

EAST AFRICAN SLUGS OF THE FAMILY UROCYCLIDAE—PART 2*

By B. VERDCOURT, Ph.D., B.Sc., F.L.S.

DENDROLIMAX

Heynemann in Malak. Blatt. 15, 32 (1868)

Slugs without a dart sac; epiphallus with a long lime gland and a long flagellum. Ovotestis not lodged in the extreme posterior extremity of the visceral cavity as it is in *Atoxon*.

Genotype, *D. heynemanni* (Dohrn) described from W. Africa, Princes Island.

This is chiefly a West African genus. *D. continentalis* Simroth occurs in the Cameroons, *D. buchholzi* von Martens in the Gold Coast and *D. greeffi* Simroth was described from S. Tomé.

Key to the species

- | | |
|--|-------------------------|
| 1. Body deep grey with rounded buff spots on the mantle and flanks; base of oviduct large and glandular, vagina narrow; spermatheca oblong, half the length of the duct | <i>D. osborni</i> |
| 1. Differently coloured | 2 |
| 2. Olivaceous with irregular pale reddish-brown spots; spermatheca ovoid bluntly narrowed at the apex, about half the length of the thick duct; penis, spermathecal duct and oviduct seemingly entering a glandular atrium or vagina | <i>D. leprosus</i> |
| 2. Spermatheca equalling or longer than the duct | 3 |
| 3. Spermatheca fusiform, more than twice as long as the duct | <i>D. continentalis</i> |
| 3. Spermatheca about as long as the duct, ovoid and pointed; body buff, white or citron-yellow with oblique buff-brown stripes | <i>D. greeffi</i> |

[*D. osborni* Pilsbry in Bull. Am. Mus. Nat. Hist. 40, 291, pl. 8, f.5, t.f.148 (1919)]

Body about 3.5 cm. long and 4 mm. wide; mantle 1.8 cm. long; ground colour deep grey, irregularly marked with rounded spots of buff on the mantle and flanks; sides also with dark grey lines. The genitalia are well-figured by Pilsbry. The most characteristic feature is the fact that a segment of the oviduct near its opening is enlarged and glandular. The spermatheca is oblong and half the length of the duct. The ovotestis is packed between the very large albumen gland and the large and sacculated uterus.

BELGIAN CONGO. Rutshuru, in riverine forest, leg. Bequaert.]

D. leprosus Pollonera in Boll. Mus. Zool. Anat. Comp. Torino 21 (543), 6 (1906); Pollonera in Il Ruwenzori, 189, t.3, f.1-5 and t.5, f.8 (1909)

An olivaceous slug 5.4 cm. long, ornamented with "reddish-brown ochraceous-whitish" (*sic*) irregular spots; head blackish, mantle with subpolygonal reticulation, back obtusely keeled; sole pale.

UGANDA. Fra Kijemula e Madudu (Abruzzi Exped.).

Pollonera compares this species with *D. continentalis* Simroth but states that it is larger and has different genitalia.

