

TWO NEW SPECIES OF *ARDEICOLA* (MALLOPHAGA)
FROM *THRESKIORNIS*.

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LE SOUÉF and Bullen (1902) described the species *Ardeicola ibis* from *Threskiornis strictipennis* = *Threskiornis molucca strictipennis* (Gould). Their description is deficient and will not suffice to identify the species in question. The types are not attainable, as they are to be found somewhere in Australia or perhaps lost. Unfortunately no material from the type host was available so I made the necessary comparisons with specimens from *Threskiornis m. molucca* from Malaya, which were kindly lent by the British Museum (Natural History). It is impossible at present to decide whether the population from that *Ibis* is *Ardeicola ibis* or a separate species, but in any case it can easily be distinguished from both the new species. While identifying these species I examined material collected from three species of *Ibis* of the genus *Threskiornis*, i.e. *Th. m. molucca* from Malaya (data above), *Th. ae. aethiopicus* from Ethiopia, Tanganyika, Kenya and Transvaal, and *Th. melanocephala* from India. Each of the populations from these hosts forms a separate species, although they all belong to the same species-group. They all agree in shape, chaetotaxy, colour (a detailed description is given with *A. clayae* sp. n.) and measurements (vide table). Some differences are shown in the last abdominal segments of male and female, male genitalia and female genital chamber. Both eastern species, that from *Th. molucca* and that from *Th. melanocephala* are more closely related to each other and distinguished by slight differences only, while *A. clayae* from *Th. aethiopicus* is distinctively different.

Ardeicola clayae sp. n.

(Text-figs. 1-5, 8, 11, 12.)

Type host: Threskiornis aethiopicus aethiopicus (Latham).

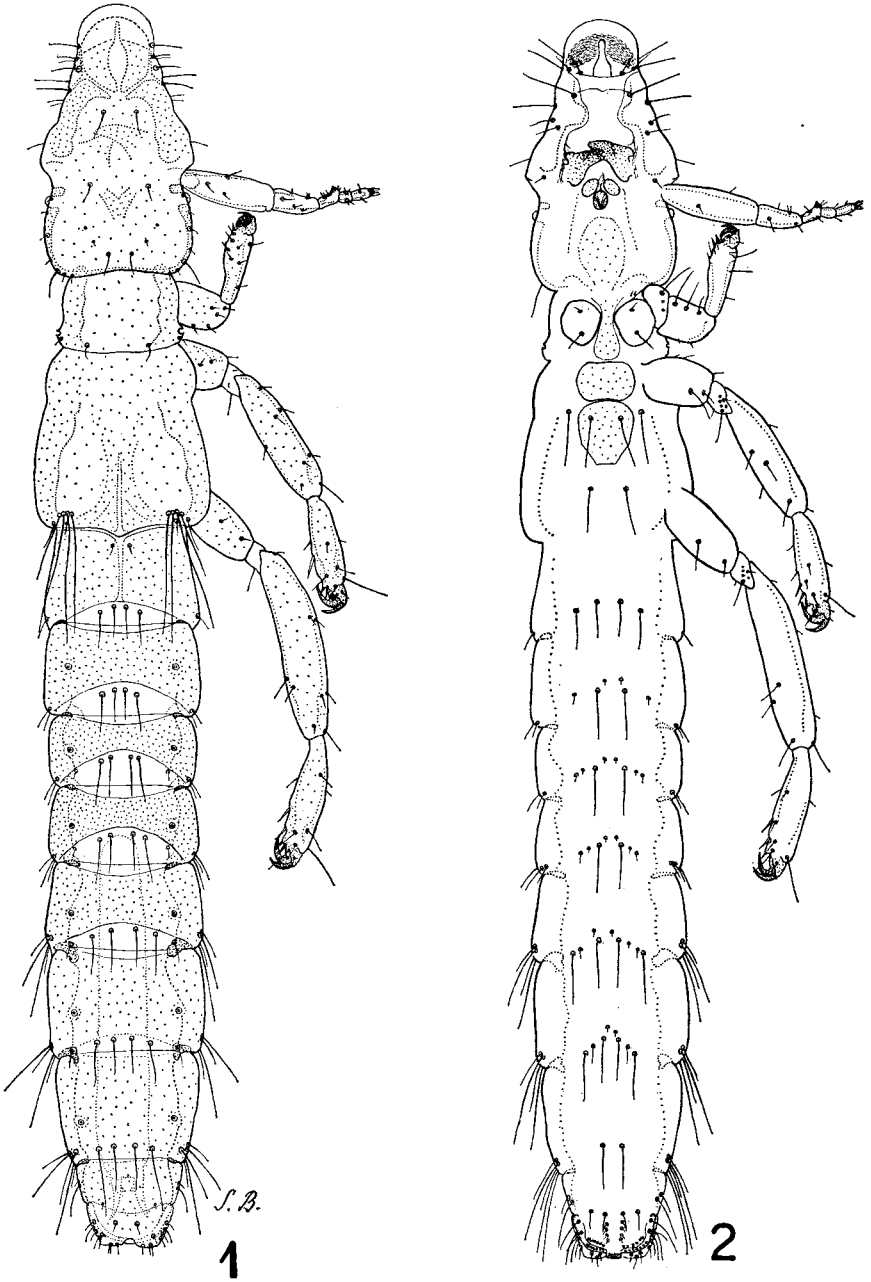
Males and females, as those of *Ardeicola plataleae* (Linn.), are not pigmented, but can easily be distinguished by the shorter abdominal segment II and several other characters.

