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(BEING A CONTINUATION OF THE 'ANNALS' COMBINED WITH LOUDON AND
CHARLESWORTH'S 'MAGAZINE OF NATURAL HISTORY.')

CONDUCTED BY

ALBERT C. L. G. GÜNTHER, M.A., M.D., Ph.D., F.R.S.,

WILLIAM CARRUTHERS, F.R.S., F.L.S., F.G.S.,

AND

WILLIAM FRANCIS, F.L.S.

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THE ANNALS
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[SEVENTH SERIES.]

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LX.—*Descriptions of new Fishes discovered by Mr. E. Degen in Lake Victoria.* By G. A. BOULENGER, F.R.S.

MR. E. DEGEN, who has rendered such signal service to African ichthyology as a collector of the fishes of Abyssinia, has utilized his leisure, when recently in Uganda as assistant to Prof. E. A. Minchin, by making a very fine collection of the fishes of Lake Victoria, our previous knowledge of which was very unsatisfactory. This collection is by far the most extensive that has ever been made in that lake, consisting of about 800 specimens. It contains not only examples of nearly all the species which had been previously described by Hilgendorf, Pfeffer, Pellegrin, and myself, but representatives of as many as 26 which are here described as new. Fuller descriptions and figures of all of them will appear later in the work on the Fishes of the Nile, on which I have been engaged for some years, and the publication of which is necessarily postponed by the constant accession of fresh material.

Until quite lately the fish-fauna of Lake Victoria was believed to be, comparatively to the other great lakes of Africa, a rather poor one, only about 25 species being known. From the available data, I concluded, when recently discussing the distribution of African freshwater fishes, that Lake Victoria has long been isolated, showing so little in common with the fauna of the Nile. This conclusion is further emphasized by the collection brought home by

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Mr. Degen, the Cichlids especially showing so many modifications, apparently derived from some original stock consisting of a small number of forms. These modifications are not comparable in importance to those with which the exploration of Lake Tanganyika has made us acquainted, but they tend to show that this lake has a quite peculiar fauna, bearing no special affinity to either the Nile or the Congo, so far as specific forms are concerned.

Mormyridæ.

Petrocephalus Degeni.

Depth of body $3\frac{1}{2}$ times in total length, length of head $3\frac{3}{4}$ times. Snout very short, about $\frac{1}{6}$ length of head, rounded, projecting beyond the mouth; width of mouth $\frac{1}{4}$ length of head; teeth bicuspid, 10 in upper jaw, 22 in lower jaw; eye longer than snout, $4\frac{1}{2}$ times in length of head, once and $\frac{1}{2}$ in interorbital width. Dorsal 19, originating above first ray of anal, its length twice and $\frac{1}{3}$ in its distance from head. Anal 27. Pectoral pointed, about $\frac{2}{3}$ length of head. Caudal peduncle twice and $\frac{1}{2}$ as long as deep, $\frac{3}{4}$ length of head. 41 scales in lateral line, $\frac{10}{12}$ in a transverse series on the body, $\frac{9}{9}$ between dorsal and anal, 12 round caudal peduncle. Silvery, back dark grey; fins grey.

Total length 88 mm.

A single specimen from the mouth of the Katonga River.

Easily distinguished from its congeners in the short dorsal fin originating above the first ray of the anal.

Marcusenius nigricans.

Depth of body 3 to $3\frac{1}{2}$ times in total length, length of head 4 to $4\frac{1}{3}$ times. Snout about $\frac{1}{5}$ length of head, rounded, projecting beyond the mouth; mouth below the nostrils, its width 4 times in length of head; teeth small, bicuspid, 7 in upper jaw, 8 in lower jaw; eye as long as snout, $\frac{1}{2}$ to $\frac{2}{3}$ interocular width. Dorsal 15-18, originating above 5th or 6th ray of anal. Anal 24-25. Pectoral pointed, subfalcate, as long as or a little shorter than head. Caudal peduncle twice and $\frac{1}{2}$ to twice and $\frac{2}{3}$ as long as deep, $\frac{2}{3}$ to $\frac{4}{5}$ length of head. 46 to 53 scales in lateral line, $\frac{10-11}{14-15}$ in a transverse series on the body, $\frac{10-12}{10-11}$ between dorsal and anal, 16-20 round caudal peduncle. Uniform blackish brown.

Total length 93 mm.

Numerous specimens from the mouth of the Katonga River.

Distinguished from *M. Isidori*, C. & V., by the shorter dorsal fin, the shorter caudal peduncle, the larger mouth, and generally fewer scales in the lateral line.

Characinidæ.

Alestes Sadleri.

Depth of body $3\frac{1}{2}$ to $3\frac{1}{2}$ times in total length, length of head 4 times. Snout rounded, not projecting beyond the lower lip, a little shorter than the eye, the diameter of which is $\frac{1}{2}$ length of head; interorbital width $\frac{2}{3}$ length of head. Gill-rakers long and slender, 18 on lower part of anterior arch. Dorsal II 8, just behind vertical of ventrals, equally distant from occiput and from root of caudal; first branched ray as long as head. Anal III 16-17. Pectoral as long as head. Caudal peduncle barely once and $\frac{1}{2}$ as long as deep. Scales $33\frac{1}{2}$, 2 between lateral line and ventral. Steel-blue above, silvery white below; fins orange-red; a black (in life brilliant orange) blotch on the caudal peduncle, extending on the middle rays of the caudal fin.

Total length 94 mm.

Two specimens from Entebbe.

This new species is named after Lieut.-Col. Hayes Sadler, H.M. Commissioner, Uganda Protectorate, at the time of Mr. Degen's visit. It is easily distinguished from *A. nurse*, Rüpp., which is common in the lake, by the more posterior position of the dorsal fin, by the greater number of rays in the anal fin, and by one series more of scales between the origin of the dorsal fin and the lateral line.

Cyprinidæ.

Barbus lobogenys.