D. sp.

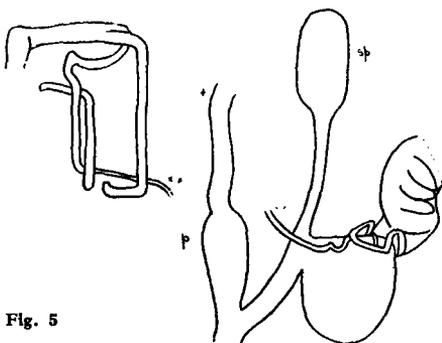
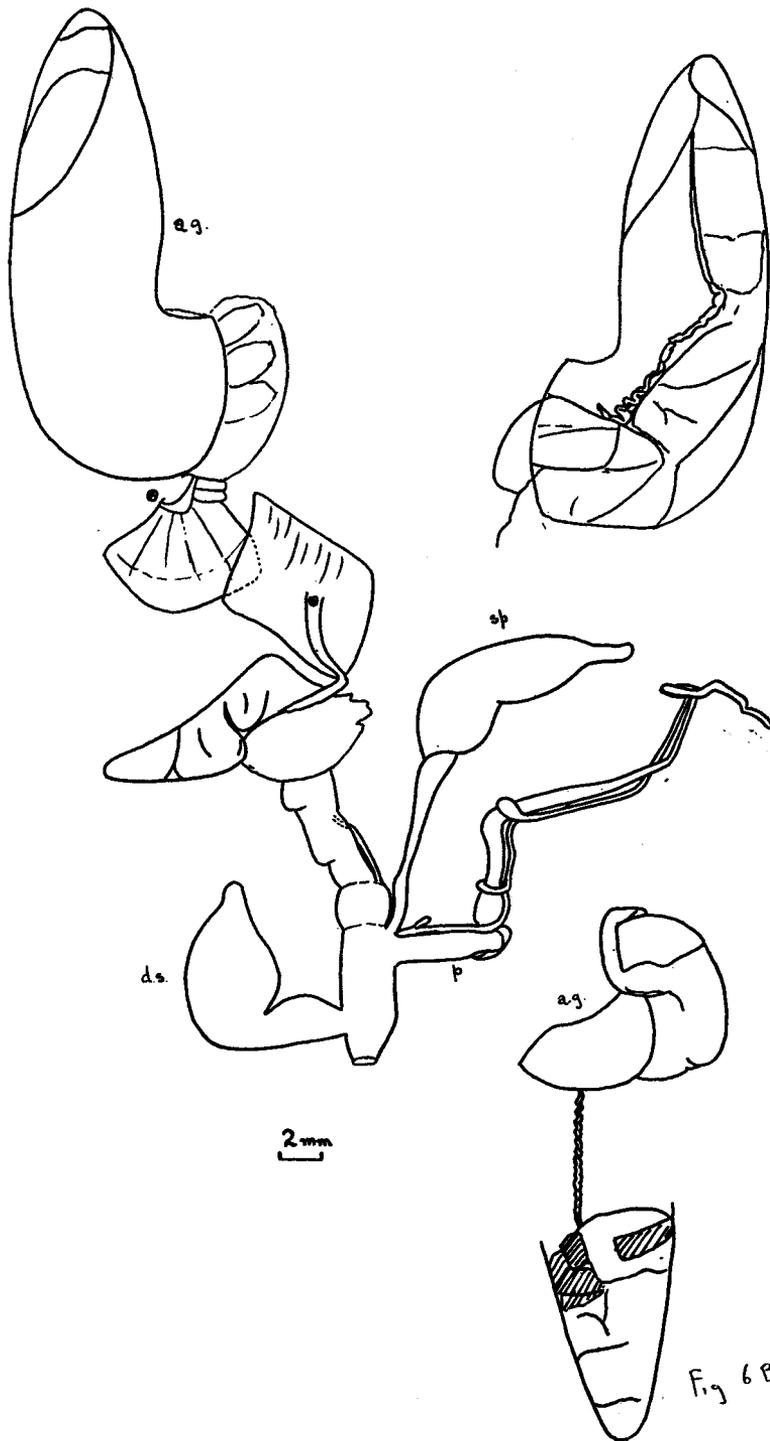


Fig. 5

A single specimen of a species of this genus was found at Thika, Kenya, by the author. Unfortunately the specimen has disintegrated owing to poor preservation and only my original sketches remain.

The ground colouration is grey and there are white markings. The white parts are thick and warty. The base of the oviduct is swollen and glandular; the oblong-ovoid spermatheca is about the same length as its duct and about three times as wide, very blunt or subtruncate above. Further specimens are needed but have so far eluded several searches. This species is obviously closely related to *D. osborni* and presumably new. The anatomy is shown in the diagram in Fig. 5. This is exceedingly rough and not in any way to scale. It may serve for future recognition of the species.

* Continued from *Journ. E. Afr. Nat. Hist. Soc.* 23, 209 (1960).



