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**The Annals and magazine of natural history; zoology, botany, and geology  
being a continuation of the Annals combined with Loudon and  
Charlesworth's Magazine of Natural History.**

London, Taylor and Francis, Ltd.

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**8th ser. v. 6 (1910):** <http://www.biodiversitylibrary.org/item/61726>

Page(s): Page 299, Page 300, Page 301, Page 302, Page 303, Page 304, Page 305, Page 306,  
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Expanse 2 2 inches (55 mm.).

Upperside fuscous; an irregular, ochreous, somewhat circular spot on costa beyond the cell extending to the second discoidal nervule, partly surrounded, particularly at the outer portion, by pale shining violet. A discal series of five small white spots in interspaces 2-6, followed by a waved submarginal pale ochreous line extending the whole length of termen.

Hind wing fuscous; a small white spot in interspaces 2-4 on the disc, a continuation of those on the fore wing; the ochreous submarginal line extends from costa to possibly anal angle (the specimen is too worn for certainty).

Underside: both wings pale ochreous, with minute darker striæ; a somewhat darker ill-defined basal and discal band crossing both wings; a submarginal series of inconspicuous brown specks.

Antennæ ochreous brown; thorax and abdomen the same colour as the wings.

The specimen is unfortunately in very bad condition, but there is no appearance of the deep violet suffusion of the male.

Mr. Wood-Mason's conjecture that the venation of the female would, unlike the male, conform to the generality of butterflies is confirmed.

I am indebted to Mr. Williams Hockin for the loan of the butterfly for description; he informs me that it is found in Travancore at the foot of the hills, or between that and 3000 feet. "It is only found on *Itah* (small hill bamboo) in drizzly weather in October."

It is evidently very rare.

XXXV.—*Descriptions of Five new Species of Ticks* (Ixodidæ).

By STANLEY HIRST and L. F. HIRST, M.D.

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*Amblyomma darwini*, sp. n.

♂. — *Scutum* oval in shape, longer than broad, and narrowed anteriorly. Cervical grooves deep, fairly long, and slightly divergent posteriorly. In line with and at some distance behind each of the cervical grooves there is a small oval impression, and a little to the outer of this



impression a pair of similar impressions is present. Postero-median groove long, straight, and not very deep; anteriorly it is almost confluent with a small but rather deep circular pit. Postero-lateral grooves deep at the anterior end, fairly long, and broader than the postero-median. Punctures numerous, small, and mostly subequal in size; towards the sides, however, they are a little larger than elsewhere. Eyes pale and very slightly convex (fig. 1).

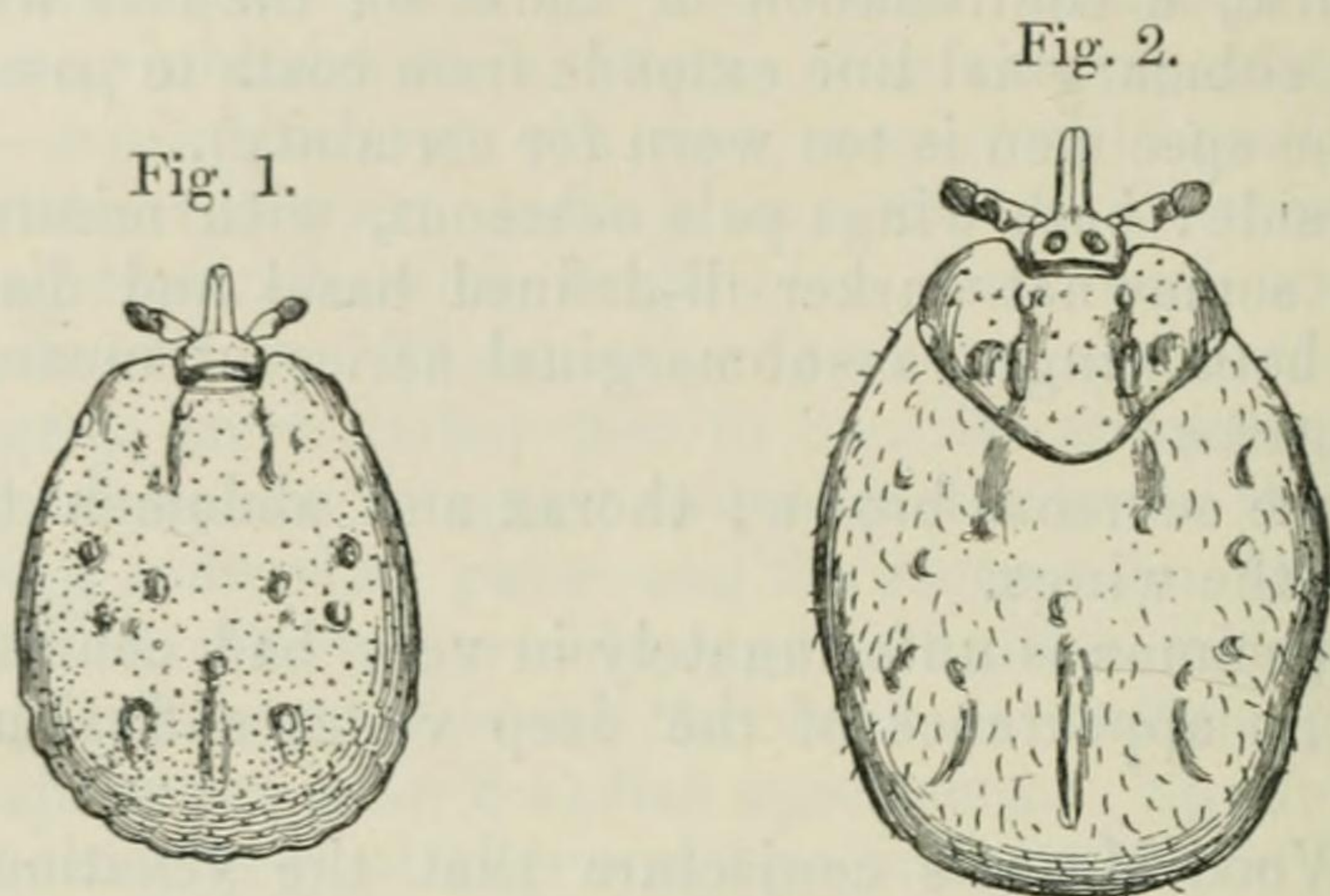


Fig. 1.—*Amblyomma darwini*, ♂. Dorsal view,  $\times 10$ .  
 Fig. 2.— " " ♀. " "  $\times 8$ .

