NOTES ON INDIAN MYGALOMORPH SPIDERS, II.

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The first series of these notes appeared in 1915 in Vol. XI of these "Records." Two new species and some additional information were added in 1921 (Vol. XXII) in an account of the Spiders of Barkuda Island in the Chilka Lake. I have to thank Mr. H. Chennappaiya, Zoological Assistant in the Madras Government Museum, for assistance in working out the additional material, mostly sent by the Indian Museum, Calcutta, which is dealt with in this paper.

Mygalomorph spiders are popularly regarded as poisonous, but authentic records of their bites seem to be rare. The effects of bites of two species, *Macrothele vidua* and *Haploclastus nilgirinus*, are described below (pp. 73 & 81).

Family CTENIZIDAE.

Genus **Heligmomerus** Simon.

The specimen recorded in the first series of these notes, and stated therein as possibly introduced into the Botanical Gardens at Sibpur near Calcutta, was probably indigenous, as a well-grown female of the genus has since been found on the ground floor of the Museum House, Calcutta, and a number of smaller ones have been sent from Serampore by Mrs. Drake. In the absence of males the species cannot be adequately defined.

The species described as *Acanthodon barkudensis* in the second paper mentioned above, proves on further examination to have the tibiae of the third pair of legs of the female excavate above and must, therefore, be transferred to this genus. In the male this excavation is, however, obsolete—which suggests that *Idiops biharicus*, described from a male only in the first paper, may perhaps also belong to this genus.

Genus **Idiops** Perty.

Simon's merging of the genus *Acanthodon* in this genus escaped my notice when I was writing the second of the above mentioned papers, and the common trap-door spider of Madras, therein referred to as *Acanthodon constructor*, should be *Idiops constructor*.

The genus is further represented in the Madras Museum collection by females from Horsleykonda, 3,000-4,100 ft., Chittoor District and from Panchgani in the Western Ghats, Satara District (Bombay Presidency) and in the Indian Museum collection by a very young specimen from Medha, *ca.* 2,200 ft., Yenna Valley, Satara District.

Concerning the bearing of Indian species on the classification of the group Idiopeae, see the first of those papers, pp. 260-261.

Genus **Conothele** Thorell.

The Indian Museum collection contains two specimens from the Nicobars, one from Goalpara, Assam, two from the Darjeeling District (Ghumti, 1,500-5,000 ft. and Kalimpong, 600-4,500 ft.) and a male, probably of this genus, from Mundali, 9,000 ft., Chakrata, United Provinces. The specimens from the Darjiling District are probably identical with one from Kurseong recorded as allied to *C. birmanica* Thorell, by Simon in 1900 (*Bull. Soc. Ent. Fr.* 1900, pp. 151, 219). The male from Mundali " builds nest in deodar humus ", an unusual situation for this genus which seems generally to build on tree-trunks, and has only a very light hollow on the upper surface of the tibiae of the third legs though no less than in the male of *Heligmomerus barkudensis*, in the female of which it is quite distinct. Until the female is found, therefore, its generic position cannot be determined with certainty.

Genus **Damarchus** Thorell.

Damarchus bifidus, sp. nov.

A single male from Tindharia, Darjeeling District ; a single female, apparently adult and presumably of the same species from Kalimpong, 2,000-4,000 ft. in the same District ; and immature specimens from the latter locality and from Sureil, 5,000 ft., an unrecorded locality at 1,000-3,000 ft. and Gopaldhara, all in that District also.

♂. Resembles *D. assamensis* in size and in the general form of the palps and palpal organ. The structure of the first pair of legs is, however, intermediate between that of *D. assamensis* and *D. excavatus*, the base of the protarsus being lightly excavate with an extensive area of fine spiniform denticles ; and the tibial apophysis of these legs differs from those of both those species in being composed of three distinct parts, a basal part and two distal parts which arise from it (fig. 1 *a*).

♀. Also resembles *D. assamensis* rather than *D. excavatus* in size and proportions, being of distinctly larger and stouter build than the latter, of which alone I have specimens at hand for comparison.

Family ATYPIDAE.

The material belonging to this family has been worked out by Mr. Chennappaiya, who has drawn up the following account of it, including the description of the new species *Atypus sutherlandi.*

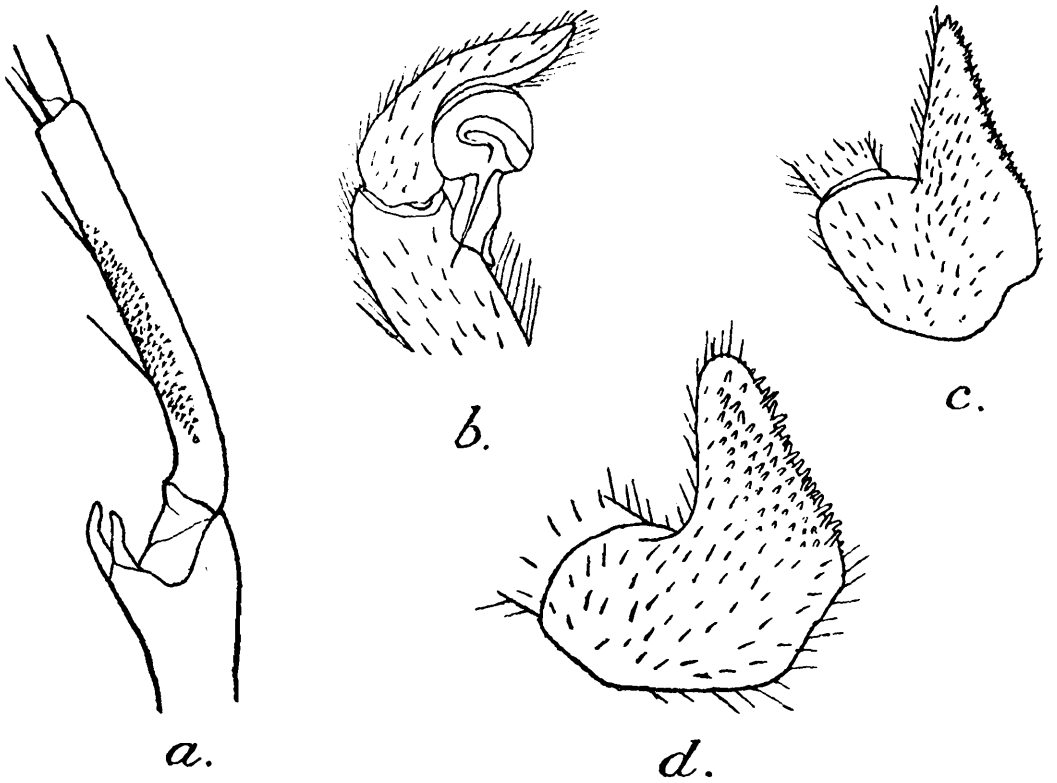
Genus **Atypus** Latreille.

