

XIII.—*Notes on some of the Solifugæ contained in the Collection of the British Museum, with Descriptions of new Species.* By R. I. POCKOCK.

[Plate IV.]

Genus GALEODES.

The species of this genus seem to me to be but little understood. That there is a large amount of variation in the genus can be observed by anyone who works through a mass of material from various localities; but it is very difficult to find the specific characters that obtain consistently in individuals of all ages and both sexes.

The adult males and females (at least of some species) appear to be recognizable by the following characters:—

♀. *Head* larger, to support the larger strongly toothed *mandibles*, which have no flagellum and no spiniform hairs. *Palpi* shorter as compared with the width of the head and slighter; *legs* also shorter, the tarsi of the fourth normally clothed below with simple hairs. *Malleoli* shorter and altogether smaller. The two halves of the *genital operculum* enlarged and united across the middle line to form a single large plate. There are no peculiar bacilliform hairs on the abdomen.

♂. *Head* narrower, to support the smaller weakly toothed *mandibles*, which are provided with a flagellum and with a large number of erect spiniform hairs to protect the flagellum when at rest. *Palpi* longer and stouter. *Legs* longer; tarsus of the fourth clothed below with modified hairs. *Malleoli* longer and larger. The two halves of the *genital operculum* distinct, with two smaller plates appearing in the middle line between them. The fifth and often other sternal plates of the abdomen provided with modified bacilliform hairs.

Male examples have been described without the hairs on the fourth tarsi and on the abdomen. It is not certain, however, I suppose, that these male examples were mature. Moreover, the shape of these hairs has been used for distinguishing species; but an examination shows that in some individuals no two of the abdominal bacilliform hairs are alike, and that they vary on the same sternite from being short and stout to long, slender, and cylindrical. On the fourth tarsi, too, the hairs have sometimes blunt points, sometimes filiform points; but it seems highly probable that the latter kind is transformed into the former simply by the process of wear.

Anyhow, it seems to me to be perfectly certain that the stout spines on the palpi of adults result from the fracture of hairs which in the young are long and filiform.

In this paper I have ventured to establish several new species, basing them largely upon differences in colour and relative length of appendages and their segments.

Galeodes barbarus, Lucas.

Galeodes barbarus, Lucas, Expl. Sci. Alg., Arachn. p. 270, pl. xviii. fig. 7.

The British Museum has a single male example of this species.

It may be recognized from the other males known to me by the presence of the shovel- or spoon-shaped spines on the lower surface of the tarsi of the fourth leg and by the thick, flattened, and pointed spines on the lower surface of the fifth abdominal sternite.

In his monograph of the species of this group Mons. Simon, as he has already pointed out, identified as the male of *barbarus* the male of another species, which appears to differ from that of *barbarus* in possessing long bacilliform spines on the fifth abdominal sternite and in having the tarsus of the fourth leg clothed with normal setæ. This latter species Mons. Simon described as *G. occidentalis* (Expl. Sci. Tunisie, Arachn. p. 44), but in his comparative diagnosis of this and the male of *barbarus* he has fallen into the curious and puzzling error of ascribing the abdominal spines of *barbarus* to *occidentalis*, and *vice versâ*. This, at least, is the only explanation which reconciles his first statement about the male of *occidentalis*, when he described it as *barbarus*, with his subsequent one, when he recognized its specific distinctness. Moreover, the male of *barbarus* that I have seen agrees with Simon's last diagnosis of this species, if we make the necessary alteration with regard to the nature of the abdominal spines.

Galeodes intrepidus (Sav. & Aud.).

Solpuga intrepida, Savigny and Audouin, Aran. d'Egypte, p. 178, fig. 8 (1827); C. Koch, Die Arachn. xv. p. 89, fig. 1479.

Galeodes scalaris, C. Koch, tom. cit. p. 87.

Galeodes leucophæus, id. ibid. p. 88.

Galeodes Savignyi, Simon, Ann. Soc. Ent. Fr. 1879, p. 105.

It seems to me to be in the highest degree probable that *G. intrepidus* of Savigny is referable to the same species as *scalaris* of C. Koch. So far as can be judged from Savigny's figures, his *intrepidus* differs from his *araneoides* (= *arabs*) in

being smaller and in having the hairy clothing of the legs thicker. Apart from colouring, these are, perhaps, the first distinctive characters to strike the eye. The colouring, however, is very different, *intrepidus* being provided with a continuous median dorsal black band, the sides of the abdomen being clothed with white or yellow hairs, and the hairs on the distal segments of the legs and palpi being of a bright greenish yellow, those on the distal half of the appendages and on the head and mandibles being greyer. The spine-armature of the legs is as in *arabs*, except that the spines are perhaps longer. Moreover, the lower surface of the tibia of the second, third, and fourth legs is furnished with a few hairs which are markedly stouter than the rest, and the anterior spine at the distal end of the lower surface is considerably stouter, and there appear to be always three pairs of spines on the first tarsal of the second and third legs. In the male the tarsus of the fourth pair of legs is clothed beneath with ordinary slender setiform hairs, and the fifth (and sixth) sterna of the abdomen are furnished with slender bacilliform spines, as in *arabs*.

I need hardly add that Simon's reason for changing the name *intrepidus* into *Savignyi*, because Dufour wrongly identified one of his species as *intrepidus*, is utterly untenable. Birula's *Savignyi* (Zool. Anz. 1890, p. 206), from Turkestan, which has six spines on the protarsus of the fourth leg, is probably different from what I believe to be *intrepidus*, as, indeed, might have been imagined from the locality. So, too, does Simon's *scalaris*, from Central Abyssinia, differ in having three pairs of spines confined to the distal half of the protarsus of the fourth leg. It resembles my specimens, however, in its small ocular tubercle; and I am not inclined to lay very much stress upon the presence of an extra spine upon the posterior side of the protarsus of the fourth leg, because there seems to be a tendency in this species for hairs to become spiniform, and in two of the British Museum specimens, which otherwise do not seem recognizable from the rest of the examples of *intrepidus*, there are six spines on this protarsus, the additional one being, however, not a pair to the one that is usually unpaired, but occupying a corresponding position on the anterior surface, but nearer the proximal end. One of the examples presenting this is a female from Oran, the other a male without locality. In addition to these two, the Museum has another example (a female, without locality), three (two males, one female) from Aden, one (female) from Perim Island, and two (male and female) from the island of Shadwan in the Red Sea.

Galeodes arabs, C. Koch.

Galeodes araneoides, Oliv. Voy. dans l'Emp. Ottoman, vol. vi. p. 304, Atlas, pl. xlii. fig. 3 (1807); Sav. & Aud. Descr. Egypte, Hist. Nat. i. pt. 4, p. 176, pl. viii. fig. 7 &c. (not *araneoides* of Pallas).

Galeodes arabs, C. Koch, Die Arachn. xv. p. 85 (1848).

Galeodes Lucasii, L. Dufour, Mém. Ac. Sci. St. Pétersbourg, xvii. p. 385, pl. ii. fig. 5 (1862).

Galeodes arabs, *araneoides*, and ? *græcus*, Butler, Tr. Ent. Soc. 1873, p. 418.

Galeodes araneoides and *græcus*, Simon, Ann. Soc. Ent. Fr. 1879, pp. 99, 100 (at least in part).

This species is spread from S. Algeria (Dufour's *Lucasii*), through Egypt, where it is evidently abundant, into Arabia. It also goes further to the north, spreading into Asia Minor.

The British Museum has upwards of forty examples from the following localities:—Smyrna, Midian, Baghdad, Euphrates, El Tor (Red Sea), Egypt (various spots), White Nile, Somali, Arabia, Aden, and Muscat.