*Ventral surface* furnished with numerous rather superficial punctures. *Stigmata* elongate and almost comma-shaped.

*Rostrum* short, its base almost smooth above. *Hypostome* with three files of teeth on each side. Dorsal surface of the second segment of the palp towards the middle with a distinct prominence (which is also present in the female).

*Legs* of moderate length. Coxa of first leg armed with two small spurs; coxæ of legs 2-4 each with a single small conical spur, that of the fourth being the longest. Tarsus of fourth only slightly convex dorsally and furnished with two terminal spurs below.

*Colour* deep brown above, dirty yellowish-white below.

*Measurements in mm.*—Length of scutum 2.56, its greatest breadth 2.12; length of rostrum .64.

♀.—Body oval in shape and furnished with a number of depressions, which much resemble those of the scutum of the male. Numerous pale-coloured hairs are present, which are comparatively slender and of small size.

*Scutum* wider than long and heart-shaped. Cervical grooves short. A second pair of deep and rather large



grooves is present behind and in line with the cervicals, and sometimes almost continuous with them; on each side of this posterior pair of grooves there is a lateral impression, which is well marked in some examples, but indistinct in others. Punctures fairly numerous, but not very deep, and rather unequal in size (fig. 2).

*Stigmata* almost comma-shaped.

*Rostrum* rather short. Porose areas deep and oval in shape. Hypostome with three files of teeth on each side.

*Legs*.—Armature of the coxæ of the legs similar to that of the male. Tarsus of fourth leg of different shape to that of the male; it is stout, rather strongly convex dorsally, and the slope is long but not very steep, the apex being narrowed.

*Colour*.—Body dark brown above, the ventral surface yellowish-brown. Scutum very dark brown, with irregular pale patches (which are only visible in the dry examples). Legs the same colour as the scutum and with the distal ends of the segments ringed with white.

*Measurements in mm.*—Length of body 4, width of body 2.75; length of scutum 1.12, width of scutum 1.6; length of rostrum .9.

*Material*.—Three males (one of which is the type) and two females, found on an *Amblyrhynchus cristatus* from Albemarle Island, Galapagos. Three females (and also several nymphs and larvæ) from an *Amblyrhynchus cristatus* labelled Galapagos (exact locality not given). Two dry female specimens from St. Paul's Island, which were collected by Charles Darwin, and two dry females labelled Galapagos, also collected by Darwin.

*Remarks*.—The specimens collected by Darwin were identified by Prof. Neumann as *A. hirtum*, Nn. The male of *A. darwini*, sp. n., is very unlike that of *A. hirtum* (cf. Neumann's fig. and our fig. 1). The scutum of the female of *A. darwini* is very much smoother than that of *A. hirtum*, and the punctures are not so deep and are further apart. We may remark here that all the specimens of *A. hirtum*, Nn., were collected by Darwin; according to his labels both the species under discussion occur on St. Paul's Island.

*Amblyomma boulengeri*, sp. n.

♂.—*Scutum* longer than wide, and slightly narrowed anteriorly. Punctures numerous and very fine. Anterior part of cervical grooves deep and slightly curved; posterior part very slight and inconspicuous, divergent from that of the opposite side, and extending as far backwards as the



postero-lateral margin of the pseudoscutum (see *Colour*). A pair of characteristic oblique impressions, partly formed of enlarged punctures, are present posteriorly, one on each side of the scutum; their shape resembles somewhat that of a comma, the broad end being situated close to the margin (near to the anteriormost festoon and almost touching the upper end of the stigma), the narrowed end pointing inwards and connected by a dark and narrow line (and sometimes by an ill-defined depression also) with the posterior margin of the pseudoscutum. Postero-median groove represented by a smooth dark line. Marginal grooves are not present. Fes-toons short and fairly well defined. Eyes small, flat, and pale in colour (fig. 3).

Fig. 3.

