

23. On a Collection of Tailless Batrachians from East Africa
made by Mr. A. Loveridge in the years 1914-1919.
By Miss JOAN B. PROCTER, F.Z.S.

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(Text-figures 1-4.)

This collection, made during the war, consists of examples of 33 species, two of which are new, representing the families Ranidæ, Engystomatidæ, and Bufonidæ*. Mr. Loveridge has presented the types of *Rappia platyrhinus* and *Megalixalus loveridgii* to the British Museum, together with specimens of the little-known species *Arthroleptis stenodactylus* Pfeff., *Rappia puncticulata* Pfeff., and many others.

I am greatly indebted to Mr. Boulenger for much kind assistance in the working out of this collection.

List of Localities.

The localities fall into three divisions:—

1. BRITISH EAST AFRICA.

Nairobi.

Parklands, Nairobi.

Besil, about 50 miles south of Nairobi.

Donya Sabuk, 30 miles from Nairobi.

Thika, about 50 miles from Nairobi.

Kagiado, about 100 miles due west of Makindu, which is on the Port Florence-Mombasa Railway.

Kedong Valley, about 100 miles from Nairobi, and south of Escarpment Station on the railway.

Kenia Forest.

Tumu Tumu, on the road from Thika to Mt. Kenia.

2. EX-GERMAN EAST AFRICA (now *Tanganyika Territory*).

Gonya, about 50 miles south of Kilima-Njaro.

Longido West, about 50 miles west of Kilima-Njaro.

Amani, 40 miles from Port Zanga.

Dodoma, about 110 miles west of Morogoro, on the Dar-es-Salaam-Tanganyika Railway.

Kongwa, about 20 miles north of Mpapua.

Morogoro, about 100 miles west of Dar-es-Salaam on the railway.

Tulo,
Duthumi, } 50 and 60 miles south of Morogoro.

* Pipidæ should also have been represented, but the large series of *Xenopus* collected were lost in transit.

Mhonga, about 20 miles east of Morogoro.

Dar-es-Salaam.

3. PORTUGUESE EAST AFRICA.

Lumbo.

RANIDÆ.

RANA, s. str.

1. RANA NUTTI Blgr.*

Nairobi. Morogoro. Longido West.

35 specimens. Average length of adult males 55 mm., of adult females 70 mm.; largest female 83 mm.

Snout variable both in length and in degree of acumination.

Subgenus TOMOPTERNA.

2. RANA DELALANDII Bibr.

Kagiado. Ex-G.E.A.

4 specimens. Length of adult females 41 and 45 mm.

A fine white vertebral line in one specimen; a linear vertebral groove in three specimens.

Subgenus PTYCHADENA.

3. RANA OXYRHYNCHUS Sund.

Thika. Nairobi. Morogoro. Duthumi. Gonya.

72 specimens. Average length of adult males 40 mm., of adult females 55 mm.

An extremely variable species. Snout equal to or twice as long as diameter of eye, rounded or acutely pointed, sometimes very projecting. Length of tibia $1\frac{1}{2}$ to $1\frac{2}{3}$ times in length of body, more often $1\frac{1}{2}$ times in females. Posterior corner of slit-like opening of male's vocal sac in line with lower border of arm. No light vertebral band.

4. RANA MASCARENIENSIS D. & B.

Nairobi. Gonya. Ex-G.E.A.

15 specimens. Average length of adult males 47 mm.; females half-grown.

Hind limb very variable in length, tibio-tarsal articulation reaching anywhere between eye and tip of snout; length of tibia $1\frac{2}{3}$ to $1\frac{3}{4}$ times in length from snout to vent in males, $1\frac{3}{4}$ to 2 times in females. Vocal sac of male in line with upper border of arm; 11 half-grown females have rudimentary vocal sacs. Markings very regular, the first two series of spots coinciding with the first two glandular folds, and often bisected by them; almost all specimens have a broad light vertebral band, and often a still lighter fine vertebral line in addition.

* "A specimen of Nutt's frog was taken at Kabete, which had retained its tail though nearly full-grown."—A. LOVERIDGE, *Field Notes*.

Subgenus *HILDEBRANDTIA*.5. *RANA ORNATA* Ptrs.

Ex-G.E.A.

1 specimen, ♀. Length 56 mm.

Exquisitely marked with series of dark, large, elongated spots, broad temporal bands, barred limbs; throat and breast mottled with dark brown, with the characteristic paired Y-markings.

