $8\frac{1}{2}$, 3 in snout, $2\frac{1}{5}$ to 3 in interorbital; maxillary $\frac{3}{5}$ to $\frac{3}{4}$ to eye, length $3\frac{1}{4}$ to $3\frac{2}{3}$ in head; mouth width $2\frac{1}{3}$ to $2\frac{4}{5}$; teeth villiform, vomero-palatine band subequally or wider than in jaws; nasal barbel half way in eye or to its hind edge; maxillary barbel to pectoral tip or in young to front of anal; outer mental barbel little beyond pectoral origin, inner mental little beyond eye; interorbital $3\frac{1}{3}$ to 4 in head, slightly convex. Gill rakers 4 + 13, short, lanceolate, $1\frac{1}{4}$ in gill filaments, which equal eye. D. I or II, 9, 1 or 10, spine $2\frac{1}{4}$ in head, entire, second ray $1\frac{1}{5}$; adipose fin $2\frac{3}{4}$ to $3\frac{1}{5}$ in combined head and body to caudal base; caudal $1\frac{1}{4}$ in head, forked, lobes pointed; caudal peduncle depth $4\frac{1}{2}$ in head; pectoral $1\frac{2}{3}$, spine $\frac{3}{4}$ of fin, 18 antrorse barbs along hind edge; ventral $1\frac{4}{5}$ in head. Brown above, whitish below. Iris pale. Spinous dorsal tinged dusky subbasally, fins otherwise all pale. Length 265 to 508 mm.

Smaller in the Academy from the Nile, obtained by Dr. H. C. Chapman, larger from Assuan, Egypt, loaned by Princeton University. The latter is included for comparison.

Chrysichthys acutirostris Günther.

Depth $4\frac{1}{3}$; head $3\frac{1}{2}$, width $1\frac{3}{5}$; snout $3\frac{1}{8}$; eye $3\frac{1}{8}$, equals snout, equals interorbital, lids free; mouth width $2\frac{2}{5}$; maxillary barbel $1\frac{1}{5}$, outer mental $1\frac{3}{4}$, inner $2\frac{3}{5}$; band of villiform upper teeth 4 times long as wide; interorbital $2\frac{2}{3}$ in head, level. Gill rakers 9 + 16, lanceolate, equal gill filaments, which $\frac{1}{3}$ in eye. D. I, 6, first ray $1\frac{1}{5}$ in head, edges of rather strong spine rough or jagged; adipose fin 2; A. 13, fifth ray $1\frac{2}{3}$; caudal peduncle depth $2\frac{3}{4}$; pectoral $1\frac{1}{3}$, spine moderate, front edge smooth, hind edge with 6 large antrorse serrae; ventral 2; caudal $3\frac{1}{4}$ in combined head and body to caudal base, deeply forked, lobes pointed. Light brown, under surface of head and belly whitish. Iris gray white. Barbels whitish. Gray blotch, about size of eye, above middle of pectoral. Fins all pale or whitish, end of dorsal and hind caudal edge narrowly brown. Length 51 mm.

Bengo River at Cabiri, Angola, July 4, 1910.

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Chrysichthys walkeri Günther.

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Depth 5 to $5\frac{1}{3}$; head 3 to $3\frac{1}{5}$, width $1\frac{1}{2}$ to $1\frac{2}{3}$; snout $2\frac{3}{4}$ to $3\frac{1}{5}$; eye $2\frac{3}{4}$ to $3\frac{2}{3}$, 1 to $1\frac{3}{3}$ in snout, greater than bony interorbital; mouth width 3 to $4\frac{1}{3}$ in head; maxillary barbel 1 to $1\frac{4}{5}$, outer mental $1\frac{1}{2}$ to $2\frac{1}{2}$, inner $2\frac{1}{3}$ to $4\frac{1}{10}$, nasal 3 in eye; teeth moderately fine, upper 4 times long as wide; interorbital 4 in head, slightly concave medially; opercle with radiating striae. Gill rakers 8 + 13, lanceolate, equal gill filaments or $2\frac{1}{2}$ in eye. D. I, 6, spine moderate, front edge entire, 11 antrorse serrae along hind edge, first ray 1 to $1\frac{1}{3}$ in head; adipose fin $2\frac{1}{4}$; A. v, 8, I, first branched ray 2; caudal 1, to little longer in young, very deeply forked, slender lobes pointed; caudal peduncle depth $3\frac{1}{4}$ to $3\frac{3}{4}$; pectoral $1\frac{1}{4}$ to $1\frac{2}{5}$, strong spine with front edge entire, 12 strong antrorse serrae along hind edge; ventral $1\frac{2}{3}$ to $1\frac{3}{4}$. Brown above, sides of head and body, also lower surface of head and belly silvery white. Iris whitish. Barbels pale brown. Fins pale brown, darker terminally. Length 45 to 178 mm.