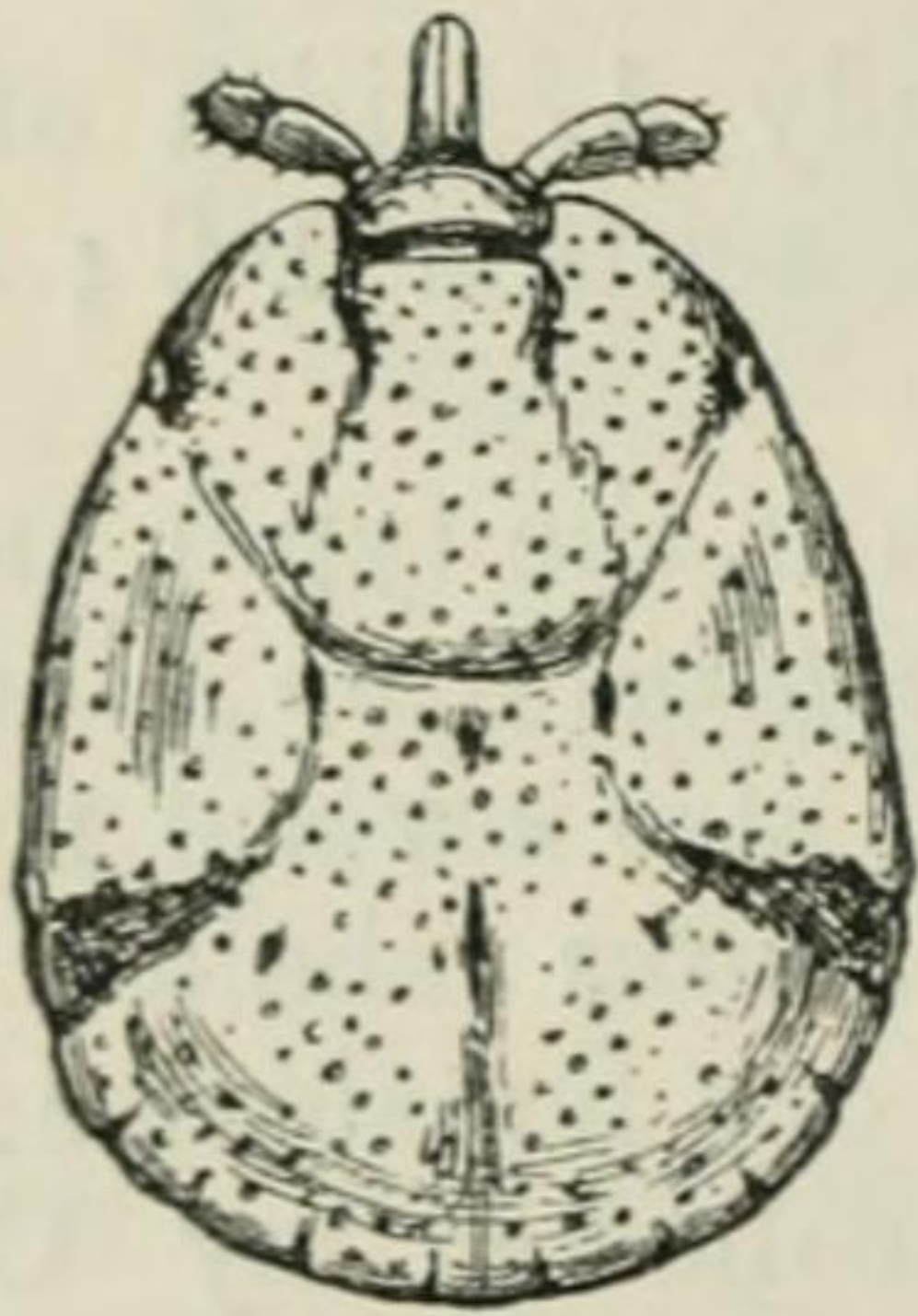


Fig. 4.

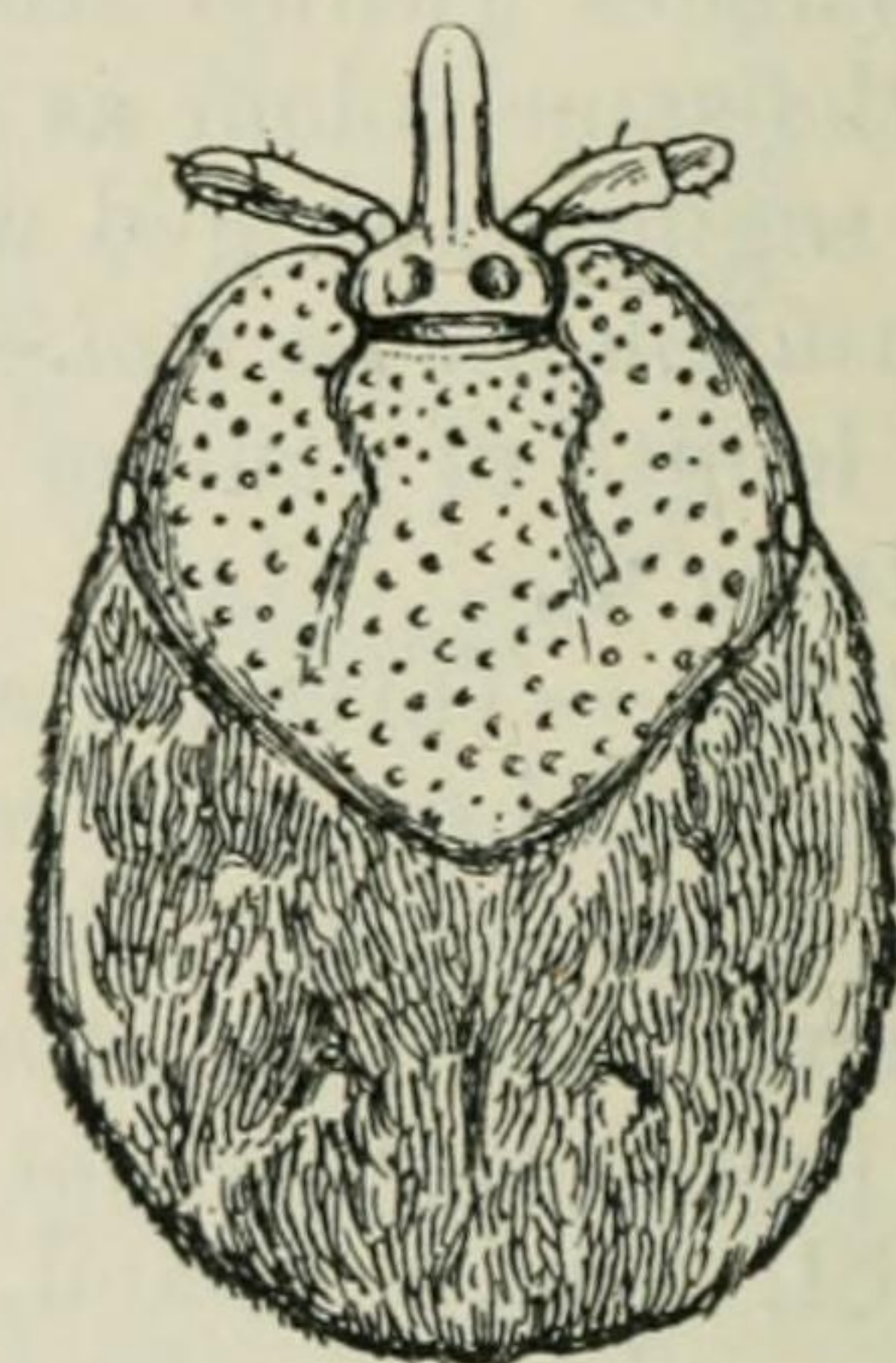


Fig. 3.—*Amblyomma bouleengeri*, ♂. Dorsal view, × 16.  
 Fig. 4.— " " " ♀. " " × 13.