The colouring is very characteristic. The ground-tint is a pale whitish or reddish yellow, but the cephalic plate is fuscous on each side, and the mandibles are usually furnished above with two stripes of the same colour; the tibia of the palpus is mostly fuscous, but its two ends retain their yellow tint, and the protarsus is furnished with a fuscous band in its proximal half, its proximal extremity, distal half as well as the tarsus, remaining yellow; and, lastly, there is usually a median dorsal fuscous band, though not a continuous one, extending over the free thoracic segments to the end of the abdomen, and the femora of the legs are sometimes slightly infusate.

The spine-armature of the feet is normally as follows:—

Second and third pair of legs: *tibia*, 1 short superior distal spine, 2 inferior distal setiform spines; *protarsus*, 5 spines along posterior edge, 3 below in the distal half (*i. e.* a distal pair and 1 posterior spine before the pair); in the legs of the third pair the 5 posterior spines of the protarsus are arranged in two alternating rows, an upper of 3 and a lower of 2; *tarsus*, 7 spines, a pair on the second segment, two pairs at the distal end of the first segment, and one anterior spine near the proximal end of this segment.

Fourth pair of legs: *tibia* without a superior distal spine; *protarsus* armed below with 5 spines (1 anterior near its middle, 2 at the distal end, and 2 midway between the single one and the distal pair); *tarsus* armed below with 8 spines in four pairs (three pairs on the proximal segment and one pair on the second), the third segment being usually unarmed.

Galeodes hector, sp. n.

Closely allied to *G. arabs*.

The ground-colour rather redder, the upperside of the mandibles more infusate; femur of palp very slightly infusate above distally; tibia marked above with a median fuscous band which extends from end to end; protarsus and tarsus entirely fuscous above; legs uniformly reddish yellow or slightly infusate; abdomen and free thoracic segments with a crescentic black spot on the middle of each tergum.

Spine-armature of legs as in *G. arabs*, but the posterior proximal spine upon the first tarsal of the second and third legs more generally present than in *arabs*.

♂. Spines on fifth abdominal sternite slender, long, cylindrical, pointed distally, but scarcely narrowed at the base; those on the fourth tarsus scarcely expanded mesially, but narrowed to a long hair-like process; the malleoli, however, are much shorter, the heads smaller and with their points more rounded; the external one is not so long as the flagellum of the mandible.

Measurements in millimetres of types (♀).—Total length of trunk 48, of coxal area 17; width of cephalic plate 10·5, of eye-tubercle 1·5; length* of mandible 14·2; palp 39, femur 14, tibia 12·5, protarsus 10, tarsus 3; width of tibia and of protarsus 1·8; length of fourth leg 51·5.

♂. Total length of trunk 30, of coxal area 14; width of head 6·8; length of mandible 10·5, of flagellum almost 4, of palp 43, femur 16·5, tibia 14, protarsus 11, tarsus 3; length of fourth leg 53; length of external coxal hammer 3, of handle 2, of head 2·5.

Loc. Smyrna; S. of Smyrna (*R. MacAndrew*); Budrum, in Asia Minor (*H.M.S. 'Supply'*).

This species seems to come very near to the genuine *G. araneoides* of the Russian steppes; but since the latter species is unknown to me, I am unable to compare the two.

It may be recognized from *arabs* by the colouring of its palpi, shorter legs, and the different shaped malleoli of the male.

In addition to the female type described above, all the other specimens that I have seen are males. One of these, ticketed "Arabia," is considerably larger than the one described, the

* In this and all cases the length of the mandible is taken along its external surface from its point of articulation to the apex of the immovable fang. The rest of the appendages are measured along the upper side.

head measuring 9·5 millim. in width, the mandible 13·5 long, and the whole trunk (with distended abdomen) 45 millim., the palp 51·5, and the fourth leg 65. The next largest male example from S. of Smyrna has the head measuring 9 millim. and the palp 50, mandible 13, flagellum 4, distal malleolus 4·5.

A male of *Galeodes arabs* which has the cephalic plate 8 millim. wide, and is thus rather smaller than the above-mentioned example from the S. of Smyrna, gives the following measurements:—Length of mandible 11·5, of flagellum 3·5, of palp 53·5, of last leg 66·5, of external malleolus 6. This specimen well illustrates the most notable distinctive features of the males of the two species, the palpi and legs being considerably longer in *arabs* and the malleolus much longer as compared with the flagellum.

Galeodes cyrus, sp. n.

♂.—*Colour*. Anterior third of cephalic plate fuscous, tubercle black; rest of the cephalothorax pale; *mandibles* furnished above with three longitudinal greenish-fuscous stripes, which coalesce before the base of the upper jaw into a continuous dark patch, extending externally to the base of the movable digit; *palpi* with the three distal segments completely blackish brown throughout, the rest of the appendage and the legs clear yellow, with perhaps a suspicion of infuscation on the upperside of the femora; abdomen a uniform dirty brown throughout (perhaps due to the colour of the food-contents).

Cephalic region high, sloped upwards at about an angle of 45°; the ocular tubercle very high and wide, the distance between the eyes about equalling a diameter, the frontal process low and rounded.

Mandibles of average size for a male, flagellum normal; the lower digit armed with three teeth, the proximal the largest, the distal the next, the median close to the base of the distal; the upper digit armed with an external row of 8 smallish teeth, which vary a little in size, but are all very distinctly defined.

Palpi very long and slender; the femur considerably longer than the tibia and twice and a half times the length of the width of the carapace, armed anteriorly and interiorly on its distal half with long, irregularly arranged, spiniform hairs; *tibia* a little more than twice the width of the carapace, slender, cylindrical, furnished below with an external series of four spiniform hairs and an internal row of five; between the two rows there are other scattered and smaller spiniform

hairs, of which the proximal, however, is as large as those of the lateral series.

Protarsus shorter than tibia, distally narrowed, armed normally below with five or six pairs of short fractured spines, the area between the spines thickly studded with hairs; tarsus long, much narrowed at the base.

Legs long; second tibia armed distally and posteriorly with 1 stout spine and below at its distal end with 2 setiform spines; *protarsus* armed behind with a row of 5 stout longish spines and below with 3, a pair at the distal end and one posterior unpaired spine further up the segment; proximal tarsal armed with 4 spines, one submedian at its proximal end and three at its distal end, *i. e.* two constituting a pair and one posterior behind them; distal tarsal armed with 3 spines, two in front and one behind.

Third leg armed like the second, except that two of the five spines on the posterior side of the protarsus are lower, the series being thus broken up into two.

Fourth leg: protarsus armed with the normal 5 spines; proximal tarsal with 6 spines in three pairs, the median tarsal with 4 spines in two pairs, and the distal tarsal with 2 spines in one pair; the lower surface of this segment clothed with normal setæ. The malleoli long, the head with nearly straight distal edge, the handle fixed nearer its middle than in *G. arabs*.

Stigmatic combs composed on each side of about twenty or a few more spines, separated like the teeth of a rake; internally the series is simple, externally above the main series there are some irregularly arranged smaller spines. The median aperture of the third pair of tracheæ distinct.

No modified hairs on the posterior border of the fifth segment.

Measurements in millimetres.—Length of trunk 32, of the inferior coxal area 17.5; width of cephalic plate 8.5, length 6.2; width of tubercle 2.5; length of mandible 11.5; length of palp (exclusive of coxa) 59, femur 22, tibia 20 (width 1.5), protarsus 14 (width 1), tarsus 3.5 (distal width 1); length of first leg 38, of second (including claw) 35.5, of third 48, of fourth 61; length of distal hammer-shaped organ 6.3, of handle 4, width of head 5.5.