Depth of body equal to or a little greater than length of head, $3\frac{1}{2}$ to $4\frac{1}{6}$ times in total length. Snout rounded, distinctly projecting beyond the mouth, longer than the eye, the diameter of which is $3\frac{2}{3}$ (young) to $5\frac{1}{2}$ times in length of head; interorbital width $2\frac{1}{2}$ to 3 times in length of head; width of mouth $\frac{1}{4}$ to $\frac{1}{3}$ length of head; lips strongly developed, the upper more or less produced into a point, the lower continuous across the chin and often produced into a long rounded mental lobe; barbels two on each side, anterior $\frac{2}{3}$

to $1\frac{1}{2}$ diameter of eye, posterior as long as eye or a little shorter. Dorsal III 8 (rarely 9), free edge feebly emarginate; last simple ray strong, bony, not serrated, straight, $\frac{1}{2}$ to $\frac{3}{4}$ length of head. Anal III 5, longest ray $\frac{2}{3}$ to $\frac{3}{4}$ length of head. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, not reaching ventral; latter below anterior rays of dorsal. Caudal peduncle once and $\frac{1}{3}$ to once and $\frac{2}{3}$ as long as deep. Scales 32-36 $\frac{5\frac{1}{2}}{5\frac{1}{2}}$, 3 or $3\frac{1}{2}$ between lateral line and ventral, 12 or 14 round caudal peduncle. Coppery brown above, pinkish or brassy yellow on the sides, the scales dark brown at the base; silvery white below; pectoral and ventral fins orange, dorsal, anal, and caudal lemon-yellow at the base, greyish or blackish towards the border; iris yellow.

Nine specimens, measuring from 155 to 600 mm., from Bunjako and Buganga.

Differs from *B. Radcliffi*, Blgr., in the more prominent snout, and in the presence of one series more of scales between the lateral line and the ventral fin; from *B. nedgia*, Rüpp., in the broader interorbital space.

Barbus Minchini.

Depth of body $3\frac{1}{3}$ times in total length, length of head 4 times. Snout rounded, not prominent, shorter than the eye, the diameter of which is $3\frac{1}{2}$ times in length of head; interorbital width twice and $\frac{1}{2}$ in length of head; lips moderate, not extending across the chin; barbels two on each side, anterior $\frac{2}{3}$ diameter of eye, posterior as long as eye. Dorsal III 7, last simple ray strong, bony, serrated behind, a little shorter than head; border of fin nearly straight. Anal III 5, longest ray $\frac{2}{3}$ length of head. Pectoral $\frac{3}{4}$ length of head, not quite reaching ventral; latter entirely in advance of vertical of origin of dorsal. Caudal peduncle twice as long as deep. Scales 25-26 $\frac{5\frac{1}{2}}{6\frac{1}{2}}$, $2\frac{1}{2}$ between lateral line and ventral, 12 or 14 round caudal peduncle. Olive above, silvery white beneath, the scales blackish at the base; a bright yellow or scarlet spot on the gill-cover; pectoral and ventral fins yellow, dorsal, anal, and caudal scarlet, yellow at the base; iris greyish white.

Total length 88 mm.

Two specimens from Entebbe.

Named after Prof. E. A. Minchin, in recognition of his service to African ichthyology in enabling Mr. Degen to form the valuable collection which it is my privilege to describe.

The nearest ally of this species is *B. Kerstenii*, Peters.

Barbus Magdalenae.

Depth of body $3\frac{1}{5}$ to $3\frac{3}{4}$ times in total length, length of head $4\frac{1}{3}$ to 5 times. Snout rounded, not prominent, shorter than the eye, the diameter of which is $2\frac{2}{3}$ to 3 times in length of head; interorbital width twice and $\frac{1}{2}$ in length of head; mouth narrow, with very thin lips; no barbels. Dorsal III 8, last simple ray not ossified and as long as head; border of fin slightly notched. Anal III 5, longest ray $\frac{2}{3}$ length of head. Pectoral $\frac{3}{4}$ length of head, not reaching ventral; latter below origin of dorsal. Caudal peduncle twice as long as deep. Scales 29-32 $\frac{5\frac{1}{2}}{3\frac{2}{3}}$, 1 or $1\frac{1}{2}$ between lateral line and ventral, 10 round caudal peduncle; lateral line descending very abruptly towards ventral fin. Silvery, yellowish olive on the back, with a more or less distinct darker lateral stripe; fins yellow.

Total length 71 mm.

Twelve specimens from Bunjako.

This species, dedicated to Mrs. Minchin, differs from *B. anema*, Blgr., and its allies, in the more numerous scales in the lateral line and in the longer caudal peduncle.

Siluridæ.

Clarias Alluaudi.

Depth of body 6 to $6\frac{1}{2}$ times in total length, length of head $4\frac{1}{4}$ to $4\frac{1}{2}$ times. Head once and $\frac{1}{3}$ to once and $\frac{1}{2}$ as long as broad, smooth above; occipital process acutely pointed, longer than broad; occipital fontanelle extending on occipital process; eye very small, twice or twice and $\frac{1}{2}$ in length of snout, 4 or 5 times in interorbital width, 9 or 10 times in length of head; vomerine teeth villiform, forming a crescentic band which is longer and broader than the band of præmaxillary teeth; nasal barbel as long as or a little longer than head; maxillary barbel once and $\frac{1}{2}$ to once and $\frac{2}{3}$ as long as head, 14 or 15 gill-rakers on anterior arch. Dorsal 67-78, its distance from the occipital process about $\frac{1}{4}$ length of head. Anal 55-62. Dorsal and anal extending to the root of the caudal. Pectoral $\frac{1}{2}$ length of head, the spine about $\frac{2}{3}$ the length of the fin and serrated on both sides. Ventrals nearly twice as far from the end of the caudal as from the end of the snout. Dark olive-brown above, lighter beneath.

Total length 143 mm.

One specimen from Entebbe and three from Bunjako; also one from Kavirondo Bay (Alluaud Collection) received from the Paris Muscum as *C. microphthalmus*, Pfeiff.

The fish described by Pfeffer is probably a young *C. Robecchii*, Vincig., and is at any rate very different from the one here described, as the vomerine teeth are granular, the dorsal fin is widely separated from the caudal, and there are 40 gill-rakers on the anterior arch.

Bagrus Degeni.