Male: Shape and chaetotaxy, as in text-figs. 1, 2 and 5; measurements given in the table under I a and I b.

The first antennal segment is broad and longer than the total length of the next three. The third segment is enlarged to a pointed protuberance. Abdominal segments VII and VIII are the longest, II, III and VI slightly shorter and of approximately the same length, IX is even shorter, IV and V are the shortest.

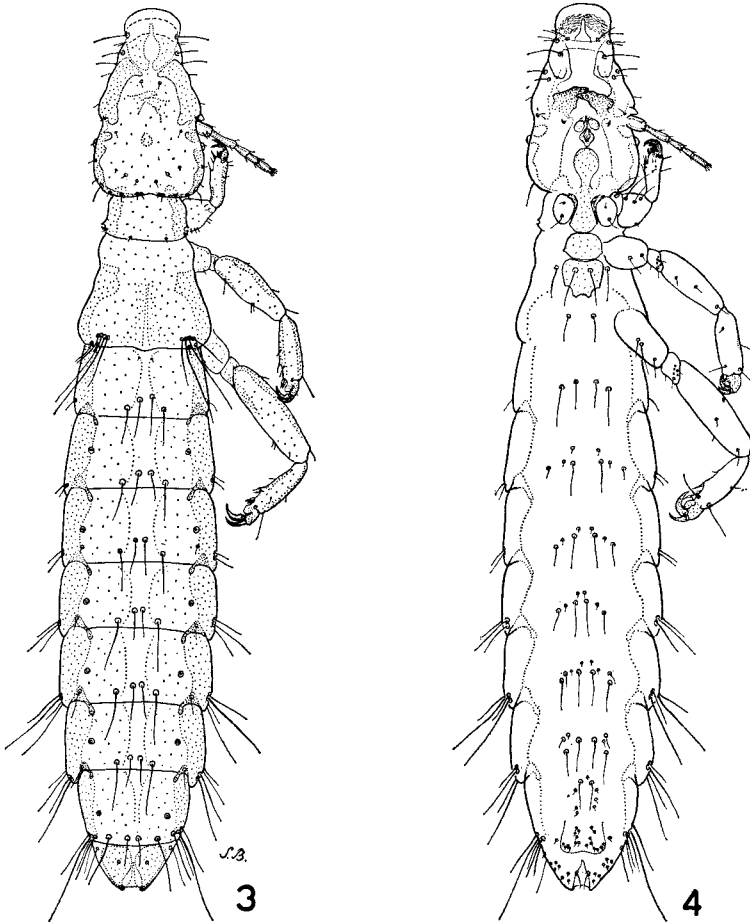
In the male genitalia the telomeres do not reach to the parameres (text-figs. 11 and 12). Differences in the parameres between the specimens

Figs. 1-2.



