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ON FIVE NEW SPECIES OF TICKS (ARACHNIDA IXODOIDEA)

BY

CECIL WARBURTON, M.A.

FROM PARASITOLOGY, VOL. XXIV, NO. 4, 25 JANUARY, 1933

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[From PARASITOLOGY, Vol. XXIV, No. 4, 25 January, 1933.]

ON FIVE NEW SPECIES OF TICKS (ARACHNIDA IXODOIDEA).

IXODES PETAURISTAE, *I. AMPULLACEUS*, *DERMACENTOR IMITANS*, *AMBLYOMMA LATICAUDAE* AND *APONOMMA DRACONIS*, WITH NOTES ON THREE PREVIOUSLY DESCRIBED SPECIES, *ORNITHODORUS FRANCHINII* TONELLI-RONDELLI, *HAEMAPHYSALIS COOLEYI* BEDFORD AND *RHIPICEPHALUS MACULATUS* NEUMANN.

By CECIL WARBURTON, M.A.

From the Molteno Institute of Parasitology, Cambridge.

(With Figures 1–7 in the Text and Figures 8 and 9 on Plate XXIII.)

Ixodes petauristae n.sp.

Male unknown.

Female (Fig. 1): *Scutum* (2·2 × 1·8 mm.) much longer than broad, with well-marked lateral folds on the anterior half; cervical grooves rather far apart at origin, then faint and divergent; some very fine punctations on the lateral folds and in the area between them and the cervical grooves, the posterior region very glossy and almost devoid of punctations. Emargination very slight. *Venter*: vulva between coxae IV. Genital grooves only slightly divergent, not extending beyond the anus. Anal groove horseshoe-shaped, then shallow and divergent. Spiracles nearly circular and very large (larger than coxa IV). *Capitulum* long; basis triangular, without cornua or auriculae, its ventral surface divided by a transverse line. Porose areas large, subrectangular, with narrow interval. Palps fairly stout; hypostome lanceolate, dentition 2|2, about twelve teeth per file, the outer the stronger. *Legs*: coxa I *deeply cleft into two equal flat teeth*, recalling that of *Rhipicephalus*, and very unusual in *Ixodes*; coxae II–IV with an external tooth, diminishing in size. Tarsi long (especially tarsus I) and tapering, the pad nearly as long as the rather weak claws.

Described from a single ♀ taken in Ceylon, May, 1930, from *Petaurista phillipensis* Link (Sciuridae), and communicated by Mr J. J. Cox of the Museum, Tring.

Type in Cambridge (N. 3872).

Of known *Ixodes* this fine species most resembles *I. acutitarsus* Karsch, from which it is easily distinguished by its smaller size, the different shape of the scutum, and the flattened teeth on coxa I.

Ixodes ampullaceus n.sp.

Male unknown.

Female (Fig. 2): body flask-shaped; lateral portions of the dorsum with numerous conspicuous hairs, directed inwards; median region less hairy and entirely destitute of hairs posteriorly. *Scutum* (1·3 × 0·8 mm.): longer than broad, broadest at the anterior third, glossy, moderately punctate with small discrete punctations; cervical grooves sigmoid, not invading the posterior third of the scutum; lateral grooves barely indicated. *Venter*: vulva between coxae IV; genital grooves narrow at first, widest at level of anus. Anal groove closed, nearly circular; posterior region of venter hairy. Spiracles transverse-oval, of moderate size, rather far removed from coxa IV. *Capitulum* long and slender. Basis without cornua. Porose areas large, pear-shaped, the narrow end of the pear attaining the posterior border at its outer extremity; the interval wide. Auriculae entirely absent. Hypostome lanceolate, the dentition rather obscure, there being a single external row of about nine stout teeth on either side, the other teeth being very fine and sharp. *Legs* smaller and weaker than in *I. rasus*, but similar, except that there is a more pronounced spine on coxa I. The coxae diverge greatly, the peculiar shape of the body causing coxae IV to be very far apart.

Described from 2 ♀ taken by Mr Rupert L. L. Hart on the "edible rat," *Cricetomys ganibicus*, in Uganda.

This species is very nearly allied to *I. rasus* Nn., and a single example might have suggested a freak specimen of that rather variable species, but the two females, being exactly alike, show that the flask-like shape is normal, and other differences appear on close examination. The basis capituli in its ventral aspect is small, rounded, and *entirely destitute of auriculae*, and the spur on coxa I is well marked.