*Ventral surface* finely wrinkled. *Stigmata* long, narrow, and shaped like a comma.

*Rostrum* short; its base rectangular, the dorsal surface being furnished with a number of minute punctures. Hypostome with three files of teeth on each side.

*Legs* short. Coxa of first leg with two short and inconspicuous spurs; coxæ of second and third unarmed (or with a single very short spur); coxa of fourth with a single very short spur. Tarsus of fourth rather gradually narrowed.

*Colour*.—A pseudoscutum, which is light brown in colour in dried specimens and copper-coloured when immersed in spirit, is present, and the central part enclosed by the cervical grooves is sometimes darker than the sides; its posterior margin is delimited by a pale transverse line. The rest of the surface of the scutum is drab (in spirit copper-coloured).



A brown speck is present above each eye and a very short dark longitudinal mark on either side of the pale transverse line, a minute central speck being present between these two. The postero-median groove and the oblique lateral depressions are also dark in colour.

*Measurements in mm.*—Length of scutum 1.75, its greatest breadth 1.4; length of rostrum .47.

♀.—*Body* oval; the part of the dorsal surface which is left uncovered by the scutum is furnished with numerous short and stout drab-coloured hairs.

*Scutum* cordiform. Punctures numerous, fairly deep, and subequal in size. Cervical grooves well-defined and coming to an end at some distance from the posterior margin. Eyes small, flat, and inconspicuous; they are yellowish in colour (fig. 4).

*Stigmata* comma-shaped.

*Rostrum.*—Porose areas well-defined and oval in shape; they are separated from one another by an interval which is about equal to their diameter. Hypostome with three files of teeth on each side.

*Legs* short. Coxa of first leg with two short spurs; coxæ of legs 2-4 each with a single very short spur. Tarsus of fourth leg stouter and not so gradually narrowed as that of the male.

*Colour* brownish, the hairs of the body drab-coloured. Chitin of scutum dark brown, but covered with a thin layer of pale enamel.

*Measurements in mm.*—Length of body 2.5, its greatest breadth 2; length of scutum 1.26, its greatest breadth 1.53; length of rostrum .86.

*Material.*—Two males (one of which is the type) and a female, from a *Tropidurus delanonis*, captured on Hood Island (Galapagos).

A large partially distended female, which probably belongs to this new species, was found on a *Tropidurus barringtonensis* from Barrington Island. It agrees closely with the female from Hood Island in most respects, but the body and legs are much paler in colour, the punctures of the scutum closer together, and its posterior end more rounded off. Another female, taken on a *Conolophus subcristatus* from the Galapagos (exact locality not given), is very similar to that from Barrington Island.

*Remarks.*—We have much pleasure in dedicating the new species described above to Mr. G. A. Boulenger. It is owing to his kindness that we have been enabled to examine most of the species which are described in this paper.



In the British Museum collection there is a large distended female tick from the Lake of Chalco, near Mexico, which has been determined by Prof. Neumann as *Amblyomma pilosum*, Nn. (originally described from the Galapagos). It differs from the female of *A. bouleengeri* in having the scutum triangular in shape and much rougher, the punctures being larger and closer together. Moreover, the stigmata are somewhat different in shape.

*Amblyomma nitidum*, sp. n.

♂.—*Scutum* longer than broad and oval in shape; its surface smooth, shining, and furnished with numerous very minute punctures, those which are placed near to the lateral margins being a little larger than those in the middle. Cervical grooves normal in appearance, the superficial posterior part short. Postero-median groove represented by a faint dark line. Postero-lateral grooves present, but ill-defined. Marginal grooves represented by very ill-defined and superficial depressions, which come to an end in front of the anteriormost festoon. Eyes minute and almost invisible (fig. 5).