Chiloangotown, Chiloango River, Chiloango, 1911.

Chrysichthys ansorgii Boulenger. Fig. 26.

Depth $4\frac{1}{4}$; head $3\frac{2}{5}$, width $1\frac{2}{5}$; snout $2\frac{3}{4}$; eye $4\frac{1}{4}$, $1\frac{3}{4}$ in snout, $1\frac{2}{5}$ in interorbital; mouth width $2\frac{1}{4}$ in head; maxillary barbel $1\frac{2}{5}$, outer mental $1\frac{3}{5}$, inner $2\frac{1}{5}$, nasal $1\frac{1}{5}$ in eye; fine teeth in bands in jaws, upper 4 times long as wide; vomero-pterygoid band of teeth narrower, little interrupted medially; interorbital 3 in head, broadly concave; opercle smooth. Gill rakers 9 + 15, lanceolate, slightly longer than gill filaments or $1\frac{3}{4}$ in eye. D. I, 6, spine moderate, hind edge obsoletely serrated or rough, first ray $1\frac{2}{3}$ in head; adipose fin $2\frac{1}{10}$; A. v, 9, I, second branched ray $1\frac{4}{5}$; caudal $1\frac{1}{5}$, deeply



FIG. 26. Chrysichthys ansorgii Boulenger. Paratype.

emarginate, lobes rather broad and pointed; caudal peduncle depth $2\frac{n}{10}$; pectoral $1\frac{2}{3}$, spine broad, with 9 large antrorse serrae on hind edge; ventral $1\frac{n}{10}$. Brown above, under surface of head and belly white. Mental barbels white, others with brownish. Iris gray white. Dorsals and caudal pale brown, other fins whitish. Length 148 mm.

Paratype, Quanza River at Dondo, Angola, 1910.

MALAPTERURIDAE

Malapterurus electricus (Gmelin).

Depth 5 to $5\frac{2}{3}$; head 4 to $4\frac{1}{2}$, width 1 to $1\frac{1}{5}$; snout $1\frac{4}{5}$ to 2, eye $7\frac{1}{2}$ to 8, $3\frac{3}{4}$ to $4\frac{4}{5}$ in snout, 5 to $5\frac{1}{2}$ in interorbital; maxillary $\frac{2}{5}$ to $\frac{3}{5}$ to eye, length 3 to $3\frac{1}{4}$ in head; mouth width 2 to $2\frac{2}{5}$; broad bands of villiform teeth in jaws; about 14 or 15 teeth transversely; maxillary barbel $1\frac{2}{3}$ to $1\frac{3}{4}$, outer mental 1 to $1\frac{1}{4}$, inner $1\frac{1}{3}$ to $1\frac{1}{2}$; interorbital $1\frac{2}{5}$ to $1\frac{4}{5}$, broad, slightly convex. Gill rakers 5+12, lanceolate, $2\frac{1}{2}$ in gill filaments, which $3\frac{1}{2}$ in snout. Adipose fin 1 to $1\frac{2}{5}$ in head; A. III, 7, I to III, 9, I, third branched ray $1\frac{2}{3}$ to 2; caudal 1, rounded behind; caudal peduncle depth 2 to $2\frac{1}{5}$; pectoral $1\frac{3}{5}$ to $1\frac{7}{5}$; ventral $1\frac{3}{4}$ to $1\frac{7}{5}$. Amber above, under surface of head and belly whitish. Back and upper surfaces variably blotched or spotted with black. Adipose fin brown. Caudal brown, broadly margined with pale and in young base pale. Anal brown, margined paler. Paired fins pale. Iris slate.