Type in Cambridge (N. 3873).

Dermacentor imitans n.sp.

Male (Fig. 3): length 4–5 mm. (capitulum included), breadth 3–3·5 mm. *Scutum* rather narrow in front, widest at the posterior third; punctations few, shallow, inconspicuous; cervical grooves small sub-circular pits; lateral grooves well marked, beginning behind the very inconspicuous eyes and ending in front of the first festoon. Festoons well marked, short, their ventral scutes, (except the median) in most examples, produced posteriorly into chitinous tubercles similar to those on *Amblyomma mantiquirense* (in company with which species the specimens were taken). The specimens show in varying degree traces of white markings on the brown scutum, mostly obsolescent. Their position is indicated by the dotted lines in the figure. The most persistent are the white patches on the external festoons, and next are the linear markings on the scapulae. The whitish round blotches in front of the sub-median festoons are dimly visible in most specimens, but only a few show traces of

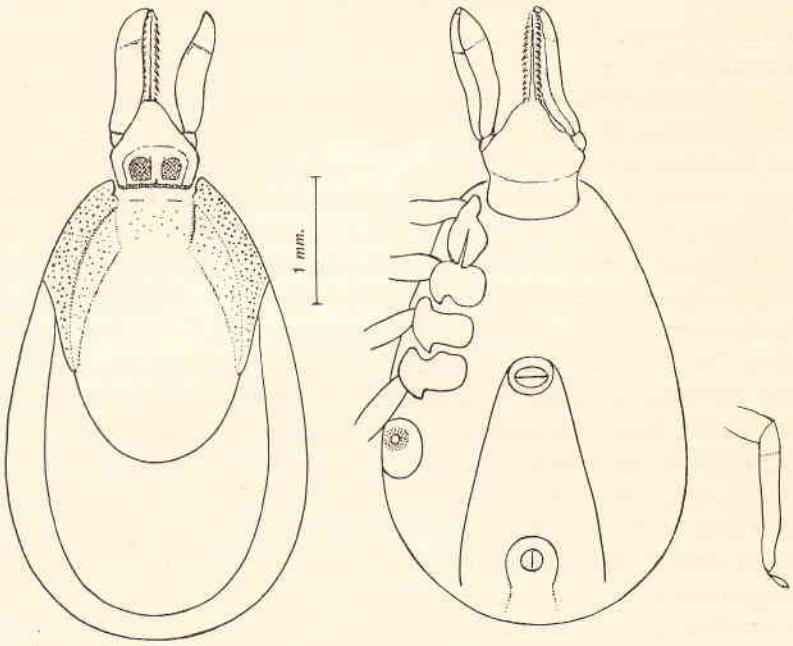

Fig. 1. *Ixodes petauristae* n.sp. ♀. Dorsal and ventral aspects and tarsus IV.

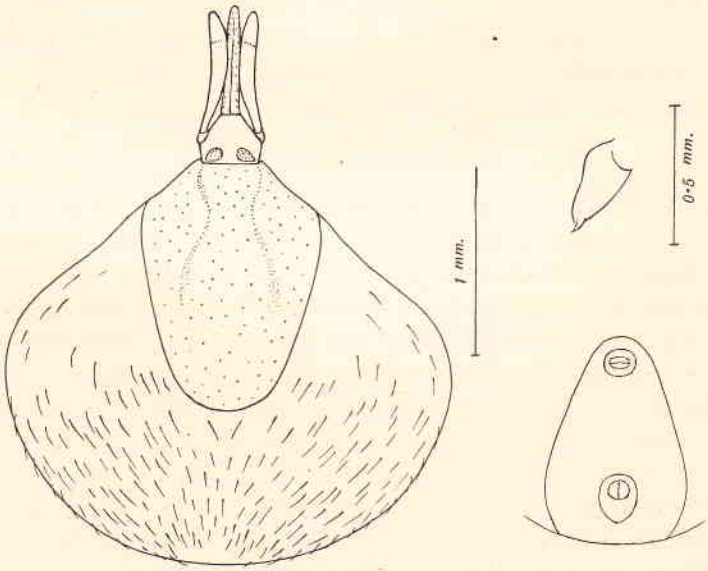

Fig. 2. *Ixodes ampullaceus* n.sp. ♀. Dorsal aspect; coxa I, posterior portion of venter.