Depth of body $4\frac{1}{2}$ to $5\frac{1}{2}$ times in total length, length of head $3\frac{1}{5}$ to $3\frac{2}{3}$ times. Head once and $\frac{2}{5}$ to once and $\frac{1}{2}$ as long as broad; occipital process long and narrow; diameter of eye 5 (young) to 11 times in length of head, once and $\frac{2}{3}$ to twice and $\frac{3}{4}$ in length of snout, once and $\frac{1}{2}$ to once and $\frac{2}{3}$ in interorbital width; nasal barbel $\frac{1}{3}$ (young) to $\frac{1}{8}$ length of head, maxillary barbel once and $\frac{1}{5}$ (adult) to twice and $\frac{1}{3}$ (young) length of head, extending barely to end of pectoral fin in the adult, to end of ventral fin in the young. Dorsal I 9, last ray in advance of vertical of inner ray of ventral; longest ray $\frac{1}{2}$ (adult) to $\frac{3}{4}$ (young) length of head. Adipose dorsal 4 to $5\frac{1}{2}$ times as long as deep, once and $\frac{1}{2}$ to once and $\frac{2}{3}$ as long as the rayed dorsal; the space between the two dorsals equals $\frac{1}{2}$ to $\frac{2}{3}$ the length of the first. Anal III 8-9. Pectoral $\frac{1}{2}$ to $\frac{2}{3}$ length of head, its spine moderately strong, not serrated in the adult. Upper lobe of caudal produced into a long filament. Caudal peduncle not or but little longer than deep. Blackish brown or dark steel-blue above, whitish or brassy yellow beneath; fins grey to blackish; iris dark, with a vivid yellow ring.

Seven specimens, measuring from 130 to 490 mm., from Entebbe.

Intermediate between *B. docmac*, Forsk., which occurs also in Lake Victoria, and *B. orientalis*, Blgr., from the Pangani River.

Synodontis victoriae.

Depth of body 4 to $4\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to 4 times. Head once and $\frac{1}{4}$ as long as broad, granulate above, the snout smooth; frontal fontanelle moderate; snout rounded, as long as postocular part of head; interorbital region slightly convex, $\frac{2}{3}$ length of head; eye supero-lateral, its diameter 5 to $5\frac{1}{2}$ times in length of head; occipital region convex; lips moderate; maxillary barbel simple, with a narrow fringe at the base, a little shorter than head, extending to base of pectoral spine; mandibular barbels with slender simple branches, outer about $\frac{1}{2}$ length of head, inner $\frac{2}{7}$ or $\frac{1}{3}$; præmaxillary teeth forming a broad band; anterior mandibular teeth curved, $\frac{1}{3}$ diameter of eye, 19-21 in number.

Gill-cleft not extending inferiorly beyond base of pectoral fin. Nuchal shield convex, not keeled, rugose and pitted, once and $\frac{1}{4}$ to once and $\frac{1}{3}$ as long as broad, ending in two blunt points, which extend a little beyond the base of the spine of the dorsal. Humeral process covered with granular asperities, once and $\frac{1}{2}$ as long as broad, pointed, not extending so far back as the occipito-nuchal shield. Skin smooth. Dorsal I 6-7; spine strong, $\frac{2}{3}$ length of head, smooth in front, with 8 very small serræ behind. Adipose dorsal 4 or 5 times as long as deep, as long as head, once and $\frac{2}{3}$ or twice its distance from rayed dorsal. Anal III 8. Pectoral spine a little shorter than head, feebly serrated on the outer side, strongly on the inner. Ventral not reaching anal. Caudal very deeply notched, crescentic, upper lobe longest. Brown above, white beneath, the brown parts with rather large round darker spots, which may be very indistinct; iris pure white.

Total length 250 mm.

One specimen from Entebbe and one from Buganga.

Allied to *S. afro-Fischeri*, Hilgand., and *S. punctulatus*, Gthr. Distinguished from the first by fewer mandibular teeth and the absence of villosities on the body, from the second by fewer mandibular teeth and shorter mandibular barbels.

Cichlidæ.

Paratilapia cinerea.

Teeth small, in 4 series in each jaw, outer largest and feebly curved. Depth of body equal to length of head, 3 times in total length; body deepest at the nape. Snout much deeper than long, with steep oblique upper profile, a little shorter than the eye, which is 3 times in length of head and equals interorbital width; maxillary extending to below anterior border of eye; 3 series of scales on the cheek. Gill-rakers short, 9 on lower part of anterior arch. Dorsal XVI 8; spines increasing in length to the last, which measures $\frac{2}{3}$ length of head. Anal III 8; third spine a little shorter than last dorsal. Pectoral as long as head, extending a little beyond origin of anal. Ventral extending beyond origin of anal. Caudal peduncle once and $\frac{2}{3}$ as long as deep. Scales with very feeble denticulation, $33\frac{5}{13}$; lat. l. $\frac{21}{11}$. Grey above and beneath, darker on the back; a blackish opercular spot; fins dark grey, ventrals blackish; two large orange round spots, encircled with red, on the posterior part of the anal.

Total length 105 mm.

A single specimen from Buganga.

Allied to *P. victoriana*, Pellegr.*; distinguished by the larger eye.

Pelmatochromis Spekii.

Teeth in 3 to 6 series in both jaws, outer large, distant, and curved in the adult. Lower jaw more or less projecting in the adult. Depth of body $2\frac{2}{3}$ to $3\frac{1}{4}$ times in total length, length of head $2\frac{2}{3}$ to $2\frac{4}{5}$ times. Head large, with straight or slightly concave upper profile; snout once and $\frac{1}{4}$ (young) to twice and $\frac{1}{2}$ diameter of eye, which is $3\frac{1}{2}$ to 6 times in length of head and $\frac{4}{5}$ to once and $\frac{1}{2}$ in interorbital width; mouth oblique; maxillary extending to below anterior border of eye, or not quite so far; 3 to 5 series of scales on the cheek. Gill-rakers short, 8 or 9 on lower part of anterior arch. Dorsal XV-XVI 9-10; spines increasing in length to the last, which measures $\frac{1}{3}$ to $\frac{2}{5}$ length of head; longest soft rays $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal III 8-10; third spine longest, stronger than dorsals, $\frac{1}{4}$ to $\frac{1}{3}$ length of head. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, reaching origin of anal or a little beyond. Ventral reaching origin of anal or a little beyond. Caudal rounded. Caudal peduncle once and $\frac{1}{4}$ to once and $\frac{1}{2}$ as long as deep. Scales ctenoid, 30-33 $\frac{5-6}{12-13}$; lat. l. $\frac{19-22}{11-14}$. Olive-brown to emerald-green above, silvery below; sometimes an ill-defined dark lateral stripe, cross-bars on the back, and a vertical dark bar below the eye; a dark opercular spot; dorsal and caudal fins greyish or bluish purple, the latter and the soft part of the dorsal with small round dark spots; anal yellow or greyish, sometimes bordered with vermilion-red, often with large orange ocellar spots encircled with red, on the posterior part; ventrals yellow or black; iris greyish white to dark brown, or upper half brown and lower half yellowish white.