Two, Monrovia, Liberia. Dr. S. M. E. Goheen. Length 165 to 210 mm. One, Lebuzi River, Kuka Muno, Chiloango, 1911. Length 139 mm.

POECILIIDAE

Aplocheilus sexfasciatus (Gill).

Depth $3\frac{7}{8}$ to $4\frac{1}{2}$; head 3 to $3\frac{1}{3}$, width $1\frac{3}{4}$ to 2; snout $2\frac{7}{8}$ to 3, from snout tip; eye $3\frac{1}{2}$ to 4, $1\frac{1}{5}$ to $1\frac{2}{5}$ in snout, $1\frac{1}{2}$ to $1\frac{3}{5}$ in interorbital; maxillary reaches $\frac{1}{8}$ to $\frac{1}{5}$ in eye, length $2\frac{1}{4}$ to $2\frac{1}{5}$ in head; lower jaw slightly protrudes; teeth in villiform bands in jaws, outer row slightly enlarged; interorbital 2 to $2\frac{1}{5}$, flat. Gill rakers 0+7 to 10, short points, $\frac{1}{5}$ of gill filaments, which $1\frac{3}{4}$ in eye. Scales 28 or 29 in lateral line to caudal base and 3 or 4 more on latter; 4 above, 5 below, 23 or 24 predorsal, 3 rows on cheek; caudal base with slightly smaller scales. Scales with 24 to 28 basal parallel striae; circuli moderate. D. IV, 6, 1 or IV, 7, 1, third branched ray $1\frac{2}{3}$ to $1\frac{2}{4}$ in total head length; A. IV, 12, I to IV, 14, I, eighth branched ray 1 to $1\frac{1}{2}$; caudal obtusely pointed behind, 3 to $3\frac{1}{2}$ in combined head and body to caudal base; caudal peduncle depth $1\frac{1}{8}$ to $2\frac{1}{4}$; pectoral $1\frac{1}{2}$ to $1\frac{3}{5}$; ventral $1\frac{1}{4}$ to $2\frac{1}{8}$. Brown generally, paler to whitish below. When fresh on back and sides each scale with carmine spot. Seven dark to blackish transverse bands; first on opercle; second close behind pectoral base; third nearly opposite depressed pectoral tip; fourth just before or opposite anal origin; fifth opposite middle of anal base; sixth on caudal peduncle; seventh at caudal base; when fresh all bands darker on lower half of body. Also dark bar below eye. Lips dusky and dark bar transversely across lower surface of under jaw. Iris whitish. Fins brown, dusky when fresh and membranes of verticals spotted with carmine.

Thirteen cotypes of *Epiplatys sexfasciatus* Gill, length 37 to 79 mm., Gaboon. P. B. Du Chaillu. Three, length 52 to 68 mm., Luali River, Mundo, Chiloango, 1911. Dr. W. J. Ansorge.

Aplocheilus spilauchen (A. Duméril).

Depth $2\frac{3}{5}$ to $3\frac{2}{5}$; head $3\frac{1}{4}$ to $3\frac{3}{5}$, width $1\frac{1}{2}$ to $1\frac{3}{5}$; snout $2\frac{7}{4}$ to $3\frac{1}{3}$ in head from snout tip; eye $2\frac{7}{4}$ to $3\frac{1}{4}$, greater than to equal to snout, $1\frac{1}{2}$ to $1\frac{3}{4}$ in interorbital; maxillary reaches $\frac{4}{5}$ to $\frac{7}{4}$ in head, length $3\frac{1}{5}$ to $3\frac{1}{4}$ in head; teeth