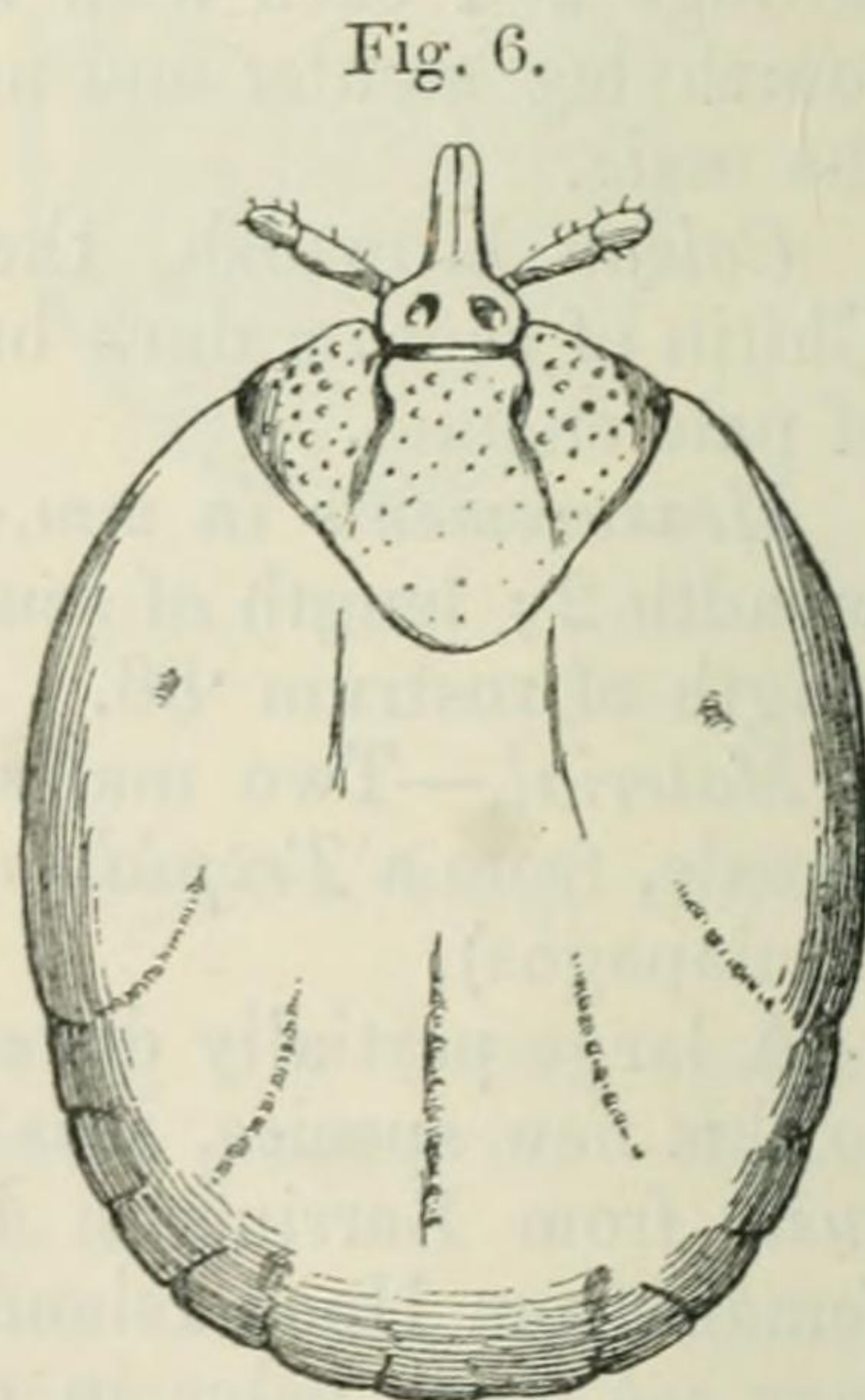
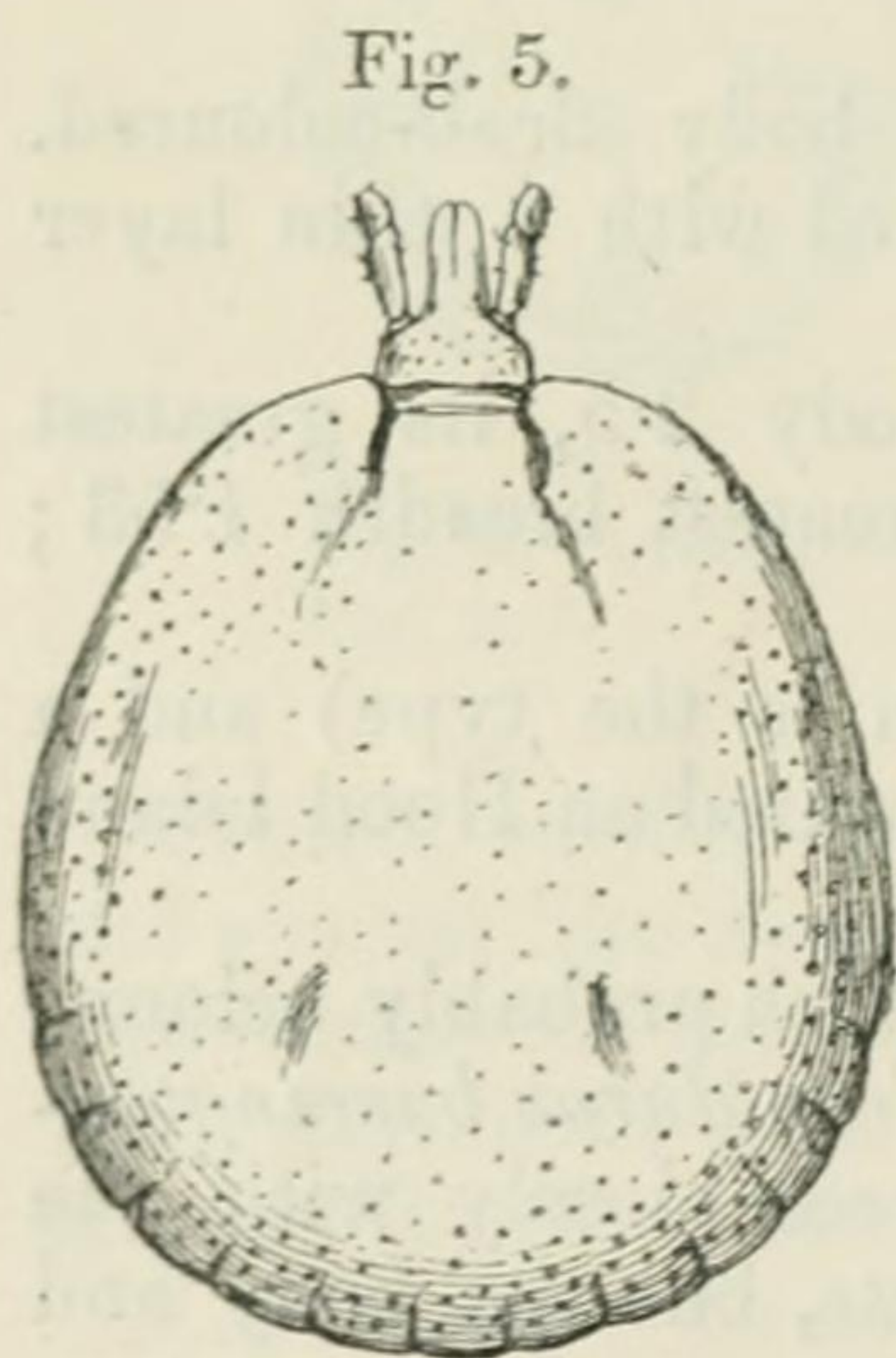


Fig. 5.—*Amblyomma nitidum*, ♂. Dorsal view,  $\times 9$ .  
 Fig. 6.— " " ♀. " "  $\times 8$ .

*Ventral surface* much furrowed and pitted, especially posteriorly. *Stigmata* very broad and roughly triangular in shape. *Rostrum* of moderate length, the base finely punctured above. Hypostome armed with four files of teeth on each side.



*Legs.*—Coxa of first leg armed with two very short spurs, coxæ of the other legs each with a single very short spur, that of the fourth being a little longer than those of the second or third. Tarsus of fourth not very abruptly narrowed.

*Colour* deep brown both above and below, the legs pale brown.

*Measurements in mm.*—Length of scutum 4.1, its greatest breadth 3.5; length of rostrum 1.08.

♀.—*Body* oval in shape.