white near the lateral grooves. *Capitulum*: basis rectangular, broader than long, with stout blunt cornua. Palps massive, articles 2 and 3 about equal in length and taken together somewhat broader across than the basis. Hypostome spatulate, well covered with fairly equal rather blunt teeth 3|3. *Venter*: spiracle very short comma-shaped with blunt tail. There is a dark anterior stigma, but all the granulations are exceedingly fine. Anal groove a shallow curve, with very ill-marked caudal prolongation. *Legs*: coxa I small, with the inner spur broad and blunt, the outer spur needle-like. Coxae II and III with very slight outer spur. Coxa IV about as broad as long, only very slightly bulging posteriorly, and practically devoid of spurs. Tarsus IV rather short, sloping abruptly and with two strong ventral spurs.

Female (Fig. 4): *Scutum* nearly circular (about 1·5 mm.); slightly angular at the very inconspicuous eyes. Punctations nearly absent but a few large shallow punctations appear, especially in the lateral groove region. Cervical grooves small oval pits, far apart; lateral grooves very shallow broad depressions chiefly indicated by the somewhat raised lateral fold. There are traces of a white pattern, but a few linear streaks are all that remain. *Capitulum*: basis with blunt diverging cornua, porose areas large, circular, with very slight interval; palps longer and less massive than in the ♂. Dentition 3|3, *Venter*: spiracle small (much smaller than coxa IV) with large oval stigma and fine granulation. *Legs* as in the ♂ except as regards coxa IV.

Described from 12 ♂♂, and 1 ♀ taken by Mr W. J. Hamilton, Jun., on a peccary (*Pecari angulatus*) at Turrialba, Costa Rica, on August 1st, 1927, and sent to Cambridge by Prof. R. Matheson. In the same tube were specimens of *Amblyomma mantiquirense*.

Types in Cambridge (N. 3874).

Amblyomma laticaudae n.sp.

Male (Fig. 5): *Scutum* longer than broad (3 × 2·6 mm.), inornate, with fairly numerous fine discrete punctations; no lateral grooves; cervical grooves short, sub-parallel; festoons fairly long, with shallow partitions; pseudoscutum indicated by a slight raising above the general surface. Eyes inconspicuous, but present in all three specimens on careful observation. *Venter* of the same colour (brown) as the scutum, rather corrugated posteriorly; spiracles large, short comma-shaped. *Capitulum* rather small; basis broader than long; punctate like the scutum; without cornua; hypostome spatulate, armed at its distal end with 3|3 fairly stout teeth, about five in each row. *Legs* slightly paler than the body; coxa I with two small blunt equal teeth, well separated; coxae II–IV with a small rather sharp external tooth. *Tarsi* rather short and stout, sloping somewhat abruptly. Pad half as long as the claws.

Female (Fig. 6): the gorged specimen measured 12 × 8 mm. *Scutum* (1·2 × 1·4 mm.) cordate with well-rounded angles, rather convex, punctations small, discrete, not numerous. No lateral grooves; cervical grooves reaching the posterior border. *Venter*: vulva rather anterior to coxae II; spiracle large,