Ardeicola clayae sp. n., male.
1, Dorsal view; 2, Ventral view.

Figs. 3-4.

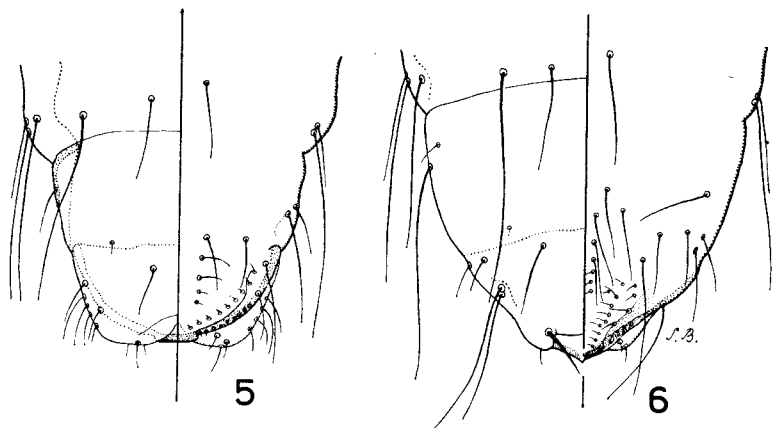


Ardeicola clayae sp. n., female.
3, Dorsal view; 4, Ventral view.

from Ethiopia and Tanganyika as seen in text-figs. 11 and 12 are probably the result of preparation. One male specimen from Ethiopia has the left paramere of the same shape as the specimens from Tanganyika, the parameres of one male specimen from Tanganyika resemble those from Ethiopia. It will be necessary to examine some more material to decide on definite differences in the genitalia of the specimens from various countries. But apparently only a large variation is in question. Length of male copulatory organ is 0.54-0.60 mm.

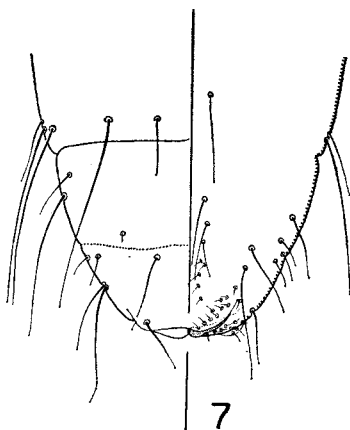
Female: Shape and chaetotaxy as in text-figs. 3, 4 and 8; measurements given in the table under I a and I b.

Figs. 5-6.



5. *Ardeicola clayae* sp. n. 6. *Ardeicola indica* sp. n.
Terminal segments of male abdomen.

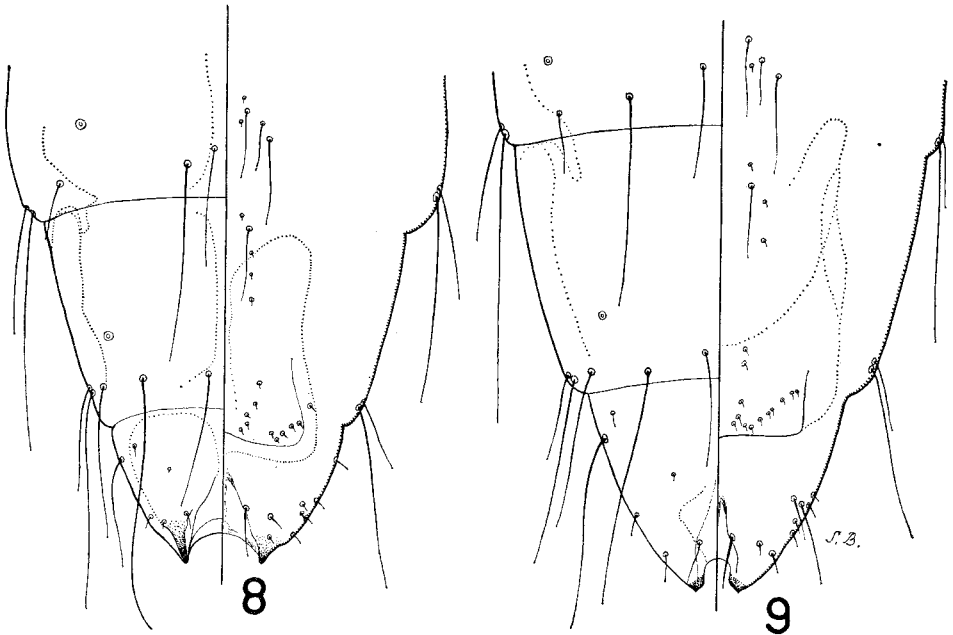
Fig. 7.



