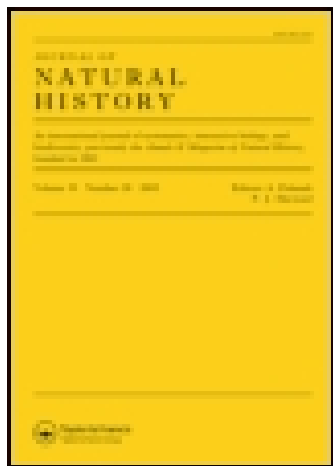


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## Annals and Magazine of Natural History: Series 8

Publication details, including instructions  
for authors and subscription information:

<http://www.tandfonline.com/loi/tnah14>

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Published online: 11 Sep 2009.

To cite this article: G.A. Boulenger F.R.S. (1910) LXI.-On a large collection  
of fishes made by Dr. W. J. Ansorge in the Quanza and Bengo Rivers, Angola ,  
Annals and Magazine of Natural History: Series 8, 6:36, 537-561, DOI:

[10.1080/00222931008692887](https://doi.org/10.1080/00222931008692887)

To link to this article: <http://dx.doi.org/10.1080/00222931008692887>

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# THE ANNALS

AND

## MAGAZINE OF NATURAL HISTORY.

[EIGHTH SERIES.]

No. 36. DECEMBER 1910.

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LXI.—*On a large Collection of Fishes made by Dr. W. J. Ansorge in the Quanza and Bengo Rivers, Angola.* By G. A. BOULENGER, F.R.S.

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THE collection on which I have the pleasure to report is one of the largest and most interesting which it has been my privilege to work out. It consists of over 1100 specimens, excellently preserved in spirit, and representing 52 species, 30 of which appear to be new to science.

Very little was previously known of the fish-fauna of the rivers of Angola, and the present collection is of the greatest importance from the point of view of geographical distribution, as it shows the affinities of these fishes to be more with East Africa than with the Congo and Gaboon, at least so far as the Cyprinids are concerned, several of the species here described as new having their nearest allies in Abyssinia and neighbouring parts of East Africa. The Bynni group of *Barbus*, to which seven species are added, is, in the present state of our knowledge, unrepresented in the Congo, and very scantily in the other rivers emptying in the Atlantic. The remarkable genus *Xenopomatichthys*, of which a new

species is described, was established a few years ago for a single species from Mozambique, the affinities of which were regarded as uncertain. One of the new fishes is regarded as the type of a new genus (*Nematogobius*).

Dr. Ansorge, who has on previous occasions added so much to our knowledge of African Ichthyology, deserves the highest praise for this new achievement. He has kindly furnished me with the following particulars concerning the manner in which the collection was made:—

“The collection was made from three rivers (the Quanza, the Lucalla, and the Bengo), two lakes (Lake Kilunda and Lake Rumango), and swamps produced by overflow of these rivers during the rainy season. Some of these swamps dry up entirely during the dry season, so that during one part of the year natives capture fish with their creels and casting-nets, and during another part of the year gather a harvest of maize from the identical spot.

“An English minnow casting-net, two German fish-cord bag-nets, three French wire-creels, and over fifteen pounds of Portuguese dynamite cartridges were used. The usefulness of this variety of means of capture is evident from the fact that it was only through the casting-net that the new *Syngnathus* was got from the Quanza and the new Gobiid from the Bengo. Again, but for the German bag-net, left in the river night after night, the single specimen of the rare *Marcusenius pauciradiatus* (hitherto unrepresented in the British Museum collection) would not have been secured. Finally, only by the dynamite cartridges were captured the new *Xenopomatiichthys*, the new *Physalia*, the new *Barbus rhynchotus* and *Barbus lucius*, and the new *Petrocephalus cunganus*.

“The Lucalla River, though only a tributary of the Quanza, is a very long, winding, and broad river; its course is broken by three separate falls and by stretches of rapids. Just above the rapids, close to the railway station also called ‘Lucalla,’ the river yielded an extraordinary number of new species both of *Varicorhinus* and of *Barbus*, also the new *Xenopomatiichthys* and the new *Labeo rocadasi*. Whereas a deep quiet pool, about an hour by canoe above Kalenge, where the River Lucalla is broad and shallow, gave the new *Odaxothrissa* and five specimens of *Marcusenius ansorgii*.

“The Bengo River is quite distinct from the Quanza and is much smaller; but the new *Nematogobius ansorgii* as well as the single specimen of *Marcusenius pauciradiatus* were only captured here. The lakes Kilunda and Rumango are connected with the Bengo and abound with the two

new species of *Petersius* and the pretty little new *Barbus musumbi*.

"Exploration of the Quanza River at Cunga, Dondo, and Cambambe gave also valuable results. The Cichlid perches *Tilapia flavomarginata* and *Tilapia cabræ* are very delicious eating; they are plentiful at Cunga and form a highly appreciated commercial commodity, both fresh and sun-dried, under the local names of 'shopa' and 'cacusso.' The single specimen of the new *Petrocephalus cunganus* as well as the single specimen of the large red-brown *Lutjanus eulactus* were captured at Cunga. The casting-net secured at Dondo the single specimen of the new *Syngnathus*, the two tiny specimens of *Haplochilus macrurus*, and quite a number of the new *Barilius*. Cambambe is a mountainous region where the River Quanza forms rapids; below these rapids the new *Physailia* and the two new species of *Chrysichthys* were obtained by using dynamite.

"In recognition of the kind assistance given by His Excellency Lieut.-Colonel José Augusto Roçadas (Governor-General of Angola) and by Senhor Manoel Francisco da Costa Serão (Director of the Companhia de Caminho de Ferro Através Africa), three of the new species have been named *Labeo rocadasi*, *Barbus rocadasi*, and *Chrysichthys seraoi* respectively. Similarly, *Barbus rosæ* has been named in honour of the Vicar Padre Anastacio Luis Rosa for helpful courtesy during a seven years' friendship."

### Mormyridæ.

#### 1. *Petrocephalus simus*, Sauv.

Quanza River at Cunga and Lucalla River at Kalenge.  
Native name: Dilele.

#### 2. *Petrocephalus cunganus*, sp. n.

Depth of body equal to length of head,  $3\frac{1}{2}$  times in total length. Head slightly longer than deep, with convex upper profile; snout rounded, strongly projecting beyond mouth,  $\frac{1}{5}$  length of head; mouth below anterior border of eye, its width  $\frac{1}{4}$  length of head; teeth bicuspid, 11 in upper jaw, 24 in lower; nostrils near lower border of eye; eye  $\frac{1}{4}$  length of head,  $\frac{2}{3}$  interorbital width. Dorsal 27, originating above first ray of anal; its length  $1\frac{1}{2}$  times in its distance from head and a little greater than its distance from caudal. Anal

32, equally distant from base of ventral and from base of caudal. Pectoral pointed,  $\frac{2}{3}$  length of head, not quite twice as long as ventral, extending beyond base of latter. Caudal scaled at the base, upper lobe pointed, lower rounded. Caudal peduncle 3 times as long as deep,  $\frac{3}{4}$  length of head. 47 scales in the lateral line,  $\frac{12}{14}$  in transverse series on body,  $\frac{16}{14}$  in transverse series between dorsal and anal, 12 round caudal peduncle. Brown above, silvery beneath; fins brownish.

Total length 110 mm.

A single specimen from the Quanza River at Cunga.

Near *P. simus*, Sauv., but agreeing with *P. degeni* in the anal not originating in front of the dorsal, and in the more elongate body.

### 3. *Marcusenius ansorgii*, Blgr.

Quanza River at Dondo, Lucalla River at Kalenge and Lucalla.

This species, originally described from half-grown specimens, attains a length of 190 millim.