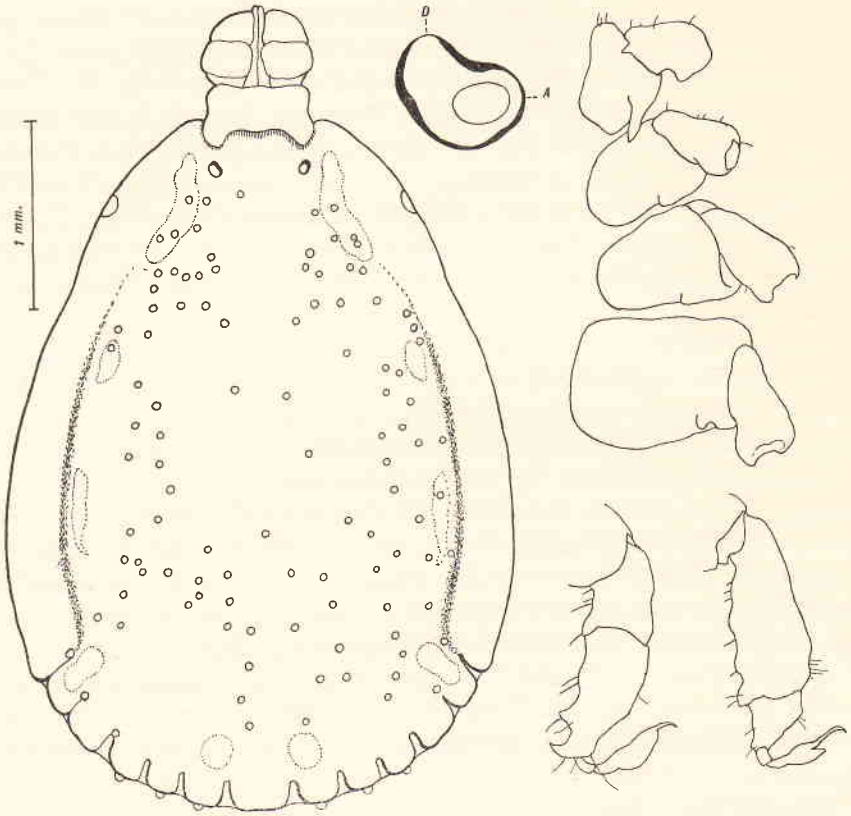

Fig. 3. *Dermacentor imitans* ♂. Dorsal aspect, spiracle, coxae and tarsi I and IV
The dotted areas indicate traces of ornamentation.

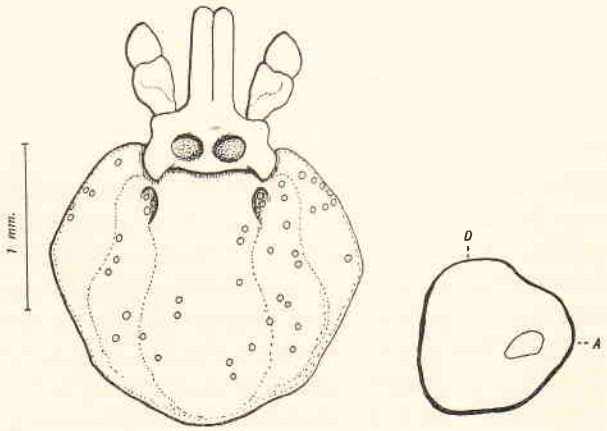

Fig. 4. *Dermacentor imitans* ♀. Capitulum, scutum and spiracle. Inconspicuous eyes
as in ♂, omitted through error.

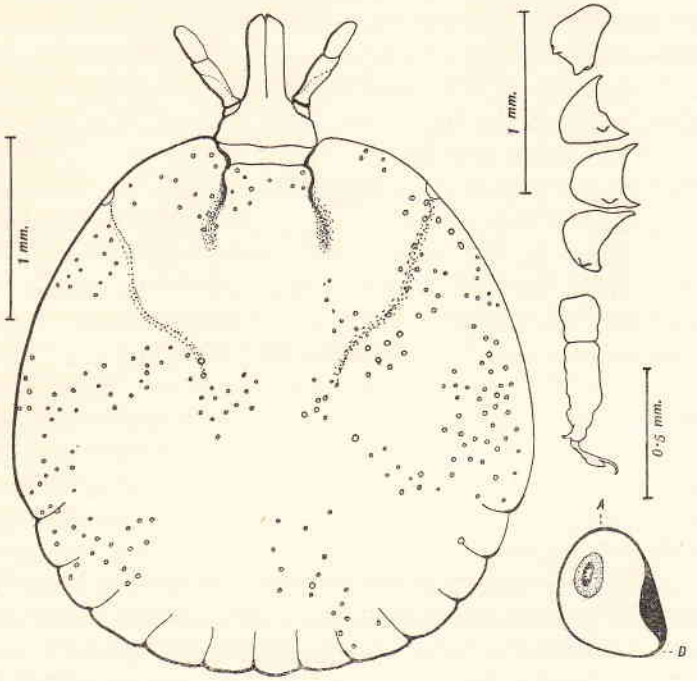

Fig. 5. *Amblyomma laticaudae* n.sp. ♂. Dorsal aspect, coxae, tarus IV and spiracle.