Ardeicola sp. [? *ibis* (Le Souéf and Bullen)] from *Threskiornis m. molucca*.
Terminal segments of male abdomen.

In the antenna no enlarged segments are present; the 2nd segment is regularly slightly longer than the last two together. Abdominal segments II, IV-VII are approximately the same length, III and IV are slightly longer, the last one is the shortest. As to the proportions in the length of single segments the new species is characterized by abdominal segment II being shorter than III (which is specific for the whole species-group; only in one female of *A. indicus* both segments were found to be of the same length) and the last one being almost half the size of the segment before.

Figs. 8-9.



8. *Ardeicola clayae* sp. n. 9. *Ardeicola indica* sp. n.
Terminal segments of female abdomen.

Material Examined: 9 ♂ and 17 ♀ from Sacred Ibis (*Threskiornis ae. aethiopicus*), i.e. 4 ♂, 9 ♀ from Awassa, Ethiopia, 6. xi. 60, legit S. Breljih, in the Prirodoslovni muzej Slovenije collection; 5 ♂, 6 ♀ from Tanganyika, March 1903, Meinertzhagen collection no. 3836, British Museum (Natural History); 1 ♀ from Kenya, March 1936, in the same collection slide no. 7217; 1 ♀ from Benoni, Transvaal, Republic of South Africa, 30. iii. 54, British Museum (Natural History) collection.

Holotype ♂ and allotype ♀ in the Prirodoslovni muzej Slovenije collection, slides no. IM-6791 and IM-6794 from *Threskiornis ae. aethiopicus* (Latham) from Ethiopia. Paratypes: 8 ♂, 16 ♀ from the same host, data as given above.

This species is named in honour of Miss Theresa Clay as a modest recognition of her great merits in the field of scientific work on Mallophaga and her valuable help given during my work.

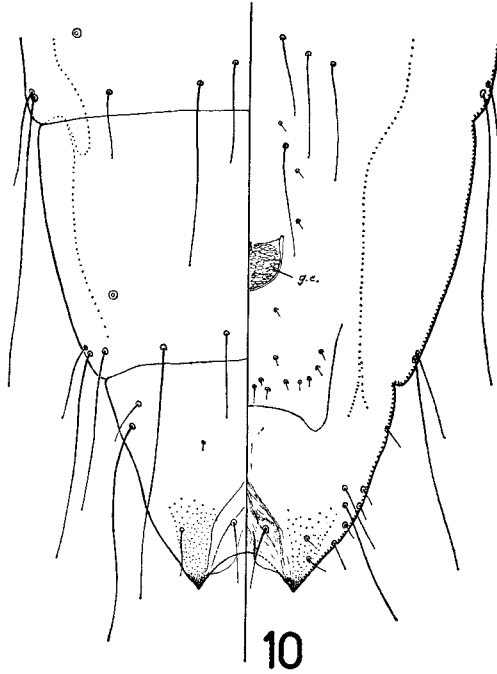
Ardeicola indicus sp. n.

(Text-figs. 6, 9 and 13.)

Type host: *Threskiornis melanocephala* (Latham).