### 4. *Marcusenius pappenheimi*, sp. n.

Depth of body  $3\frac{2}{3}$  to 4 times in total length, length of head 4 to  $4\frac{3}{4}$  times. Head slightly longer than deep; snout rounded,  $\frac{1}{4}$  length of head, slightly projecting beyond mouth; mouth small, subinferior, its width  $\frac{1}{5}$  to  $\frac{1}{4}$  length of head; teeth notched, 5-7 in upper jaw, 6-8 in lower; posterior nostril a little below level of centre of eye; eye about  $\frac{2}{3}$  length of snout and  $\frac{1}{2}$  interorbital width. Dorsal 20-22, its length about  $\frac{1}{2}$  its distance from head, originating above 4th to 6th ray of anal. Anal 25-28, a little longer than dorsal, nearly equally distant from base of ventral and from base of caudal. Pectoral pointed,  $\frac{3}{4}$  to  $\frac{4}{5}$  length of head, reaching base of ventral. Caudal densely scaled in the basal half, with obtusely pointed lobes. Caudal peduncle 3 to  $3\frac{1}{2}$  times as long as deep, as long as head. 71-80 scales in lateral line,  $\frac{14-16}{21-24}$  in transverse series on body,  $\frac{11-13}{11-13}$  in transverse series between dorsal and anal, 12-14 round caudal peduncle. Brown; a more or less indistinct dark vertical bar between anterior part of dorsal and anal.

Total length 80 to 180 mm.

Numerous specimens from the Quanza River at Cunga.

This species, allied to *M. marchii*, Sauv., *kingsleyæ*, Gthr.,

and *sphécodes*, Sauv., is dedicated to Dr. P. Pappenheim, of the Berlin Museum, who has contributed to our knowledge of the Mormyrids.

5. *Marcusenius pauciradiatus*, Stdr.

A single specimen, 190 mm. long, from the Bengo River at Cabiri.

Native name : Libi.

Clupeidæ.

6. *Pellonula vorax*, Gthr.

Quanza River at Cambambe and Dondo ; Bengo River at Cabiri.

7. *Odaxothrissa ansorgii*, sp. n.

Depth of body equal to length of head, 3 to  $3\frac{1}{2}$  times in total length. Snout as long as eye, which is 3 or  $3\frac{1}{4}$  times in length of head and exceeds interorbital width ; chin strongly projecting ; maxillary extending to below centre of eye. Gill-rakers moderately elongate, 23-25 on lower part of anterior arch. Dorsal 15-16, originating immediately behind vertical of base of ventral, at equal distance from end of snout or anterior border of eye and from caudal. Anal 17-19. Pectoral  $\frac{2}{3}$  length of head, not reaching ventral. Caudal deeply forked, with pointed lobes. Caudal peduncle as long as deep. 40-45 scales in longitudinal series, 16-17 in transverse series ; 15-16 keeled scutes between isthmus and ventrals, 10-12 between ventrals and anal. Upper half, with dorsal and base of caudal pale olive-green in life, lower half and other fins white ; a broad silvery band along each side.

Total length 160 mm.

Several specimens. Quanza River at Cambambe ; Lucalla River at Kalenge ; Bengo River at Cabiri.

Native name : Mabemba.

Well distinguished from the type of the genus by the smaller number of rays in the anal fin (17-19 instead of 21-22) and of scutes in the abdominal serrature (15-16 + 10-12 instead of 17-18 + 9-10).

**Kneriidae.**8. *Xenopomatichthys ansorgii*, sp. n.

Depth of body equal to length of head,  $5\frac{1}{2}$  times in total length. Snout rounded, nearly as long as eye, which is perfectly lateral, visible from below as well as from above,  $3\frac{1}{2}$  times in length of head and  $1\frac{1}{2}$  times in interorbital width; width of mouth equal to diameter of eye; sides and lower surface of head with conical horny tubercles; cup-shaped apparatus on operculum much larger than eye, followed, on the scapular region, by a large lamellar pad (18 or 19 lamellæ). Dorsal III 7, originating at equal distance from eye and from root of caudal, well behind vertical of base of ventral. Anal III 8-9. Pectoral shorter than head. Caudal deeply notched, crescentic. Caudal peduncle half as deep as long\*. Scales longitudinally striated, 110-120 in lateral line, 16-18 between dorsal and lateral line, 10-11 between lateral line and ventral. Pale brownish above, yellowish beneath, with scattered dark brown dots and a series of round blackish spots, connected by a dark brown lateral band, just above the lateral line; fins uniform whitish.

Total length 67 mm.

Two specimens from the Lucalla River at Lucalla.

This fish, one of the most interesting of Dr. Ansorge's discoveries in Angola, shows *Xenopomatichthys* to be unquestionably related to *Kneria*. *X. ansorgii* is easily distinguished from *X. auriculatus*, Pellegrin, by the longer body, the number of branched rays in the dorsal (7 instead of 8) and anal (8-9 instead of 6-7), and the number of scales in the lateral line (110-120 instead of 60-65).

**Characinidae.**9. *Alestes ansorgii*, sp. n.

Depth of body  $3\frac{3}{4}$  to  $4\frac{1}{2}$  times in total length, length of head  $4\frac{1}{4}$  to 5 times. Head  $1\frac{3}{4}$  to  $2\frac{1}{4}$  times as long as broad,  $1\frac{1}{5}$  to  $1\frac{1}{4}$  times as long as deep; snout as long as or shorter than eye, which is lateral and  $2\frac{1}{2}$  (young) to  $3\frac{1}{2}$  times in

\* In the description of *X. auriculatus* in Brit. Mus. Cat. Afr. Fish. i. p. 172, "Caudal peduncle half as long as deep" is a *lapsus calami*, and should be corrected to "Caudal peduncle half as deep as long."



length of head; adipose eyelid well developed; interorbital region convex, its width  $2\frac{2}{3}$  to 3 times in length of head; maxillary not extending to below anterior border of eye;  $14\left(\frac{6}{8}\right)$  teeth in upper jaw,  $10\left(\frac{6}{5}\right)$  in lower; lower border of second suborbital as long as eye. Gill-rakers long and slender, 15 to 18 on lower part of anterior arch. Dorsal II 8, originating above ventral, at equal distance from end of snout and from caudal, longest ray  $\frac{4}{5}$  to once length of head. Anal III 17-18. Pectoral  $\frac{3}{4}$  to once length of head, not reaching ventral. Caudal forked, with long pointed lobes. Caudal peduncle  $1\frac{1}{3}$  to  $1\frac{1}{2}$  times as long as deep. Scales 37-40  $\frac{5\frac{1}{2}-6\frac{1}{2}}{3\frac{1}{2}}$ ,  $1\frac{1}{2}$  between lateral line and ventral. Steel-blue on the back, silvery-white on the sides and below; fins greyish, ventrals, anal, and caudal yellow or orange at the base; pectoral and ventral often with a large black or blackish blotch.

Numerous specimens, 85 to 270 mm. long, from the Quanza River at Cunga and Dondo, and from the Lucalla River at Lucalla.

Native name: Kitete.

Very closely allied to *A. macrophthalmus*, Gthr.; distinguished by larger scales (37-40  $\frac{5\frac{1}{2}-6\frac{1}{2}}{3\frac{1}{2}}$ ,  $1\frac{1}{2}$ , instead of 39-45  $\frac{6\frac{1}{2}-8\frac{1}{2}}{3\frac{1}{2}}$ , 2).