Atypus sutherlandi, Chennappaiya, sp. nov.

The Indian Museum contains a number of specimens collected by Dr. Sutherland at Kalimpong in the Darjeeling District at altitudes between 2,000-4,500 ft. The largest female has been selected as the type specimen.

This species differs from *A. dorsualis* in the presence of spines on some of the joints of the legs. According to Pocock (*Fauna of British India, Arachnida*, p. 158) the legs of *A. dorsualis* are without spines.

The legs, carapace and chelicerae are yellowish in young specimens and mature males, reddish brown in adult females, with coxae and femora, but not trochanters or distal joints, somewhat lighter on the ventral side. The ocular area and margin of the carapace are black. The



TEXT-FIG. 1.—Mygalomorph Spiders.

a. Protarsus and adjoining portions of first leg of male (hair omitted) of *Damarchus bifidus*, sp. nov.
b. Palpal organ of *Atypus sutherlandi*, Chennappaiya, sp. nov.
c. Maxilla of male of latter. *d.* Maxilla of female of latter.

fang is dark reddish brown to almost black. The abdomen is pinkish brown; it usually bears a dark glossy median stripe, less distinct in the female than in the male, extending from near the anterior end towards the middle, with a lenticular or crescentic spot of about its own width on the anterior slope. The anal papilla is situated far above the spinnerets and like them is yellowish.

The anterior median eyes may be about equal to or much larger than the anterior laterals and are separated from each other by a space about equal to their diameter. The posterior median eyes are at a distance varying from three quarters to one diameter from the anterior medians. The posterior laterals are about twice as large as the posterior medians, with which and with the anterior laterals they are in contact.

The fang groove is guarded on its inner edge by a row of about a dozen teeth, of which the middle ones are the largest. They are much stouter in the female than in the male.

The inner edge of the maxilla is straight and is bordered by long whitish hairs with an irregular row of minute spiniform denticles on the ventral margin. The labium also is bordered by whitish hairs on its margin.

The posterior spinnerets are four-jointed, the third and fourth joints being respectively two and three times as long as they are wide.

The patella, tibia and tarsus of the palp are subequal.

♀. Total length up to 1·52 cm., carapace up to 0·62×0·52 cm. The carapace is as long as the patella, tibia and metatarsus of the first and fourth legs.

The maxilla is broad and rounded at its anterior end, and has closely set denticles on its ventral surface (fig. 1 *d*). The tarsus of the palp is armed with a single pectinate claw. The tarsi of the legs are stouter and shorter than in the male, and they and the metatarsi are armed with a number of spines dorsally and on the anterior face.

♂. Total length up to 0·85 cm., carapace up to 0·38×0·35 cm. The carapace is as long as the patella and tibia of the first and fourth legs.

The distal end of the maxilla is more or less pointed and its ventral surface is hairy but without denticles (fig. 1 *c*). The palpal organ is shown in fig. 1 *b*. Its style is very slender, straight and finely pointed, protected dorsally by a chitinous sheath which is wider distally than at the base, with raised lateral margins. The tibiae and metatarsi of the legs are armed with a few spines beneath and at the apex. The tarsi are densely hairy but are practically without spines.

Atypus sp.

There are in the Indian Museum collection two dried up and badly damaged specimens and a number of silken tubes collected by Mr. Anstead at Kilkundha, 6,500 ft. in the Nilgiri Hills. They were taken from galleries on tea stems.

Genus **Calommata** Lucas.

There are five specimens belonging to this genus in the Indian Museum. They were collected by Mrs. Drake at Saharanpur in the United Provinces. Three of them are evidently young.

Family DIPLURIDAE.

Genus **Ischnothele** Ausserer.

Ischnothele ? dumicola Pocock.

Two specimens in the Madras Museum, one from Horsleykonda, 3,000-4,100 ft., Chittoor District, and one (immature) from the Netterikal region of the Kalakad forest, Tinnevelly District, both collected by Mr. E. Barnes, probably belong to this species hitherto recorded only from Poona in Western India.

Genus **Macrothele** Ausserer.

Macrothele vidua Simon.

There are numerous specimens of this species in the Indian Museum from the Darjeeling District (Kurseong 5,366 ft., Pashok 2,000 ft., Kalimpong 2,000-4,500 ft., and Sitong Ridge 4,700 ft.).

