

BEAUFORTIA

SERIES OF MISCELLANEOUS PUBLICATIONS

ZOOLOGICAL MUSEUM OF THE UNIVERSITY OF AMSTERDAM

No. 194

Volume 15

May 17, 1968

Dedicated to Professor Dr. H. Engel

Bipalium engeli n. sp., a terrestrial triclad from Singapore

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ABSTRACT

A new species of the genus *Bipalium*, *B. engeli*, is described from secondary forest in Singapore. It is allied to *B. rauchi* von Graff, 1899, from the same area, but differs markedly in its colour pattern.

During a botanical excursion in Singapore I collected a beautiful, very conspicuously coloured, but hitherto undescribed terrestrial flatworm of the genus *Bipalium*, and it is my pleasure to dedicate this species to Professor Dr. H. Engel on the occasion of his 70th birthday.

Bipalium engeli n. sp.

Locality. — Singapore: one specimen in secondary forest near the drinking-water reservoir, on a piece of dead wood, creeping around actively during rainy weather. December 13th, 1967. The preserved specimen (holotype) has been deposited in the collection of the Rijksmuseum van Natuurlijke Historie, Leiden.

Body elongate, dorso-ventrally flattened, when creeping about 20 mm, when resting 12 mm, and after preservation 11 mm long; maximum width of the body 2 mm. Head distinctly hammer-shaped when the animal is creeping; length 1 mm, maximum width when creeping 2 mm. Many microscopically small eyes behind the margin of the head.

Ventral sole linear, very narrow, extending from the "neck" to the posterior tip.

Colour pattern of the dorsal side more complicated than that of the ventral side (fig. 1A). Anterior zone of the head bright orange, interrupted in the middle by a shiny black, trapezoid spot. Posterior part of the head milky white. Ventral side of the head also milky white, with a dark margin. Dorsal side of the body showing a zebra pattern, consisting of 8 shiny black transverse-bands which alternate with 7 milky white ones. First and third black

Received: February 1, 1968

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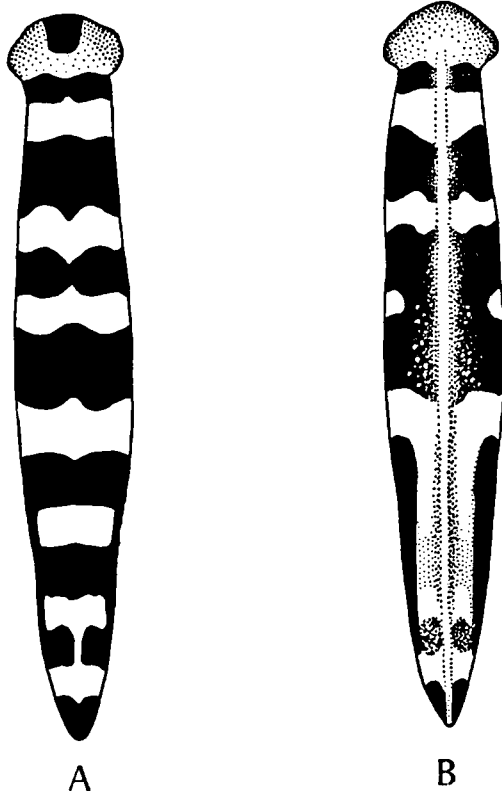


FIG. 1. *Bipalium engeli* n. sp. A, dorsal view; B, ventral view.

bands considerably narrower than second and fourth; bands showing irregularities in the middle: first band has a posterior incision, second band a posterior extension, third band distinctly constricted and fourth band undulate. Fifth, sixth and seventh bands of equal width, slightly wider than the third band; laterally connected with each other; fifth and sixth bands with slight irregularities in the middle, seventh band interrupted in the middle. Eighth band coinciding with the "tail" and having a slight median incision at its anterior margin.

On the ventral side the first and second bands are interrupted by the milky white sole (fig. 1B). Third and fourth bands united except along the lateral margins, interrupted by the sole. Fifth, sixth and seventh bands only present as 2 joint lateral stripes, not reaching the sole. Eighth band interrupted by the sole. Dorsal pattern vaguely shining through.

Mouth at $\frac{3}{8}$ of the body length, between the third and fourth black bands. Genital opening at half the length of the body, behind fourth black band. On preservation of the animal the milky white colour became yellowish and the orange band on the head became more or less black. As I had only 1 specimen I did not make sections for anatomical study.

Discussion. — *Bipalium engeli* is closely allied to *B. rauchi* von Graff, which was collected by von Graff (1899 : 457, pl. 9 fig. 36) in the Botanical Gardens of Singapore. Both species are similar in having a median trapezoid spot on the head, and 8 black transverse-bands on the body; the arrangement and shape of these transverse-bands, however, are different. Von Graff described the first five black bands of *B. rauchi* as being square and more or less the same size, the sixth band as consisting of two black spots which do not reach the lateral margin, the seventh band as being irregular and drawn out laterally almost reaching the fifth band, and the eighth band as not including the tip of the tail. Further all black bands are more or less completely intersected by a light median line, while in *B. engeli* only the seventh band is interrupted in the middle. In *B. rauchi* the sole is white and the rest of the ventral side is light yellow, the dorsal black bands shining through. In contrast the ventral side of *B. engeli* shows a quite conspicuous pattern. According to von Graff the ground colour of *B. rauchi* is vividly yellow becoming brown towards the head and the tail. In *B. engeli* the ground colour is milky white. As the colour pattern is usually a very reliable species character in the genus *Bipalium*, I have not hesitated to regard *B. engeli* as distinct from *B. rauchi*.

I am indebted to Mr. J. J. M. Vreeburg, Rijksmuseum van Natuurlijke Historie, Leiden, for drawing the figure.

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