

Notes on land slugs, 24<sup>1</sup>  
Redescription of *Limax wohlberedti* Simroth and  
*Milax reuleauxi* (Clessin) from Crna Gora  
(= Montenegro)

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The specimens mentioned in this paper were collected by Dr. E. Gittenberger in 1974 and are kept in the collections of the Rijksmuseum van Natuurlijke Historie, Leiden. The measurements are taken from material conserved in alcohol 70%.

*Limax wohlberedti* Simroth, 1900  
(figs. 1-3)

Simroth, 1900: 98; Simroth, 1909: 600.

Material: Ljuta (Dobrota, N of Kotor), 5 m, 28.IV-6.V: one juvenile specimen. Tološi (4 km NW of Titograd), 50 m, 29.IV: two specimens of which one adult. Trnovo (6 km NW of Virpazar), 300 m, 8.V: one adult specimen (neotype). Road above Kotor, leading to Cetinje, 800 m, 15.V: one subadult and one juvenile specimen.

External characters. — Total length 72 mm, mantle length 26 mm, respiratory orifice 19 mm from anterior border of mantle. Keel poste-

<sup>1</sup> Notes on land slugs, 23: *Basteria* 38: 103-108, 1974.

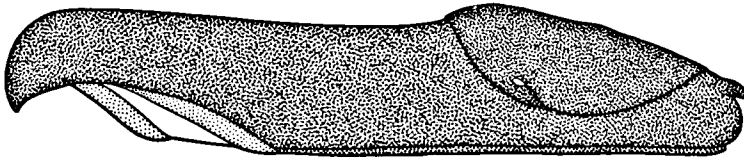


Fig. 1. External appearance of *Limax wohlberedti* Simroth, schematic.

riorly prominent, becoming gradually weaker and petering out about the middle of the body. Colour: whole upper side of the body black; sole with grey lateral areas and a cream-coloured middle area (fig. 1).

Anatomy. — The mandible is 3 mm wide and of the normal type. The radula is about 10 mm long, has about 180 rows of teeth and the formula is C.36.37; laterals and marginals are, however, not clearly separated. From the middle tooth the teeth have at first both endocone and ectocone which become gradually indistinct until the endocone disappears at about the thirty-sixth tooth. The ectocone is then still present, but indistinct; however, it starts to increase in size towards the end of the row. In the last part of the transverse rows the teeth become smaller and finally the ectocone is nearly as high as the tooth itself. Near the end the ectocoines are sometimes bifurcate and even three-pronged in one or more rows.

The alimentary canal with the glands debouching in it shows no differences of any importance with that in other species of *Limax*.

The genitalia are cream to whitish coloured, except for the ovotestis which is greyish. Ovotestis 23 × 10 mm. Hermaphrodite duct 80 mm long and becoming progressively twisted (site of entrance into the albumen gland cannot be seen in fig. 2). The duct is very narrow and there is a wider talon parallel to it. Albumen gland 19.5 mm long (fig. 2). The spermoviduct is twisted, but otherwise very short, length 11 mm. The oviduct is composed of three parts: the first is 35 mm long, somewhat tortuous, and has a glandular wall; the second is without glandular wall and 27 mm long, while the third begins where the oviduct suddenly widens, length 7 mm. The prostate is also somewhat tortuous and is 35 mm long.

The receptaculum seminis has no clear transition into the duct, which ends just at the anterior end of the penis; receptaculum and duct together have a length of 11 mm. The penis is 21 mm long and widens somewhat toward the vas deferens; the retractor muscle is connected with the apex of the penis (fig. 3). The penis continues a little beyond the retractor in the adult specimen of Tološi; one might call this part a small appendix.

