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NATURAL HISTORY  
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Notes on land slugs, 16<sup>1</sup>:  
*Deroceras* from Afghanistan, including  
 description of *D. kandaharensis*

C. O. VAN REGTEREN ALTENA

RIJKSMUSEUM VAN NATUURLIJKE HISTORIE, LEIDEN, NETHERLANDS

Among mollusks collected by members of the W. S. and J. K. Street Expedition to Afghanistan in 1965 were 47 specimens of land slugs belonging to the genus *Deroceras*. Through the kindness of Dr. Alan Solem, Curator of Lower Invertebrates, Field Museum of Natural History, it was possible to study this material and to retain a few examples for the Rijksmuseum van Natuurlijke Historie, Leiden. I am indebted to Mr. E. Gittenberger for preparation of a radular mount; to Mr. W. C. G. Gertenaar for assistance with the illustrations, and to Dr. Solem for correcting the translation.

Previously Likharev and Starobogatov (1967) reported *Deroceras laeve* (Müller, 1774) from near Kabul. Most of the Street Expedition material was taken in the same area and is referred to this species. One set from near Kandahar consisted of both *D. laeve* and a new species that is described below as *Deroceras kandaharensis*. Although it was collected from cultivated gardens, I do not consider that it is an introduced species.

***Deroceras kandaharensis* new species.** Figure 1, *a-e*.

*Diagnosis*.—A species of *Deroceras* with white line on the dorsum continuing into the posterior keel, ovotestis extending from caecum to end of cavity, oviduct narrow at first, then turns sharply before widening, penis lacking appendix and internally with a stimulator having a peculiar white cap.

*Deroceras buchar* (Simroth, 1910) is the most similar species, but is distinctly smaller, sometimes lacks an intestinal caecum, lacks the

<sup>1</sup> 1969. Notes sur les limaces, 15: Quelques limaces d'Israël, in *Basteria*, **33**, (1-4), pp. 3-10, 18 figs.

white dorsal coloration, and does not have the sharply-reflexed oviduct. No other species are immediately comparable.

*Description.*—Color yellowish white with some grey pigmentation on mantle. Dorsum with white line in middle that on posterior half edges an increasingly prominent keel (fig. 1, *a*). Pigmentation heaviest on sides of keel; neck and sole nearly white.

Radula of holotype with 88 rows of denticles, formula at right side of thirtieth row from posterior margin, 1-16-28. Form of denticles typical of genus.

Intestine poorly preserved, but caecum agreeing with that of *D. reticulatum* seen in two dissected examples. Other features of intestine agreeing with generic definition.

Ovotestis very large, extending from level of intestinal caecum to posterior end of body cavity. Hermaphroditic duct somewhat sinuated, albumen gland (fig. 1, *b*) relatively small. Spermooviduct for first 8 mm. large, then for next 5 mm. about as thin as prostate. Vas deferens short, entering penis lateral to insertion of penial retractor muscle. Free oviduct narrow at first, sharply reflexed, broadening (fig. 1, *c*) before entering atrium. Penis oval, without appendix, broader below middle, narrowing abruptly before entering atrium. Seminal receptacle globular, with short and narrow shaft that inserts on lower portion of penis, just before latter narrows. Atrium short, without unusual features.

Interior of penis (fig. 1, *d*) with a large stimulatory papilla surmounted by a small "dunce's cap" (fig. 1, *e*) that is soft and white except where some tissue connects to it.

Length of holotype 30 mm., mantle length 11.5 mm.

*Holotype.*—Afghanistan: cultivated gardens of Baba Wali near Kandahar, 1,425 m., Kandahar Province, 31° 36' N, 65° 47' E. Collected by the Street Expedition on November 9, 1965. Field Museum of Natural History (FMNH) number 151672.

*Paratypes.*—FMNH 147120 and Rijksmuseum, Leiden, 4 specimens.

*Remarks.*—All of the specimens were between 25 and 30 mm. in length. There was little variation in color, none of the examples being dark, but some showing practically no pigmentation. Two dissected specimens showed the intestinal caecum, and three individuals showed the peculiar "dunce's cap" on the penial stimulator. Two of these had the cap smaller and less clearly formed than in the holotype. Possibly this may be lost during copulation and a new cap