The late Dr. Sutherland informed me of a boy 14 years old being bitten on the finger by a well grown female of this species which, however, only bites on such great provocation that though the boys in his school often kept specimens in captivity he had never known another instance. "The pain extended up the arm and down the side. After twenty-four hours the finger was still swollen."

Family BARYCHELIDAE.

Genus **Diplothele** Cambridge.

A single specimen in the Madras Museum from Horsleykonda, 3000-4100 ft., Chittoor District, belongs to this genus. It is, however, somewhat larger than *D. walshi* from Orissa and Ganjam, and is likely therefore to belong to a new species.

Genus **Sason** Simon.

Pocock recognises three Indian and Ceylonese species—*S. robustum*, *S. cinctipes* and *S. armatoris*—in his account of the genus in the Arachnid volume of the *Fauna of British India* series (1900). *S. armatoris* seems to differ from *S. robustum* only in having a complete row of teeth on the labium of the male. Of the two males before me, both from a wall in the compound of the Madras Museum, one has this complete row of teeth and the other is without a trace of it; and I can find no other difference between them. *S. cinctipes* is known only from the female, which differs from *S. robustum* only in having the carapace low and as long as the patella, tibia and half protarsus of the first leg instead of high and as long as the patella, tibia and whole protarsus of the first of the somewhat shorter legs. But Cambridge says (*Proc. Zool. Soc., London*, 1883, p. 353) in defining the new genus which he established for the reception of *robustum* that the carapace is "tolerably convex above, rather higher a little in front of the thoracic indentation than at the eyes" which Pocock intensifies to "Carapace high, strongly elevated in front of the fovea, which is situated on its posterior slope; lightly convex or sloped downwards anteriorly" and contrasts with "carapace much lower, being scarcely elevated posteriorly in front of the fovea, so that the latter is situated almost on a level with the upper surface of the carapace, the area between the fovea and the eye being almost horizontal." Of these three descriptions that given by Cambridge suggests a condition intermediate between the two given by Pocock and describes most accurately the specimens before me, which seem, moreover, to indicate that the differences noted in Pocock's descriptions are more trivial than they at first appear.

I am thus able to recognize only a single species, *S. robustum* (Cambridge), and must include in this species Pocock's *cinctipes* and *armatoris*.

Sason robustum (Cambridge).

The Madras Museum contains specimens from Tirupati hills (R. V. Seshaiya), and Horsleykonda 3,000-4,100 ft. in Chittoor District; Madras City; Nekkundram, Chingleput District; Trivandrum, Travancore (K.

S. P. Aiyangar) ; and Anuradhapura, Ceylon. Among these the only males are the two from Madras referred to above, both of which were collected in July.

Family THERAPHOSIDAE.

That the Oriental forms of this family are more closely related to one another than to forms from other regions was pointed out in 1895 by Pocock (*Ann. Mag. Nat. Hist.* (6) XV, pp. 166-167), who divided them into two sections, to which he gave family rank under the names Ornithoctonidae & Selenocosmiidae.

In 1897 Simon (" *Histoire Naturelle des Araignees* " II, pp. 916-919) divided them into five groups, the forms without stridulating organ being included with a number of others from other regions in the Ischnocoleae and the forms with stridulating organs divided into Ornithoctoneae, Selenocosmieae, Thrigmopoeeae and Poecilotherieae, containing exclusively Oriental forms except that two genera of the Selenocosmieae extend into the Australian region.

In 1915 I pointed out (*Rec. Ind. Mus.* XI, pp. 265-269) that the Selenocosmieae differed from the other three groups with stridulating organs in having the anterior margin of the labium densely and somewhat finely granular instead of more sparsely and coarsely so ; and that this character was shared by a few species with either no stridulating organ or a rudimentary one of the Selenocosmiine type. As these species obviously stand at the base of the evolutionary series of genera composing the Selenocosmieae I suggested that this group might be redefined in accordance with the character of the labium instead of that of the stridulating organs, so that they might be included within it ; and I pointed out (p. 282) that the subgenus *Neochilobrachys*, Hirst, could conveniently be raised to generic rank and redefined so as to include them. And I further suggested the possibility that means might ultimately be found of separating the rest of the Oriental species included in Simon's group Ischnocoleae from the remainder of that group, so that they could likewise be placed with Oriental forms to which they too are likely to be most closely related.

Petrunkevitch, in his " *Systema Aranearum* ", published in 1928 (*Trans. Conn. Ac. Art. Sci.* XXIX, pp. 1-270) gives *Neochilobrachys* generic rank (p. 84) in his sub-family Selenocosmiinae, but defines the latter with reference to the stridulating organs, thus necessarily excluding from the former all forms without any such organ. He unites Simon's Ornithoctoneae and Thrigmopoeeae into a single sub-family Ornithoctoninae, and Simon's Selenocosmieae and Poecilotherieae with the African Harpactireae into a single sub-family Selenocosmiinae. All Oriental species without stridulating organs are evidently included in his sub-family Ischnocolinae.

My knowledge is confined to Oriental genera, but so far as these are concerned it seems clear that those included by Petrunkevitch in his Ischnocolinae stand at the base of the different evolutionary series contained in his Ornithoctoninae and Selenocosmiinae. Whether the Ischnocolinae as defined by Petrunkevitch should be maintained intact, or should have such genera as can be shown to stand at the base of particular series transferred from it to them, is therefore mainly a matter of

taxonomic convenience. The material for the present paper convinces me that the Ornithoctoneae and Thrigmopoeeae form a homogeneous, though probably somewhat ramified, evolutionary series and that their union into a single sub-family is therefore best. As regards the union of the Selenocosmiinae, Poecilotherieae and Harpactireae I am not, however, convinced.