Loc. Fao, on the Persian Gulf (*W. D. Cuming*). A single male example, probably not quite mature.

This species differs from *G. arabs* in the colouring of its head, mandibles, palpi, and ? abdomen; in its more vertical and less convex head and larger tubercle; in having the proximal tarsal of the second and third legs armed with four

instead of five spines, and the distal tarsal with three instead of two spines; and in having on the fourth leg the hairs of the tarsus normal, two pairs of spines instead of one pair upon the median tarsal, and one pair instead of none upon the distal tarsal, and in having the handle of the malleoli nearer the centre of the head.

Galeodes darius, sp. n.

♀. Head, mandibles, and legs entirely lemon-yellow; ocular tubercle black; tibia and protarsus of palp fuscous; tarsus and femur yellow; abdomen and thoracic segments pale, the tergal plates only very faintly infuscate.

Measurements in millimetres.—Total length of trunk 41, width of head 12, of ocular tubercle 2·5; length of mandible 17, of palp 62, its tibia 20, protarsus 15; of fourth leg 81, its protarsus 15·5.

Loc. Fao, on the Persian Gulf (*W. D. Cuming*).

Apart from its colouring, this species may be easily recognized from *G. arabs* by the enormous length of its legs and palpi. For instance, in adult females of *arabs* the width of the carapace is about equal to the length of the protarsus of the palp or of the fourth leg; but in *G. darius* the protarsi in question are far longer than the width of the head. The following measurements of an example of *arabs* from Muscat will illustrate the differences:—Total length 43; width of head 12·5, of ocular tubercle 2·5, of palp 49, its tibia 16, protarsus 12; length of fourth leg 64, its protarsus 11·5.

It may thus be seen that, although actually smaller in the head, *G. darius* has the appendages actually considerably longer.

It is possible that this species may prove to be the female of *G. cyrus*, since the two come from the same locality. I refrain, however, from uniting them, on account of the difference in colour that the two present and from the fact that the ocular tubercle is not unusually large in *G. darius* and the spine-armature of the feet is normal, except that the distal tarsal of the fourth foot has two spines upon it, as in *G. caspius*.

Galeodes citrinus, sp. n.

Colour a rich lemon-yellow throughout, except for a faint median band down the back and very slight infuscation on the anterior edge of the cephalic shield; ocular tubercle black, pale sometimes in the middle.

Legs entirely pale; palpi with femur and tarsus pale, but

tibia and protarsus black from end to end, a fine yellow line merely marking the joint between them.

Measurements in millimetres.—♂ (adult). Total length of trunk 40; width of head 10, of ocular tubercle 2; length of mandible 15, of palp 61, its tibia 20·5, protarsus 14·5, of fourth leg 73.

♀ (probably not quite mature). Total length of trunk 35; width of head 10, of ocular tubercle 2; length of mandible 15, of palp 46·5, its tibia 15, protarsus 11·5, fourth leg 59.

Loc. Jask, in Persia, on the Gulf of Oman, close to the confines of Beluchistan. Two young specimens obtained by Mr. B. T. Finch and four examples, including those described above, collected by Mr. Butcher.

Resembling *G. arabs*, but having the tibiae and protarsi of the palp more completely fuscous and the trunk and legs less so. In colouring it resembles *G. darius*, but differs so markedly from it in the greater shortness of its legs, that it is impossible without further evidence to regard the two as identical.

Galeodes afghanus, sp. n.

♂.—*Colour.* Carapace anteriorly infusate; mandibles flavous above; palpi with femur infusate in its distal half and tibia infusate, as in *G. arabs*, but the protarsus and tarsus entirely flavous; anterior two pairs of legs flavous; third pair with femur infusate, fourth pair absent; (abdomen discoloured).

Flagellum of mandibles with its basal cylindrical part much shorter than its distal expanded part, as in the Indian *G. fatalis*; the lower jaw of the mandible with 3 small teeth between the two primary teeth on the right side and two on the left; on the latter, however, the space remains where the third tooth has been.

The second and third legs like those of *G. arabs*, except that there are 8 spines on the tarsi instead of 7, the posterior spine of the first pair being retained.

Malleoli not certainly distinguishable from those of *G. arabs*.

Measurements in millimetres.—Total length of trunk 34; length of head 6·5, width 9; length of mandible 13·5, of palp 54·5, its tibia 18·5, protarsus 13·5.

Loc. Between Quetta and Kandahar. A single male specimen presented by Col. Godwin-Austen.

This species differs from *araneoides*, *caspius*, *arabs*, and *orientalis* in having the protarsus and tarsus of the palpi

entirely pale, while the tibia and femur are infusate, as in those species.

Genus SOLPUGA.

Solpuga ferox, sp. n. (Pl. IV. fig. 3.)

♀.—*Colour*. Cephalic plate, mandibles, and appendages reddish yellow; abdominal terga pale yellow, the membrane at the sides of the plates and between them slightly infusate.

Cephalic plate in width a little greater than the length of the tibia of the palpus and a little less than the length of the tarsus and protarsus of that appendage; width of ocular tubercle about equalling the length of the tarsus of palp; distance between eyes less than a diameter.

Mandibles furnished inside with nine or ten ridges, which inferiorly decrease in length; the upper jaw armed distally with 3 large conical subequal teeth, between the second and third of which there are two smaller teeth, of which the posterior is much larger than the anterior; this jaw is armed behind with an external series consisting of 4 teeth and an internal consisting of 3, of which the anterior is long and stout; lower jaw armed with 3 teeth, of which the first and third are subequal, and the second situated upon the base of the third mall.

Palpi moderately long and slender; femur furnished below with long setæ; tibia also furnished below with long setæ and thickly clothed above and below with short erect hairs; protarsus, which is attenuate in its distal half, clothed like the tibia, but its lower surface is furnished with a number of erect short truncate hairs, which may have resulted from the breaking of the long setæ.

Legs of first pair clothed with short close-set hairs and long slender setæ; those of *second pair* covered with fine hairs above, and on the lower surface of the tibia with setæ which increase in stoutness towards the distal end of the segment, the distal pair being stout and spiniform; this segment is armed above with a single stout distal spine; the protarsus armed above with five strong spines and below in its distal half with two spines behind and three in front; tarsus armed below with seven pairs of spines—four pairs on the first and one pair upon the second, third, and fourth segments, of which those of the third to fifth pairs are the strongest; *third leg* resembling the second, except that there are two spines on the upperside of the tibia, and the interval between the third and fourth spines on the upperside of the protarsus is greater than in the second leg, and the segment is armed below with

six spines in three pairs; on the *fourth leg* the protarsus is armed below with three spines behind and five in front; tarsus armed below with ten pairs of spines, those from 1 to 7 on each side gradually increasing in strength up to the seventh; tibia of this appendage longer than the protarsus, but a little shorter than width of the cephalic plate. *Malleoli* short. Inner angles of the two halves of the *genital operculum* convexly rounded, the posterior border of each half at right angles to the median groove.

♂. Resembling female in colour; a little smaller, but with legs much longer as compared with width of head, *i. e.* the tibia and protarsus of palp and fourth leg greater than width of head; protarsus of palp scopulate beneath. Upperside of head-plate and of mandible furnished with a small number of stout spiniform setæ. Dentition of the mandibles very much as in the female, except that the distance between the second and third large fangs of the upper jaw is greater and the anterior of the two small denticles which occupy this space is considerably removed from the posterior. Moreover, owing to the shortness of the terminal fang, the first tooth is closer to its apex than in the female; and, lastly, upon the upper-side of the terminal fang and close to the base of the recurved portion of the flagellum there is an additional forwardly directed tooth. The proximal portion of the flagellum, *i. e.* the piece that is attached to the mandible and lies forwards, is high and rounded, the remaining part, *i. e.* the recurved portion, is very short, broad, flattened, narrower at the base, pointed at the apex, not projecting backwards beyond the point of origin of the basal portion. On the inner side of the apex there is an extra small tooth.