in rather narrow villiform bands in jaws, outer row slightly enlarged; interorbital 1⁴/₅ to 2, flattened. Gill rakers 1+9, lanceolate, $\frac{1}{4}$ of gill filaments, which $1\frac{1}{2}$ in eye. Scales 26 in median lateral series to caudal base and 4 or 5 more on latter, 9 transversely, 18 or 19 predorsal, 3 rows on cheek; caudal base half scaled. Scales with 12 to 15 marginal parallel striae; circuli moderate. D. 1, 6, 1 or 1, 7, 1, fourth branched ray in males 3 to $3\frac{1}{8}$ in combined head and body to caudal base; A. II, 10, fifth branched ray in males 1 to $1\frac{1}{5}$ in total head; caudal $2\frac{3}{5}$ to 3 in combined head and body to caudal base; caudal peduncle depth $1\frac{2}{5}$ to $1\frac{2}{3}$ in total head; pectoral $1\frac{1}{5}$ to $1\frac{1}{4}$; ventral $1\frac{1}{4}$ to $1\frac{3}{4}$. Light brown, little paler below. Male with numerous, dark, narrow, transverse bars or lines, most distinct on caudal pedun-Male with gray white vertical fins, dorsal, caudal and hind part of cle. anal with dusky to blackish spots forming transverse lines; in female fins Paired fins whitish. Iris white. Length 49 to 63 mm. uniform.

Ten, Chiloango River, Chiloangotown, 1911.

Aplocheilus macrostigma Boulenger.

Depth $4\frac{1}{5}$ to 5; head $3\frac{1}{5}$ to $3\frac{2}{5}$, width $1\frac{4}{5}$ to $1\frac{7}{5}$; snout $2\frac{3}{4}$ to 3 in head from snout tip; eye $3\frac{2}{5}$ to $3\frac{3}{4}$, $1\frac{1}{5}$ to $1\frac{1}{3}$ in snout, $1\frac{1}{2}$ to $1\frac{4}{5}$ in interorbital; maxillary reaches $\frac{1}{8}$ in eye, length $2\frac{2}{3}$ to $2\frac{3}{4}$ in head from snout tip; lower jaw well protruded; teeth minute, in narrow bands in jaws, uniform; interorbital 21 to $2\frac{2}{5}$ in head, flattened. Gill rakers 0 + 13, short points, equal gill filaments, which $2\frac{3}{4}$ in eye. Scales 24 or 25 in lateral series to caudal base and 4 or 5 more on latter, 7 transversely from dorsal origin, 24 or 25 predorsal, 2 rows on cheek; scales little smaller on caudal base. Scales with 20 to 23 basal marginal parallel striae; circuli moderate. D. IV, 4, I, first branched. ray $1\frac{1}{4}$ to $1\frac{1}{3}$ in total head length; A. IV, 10, I, ninth branched ray $1\frac{1}{3}$ to $1\frac{3}{5}$; caudal peduncle depth 2 to $2\frac{1}{5}$; pectoral $1\frac{2}{5}$ to $1\frac{3}{5}$; ventral 2 to $2\frac{1}{5}$. Light brown with yellowish tinge. Each scale on sides of trunk and tail with large dark crimson spot at base of exposure, forming 4 or 5 longitudinal lateral series, medianly largest though very variable or absent from many Iris gray. Crimson line borders each lip. Fins pale, grayish scales. terminally on verticals and all except uniform pectorals with small crimson spots. Length 31 to 49 mm.

Ten paratypes, Chiloango, West Africa.

MUGILIDAE

Mugil falcipinnis Valenciennes.

One, from the Bengo River at Cabiri, Angola, July 2, 1910. Length 79 mm.

ANABANTIDAE

Anabas congicus Boulenger.