Of the Harpactireae I have no experience and can therefore only quote Pocock's opinion of 1895 that " the genera comprising either of the two groups into which the Oriental genera fall are more nearly related *inter se* than any one of them is to any Ethiopian genus known to me " ; to which I would add that my experience of these Oriental genera leads me to believe that this is likely in the end to prove true.

As regards the Poecilotherieae the further material before me only confirms my opinion expressed in 1914 (*Journ. Asiatic Soc. Bengal*, N. S. X, p. 417).—" The stridulating organ of the Poecilotherieae. .somewhat resembles that of *Chilobrachys*, but could only be derived from it by a considerable degeneration of the claviform bacilli. It could be more directly derived from *Selenocosmia* ; but there is no evidence that *Selenocosmia* ever occurred in the Indian Peninsula, or that *Poecilotheria* ever occurred out of it. Indeed, if the former genus had ever entered this Peninsula it might be expected to occur there more abundantly than further east, just as the Ischnocoleae do ; and if the latter had originated further east it is difficult to see, in view of its peculiar habits, by the competition of what other group it could have been exterminated there. The labium of *Poecilotheria*, moreover, is sparsely denticulate, not closely granular. Most probably, then, *Poecilotheria* originated from the Ischnocoleae or Thrigmopoeeae (or both) in the Indian Peninsula itself, the modified habits of its earliest arboreal ancestors having been in some way correlated with an increase in the potentiality of these ancestors to give rise to forms more highly specialised than themselves." If this is so *Poecilotheria* should be classed with the Thrigmopoeeae in the Ornithoctoninae rather than in the Selenocosmiinae. Its stridulating organ is, however, so distinct that it seems better to place it by itself in a separate sub-family Poecilotheriinae.

In order to emphasise the special relationship with the Selenocosmiinae of the species without stridulating organ that resemble them in the nature of the anterior margin of the labium, I still prefer to define this sub-family with reference to the latter so that it may include the whole evolutionary series, from species resembling the Ischnocolinae in the absence of stridulating organs, to the genus *Chilobrachys* in which the specialisation of these organs reaches its climax. The structure of the anterior margin of the labium is, it is true, a somewhat trivial character ; but when an otherwise trivial character is so definitely correlated with more obviously important ones it is often found to have special phylogenetic significance. And though the difference between the two forms of labia is very small it is quite definite and therefore much easier to recognise than are many of the differences between eyes or legs that are habitually used in the classification of spiders.

Retaining, therefore, at least provisionally, in the widely distributed Ischnocolinae all species without stridulating organs except such as are

shown by the labium to have special affinity to the Selenocosmiinae, and excluding from the latter sub-family the African group Harpactireae, the above mentioned phylogenetic considerations lead me to adopt the following classification of Oriental sub-families :—

1. Anterior border of labium more or less sparsely armed with moderately coarse granules or denticles	2.
Anterior border of labium closely and finely granular	4. *Selenocosmiinae.*
2. Stridulating organs between outer surface of chelicerae and inner surface of coxae of palps absent	1. *Ischnocolinae.*
Stridulating organs present in the above position.	3.
3. Stridulating bristles on inner surface of coxae of palps spiniform or dentiform	2. *Ornithoctoninae.*
Many of the stridulating bristles on inner surface of palp bacilliform or clavate; one or more stout denticles also present	3. *Poecilotheriinae.*

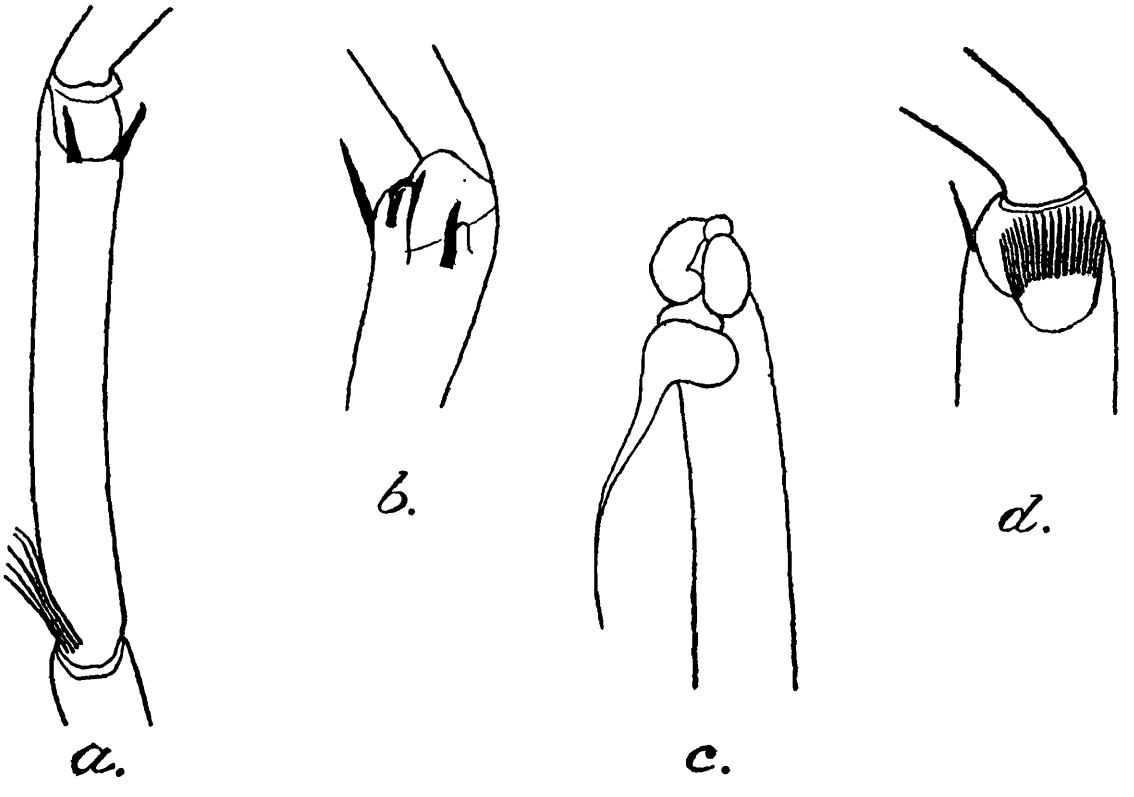
Sub-family ISCHNOCOLINAE.