#### 10. *Petersius ansorgii*, sp. n.

Depth of body  $2\frac{1}{2}$ - $2\frac{3}{4}$  times in total length, length of head  $3\frac{1}{2}$  to 4 times. Head as long as deep, with slightly concave upper profile; lower jaw not projecting beyond upper; snout much shorter than eye, which is  $2\frac{1}{2}$  to  $2\frac{2}{3}$  times in length of head and equals interorbital width; maxillary extending to below anterior border of eye; outer premaxillary teeth 4, alternating with those of the inner row, 8 in number; 8 teeth in lower jaw. Gill-rakers moderate, 18-20 on lower part of anterior arch. Dorsal II 8, originating above base of ventral, some of the rays produced into long filaments in males. Anal II-III 20-23, pointed in males, median ray produced into a filament. Pectoral as long as or a little shorter than head, reaching or nearly reaching ventral. Caudal forked. Caudal peduncle as long as deep. Scales 31-33  $\frac{6\frac{1}{2}-7\frac{1}{2}}{3\frac{1}{2}}$ ,  $1\frac{1}{2}$ -2 between lateral line and ventral. Reddish brown above, more red on the sides, approaching vermilion\*,

\* This vermilion soon disappeared after staining the spirit in which the specimens were preserved.

silvery beneath, with a more or less distinct dark lateral band extending on the caudal fin, and a vertical dark bar above pectoral; fins greyish, tinged with vermilion.

Numerous specimens, 38 to 60 mm. long, from the Bengo River at Cabiri and from Lake Kilunda.

Native name: Kamakanja.

Most nearly related to *P. hilgendorfi*, Blgr.; distinguished by a shorter body, the shape of the anal fin in the males, more numerous gill-rakers, and fewer scales in the lateral line (31-33 instead of 35-36).

### 11. *Petersius ubalo*, sp. n.

Depth of body 3 to  $3\frac{1}{2}$  times in total length, length of head  $3\frac{2}{3}$  to 4 times. Head as long as deep, with slightly concave upper profile; lower jaw not projecting beyond upper; snout much shorter than eye, which is  $2\frac{1}{2}$  to  $2\frac{2}{3}$  times in length of head and equals interorbital width; maxillary extending to below anterior border of eye; outer premaxillary teeth 4, alternating with those of the inner row, 8 in number; 8 teeth in lower jaw. Gill-rakers rather long, 16-18 on lower part of anterior arch. Dorsal II 8, originating above base of ventral, longest ray as long as head. Anal III 18-20. Pectoral as long as or a little shorter than head, not reaching ventral. Caudal forked. Caudal peduncle as long as deep. Scales 30-34  $\frac{6\frac{1}{2}-7\frac{1}{2}}{3\frac{1}{4}}$ , 2 between lateral line and ventral. Yellowish green above, silvery beneath; fins whitish; a more or less distinct dark lateral band, terminating in a rhomboidal black blotch on caudal peduncle and median rays of caudal fin.

Numerous specimens, 30 to 45 mm. long, from Lakes Rumango and Kilunda.

Native name: Ubalo.

Closely allied to the preceding species; distinguished by a more elongate body, longer gill-rakers, fewer branched rays in the anal fin (18-20 instead of 20-23), and especially by the more normal shape of the dorsal and anal fins.

### Cyprinidæ.

### 12. *Labeo rocadasi*, sp. n.

Body moderately compressed, its depth equal to or a little less than length of head, 4 to  $4\frac{3}{4}$  times in total length. Head  $1\frac{1}{2}$  to  $1\frac{3}{4}$  times as long as broad; snout rounded or

obtusely pointed, strongly projecting, more or less swollen, often with a more or less distinct curved transverse groove above, its length  $\frac{1}{2}$  or a little more than  $\frac{1}{2}$  length of head (a little less in the young); eye small, supero-lateral, 4 (young) to 6 times in length of head; interorbital width  $\frac{2}{3}$  to  $\frac{1}{2}$  length of head; width of mouth  $\frac{1}{2}$ , or a little less than  $\frac{1}{2}$ , length of head; lips strongly developed, upper straight-edged, lower more or less expanded and bordered in front by a fringe of papillæ, the posterior border more or less distinctly festooned; inner surface of lips with small papillæ forming numerous transverse plicæ; rostral flap large, completely detached at the sides, the edge more or less distinctly festooned or denticulate; a small barbel, concealed under folds of mouth; more or less developed horny tubercles (or their scars) on the snout. Dorsal III 10 (rarely 9 or 11), equally distant from end of snout or nostrils and from caudal, upper edge concave, last simple ray and first branched ray longest, as long as head or a little longer. Anal III 5, not reaching root of caudal. Pectoral as long as or a little longer than head, not reaching ventral; latter inserted below middle of dorsal. Caudal deeply emarginate. Caudal peduncle  $1\frac{2}{3}$  to 2 times as long as deep. Scales 39-42  $\frac{6\frac{1}{2}-7\frac{1}{2}}{7\frac{1}{2}-8\frac{1}{2}}$ , 4-5 between lateral line and ventral, 16 round caudal peduncle. Dark olive above, whitish beneath; fins greyish or bright red; young with a dark spot on each scale and a black blotch on caudal peduncle.

Numerous specimens, 40 to 250 mm. long, from the Quanza and Lucalla Rivers.

Closely allied to *L. forskalii*, Rüpp.; distinguished chiefly by the longer caudal peduncle.

### 13. *Labeo ansorgii*, Blgr.

Originally described from a single young specimen from Mossamedes, this species is represented in the present collection by numerous specimens, 50 to 190 mm. in length, from the Quanza and Bengo Rivers and Lake Kilunda.

Except for the presence of an anterior small and often quite rudimentary barbel, this species agrees closely with *L. forskalii*.

### 14. *Varicorhinus ensifer*, sp. n.

Depth of body  $3\frac{1}{2}$  to 4 times in total length, length of head  $4\frac{1}{3}$  to  $5\frac{1}{3}$  times. Snout rounded, a little broader than long, as long as or a little longer than eye, which is about 3 times

in length of head and  $1\frac{1}{2}$  to  $1\frac{2}{3}$  times in interorbital width ; mouth straight, its width about  $\frac{1}{3}$  length of head, with a thick upper lip covered with round papillæ ; similar papillæ behind the cutting-edge of the lower jaw ; two barbels on each side, anterior minute, posterior about  $\frac{1}{2}$  diameter of eye. Males with large horny spinose tubercles on sides of head and end of snout. Dorsal IV 10 (rarely 9 or 11), equally distant from eye and from caudal, last simple ray very strong, bony, not serrated, straight,  $1\frac{1}{2}$  to  $2\frac{1}{4}$  times length of head ; border of fin strongly emarginate. Anal III 5, longest ray a little shorter or a little longer than head, sometimes reaching caudal, with nuptial tubercles in the males. Pectoral as long as or a little longer than head, not reaching ventral ; latter inserted below anterior rays of dorsal. Caudal deeply forked. Caudal peduncle  $1\frac{1}{2}$  to  $1\frac{2}{3}$  times as long as deep. Scales 30-35  $\frac{4\frac{1}{2}-5\frac{1}{2}}{4\frac{1}{2}}$ , 2-2 $\frac{1}{2}$  between lateral line and ventral, 12-14 round caudal peduncle. Olive-brown above, white beneath ; fins bright red, edged with greyish.

Numerous specimens, measuring from 75 to 195 mm., from the Lucalla River at Lucalla.

15. *Varicorhinus stenostoma*, sp. n.

Depth of body  $3\frac{1}{4}$  times in total length, length of head  $4\frac{1}{4}$  times. Snout rounded, a little broader than long, a little shorter than eye, which is 3 times in length of head and equals interorbital width ; mouth curved, its width  $\frac{2}{7}$  length of head ; no papillæ round the mouth ; two barbels on each side, anterior about  $\frac{1}{2}$ , posterior  $\frac{2}{3}$  diameter of eye. Dorsal IV 10, equally distant from centre of eye and from caudal, last simple ray very strong, bony, not serrated, straight,  $1\frac{1}{3}$  times length of head ; border of fin strongly emarginate. Anal III 5, longest ray  $\frac{2}{3}$  length of head. Pectoral as long as head, not reaching ventral ; latter inserted below middle of dorsal. Caudal deeply forked. Caudal peduncle  $1\frac{2}{3}$  times as long as deep. Scales 41  $\frac{7\frac{1}{2}}{6\frac{1}{2}}$ , 4 between lateral line and ventral, 16 round caudal peduncle. Brownish above, each scale with a dark spot, white beneath ; fins whitish.