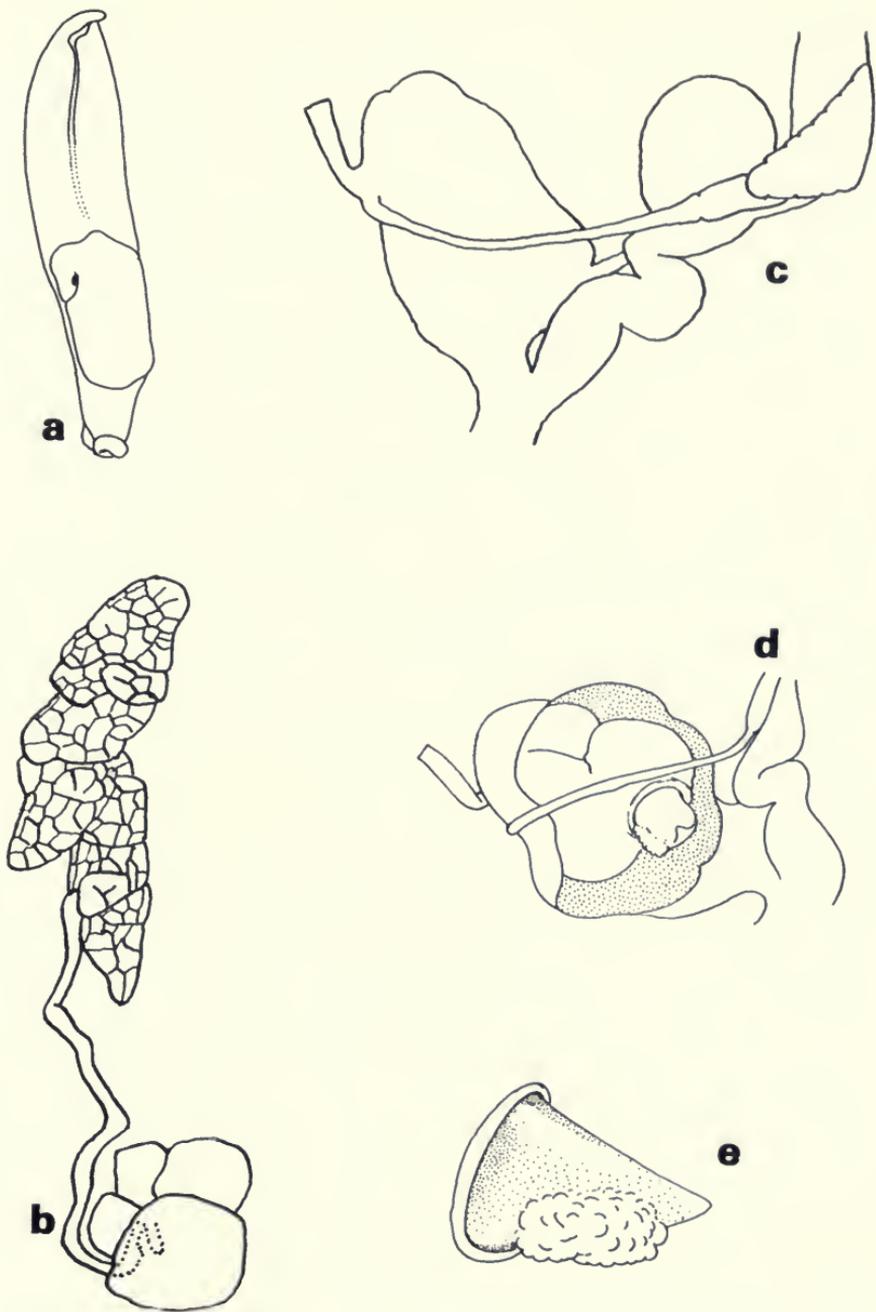


FIG. 1. *Deroceras kandaharensis* new species. a, Dorsal view of a paratype (2 ×); b, ovotestis, hermaphroditic duct, talon, and albumen gland of holotype (5 ×); c, terminal genitalia of holotype (10 ×) showing insertions of vas deferens, penial retractor muscle, spermatheca, and shape of oviduct; d, interior of penis from holotype (10 ×) showing stimulatory papilla and "cap"; e, "dunce's cap" structure on stimulatory papilla (20 ×) from dissected holotype.

formed subsequently, although its solid attachment to the stimulator does not make this very likely.

*Deroceras buchar* (Simroth, 1910, pp. 523-526, 558-560, pl. VII, figs. 19-21) is known from a fragmentary description and penial illustrations showing little detail. I hesitated whether to refer this material to Simroth's species, but several features present in the Afghanistan specimens would not have been overlooked by Simroth. The white dorsal line, reflexed oviduct, and very large ovotestis are characters that are readily visible even in poorly preserved material. Simroth notes the same kinds of characters in descriptions of other slug species. His failure to do so in reference to *D. buchar* is interpreted as meaning that these characters were not present in specimens of that taxon. Since in reference to other limacid slugs these types of differences have been shown to denote specific separation, I am describing the Kandahar specimens as a new species. *D. buchar* was reported from several localities between the Caspian Sea and Fergana. The intestinal caecum and the penis look similar to that of *D. kandaharensis*, but too little detail is shown for meaningful comparisons. Most other *Deroceras* show obvious differences in having, for instance, penial appendices.

#### *Deroceras laeve* (Müller, 1774)

*Material*.—Highly irrigated area at 2,240 m. elevation near Paghman, Kabul Prov., Afghanistan, 34° 36' N, 68° 56' E, collected August 23, 1965 (32 specimens, FMNH 147081, FMNH 147082, Rijksmuseum, Leiden); cultivated gardens of Baba Wali, 1,425 m., Kandahar, Kandahar Prov., Afghanistan, 31° 36' N, 65° 47' E, collected November 9, 1965 (10 specimens, FMNH 151673).

*Remarks*.—Five of the 32 specimens from Paghman were dissected. Of these, three were aphyllid, the other two with typical penial structure. Size of the entire set varied between 10 and 23 mm. in body length. The 10 specimens from Kandahar were 10 to 21 mm. long, with all four dissected examples aphyllid.

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