Depth $2\frac{3}{4}$ to 3; head $2\frac{2}{3}$ to $2\frac{3}{4}$, width $1\frac{3}{4}$ to $1\frac{9}{10}$; snout $4\frac{1}{2}$ to $4\frac{3}{4}$ in head from snout tip; eye $3\frac{1}{5}$ to $3\frac{2}{5}$, greater than snout, greater than or subequal with interorbital; maxillary reaches eye, length $3\frac{3}{4}$ to 4 in head from snout tip; teeth in jaws minute, in narrow bands; interorbital $3\frac{1}{4}$ to $3\frac{2}{5}$, nearly level; 3 or 4 spines above opercular notch, 1 below; subopercle fully serrate. Gill rakers 7 below, about $\frac{2}{5}$ of gill filaments, which $\frac{1}{2}$ of eye. Scales 15 to 19 in upper section of lateral line, 5 or 6 in lower section to caudal base and 2 to 5 more on latter; 3 or 4 above, 7 or 8 below, 13 to 15 predorsal, 4 rows on cheek; caudal base with small scales. Scales with 13 to 15 basal radiating striae; 25 to 30 apical denticles with 3 to 6 transverse series basally; circuli fine. D. XIV or XV, 7, I to 9, I, fourth spine $2\frac{2}{3}$ to 3 in total head length, third ray $1\frac{1}{5}$ to $1\frac{1}{5}$; A. IX or X, 9, I, last spine $1\frac{7}{8}$ to 2, fourth ray $1\frac{1}{5}$ to $1\frac{1}{4}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$. convex behind; caudal peduncle depth $2\frac{1}{10}$ to $2\frac{1}{5}$, length $2\frac{3}{4}$ to $3\frac{1}{4}$ in its depth, or much less than eye; pectoral $1\frac{1}{5}$ to $1\frac{1}{3}$ in head; ventral $1\frac{1}{10}$ to $1\frac{1}{4}$. Brown, paler below. Back with scattered dark brown spots. Often traces of about 6 or 7 dark brown vertical bands on trunk and tail, variable. Often some scattered whitish spots on lower half of body. Iris gray. Dark brown postocular bar down over cheek, above preopercle angle. Vertical fins grayish, darker terminally. Paired fins pale, ventral with second and third rays and their membrane dusky brown. Length 43 to 45 mm.

Three, Luali River, Lundo, West Africa.

Anabas ansorgii Boulenger.

Depth $3\frac{1}{2}$ to $3\frac{2}{3}$; head $2\frac{1}{5}$ to 3, width $1\frac{1}{5}$ to 2; snout $4\frac{2}{5}$ to 5 in head from snout tip; eye $3\frac{2}{5}$ to 4, greater than snout or interorbital; maxillary reaches $\frac{1}{5}$ in eye in young, shorter or to front eye edge in larger examples, length $3\frac{1}{5}$ to $3\frac{2}{5}$ in head from snout tip; band of fine villiform teeth in each jaw and across each palatine; interorbital $4\frac{2}{3}$ to 5, broadly convex; 3 to 5 spines Gill rakers 9 lower above opercular notch, 1 below; subopercle entire. points, $\frac{2}{5}$ of gill filaments, which $\frac{1}{2}$ of eye. Scales 12 to 15 in upper section of lateral line, 11 or 12 in lower section to caudal base; 3 above, 7 or 8 below, 14 predorsal, 4 rows on cheek; caudal covered basally with small scales. Scales with 14 to 16 basal close set radiating striae; 30 to 32 apical denticles with 5 transverse series; circuli fine. D. XVII or XVIII, 7, 1 or 8, 1, last spine $2\frac{1}{5}$ to $2\frac{2}{5}$ in total head length, second ray $1\frac{1}{3}$ to $1\frac{1}{2}$; A. XI or XII, 8, I or 9, I, last spine 2 to $2\frac{1}{3}$, second ray $1\frac{1}{10}$ to $1\frac{3}{4}$; caudal $1\frac{1}{3}$ to $1\frac{1}{2}$, convex behind; caudal peduncle depth $2\frac{1}{3}$ to $2\frac{2}{5}$, length $2\frac{2}{5}$ to $2\frac{1}{2}$ in its least depth or less than eye; pectoral $1\frac{1}{3}$ to $1\frac{1}{2}$; ventral $1\frac{1}{2}$ to $1\frac{4}{5}$ in young, with age first ray ends in long filament so fin greater than head. Brown, little paler be-Eight transverse dark to blackish brown vertical bands, usually little low. narrower than pale interspaces, also extend on vertical fins. Iris dark grayish. Blackish brown bar from lower hind eye edge down over cheek above preopercle angle. Black spot in membrane of opercular notch. Vertical fins and pectorals, other than noted, pale brown. Ventrals whitish, with blackish band inclusive of first three rays and their membranes, really continuation of first dark transverse body band to base of fin; second dark body band also continued on ventral posteriorly. Length 37 to 50 mm.