Genus **Plesiophrictus** Pocock.

Plesiophrictus blatteri, sp. nov.

One male and one female—the latter probably immature—collected by the late Fr. Blatter from Panchgani, Satara District, in the Indian Museum collection.

♂. Total length 1·9 cm., carapace 1·0×0·8 cm. Allied to *P. millardi,* Pocock and *P. satarensis,* Gravely, from localities not far distant, but



TEXT-FIG. 2.—Mygalomorph Spiders.

a. Tibia of first leg of male (hair omitted) of *Plesiophrictus blatteri,* sp. nov.
b. Distal end of tibia of first leg of male (hair omitted) of *Plesiophrictus madraspatanus,* sp. nov.
c. Palpal organ of *Annandaliella pectinifera,* sp. nov.
d. Distal end of tibia of first leg of male (hair omitted) of same.

differing from both in the armature of the first pair of legs. Colour brownish, the tarsus and protarsus of first two pairs of legs whitish. Labium sparsely tuberculate in front. Posterior sigilla of sternum marginal. Palps somewhat long and slender, the tibia about four times as long as broad; palpal organ not markedly dissimilar from that of *P. satarensis*. Legs in the order 4, 1, 2, 3; patella and tibia of second pair about equal to carapace in length; tibia of first pair (fig. 2 *a*) with basal cluster of spines on outer side and a ventral pair of apical spines of which that on the outer side is the stouter, but without any definite apophysis; protarsus of first pair with a single mid-ventral apical spine.

♀. Total length 1·8 cm., carapace 1·0×0·8 cm., somewhat paler in colour than the male and probably not full grown. Legs much shorter and stouter than in male, with femur, patella and tibia of second pair about equal in length to carapace. The first pair of legs has the tibia unarmed, but a single mid-ventral apical spine is present on the protarsus as in the male; like the following pairs they are brownish throughout.

Plesiophrictus madraspatanus, sp. nov.

A number of specimens in the Madras Museum from Madras city and the following places in the adjoining District of Chingleput:—Velacheri; Nagalapuram Hill 500-2,400 ft.; and Kambakkam Hill 200-800 ft. and 1,000 ft.

♂. Size extremely variable; total length 0·7 to 2·0 cm., carapace 0·35× 0·25 to 0·9×0·65 cm. Colour brownish, somewhat dark in large specimens, paler in small ones; anterior legs not ornamented with white hair. Labium somewhat densely tuberculate in front. Posterior sigilla of sternum marginal. Palps shorter than in *P. blatteri*, their tibiae being only about twice as long as broad; palpal organ much as in *P. blatteri* and *P. satarensis*. First and fourth legs of about equal length, the former perhaps slightly longer than the latter; second legs shorter, but longer than third; patella and tibia of first pair about equal to carapace in length. Tibia of first pair with or without a single ventral spine a little on outer side near base; otherwise unarmed except at apex (fig. 2 *b*) which bears on outer side an almost straight spine, ventrally a large curved apophysis with trifid apex, and on inner side a smaller conical apophysis with a curved spine about twice its length arising from its base. These structures can be more easily seen in specimens of moderate size than in very large ones in which they are apt to be obscured by the dense covering of very dark hair, for which reason a male of moderate size has been selected as type, together with a female from the same locality, Nagalapuram Hill.

♀. Total length up to 1·9 cm., carapace up to 0·8 ×0·6 cm. Closely resembling the male except for the absence of special tibial armature on the first legs, the only spine on which is the usual mid-ventral one at the apex of the protarsus.

Genus **Annandaliella** Hirst.

This genus cannot belong to the Selenocosmiinae, where it has been placed by Petrunkevitch (*loc. cit.*, p. 83), for it has no stridulating organ

between the chelicerae and palps. The presence of a row of stout spines on the inner surface of each of the chelicerae, presumably forming a simple type of stridulating organ between them, in well grown females of the type species and in all known phases of the new species described below, distinguishes it from all other Oriental genera and seems to indicate that it represents an independent line of evolution from primitive Ischnocoline stock, a line distinct from those of the Ornithoctoninae, Poecilotheriinae and Selenocosmiinae. As it seems undesirable to form a special subfamily for so small a genus, it can most conveniently be placed at the end of the Oriental Ischnocolinae, though this unfortunately breaks the sequence from the more typical Ischnocolinae to the most primitive genus of Ornithoctoninae, *Haploclastus*.

The genus *Annandaliella* is already known from Travancore, Cochin, Ootacamund in the Nilgiri Hills, and Coimbatore, the type species *A. travancorica* being known from Travancore and Cochin. A male recently collected by Mr. P. N. Krishnaier shows that the Coimbatore form belongs to a different species which must now be described.

Annandaliella pectinifera, sp. nov.

Several specimens from Coimbatore, collected by Mr. P. N. Krishnaier of the Agricultural College. Also one collected by Mr. T. Bainbrigge-Fletcher at the same place. Both collectors found them in the ground, the former " in and near ant nests in the soil at varying depths " The single male, which must be taken as the type specimen, was collected early in November. This and the specimen collected by Mr. Bainbrigge-Fletcher are in the Indian Museum. This species differs from *A. travancorica* in the colour of the male, in the presence of stridulating spines on the opposed surfaces of the chelicerae in male and young as well as in adult female specimens, and in the form of the palpal organ and tibial apophysis (fig. 2 *c* & *d*).