The specimen was found on the steep walls of the Chania gorge at Thika, about 27 miles north of Nairobi. The gorges nearby are deep and contain swiftly flowing small rivers which are bordered by rich but narrow belts of riverine forest, with such typical trees as *Newtonia buchananii*. Several species of mollusc live in this small belt of forest including *Maizania magilensis* (Craven), *M. volkensis* (von Martens), *Edouardia rutshuruensis* (Pilsbry) var., *Rhachidina usagarica* (Sm.), *Krapfiella mirabilis* Pr., *Euonyma aff. magilensis* (Craven), *Trochonanina crassiplicata* (Pr.), *T. elatior* (von Martens), *Trichotoxon ihikense* Verdcourt and *Tayloria urguessensis* (Pr.) var. *subangulata* Verdcourt. Parts of the gorges have steep, damp rocky walls and mollusca are often found on these.

BUKOBIA

Simroth in Die Nacktschnecken Ost-Afrikas 11 (1897) (= *Stuhlmannia* Simroth in S.B. naturf. Ges. Lpz. 19-21 (1892-4), 59 (1895) preoccupied)

Microcyclus sensu Pollonera non Simroth

Dart sac small, round or ovoid, without darts, situated on the left of the atrium, usually without retractor muscles or with small lateral retractors only. Epiphallus as in *Atoxon*, with a long lime gland and a rudimentary flagellum.

Genotype, *B. picta* (Simroth)

Note: In one figure of *B. picta* Simroth figures a dart sac retractor but in another it is not shown; presumably the first is erroneously drawn.

Key to the species

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| 1. Dart sac without retractor muscles | 2 |
| 1. Dart sac with small lateral retractor muscles | 4 |
| 2. Spermatheca narrowly fusiform, merely a widening of the duct | 3 |
| 2. Spermatheca cylindrical-ellipsoidal about as long as the duct but four times as wide; body cream-coloured, densely marbled and spotted with brown | <i>B. cockerelli</i> |
| 3. Mantle sides with one band, dart sac globular (at least as shown in the original reference) | <i>B. picta</i> and <i>B. hoeseimanni</i> (see text) |
| 3. Mantle sides with two bands; dart sac ovate-acuminate bent at right angles to its basal part or stalk | <i>B. kikuyuensis</i> |
| 4. Body golden-ochraceous with marked bands; described from an immature specimen | <i>B. signata</i> |
| 4. Body earth-coloured with inconspicuous bands | 5 |
| 5. Penis shorter, spermatheca longer than its duct; flagellum small | <i>B. incerta</i> |
| 5. Penis longer, spermatheca shorter than duct; flagellum large | <i>B. modesta</i> |

[*B. cockerelli* Pilsbry in Bull. Am. Mus. Nat. Hist. 40, 294, pl. 8, f.4, t.f.149 (1919)]

A cream-coloured slug 3.7 cm. long, densely marbled with cinnamon-brown and blackish brown. The dart sac is sub-globular, about 3 mm. long; the spermatheca is sausage-shaped with a slightly longer duct. The ovotestis occupies the posterior extremity of the visceral cavity. This species which is fully illustrated in Pilsbry's paper differs from *picta* in its colour and differently shaped spermatheca.

BELGIAN CONGO. Ruwenzories, Butagu Valley, leg. Bequaert.]

B. picta Simroth in Die Nacktschnecken Ost-Afrikas 11, t.2, f.10 and t.3, f.1 (1897); Simroth in Rev. Suisse de Zool. 20, 36, t.3, f.3 a-c (1912)

Stuhlmannia picta Simroth in S.B. naturf. Ges. Lpz. 19-21 (1892-94), 59 (1895)

Body 1-3 cm. long, yellow-buff with orange-brown stripe on the mantle and hind body or almost devoid of stripes or more or less spotted; the mantle is often heavily spotted as well as striped; the stripes sometimes break up into big spots. The original figure given by Simroth shows a dart sac without retractor muscles but the figure given much later in Rev. Suisse de Zool. shows a retractor. Whether or not these figures represent distinct species I do not know. The spermatheca is long and narrow merging with the duct.

TANGANYIKA. Bukoba, Bussiro, leg. Stuhlmann.