Total length 105 mm.

A single specimen from the Lucalla River at Lucalla.

16. *Varicorhinus varicostoma*, sp. n.

Depth of body  $3\frac{2}{3}$  times in total length, length of head 5 times. Snout rounded, much broader than long, as long

as eye, which is 3 times in length of head and  $1\frac{2}{3}$  times in interorbital width; mouth straight, its width  $\frac{1}{3}$  length of head, with a thick upper lip covered with round papillæ; smaller papillæ behind the cutting-edge of the lower jaw; a single barbel on each side, at angle of mouth,  $\frac{1}{2}$  diameter of eye. Dorsal IV 10, equally distant from centre of eye and from root of caudal, last simple ray very strong, bony, not serrated, straight,  $1\frac{1}{2}$  times length of head; border of fin strongly emarginate. Anal III 5, longest ray as long as head. Pectoral as long as head, not reaching ventral; latter inserted below anterior rays of dorsal. Caudal deeply forked. Caudal peduncle  $1\frac{1}{2}$  times as long as deep. Scales 35  $\frac{5\frac{1}{2}}{5\frac{1}{2}}$ , 3 between lateral line and ventral, 14 round caudal peduncle. Dark brown above, yellowish beneath; fins dark grey.

Total length 170 mm.

A single specimen from the Lucalla River at Lucalla.

#### 17. *Varicorhinus steindachneri*, sp. n.

Depth of body 3 to  $3\frac{1}{2}$  times in total length, length of head  $3\frac{1}{2}$  to  $4\frac{1}{2}$  times. Snout rounded, a little broader than long, as long as or a little longer than eye, which is 3 (young) to 4 times in length of head and  $1\frac{1}{3}$  to  $1\frac{1}{2}$  times in interorbital width; mouth straight, its width about  $\frac{2}{5}$  length of head; a minute, sometimes almost imperceptible, barbel at angle of mouth; a few conical tubercles on sides of snout. Dorsal IV 10 (rarely 9 or 11), equally distant from anterior border or centre of eye and from root of caudal, last simple ray very strong, bony, not serrated, straight or very feebly curved, 1 to  $1\frac{1}{3}$  times length of head; border of fin strongly emarginate. Anal III 5, longest ray  $\frac{2}{3}$  to  $\frac{5}{6}$  length of head. Pectoral as long as or a little shorter than head, not reaching ventral; latter inserted below middle of dorsal. Caudal deeply forked. Caudal peduncle  $1\frac{1}{2}$  to  $1\frac{2}{3}$  times as long as deep. Scales 30–35  $\frac{4\frac{1}{2}-5\frac{1}{2}}{5\frac{1}{2}}$ , 3– $3\frac{1}{2}$  between lateral line and ventral, 12 (rarely 14) round caudal peduncle. Brown above, whitish beneath; fins dark grey, often tinged with red.

Numerous specimens, measuring from 50 to 190 mm., from the Lucalla River at Lucalla.

Named in honour of Dr. F. Steindachner, this species being very closely allied to the one described by him as *V. tornieri*.

18. *Varicorhinus latirostris*, sp. n.

Depth of body 3 to  $3\frac{1}{2}$  times in total length, length of head 4 to  $4\frac{1}{2}$  times. Snout rounded,  $1\frac{2}{3}$  to 2 times as broad as long, as long as or a little shorter than eye, which is 3 to  $3\frac{1}{3}$  times in length of head and  $1\frac{1}{2}$  to  $1\frac{2}{3}$  times in interorbital width; mouth straight, its width  $\frac{2}{5}$  to  $\frac{1}{2}$  length of head; a minute barbel at angle of mouth; a few, very small, conical tubercles on sides of snout. Dorsal IV 10 (rarely 11), equally distant from end of snout or nostrils and from root of caudal, last simple ray very strong, bony, not serrated, straight or very feebly curved, as long as or slightly longer than head; border of fin strongly emarginate. Anal III 5, longest ray a little shorter than head. Pectoral as long as or a little longer than head, not reaching ventral; latter inserted below anterior soft rays of dorsal. Caudal deeply forked. Caudal peduncle twice as long as deep. Scales 34-39  $\frac{5\frac{1}{2}-6\frac{1}{2}}{5\frac{1}{2}-6\frac{1}{2}}$ , 3- $3\frac{1}{2}$  between lateral line and ventral, 14 (rarely 12) round caudal peduncle. Olive-brown above, whitish beneath; fins dark grey, often tinged with red.

Ten specimens, measuring 100 to 160 mm., from the Lucalla River at Lucalla.

The discovery of these five species nearly doubles the number of African species of the genus *Varicorhinus*, the principal characters of which are here contrasted:—

I. Two pairs of barbels; last simple ray of dorsal strong and ossified.

A. Spine of dorsal shorter than head; 9 branched rays in dorsal; posterior barbel as long as eye.

Sc. 29  $\frac{4\frac{1}{2}}{4\frac{1}{2}}$ , 2, 12; caudal peduncle not longer than deep; ventral below anterior soft rays of dorsal ..... *V. ansorgii*, Blgr.

Sc. 31  $\frac{4\frac{1}{2}}{4\frac{1}{2}}$ ,  $2\frac{1}{2}$ , 12; caudal peduncle much longer than deep; ventral below middle of dorsal. *V. brucei*, Blgr.

B. Spine of dorsal longer than head; 10 (rarely 9 or 11) branched rays in dorsal.

Sc. 30-35  $\frac{4\frac{1}{2}-5\frac{1}{2}}{4\frac{1}{2}}$ , 2- $2\frac{1}{2}$ , 12-14; mouth straight, with rounded papillæ in front and behind; posterior barbel about  $\frac{1}{2}$  diameter of eye; ventral below anterior rays of dorsal .... *V. ensifer*, Blgr.

Sc. 41  $\frac{7\frac{1}{2}}{6\frac{1}{2}}$ , 4, 16; mouth curved, without papillæ; posterior barbel  $\frac{2}{3}$  diameter of eye; ventral below middle of dorsal ..... *V. stenostoma*, Blgr.

II. One pair of barbels, sometimes very minute and hidden in the folds at angle of mouth.

A. 30-39 scales in lateral line; last simple ray of dorsal strong and ossified; 9 to 11 branched rays in the dorsal.

1. Snout much broader than long; rounded papillæ in front of and behind mouth.

Sc. 35  $\frac{5\frac{1}{2}}{5\frac{1}{2}}$ , 3, 14; ventral below anterior rays of dorsal; barbel  $\frac{1}{2}$  diameter of eye . . . . . *V. varicostoma*, Blgr.

2. Snout a little broader than long; barbel minute; ventral below middle of dorsal.

Sc. 31  $\frac{4\frac{1}{2}}{4\frac{1}{2}}$ ,  $2\frac{1}{2}$ , 12; eye  $4\frac{2}{3}$  times in length of head . . . . . *V. tornieri*, Stdr.

Sc. 30-35  $\frac{4\frac{1}{2}-5\frac{1}{2}}{5\frac{1}{2}}$ , 3-3 $\frac{1}{2}$ , 12-14; eye not more than 4 times in length of head . . . . . *V. steindachneri*, Blgr.

3. Snout much broader than long; barbel minute; ventral below anterior soft rays of dorsal.

Sc. 30-35  $\frac{4\frac{1}{2}-5\frac{1}{2}}{4\frac{1}{2}-5\frac{1}{2}}$ , 2-3, 12; eye 4 to 6 times in length of head . . . . . *V. beso*, Rüpp.

Sc. 34-39  $\frac{5\frac{1}{2}-6\frac{1}{2}}{5\frac{1}{2}-6\frac{1}{2}}$ , 3-3 $\frac{1}{2}$ , 12-14; eye 3 to 3 $\frac{1}{2}$  times in length of head . . . . . *V. latirostris*, Blgr.