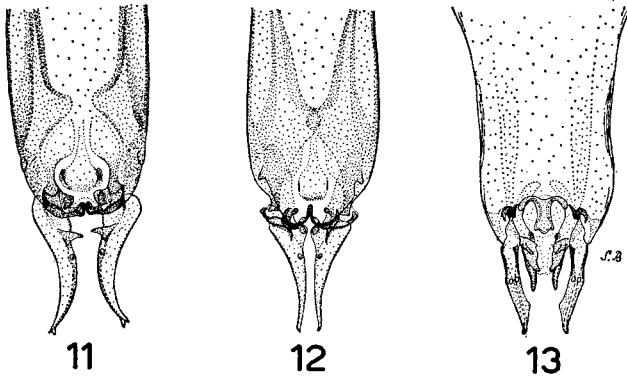
Male: Very similar to *A. clayae* sp. n., markedly different from it only in the last segments (text-fig. 6) and genitalia (text-fig. 13), where the

Fig. 10.



Ardeicola sp. [? *ibis* (Le Souéf and Bullen)] from *Threskiornis m. molucca*.
Terminal segments of female abdomen; *g.c.*, genital chamber.

Figs. 11-13.



11-12. *Ardeicola clayae* sp. n., male genitalia.
11, of specimens from Ethiopia (vide the text); 12, of specimens from Tanganyika.
13. *Ardeicola indica* sp. n., male genitalia.

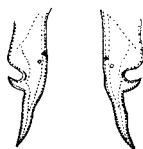
telomeres and endomerall-complex are well developed and placed between the parameres. Measurements given in the table under II a and II b are nearly the same; the length of single antennal and abdominal segments is comparatively the same as in the previous species. Length of genitalia: 0.88–0.95 mm.

Female: Markedly different from the previous species in the last abdominal segments (text-fig. 9). Distinguished also by differences in the genital chamber (text-figure was not made due to its deformation). Measurements given in the table under II a are nearly the same. The length of abdominal and antennal segments is comparatively the same as in *A. clayae*, only the last abdominal segment is regularly slightly longer than the segment before.

Material Examined: 12 ♂, 17 ♀ from type host, i.e. 3 ♂, 11 ♀ from Deccan, India, February 1937 and 9 ♂, 6 ♀ from India (no specific data), both in the Meinertzhagen collection, British Museum (Natural History), slide no. 8720–22 and 4823.

Holotype ♂ and allotype ♀ from *Threskiornis melanocephala* (Latham) from India, slide no. 4823, Meinertzhagen collection, paratypes 11 ♂, 16 ♀ from the same host, data as given above.

Fig. 14.



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Ardeicola sp. [? *ibis* (Le Souéf and Bullen)] from *Threskiornis m. molucca*, telomeres.

Ardeicola sp. [? *ibis* (Le Souéf and Bullen, 1902)].

(Text-figs. 7, 10, 14.)

Host: *Threskiornis molucca molucca* (Cuvier).

Male: Differs from the previous two species in the last abdominal segments (text-fig. 7) and genitalia (text-fig. 14). In the only male available, the parameres are deformed, so figures can be given for the telomeres only; these can be easily distinguished from those of *A. indicus* sp. n. Measurements are given in the table under No. III. The length of the antennal segments is related to those of the previous two species, but it differs slightly in abdominal segments, considering of course that only one specimen was examined. Unlike the previous two species abdominal segments V and VI are the shortest, II and IV slightly longer, all the others still longer but of comparatively the same length.

Female: Similar to the male; it also differs from *A. clayae* and *A. indicus* in the last abdominal segments (text-fig. 10). The last two abdominal segments are approximately the same length and the shortest of all.

Material Examined: 1 ♂, 7 ♀ from *Threskiornis molucca molucca* from Malaya, Meinertzhagen collection, British Museum (Natural History), slide no. 4822.

Measurements in mm.