Four paratypes, Luali River, Lundo, Chiloango, 1911.

CICHLIDAE

Tilapia nilotica (Linné).

Depth $2\frac{2}{5}$ to $2\frac{4}{5}$; head $2\frac{2}{3}$ to 3, width 2 to $2\frac{1}{5}$; snout $3\frac{1}{4}$ to 4 from snout tip; eye $3\frac{2}{3}$ to $4\frac{2}{5}$, $1\frac{1}{5}$ to $1\frac{1}{2}$ in snout, $1\frac{1}{10}$ to $1\frac{1}{2}$ in interorbital; maxillary

reaches $\frac{3}{4}$ to $\frac{4}{5}$ in snout, expansion 2 to $2\frac{3}{5}$ in eye, length $3\frac{1}{2}$ to $4\frac{3}{5}$ in head from snout tip; teeth in 2 to 6 series, usually outermost well separated, little larger and ends bifid; interorbital 3 to $3\frac{2}{5}$, broadly and slightly convex. Gill rakers 5 + 21, lanceolate, slender, $\frac{1}{3}$ of gill filaments, which $1\frac{2}{5}$ in eye. Scales 18 to 22 in upper section of lateral line, 11 to 14 in lower section to caudal base and 2 or 3 more on latter; 4 above, 10 or 11 below, 10 or 11 predorsal forward opposite front eye edge; 3 rows on cheek to preopercle ridge; caudal covered with small scales basally. Scales with 11 to 21 basal radiating striae; circuli very fine. D. XVI or XVII, 11 to 13, last spine $1\frac{7}{8}$ to 2 in total head length, sixth ray $1\frac{1}{2}$ to $1\frac{2}{3}$; A. III, 9 or 10, third spine 2 to $2\frac{1}{4}$, fourth ray $1\frac{2}{5}$ to $1\frac{2}{5}$; caudal $1\frac{1}{5}$ to $1\frac{1}{3}$, convex behind; caudal peduncle depth $2\frac{1}{10}$ to $2\frac{1}{4}$; ventral $1\frac{1}{4}$ to $1\frac{4}{5}$; pectoral $2\frac{2}{5}$ to $2\frac{2}{3}$ in combined head and body to caudal base. Brown, paler on under surface. Each scale on back and sides with dark basal spot. Dark opercular blotch little less than Young with 8 or 9 dark transverse bands, obsolete or absent with eye. age. Dorsals and anals with oblique dark bands. Caudal with narrow dark bars or lines transversely. Paired fins dusky, pale in young.

One, Lake Stepharus, East Africa, May 30, 1895. Length 168 mm. Two, Sheikh Husein, December 8, 1894. Length 87 to 99 mm. Three, East Africa, December 30, 1894. Length 79 to 96 mm.

One, Lake Rudolph. Length 98 mm. This example identified as *Chromis tristrami* by Günther cannot be that species as it has gill rakers 5+23.

All seven specimens collected by Dr. A. Donaldson Smith.

Tilapia dolloi Boulenger.