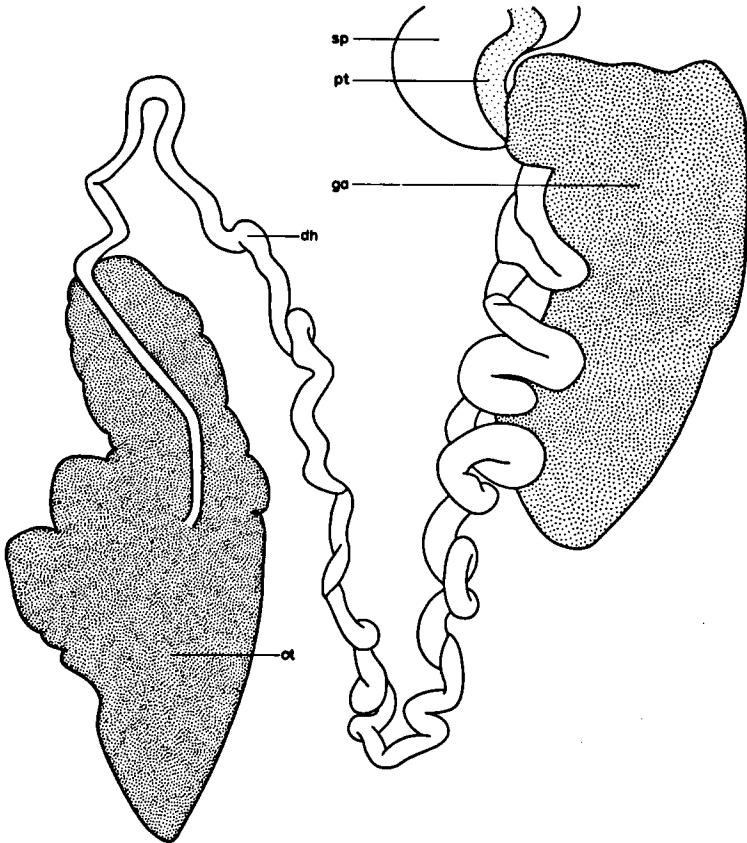


Fig. 2. Posterior part of genitalia of *Limax wohlberedti* Simroth. Hermaphrodite duct and ovotestis are for convenience's sake partly shown next to the albumen gland; the real position of the ovotestis is right at the end of the body cavity. Scale 5 mm.

Discussion. — We have selected a neotype, as Simroth's syntypes cannot be found. Enquiries in several German museums have failed to reveal the whereabouts of Simroth's types if indeed still extant. The specimen from Trnovo is here selected, as this locality is situated at a little distance (6 km) from Virpazar, the first of the two localities mentioned by Simroth.

The comparatively posterior position of the respiratory orifice and especially the long part of the oviduct with the glandular wall are characters which I have never seen before in any species of *Limax*.

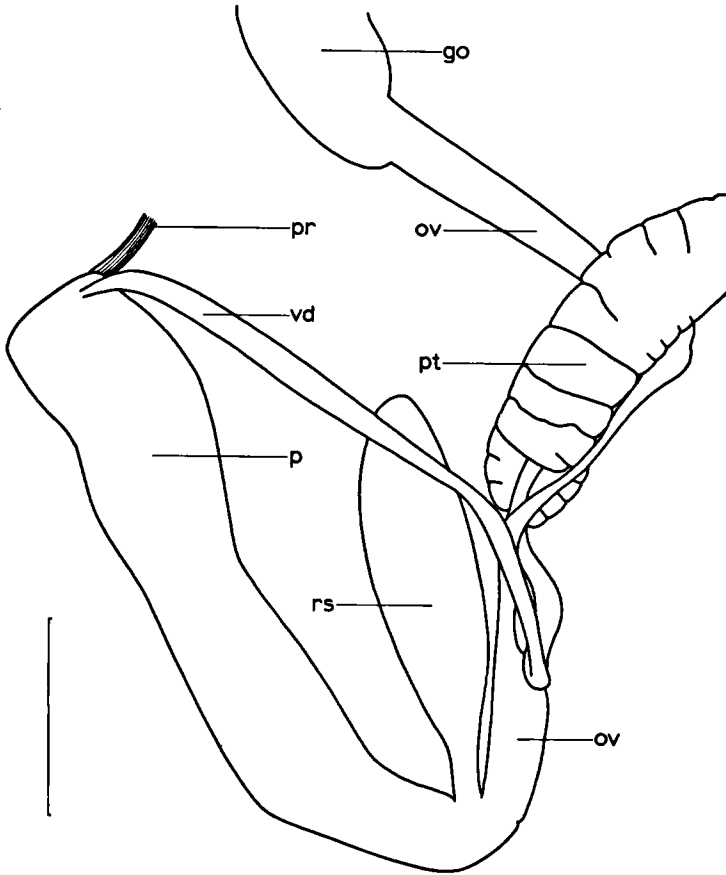


Fig. 3. Anterior part of genitalia of *Limax wohlberedti* Simroth. Scale 5 mm.