♂. Total length 1·7 cm., carapace 0·8×0·6. Colour dull brownish, darker above than below; with fine golden hair below with reddish hair on the outer margin of the chelicerae and the inner margin of the coxae of the palps; front tarsi (? also protarsi) perhaps slightly whitish. Posterior sigilla of sternum marginal. Chelicerae with stridulating organ as in the female of *A. travancorica*. Palpal organ with style long and slender as in *A. travancorica*, but less strongly and less evenly curved. Legs in the order 1, 4, 2, 3, the first and fourth sub-equal. Patella and tibia of fourth pair about equal to carapace in length. The front legs are armed, as in *A. travancorica*, with an apophysis on the inner and a spine on the outer side of the distal end of the tibia below, and the usual mid-ventral apical spine on the protarsus.[1] The apophysis is in the form of a short broad lobe bearing a comb-like series of stout black spines.

♀. Total length up to 2·4 cm., carapace up to 0·9×0·7 cm. Chelicerae with stridulating spines on their opposed surfaces not only in well grown specimens but also in quite small ones. Otherwise probably indistinguishable from the female of *A. travancorica*.

[1] This spine is present in *A. travancorica*, not absent as would appear from my description.

Sub-family ORNITHOCTONINAE.

For reasons already given (above, p. 75) I follow Petrunkevitch in uniting Simon's groups Thrigmopoeeae and Ornithoctoneae in this sub-family. The coxae of the palps of the most primitive species, which belong to the genus *Haploclastus*, differ from those of *Plesiophrictus* in having their inner surface somewhat thinly covered with long straight hairs instead of naked, some of those near the base being more or less spiniform. The stridulating organ consists of these spiniform hairs and of some more or less spatulate ones adjoining the basal part of the scopula fringing the lower margin of the chelicerae. Two such species are recorded below, both much smaller in size than *H. nilgirinus*, in which the spiniform bristles on the coxa of the palp are stronger and thus more highly differentiated.

In *Thrigmopoeus* the stridulating bristles of the palps are arranged in a definite curved band, but none of those on the chelicerae are spatulate.

The remaining Indian and Burmese species seem to me to represent no more than a single genus *Cyriopagopus*. (See below pp. 81-82.) In this also the chelicerae are without spatulate bristles. The stridulating bristles on the palps, however, reach a higher degree of specialization than in the preceding genera, being individually stronger, but fewer in number; and the chelicerae are thickly covered with hair on their outer side.

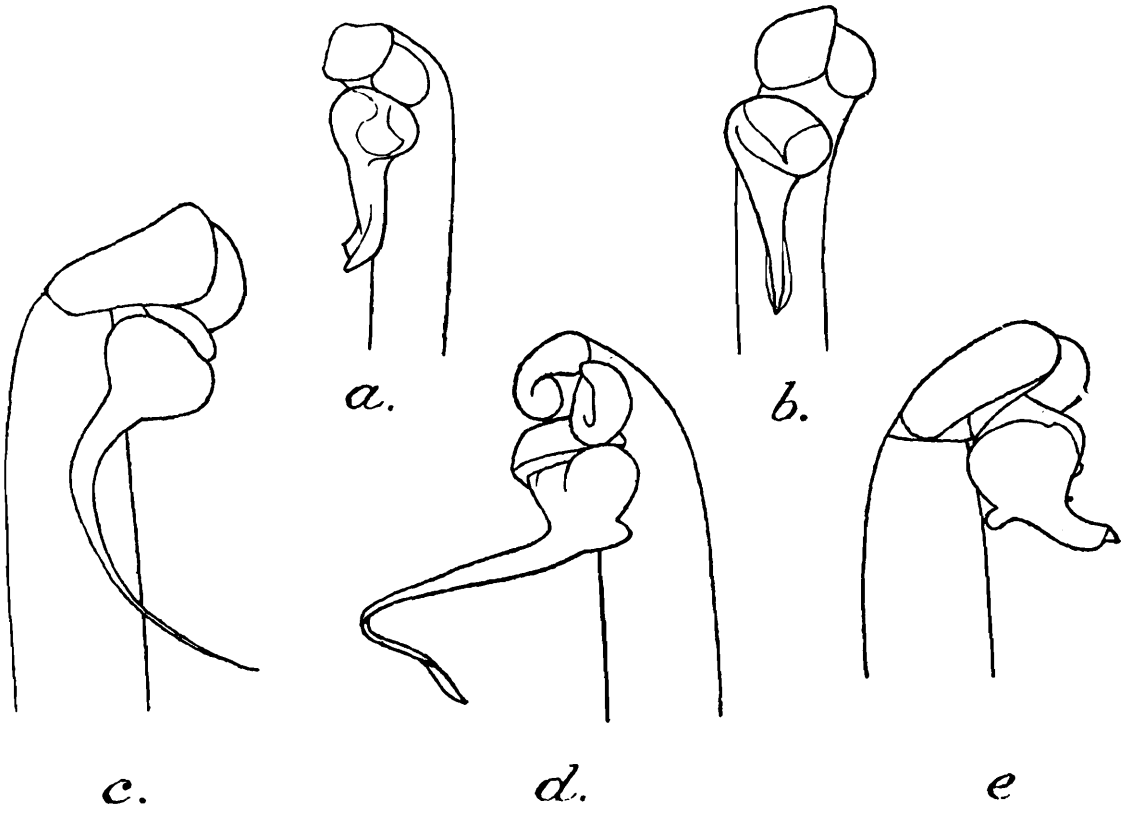
Genus **Haploclastus** Simon.