Depth $2\frac{1}{3}$; head $2\frac{3}{5}$ to $2\frac{2}{3}$, width $1\frac{9}{10}$ to 2; snout $2\frac{7}{3}$ from snout tip; eye $3\frac{2}{5}$ to $3\frac{7}{4}$, $1\frac{2}{5}$ to $1\frac{1}{2}$ in snout, $1\frac{2}{5}$ in interorbital; maxillary reaches $\frac{3}{5}$ in snout, expansion $2\frac{3}{5}$ to 3 in eye, length $3\frac{2}{5}$ to $4\frac{1}{10}$ in head from snout tip; jaws with narrow band of fine teeth in 3 series and outer row somewhat separated from inner band, of slender movable teeth with expanded ends; interorbital 3 to $3\frac{1}{4}$, broadly convex. Gill rakers 3 + 15, short points, $\frac{1}{3}$ of gill filaments, which $1\frac{1}{3}$ in eye. Scales 18 or 19 in upper section of lateral line, 11 or 12 in lower section to caudal base and 2 or 3 more on latter; 4 or 5 above, 9 or 10 below, 9 to 11 predorsal forward nearly opposite front eye edge; 2 rows on cheek to preopercle ridge. Scales with 10 to 14 basal radiating striae; circuli fine. D. XVI, 10 or 11, last spine $2\frac{1}{5}$ to $2\frac{1}{2}$ in total head length, fifth ray $1\frac{1}{2}$ to $1\frac{3}{4}$; A. III, 8 or 9, third spine 2 to $2\frac{3}{4}$, fourth ray $1\frac{3}{5}$ to $1\frac{4}{5}$; caudal $1\frac{1}{10}$ to $1\frac{1}{5}$, slightly concave behind, caudal peduncle depth $2\frac{1}{3}$ to $2\frac{2}{5}$; ventral $1\frac{1}{3}$ to $1\frac{1}{4}$; pectoral $2\frac{2}{5}$ to $2\frac{3}{4}$ in combined head and body to caudal base. Brown, paler on under surfaces. Under surface of head creamy or soiled dusky. Iris slate gray. Fins all more or less brown, several obsolete darker bars on last dorsal rays. Pectorals pale, ventrals little brownish.

Two, Chiloango River, Chiloangotown, Chiloango, 1911. Length 107 to 117 mm.

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Tilapia buettikoferi (Hubrecht).

One, West Africa. Length 66 mm.

Tilapia andersonii (Castelnau).

Six, Quanza River at Cambambe, Angola, 1910. Length 62 to 200 mm. One, Kuka Muno, Lebuzi River, Chiloango, 1911. Length 140 mm.

Tilapia melanopleura A. Duméril.

Depth $2\frac{1}{5}$ to $2\frac{2}{5}$; head 3 to $3\frac{1}{4}$, width $1\frac{2}{3}$ to $1\frac{1}{8}$; snout $2\frac{1}{2}$ to 3; eye 3 to $4\frac{1}{5}$, $1\frac{1}{5}$ to $1\frac{7}{8}$ in snout, 1 to $1\frac{3}{4}$ in interorbital; maxillary reaches $\frac{3}{4}$ to $\frac{4}{5}$ in snout, expansion $2\frac{2}{5}$ to 3 in eye, length $3\frac{1}{4}$ to $3\frac{1}{2}$ in head; teeth in about 4 rows in jaws, outer row largest, bifid and well separated from other rows; interorbital $2\frac{2}{3}$ to 3, broadly and slightly convex. Gill rakers 3+9 short points, $2\frac{4}{5}$ in gill filaments, which $1\frac{2}{5}$ in eye. Scales 21 to 23 in upper section of lateral line, 12 in lower section to caudal base and 3 more on latter; 4 above, 10 below, 11 or 12 predorsal forward opposite front eye edge; 3 or 4 rows on cheek to preopercle ridge; caudal largely covered with fine scales basally. Scales with 13 basal radiating striae; circuli fine. D. XVI, 12, 1 or 13, 1, last spine 2 in head, fifth ray $1\frac{1}{5}$ to $1\frac{2}{5}$; A. III, 9, 1, third spine $2\frac{1}{10}$ to $2\frac{2}{5}$; fourth ray $1\frac{1}{10}$ to $1\frac{2}{5}$; caudal 1 to $1\frac{1}{5}$, truncate; caudal peduncle depth 2 to $2\frac{1}{4}$; ventral 1 to $1\frac{1}{10}$; pectoral $2\frac{3}{5}$ to $2\frac{7}{8}$ in combined head and body to caudal base. Back brown, under surface of head and body whitish. Young with about 9 dark broad transverse bands, ill defined and obsolete with age. Black or slate opercular spot less than eye. Blackish ocellus nearly large as eye at last dorsal spine and first rays, obsolete with age. Vertical fins brown, with darker cloudings or oblique dark bars on dorsals. Pectoral pale brownish. Ventral brown, darker anteriorly.