Fifteen specimens, measuring from 95 to 235 mm., obtained at Entebbe, Munyongo, Bunjako, and Buganga.

In the smaller specimens a few of the inner teeth in both jaws are tricuspid, whilst in the larger ones they are all unicuspid; the dentition of the young is that of a *Tilapia*.

* The very young of all the *Paratilapia* and *Pelmatochromis* of Lake Victoria have more or less distinctly bi- or tricuspid teeth, thus rendering the distinction between these genera and *Haplochromis* or *Astatotilapia* as difficult and unsatisfactory as is that between the latter and *Tilapia*.

Pelmatochromis flavipinnis.

Teeth in 4 series in the upper jaw, in 3 in the lower, outer largest. Lower jaw projecting. Depth of body equal to length of head, 3 times in total length; body deepest at the nape. Head large, with concave upper profile; snout once and $\frac{2}{3}$ diameter of eye, which is 5 times in length of head and once and $\frac{1}{4}$ in interorbital width; mouth obliquely directed upwards; maxillary not extending quite to below anterior border of eye; 6 series of scales on the cheek. Gill-rakers short, 9 on lower part of anterior arch. Dorsal XV 9; spines increasing in length to the last, which measures $\frac{1}{3}$ length of head; longest soft rays a little more than $\frac{1}{2}$ length of head. Anal III 8; third spine longest, a little shorter than last dorsal. Pectoral $\frac{3}{4}$ length of head, not reaching origin of anal. Ventral reaching vent. Caudal rounded. Caudal peduncle once and $\frac{1}{2}$ as long as deep. Scales ctenoid, $31 \frac{7}{12}$; lat. l. $\frac{22}{15}$. Yellowish, tinged with orange on the sides, with 4 broad olive-brown cross-bands on the upper half of the body; an interrupted dark streak on each side from above the gill-cover to the base of the tail; head speckled with brown; an angular olive-brown band, pointing backwards, from eye to eye on the occiput; a broad blackish band from below the anterior half of the eye to the mouth; a blackish vertical bar on the præoperculum; an oblique blackish bar, involving the opercular spot, behind the gill-cover; fins bright yellow, the ventral black on the outer side; two large round orange spots encircled with red on the posterior part of the anal.

Total length 145 mm.

A single specimen from Buganga.

Closely allied to the preceding.

Pelmatochromis microdon.

Teeth very small and few, in 3 series in both jaws. Lower jaw slightly projecting. Depth of body equal to length of head, 3 times in total length. Head large, with slightly concave upper profile; snout as long as broad, once and $\frac{1}{3}$ diameter of eye, which is 4 times in length of head and once and $\frac{1}{4}$ in interorbital width; præorbital a little narrower than the eye; mouth obliquely directed upwards; maxillary extending to below anterior border of eye; 3 series of scales on the cheek. Gill-rakers very short, the posterior strongly expanded, much broader than long, 9 on lower part of anterior arch. Dorsal XV 9; spines increasing in length to

the last, which measures $\frac{2}{3}$ length of head; longest soft rays $\frac{3}{5}$ length of head. Anal III 8; third spine longest, as long as and stouter than last dorsal. Pectoral as long as head, extending to above base of third anal spine. Ventral reaching origin of anal. Caudal obliquely truncate, upper rays longest. Caudal peduncle once and $\frac{1}{3}$ as long as deep. Scaled ctenoid, $32 \frac{4-5}{11}$; lat. l. $\frac{21}{11}$. Olive above, grey beneath, with six ill-defined darker vertical bars on the sides; a blackish opercular spot; fins grey, posterior part of dorsal and caudal with small round darker spots, forming regular series between the rays; posterior part of anal with a few small orange ocellar spots.

Total length 175 mm.

A single specimen from Bunjako.

A small specimen, 90 mm. long, from Entebbe, which I regard as probably a young of the same species, has stronger outer teeth, the maxillary extends to below anterior third of eye, and the caudal fin is regularly rounded. Snout as long as the eye, which is $3\frac{1}{3}$ times in length of head. D. XV 9; A. III 8; Sc. $32 \frac{4}{11}$; lat. l. $\frac{21}{11}$.

Allied to the two preceding. Agrees with *P. Jentinki*, Stdr., in the very feeble dentition.

Pelmatochromis obesus.

Teeth in 2 or 3 series in both jaws, outer small, inner minute. Depth of body twice to twice and $\frac{1}{2}$ in total length, length of head 3 times. Head broad, with slightly concave upper profile; snout twice as broad as long in the adult, as long as diameter of eye, which is $3\frac{1}{2}$ times in length of head and once and $\frac{1}{4}$ to once and $\frac{1}{2}$ in interorbital width; præ-orbital much narrower than the eye; mouth obliquely directed upwards; maxillary extending to below anterior border of eye; 3 or 4 series of scales on the cheek. Gill-rakers short, some T-shaped, 8 to 10 on lower part of anterior arch. Dorsal XV 9; spines increasing in length to the last, which measures $\frac{2}{3}$ to $\frac{1}{2}$ length of head; longest soft rays $\frac{3}{5}$ length of head. Anal III 8-9; third spine stronger but a little shorter than last dorsal. Pectoral as long as head, extending to above base of third anal spine. Ventral extending to soft anal rays. Caudal obliquely truncate, upper rays longest. Caudal peduncle once and $\frac{1}{4}$ as long as deep. Scales ctenoid, $32 \frac{4-5}{13}$; lat l. $\frac{20-21}{11-13}$. Olive above, with very indistinct dark cross-bands, yellowish white beneath; a rather indistinct dark vertical bar below the eye; a dark

opercular spot; dorsal fin greyish, blackish towards the border, the soft portion with round dark spots; anal yellow, with two or three large round orange spots on its posterior half; inner rays of ventrals yellow, outer blackish; caudal greyish.