B. More than 40 scales in lateral line.

Sc. 43-46  $\frac{8\frac{1}{2}-9\frac{1}{2}}{9\frac{1}{2}-10\frac{1}{2}}$ , 4-5, 16; dorsal with the last simple ray slender and flexible, followed by 10-11 branched rays . . . . . *V. maroccanus*, Gthr.

Sc. 64-70  $\frac{13\frac{1}{2}-14\frac{1}{2}}{14\frac{1}{2}-15\frac{1}{2}}$ , 9-10, 32-34; dorsal with the last simple ray strong and ossified, followed by 8-9 branched rays . . . . . *V. tanganica*, Blgr.

19. *Barbus ensis*, sp. n.

Depth of body  $3\frac{1}{2}$  to  $4\frac{1}{4}$  times in total length, length of head  $3\frac{1}{3}$  to  $3\frac{3}{4}$  times. Snout rounded, 3 times in length of head; eye  $2\frac{3}{4}$  to  $3\frac{1}{2}$  times in length of head, interorbital width 3 to  $3\frac{1}{4}$  times; mouth inferior, its width 4 times in length of head; lips moderately or rather strongly developed, lower continuous across chin, where it may form a rather long rounded lobe; two barbels on each side, anterior about  $\frac{2}{3}$  length of eye, posterior as long as eye or slightly longer. Dorsal IV 9, equally distant from centre or anterior border of eye and from root of caudal, border concave, last simple ray extremely strong, bony, not serrated, straight,  $1\frac{1}{4}$  to  $1\frac{2}{3}$  times length of head. Anal III 5, not reaching caudal. Pectoral shorter than head, not reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle twice as long as deep. Scales finely striated longi-

tudinally, 36-40  $\frac{5\frac{1}{2}-7\frac{1}{2}}{5\frac{1}{2}}$ , 3 between lateral line and ventral, 12-14 round caudal peduncle. Silvery, back brownish; fins sometimes tinged with red.

Fifteen specimens, measuring from 55 to 140 mm., from the Lucalla River at Lucalla.

Most nearly related to *B. bynni*, Forsk., and *B. ruspolii*, Vincig.; distinguished from both by the proportions of the head and body, the larger eye, the more anterior position of the dorsal fin, and from the latter by the higher number of scales in the lateral line.

#### 20. *Barbus rocadasi*, sp. n.

Depth of body 3 to  $3\frac{1}{2}$  times in total length, length of head  $3\frac{1}{2}$  to 4 times. Snout rounded,  $2\frac{3}{4}$  to  $3\frac{1}{4}$  times in length of head; eye 3 (young) to 5 times in length of head, interorbital width  $2\frac{3}{4}$  to 3 times; mouth inferior, its width 3 to  $3\frac{2}{3}$  times in length of head; lips moderately developed, lower continuous across chin (sometimes interrupted in the young), but not forming a median lobe; two barbels on each side, anterior a little shorter than posterior, which is as long as or a little longer than eye. Dorsal III-IV 9 (rarely 8 or 10), equally distant from anterior or posterior border of eye and from caudal, border concave, last simple ray very strong, bony, not serrated, straight or feebly curved,  $\frac{2}{3}$  to once length of head. Anal III 5, not reaching caudal. Pectoral as long as or a little shorter than head, not reaching ventral; base of latter below anterior soft rays of dorsal. Caudal peduncle  $1\frac{1}{3}$  to  $1\frac{1}{2}$  times as long as deep. Scales finely striated longitudinally, 30-35  $\frac{4\frac{1}{2}-5\frac{1}{2}}{4\frac{1}{2}}$ ,  $2\frac{1}{2}$ -3 between lateral line and ventral, 12 round caudal peduncle. Olive-brown above, scales edged with darker, whitish beneath; fins dark in the adult, orange at the base, ventrals and anal edged with yellow or orange.

Numerous specimens, measuring 65 to 350 mm., from the Quanza and Lucalla Rivers.

This species may be placed near *B. duchesnii*, Blgr., from Abyssinia; distinguished by shorter barbels.

#### 21. *Barbus guielmi*, sp. n.

Depth of body  $3\frac{3}{4}$  to 4 times in total length, length of head  $3\frac{2}{3}$  to 4 times. Snout obtusely pointed, 3 times in length of head; eye  $3\frac{1}{3}$  times in length of head, interorbital width 3 to  $3\frac{1}{3}$  times; mouth inferior, its width 4 to  $4\frac{1}{3}$  times in length of head; lips feebly developed, lower continuous



across chin; two barbels on each side, anterior a little shorter than posterior, which measures 1 to  $1\frac{2}{3}$  diameters of eye. Dorsal III 8-9, equally distant from anterior border or centre of eye and from caudal, border concave, last simple ray very strong, bony, not serrated, as long as or a little shorter than head. Anal III 5, not reaching caudal. Pectoral a little shorter than head, not reaching ventral; base of latter below anterior soft rays of dorsal. Caudal peduncle  $1\frac{2}{3}$  to 2 times as long as deep. Scales finely striated longitudinally, 29-31  $\frac{4\frac{1}{2}}{4\frac{3}{4}}$ , 2-2 $\frac{1}{2}$  between lateral line and ventral, 12 round caudal peduncle. Brownish above, silvery white beneath, the scales on the upper parts blackish at the base; fins greyish.

Three specimens, measuring 110 to 150 mm., from the Quanza River at Dondo.

This species, named after Dr. William J. Ansorge, is distinguished from the preceding by the more slender body, the longer caudal peduncle, the more pointed snout, and the narrower mouth.

Native name: Quangalatunda.

## 22. *Barbus girardi*, sp. n.

Depth of body 3 to  $3\frac{1}{2}$  times in total length, length of head  $3\frac{1}{2}$  to  $4\frac{1}{3}$  times. Snout rounded,  $3\frac{1}{3}$  to  $3\frac{1}{2}$  times in length of head; eye 3 (young) to 4 times in length of head, interorbital width  $2\frac{1}{2}$  to  $2\frac{2}{3}$  times; mouth inferior, its width  $3\frac{1}{2}$  to 4 times in length of head; lips rather feebly developed, lower restricted to the sides; two barbels on each side, subequal, or posterior a little longer,  $1\frac{1}{3}$  to  $1\frac{1}{2}$  diameters of eye. Dorsal IV 10, equally distant from anterior or posterior border of eye and from caudal, border concave, last simple ray very strong, bony, not serrated, 1 to  $1\frac{1}{2}$  times length of head. Anal III 5, reaching caudal in the adult. Pectoral as long as head, nearly reaching ventral; latter below anterior soft rays of dorsal. Caudal peduncle  $1\frac{2}{3}$  times as long as deep. Scales finely striated longitudinally, 40-44  $\frac{7\frac{1}{2}-8\frac{1}{2}}{6\frac{1}{2}-7\frac{1}{2}}$ ,  $3\frac{1}{2}$ -4 $\frac{1}{2}$  between lateral line and ventral, 16-18 round caudal peduncle. Brownish above, the scales darker at the base, whitish beneath; all the fins of a rich red in life.

11 specimens, measuring from 60 to 300 mm., from the Lucalla River at Lucalla.

This species, named after Dr. Albert Girard, Director of the Lisbon Museum, is allied to *B. intermedius*, Rüpp., but distinguished by smaller scales.

23. *Barbus rhinophorus*, sp. n.

