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XLVIII.—On the Variety *cinereo-niger*, Wolf, of *Limax maximus*, L. By WALTER E. COLLINGE, Demonstrator of Biology in Mason College, Birmingham.

IN the 'Annals' for March Mr. Roebuck objects to my classing the *Limax cinereo-niger*, Wolf, as a colour-variation of the well-known *L. maximus*, L., and puts forward an argument for the retention of this slug as a distinct species or subspecies.

He contends that it differs from *L. maximus* in its "dentition," the anatomy of the reproductive organs, and in its external form and coloration. When I stated* that there were no differences of importance in the general anatomy, I did not think it necessary to enter into details as to the slight variations and modifications to which all the Mollusca are subject, according to age, season of the year, habitat, &c., for both Simroth† and Scharff‡ had previously described the anatomy, and I stated that my investigations agreed with the accounts given by them.

It seems, however, since Mr. Roebuck has become convinced that he was wrong in stating that there were important differences in the reproductive organs, solely upon the observations of Sordelli§, that he now intends to uphold its specific distinction upon some drawings &c. made by Mr. Charles Ashford which exhibit some slight variations from one another, and upon some observations on the lingual ribbon.

The lingual ribbon, which Mr. Roebuck regards as of such importance, is, for generic or specific distinction, of little or no value; indeed, such is its unreliability that not a few malacologists totally ignore it.

Simroth, who has had more experience with the anatomy of the slugs than any other living investigator, years ago showed the great variation it was subject to, and that it "was perhaps the most unsuitable portion of the slug's body" that could have been chosen for purposes of classification. Indeed a large number of species constituted upon differences in the lingual ribbon he conclusively proved by a series of careful anatomical investigations to be but varieties of *L. maximus*, whose lingual ribbon is subject to endless variations. The

* Ann. & Mag. Nat. Hist. 1892, vol. x. p. 425.

† Zeitschr. f. wiss. Zool. 1885, vol. xlii.

‡ Trans. Royal Dublin Soc. 1891, ser. 2, vol. iv. p. 518.

§ I think Mr. Roebuck's statement "important differences" is hardly borne out by Sordelli's original account.

only malacologists I can call to mind who use it to-day are Binney and Pollonera, and both give it quite a secondary place. I therefore am of opinion that, from a consideration of its development and variation, it is absolutely useless for specific or generic distinction.

Respecting the reproductive organs, I regret Mr. Roebuck has not a knowledge from personal examination. Accurate as Mr. Ashford's drawings may be—and I see no cause to doubt the particulars given—personal observation of the reproductive organs of a few slugs would, I think, at least have shown him that to separate species of slugs upon any single system is unsafe, if not unscientific. My contention is that the general anatomy—the reproductive, nervous, digestive, and muscular systems—of *cinereo-niger* is the same as that of *L. maximus*. All who have had any experience in the anatomical examination of the Mollusca know the endless minor variations that occur in the form, size, and colour of the reproductive organs, according to age, season, habitat, &c. The writings of Simroth, Lessona, Pollonera, Scharff, Jourdain, Binney, and others will bear out my statement. It is therefore needless for me to dwell upon these slight variations Mr. Roebuck has seen in Mr. Ashford's drawings.

I have frequently of late dwelt upon the external variations of the slugs in form and colour, and I was careful to point out that I agreed with Jourdain that species could not be founded or separated from each other upon these minor differences. Mr. Roebuck says he has examined "by far the greater proportion of British specimens known"; and yet it seems to me that he is still ignorant of very many of the variations to which *L. maximus* is subject. Seeing that the actual published records of *cinereo-niger* are but few, I can only regard his statements *re* variation as founded upon an insufficient knowledge of the subject. Personally I have only seen about one hundred examples of *cinereo-niger* and some seven or eight hundred of *L. maximus*, most of which I have subjected to a careful examination, and many anatomically. Amongst these I have met with both *L. maximus* and its variety *cinereo-niger* with the marblings on the mantle and with a white foot-sole also.

In conclusion, I fail to see any points which are of sufficient importance to establish the specific identity of *cinereo-niger*, and until such are shown to exist I shall, with the above-mentioned malacologists, continue to regard it as a variety of *L. maximus*.