Total length 155 mm.

A single adult specimen from Bunjako; a smaller one from Entebbe.

Very closely related to the preceding, in spite of the great difference in form.

*Haplochromis** *percoides*.

Teeth in 3 series in both jaws, outer largest, some with a faint trace of a lateral cusp. Lower jaw projecting. Depth of body $3\frac{1}{4}$ to $3\frac{1}{2}$ times in total length, length of head $2\frac{3}{4}$ to 3 times; body deepest at the nape. Snout with convex upper profile, a little longer than the eye, which is 4 times in length of head and once to once and $\frac{1}{4}$ in interorbital width; maxillary extending to below anterior border of eye; 4 series of scales on the cheek. Gill-rakers moderate and stout, 8 or 9 on lower part of anterior arch. Dorsal XIV-XV 10; spines increasing in length to the last, which measures nearly $\frac{1}{3}$ length of head; longest soft rays nearly $\frac{1}{2}$ length of head. Anal III 9; third spine longest, as long as and stronger than longest dorsal. Pectoral $\frac{2}{3}$ length of head, not reaching origin of anal. Ventral reaching vent. Caudal truncate. Caudal peduncle once and $\frac{1}{2}$ as long as deep. Scales strongly ctenoid, $32\frac{5}{13}$; lat. l. $\frac{20-21}{11-15}$. Dark olive above, ochre-yellow below; four dark brown transverse bands on the body and a dark brown blotch at the base of the tail; a dark brown bar across the forehead, and another, vertical, below the eye; dorsal light olive-brown, with a darker longitudinal streak on its posterior portion; pectorals, ventrals, and anal ochre-yellow, the latter with an orange spot with dark centre; iris white, with a reddish circle round the pupil.

Total length 98 mm.

Two specimens from Entebbe.

* *Haplochromis*, Hilgendorf, 1888, and *Ctenochromis*, Pfeffer, 1893, have priority over *Astatotilapia*, Pellegrin, 1904. *H. nuchisquamulatus*, which may be taken as the type of *Haplochromis* and *Ctenochromis*, is closely allied to *H. Desfontainesi*, which represents Pellegrin's genus; in addition to the character of the dentition, intermediate between *Paratilapia* and *Tilapia*, the fishes of this genus differ from the latter in usually having a considerable portion of the maxillary bone exposed when the mouth is fully closed.

Haplochromis Stanleyi.

Teeth in 3 or 4 series in both jaws, outer largest, conical or bicuspid, the others minute and tricuspid. Lower jaw slightly projecting. Depth of body equal to length of head, 3 times in total length. Upper profile of head slightly concave; snout as long as the eye, the diameter of which is $3\frac{1}{2}$ or $3\frac{2}{5}$ times in length of head and equals interorbital width; maxillary extending to below anterior border of eye; 3 series of scales on the cheek. Gill-rakers rather long, some T-shaped, 12 or 13 on lower part of anterior arch. Dorsal XIV-XV 9-10; spines equal from the sixth or seventh, $\frac{1}{3}$ to $\frac{2}{5}$ length of head; longest soft rays $\frac{2}{3}$ length of head. Anal III 9; third spine as long as or a little longer than longest dorsal. Pectoral as long as head, reaching origin of anal. Ventral extending beyond origin of anal. Caudal truncate, slightly emarginate. Caudal peduncle twice as long as deep. Scales ctenoid, 30-32 $\frac{4}{11}$; lat. l. $\frac{19-21}{10-11}$. Reddish brown above, greyish beneath; throat and opercle blackish; a V-shaped blackish band, pointing forwards, on the nape; a blackish vertical bar below the anterior border of the eye; ill-defined blackish spots on the side of the body, partly confluent into one or two longitudinal bands; dorsal grey, anal yellow, both blackish at the base, the latter with two or three large orange ocellar spots encircled with red; caudal greyish, blackish in the middle; ventrals black.

Total length 110 mm.

Two specimens from Bunjako and one from Buganga.

This species, called after the great African explorer whose name stands next to those of Speke and Grant in the history of Lake Victoria, is allied to *H. Bloyeti* and *H. nuchisquamulatus*, but well distinguished by the larger eye, the longer caudal peduncle, the truncate caudal fin, and the more numerous gill-rakers.

Haplochromis bicolor.

Teeth in 3 to 5 series in both jaws, the outer larger and mostly bicuspid in the young, obtusely conical in the adult, the others minute and partly conical, partly tricuspid. Depth of body $2\frac{3}{5}$ to 3 times in total length, length of head $2\frac{4}{5}$ or 3 times. Snout broad, rounded, with curved upper profile, as long as or slightly longer than the eye, which is $3\frac{1}{2}$ to $4\frac{1}{2}$ times in length of head and once to once and $\frac{1}{2}$ in interorbital width; lips very thick; maxillary reaching or hardly reaching to below anterior border of eye; 3 or 4 series of

scales on the cheek. Gill-rakers short, the larger T-shaped, 7 to 9 on lower part of anterior arch. Dorsal XV-XVI 8-10; spines subequal from the seventh or eighth, about $\frac{2}{3}$ length of head; longest soft rays $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal III 8-9; third spine as long as longest dorsal. Pectoral as long as or a little shorter than head, reaching vertical of origin of anal. Ventral reaching vent or origin of anal. Caudal truncate, the upper rays usually longer than the lower. Caudal peduncle once and $\frac{1}{3}$ to once and $\frac{1}{2}$ as long as deep. Scales ctenoid, 31-35 $\frac{5-6}{11-13}$; lat. l. $\frac{18-25}{10-14}$. Bright yellow, irregularly blotched or marbled with black, the black sometimes forming irregular cross-bands on the body; one or two pale yellow ocellar spots may be present on the posterior part of the anal fin; iris yellow or bronzy brown, with a red circle round the pupil.

Numerous specimens, measuring from 70 to 155 mm., from Bunjako and Buganga.

Allied to *Tilapia Johnstoni*, Gthr. (also a *Haplochromis*).

Haplochromis crassilabris.