B. hoeseimanni Simroth in Reise in Ostafrika A. Voeltzkow 1903-5, Wiss. Ergebn. 2, 607, t.26, f.7, t.f.16 (1910)

Body 3 cm. long, pale leather-coloured with one rust-coloured band on each side of the mantle and hind body. The plate shows an ochre slug with brown bands. The spermatheca

appears to be very similar to that of *B. picta*. I am unable to follow the distinctions given by Simroth to separate the latter from this present species. It appears that the dart sac is plicate internally in *B. picta* and that in *B. hoeseimanni* the folds are shaped about a flap-shaped excitatory organ. No retractor muscle is shown.

TANGANYIKA. 'Bukenza oder Buhumbi am Südufer des Viktoria Nyansa', leg. Hoeseimann.

B. kikuyuensis Urban and Verdcourt in Proc. Malac. Soc. 34, 106-111. pl.6, t.f.1-9 (1960)

Judging from the description it seems likely that this species is similar to *B. signata* (Pollon.). In that species, however, the dart sac is described as having five retractors, moreover, the

present species lacks the dorsal interrupted lines.



Body very pale creamy-buff, yellow-brown or yellow-ochre, tinged pinkish-white. Hind body carinate only at extreme

end; keel and top of dorsum yellowish-white, side parts of body with longitudinal grey lines. The sides of the body also each bear a grey-brown stripe; these stripes are darker, narrower and pointed posteriorly. There are also a few marks in the grooves above the stripes. Front part of the body near the head very pale. Fringe pale whitish-brown. Mantle more or less the same colour as the body, pale bistre, buff, yellow-brown or yellow-ochre, granular, shagreened, with two grey-brown stripes on either side. The inner stripes are distinctly narrower and darker anteriorly but the outer ones are fainter and wider anteriorly; these stripes contain white granules; in the middle of the mantle there is sometimes a faint trace of two bands of pale spots; this central area is tinged pinkish-white. There is a vague V-shaped mark at the posterior end of the mantle. The front end of the mantle is drawn out when the animal is in motion. Tentacles brownish-bistre or pale grey-brown. Sole tripartite, pale yellow-brown or bistre, the central part with blue-grey lines showing through in life. (Fig. 7.)

Dimensions:—

Length of body outstretched, 5-6.2 cm., breadth, 1-1.3 cm. Length of body contracted, 2.5 cm., breadth, 1 cm. Length of mantle contracted, 1.9 cm. Pulmonary aperture situated half-way along the mantle, the distance between the pallial and pulmonary apertures being 9 mm.

The anatomy resembles that of *B. picta*. The dart sac, however, is ovoid, acuminate at the apex and twisted at right angles to its lower portion or stalk, the two portions being 6 x 3.5-4 mm. and 3 x 2.5 mm. respectively. There are no retractor muscles. The spermatheca is elongate, sausage-shaped, longer than its narrow duct. The spermatheca varies in size, 9-16 mm. long and

3.5-4 mm. wide on a duct 7-9 mm. long. The largest measurements refer to spermathecae swollen with spermatophores. The anatomy is shown in Figs. 6 and 7.

In some specimens the albumen gland is very much more developed than in others which nevertheless appear to be fully adult. These conditions presumably coincide with certain sexual phases. In the specimen collected at Muguga North by P. J. Greenway, the genitalia are huge and take up quite three-quarters of the visceral cavity, the albumen gland itself almost filling the posterior half of the cavity and quite concealing the liver.

Other specimens collected at Limuru by D. C. Thomas of the same length and with the genitalia apparently mature have a very small albumen gland taking up only 1/5 of the cavity and not concealing the liver which is much larger than the gland and clearly visible. The ovotestis is right at the end of the cavity but in one form it is quite separate from the albumen gland whereas in the other it is beneath the gland.

The Limuru specimen had three spermatophores in the spermatheca; they are spiral, slender, trigonous in section, 6-8 mm. long. The eggs are globular, pale amber (in spirit), 3-3.5 mm. long.