Measurements in millimetres.—♀. Total length from ocular tubercle to anus 31·5; length of head 7·3, width 9·8, width of ocular tubercle 2·2; length of mandible 13, of palp 31, its tibia 9·8, protarsus and tarsus 10·8; of fourth leg 46·5, its tibia 8·8, its protarsus 8·5.

♂. Width of head 7·5, length 6; width of tubercle 1·8; length of mandible 9·5, of palp 34·5, its tibia 11, tarsus and protarsus 11·2; length of fourth leg 49, its tibia 9·6, protarsus 9·3.

Loc. Port Elizabeth (*I. L. Drège*).

Solpuga paludicola, sp. n. (Pl. IV. fig. 4.)

♀. Resembling *S. ferox* in colour, *i. e.* in having the limbs, head, &c. of a uniform reddish yellow; the femur of the fourth leg, however, is lightly infusate in its distal half, and

the tergal plates of the abdomen are a shade darker than the lateral membrane.

Ocular tubercle very slightly smaller than in *S. ferox*; structure of mandibles the same. Palpi and legs longer, the tibia of palp being distinctly longer than the width of the cephalic plate, which is only very slightly wider than the tibia or patella of the fourth leg. Spine-armature of legs as in *ferox*; the spine on the posterior side of the lower surface of the third tarsal segment of the second and third pairs of legs is very generally absent.

Genital operculum with its posterior border a little more convex than in *ferox*; its two halves distinctly more thickly chitinized.

♂. Smaller than female, but with much longer legs (*cf.* measurements); the femur, tibia, and protarsus of the palp, the femora of the third and fourth legs, and the tibia of the fourth as well, lightly infusate. *Malleoli* long.

Mandibles: teeth numerically the same as in the female, the two small ones on the upper jaw which lie between the second and third of the large ones are subequal, conical, and evenly spaced; the *flagellum* has the bulbous portion high and black, the distal recurved portion is stout at the base but very short, its apex, which is truncate and pubescent, not projecting posteriorly beyond the point of origin of the basal piece.

Measurement in millimetres.—♀. Total length 37; length of cephalic plate 7.2, width 10; width of tubercle 2; length of mandible 13, of palp 34, its tibia 11; protarsus and tarsus 11.8; fourth leg about 53, its tibia and protarsus about 9.8.

♂. Total length 34; length of cephalic plate 7.5, width 8.5, of tubercle 2; length of mandible 9.8, of palp 43.5, its tibia 14.5; protarsus and tarsus 14.2, of fourth leg 63, of its tibia 12.8, protarsus 13.

Loc. Lake Nyasa (Universities' Mission), and Zomba, south of Lake Nyasa (*H. H. Johnson*).

The female, of which the measurements are given above, is not by any means the largest in the Museum collection. One sent by Miss Woodward from Lake Nyasa has the trunk 46 millim. long and the cephalic plate 11.5 millim. wide; the legs and palps are correspondingly longer, the proportion of the segments remaining the same.

Of all the species that have been hitherto described, this new one appears to be most nearly related to *S. merope* of Simon, from Zanzibar. The latter, however, seems to be smaller, seeing that the length given for several females is only 25 millim.; moreover, the cephalothorax and chelicerae

are said to be a more or less obscure olivaceous brown, and the tibia of the palp lightly infuscate above. I can find no other satisfactory differential characters. The male of *merope* is undescribed.

I have only seen two males of my species, one from Lake Nyasa and the other from Zomba. The former is dry, and I have consequently been compelled to take my measurements from the latter, which differs in having the femora and tibiæ of the legs more distinctly fuscous. The flagellum of the male of this species seems to resemble in its shortness that of *S. niassa* of Karsch, which is presumably from nearly the same locality. In *S. niassa*, however, the flagellum is rather longer, distally pointed, and dentate near the base.

Solpuga Keyserlingii, sp. n. (Pl. IV. fig. 5.)

Colour. Head, mandibles, palpi, and legs flavous; free thoracic segments and abdomen fusco-olivaceous.

Head flattish, nearly as long as wide, tubercle large.

Legs and palpi long, the latter normally robust, with its tibial segment as long as the tarsus and protarsus and nearly twice the width of the head; tibia of fourth leg a little shorter than that of the palpus.

Mandibles with the internal ridges about twice as long as in *S. paludicola*. The terminal fang long, curved, pointed, slender, with only one small tooth just in front of the third large fang. *Flagellum* with its basal part low and short, the recurved part rather short, not extending half across the distance between its point of origin and the base of the upper surface of the mandible; slender throughout, but gradually pointed towards the apex, which is sinuate.

Measurements in millimetres.—Length of trunk 28, of head 6·5; width of head 7·5, of ocular tubercle 2; length of mandible 10·5, of palp 43, its tibia 13·5; of protarsus and tarsus 13·8; of fourth leg 62, its tibia 12·4, protarsus 11·9.

Loc. —? A single male example belonging to the late Count Keyserling's collection.

Apart from the very obvious distinctions between this species and the preceding two which is supplied by the form of the flagellum, it may be recognized easily from the male of *S. ferox* by the greater length of its legs and palpi, relatively longer head, wider ocular tubercle, longer mandible, &c. In length of palpi and legs it more resembles *S. paludicola*; but although the head is actually narrower in *Keyserlingii*, the ocular tubercle is the same size and the mandible distinctly longer, owing to the greater length of its terminal fang.

Of the previously described species, which are unknown to me, it perhaps approaches the Algerian *S. aciculata* in the structure of its mandibles. The latter, however, has the basal portion of the flagellum very high, the terminal portion more elevated in consequence, and the terminal fang of the upper jaw short. It may also be allied to *S. Schweinfurthi* of Karsch.

Solpuga Monteiri, sp. n. (Pl. IV. fig. 6.)

♀. Colour entirely pale except for indications of blackness upon the cephalic plate.

Allied to female of *ferox*, but with legs and palpi relatively shorter and stouter; cephalic plate equalling in width the length of the tibia of the palp, tibia of palp equalling the protarsus and tarsus taken together; the latter clothed below with soft hairs and not presenting those short, erect, truncate hairs which are observable in *S. ferox*.

♂. *Head* and *mandibles* infusate above; head about as wide as long, its anterior border produced forwards, tubercle large. Mandibles with the internal ridges longish, as in *S. Keyserlingii*; terminal fang of the upper jaw rather short, slightly curved at the apex, the two anterior teeth well developed and sharp, followed by two minute and separated denticles; *flagellum* with its basal portion low, mostly pale; distal portion, which begins to take its backward curve on a level with the second tooth of the upper jaw, very long and slender, projecting backwards past the ocular tubercle, slightly sinuate in its distal third. *Palpi* longish and robust (*cf.* measurements).

Measurements in millimetres.—Adult ♀. Total length (abdomen small) 33; width of head 12, length 9; width of tubercle 2.5; length of mandible 16.5, of palp 38, its tibia 12, protarsus and tarsus 12.2; length of fourth leg 56, of tibia 10.5, of protarsus 10.