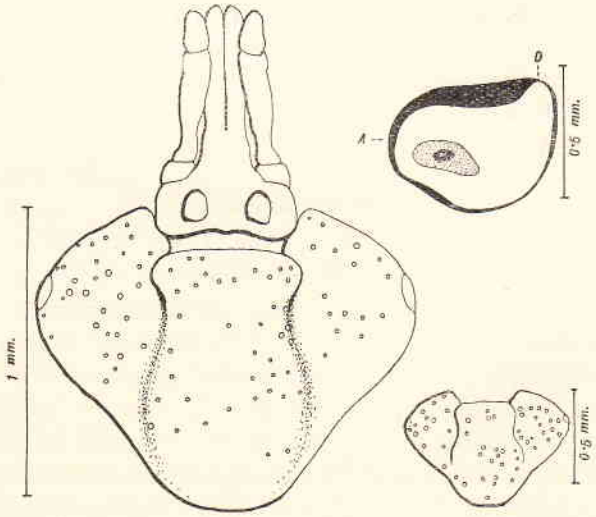

Fig. 6. *Amblyomma laticavdae* ♀. Capitulum, scutum and spiracle, and scutum of nymph.

sub-rectangular; anal groove ogival, the anus far from the posterior end in the gorged specimen. *Capitulum* longer than in the ♂; basis broader than long; porose areas circular, of moderate size, the interval equal to their diameter. Cornua absent. Palps and hypostome much longer than in the ♂; the distal end of the hypostome armed with 4|4 teeth, the inner row very small. *Legs* rather weak; armature as in the ♂.

Nymph with the general characters of the ♀, but the scutum is broader than long (Fig. 5) and the punctations are deeper and more conspicuous.

Described from 1 ♂, 1 ♀ (gorged) and 1 nymph taken from a sea-snake, *Laticauda colubrina*. The ticks were adhering to the skin, shed in captivity, at the Raffles Museum, Singapore, and were sent to Cambridge by the Assistant Curator, Mr Norman Smedley, who adds the following note: "The large ♀ and others were of the same grey as the snake and usually attached to the grey parts of the body, although I observed one on a black stripe. *Laticauda colubrina* belongs to that group of the sea-snakes possessing broad ventrals, and spends quite a considerable part of its time out of water, but even so the survival of the ticks while the snake is submerged seems remarkable."

The tick belongs to a group apparently connecting *Amblyomma* and *Aponomma*, and very difficult to differentiate because they seem to present no salient features, all the most distinctive characters such as ornamentation and peculiar leg armature being absent. The singularity of its host points to a specific difference, but there are few characters on which to found a diagnosis.

In 1910 S. Hirst and L. F. Hirst described (*Ann. and Mag. Nat. Hist.* **6**, 304) a tick from a sea-snake in the Solomon Islands under the name of *Amblyomma nitidum*, and Sharif (*Records of the Indian Museum*, **30**, Pt 3, p. 326) states that in the Indian Museum there are specimens of all stages from Port Blair, Andaman Islands. *A. nitidum* has very distinct eyes, and the dentition of the ♂ is 4|4. In the specimens here described the eyes were so feeble that they were at first missed, and the ticks ascribed to the genus *Aponomma*. Moreover the ♂ dentition is 3|3.

Types in the British Museum (Nat. Hist.).

Aponomma draconis n.sp.

Male (Fig. 7): *Scutum* (2·6 × 3 mm.) broader than long, broadest posteriorly, ornate, with three characteristic light markings on a nearly black ground—a small central spot and two pear-shaped lateral markings (see Fig. 7); the whole surface densely pitted with shallow punctations of two sizes—moderate and very small. Emargination slight; cervical grooves short and deep; no lateral grooves, festoons short and ill-defined. *Venter* of a lighter colour; spiracles long, comma-shaped. *Capitulum* of moderate length and of the colour of the scutum; basis triangular with slight rounded cornua, no auriculae; hypostome spatulate, dentition 3|3, with about eight small equal teeth per row. *Legs*: coxa I with two blunt teeth; coxae II–IV with a blunt external

tooth (arising from about the middle of coxa IV). Tarsi short and stout, sloping very abruptly; claws long; pad almost vestigial.

Female (Fig. 7): *Scutum* (1·5 × 2 mm.) cordate, ornate, with three light markings on a nearly black ground, the lateral markings sub-circular, the median marking linear. Punctation as in the ♂; emargination moderate. *Venter*: finely punctate; vulva between legs II and III; anal groove a semicircle; spiracle comma-shaped, but shorter and smaller than in the ♂. *Capitulum* as in the ♂ except for the porose areas which are circular with a narrow interval. *Legs* as in the ♂.