KENYA. Muguga, 18 miles west of Nairobi, W. Wilkinson (type in Berlin Museum); same locality, on a piece of chewed sugar cane, leg. B. Verdcourt (sent to S. Jaekel, Zoological

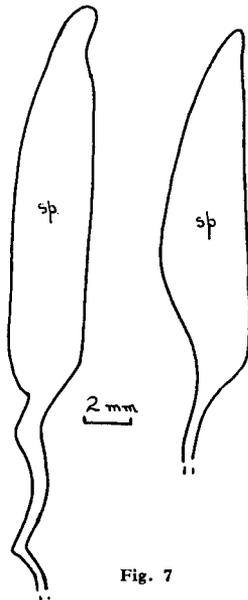


Fig. 7

Museum, Berlin). Muguga North, about 21 miles west of Nairobi, leg. P. J. Greenway (an ochre-coloured specimen with only the vaguest traces of bands near the hind end of the body and on the mantle). Ngong Hills, leg. R. D. Brown. Further specimens since collected at Muguga, leg. B. Verdcourt.

B. signata (Pollonera)

Urocyclus (*Microcyclus*) *signatus* Pollonera in Ann. Mag. Nat. Hist. (8), 8, 331, pl. 8, f.1 and 2 (1911)

The following is directly translated from Pollonera's latin. Pale ochraceous-golden, paler in front, zoned with blackish-chestnut; mantle granulate, rounded behind; pallial hole large. Pulmonary aperture slightly post-median, pallidly margined; mantle ochraceous-golden, slightly fuscous in the middle, brown-spotted, bizonate at the sides, the principal zone the more obscure. Back obtusely carinate, the keel evanescent towards the mantle; obscurely unizonate on each side and above with many interrupted lines. Sole pale, median part paler. Dorsum 1.25 cm. long, mantle 9.5 mm. long and sole 2.6 cm. long. The reproductive organs of the two specimens found were very undeveloped; five retractors are shown attached to the dart sac.

KENYA. Mt. Kenya, montane forest, 9-10,000 ft., leg. R. Kemp.

B. modesta (Pollonera)

Microcyclus modestus Pollonera in Boll. Mus. Zool. Anat. Comp. Torino 21 (543), 3 (1906); Pollonera in Il Ruwenzori, 186, t.2, f.4-5 (1909)

Earth-coloured slug, inconspicuously zoned with brown. Mantle minutely granular with an evanescent brown zone on both sides and two faint zones in the middle. Pallial aperture short and narrow; pulmonary aperture a little post-median. Back minutely rugose, distinctly carinate but keel not raised, with inconspicuous brown zones on the sides. Dorsum 2.4 cm. long, mantle 1.5 cm. long, sole 4.5 cm. long.

UGANDA. Fra Kijemula e Madudu (Abruzzi Exped.).

B. incerta (Pollonera)

Microcyclus incertus Pollonera *op. cit.* 4 (1906); Pollonera in Il Ruwenzori, 186, t.1, f.15-16 and t.2, f.1-3 (1909)

Earth-coloured slug, mantle granular, only very palely and inconspicuously bifasciate with very pale brown, bands very narrow; pallial aperture large, ovate-rounded, pulmonary orifice very slightly antemedian. The back is very slightly rugose, very obtusely carinate, the keel extending about three-quarters of the way along the back. Dorsum 1.8 cm. long, mantle 1.55 cm. long, sole 4.4 cm. long.

This species is said to differ from the last by its smaller, less rounded dart sac and shorter spermathecal duct.

UGANDA. Toro, near Fort Portal (Abruzzi Exped.).

Notes on Pollonera's species of *Microcyclus*

Pilsbry (1919) indicated that he thought that these were *Bukobiae* but the figures show distinct lateral retractors; apart from these, however, the anatomy is very similar to that of *Bukobia picta* and they are perhaps best referred to that genus. The presence or absence of a few small muscles does not seem to be much of a generic character. As I have mentioned before one of Simroth's drawings of the anatomy of *B. picta* shows muscles. *Microcyclus* was proposed by Simroth (Abh. Senck. naturf. Ges. 19, 303, t.1, f.12-20 (1896)) for a species from Togo in West Africa namely *M. baumannii* Simroth. This species does not resemble very closely the slugs which Pollonera has referred to *Microcyclus*. *M. baumannii* differs very decidedly by its long dart sac and spherical atrium. Thiele defines *Microcyclus* as follows:— Atrium spherical containing a glans penis; the dart sac has several lateral retractors and inner ridges; its end is not evidently glandular. The thickened end of the oviduct and the narrow duct of the spherical spermatheca open into the tubular dart sac near its apex. Thiele treats it as a subgenus of *Urocyclus* as also did Pollonera in his later (1911) paper.