Haploclastus tenebrosus, sp. nov.

A single male (lacking both legs of the second pair) from the High Wavy Mountains, Madura District, S. India, in the Indian Museum. Though it may possibly be the male of *H. cervinus* from the neighbouring Palni Hills this is not very probable, and in any case it seems safest to describe it under a separate name till identity is established. In none of the species so far described is the male known. This specimen is evidently allied to *H. cervinus* Simon and *H. kayi* Gravely, (the latter from the Cochin timber forests) but lacks the distinctive colouration of the anterior legs of the latter, is much darker than either and has much longer legs—the last being, however, a usual male characteristic.

Total length 2 cm., carapace 1·1 × 0·8 cm. Colour dark brown, the hind pairs of legs slightly paler. Posterior sigilla of sternum long and narrow as in both *H. cervinus* and *H. nilgirinus*, marginal as in the former but not in the latter. Stridulating organ consisting of a small cluster of hair-like and spatulate bristles adjoining the basal part of the scopula of the chelicerae and of fine hair-like bristles scattered over the anterior face of the coxa of the palp. Palps long and slender, the tibia about five times as long as broad; palpal organ as in fig. 3 *c*. Legs unarmed, first very slightly longer than fourth, much longer

than third ; tibia and half patella of first pair about equal to carapace in length.



TEXT-FIG. 3.—Mygalomorph Spiders, Palpal organs.

a. Haploclastus tenebrosus, sp. nov. *c. Selenocosmia sutherlandi*, sp. nov.
b. Thrigmopoeus insignis Pocock. *d. Selenocosmia pugnax* Pocock.
e. Selenocosmia himalayana Pocock.

Haploclastus cervinus Simon.

The Madras Museum contains females from Vilpatti, Shembaganur *ca.* 6,000 ft., and Kodaikanal *ca.* 6,500-7,500 ft., in the Palni Hills of S. India. A specimen with egg cocoon is slightly smaller than Simon's type which Pocock suggests, after describing the much larger *H. nilgirinus*, may have been young.

The stridulating organ consists of a small cluster of hair-like and spatulate bristles adjoining the basal part of the scopula of the chelicerae and of fine hair-like bristles scattered over the anterior face of the coxa of the palp.

Haploclastus nilgirinus Pocock.

The Madras Museum contains a single somewhat damaged specimen of this immense species collected by Mr. S. Ananda Rao from Savarimullay, Vandiperiyar, Travancore, where it had bitten a cooly.

The stridulating organ consists of a small cluster of hair-like and spatulate bristles adjoining the basal part of the scopula of the chelicerae, and of bristles scattered over the anterior face of the coxa of the palp which are hair-like distally and ventrally but more spiniform basally and dorsally. A similar differentiation is present in the two preceding species but is less marked as the bristles are less strong.

Regarding the bite Mr. Ananda Rao writes: "The bite on the cooly was quite a severe one and was inflicted on the fore-finger. When he was brought to me, which was almost immediately after the bite, I noticed that the bitten spot was bleeding and the finger, as also the palm, had swollen. He was also complaining of severe twitching pain extending up to the shoulder. The wound was treated in the usual way, *i.e.*, washing with a lotion of potassium permanganate, an application of tincture of iodine and dressing. The pain and swelling persisted for three days, after which they subsided. But, curiously enough, even now after a lapse of nearly six months since the occurrence, he states that he has no proper sensation in that finger and that it gets very easily benumbed when the hand is wet."

Genus **Thrigmopoeus** Pocock.

Thrigmopoeus insignis Pocock.

The Indian Museum possesses a male from Castle Rock, N. Kanara District, and a female from near Karmal, six and a half miles from Castle Rock. The male, which has not previously been recorded, differs from the female chiefly in its somewhat smaller size (carapace 1·8 cm. long) and in its relatively longer and more slender legs, of which the tibia of the first pair is equal to the carapace in length. The palpal organ is shown in fig. 3*b*. The front legs are unarmed as in the female. The stridulating organ consists, as in the female, of a group of stout curved bristles immediately above the basal part of the scopula of the chelicerae and of bristles on the anterior face of the coxa of the palps arranged in the manner characteristic of the genus.

Genus **Cyriopagopus** Simon.

In the first series of these notes I showed (p. 281) that *Cyriopagopus* and *Melopoeus* were male and female forms respectively belonging to a single genus, and suggested the probability that *Ornithoctonus* would have to be merged with them, though in the absence of specimens of that genus I was unable to come to a definite conclusion. The specimens recorded below seem to me to show that this suggestion was right, and that all three genera should be merged into one, for which the name *Cyriopagopus* has priority.

Cyriopagopus andersoni (Pocock).

Three damaged specimens in the Indian Museum, two collected by Mr. Coggin Brown in Tavoy, and one by Capt. Harris in "Burma"

Apart from the practically straight fovea of the carapace I find these specimens extremely difficult to distinguish from the next species. The stridulating spines on the inner surface of the coxa of the palp are slightly more elongated, but this difference, too, is not a very marked one.

Cyriopagopus minax (Thorell).

Three females collected by Mr. C. S. Barton at about 1,500 ft. on the hills between the Thaungyin and Me-Ping rivers, N. Siam; two females collected by Mr. H. W. Brigge from Pitsanulok, N. Siam. All in the Indian Museum.