CHIROMANTIS.6. *CHIROMANTIS XERAMPELINA* Ptrs.

Ex-G.E.A.

1 specimen, probably a female. Length 66 mm.

7. *CHIROMANTIS PETERSII* Blgr.

Dodoma. Ex-G.E.A.

3 specimens. Length 50, 55, and 59 mm.

Inner fingers with a mere rudiment of web, outer differing from those of the type in being $\frac{1}{4}$ instead of $\frac{1}{3}$ webbed.

PHRYNOBATRACHUS.8. *PHRYNOBATRACHUS NATALENSIS* Smith.

Kagiado. Nairobi. Longido West. Morogoro.

29 specimens. Average length of adults 30 mm.

An extremely variable species. Toes sometimes $\frac{2}{3}$ instead of $\frac{1}{2}$ webbed. Skin perfectly smooth or extremely warty; all male specimens from Nairobi are of the latter description, but three females from the same locality are smooth. A wide white vertebral streak in three specimens.

9. *PHRYNOBATRACHUS RANOIDES* Blgr.

Morogoro. Ex-G.E.A.

2 specimens. Length of larger 33 mm.

10. *PHRYNOBATRACHUS BOULENGERI* de Witte.

Morogoro. Duthumi. Gonya. Tulo. Ex-G.E.A.

61 specimens. Average length of adults 26 mm.

Skin perfectly smooth or warty. Markings variable, three forms with and one without vertebral bands; five specimens have a very broad vertebral band, two have a broad one, and two have a fine white vertebral line. These four forms are shown in figures of *P. natalensis* *, P. Z. S. 1907, pl. xxii.

* Boulenger, "Second Report on the Batrachians and Reptiles collected in South Africa by Mr. C. H. B. Grant. . . ."

11. *ARTHROLEPTIS WAHLBERGII* Gthr.

Morogoro. Amani.

2 specimens. Length 25 mm.

Dark without distinct markings; dermal ridge along the vertebral line. Back of one specimen covered with minute tubercles.

12. *ARTHROLEPTIS WHYTHI* Blgr.

1 specimen. Length 35 mm.

Pale brown above, with a dark subtriangular marking between the eyes; a fine dermal ridge along the vertebral line.

13. *ARTHROLEPTIS MINUTUS* Blgr.

Kenia Forest. Nairobi.

33 specimens. Average length 17 mm.; large specimens 22 mm.

The majority of the specimens are dark olive, without distinct markings; four have a fine, and two a broad white vertebral line.

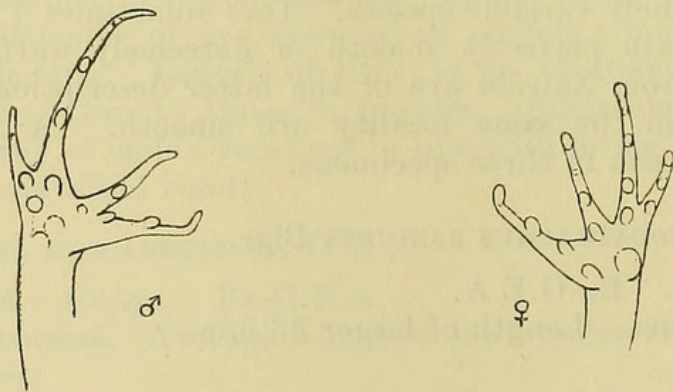
14. *ARTHROLEPTIS STENODACTYLUS* Pfeff.

Morogoro. Duthumi. Ex-G.E.A.

16 specimens. Average length of adults 32 mm.

This species, described by Pfeffer * from a single female from Kihengo, is new to the collection of the British Museum.

Text-figure 1.

Hand of male and female *Arthroleptis stenodactylus*.Underside, $\times 2$.

