

18286 vol. 12:

## THE SPHEGIDAE OF SOUTH AFRICA

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## PART X

With 3 Plates and 9 text-figures.

## CHLORION Group

GENERAL CHARACTERS. The eyes usually reach the base of the mandibles, but sometimes they are separated from them by short cheeks. Maxillary palpi 6-, labial palpi 4-jointed. Mandibles not excised on the outer margin. Antennae 13-jointed in the ♂, 12-jointed in the ♀. Flagellum filiform. Pronotum as high as the mesonotum, or not much lower; the pronotal tubercles do not extend back as far as the tegulae. Epicnemium absent, the episternal suture usually present. Epinotum large. Abdomen petiolate, the petiole formed only by the sternite of the first segment, or in forms with a 2-jointed petiole, by the sternite and tergite of the first segment. Pygidial area absent. Middle tibiae with two spurs.

Forewing with 3, rarely with 2 cubital cells; the basal vein meets the subcosta at a considerable distance from the stigma. Basal lobe of hindwing very large, extending beyond the submedial cell. This group consists of the following subdivisions:

Group	Subgroups	Genera	Subgenera and species-groups
CHLORION (olim SPHEX)	SCELIPHRON Ill. s.l.	SCELIPHRON Ill. s.str.	CHALYBION Dhlb. HEMICHALYBION Kohl PELOPOEUS Latr.
		PODIUM F. <sup>1</sup> TRIGONOPSIS Perty <sup>1</sup>	
	SPHEX L.	SPHEX L. (olim AMMOPHILA Kirby)	PARAPSAMMOPHILA Tasch. PSAMMOPHILA Dhlb. SPHEX L. COLOPTERA Lep.
	CHLORION Fab. s.l.	CHLORION Fab.  HARPACTOPUS Smith  ISODONTIA Patt. PROTEROSPHEX Fernald.	PSEUDOSPHEX Tasch. <sup>1</sup> CALOSPHEX Kohl <sup>1</sup> PARASPHEX Smith PALMODES Kohl HARPACTOPUS Smith

<sup>1</sup> Not Ethiopian genera.

Genus *SCELIPHRON* Klug.

*Neue Schr. d. Ges. Naturforsch. Freunde*, Berlin, III, pp. 554-66. 1801.

*Pelopoeus* Latr. *Hist. Nat. Crust. et Insect.* III, p. 334. 1802.

*Chalybion* Dhlb. *Hymen. Eur.* I, p. 21. 1843-45.

CHARACTERS. Eyes usually moderately convergent above, the inner margins slightly concave. Ocelli round and normal. Third joint of the maxillary palpi dilated below. Joints of the flagellum, excepting the first, elongate, the apical joint not truncate at the end. Tongue short, feebly bilobate at the apex. Clypeus in the ♀ with either 3-5 blunt teeth or lappets, or bilobed in the middle; in the ♂ it is more or less produced in the middle, with the anterior margin bidentate or tridentate. Mandibles sickle-shaped, armed in the ♀ with a tooth behind the apex. Occiput short. Pronotum with a short collar, about as high as the mesonotum, with a more or less deep median longitudinal impression; the sides of the collar are more or less sunken in the middle, the depression being either free and continuous to the front of the collar, or shut off in front by a torus. Mesonotum a little wider than long, sometimes impressed lengthwise in the middle in front. Scutellum subrectangular, sometimes impressed in the middle or bituberculate. Mesopleurae decidedly long, with a distinct episternal suture in front. Metapleurae long, produced rather far backwards, almost as far as the end of the epinotal declivity; in front they are not very clearly delimited from the mesopleurae, and above the middle coxae they have a deep pit. Epinotum long, the dorsum as long as, or longer than wide, sometimes with a dorsal area delimited by a depression bordering the lateral and apical margins; the declivity is as a rule very oblique and fairly long. Petiole cylindrical, long and thin, formed by the first sternite; the rest of the abdomen ovate-globose. Legs long, the femora and tibiae without spines; tarsi without a comb, but with small short spines underneath. Claws of the fore and middle legs always with a tooth, those of the hind legs often unarmed.

Fore wing. Pterostigma small. Three cubital cells, the first much larger than the other two. Both recurrent veins are received by the second cubital cell. The basal vein arises behind the end of the first submedial cell.

Hind wing. Retinaculum unbroken, beginning at the base of the radius. The cubitus arises behind the end of the submedial cell. The basal lobe is very large, folded under and forwards when the wing is at rest, and ends near the anal sinus; a basal sinus is not defined.

Habitat. Temperate and tropical zones of both hemispheres. These wasps build cells of mud, dung, etc., which are attached to the walls of human habitations, or sometimes to the trunks and branches of trees, or to stones. Some species have a partiality for using key-holes and similar cavities. The nest consists of a variable number of cells which are usually enclosed in a common envelope of mud, but in some species the cells may be left uncovered. The prey with which they provision their young consists exclusively of spiders. This genus has been exhaustively monographed by Kohl in the *Ann. K.K.N.H. Mus. Wien*, vol. XXXII, 1918, and the reader should turn to it for further information on the life-history and habits of these insects.

In the following key and descriptions *S. leptogaster* Cameron (*Trans. Phil. Soc. S.A.* p. 227, 1915) has been omitted, since, as Kohl has rightly remarked, it is impossible to determine from the description whether the species belongs to this genus or not.

*S. punctatum* Kohl (*Verh. Zool. Bot. Ges. Wien*, vol. XXXVIII, p. 155, ♀, 1888) has also been omitted, since it appears to be synonymous with *S. inflexum* Sickm., a palaearctic species which may have been accidentally introduced into Zanzibar.