Depth of body 4 to  $4\frac{1}{3}$  times in total length, length of head  $3\frac{1}{2}$  to  $3\frac{2}{3}$  times. Snout pointed, terminating in a rounded dermal pad projecting strongly beyond the mouth, its length  $2\frac{1}{2}$  times in length of head; eye 4 to  $4\frac{1}{3}$  times in length of head, interorbital width  $3\frac{2}{3}$  to 4 times; mouth inferior, its width 4 to  $4\frac{1}{3}$  times in length of head; lips rather strongly developed, not extending across chin; a single barbel on each side, as long as or slightly longer than eye; sides of snout with scattered, very small, granular nuptial tubercles. Dorsal III 9, equally distant from nostrils or anterior border of eye and from caudal, last simple ray very strong, bony, not serrated, slightly longer than head. Anal III 5, not reaching caudal. Pectoral  $\frac{3}{4}$  length of head, not reaching ventral; latter below middle of dorsal. Caudal peduncle twice as long as deep. Scales finely striated longitudinally, 30-32  $\frac{4\frac{1}{2}}{4\frac{1}{2}}$ , 2 between lateral line and ventral, 12 round caudal peduncle. Brownish above, each scale blackish at the base, whitish beneath; fins red.

Total length 150 mm.

Two specimens from the Lucalla River at Lucalla.

24. *Barbus rosæ*, sp. n.

Depth of body  $3\frac{1}{3}$  to  $3\frac{2}{3}$  times in total length, length of head  $3\frac{1}{2}$  to 4 times. Snout rounded, 3 to  $3\frac{1}{3}$  times in length of head; eye 3 to  $3\frac{1}{2}$  times in length of head, equal to interorbital width; mouth inferior, lower jaw with sharp cutting-edge\*; lips feebly developed, lower restricted to the sides; a single barbel on each side,  $\frac{2}{3}$  to  $\frac{2}{3}$  diameter of eye. Dorsal III 9, equally distant from anterior border or centre of eye and from caudal, border concave; last simple ray very strong, bony, as long as or a little longer than head. Anal III 5, not reaching caudal. Pectoral a little shorter than head, not reaching ventral; latter below middle of dorsal. Caudal peduncle nearly twice as long as deep. Scales finely striated longitudinally, 30-33  $\frac{4\frac{1}{2}-5\frac{1}{2}}{4\frac{1}{2}}$ ,  $2\frac{1}{2}$  between lateral line and ventral, 12 round caudal peduncle. Olive above, yellowish beneath; a blackish lateral band, terminating in a large black spot at the base of the caudal; fins orange.

Five specimens, measuring 55 to 95 mm., from the Lucalla River at Lucalla.

\* In the larger specimens only.

This species and the preceding are closely related, and constitute an isolated group, owing to the presence of a single barbel combined with the characters of the allies of *B. bynni*.

25. *Barbus lucius*, sp. n.

Depth of body  $4\frac{1}{3}$  to  $4\frac{1}{2}$  times in total length, length of head  $3\frac{1}{4}$  to  $3\frac{1}{3}$  times. Head nearly 3 times as long as broad; snout rounded, 3 to  $3\frac{1}{2}$  times in length of head; eye  $3\frac{1}{2}$  (young) to 5 times in length of head, interorbital width 4 to  $4\frac{1}{2}$  times; mouth terminal, or lower jaw projecting, its width  $3\frac{1}{2}$  to 4 times in length of head; lips rather strongly developed, not extending across chin; two barbels on each side, the anterior very minute, the posterior about  $\frac{1}{2}$  diameter of eye. Dorsal III 9-10, equally distant from eye and from caudal, border feebly concave, last simple ray strong, bony, not serrated,  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head. Anal III 5, not reaching caudal. Pectoral  $\frac{1}{2}$  to  $\frac{3}{5}$  length of head, not reaching ventral; latter below anterior soft rays of dorsal. Caudal peduncle nearly twice as long as deep. Scales finely striated longitudinally, 43-47  $\frac{6\frac{1}{2}-7\frac{1}{2}}{6\frac{1}{2}-7\frac{1}{2}}$ , 3 between lateral line and ventral, 16 round caudal peduncle. Silvery, back brownish, fins orange.

Three specimens, measuring 55 to 230 mm., from the Lucalla River at Lucalla.

This species also occupies an isolated position in the *B. bynni* division.

26. *Barbus mattozi*, Guimaraes.

Lucalla River.

Stands very near *B. argenteus*, Gthr.

27. *Barbus eutænia*, Blgr.

Quanza River at Dondo.

28. *Barbus kessleri*, Sldr.

Lucalla River and Lake Kilunda.

29. *Barbus holotænia*, Blgr.

Lucalla and Bengo Rivers.

30. *Barbus unitæniatus*, Sldr.

Lucalla and Bengo Rivers, Lake Kilunda.

31. *Barbus aurantiacus*, sp. n.

Depth of body equal to length of head,  $3\frac{2}{3}$  to 4 times in total length. Snout rounded, shorter than eye, which is  $2\frac{2}{3}$  to  $2\frac{3}{4}$  times in length of head and equals interorbital width; mouth subinferior, its width  $3\frac{1}{2}$  times in length of head; lips moderately developed, interrupted on the chin; two minute barbels on each side. Dorsal III 8, equally distant from end of snout or anterior border of eye and from root of caudal, border slightly concave; last simple ray flexible, not enlarged, not serrated, as long as head. Anal III 5, not reaching caudal. Pectoral  $\frac{3}{4}$  to  $\frac{4}{5}$  length of head, not reaching ventral; base of latter below anterior rays of dorsal. Caudal peduncle  $1\frac{2}{3}$  to 2 times as long as deep. Scales radiately striated, 26–28  $\frac{3\frac{1}{2}}{3\frac{1}{2}}$ , 2– $2\frac{1}{2}$  between lateral line and ventral, 12 round caudal peduncle. Pale olive-brown above, each scale with a dark brown spot; a blackish streak on each side of the head, passing through the eye, continued as a series of spots along the lateral line; lower parts yellowish, more or less tinged with orange; basal half or two-thirds of fins bright orange.

Five specimens, measuring 54 to 87 mm., from the Lucalla River at Lucalla.

Most nearly related to *B. doggetti*, Blgr., from Lake Victoria; distinguished by the larger eye and fewer scales in the lateral line (26–28 instead of 29).

32. *Barbus musumbi*, sp. n.

Depth of body  $2\frac{3}{4}$  to  $3\frac{1}{4}$  times as long as deep, length of head 3 to  $3\frac{2}{3}$  times. Snout rounded, shorter than eye, which is  $2\frac{1}{2}$  to 3 times in length of head and equals interorbital width; mouth small, subinferior; lips feebly developed; two barbels on each side, posterior the longer and  $\frac{1}{3}$  to  $\frac{1}{2}$  diameter of eye; males with small nuptial tubercles on lips and sides of snout. Dorsal III 8, equally distant from eye and from root of caudal, border straight or slightly concave; last simple ray flexible, not enlarged, not serrated, as long as head. Anal III 5, not reaching caudal. Pectoral about  $\frac{3}{4}$  length of head, not reaching ventral; latter below anterior rays of dorsal. Caudal peduncle  $1\frac{1}{3}$  to  $1\frac{1}{2}$  times as long as deep. Scales radiately striated, 22–25  $\frac{3\frac{1}{2}}{3\frac{1}{2}}$ ,  $1\frac{1}{2}$  between lateral line and ventral, 8 round caudal peduncle. Yellowish or pale olive above, scales often edged with black; top of head sometimes black; a more or less distinct black or blackish bar behind the gill-opening; fins red or blackish.

Total length 48 mm.

Numerous specimens from the Quanza River at Cambambe, the Bengo River at Cabiri, and Lake Kilunda.

Native name : Musumbi.

Very closely allied to the larger *B. congicus*, Blgr.