♂. Total length 30, of head 7, width of head 7, width of tubercle 2; length of mandible 10; palp 36, its tibia 11.5, protarsus and tarsus 11.3; of fourth leg 52.5, its tibia 10.

Loc. Delagoa Bay (*Mrs. Monteiro*).

A third specimen, a female measuring, with distended abdomen, 33 millim., but with the head about 7.8 millim. wide, has the palpi relatively longer, the tibia being 8.5, and therefore noticeably longer than the width of the head; the latter, too, is distinctly fuscous above; moreover, the free thoracic segments and the abdominal dorsal plates are lightly infusate,

Apart from the form of the flagellum, the male of this species may be recognized from the male of *Keyserlingii* and of *paludicola* by its longer head, shorter legs and palpi.

The female is harder to discriminate.

In the structure of its flagellum the male approaches *S. chelicornis* of Licht. and Herbst (= *jubata*, Koch), a species which is unknown to me. But the three figures that have been published of the mandible of that species agree at least in one respect, namely in showing that the recurved portion of the flagellum starts a long distance behind the apex of the upper jaw.

Solpuga nigrescens, sp. n.

Colour black or very deep green throughout, hairs on abdomen and the long ones on the appendages reddish; the genital operculum pale in the middle; coxal racquets also entirely pale.

In general structure this species resembles *S. ferox*, but, apart from colour, certain other differential characters may be made out. The ocular tubercle is smaller (*cf.* measurements) and the legs and palpi are shorter, *i. e.* the protarsus and tarsus of the palp are shorter than the width of the cephalic plate, whereas in *ferox* they are longer; so, too, are the tibia of the palp and the tibia and protarsus of the fourth leg more noticeably shorter than the width of the cephalic plate than in *ferox*; and, lastly, the posterior borders of the two halves of the genital operculum are more convex than in the last species.

Measurements in millimetres.—Total length of trunk 34, of head 6·7; width of head 10, of ocular tubercle 1·6; length of mandible 13, of palp 26·5, its tibia 8, protarsus and tarsus 9·2; of fourth leg 42, its tibia and protarsus about 8.

Loc. Lower Zambesi (*J. Grant*).

The above measurements show that, although the cephalic plate of *S. nigrescens* is actually slightly wider than that of *S. ferox*, the ocular tubercle is noticeably narrower, and the segments of the palpi and legs noticeably shorter.

Solpuga Butleri, sp. n.

♀. *Colour* (dry example). Head, mandibles, legs, and palpi entirely fuscous; abdomen pale.

Cephalic plate not very high, equalling in width the protarsus of the fourth leg, but noticeably less in width than the tibia of the fourth and the tibia and protarsus and tarsus of the palpus. *Ocular tubercle* low, moderately wide. *Mandibles* with their dentition as in *S. ferox*, *i. e.* with two small

teeth between the second and third large teeth of the upper jaw. *Palpi* slender, longish; tibia slightly shorter than the tarsus and protarsus together, the latter thickly clothed beneath with longish hairs.

Legs longish (*cf.* measurements).

Genital operculum with the posterior borders of its two halves lightly convex, the inner angle not thickened and produced.

Measurements in millimetres.—Total length of trunk 54, of head 8·5; width of head 11·5, of ocular tubercle 2·5; length of mandible 18; tibia of palp 14·5, its protarsus and tarsus 15; tibia of fourth leg 14, protarsus 12.

Loc. Congo.

In the black colouring of its legs, palpi, mandibles, and head-plate this species resembles *S. nigrescens*; it appears, however, to differ in having the abdomen pale and the head much narrower as compared with the length of the palpi and legs.

The type of the species is the example from the Congo referred by Mr. Butler to *S. lethalis* of Koch.

Solpuga hostilis (White). (Pl. IV. fig. 7.)

Solpuga hostilis (White), Appendix to Methuen's 'Life in the Wilderness,' p. 317, pl. ii. fig. 5 (1846).

This species, of which there are two (♂ ♀) typical examples in the British Museum, seems to me to be identical with those that Simon has described as *S. setifera* of Olivier. But since there is very little evidence that it is *setifera* of Olivier, I prefer to retain the name that White applied to it.

In the male the upper jaw of the mandible is slightly depressed proximally, with the apex a little upturned; on its lower edge there are two small equal teeth a little behind the apex; these teeth are followed by a concave toothless area, behind which come the normal double series, but the first tooth of the inner series is enormously long and conical; on the lower jaw the three teeth are small, erect, sharp, and situated far behind the middle of the blade, the distal half of which is very long and curved; the *flagellum* has a high basal piece, and the slender portion runs forwards nearly to the apex of the fang before curving sharply backwards to terminate at a point beyond the ocular tubercle on the carapace.

Simon's figure differs from the structure here described in showing the two distal teeth on the upper jaw larger and the

first tooth of the posterior series small; moreover, the apex of the terminal fang is directed downwards.

In the female there is only one small tooth between the second and third large ones on the upper jaw, and the posterior angles of the genital operculum are produced. The head, mandibles, legs, and palpi are brownish or yellowish red, and there is a dark stripe down the middle of the back, which becomes black towards the hinder end.

Some of the measurements of the two species are as follows:—

♀. Length (abdomen shrivelled) 20; length of head-plate 5·5, width 7·5, of tubercle 1·2; length of mandible 10·5; tibia of palp 7; protarsus and tarsus 7·5; tibia of fourth leg 7·5, protarsus 6·5.

♂. Width of head 6, length 5; length of mandible 9; tibia of palp 9·3, protarsus and tarsus (noticeably curved) 9·8; tibia of fourth leg 9, protarsus 7·5.

Loc. “S. Africa, near the tropic of Capricorn.”

The male example of this species is the one that Mr. Butler identified as *S. chelicornis*.

Solpuga Derbiana, sp. n. (Pl. IV. fig. 8.)

= *S. jubata*, Koch, Butler, Tr. Ent. Soc. 1873, p. 421.

♂. *Colour* (dry) rufo-fuscous, with a dark median dorsal band, posteriorly blacker, on the abdomen; clothed with white hairs; the palpi and legs of the fourth pair become nearly black distally.

Head as wide as the length of the protarsus of the fourth leg, but shorter than the tibia of the palp. *Mandible* much resembling that of *S. hostilis*, but with the upper jaw straighter, extending further beyond the flagellum, not or scarcely toothed on its inner side; on the lower jaw the teeth are larger, conical, and more to the front; the first, moreover, is on both sides small and apically bifid, somewhat as Karsch has described for *S. scopulata*; the *flagellum* does not approach so near the apex of the jaw as in *hostilis*, and, curving more sharply backwards, fails to reach the edge of the carapace.

The palpi have the *protarsus* less bowed than in *hostilis*, and the scopula is composed of red hairs, and not of grey ones, as in that species.

Measurements in millimetres.—Total length 25; width of head 7·5, length 5; length of mandible 10·5, of tibia of palp 8·5, protarsus and tarsus 9; tibia of fourth leg 8, protarsus 7·5,

Loc. Interior of S. Africa (*Earl of Derby*).

The above-given measurements show that this species further differs from *hostilis* in having the legs shorter as compared with the width of the cephalic plate.

In the structure of its mandibles it seems to approach *S. producta* of Karsch (= *vineta* (C. Koch), Simon); but the teeth on the lower jaw of the mandible are more to the front, the curvature of the flagellum is much more abrupt, the upper jaw projects further in front of it and is not hooked at the apex.

Solpuga Marshalli, sp. n. (Pl. IV. figs. 9, 9 a.)

♂. Colour of head, mandibles, palpi, and anterior three pairs of legs reddish brown; the distal segments of the fourth leg, *i. e.* from the tibia to the tarsus, black; abdomen with a broad median black band, which spreads in front on to the posterior thoracic segments, clothed at the sides with long yellowish-white hairs.