		Male		Female		
		Range	Mean	Range	Mean	
Length of head	I a	0.72-0.75	0.73 (4)	0.73-0.79	0.76 (9)	
	I b	0.73-0.76	0.75 (5)	0.73-0.79	0.77 (5)	
	II a	0.72-0.73	0.72 (3)	0.73-0.78	0.75 (11)	
	II b	0.73-0.78	0.75 (9)	0.73-0.78	0.75 (5)	
	III	0.76	— (1)	0.79-0.82	0.81 (6)	
		I a	0.39-0.44	0.42 (4)	0.45-0.49	0.46 (9)
Breadth of head	I b	0.44-0.45	0.44 (5)	0.46-0.49	0.48 (5)	
	II a	0.44-0.46	— (2)	0.46-0.49	0.47 (11)	
	II b	0.46-0.49	0.47 (8)	0.44-0.49	0.46 (5)	
	III	0.46	— (1)	0.47-0.50	0.49 (6)	
		I a	0.34-0.37	0.35 (4)	0.35-0.39	0.37 (9)
	Breadth of prothorax	I b	0.35-0.38	0.37 (5)	0.37-0.39	0.38 (5)
II a		0.34-0.37	— (2)	0.35-0.38	0.37 (10)	
II b		0.38-0.41	0.39 (8)	0.37-0.39	0.38 (6)	
III		0.38	— (1)	0.37-0.40	0.39 (6)	
		I a	0.50	0.50 (3)	0.51-0.57	0.55 (9)
Breadth of pterothorax		I b	0.46-0.50	0.48 (5)	0.49-0.56	0.52 (5)
	II a	0.50	— (1)	0.50-0.57	0.53 (9)	
	II b	0.49-0.57	0.52 (9)	0.46-0.56	0.52 (6)	
	III	0.50	— (1)	0.49-0.54	0.51 (6)	
		I a	1.97-2.01	2.00 (4)	2.15-2.33	2.25 (9)
	Length of abdomen	I b	1.99-2.08	2.04 (5)	2.22-2.37	2.28 (5)
II a		2.18	— (1)	2.31-2.42	2.37 (4)	
II b		1.99-2.22	2.13 (8)	2.22-2.48	2.33 (6)	
III		2.14	— (1)	2.31-2.45	2.39 (5)	
		I a	0.45-0.47	0.46 (4)	0.61-0.69	0.66 (9)
Breadth of abdomen		I b	0.49-0.50	0.50 (5)	0.65-0.75	0.69 (5)
	II a	0.44	— (1)	0.65-0.69	— (2)	
	II b	0.49-0.57	0.53 (9)	0.61-0.73	0.66 (6)	
	III	0.53	— (1)	0.61-0.67	0.64 (5)	
		I a	3.40-3.48	3.42 (4)	3.58-3.81	3.72 (9)
	Total length	I b	3.48-3.56	3.53 (5)	3.64-3.90	3.77 (5)
II a		3.70	— (1)	3.74-4.00	3.86 (10)	
II b		3.55-3.84	3.70 (9)	3.64-3.88	3.79 (5)	
III		3.71	— (1)	3.88-4.05	3.98 (5)	
		I a	0.54-0.60	0.57 (4)	0.58-0.63	0.61 (9)
Head index		I b	0.58-0.60	0.59 (5)	0.62-0.63	0.62 (5)
	II a	0.61-0.63	— (2)	0.61-0.66	0.64 (11)	
	II b	0.61-0.63	0.62 (8)	0.60-0.63	0.61 (5)	
	III	0.61	— (1)	0.58-0.61	0.60 (6)	

- I a *A. clayae* sp. n. from *Th. ae. aethiopicus* from Ethiopia;
 I b *A. clayae* sp. n. from *Th. ae. aethiopicus* from Tanganyika;
 II a *A. indica* sp. n. from *Th. ae. melanocephala* from Deccan, India;
 II b *A. indica* sp. n. from *Th. ae. melanocephala* from India (no specific data);
 III *A. ? ibis* (Le Souéf and Bullen) from *Th. m. molucca* from Malaya.

Remark: the number of measured specimens is inserted between brackets.

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