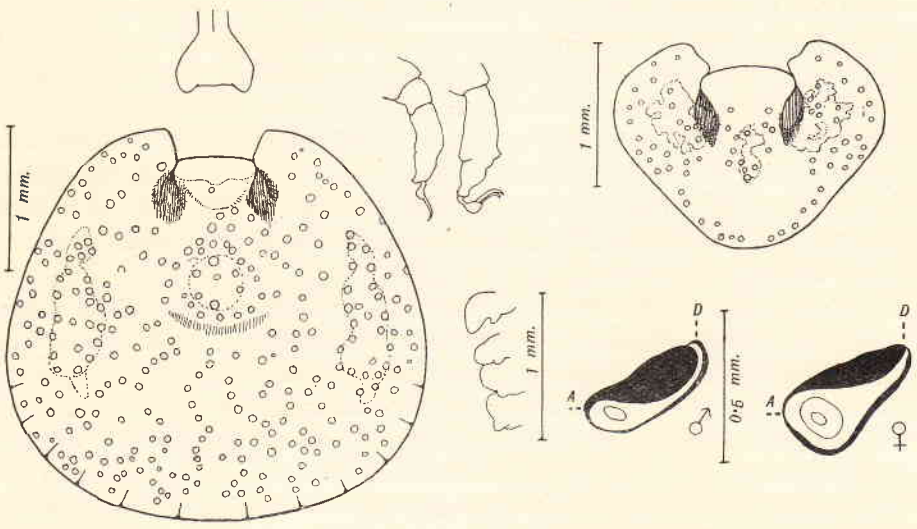

Fig. 7. *Aponomma draconis* n.sp. ♂ scutum, basis capituli, tarsi I and IV, coxae and spiracle. ♀ scutum and spiracle.

Described from 3 ♂♂ and 6 ♀♀ (in poor condition) taken from a "dragon," *Varanus komodoensis*, brought from Komodo Island, Flores, Dutch East Indies, and for some years past in the Zoological Gardens, London. Communicated by Dr P. A. Buxton, April, 1931.

Types in Cambridge (N. 3875).

Ornithodorus franchinii Tonelli-Rondelli 1930.

Dr Maria Tonelli-Rondelli (1930)[1] has described under this name a new Argasid tick taken in a hole in the Oasis of Gadames (Tripolitania) by Dr Lodato in 1927. In 1930 Prof. Franchini sent me specimens of the same tick with the intimation that it was being described by Dr Rondelli, and with the statement that it causes "tick-bite fever" in Cyrenaica and lives in all probability on small rodents in grottoes alongside rivulets. Dr Rondelli's figure—a half-tone photograph—gives an idea of the general facies of the

[1] *O. franchinii*, n.sp. un nuovo Argasidae della Tripolitania *Boll. de Zool.*, Anno 1, N. 3, 1930, pp. 113–15, Naples, N. Jovene.

animal, but it fails to indicate the peculiar texture of the integument, and I give here (Fig. 8) a reproduction of a drawing in which this character is more apparent.

The validity of this fine new species is not in question, but its *generic* position raises a question of great interest. Dr Rondelli has missed its remarkable resemblance to *Argas brumpti* Neumann 1907. This resemblance is by no means superficial—one of size and general appearance—but extends to such characters as the armature of the legs, and apparently to the mode of life. Neumann's specimens were collected by Dr Brumpt at Ogaden in Somaliland (no host mentioned), and the severity of its bite is commented on at some length. We have received other specimens from Mr S. W. J. Scholefield who collected them from the dust of an ant heap in the Yatta Plains, British East Africa. He states that the natives, who call it Kituñu, believe that it feeds on large animals—elephant, buffalo, eland and giraffe. They also mention rock-rabbits, but Scholefield says these do not occur on the plains, and that on the hills *O. savignyi* abounds, and may very likely have been confused with *A. brumpti*. "*A. brumpti* is said to be always obtainable in the dust where big game rolls."

Now *A. brumpti* Nn. always appeared to me a somewhat doubtful *Argas*. With its projecting hood and its leg armature it had the general facies of such an undoubted *Ornithodorus* as *O. lahorensis* or *O. turicata*, but it did possess one *Argas* characteristic—a faintly distinguishable border of different texture to the general integument. I always regarded it as a link between the two genera, to either of which it might have been attributed. And here we have a form so like *A. brumpti* that it seems impossible to consider them generically distinct, but it is without the only remaining *Argas* character of that species; *O. franchinii* has an integument showing no differentiation of texture along the sides, though the hood shows some indication of being bordered. I should hesitate to say that *Argas* and *Ornithodorus* ought to be combined into one genus. There are many cases in which it is convenient to retain distinct names for groups of animals which in fact shade off into one another (*Rhopalocera* and *Heterocera* for example), and this is very likely such a case. The alternative course, which I think should be pursued, is to remove *A. brumpti* from the genus *Argas* and place it in the genus *Ornithodorus*.