UROCYCLUS

Gray in Proc. Zool. Soc. Lond. 1864, 250 (1864)

Elisa Heynemann in Jahrb. Mal. Ges. 10, 40 (1883)

Dart sac present with retractor muscles. Epiphallus with long lime gland and rudimentary flagellum.

Subgenus *Urocyclus sensu stricto*

Dart sac powerfully developed with apical retractors. Epiphallus with a long gland. Mainly distributed along the Tanganyika coastal areas, the East African Islands and the Mascarene Islands.

Key to the species

1. Spermatheca and duct over twice as long as the length of the penis and epiphallus not unravelled *U. bussei*
1. Spermatheca and duct shorter than the penis and epiphallus not unravelled 2
2. Slug yellow with distinct orange-yellow spots *U. ehlersii*
2. Slug not coloured as above 3
3. Spermatheca and duct about twice as long as the dart sac; slug blueish-white with yellow-ochre spots becoming more or less solid on the back and the middle of the mantle; or uniform buff with small dark spots *U. roebucki*
3. Spermatheca and duct about equal to the dart sac. 4
4. Animal much marked with red or red-brown; dart sac with seven lateral retractor muscles as well as apical one *U. rufescens*
4. Animal white marked with black to a varying degree sometimes almost entirely black; dart sac with two weak lateral retractor muscles *U. variabilis*

U. rufescens *Simroth* in Abh. Senck. naturf. Ges. 18, 298, t.1, f.2-4 and t.2, f.7 (1894)
 Young animal grey with two dorsal white stripes and black pallial stripes. The mantle of the adult has a median band and two side bands that coalesce anteriorly, all red or red-brown in colour; the dorsum is heavily marked with radiating red bands sometimes cut by a white lateral stripe on either side; sometimes, however, this stripe is lacking and the red marks are continuous. There is a pallid mark around the shell. Animal about 4.7 cm. long. Dart sac very elongate with many retractors. Spermatheca subglobose with duct over twice as long as itself; the two together about equalling the dart sac. Lime gland or second appendix very long.

TANGANYIKA. East Usambaras, Derema, leg. L. Conradt.

Urocyclus variabilis *Verdcourt* sp. nov.

This species is variable in the extent of the markings. The three specimens seen alive were all obviously conspecific. In two specimens the keel and caudal gland are white; the flanks below the mantle entirely white and the posterior parts of the flanks marked with black ridges and speckles. The mantle has the posterior margin sinuate; ground colour whitish, a lateral band of black on each side, the central area between filled with dense black and white speckles. The pallial hole is very minute or not perceptible but that area is white margined with black. The pulmonary aperture is 7 mm. from the anterior margin. The head is grey-brown. The animal is 3.9 cm. long and 8.5 mm. wide; the mantle is 1.3 cm. long. Another specimen of similar size was almost entirely black save for the white sole, tiny white spots on the basal edge of the mantle and the base of flanks white, with white spots above on the black areas.

The shell is relatively large, more or less membranous, about 4.5 mm. long and 3 mm. wide. Dart sac cylindrical, about 5 mm. long furnished with a powerful apical retractor and with two small lateral ones. The spermatheca is small, ovoid, 1.5 mm. long and 1 mm. wide, duct slender about 2.6 mm. long. See Fig. 8.

KENYA. Kwale District, Marenji Forest Reserve on the Mrima Road joining the coast road and the main Kwale-Tanga road, leg. B. Verdcourt (a pale specimen

chosen as holotype, in Coryndon Memorial Museum, Nairobi).

This species does not agree with any of the previously described species in *Urocyclus* s.s. but it is apparently related to *U. rufescens* *Simroth*.