Teeth few, in 3 or 4 series in both jaws, of outer row large and conical or indistinctly bicuspid in the adult, bicuspid in the young, others minute and tricuspid. Depth of body equal to length of head, $2\frac{1}{2}$ or 3 times in total length. Snout with convex upper profile, as long as (young) or a little longer than the diameter of the eye, which is $3\frac{1}{2}$ to 4 times in length of head and equals interorbital width; mouth not very oblique, with very thick lips; maxillary not extending to below anterior border of eye; 3 series of scales on the cheek. Gill-rakers short, 7 or 8 on lower part of anterior arch. Dorsal XV-XVI 8-9; spines increasing in length to the last, which measures $\frac{2}{3}$ to $\frac{1}{2}$ length of head; longest soft rays $\frac{1}{2}$ length of head. Anal III 8-9; third spine stronger and a little shorter than last dorsal. Pectoral $\frac{3}{4}$ to $\frac{4}{5}$ length of head, extending to vertical of origin of anal. Ventral extending a little beyond origin of anal. Caudal rounded, subtruncate. Caudal peduncle once and $\frac{1}{4}$ as long as deep. Scales ctenoid, 31-33 $\frac{4}{13}$; lat. l. $\frac{17-22}{10-12}$. Brownish above, silvery white beneath; a rather indistinct dark bar across the nape, in front of the dorsal fin, and more or less distinct traces of two dark longitudinal stripes on the body in the adult; back with ill-defined dark cross-bands; fins greyish, caudal with small round darker spots, anal with or without small orange ocellar spots.

Ten specimens from Entebbe, measuring from 60 to 105 mm.

Closely allied to *H. retrodens*, Hilg.*. Distinguished by fewer and larger outer teeth, fewer rows of inner teeth, and thicker lips.

Haplochromis Granti.

Teeth in 5 or 6 series in both jaws, all conical in the adult, some of the outer flattened and more or less distinctly bicuspid in the young. Depth of body equal to or a little greater than length of head, 3 to $3\frac{1}{4}$ times in total length; body deepest at the nape. Upper profile of head forming a strong curve; snout much deeper than long, as long as the eye, which is $3\frac{1}{2}$ to $3\frac{3}{5}$ times in length of head, and equals interorbital width; mouth nearly horizontal or slightly oblique, extending to below anterior border of eye or not quite so far; 3 or 4 series of scales on the cheek. Gill-rakers short, 8 or 9 on lower part of anterior arch. Dorsal XV-XVII 8-9; spines equal from the seventh or eighth, $\frac{2}{5}$ to $\frac{1}{4}$ length of head; longest soft rays $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Anal III 8-9; third spine stronger than dorsals, $\frac{1}{3}$ to $\frac{2}{5}$ length of head. Pectoral as long as head or a little shorter, extending to origin of anal, or not quite so far. Ventral reaching origin of anal or a little beyond. Caudal truncate. Caudal peduncle once and $\frac{1}{3}$ to once and $\frac{2}{3}$ as long as deep. Scales ctenoid, 30-35 $\frac{4-5}{12-13}$; lat. l. $\frac{20-23}{9-13}$. Pale olive-brown above, silvery white beneath; chin and throat bright yellow; a blackish opercular spot; a more or less distinct dark streak from the latter to the base of the caudal; sometimes a second dark streak higher up on the back; dorsal and caudal fins greyish, sometimes with small light spots between the rays; anal yellow, usually with one or two orange ocelli edged with red; ventrals yellow, uniform or outer rays black or blackish.

Six specimens from Bunjako, two from Entebbe, and one from Buganga, measuring from 80 to 145 mm.

Distinguished from *H. retrodens* and the preceding species by the shorter snout and the larger eye.

Haplochromis Ishmaeli.

Teeth very small, in 3 to 5 series in both jaws, outer largest and mostly bicuspid, the others tricuspid. Depth of body $2\frac{2}{3}$ to 3 times in total length, length of head $2\frac{2}{3}$ to 3 times. Snout with straight or slightly convex upper profile,

* I am indebted to Dr. Pappenheim for photographs of the type specimens of the Victorian Cichlids described by the late Prof. Hilgendorf.

once to once and $\frac{1}{3}$ as long as the eye, the diameter of which is $3\frac{1}{2}$ to 4 times in length of head; interorbital width once to once and $\frac{1}{4}$ diameter of eye; mouth not very oblique, extending to below anterior border of eye; 3 or 4 series of scales on the cheek. Gill-rakers short, 8 or 9 on lower part of anterior arch. Dorsal XV-XVI 9-10; spines equal from the eighth or ninth, or slightly increasing in length to the last, which measures $\frac{1}{3}$ to $\frac{1}{2}$ length of head. Anal III 8-9; third spine stronger than dorsals, $\frac{1}{3}$ to $\frac{2}{5}$ length of head. Pectoral as long as head or a little shorter, reaching vertical of origin of anal or a little beyond. Ventral reaching origin of anal or a little beyond. Caudal truncate. Caudal peduncle once and $\frac{1}{3}$ to once and $\frac{1}{2}$ as long as deep. Scales ctenoid, 31-34 $\frac{5-6}{11-13}$; lat. 1. $\frac{19-22}{10-15}$. Females pale olive-brown above, silvery white below; a brown or black opercular spot; a brown vertical bar below the anterior third of the eye sometimes present; ill-defined dark cross-bars on the back, barely distinguishable; dorsal and caudal fins greyish, with or without round darker spots; ventrals and anal bright yellow, the former sometimes blackish on the outer border, the latter sometimes with two large orange ocellar spots; lower half of caudal sometimes bright yellow. Males darker, grey or blackish on the belly; dorsal fin grey, the soft portion with round light spots; ventrals black.

Thirteen specimens, measuring from 110 to 130 mm., from Bunjako. One of them, a female, has the mouth and pharynx full of eggs, measuring 3 mm. in diameter.

This species appears to be very near *Ctenochromis pectoralis*, Pfeff.

Named after Mr. George Ishmaël, Interpreter to the Police Court at Entebbe, to whom Mr. Degen is indebted for valuable assistance during his stay in Uganda.

Tilapia variabilis.