Head exceeding in width the length of the protarsus of palp, but shorter than tarsus and protarsus taken together.

Mandible with upper fang straight and parallel-sided from base to point, where, in addition to the terminal fang, it is armed with two blunt teeth; *flagellum* almost as in *S. hostilis*, White, but rising from an upstanding semicircular plate and running forwards almost up to the apex of the fang, then turning abruptly backwards and terminating in a slightly upcurled point above the ocular tubercle.

Palpi short and moderately robust; the protarsus much less strongly bowed than in *hostilis*.

Measurements in millimetres.—Total length of trunk 21; width of head 5; length of mandible 9, of palp 22, of its tibia 7, tarsus and protarsus 7; length of fourth leg 36, its tibia 7.2, protarsus 6.2.

Loc. Fort Salisbury (Mashonaland). A single specimen obtained by Mr. G. A. K. Marshall, to whom I have great pleasure in dedicating the species.

This species is nearly allied to *S. hostilis* and *derbiana*, but may be recognized from both by the form of its mandibles.

Genus RHAX.

Rhax miranda, sp. n. (Pl. IV. fig. 1.)

♂.—*Colour.* Head black, with a small yellow spot on each side near the ends of the anterior border; mandibles entirely black; posterior two thoracic segments yellowish white;

anterior nine tergal plates of abdomen yellowish white; the sides of the abdominal segments and the entire anal segment black, lower surface of abdomen yellow in front, black posteriorly; palpi and legs clear reddish yellow, with the coxa, trochanter, and protarsus and tarsus of palp black, and the tarsus and distal end of protarsus of legs of first pair also black; edge of the malleoli blackish.

Ocular tubercle oval, flattish, without accessory setæ; the surface between the eyes flat, not sulcate, and about equalling an eye's diameter in width. *Mandibles* with the terminal fangs only moderately long; the anterior denticle on the lower jaw very minute. *Protarsus* of palp and of first leg normally spined; no spines on tarsal segment of palp; tibia of palp longer than protarsus and tarsus; tarsus of fourth segment provided only with setiform spines. *Coxæ* marked with a few spines.

♀. Larger than male, with abdomen enormously distended, and differing in the usual sexual characters.

Measurements in millimetres.—♂. Total length of trunk 28.5, of abdomen 17, of head 5, of mandible 11.8; width of head 8.5; length of palp 18.5, of fourth leg 26.5.

♀. Total length 63, of abdomen 50, of head 6.8; width of head 11.5; length of mandible 15.5, of palp 22, of fourth leg 27.5.

Loc. Gambia. Two examples (♂ ♀), collected and presented by Sir A. Moloney in 1885.

The locality of this species is of peculiar interest, inasmuch as it is, so far as is at present known, the most southern limit for the genus *Rhax* on the west coast of Africa. The species itself seems to be most nearly related to the Nubian *R. melanocephala* of Simon, which is unknown to me. The following differential characters, however, may be recognized from Simon's description:—In *R. melanocephala* the thoracic segments are mesially brown, and the protarsus of the first leg is entirely black; moreover, the ocular tubercle is said to be nearly round and mesially striate. In *R. miranda* the thoracic segments are pale, the protarsus of the first leg blackish only distally; the ocular tubercle is oval and not striate.

It also closely resembles in colour the Transcaspian *R. Eylandti*, of which the British Museum has two examples; but in *R. Eylandti* the median dorsal pale stripe on the abdomen narrows anteriorly upon the first tergite, is not directly continuous with the white of the thoracic segments, expands towards the posterior end, and extends on to the tenth or anal segment; whereas in *R. miranda* this stripe is

parallel-sided, extends only to the ninth segment, and is anteriorly continuous with the white of the thoracic segments.

Rhax ornata, sp. n. (Pl. IV. figs. 2, 2 a.)

Colour. Head black, yellow along the antero-lateral border; mandibles fulvous above, infusate externally; thoracic segments behind the head white; first, second, and third abdominal terga black; fourth yellow; fifth yellow in the middle, black at the sides; sixth and seventh black; eighth and ninth yellow; tenth black; sides and lower surface of abdomen brownish; legs and palpi yellow, ringed with black, palp with a band round the femur and another round the tibia; tarsus and distal half of protarsus also black; first leg with a black ring round the femur, tarsus deep brown; second and third legs also with a ring round the femur; fourth leg with a black spot on the lower side of the femur.

Ocular tubercle without additional setæ.

Mandibles powerful, the anterior denticle on the movable digit far in advance of the posterior; on the immovable digit there is a wide space between the second and third teeth; the terminal fangs of both digits long and slender.

Legs and palpi slender and longish; tibia of palp considerably longer than the protarsus and tarsus, the latter unarmed beneath, the protarsus, like that of the legs of the first pair, normally spined below. Spine-armature of the remaining legs also normal, but the spines prolonged distally into setiform terminations; coxæ of the first, second, and third legs armed below with a pair of spines set transversely (when the spines have been broken off, their situation may be easily recognized by the scars).

Measurements in millimetres.—Total length of body, from ocular tubercle to anus, 30; length of abdomen 17·5, of head 7; width of head 12; length of mandible 18, of palp 25, of its tibia 9·3, protarsus and tarsus 7·5, of fourth leg 35.

Loc. Mombasa. A single male example.

Somewhat resembling the male of *Rhax termes* of Karsch, judging from the description of the latter, but certainly differing in having black markings on the appendages, white thoracic segments, and the fourth and fifth abdominal terga pale above; moreover, the structure of the mandible is quite different in the two species (compare figures).

Genus GLUVIA.

Gluvia nigrimanus, sp. n. (Pl. IV. fig. 10.)

♂. *Colour* entirely pale yellow, except for the black ocular tubercle, the blackish fangs, and the dense black protarsus and tarsus of the palp, this segment, counting them as one, being only pale-coloured quite at its proximal and distal extremity.

Carapace with its anterior border lightly concave in the middle, owing to the slight forward production of the membrane of the lateral portion in advance of the buttress which supports the mandible.

Ocular tubercle hairy behind and in front, two of the anterior setæ longer than the rest.

Mandibles smooth above at the base, then strongly elevated before the base of the fang, armed above and externally with stout spiniform hairs and internally above at the base with a tuft of short hairs, and distally with a tuft of straight, long, thin hairs extending along the inner side of the upper fang as far as its apex; the upper fang rising abruptly from its base directed outwards and downwards, its upper edge nearly straight, only slightly depressed towards the apex, its inner edge entirely unarmed, carinate, and very lightly sinuate, the vertical area lying between the bases of the two fangs unarmed above, but furnished below with an external series of four teeth and an internal of three, the upper on each side being much larger than the rest, which gradually decrease in size; lower jaw furnished with two teeth only in its proximal half, one very large, the other much smaller and situated posteriorly on the inner side of the large tooth; the area in front of the large tooth slightly elevated.

Palpi longish and slender; femur and tibia spinous internally; protarsus and tarsus distinctly arcuate, closely hairy, but not spined.

Legs long and slender.

Measurements in millimetres.—Total length of trunk 24; width of head 7, length 5; width of tubercle 1; length of mandible 9, of palp 26.5, its tibia 9.2, protarsus and tarsus 8.5; of fourth leg 34.

Loc. —? (probably Meshed, Afghanistan; obtained by the Afghan Delimitation Commission).