Head broader than long; canthus rostralis obtuse; loreal region oblique, concave; interorbital width greater than that of upper eyelid; tongue with a conical papilla; tympanum distinct, usually $\frac{1}{2}$ diameter of eye. First and second fingers equal in length, third $1\frac{1}{2}$ times length of second in females, $1\frac{3}{4}$ to 2 times in males; tips of fingers and toes somewhat swollen but not

* Jahrb. Hamb. Wiss. Anst. x. (1893) Taf. i. fig. 11.

dilated; toes with a rudiment of web; inner metatarsal tubercle as long as or slightly shorter than inner toe; no outer tubercle. Tibio-tarsal articulation reaches the eye or slightly beyond; length of tibia 3 times its breadth, twice in length of body. Skin smooth. Reddish brown or olive-grey above, with the dark vertebral markings characteristic of the genus; a fine white vertebral line in five, a broad one in three specimens; barred limbs; whitish beneath, sometimes with a dark throat; a few spots on lower lip. A fine linear vertebral ridge in two specimens. Males with an internal vocal sac.

RAPPIA*.

15. RAPPIA GRANULATA Blgr.

Ex-G.E.A.

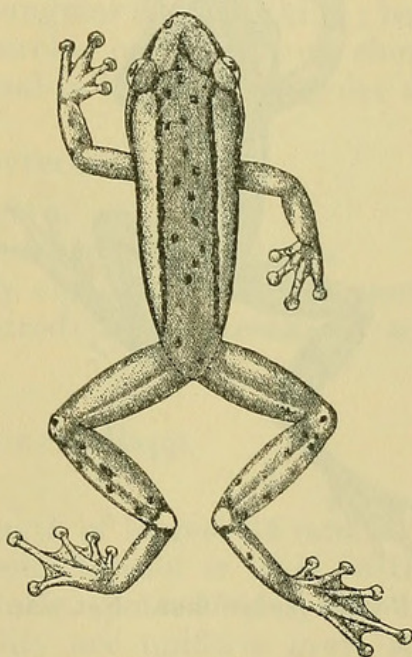
6 young.

16. RAPPIA PUNCTICULATA Pfeff.

Morogoro. Ex-G.E.A.

7 specimens. Length 22 to 32 mm.

Text-figure 2.



Rappia puncticulata. Nat. size.

Interorbital space varies from $1\frac{1}{2}$ to 2 times width of upper eyelid. Fingers with a rudimentary web, toes $\frac{3}{4}$ webbed. Length of tibia $2\frac{1}{5}$ to $2\frac{1}{3}$ times its breadth, $3\frac{1}{4}$ to 4 times in length of body.

The specimen figured by Pfeffer is of a uniform colouring,

* "*Rappia*, sp. A Tree Frog was found impaled on the spike of an Aloe, in company with sundry grasshoppers which formed the larder of a Shrike."—A. LOVERIDGE, *Field Notes*.

with a light dark-edged lateral band passing round snout and ending on the sacral region; it has also a fine dark vertebral line. Several young in the British Museum collection have similar markings, but the seven noted above differ considerably. In these the light lateral band is heavily bordered with black, the enclosed dorsal area and upper surfaces of tibia, tarsus, and forearm irregularly spotted with black or dark grey; they have also a large white dark-edged spot on the heel. The markings of the smallest specimen are so light and indistinct that it more resembles the type specimen.

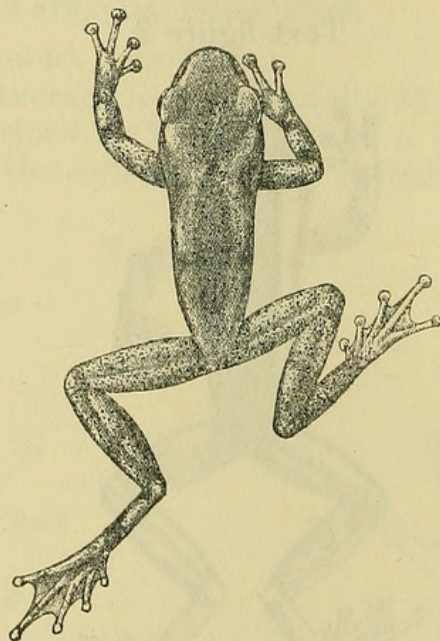
17. *RAPPIA PLATYRHINUS*, sp. n.

Nairobi.

1 specimen, ♂.

Head small, broad as long, moderately depressed; snout flat, markedly truncate, as long as diameter of eye; canthus rostralis feebly marked; loreal region oblique, concave; nostril at end of

Text-figure 3.