*Scutum* roughly triangular in shape, but the sides are slightly incurved at the points at which the cervical grooves reach them, and this causes a slight trilobation. Posterior angle obtuse. Punctures numerous, those in the central area (marked off by the cervical grooves) being a little smaller than those of the sides. Cervical grooves well-defined and reaching the postero-lateral border. Eyes very inconspicuous (fig. 6).

*Stigmata* broad and shaped rather like a human ear.

*Rostrum* fairly long; the porose areas oval and of rather large size. Hypostome with four files of teeth on each side.

*Legs.*—Spurs of the coxæ of the legs very weak; in number they are the same as in the male. Tarsus of fourth leg very similar to that of the male.

*Colour.*—Body brownish, scutum deep brown, legs pale brown.

*Measurements in mm.*—Length of body 5.2, its greatest breadth 4; length of scutum 1.45, its greatest breadth 2.03.

*Material.*—A male and a female collected on a sea-snake in the Solomon Islands by Staff-Surgeon Vidal Sharpe, R.N.

*Amblyomma (Aponomma?) neglectum*, sp. n.

♂.—*Scutum* a little longer than wide, narrowed anteriorly, and oval in shape; its surface smooth and shining, but slightly depressed and uneven towards the sides in the anterior half. Punctures very numerous, especially in the posterior half and towards the margins, some of those which are situated close to the margins being of larger size than the others; in the middle of the anterior part of the surface the punctures are minute and fewer in number. Cervical grooves very short and shaped like an inverted comma. Marginal grooves absent. Postero-median groove represented by a dark unpunctured line. Postero-lateral grooves in the form of slight oval depressions. Fестоons short and not very distinct. Eyes apparently absent (fig. 7).

*Ventral surface* furnished with numerous distinct punctures.



*Stigmata* comma-shaped.

*Rostrum* fairly long, the base sparsely punctured above. [Hypostome broken.]

*Legs*.—Coxa of first leg armed with two short spurs; coxæ of legs 2-4 each with a single short spur, that of the fourth being the longest. Tarsus of fourth leg stout and furnished with a dorsal hump, sloping rather steeply to the narrowed apex; ventral surface of the tarsus with two spurs, the apical one being well-developed.

*Colour*.—Ground-colour of scutum deep mahogany-brown. A minute spot of metallic green is present on each of the scapulæ, and a fairly large median spot of the same colour is also present at about a quarter of the length of the scutum from the anterior emargination.

*Measurements in mm.*—Length of scutum 3.3, its greatest breadth 3.2; length of rostrum 1.11.

♀.—*Scutum* wider than long and heart-shaped. Punctures numerous and mostly fairly deep, but those in the posterior angle are superficial. Cervical grooves rather large and comma-shaped; they are continued posteriorly by shallow and ill-defined depressions. Eyes pale, flat, and inconspicuous (fig. 8).

Fig. 7.

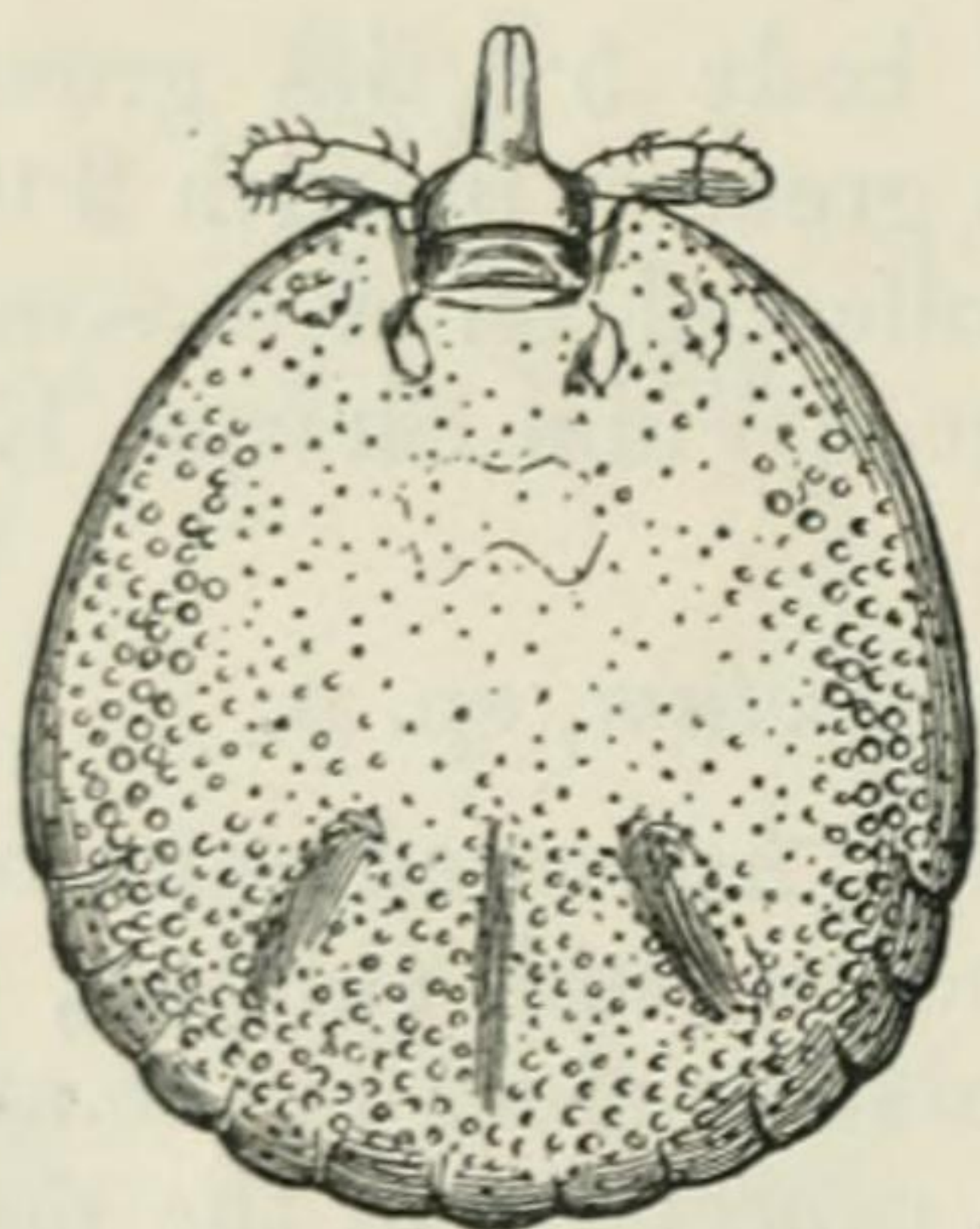


Fig. 8.