Haemaphysalis cooleyi Bedford 1929

In the 15*th Annual Report of the Director of Veterinary Services of the Union of South Africa* (October, 1929, p. 494), Mr G. H. A. Bedford describes a new *Haemaphysalis—H. cooleyi*—from specimens taken by himself and Prof. Cooley on *Procavia capensis coombsi* Roberts, (the Transvaal "dassie") near Onderstepoort in August, 1928. The brief description and apparently very diagrammatic figures suggested a remarkably featureless form, with mainly negative characteristics. Mr Bedford was kind enough to send me in March, 1932, three ♂♂ labelled "*Procavia coombsi* Rbts, Onderstepoorte 5. vi. 31,"

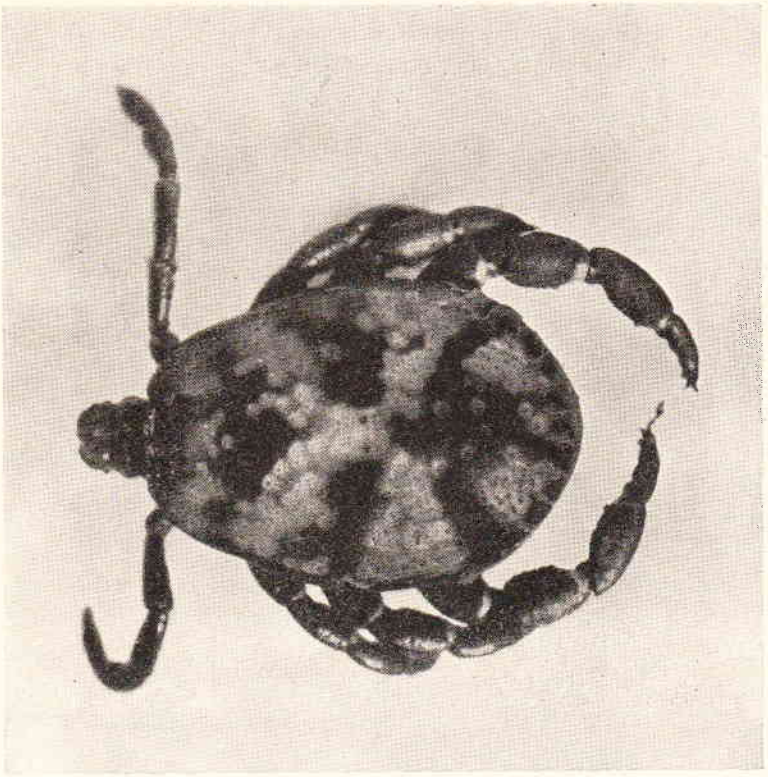

Fig. 9. *Rhipicephalus maculatus* Nn.

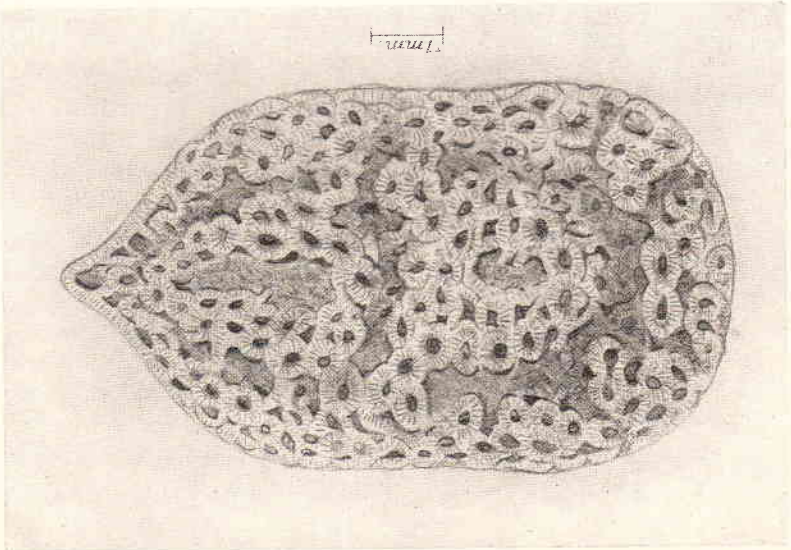

Fig. 8. *Ornithodorus franchinii* Tonelli-Rondelli. Dorsum.