Teeth very small, in 4 to 8 series in both jaws, outer bicuspid, inner tricuspid. Depth of body $2\frac{1}{4}$ to $2\frac{1}{2}$ times in total length, length of head $2\frac{1}{3}$ to 3 times. Upper profile of head curved; snout broader than long, as long as the eye in the young, twice as long as the eye in the adult; diameter of eye $3\frac{1}{3}$ (young) to $6\frac{1}{2}$ times in length of head, once and $\frac{1}{2}$ to 3 times in interorbital width; mouth small, scarcely oblique, $\frac{1}{2}$ to $\frac{2}{3}$ width of head, extending to between nostril and eye; 2 series of scales on the cheek. Gill-rakers moderately long, 17 to 19 on lower part of anterior arch. Dorsal XVI-XVII 11-12; spines strong, last longest, $\frac{1}{2}$ or a little

less than $\frac{1}{2}$ length of head; longest soft rays $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Anal III 10-11; third spine $\frac{2}{5}$ to $\frac{1}{2}$ length of head. Pectoral once and $\frac{1}{6}$ to once and $\frac{1}{4}$ length of head, extending to vertical of origin of anal or beyond. Ventral reaching vent or not quite so far, rarely origin of anal. Caudal truncate, more or less obliquely in the adult, with the lower angle rounded. Caudal peduncle as long as deep or a little longer than deep. Scales cycloid, 31-35 $\frac{4-5}{14-15}$; lat. l. $\frac{20-22}{11-15}$. Coloration very variable, some specimens olive-brown, others brilliant vermilion on the sides, others bright yellow with black markings and the dorsal and caudal fins edged with red, &c. The very young not distinguishable from those of *T. galilæa* and likewise with a blackish ocellar spot on the anterior part of the soft dorsal. Iris grey or dark hazel, with a red circle round the pupil.

Numerous specimens, measuring from 20 to 320 mm., from Entebbe, Bunjako, and Buganga.

Very closely allied to *T. nilotica* and *T. galilæa*, with which species it has probably been confounded by other ichthyologists. Differs only in the smaller eye and the longer caudal peduncle.

Tilapia nigricans.

Teeth small, in 6 series in both jaws, outer largest and bicuspid, the others tricuspid. Depth of body $2\frac{1}{2}$ to $2\frac{2}{3}$ times in total length, length of head 3 times. Upper profile of head strongly curved; snout broader than long, a little shorter than the diameter of the eye, which is $3\frac{1}{4}$ times in length of head and equals interorbital width; mouth small, with thick lips, not extending to below anterior border of eye; 3 series of scales on the cheek. Gill-rakers moderately long, 10 on lower part of anterior arch. Dorsal XV-XVI 9-10; spines equal from the eighth or ninth, nearly $\frac{1}{2}$ length of head; longest soft rays $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Anal III 9; third spine as long as longest dorsals. Pectoral nearly as long as head, extending nearly to above origin of anal. Ventral extending beyond origin of anal. Caudal truncate. Caudal peduncle slightly longer than deep. Scales ctenoid, 31-32 $\frac{5}{14}$; lat. l. $\frac{21-22}{11}$. Blackish or steel-grey above, somewhat lighter beneath; seven ill-defined black bars on the body and a vertical black bar below the anterior third of the eye; a black opercular spot; dorsal and ventral fins dark brown or black; other fins dark greyish brown, the anal in

one of the specimens with two orange ocellar spots; iris white.

Total length 100 mm.

Two specimens, the larger caught with rod and line from the pier at Entebbe, the smaller also from Entebbe.

Allied to *T. Kirkii*, Gthr.

Tilapia Martini.

Teeth small, in 3 or 4 series in both jaws, outer largest and bicuspid, the others tricuspid. Depth of body $2\frac{2}{3}$ to 3 times in total length, length of head $2\frac{1}{5}$ to 3 times; body deepest at the nape. Upper profile of snout descending in a steep oblique line; diameter of eye greater than length of snout, twice and $\frac{2}{3}$ to 3 times in length of head; interorbital width equal to length of snout; mouth not very oblique; maxillary extending to below anterior third of eye; 4 or 5 series of scales on the cheek. Gill-rakers short, some T-shaped, 8 or 9 on lower part of anterior arch. Dorsal XV-XVI 8-10; spines equal from the eighth or ninth, $\frac{1}{3}$ to $\frac{2}{5}$ length of head; longest soft rays $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal III 8-9; third spine as long as and stronger than longest dorsal. Pectoral nearly as long as head, reaching beyond vertical of origin of anal. Ventral reaching origin of anal or a little beyond. Caudal truncate. Caudal peduncle once and $\frac{2}{3}$ as long as deep. Scales ctenoid, 32-33 $\frac{4-5}{13-15}$; lat. l. $\frac{19-22}{11-13}$. Yellowish olive above, white beneath; a dark vertical bar below the eye and a cross-bar on the forehead; a blackish opercular spot; a blackish stripe from the latter to the root of the tail; a second, more or less distinct dark stripe higher up on the side of the back; one specimen uniform dark grey; dorsal and anal fins greyish, with more or less distinct round darker spots; pectoral and anal fins yellow, the latter sometimes with one or two orange ocellar spots in the posterior part, ventrals yellow in the female, black in the male.

Seven specimens from Bunjako, measuring from 75 to 110 mm. One of these, a female with large eggs in the ovaries, has the mouth filled with embryos measuring 8 or 9 mm. and provided with a large yolk-sac.

This species is named after Mr. James Martin, Transport Officer in the Uganda Protectorate, in recognition of much assistance rendered to Mr. Degen. *Tilapia Martini* bears a great resemblance to the *Paratilapia* described above as *P. cinerea*, but the dentition is quite different.

Tilapia lacrimosa.