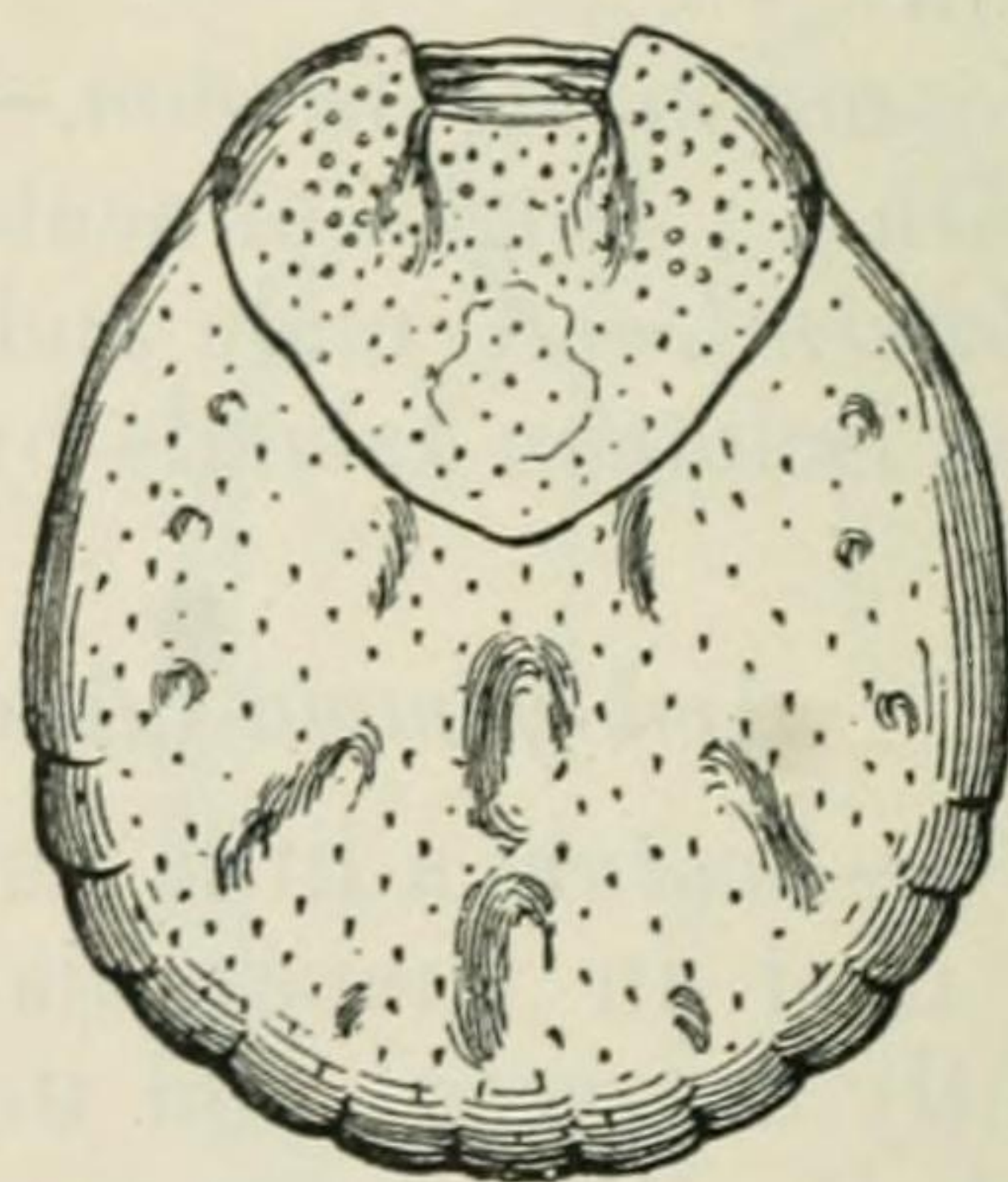


Fig. 7.—*Amblyomma* (*Aponomma*?) *neglectum*, ♂. Dorsal view, × 9.  
 Fig. 8.— " " " ♀. " " × 9.

*Ventral surface* smooth; the punctures and hairs are minute and inconspicuous.

*Stigmata* small and comma-shaped.

*Rostrum*.—Porose areas large, oval, and separated from one another by an interval which is greater than their diameter. [Hypostome broken.]

*Legs*.—Coxa of first leg with two very short spurs; coxæ



of legs 2-4 each with a single short spur, that of the fourth being slightly the longest. Tarsus of fourth leg closely resembling that of the male.

*Colour*.—Body brownish. Scutum deep brown and with a large metallic spot at a short distance from the posterior angle. Traces of metallic coloration are also present on the scapulæ (?).