U. bussei *Simroth* in Reise in Ostafrika A. Voeltzkow, 1903-5, Wiss. Ergebn. 2, 606, t.26, f.13, t.f.14 (1910)

Slug about 2.5 cm. long, mantle ochraceous,

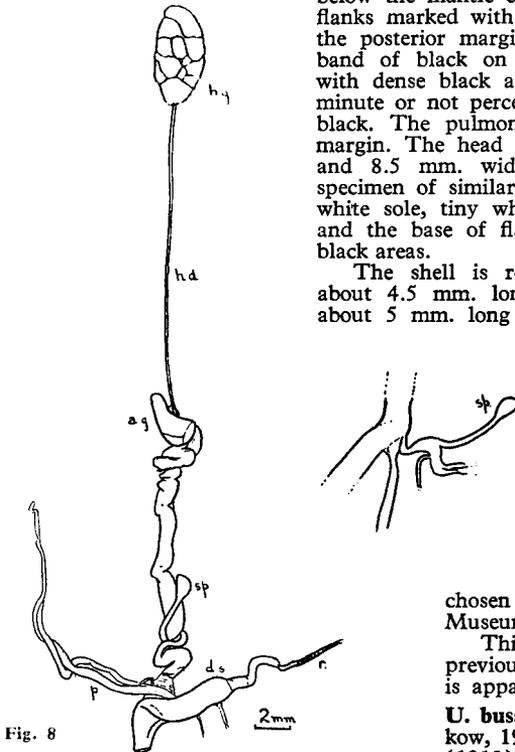


Fig. 8

margined with a narrow zone of dark brown all round followed by an exterior zone of white. Dorsum keeled blue-tinged with brown and fine dark-brown oblique lines or very strong lines. Keel ochraceous, margined with dark brown. Genitalia juvenile. Simroth shows the spermatheca as a slightly spatulate broadening of the very long duct. The relative lengths of the various organs may, of course, be quite different in an adult specimen.

TANGANYIKA. Bei Seliman Mamba, in *Sorghum* field, leg. W. Busse.

In the description of this present species Simroth mentions that Busse collected a *U. auriantiacus* and refers to the paper which contains the description of *U. ehlersii*; he presumably altered the name.

U. ehlersii Simroth in Zeitschr. Wiss. Zool. 82 (Festschrift), 496, t.29, f.1-7 (1905)

Slug about 3.8 cm. long, yellow with numerous orange-yellow flecks. The figure given by Simroth depicts abnormal genitalia.* The tubular dart sac has a strong apical retractor but no lateral retractors are figured; this sac, the penis, the oviduct and the atrium all open into a large quadrate sac which Simroth has called the spermatophore sac and figured containing a spermatophore. The spermatheca proper is ovoid with a slightly longer duct.

TANGANYIKA. Kwa Sikumb, auf Grassholmen gefangen, leg. W. Busse.

U. roebucki Simroth in Reise in Ostafrika A. Voeltzkow 1903-5, Wiss. Ergebn. 2, 595, t.26, f.12, t.f.5 (1910)

Slug about 4 cm. long, whitish with a blue tinge, covered with yellow-ochre spots becoming more or less solid on the dorsum and middle of the mantle. Some specimens are uniform buff or have small superimposed dark brown spots. Spermatheca globular with a duct about three times as long. Several retractors are shown attached to the dart sac.

ZANZIBAR. Pemba Island, leg. Voeltzkow.

Subgenus *Mesocyclus* Pollonera in Boll. Mus. Zool. Anat. Comp. Torino 21 (543), 3 (1906) and in Il Ruwenzori, 184 (1909)

Pollonera proposed this subgenus for four species (mentioning *U. zonatus* first) and defined it by saying that the dart sac (prostate gland, mucous gland) is less evolved than in subgenus *Urocyclus* and that it lacks the strong terminal retractors; it possesses only numerous lateral retractors. By this lack of terminal retractors *Mesocyclus* approaches *Microcyclus* but the dart sac is much more slender in *Microcyclus*. Thiele says "blindsack' with lateral retractors; epiphallus with a narrow and a long appendix". Pollonera adds: perhaps likewise it will be necessary to consider *Microcyclus* as a subgenus of *Urocyclus*.