Rappia platyrhinus. Nat. size.

snout; interorbital space nearly twice width of upper eyelid; tympanum hidden. Fingers long, $\frac{1}{4}$ webbed, second longer than first; toes slender, fully webbed; subarticular tubercles soft, flat, small; inner metatarsal tubercle also soft and small; no outer one. Tibio-tarsal articulation reaches middle of eye; length of tibia 5 times its breadth, $1\frac{1}{8}$ times in length from snout to vent. Skin smooth above, granular below. Uniformly brownish-grey above, finely speckled with black pigment cells which are slightly concentrated along canthus rostralis. Male with internal vocal sac and adhesive subgular disc.

Measurements in millimetres.

Snout to vent	28
Head	9
Width of head	9
Snout	3
Interorbital width	3.5
1st finger.....	2.5
2nd „	3.5
3rd „	5
4th „	4
Hind limb	43
Tibia	14
Foot	19

The broad truncate snout combined with the very short web between the fingers are the distinguishing features of this species.

18. *RAPPIA CINCTIVENTRIS* Cope.

Nairobi. Ex-G.E.A.

2 specimens. Length 31 and 20 mm.

Male from Nairobi greyish; female from Ex-G.E.A. pale brown, with a subtriangular dark marking; both have two paired series of small tubercles on head and shoulders. The male differs from the normal in having a subgular disc.

19. *RAPPIA FULVOVITTATA* Cope.

Duthumi. Morogoro.

30 specimens. Average length 22 mm.

Body exceptionally elongated and depressed. Light purplish brown, with two paired dorsal streaks of a darker shade but indistinct.

20. *RAPPIA MARMORATA* Rapp.

Besil. Nairobi.

5 specimens. Length of largest 34 mm.

Male specimen from Nairobi is black, with three wide white dorsal bands and finely spotted sides and limbs; two females from the same locality are uniform grey, speckled with black above, salmon-pink beneath, especially hinder side of thighs; two females from Besil are uniform pale grey.

21. *RAPPIA ARGUS* Ptrs.

Morogoro. Dar-es-Salaam.

3 specimens. Length 32 and 35 mm.

Two are light brown above; a white, black-edged band passing round snout, through eye to temple or back of head; the third has several ocellar spots on the back, but no canthal band. The absence of the characteristic spots is unusual, but there are

two similar specimens in the British Museum collection. In the spotted form the canthal band is usually present and continued down the side of the body.

MEGALIXALUS.

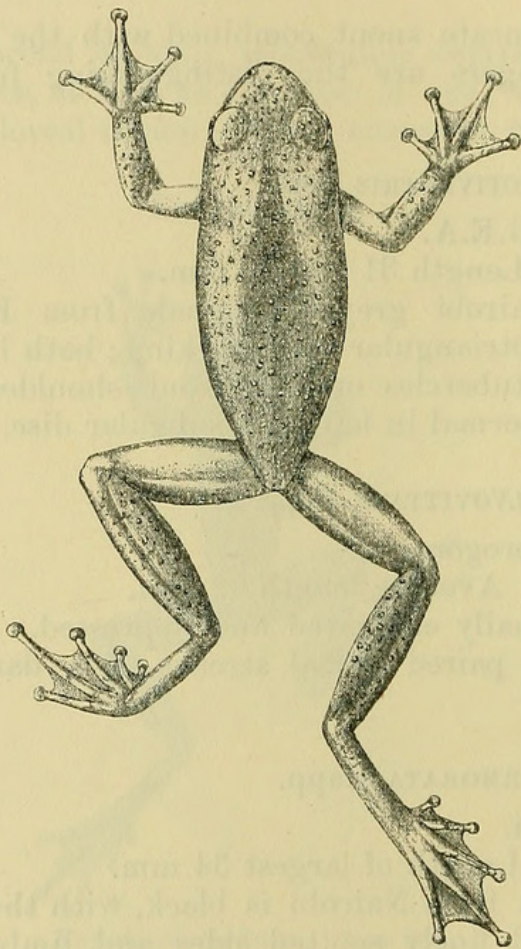
22. MEGALIXALUS LOVERIDGII, sp. n.

Morogoro.

1 specimen, ♀.

Head small, depressed, broader than long; snout rather pointed, as long as diameter of eye; canthus rostralis rounded;

Text-figure 4.