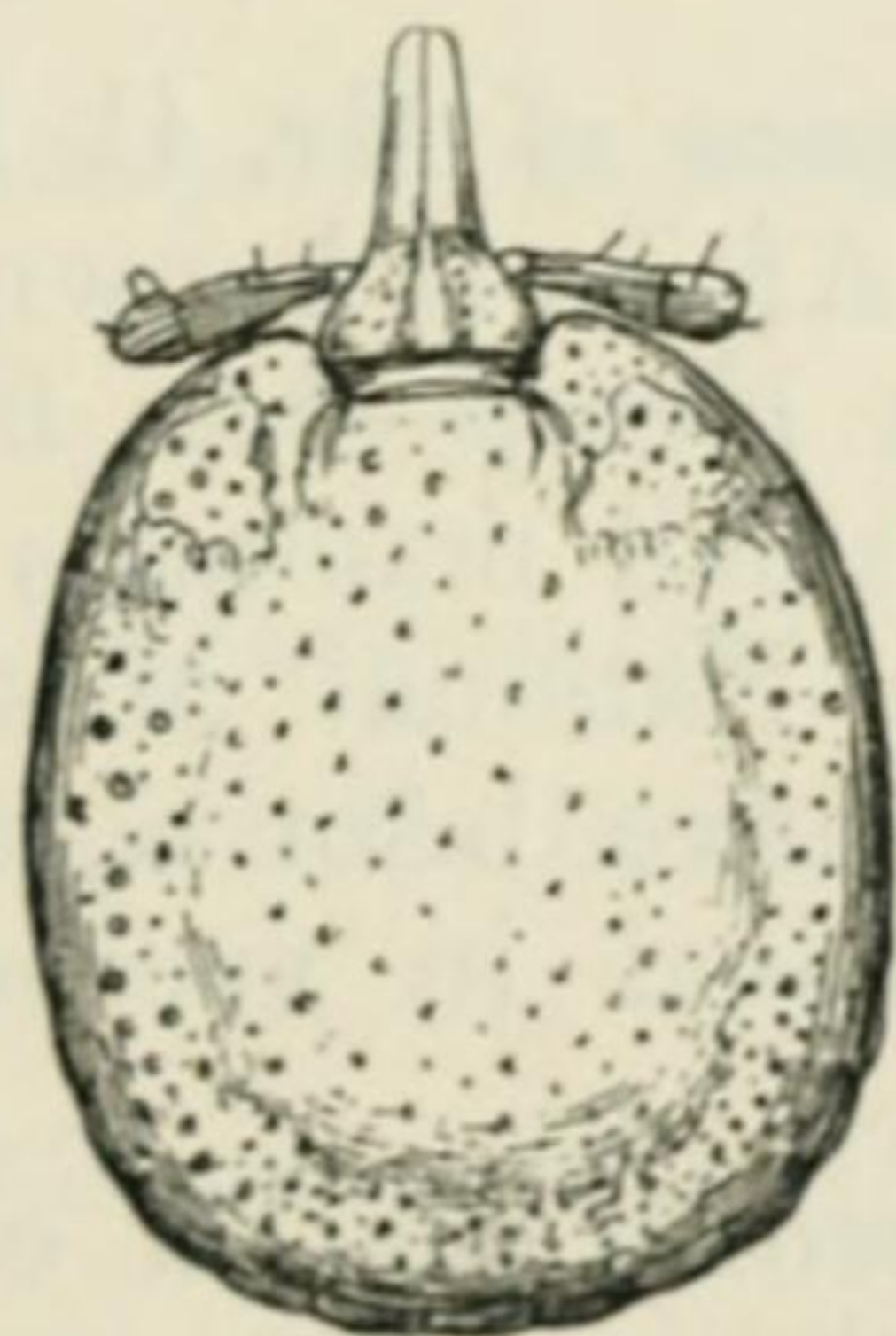
*Measurements in mm.*—Length of body 4, its greatest breadth 3·8; length of scutum 1·78, its greatest breadth 2·24.

*Material*.—A male and a female from *Varanus albigularis*, Deelfontein, Cape Colony, collected by Colonel Sloggett.

*Amblyomma (Aponomma) tenimberense*, sp. n.

♂.—*Scutum* longer than wide and roughly oval in shape, but slightly truncate posteriorly; its surface smooth and furnished with numerous punctures, which are superficial and unequal in size. Cervical grooves shallow, very short, and slightly curved. Marginal grooves are not present. Eyes absent (fig. 9).

Fig. 9.



*Amblyomma (Aponomma) tenimberense*, ♂. Dorsal view,  $\times 10$ .

*Ventral surface* punctured and slightly wrinkled posteriorly. *Stigmata* comma-shaped.

*Rostrum* long, the dorsal surface of the base furnished with a very slight median (longitudinal) keel. Hypostome furnished with three files of teeth on each side.

*Legs*.—Coxa of first leg armed with two spurs, the inner of them being smaller than the outer. Coxæ of the three posterior legs armed each with a single stout conical spur. Tarsus of fourth leg progressively attenuate and without any dorsal protuberance.

*Colour* of scutum dark brown. An iridescent greenish



spot is present on the scapulæ, and a continuous marginal band of the same colour runs down either side, reaching the posterior end of the scutum. Additional traces of metallic green are present in the middle of the posterior margin (and it is possible that they are connected with the lateral bands in perfect specimens). Ventral surface a dirty yellowish-white.

*Measurements in mm.*—Length of scutum 2·75, its greatest breadth 2·4; length of rostrum 1·26.

*Material.*—A single example of the male sex from *Varanus indicus*, Timor-Laut.

*Remarks.*—This species is closely allied to *A. gervaisii*, Lucas, from which it chiefly differs in the shape of the tarsus of the fourth leg and in the shape of the scutum.

XXXVI.—*List of Mammals from Mount Kilimanjaro, obtained by Mr. Robin Kemp, and presented to the British Museum by Mr. C. D. Rudd.* By OLDFIELD THOMAS, F.R.S.

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BY the generous assistance of Mr. C. D. Rudd, whose zoological exploration of S. Africa is known to all mammalogists, a collector—Mr. Robin Kemp—has been employed for the past year in obtaining small mammals in British East Africa for the benefit of the National Museum. A considerable number of new species have been obtained, and these have been described on arrival in successive numbers of the 'Annals.'

Mr. Kemp has recently sent a collection from Mount Kilimanjaro, and it is thought that a complete list of them may in this case prove of utility to other workers on African mammals.

The collection was obtained at two localities—Taveta, alt. 2500', at the foot of the mountain, on the British East African side; and Rombo, a mission station on the German side of the frontier, at an altitude on the mountain of about 6000'. Mr. Kemp was much indebted to the missionaries at Rombo for help and hospitality.

In nearly all cases the species obtained at the two places prove to be different, those from Rombo being Kilimanjaro mountain forms, while those from Taveta belong to the hot country and desert fauna which stretches northwards through Voi and Kitui to the region north-east of Mount Kenya.