This species is very like the last but has the fovea slightly but definitely procurved. The fourth legs are thinner than the first, as stated by Pocock, but the difference seems to me to be practically confined to the protarsus. I cannot detect any definite difference, such as he mentions in distinguishing between the genera *Melopoeus* and *Ornithoctonus* on p. 205 of the Arachnid volume in the *Fauna of British India* series, between the fourth tibiae of this species and those of his figure of *C. andersoni* (*Journ. Linn. Soc. Zool.* XXIV, pl. xxii). Unfortunately the specimens of the latter species before me have the legs so broken that their fourth tibiae cannot be recognised with certainty, none remaining attached.

Subfamily POECILOTHERIINAE.

Genus **Poecilotheria** Simon.

Poecilotheria subfusca Pocock.

The Indian Museum collection contains a male and a female collected by Mr. Senior White from Sudugang Estate, Matale, Ceylon, a female from 1,386 ft. on the same estate, and another from Dankanikota.

Except in the last specimen the pale markings described by Pocock are scarcely distinguishable.

Poecilotheria regalis Pocock.

One specimen from Shencottah in Travancore and one from Madanapalle in Chittoor District in the Madras Museum, and one from the latter locality in the Indian Museum.

Subfamily SELENOCOSMIINAE.

As pointed out above (p. 75) this family is here defined, as in my earlier series of these notes, with reference to the structure of the anterior margin of the labium, so as to include in the genus *Neochilobrachys* not only the type species *N. subarmatus*, Hirst, with a very simple form of stridulating organ between the chelicerae and the coxae of the palps, but also certain still more primitive species agreeing with the Ischnocolinae in having no stridulating organ in this position. These species, which appear to stand at the base of the Selenocosmiine evolutionary series, differ from Oriental species of the Ischnocolinae and agree with the Selenocosmiinae in having the anterior margin of the labium densely and finely instead of more sparsely and coarsely granular.

Genus **Neochilobrachys** Hirst.

There is a single damaged female specimen of this genus, entirely without stridulating organs, in the Madras Museum. It was collected by Fr. Blatter at Panchgani in the Western Ghats, Satara District (Bombay Presidency). The genus has not previously been recorded from the Indian Peninsula.

Genus **Selenocosmia** Ausserer.

Selenocosmia sutherlandi, sp. nov.

One male in the Indian Museum, collected by Dr. Sutherland at Kalimpong, 600-4,500 ft., Darjeeling District. Both this and the next species differ from *S. himalayana* (fig. 3 *e*) and *S. kulluensis*[1], in the male sex at least, in having the anterior median eyes larger than the anterior laterals, as well as in the form of the palpal organ (fig. 3 *c*).

Total length 1·25 cm., carapace 0·7×0·55 cm. Chelicerae and carapace reddish brown, abdomen greyish brown, palps and legs yellowish brown. Both legs and body covered with long hair. Anterior eyes much larger than posterior; anterior medians separated by a distance scarcely equal to half the diameter of one of them, larger than anterior laterals, with which they are almost contiguous. Stridulating organ much as in *S. himalayana*, its bacilli very slender in this small specimen. Style of palpal organ long, curved and finely pointed, without the basal projection found in *S. himalayana*, *S. kulluensis* and *S. pugnax*. Legs in the order 4, 1, 2, 3, the patella and tibia of the second pair about equal to carapace in length.

Selenocosmia (Lyrognathus) pugnax Pocock.

Two damaged males from the Khasi Hills, one of them from Shillong, in the Indian Museum collection, evidently belong to this species. If, as seems probable, the three described species of *Lyrognathus* are really one, the name *crotalus*, Pocock, must be given priority over the others; but for the present it seems wisest to identify these specimens as *pugnax* since this is the species described from Shillong. No male *Lyrognathus* seems yet to have been described.

Total length 2·2 cm., carapace 1·2×0·9 cm. Colour dark brown, darker above than below; covered with long hair. Anterior eyes larger than posterior, anterior medians larger than anterior laterals, separated from each other by fully half the diameter of one of them and from anterior laterals by almost the same distance. Palpal organ (fig. 3 *d*) resembling that of *S. sutherlandi* in its long, curved and finely pointed style, but with a basal projection like that of *S. himalayana* though somewhat smaller. Legs in the order 4, 1, 2, 3, the fourth pair slightly thicker than the first, the patella and tibia of the second pair about equal to the carapace in length.

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[1] *S. kulluensis* was described by Chamberlin in 1917 from a male from the Kullu Valley (*Bull. Mus. Comp. Zool. Harvard*, LXI, 1917-18, pp. 68, 69, pl. v, figs. 2, 3). It is probably identical with the male of *S. himalayana*, Pocock, Hirst's description of which (*Ann. Mag. Nat. Hist.*, XIX, 1907, pp. 523-4, text-fig. 2) was evidently unknown to him.

Selenocosmia sp.

Several females collected by Dr. Kemp at Port Blair, Andaman Islands, are in the Indian Museum.

Genus **Chilobrachys** Karsch.

Chilobrachys fumosus Pocock.

The Indian Museum has specimens from the following localities in the Darjiling District.—Kalimpong, 2,000-4,500 ft.; Jor Pokri, nr. Sitong, 4,800 ft.; Sitong Ridge, *ca.* 4,700 ft.; Mangpu; Sureil, 5,000 ft.; Pashok, 2,500 and 3,500 ft.; Kurseong, 5,366 ft.; and stream at Baumpukri nr. Punkabari, 400-500 ft.

Chilobrachys fimbriatus Pocock.

One specimen from Castle Rock, N. Kanara District, in the Indian Museum and two from Panchgani, Satara District, in the Madras Museum.

Chilobrachys hardwickii Pocock.

One specimen from Hazaribagh, Bihar, " lives in trees, bite dangerous ", in the Indian Museum collection.