Megalixalus loveridgii. Nat. size.

loreal region feebly oblique; nostril near end of snout; inter-orbital width greater than that of upper eyelid; tympanum just distinguishable on right side, $\frac{1}{3}$ diameter of eye. Fingers long, $\frac{2}{3}$ webbed, the web extending as a fringe to discs of third and fourth, second longer than first, third twice length of first; toes entirely webbed; discs small and round; subarticular tubercles small, soft, feebly prominent; inner metatarsal tubercle small, soft, oval; outer one minute. Tibio-tarsal articulation reaches eye; length of tibia $4\frac{1}{2}$ times its breadth, $2\frac{1}{6}$ times in

length of body. Length from snout to vent $3\frac{1}{2}$ times length of head. Skin smooth, dotted with minute white tubercles each bearing a minute black spine, on upper surfaces of head, body, forearm, tibia, and hinder side of tarsus. Smooth beneath; throat granular; some small warts at corners of mouth. Pale brown above, with a faintly marked band, commencing on snout and progressively widening on the back. Uniformly speckled on upper surfaces with black pigment cells, which are slightly concentrated along the canthus rostralis; lower surfaces pale brown.

Measurements in millimetres.

Snout to vent	36
Head	11
Width of head.....	11.5
Snout	4.5
Interorbital width	3.5
1st finger.....	4
2nd „	5
3rd „	8.5
4th „	6
Hind limb	52
Tibia	18
Foot	23

The closest affinity of this species is *M. fornasinii* Bianconi, which it resembles in dermal characters, but which differs in having the fingers $\frac{1}{4}$ to $\frac{1}{3}$ webbed and shorter, especially the third, which is $1\frac{1}{2}$ times length of first. It is also less elongate in habit, the length from snout to vent being little over 3 times the length of the head.

CASSINA.

23. CASSINA SENEGALENSIS D. & B.

Nairobi. Ex-G.E.A.

3 specimens. Length 29, 39, and 40 mm.

Male specimens from Nairobi have a vertebral and two paired series of dark elongated spots; female from Ex-G.E.A. has five unbroken dark bands. The former have the tips of the digits much swollen, almost amounting to small discs as in *Hylambates*; specimens in the British Museum collection from the same locality show the same variation.

HYLAMBATES.

24. HYLAMBATES BOCAGII Gthr.

Nairobi.

3 specimens. Length 26, 31, and 35 mm.

Skin slightly granular above, with a linear vertebral groove. Upper parts uniform dark grey.

25. *HYLAMBATES JOHNSTONI* Blgr.*

Mhonga. Ex-G.E.A.

6 specimens. Length 27 to 45 mm.

ENGYSTOMATIDÆ.

PHRYNOMANTIS.

26. *PHRYNOMANTIS BIFASCIATA* Smith.

Ex-G.E.A. Lumbo.

3 specimens. Length 38, 40, and 48 mm.

Dark purplish brown with pink markings, agreeing with var. A of the British Museum Catalogue.

BREVICEPS.

27. *BREVICEPS MOSSAMBICUS* Ptrs.

Morogoro. Kongwa. Dodoma. Lumbo.

15 specimens. Length 29 to 48 mm.

HEMISUS.

28. *HEMISUS MARMORATUM* Ptrs.

Gonya. Morogoro.

8 specimens. Length of largest 35 mm.

Length of tibia variable, going from $2\frac{1}{3}$ to 3 times in length from snout to vent. The usual occipital fold is absent in three specimens, and a linear vertebral groove is present in three specimens.

BUFONIDÆ.

BUFO.

29. *BUFO REGULARIS* Reuss.

Nairobi. Kedong Valley. Donya Sabuk. Tumu Tumu. Longido West. Morogoro. Duthumi. Tulo.

27 specimens. Average length of adult 80 mm.

Every specimen has either a fine light vertebral line or a sunken line in the skin; one female has its thighs marbled with red, but there are none of the beautiful red forms figured in Mr. Boulenger's Second Report on the Grant Collection †. The parotoids are very variable in length, sometimes 4 times as long as broad, and greenish in colour.

30. *BUFO CARENS* Smith.

Nairobi.

1 specimen. Length 76 mm.

* "At Mhonga, when my boy brought me my mule which had been grazing in a patch of kaffir-corn, I was delighted to find my saddle already occupied by a large frog, whilst another was ensconced in the nose-bag."—A. LOVERIDGE, *Field Notes*.

† P.Z.S. 1907, pl. xxi.



Procter, Joan B. 1920. "23. On a Collection of Tailless Batrachians from East Africa made by Mr. A. Loveridge in the years 1914-1919." *Proceedings of the Zoological Society of London* 1920, 411–420.

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