Key to the species

1. Spermatheca folded into a U shape; duct three times as long; mantle three-banded (the duct has a small excrescence near the middle but this may be abnormal) *U. zonatus*
1. Spermatheca not so folded 2
2. Spermatheca elongated, convoluted, double the length of the duct; mantle black-spotted at the edge *U. raripunctatus*
2. Spermatheca not as above; mantle more or less 2-4 zoned 3
3. Spermatheca ovoid, sharply pointed, half the length of the duct *U. subfasciatus*
3. Spermatheca elongate, gradually passing into the short duct *U. tenuizonatus*

U. zonatus Pollonera *op. cit.* 1 (1906) and in Il Ruwenzori, 183, t.1, f.11-14 and t.5, f.1 (1909)

Animal pale brown, paler in front, distinctly zoned with chestnut-brown on either side of the body; mantle three-banded with brown, granular reticulate and margins spotted; the median band is furcate behind and splits up into spots in front. Hind body rugose, carinate and attenuated behind. Dorsum 17mm. long. mantle 11 mm. long and sole 28 mm. long. The spermatheca is a cylindrical elongated sac bent in the shape of a U; the duct three times the length of the sac with a small excrescence near the middle. These may not be constant characters, of course.

UGANDA. Toro, near Fort Portal (Abruzzi Exped.).

U. tenuizonatus Pollonera *op. cit.* 2 (1906) and in Il Ruwenzori, 183, t.1, f.6-10 and t.5, f.3 (1909)

A very pale-brown slug interruptedly and inconspicuously zoned with brown. Mantle small, minutely granular, inconspicuously zoned with four brown lines, lateral zones continuous, inner ones interrupted and not reaching the anterior margin. Back a little rugose; obtusely keeled

* This paper is about slugs with deformities.

behind, lateral zones of brown interrupted and very inconspicuous. Dorsum 22 mm. long, mantle 11.5 mm. long and sole 43 mm. long. Spermatheca narrowly cylindrical gradually passing into a short duct.

UGANDA. Toro, near Fort Portal (Abruzzi Exped.).

U. subfasciatus Pollonera *op. cit.* 2 (1906) and in Il Ruwenzori, 184, t.1, f.1-3 and t.5, f.6 (1909)

A brown slug with one blackish band on either side. Mantle minutely granular distinctly zoned with blackish on either side, middle obscure. Back rugose, inconspicuously zoned with blackish on either side; obtusely keeled but keel very weak just behind the mantle. Dorsum 16 mm. long, mantle 11.5 mm. long and sole 35 mm. long. Spermatheca ovoid with tapering triangular point, half the length of the distinct duct.

UGANDA. Toro, near Fort Portal (Abruzzi Exped.).

U. raripunctatus Pollonera *op. cit.* 3 (1906) and in Il Ruwenzori, 184, t.1, f.4-5 (1909)

A unicolorous earth-coloured slug, mantle black-spotted at the edges only, minutely granular. Back rugose, tuberculate, obtusely keeled, the keel becoming evanescent anteriorly. Dorsum 25 mm., mantle 17 mm. and sole 47 mm. long. Spermatheca elongate fusiform, convoluted, duct about half as long. Flagellum long.

UGANDA. Toro, near Fort Portal (Abruzzi Exped.).

(To be continued)

(Received 12th February, 1960)

CAPTIONS

Fig. 5. *Dendrolimax* sp. nov. Kenya, Thika, Chania Gorge. B. Verdcourt (not to scale)

Fig. 6. *Bukobia kikuyuensis* Urban and Verdcourt. (A) Kenya, Muguga, W. Wilkinson. Genitalia. (B) Kenya, Limuru, D. C. Thomas. Part of the genitalia, showing the albumen gland and hermaphrodite gland.

Fig. 7. *Bukobia kikuyuensis* Urban and Verdcourt. (A) Kenya, Muguga, B. Verdcourt. Pattern diagram. (B) Limuru, D. C. Thomas. Spermathecal sac. (C) Muguga, B. Verdcourt. Spermathecal sac.

Fig. 8. *Urocyclus variabilis* Verdcourt sp. nov. Kenya, Kwale District, Marenji Forest near Mrima, B. Verdcourt. Genitalia.