One, Quanza River at Cungo, Angola, August 21, 1910. Length 210 mm. One, Chiloango River at Chiloangotown, Chiloango, 1911. Length 77 mm.

Hemichromis fasciatus Peters.

No. 9036, A.N.S.P., Cape Palmas, Liberia, West Africa. Length 110 mm. (caudal damaged). Rev. Thomas S. Savage. Type of *Hemichromis auritus* Gill. Four, Gaboon, French Congo. P. B. Du Chaillu. Length 101 to 116 mm. Three, Quanza River at Cambambe, Angola, 1910. Length 77 to 124 mm. Two, Lebuzi River, Boma Vonde, Chiloango, 1911. Length 58 to 72 mm.

Pelmatochromis kingsleyae (Boulenger).

Depth $2\frac{3}{5}$ to $2\frac{7}{8}$; head $2\frac{3}{4}$ to $2\frac{4}{5}$, width 2 to $2\frac{1}{10}$; snout $2\frac{1}{2}$ to $2\frac{3}{5}$ from snout tip; eye $3\frac{1}{4}$ to 4, $1\frac{1}{5}$ to $1\frac{2}{3}$ in snout, greater than interorbital in young to $1\frac{1}{5}$ with age; maxillary reaches $\frac{2}{5}$ to $\frac{3}{4}$ in snout, expansion $2\frac{1}{4}$ to $2\frac{3}{5}$ in eye, length $2\frac{7}{4}$ to $3\frac{1}{4}$ in head from snout tip; teeth simple, small, uniserial in jaws; interorbital $3\frac{1}{5}$ to $3\frac{3}{5}$, nearly level. Gill rakers 5+9, short, compressed, triangular points $\frac{1}{2}$ of gill filaments, which $\frac{1}{2}$ of eye. Scales 19 or 20 in upper section of lateral line, 7 or 8 in lower section to caudal base and 1 more on latter; 4 above, 8 or 9 below, 8 or 9 predorsal forward opposite front eye edge; 3 or 4 rows on cheek to preopercle ridge; caudal largely covered with fine scales basally. Scales with 10 to 15 basal radiating striae; circuli fine. D. XIV or XV, 11, last spine 2_{10}^{+} to $2\frac{1}{4}$ in total head length, seventh ray $1\frac{3}{5}$ to $1\frac{3}{4}$; A. III, 7 or 8, third spine $2\frac{1}{4}$ to $2\frac{3}{5}$, fourth ray $1\frac{2}{5}$ to $1\frac{3}{5}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, truncate; caudal peduncle depth $2\frac{1}{3}$ to $2\frac{2}{5}$; pectoral $1\frac{1}{2}$ to $1\frac{3}{5}$; ventral $1\frac{2}{5}$ to $1\frac{3}{5}$. Brown, under surfaces whitish. Iris dark gray or slate. Blackish brown to slate opercular blotch little smaller than eye. Lips pale brown, upper bordered above with dusky streak. Fins all pale brown, verticals darker terminally or marginally. Ventral whitish, with dark brown band all along front border.

Four, Lebuzi River, Kuka Muno, Chiloango, 1911. Length 58 to 78 mm.

ELEOTRIDAE

Eleotris vittata Bloch.

Three from Cabinda, Lulongo River, Chiloango, 1911. Length 53 to 80 mm.

Eleotris lebretonis Steindachner.

Four from Chiloango River, Chiloangotown, 1911. Length 49 to 83 mm.

BOTHIDAE

Syacium spilopterum (Günther).

One from Chiloango River, Chiloangotown, 1911. Length 62 mm.

MASTACEMBELIDAE

Mastacembelus flavomarginatus Boulenger.

One from Luali River, Lundo, Chiloango, 1911. Length 100 mm.

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