In colouring and structure of its mandibles this species approaches *G. magna* (Hancock), from Texas; but the latter has the upper jaw of the mandible cylindrical, and not carinate below; the lower jaw is strongly curved distally,

with its large fang recurved; the protarsus of the palp, too, has spines mixed up with the hairs of its lower surface, and is less arcuate. Moreover, all the appendages are stouter and shorter.

Gluvia tolteca, sp. n.

(Preliminary description.)

♂.—*Colour*. Head ferruginous, anteriorly infusate; free thoracic segments and abdomen black above, clothed with white hairs; appendages of a uniform pale ferruginous tint, only lightly infusate.

Mandible as in *G. nigrimanus*, except that the superior edge of the upper fang follows the slope of the basal portion and the lower edge is less carinate; the area just above the joint of the lower fang armed with two series of teeth, of which the outer consists of five and a series of minute denticles and the inner of five; the lower jaw armed with two large teeth and two small ones between them. *Palpi* unspined, furnished with long hairs.

Loc. Mexico. A single male example.

PARACLEOBIS, nom. nov.

= *Gluvia*, Simon, Ann. Soc. Ent. Fr. 1879, p. 127 &c.; not *Gluvia* C. Koch, Arch. Nat. 1842, p. 355, and Die Arachn. xv. p. 95.

Since none of the species referred by C. Koch to *Gluvia* are generically identical with those that Simon referred to this genus, it is clear that the latter are nameless.

I propose that *Paracleobis* be established for their reception, with the Spanish species *dorsalis*, Latr., as the type; and, since Mons. Simon recharacterized *Gluvia* as *Datames*, the two must be regarded as synonyms, *Gluvia* having the priority.

Paracleobis Balfouri, sp. n.

♀. *Colour* entirely pale yellow, with the exception of the black ocular tubercle, black mandibular fangs, and a broad black band round the distal half of the protarsus of the palp; distal extremity of the tarsus pale.

Carapace with its anterior border lightly convex; tubercle with a series of hairs surrounding the eyes in the inner side and a cluster in front, of which two are stronger than the rest; space between the eyes about equal to a diameter.

Mandibles with long, sharply defined, stridulating ridges; the lower jaw dentate, somewhat as in *P. dorsalis*, but in the

upper the anterior two teeth are large and subequal, as large, in fact, as the fourth—the third, fifth, and following ones being small.

Palp with its *protarsus* studded below with two series of longish spines.

Measurements in millimetres.—Total length 16; width of head 4, length 3; length of mandible 5.3, of palp 12, its *protarsus* and *tarsus* 4, of fourth leg 18.

A single female example from Socotra (*I. B. Balfour*).

Genus CLEOBIS.

Cleobis gryllipes (Gervais).

Galeodes gryllipes, Gervais, L'Institute, 1842, p. 76; Ins. Apt. iii p. 91 (*Solpuga*).

In his description of this species Gervais wrongly asserts its locality to be Martinique. The type specimen preserved in this Museum, labelled, apparently, by Gervais himself and agreeing accurately with his description, bears a ticket on which Jamaica is distinctly written. In the British Museum there is no example of *Solifugæ* belonging to this or any other genus from Martinique.

The type of the species in question is a male, and it may be recognized from both males and females of the other species known to me by the presence of two minor teeth between the two large teeth on the lower fang of the mandible.

Cleobis Gervaisii, sp. n.

Colour. Cephalic plate and mandibles entirely pale yellow; palpi with femora, proximal end of tibia, and proximal half of *protarsus* flavous, the rest fuscous; legs, with the exception of the basal segments, infusate, the anterior pair paler than the posterior (fourth pair missing in type); free thoracic segments and abdomen fuscous above.

Ocular tubercle represented merely by a slight prominence, projecting anteriorly between the eyes, which look forwards, upwards, and outwards, the space between them about equal to a diameter.

Mandibles with a distinct crest at the base of the upper fang; the first and second teeth about as large as the fourth, the third small; in the lower jaw there is one small tooth between the two large ones.

Palp without spines, except for a few small ones on the inner side of the lower surface of the *protarsus*.

Loc. Type specimen ticketed “? S. America;” but the

other specimens in the Museum belonging apparently to the same species, but too mutilated and shrivelled for accurate determination, are labelled "Guayaquil and Colombia."

Cleobis Stollii, sp. n.

(Preliminary diagnosis.)

Colour. Head and mandibles entirely pale yellow; upper surface of the free thoracic segments and of the anterior seven abdominal segments pale yellow in the middle, infusate at the sides; palp with tibia lightly infusate above, protarsus with its proximal third pale, the rest of it infusate, the two tints gradually blending; first and second legs slightly infusate distally, third more strongly so, with a pale band round the distal end of the tibia and protarsus; fourth leg with femur, tibia, and tarsus deeply infusate, especially the latter two segments, which, however, have their distal ends ringed with flavous; coxæ, trochanters, and tarsi of all the legs pale.

Loc. Retalhuleu in Guatemala (*Dr. O. Stoll*).

This species and the preceding resemble *C. cubæ*, Lucas, as described by Mons. Simon, in the structure and dentition of their mandibles, spinulose armature of protarsus of palp, &c. *C. Stollii* further resembles *C. cubæ* in having the upperside of the abdomen adorned with a median flavous band; but it appears to differ in having the first, second, third, and fourth legs infusate, with a conspicuous flavous ring round the distal end of the tibia of the fourth. According to Simon *C. cubæ* has the first, second, and third legs pale, and the fourth reddish brown, with the base of the femur, extremity of the metatarsus, and the tarsus clear testaceous.

C. Gervaisii differs from *C. cubæ* in having no distinct median pale band on the abdomen, in having the second and third legs infusate, and a wide, sharply defined, flavous band upon the proximal half of the protarsus of the palp.

EXPLANATION OF PLATE IV.

Fig. 1. *Rhax miranda*, sp. n., ♂, nat. size.

Fig. 2. *Rhax ornata*, sp. n., ♂, nat. size.

Fig. 2 a. Ditto. Mandible.

Fig. 3. *Solpuga ferox*, sp. n. Mandible of male.

Fig. 4. *Solpuga paludicola*, sp. n. Mandible of male.

Fig. 5. *Solpuga Keyserlingii*, sp. n. Mandible of male.

- Fig. 6. *Solpuga Monteiri*, sp. n. Mandible of male.
 Fig. 7. *Solpuga hostilis*, sp. n. Mandible of male.
 Fig. 8. *Solpuga Derbiana*, sp. n. Mandible of male.
 Fig. 9. *Solpuga Marshalli*, sp. n. Mandible of male (inner view).
 Fig. 9 a. Ditto. Ditto (outer view).
 Fig. 10. *Gluvia nigrimanus*, sp. n. Mandible of male.
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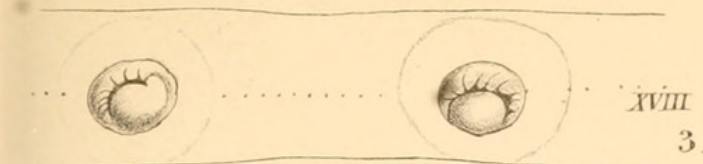
XIV.—*On the Dascillidæ and Malacoderm Coleoptera of Japan.* By G. LEWIS, F.L.S.

[Plate VI.]

