

THE GENUS *KILULUMA*

BY

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This genus was the subject of a recent paper by Thapar (1924), who divided it into six new species: unfortunately, he does not give any key to assist in placing a member of the genus in its proper species, nor does he give any list of differences of specific value, but only a detailed description of each type, in which he singles out but very few points considered by him to be of specific importance. A complete list of the measurements and morphological differences given by Thapar was, therefore, drawn up with the idea of preparing a key to be used in the classification of worms of this genus in the Museum of the Liverpool School of Tropical Medicine. On perusal of this table of differences there appeared to be small reason for the subdivision of the genus to such an extent, and the subsequent examination of the large amount of material at my disposal has brought me to the conclusion that the individual differences noted by Thapar are only sufficient to divide the genus into two, or possibly three species. The Museum of the Liverpool School of Tropical Medicine contains some eight hundred worms of the genus *Kiluluma*, collected in Rhodesia from five rhinoceroses; measurements were made from a number of worms picked at random; details of morphology noted in a still greater number, while general characters of the whole collection were also noted for the purposes of this paper.

Of the six species named by Thapar, I should consider the following four synonymous:—*K. rhinocerotis*, *K. africana*, *K. pachyderma* and *K. solitaria*, since in the same individual I have found varying combinations of the supposed specific differences. These supposed differences in morphological characters are very small. As an example, two definite points, in which the presence or absence of a character is involved, may be singled out, namely

the presence or absence of a second wing to the spicules, and of a small branch to the externo-dorsal ray. Although, according to Thapar, the presence of the branch to the ray should only coincide with a one-winged spicule (*K. pachyderma*), I have frequently found it to coincide in the same individual with a two-winged spicule.

Differences between these four species in the matter of the detailed measurements given by Thapar are also very small, and similar measurements made from material at hand have in no single instance fitted one of the four species to any marked degree more than the rest; where measurements of one part of an individual might coincide with those of *K. rhinocerotis*, measurements of other parts might fit *K. pachyderma*, or *K. solitaria*, or *K. africana*. In my opinion, Thapar attaches too much importance to small differences in measurement: for example, in the text, attention is especially drawn to the larger spicule in *K. africana* as a difference from *K. rhinocerotis*, yet this difference is only between spicules 2.1 mm. and those 2.25 mm. in length, where the male of the first species measures 13 mm. and of the second 13 to 14 mm. in length.

Differences made on the position of the so-called 'filiform process of the lips' and the narrow, or the swollen appearance of the anterior end of the 'lips' do not seem to hold, since this internal leaf-crown appears to be pliable and liable to be fixed in varying positions. Although by far the greater number of worms examined by me showed the 'lips' in the position seen in Thapar's drawings of *K. pachyderma* and *K. macdonaldi*, I came across several with 'lips' approaching the shapes shown in the drawings of *K. africana* and *K. rhinocerotis*. I did not, however, come across any with 'lips' in the positions seen in the drawing of *K. solitaria*.

The reasons for making the species *K. macdonaldi* do not seem to be much stronger than those for making the four other species mentioned above; but two characters are described as not occurring in these four; firstly, the cervical papillae are said to be anterior to the excretory pore; and secondly, the preventral ray in the bursa of the male is stated to be moved forward to the position of a prebursal papilla. The first of these two differences does not seem to be of great importance, since in common with other species the papillae are at about the same level as the excretory pore. The second point may be of more importance, although I have come

across some remarkable variations from the normal in the arrangement of bursal rays ; two males actually showed asymmetrical lateral lobes, the postero-lateral and extra-lateral rays being present on the one side only.

The sixth species, *K. magna*, shows some outstanding differences, the most marked of which is in the much greater length of the oesophagus, the excretory pore and cervical papillae being on that account in the oesophageal region of the body : the general size of the worm is greater than in the five preceding species, the uterus is much larger and the eggs are double the size. I did not find any worm belonging to this species, but the differences given by Thapar clearly set it apart from the other five.

In my opinion, *K. rhinocerotis*, *K. africana*, *K. pachyderma* and *K. solitaria* are one and the same species to which *K. macdonaldi* may also belong, while *K. magna* only has distinctive specific characters.

REFERENCE

- THAPAR, G. S. (1924) — On *Kilbiana* Skrjabin, a genus of Strongyliid nematodes parasitic in the African Rhinoceros. *Jl. of Helminthology*, Vol. II, pp. 219-238.