### 33. *Barilius ansorgii*, sp. n.

Depth of body equal to or a little less than length of head,  $3\frac{2}{3}$  to  $4\frac{1}{3}$  times in total length. Head 2 to  $2\frac{1}{3}$  times as long as broad, with feebly curved upper profile; snout pointed, not projecting beyond mouth, as long as or a little longer than eye, which is  $3\frac{1}{2}$  to 4 times in length of head; interorbital width 3 to  $3\frac{1}{3}$  times in length of head; mouth extending to below centre or posterior third of eye; no barbels; naked space between præoperculum and suborbitals not  $\frac{1}{2}$  width of third suborbital. Gill-rakers few, rudimentary. Dorsal II 7, originating midway between occiput and root of caudal, its posterior half above anal; anterior rays longest,  $\frac{3}{5}$  to  $\frac{2}{3}$  length of head. Anal III 12-14 (usually 13), anterior rays much longer than posterior, about as long as longest dorsals. Pectoral acutely pointed, as long as or a little shorter than head, reaching ventral or not. Caudal forked. Caudal peduncle  $1\frac{2}{3}$  to 2 times as long as deep. Scales radiately striated, 40-44  $\frac{7\frac{1}{2}-8\frac{1}{2}}{4\frac{1}{2}-5\frac{1}{2}}$ , 2- $2\frac{1}{2}$  between lateral line and ventral, 12-14 round caudal peduncle. Back bluish grey, sides and lower parts silvery white in females, bright yellow in males; 10 to 15 bluish-black vertical bars on each side, above the lateral line, the last usually expanding into a large blotch on the caudal peduncle at root of caudal; fins white.

Numerous specimens, measuring 80 to 120 mm., from the Quanza River at Dondo.

Closely allied to *B. kingsleyæ*, Blgr.

### Siluridæ.

#### 34. *Clarias gariepinus*, Burch.

Lake Kilunda.

#### 35. *Eutropius ansorgii*, sp. n.

Depth of body 4 times in total length, length of head 5 times. Head  $1\frac{1}{3}$  times as long as broad; snout broad, a little longer than eye; both jaws equal in front; eye perfectly lateral, 5 times in length of head, 3 times in interorbital

width; width of mouth equal to or a little less than interorbital width; vomero-palatine teeth forming an uninterrupted band, which is a little narrower than the band of præmaxillary teeth. Nasal barbel  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head, maxillary  $\frac{2}{3}$  to  $\frac{3}{4}$ , outer mandibular  $\frac{1}{2}$ , inner mandibular  $\frac{1}{5}$  to  $\frac{1}{4}$ . Gill-rakers moderately long, 9 to 12 on lower part of anterior arch. Dorsal I 6, entirely in advance of ventral, about twice as distant from caudal as from end of snout, its spine slender,  $\frac{3}{5}$  to  $\frac{2}{3}$  length of head, very feebly serrated behind. Anal 55-59. Pectoral not reaching ventral, its spine stronger and a little longer than that of dorsal, inner border feebly serrated. Caudal deeply forked, with pointed lobes. Caudal peduncle as long as deep or a little deeper than long. Brownish above, white below; a dark, ill-defined blotch on each side above the pectoral fin; vertical fins brownish, with a light streak along the anal.

Total length 240 mm.

Three specimens from the Quanza River at Cunga: one was caught in the act of swallowing a full-grown *Odaxothrissa ansorgii*.

Native name: Buanga.

The longer nasal barbel precludes the identification of this fish with the *E. bocagii*, from the Dondo River, described and figured by Guimaraes.

### 36. *Eutropius seraoui*, sp. n.

Depth of body 4 to  $4\frac{1}{2}$  times in total length, length of head  $4\frac{2}{3}$  to 5 times. Head  $1\frac{1}{4}$  to  $1\frac{1}{3}$  times as long as broad; snout broad, as long as or a little longer than eye, projecting slightly beyond lower jaw; eye perfectly lateral,  $3\frac{1}{2}$  to 4 times in length of head,  $2\frac{1}{2}$  to 3 times in interorbital width; width of mouth equal to interorbital width; vomero-palatine teeth forming an uninterrupted band, which is narrower than the band of præmaxillary teeth. Nasal barbel  $\frac{2}{3}$  to  $\frac{5}{6}$  length of head, maxillary  $1\frac{1}{4}$  to  $1\frac{1}{2}$ , outer mandibular  $\frac{3}{4}$  to 1, inner mandibular  $\frac{1}{2}$  to  $\frac{2}{3}$ . Gill-rakers rather long and closely set, 15 to 18 on lower part of anterior arch. Dorsal I 6, entirely in advance of ventral,  $2\frac{1}{3}$  to  $2\frac{1}{2}$  times as distant from caudal as from end of snout, its spine slender,  $\frac{2}{3}$  to  $\frac{3}{4}$  length of head, very feebly serrated behind. Anal 46-53. Pectoral reaching ventral or not, its spine stronger and a little longer than that of dorsal, inner border feebly serrated. Caudal deeply forked, with pointed lobes. Caudal peduncle as long as deep. Back brownish, sides and belly silvery white; a more or less distinct dark lateral stripe; a dark, ill-defined blotch on each side above the pectoral fin; fins whitish.

Ten specimens, measuring 50 to 200 mm., from the Bengo River and from the Lucalla River at Lucalla.

Distinguished from the preceding principally by the longer barbels and lower number of anal rays.

37. *Physailia ansorgii*, sp. n.

Depth of body  $4\frac{1}{2}$  times in total length, length of head 5 times. Snout broad, rounded, not projecting beyond mouth, a little shorter than eye; latter perfectly lateral, 3 times in length of head, and a little less than interocular width, which equals width of mouth. Nasal barbel  $\frac{2}{3}$  total length, maxillary and mandibular  $\frac{1}{2}$ . Pectoral as long as head, extending beyond root of ventral, spine serrated on inner side. Ventrals very small,  $2\frac{1}{2}$  times as distant from caudal as from end of snout. Anal 60-65, narrowly separated from caudal, which is deeply forked, with pointed lobes. Yellowish, more or less dotted with black, especially on the back and anal fin; lateral line black.

Total length 63 mm.

Two specimens from the Quanza River at Cunga.

Intermediate between *P. pellucida*, Blgr., and *P. somalensis*, Vincig.; distinguished from the former by longer barbels, from the latter by the serrated pectoral spine.

38. *Chrysichthys acutirostris*, Gthr.

Quanza, Lucalla, and Bengo Rivers.

Native name: Msolo.

This species was only known from the single type specimen, obtained by Welwitsch at Golungo Alto.

39. *Chrysichthys bocagii*, sp. n.

Depth of body  $4\frac{1}{2}$  to  $4\frac{2}{3}$  times in total length, length of head  $3\frac{1}{2}$  times. Head moderately depressed,  $1\frac{1}{2}$  times as long as broad, its upper surface slightly rugose, covered with thin skin; occipital process narrow, extending to the small interneural shield; snout obtusely pointed; eye  $3\frac{1}{2}$  to 4 times in length of head,  $1\frac{1}{3}$  to  $1\frac{1}{2}$  times in interocular width; mouth inferior, its width  $2\frac{1}{2}$  times in length of head; præmaxillary band of teeth nearly straight, 3 times as long as broad; vomero-ptyergoid teeth not much developed, forming a narrow band interrupted in the middle; nasal barbel 1 to  $1\frac{1}{3}$  diameters of eye, maxillary  $1\frac{1}{3}$  to  $1\frac{1}{4}$  length of head, outer mandibular  $\frac{2}{3}$  to  $\frac{3}{4}$ , inner mandibular  $\frac{2}{5}$  to  $\frac{1}{2}$ . Gill-rakers rather long, 15 to 17 on

lower part of anterior arch. Dorsal I 6,  $1\frac{1}{4}$  to  $1\frac{1}{2}$  as distant from root of caudal as from end of snout; spine strong, feebly serrated behind,  $\frac{2}{3}$  length of head; first and second soft rays longest, as long as head, reaching or nearly reaching adipose fin when folded; adipose fin as long as base of rayed dorsal,  $\frac{1}{2}$  as long as its distance from latter. Anal 13, 9 rays branched. Pectoral shorter than head, spine strongly serrated on inner side. Caudal deeply forked, with long pointed lobes, middle rays  $\frac{1}{3}$  length of longest. Caudal peduncle  $1\frac{1}{3}$  to  $1\frac{1}{2}$  times as long as deep. Olive-brown above, white beneath; fins olive-brown.