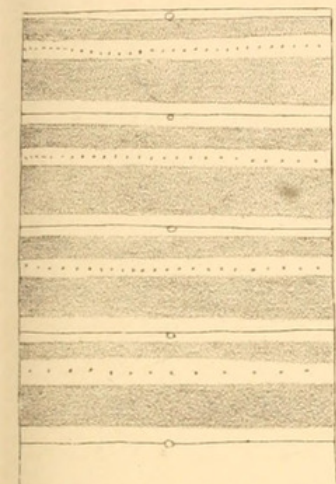
THIS paper is supplementary to those written by Kiesenwetter in 1874 and 1879; the first was published in the 'Berliner ent. Zeitschrift,' xviii. pp. 241–288, and the second in the 'Deutsche ent. Zeitschrift,' xxiii. pp. 305–320. But this paper does not include the Lycidæ nor the Lampyridæ, as a revision of these sections was given by Gorham in the Trans. Ent. Soc. Lond. pp. 393–411 (in 1883), and the Cleridæ, also included in the Malacodermata, have been dealt with by myself in the Ann. & Mag. Nat. Hist. (6) x. pp. 183–192, in 1892. A note on the synonymy of the last paper will be found at the end of this memoir; and I hope to describe and figure during the current year a remarkable new species with pectinate antennæ, and, perhaps, allied to *Tenerus*.

The numbers of species at present known from Japan in the various families are represented by the following figures:—Dascillidæ 27, Telephoridæ 39, Drillidæ 5, Melyridæ 19, Lycidæ 20, Lampyridæ 8, and Cleridæ 23, making a total of 141 species.

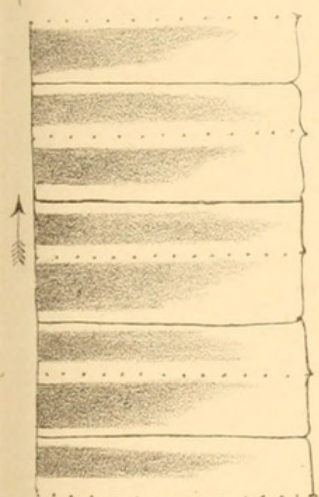
Owing to some authors using the name of *Cantharis* for *Telephorus*, species are recorded in the 'Zoological Record' of 1879 (Ins. p. 65) amongst the Cantharidæ; it is very inconvenient using two names, such as *Telephorus* and *Cantharis*, of different genders, as the species, when transferred from one to the other, require different specific terminations. In Kiesenwetter's paper of 1879 no sizes are given for his species; but it is not a matter of great importance, as the measurements of species in this section of the Coleoptera necessarily take a wide range, as individuals vary greatly in size, and entomologists seeking to name their specimens by Kiesenwetter's descriptions will not be misled by the omissions.



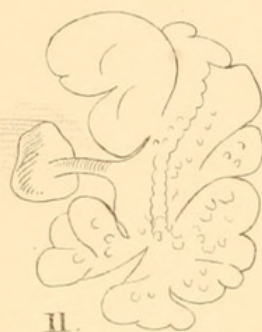
XIX



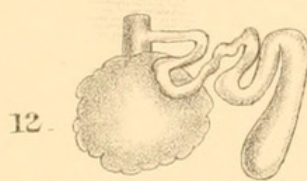
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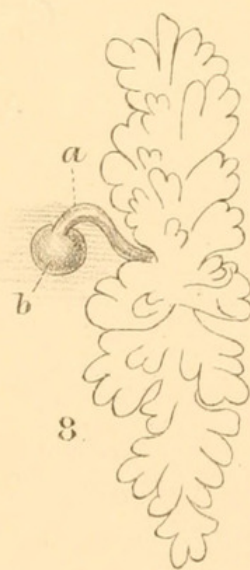
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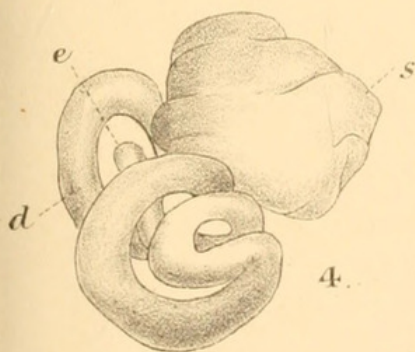
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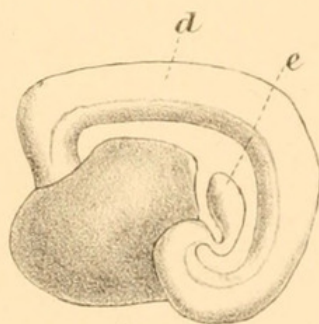
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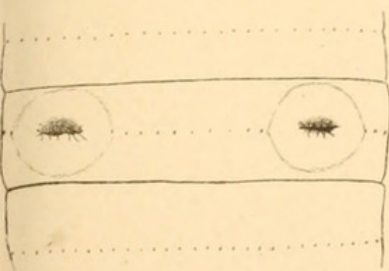
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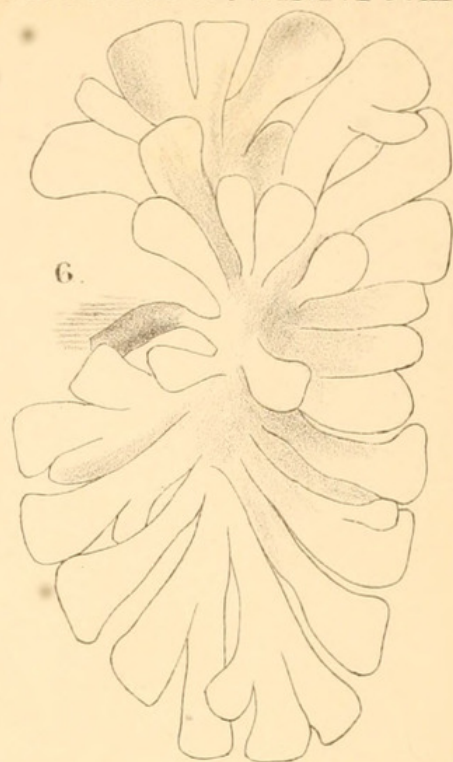
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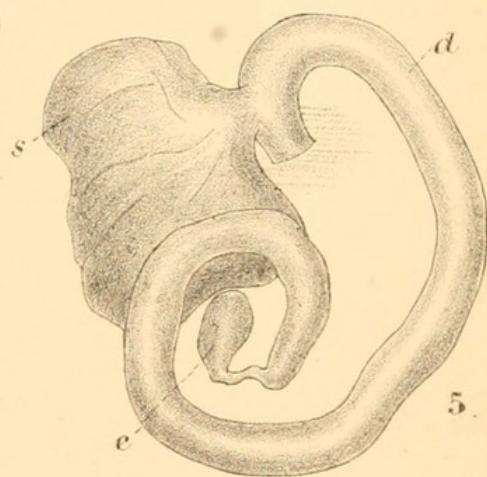
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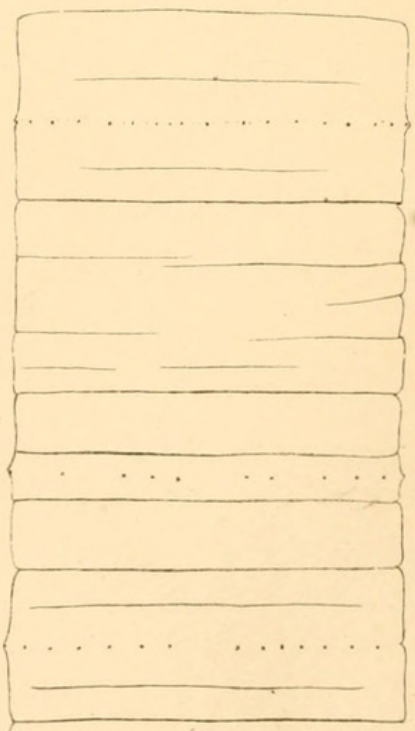
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6.



5.



10.



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