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NOTES ON FLEAS PARASITIC ON THE TIGER CAT.

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In a former number of the "Records of the Australian Museum,"¹ the late Mr. F. A. A. Skuse described what he supposed to be the male and female of a flea parasitic on the Australian Tiger Cat, *Dasyurus maculatus*, Kerr, and for the reception of the species founded a new genus, *Stephanocircus* (*S. dasyuri*, Sk.). Later, Mr. Carl F. Baker, of Fort Collins, Colorado, published a monographic list under the title of "Preliminary Studies in Siphonaptera,"² and in this work, not only questioned the validity of Skuse's genus, but also suggested³ that the latter writer had probably confused two species, and that both were referable to known genera. For this reason Mr. Baker, whilst reprinting the description, declined to incorporate the genus and species as defined by Skuse in his table of the Pulicidæ. In answer to this Mr. Skuse published a short paper under the heading of "*Stephanocircus*, Sk.: A Rejoinder,"⁴ in which he maintained the accuracy of his determination.

Fortunately the types of Skuse's species are in the collection of the Australian Museum, and a study of these has convinced me that two distinct forms were confused, and that each are referable to separate genera, but, having also carefully studied Taschenberg's descriptions and figures⁵ together with Baker's Key to the genera, I am of opinion that Skuse's genus should stand, and that it should be amended so as to include not only *S. dasyuri*, Sk., but also *S. mars*, N. C. Rothsch.⁶

In order to assist the student in working out the systematic position of these insects, I reprint Baker's Key of the Pulicidæ,⁷ adding thereto the characters of Skuse's genus, as I think they should be understood.

- a. Eyes well developed; antennæ with circular incisions or cleft only on one side; head and thorax usually stout and compact; head rarely angulated in front;

¹ Skuse—Rec. Aust. Mus., ii., 5, 1893, p. 78, pl. xvii.

² Baker—Canadian Entomologist, xxvii., 1895, pp. 19-22, 63-66, 108-111, 130-132, 162-165, 186-191, and 221-2.

³ Baker—loc. cit., p. 63.

⁴ Skuse—Rec. Aust. Mus., ii., 7, 1896, p. 5.

⁵ Taschenberg—Die Flöhe, 1880.

⁶ N. C. Rothschild—Nov. Zool., v., 1898, p. 544, pl. xvi, fig. 11.

⁷ Baker—loc. cit., p. 63.

lower edge of head and pronotum behind sometimes with combs, abdominal segments and discs of cheeks without. *Pulex*.

- aa. Eyes wanting, or very rudimentary; antennæ with circular incisions.
- b. Eyes entirely wanting; head and thorax stout and compact; head angulated in front, truncate; discs of cheeks, pronotum, and several abdominal segments with combs of numerous spines, the whole body heavily bristled. *Hystrichopsylla*.
- c. Eyes entirely wanting; head flattened in front, or sharply truncated, posterior margin pectinated; discs of cheeks and pronotum armed with tooth-like spines similar to those encircling the head; the whole body thickly bristled. *Stephanocircus*.

It is remarkable, too, when we consider how careful Mr. Skuse usually was, that not only should he have confused two genera so well marked, and so easily distinguishable, but that he should have failed to distinguish the female form of the male he described as *Stephanocircus*. Yet such is the case. There are four microscope slides in the Museum collection, the specimens upon which are registered as *types* of *Stephanocircus*. One contains three specimens—two females of *Stephanocircus*, and one male *Pulex*, and this slide is labelled "*Stephanocircus dasyuri*, Sk., from *D. maculatus*, N.S.W. (TYPES) 1 male, 2 female Tiger Cat Flea;" the second has two specimens of *Pulex*—one male and one female, and it is labelled "Tiger Cat Flea, 2 males, (TYPE);" the third and fourth contain dissected portions of females of *Stephanocircus dasyuri*, and are labelled "Tiger Cat Flea, female." It is singular to note, that, whilst specimens of both sexes of a *Pulex* were collected from the body of a Tiger Cat, only one sex (female) of *Stephanocircus* was obtained. Probably the males were overlooked.

As to the identity of the *Pulex*: It appears to me that the form collected from the Tiger Cat is *Pulex fasciatus*, Bosc. It certainly agrees with the brief description given by Baker in his Key to that species of the genus *Pulex*,⁸ and is similar to many examples taken from plague-infested and other rats by Dr. F. Tidswell, of the Department of Public Health of New South Wales, to whom I am indebted for the privilege of examining his long series of specimens, and who has also kindly presented some examples to the Trustees of the Australian Museum. That *P. fasciatus* should be found parasitic on the Tiger Cat

⁸ Baker—*loc. cit.*, pp. 109-110.

does not, to me, appear strange, seeing that it has been recorded from time to time as occurring upon various mammals. It has been found upon the Garden Dormouse, *Myoxus nitidula*, Pall. (= *P. nitela*, Curv.); the Mole, *Talpa europea*, Linn.; the Hamster, *Cricetus cricetus* Linn. (= *C. frumentarius*, Pall.); the House Mouse, *Mus musculus*, Linn.; the Brown Rat, *Mus decumanus*, Pall.; and the White Fox, *Canis lagopus*, Linn.

It has been stated that it is not usual for two species of fleas to be found living together upon a single wild animal, and it was a belief in this theory, doubtless, that led Mr. Skuse into the mistaken assumption that the two species found upon the Tiger Cat were merely the male and female forms of what he described as *Stephanocircus dasyuri*. Indeed, in his "Rejoinder" (already quoted) he endeavoured to make a strong point of this, for he wrote: "It is at least remarkable that one supposed species should be all males, and the others all females. Were such the case they might produce a hybrid in consonance with Mr. Baker's classification." Unhappily for this argument, as I have already shown, *two species were taken from one animal*, and although no males of one form were found, both sexes of the other were represented. Again, in reference to the fleas found upon rats by the authorities of the Department of Public Health, I may point out that it was not at all an uncommon experience to find two species upon a single animal—indeed, such was frequently the case. Dr. Tidswell showed me a number of examples. From this it will be seen how careful a collector should be when collecting these parasites for study and observation, and how important it is to bear this in mind when dealing with animals—parasitic or otherwise—that have the power of spreading disease.