**Milax reuleauxi (Clessin, 1887)**  
(figs. 4-6)

Clessin, 1887: 46 (*Amalia Reuleauxi*); Wagner, 1929: 335, fig. 6; Wagner, 1935: 201, fig. 29.

Material: Two km E of Crkvice (WNW of Risan), 700 m, 27.IV: one juvenile specimen. Surroundings of Knezlac (NW of Risan), 650 m, 27.IV: one juvenile specimen. Ljuta (Dobrota, N of Kotor), 5 m, 28.IV-

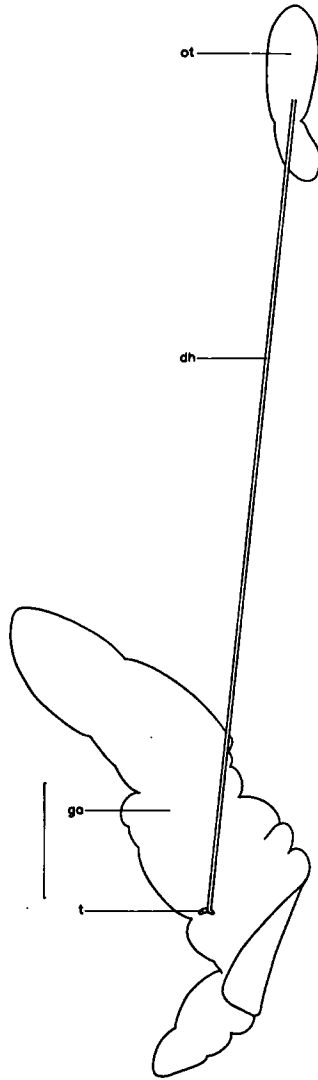


Fig. 4. Posterior part of genitalia of *Milax reuleauxi* (Clessin). Scale 5 mm.

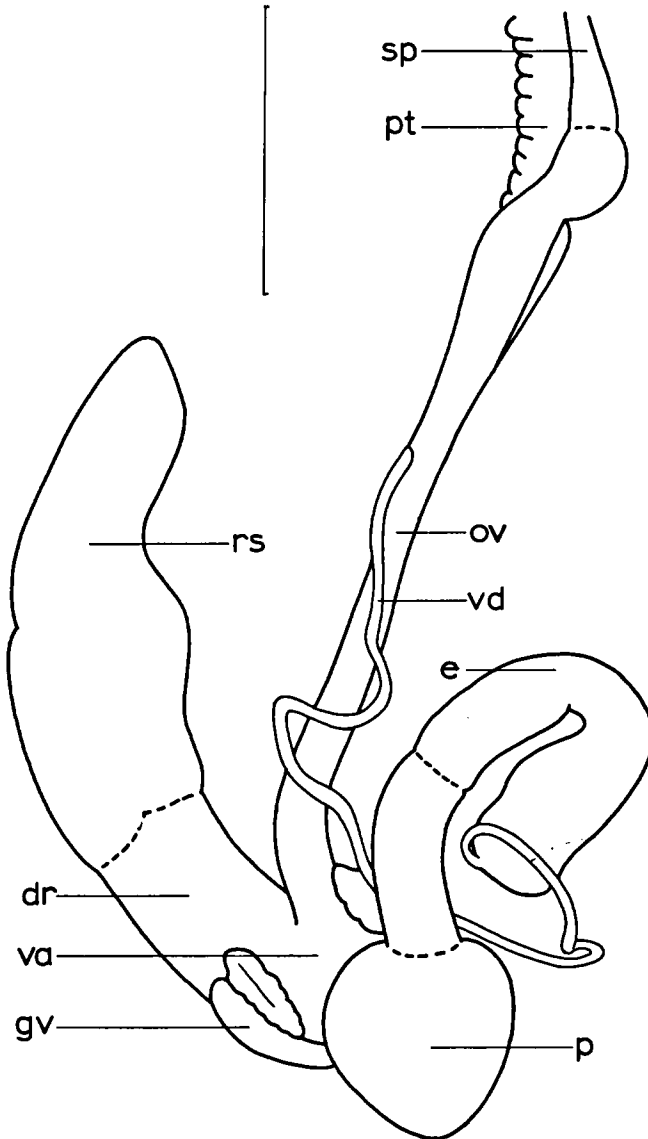


Fig. 5. Anterior part of genitalia of *Milax reuleauxi* (Clessin). Scale 5 mm.