from the examination of which I am able to supplement his description in the following respects:

H. cooleyi Bedford.

Male: body rather narrow in front, broadest at the posterior third. *Scutum*: cervical grooves almost linear and converging; lateral grooves fairly well marked and including the first festoon. Festoons feebly marked. The punctation is fine and shallow, and does not prevent the scutum from appearing glossy. *Capitulum*: basis trapezoidal, broadest in front. The lateral salience of article 2 of the palps is marked off by a constriction not shown in Mr Bedford's figure. The ventral process of article 3, mentioned in the description as present in the ♂, and presumably therefore also in the ♀, does not appear in Mr Bedford's figure 3 c. *Venter*: the spiracle is a narrow transverse oval, with the narrower end dorsal. *Legs*: the coxae are almost unarmed, the inner angles being blunt and hardly observable. Trochantal spurs absent. Tarsus IV short and thick, tapering very abruptly, almost humped. Pad small.

I have not seen the ♀ nor the immature forms. From the ♂ it is clear that the characteristics upon which one is able to seize are indeed few: no dorsal spines on the palps, very feeble coxal armature, etc. In such a case very careful drawings of any structures which are at all distinctive seem essential.

Before I had received Mr Bedford's specimens I was engaged in examining a large collection of African ticks submitted to me by Prof. R. A. Cooley of Montana, U.S.A., and his catalogue stated that tube 172 contained a new species of *Haemaphysalis* which Mr Bedford was describing and naming after Prof. Cooley. Now the specimens in this tube, 1 ♂ and 1 ♀, did not at all agree with Mr Bedford's description. They were, in fact, examples of an already known species *H. numidiana* Nn. 1905. The label in the tube stated that the ticks were taken from *Pedetes caffer* Pall. (Spring hare) on October 1st, 1928. Now in Mr Bedford's description of *H. cooleyi* he states that the adults were taken on *Procavia capensis coombsi* on August 22nd, 1928, and that "several engorged nymphs and larvae were taken off *Pedetes caffer* Pall. at Pienaars River, Transvaal on October 1st, 1928 (coll. Prof. R. A. Cooley)." In view of the fact that the ticks in the collection submitted to me by Prof. Cooley as taken on *P. caffer* on October 1st, 1928, were *H. numidiana*, a doubt arises as to whether Mr Bedford was justified in attributing the nymphs from *Pedetes* to his new species which he obtained from *Procavia*.

Rhipicephalus maculatus Neumann 1901.

In 1901 Neumann described *R. maculatus* from a ♂ and 2 ♀♀ in the Berlin Museum, taken in the Cameroons on *Platymeris horrida*. Unfortunately no figure was given. Its general resemblance to *R. pulchellus* was noted, and its ornamentation described as consisting of a large number of detached yellowish spots.

We have received at Cambridge from time to time specimens which we have attributed—with some hesitation—to this species, but in all the dorsal pattern has been very fragmentary, and in 1912 I discussed the matter (*Parasitology*, **5**, 17) and gave a figure of a specimen in which the dorsal pattern was most complete.

Recently we have received from Mr E. Aneurin Lewis of Uganda specimens which we believe to reveal the true ornamentation of this fine species, and we give here (Fig. 9) a microphotograph of one of the males. The spots hitherto observed in specimens that have been attributed to this species all fall into place in the complete pattern, and the resemblance to *R. pulchellus* is increased.

Curiously enough, we have recently received from Prof. Franchini a variety of *R. pulchellus* from Italian Somaliland (host unrecorded) in which all the white markings were obsolete except patches on the scapulae, though the same consignment contained intermediate forms clearly linking these up with full-patterned specimens. In all previously received consignments of the exceedingly common *R. pulchellus* no variation in design of ornamentation had been observed, the pattern being always vivid and well marked, but in view of the above facts it is impossible to exclude the possibility of the two species having been confounded when the pattern was largely obsolete.

According to Neumann, while the legs of *R. pulchellus* are ornate, those of *R. maculatus* are uniformly brown, and in cases of obsolescent pattern this would appear to be the best character on which to separate the two species.

(*MS. received for publication* 19. VIII. 1932.—Ed.)