Two specimens, measuring 85 and 160 mm. respectively, from the Bengo River at Dondo.

Closely allied to *C. furcatus*, Gthr.; distinguished by longer barbels.

Named in memory of the late Prof. Barboza du Bocage, who so largely contributed to our knowledge of the Zoology of Angola.

#### 40. *Chrysichthys ansorgii*, sp. n.

Depth of body  $4\frac{1}{2}$  to 5 times in total length, length of head  $3\frac{1}{4}$  to  $3\frac{2}{3}$  times. Head rather strongly depressed,  $1\frac{1}{3}$  to  $1\frac{2}{3}$  times as long as broad, its upper surface smooth, covered with thick skin; occipital process narrow, extending to the small interneural shield; snout rounded; eye  $3\frac{1}{2}$  (young) to 5 times in length of head, 1 (young) to 2 times in interocular width; mouth inferior, its width  $1\frac{1}{3}$  to  $1\frac{1}{2}$  times in length of head (narrower in young); præmaxillary band of teeth straight or feebly curved, 4 times as long as broad; vomero-ptyergoid teeth forming a strong and long band, narrowly interrupted in the middle; nasal barbel as long as eye, maxillary  $\frac{3}{4}$  to  $\frac{5}{8}$  length of head (as long as head in very young), outer mandibular  $\frac{1}{2}$  to  $\frac{2}{3}$ , inner mandibular  $\frac{1}{3}$  to  $\frac{1}{2}$ . Gill-rakers rather long, 13-15 on lower part of anterior arch. Dorsal I 6,  $1\frac{1}{4}$  to  $1\frac{1}{2}$  times as distant from end of snout as from root of caudal; spine strong, feebly serrated behind,  $\frac{2}{3}$  to  $\frac{3}{4}$  length of head; second or third soft ray longest,  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head; adipose fin as long as or a little shorter than base of rayed dorsal,  $\frac{1}{3}$  to  $\frac{1}{2}$  as long as its distance from latter. Anal 13, 8 or 9 rays branched. Pectoral much shorter than head, spine strongly serrated on inner side. Caudal moderately forked, the lobes obtusely pointed in the adult, middle rays  $\frac{2}{3}$  to  $\frac{1}{2}$  length of longest. Caudal peduncle  $1\frac{1}{2}$  times as long as deep. Olive-brown or grey to blackish above, white beneath; fins olive-brown.



Numerous specimens, 65 to 300 mm. long, from the Quanza River at Dondo, and from the Bengo River.

In the adult and half-grown state this fish is easily distinguished from the preceding by the broader, flatter head, shorter maxillary barbels, and less deeply forked tail; but what I regard as the young of the two species are not so readily separated.

#### Cyprinodontidæ.

##### 41. *Haplochilus macrurus*, Blgr.

Quanza River at Dondo.

#### Syngnathidæ.

##### 42. *Syngnathus ansorgii*, sp. n.

Head and body  $\frac{1}{3}$  of total length; osseous rings 15 + 37, without spines; body a little deeper than broad; lateral line and upper caudal edge not continuous. Snout as long as postocular part of head; operculum crossed by a straight ridge; a ridge along the upper surface of the head and on the nape. Dorsal 29, originating above vent and occupying 7 rings. Anal 2. Pectoral and caudal fins well developed but small. Pouch half as long as tail. Yellowish brown, darker on the tail, with rather indistinct dark brown bars above and blackish spots dispersed regularly on the sides, one above and one below the median lateral ridge to each ring on the body; dark lines radiating from the pupil; caudal fin black, edged with yellowish above and beneath.

Total length 115 mm.

A single specimen from the Quanza River at Dondo.

Distinguished from *S. mossambicus*, Peters, and *S. kaupi*, Blkr., by more numerous dorsal rays, and from the latter by the shorter snout.

Native name: Ralo.

#### Mugilidæ.

##### 43. *Mugil falcipinnis*, C. & V.

Bengo River at Cabiri.

#### Pleuronectidæ.

##### 44. *Cynoglossus senegalensis*, C. & V.

Quanza River at Cunga.

**Serranidæ.**

45. *Lutjanus eutactus*, Blkr.

Quanza River at Cunga.

**Pristipomatidæ.**

46. *Pristipoma jubelini*, C. & V.

Quanza River at Cunga, and Bengo River at Qui-fungondo.

Native name : Matoma.

**Cichlidæ.**

47. *Hemichromis fasciatus*, Peters.

Quanza River at Cunga.

48. *Tilapia flavomarginata*, Blgr.

Quanza and Bengo Rivers, Lake Panguila.

Native name : Cacusso.

49. *Tilapia cabræ*, Blgr.

Quanza River at Cunga and Cabambe, Lake Rumango.

Native name : Shopa.

50. *Tilapia melanopleura*, A. Dum.

Quanza River at Cunga.

51. *Tilapia acuticeps*, Stdr.

Lucalla River at Lucalla.

Adult males are pale purplish brown, the chin and throat dull blue, the other fins yellow, dorsal, anal, and caudal with bright rose round spots and edged with light rose.

**Gobiidæ.**

52. *Nematogobius ansorgii*, g. & sp. n.

Depth of body 5 to 6 times in total length, length of head  $3\frac{1}{2}$  to  $3\frac{1}{2}$  times. Head  $1\frac{2}{3}$  times as long as broad, broader than deep; snout short, rounded; jaws equal in front or lower slightly projecting; eye 4 times in length of

head; interorbital space narrow; mouth extending to below centre of eye; no canines; head naked, with very regular series of sensory papillæ; a short nasal barbel and a pair of mental barbels. Dorsal VI, I 12; longest ray of first dorsal nearly  $\frac{1}{2}$  length of head. Anal I 9. Pectoral as long as head. Ventral with well-developed anterior membrane, not reaching vent. Caudal rounded. Caudal peduncle  $1\frac{2}{3}$  times as long as deep. Scales ctenoid, 37-40 in longitudinal series, 10-11 between dorsal and anal. Yellowish brown above, speckled with brown, with 3 or 4 ill-defined dark brown cross-bars; dorsal and caudal fins spotted with dark brown; a round blackish spot on upper part of pectoral fin, near its base.

Total length 80 mm.

Three specimens from the Bengo River at Cabiri.

Native name: Kimbunu.

In the presence of a nasal barbel and a pair of mentals this species differs from all the *Gobius* with barbels which are placed in the genera *Chaturichthys*, *Ainosus*, *Trienopogon*, &c., and deserves to be made the type of at least a subgenus, for which the name *Nematogobius* is proposed.

LXII.—*New Species of Heterocera from Costa Rica*.—III.

By W. SCHAUS, F.Z.S.

**Lasiocampidæ.**

*Claphe francesca*, sp. n.

Body above lilacine buff; the anal hairs and subdorsal basal tuft brownish. Fore wings: the basal area above submedian, and the medial space above vein 3 light grey with two black points at end of cell; the costa finely, the inner margin and marginal space light fawn-brown; a white basal spot below cell; a curved geminate darker grey antemedial line with a paler spot on costa; the postmedial whitish buff below vein 5, incurved at vein 2, oblique and geminate from costa, angled at vein 7 and filled in with grey to vein 5, where it is followed by a brown streak between 5 and 6; a subterminal fine whitish lunular line; below vein 5 a fine paler line between subterminal and postmedial; a terminal paler line. Hind wings buff; the veins beyond a medial brownish shade slightly darker; the outer half of costa pale reddish brown crossed by a subterminal paler line.

Expanse 28 mm.

*Hab.* El Sitio.