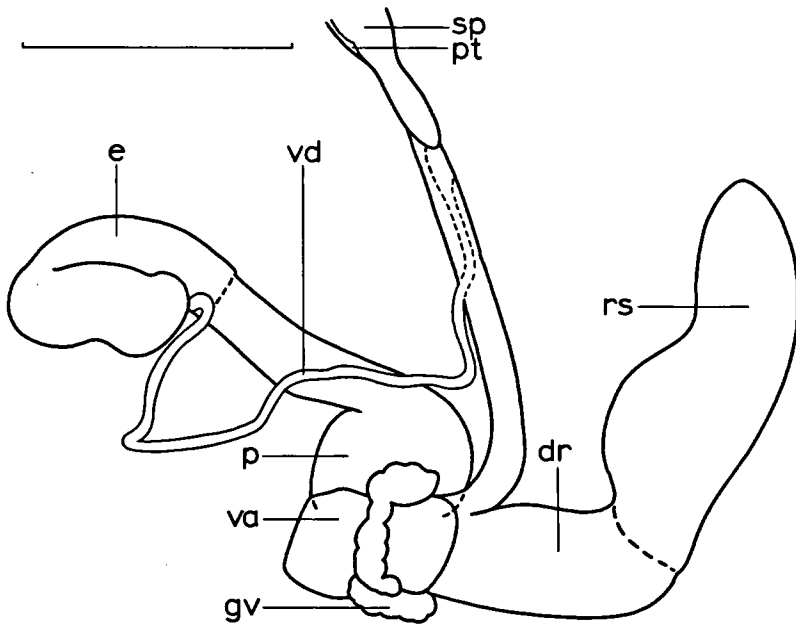


Fig. 6. Anterior part of genitalia of *Milax reuleauxi* (Clessin). Scale 5 mm.

6.V: six juvenile specimens. NE-side of Kotor, gorge, 15-50 m, 26.IV-6.V: one adult specimen (neotype), one adult and three juvenile specimens.

External characters. — Total length 64 mm, mantle length 21 mm, respiratory orifice 19 mm from anterior border of mantle. Keel covering dorsum completely, becoming more prominent towards the end. Colour black, beige in front of and under the mantle which is also the colour of the sole.

Anatomy. — Mandible and radula have not been investigated.

The alimentary canal with the glands debouching in it shows no differences of any importance with that in other species of *Milax*.

The genitalia are whitish to beige in colour, only the ovotestis is light brown. Ovotestis 7.5 mm long, maximum width 2.5 mm; hermaphrodite duct 35 mm and albumen gland 25 mm long, the latter somewhat twisted (fig. 4). Spermooviduct strongly twisted, 20 mm long, oviduct 7 mm long. Receptaculum seminis 8 mm and duct leading to it 3 mm long. The vaginal glands are situated round the vagina, but debouch into

the junction of oviduct and vagina with very thin ducts. The vagina changes into the atrium genitale without clear limit. Vagina and atrium are partly covered by the penis in figure 6. There was no more retractor muscle on the penis of the neotype when the genitalia were taken out of the body cavity. As it is present in several juveniles and in the other adult specimen it was probably accidentally destroyed. It is very thin and inserted on to the penis where the colour of the narrower part changes a little (marked in the figure with an interrupted line). The epiphallus is 7.5 mm long, the narrower part of the penis 3.5 mm and the very broad part 3 mm (figs. 5, 6).

Discussion. — As Clessin's syntypes are apparently lost and the specimens described and figured by Wagner (1929, 1935) were destroyed in 1956, we have selected a neotype. This has been collected at the same locality or very near to where Clessin's specimens were obtained, as Cattaro is the Italian translation of Kotor.

Simroth's *Amalia* cf. *reuleauxi* (1886: 32, pl. 1 fig. 8) is probably another species. I have not found the six papillae in the atrium and the epiphallus is much longer than shown in Simroth's figure.

#### Abbreviations used in the figures

dh:	hermaphrodite duct	p:	penis
dr:	duct of receptaculum seminis	pr:	penial retractor muscle
e:	epiphallus	pt:	prostate
ga:	albumen gland	rs:	receptaculum seminis
go:	glandular part of oviduct	sp:	spermoviduct
gv:	vaginal glands	t:	talon
ot:	ovotestis	va:	vagina and atrium
ov:	oviduct	vd:	vas deferens

#### LITERATURE

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