Teeth small, in 3 to 5 series in both jaws, outer largest and bicuspid, the others tricuspid. Depth of body $2\frac{1}{2}$ to 3 times in total length, length of head 3 or $3\frac{1}{5}$ times. Upper profile of snout straight or slightly convex; diameter of eye equal to length of snout and to interorbital width, $3\frac{1}{3}$ to $3\frac{1}{2}$ times in length of head; mouth moderately oblique, maxillary extending to below anterior border of eye or a little beyond; 3 or 4 series of scales on the cheek. Gill-rakers short, 7 to 9 on lower part of anterior arch. Dorsal XV-XVI 8-9; spines increasing in length to the last, which measures $\frac{2}{3}$ to $\frac{1}{2}$ length of head; longest soft rays $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Anal III 8-9; third spine as long as and stronger than longest dorsal. Pectoral as long as head, extending to vertical of origin of anal or a little beyond. Ventral reaching origin of anal or beyond. Caudal truncate. Caudal peduncle once and $\frac{1}{3}$ to once and $\frac{2}{3}$ as long as deep. Scales ctenoid, 30-34 $\frac{4-5}{12-13}$; lat. l. $\frac{19-21}{10-13}$. Pale olive or reddish brown above, white or grey beneath; belly sometimes blackish; usually two blackish cross-bars on the upper surface of the snout and a broader one on the occiput; a black vertical bar below anterior third of eye, rarely indistinct or absent; a black opercular spot; more or less distinct dark bars on the body, and a lateral series of blackish blotches sometimes confluent into a longitudinal band; dorsal fin greyish, usually with small darker or lighter spots; anal and lower half of caudal bright yellow, the former usually with one, two, or three large orange ocellar spots encircled with red; ventrals black or blackish; iris white.

Numerous specimens, measuring from 75 to 100 mm., from Entebbe, Bunjako, and Buganga.

Very similar to *Haplochromis nuchisquamulatus*, Hilg., but eye larger, caudal fin truncate, and maxillary entirely or nearly entirely concealed when the mouth is closed.

Tilapia nubila.

Teeth small, in 3 or 4 series in both jaws, outer largest and bicuspid, the others tricuspid. Depth of body equal to length of head, $2\frac{3}{5}$ to 3 times in total length. Upper profile of snout slightly convex; diameter of eye equal to length of snout (a little less in the young) and to interorbital width, 3 to $3\frac{1}{2}$ times in length of head; mouth not very oblique, with thick lips; maxillary extending to below anterior border of eye or not quite so far; 3 or 4 series of scales on the cheek.

Gill-rakers short, 8 or 9 on lower part of anterior arch. Dorsal XV-XVI 8-10; spines increasing in length to the last or last few, $\frac{2}{5}$ to $\frac{1}{2}$ length of head; longest soft rays $\frac{1}{2}$ to $\frac{4}{5}$ length of head. Anal III 8-10; third spine as long as longest dorsal. Pectoral $\frac{3}{4}$ to once length of head, extending to vertical of origin of anal or a little beyond. Ventral extending to origin of anal or beyond. Caudal rounded. Caudal peduncle once and $\frac{1}{4}$ to twice as long as deep. Scales ctenoid, 29-33 $\frac{3-4}{11-12}$; lat. l. $\frac{18-21}{9-14}$. Adult males black, the anal fin and the border of the caudal fin often bright vermilion; orange ocellar spots sometimes present on the anal. Females and young dark grey or brown to blackish, with or without black bars on the body; usually a black vertical bar below the anterior third of the eye; a black opercular spot; dorsal and anal fins dark grey or brown, edged with black; caudal grey or brown, and, like the soft dorsal, with more or less distinct small darker spots; some yellow spots may be present on the anal; ventrals greyish or yellow.

Numerous specimens, measuring from 50 to 120 mm., from Entebbe.

Very closely allied to the preceding; distinguished by the shape of the caudal fin.

PLATYTÆNIODUS, gen. nov.

Jaws with very broad bands of small conical teeth, the alveolar surface of the premaxillaries widening towards the pharynx, the band of teeth in the upper jaw horseshoe-shaped, that in each ramus of the lower jaw not much longer than broad; a very small part of the maxillary exposed when the mouth is closed. Scales very feebly denticulate. Dorsal with 15 spines, anal with 3.

Platytæniodus Degeni, sp. n.

Depth of body twice and $\frac{2}{3}$ in total length, length of head 3 times. Snout with convex upper profile, as long as inter-orbital width, once and $\frac{1}{3}$ diameter of eye, which is 4 times in length of head; mouth not extending quite to below anterior border of eye, its width half that of the head; lips thick; 4 series of scales on the cheek; gill-rakers short, 9 on lower part of anterior arch. Dorsal XV 10; spines increasing in length to the last, which measures $\frac{1}{2}$ length of head; longest soft rays $\frac{3}{4}$ length of head. Anal III 9; third spine longest, not quite half length of head. Pectoral acutely pointed, as long as head, extending to above origin of anal.

Ventral reaching a little beyond origin of anal. Caudal rounded. Caudal peduncle once and $\frac{1}{2}$ as long as deep. Scales $33 \frac{5}{12}$; lat. l. $\frac{22}{13}$. Pale olive above, silvery white beneath; a blackish opercular spot; a dark grey band from the latter to the root of the caudal; a rather indistinct dark vertical bar below the eye; dorsal and caudal fins greyish; ventrals yellow, the outer rays blackish; anal yellow, with three orange ocellar spots, encircled with red, on the posterior part.

Total length 140 mm.

A single specimen from Bunjako.

LXI.—*Preliminary Descriptions of new Species of Amphipoda from the 'Discovery' Antarctic Expedition, 1902-1904.*
By ALFRED O. WALKER, F.L.S., F.Z.S.

Fam. Hyperiidæ.

Hyperia macronyx *, sp. n.

S.E. of Coulman I., 22/2/04; six specimens, immature: length of largest 10 mm. W.Q.† 16/4/03, 5 f.; one specimen. W.Q. 18/5/03, 10 f. W.Q. 1/8/03, 10 f.; eight specimens.

Head shorter than the first two segments. *Eyes* occupying the entire head. *Segments all free*; the three pleon-segments with a tooth on the hind epimeral angle. *Carpal process of the first gnathopods reaching the middle of the hind margin of the hand, which is ovate, less than twice as long as wide, the hind margin convex and finely serrate.* Carpal process of the second pair reaching considerably beyond the middle of the hand; the limb otherwise as in the first; branchiæ of first pair oblong, wider below; of second pair pyriform.

First and second peræopods longer than the gnathopods; first joint a little wider than the fourth, which is twice as wide and about two thirds as long as the fifth, with five long equidistant spines on the hind margin; the fourth and fifth joints have their hind margins finely serrate. *Dactyli* slightly curved, slender, about half as long as the fifth joint.

Third peræopods: first joint subequal to the fifth, about twice as long as wide, widening near the middle; fifth joint

* From the long dactyli of the peræopods.

† W.Q. = winter-quarters.