KEY TO THE SPECIES OF *SCELIPHRON*

- A. Body metallic blue. Third cubital cell narrowed on the radius. Clypeus distinctly convex, in the ♀ with three to five small rounded lobes on the anterior margin, in the ♂ with three small teeth. Petiole always more or less curved, and never yellow. Second joint of the flagellum never longer than the third. Claws of the hind legs unarmed, or with a very small tooth. Second cubital cell narrower on the radius than the third, never wider. Dorsum of epinotum without a median longitudinal groove. subgenus *Chalybion* Dahlbom

♀♀

- (8) 1. Metapleurae not sunken, lying in the same plane as the mesopleurae and the sides of the epinotum.  
 (3) 2. Metapleurae distinctly striate as well as punctate. *Schulthessi-Rechbergi* Kohl  
 (2) 3. Metapleurae not striate, only sparsely punctured.  
 (5) 4. Head and thorax black, without metallic lustre. Pilosity reddish brown. Clypeus, first seven joints of the antennae, fore and middle legs and hind tarsi more or less ferruginous. *fuscipenne* Smith  
 (4) 5. Head, thorax and abdomen metallic steel-blue or purple.  
 (7) 6. Mesonotum fairly shining, feebly and very sparsely punctured. Hind tibiae metallic blue. Claws of hind legs without a distinct tooth. Pilosity of the head whitish, rarely blackish brown. Wings dark brown, with a steely blue lustre. *laevigatum* Kohl  
 (6) 7. Mesonotum fairly strongly punctured. Hind tibiae and tarsi, and often also the middle tibiae and tarsi, ferruginous. Claws of hind legs with a distinct tooth. Pilosity of the head and thorax dense and black. Wings dark brown, with a violaceous lustre. *tibiale* Fab.  
 (1) 8. Metapleurae sunken, not lying in the same plane as the mesopleurae and the sides of the epinotum.  
 (10) 9. Petiole long, as long as the first two joints of the hind tarsus. Metapleurae transversely striated. *Gredleri* Kohl  
 (9) 10. Petiole shorter, not longer than the basal joint of the hind tarsus plus half of the second joint. Metapleurae punctured.  
 (12) 11. Dorsum of epinotum fairly flat and long, longer than the mesonotum and scutellum united, very closely and rather finely transversely striate, not punctured between the striae. Metapleurae only very slightly sunken. *Heinii* Kohl  
 (11) 12. Dorsum of epinotum less elongate, almost flat, as long as the mesonotum and scutellum united, transversely and not very closely or finely striate, punctured between the striae. Metapleurae sunken. *bengalense* Dahlbom

♂♂

- (6) 1. Metapleurae not sunken, lying in the same plane as the mesopleurae and the sides of the epinotum; they are punctured and without striae. Second joint of the flagellum shorter than the third. (Sternites 4 and 5, or 3, 4 and 5 covered with a fine decumbent pile.)  
 (3) 2. Head and thorax black, without metallic lustre. Clypeus more or less, mandibles, first seven joints of the antennae, fore and middle legs, and the tarsi, ferruginous. *fuscipenne* Smith  
 (2) 3. Head, thorax and abdomen metallic blue, blue-green or purple.  
 (5) 4. Mesonotum shining, very shallowly, sparsely and finely punctured. Hind tibiae metallic blue. Pilosity of the head and thorax whitish, rarely black. Dorsum of the epinotum a little longer than the length of the mesonotum and postscutellum united. Interocular distance across the clypeus a little greater than across the vertex. *laevigatum* Kohl

- (4) 5. Mesonotum distinctly and not shallowly punctured. Hind tibiae and tarsi, and often also the middle tibiae and tarsi, ferruginous. Pilosity of the head and thorax thick and black. Dorsum of the epinotum a little shorter than the length of the mesonotum and post-scutellum united. Interocular distance across the clypeus not greater than across the vertex. *tibiale* Fab.
- (1) 6. Metapleurae sunken, not lying in the same plane as the mesopleurae and the sides of the epinotum. (Sternites 4 and 5 with a fine decumbent pile.)
- (8) 7. Dorsum of epinotum closely and rather finely striate transversely, without punctures, a little longer than the mesonotum and scutellum united. (The metapleurae are only slightly sunken.) *Heinii* Kohl
- (7) 8. Dorsum of epinotum transversely striate and punctured between the striae, as long as the mesonotum and scutellum united. *bengalense* Dahlb.
- B. Body black and yellow; the abdomen, and sometimes the thorax, with a metallic blue lustre. Clypeus convex, the anterior margin without lobes or teeth. Second joint of the flagellum about as long as third. Petiole yellow. Legs ringed with yellow as in the subgenus *Pelopoeus*. Third cubital cell not, or only very slightly, narrowed on the radius, the second cubital cell very much narrowed there. Dorsum of epinotum convex, sometimes subcarinate lengthwise in the middle, without a median longitudinal groove. subgenus *Hemichalybion* Kohl

♀♀ and ♂♂

- (2) 1. Head and thorax black, without any trace of metallic lustre; the abdomen black, with a dark purplish lustre which is sometimes absent. The median area of the clypeus is not much produced in front, and the anterior margin is not excised in the middle. *brachystylus* Kohl
- (1) 2. Thorax and abdomen dark metallic blue, the thorax sometimes more or less ferruginous. Median area of the clypeus more produced in front, and with a feeble median excision.
- (4) 3. Thorax more or less ferruginous, sometimes entirely so. *Eckloni* Dahlb., var. *rufopicta* Magretti
- (3) 4. Thorax metallic blue-black.
- (6) 5. Wings clouded with fuscous only on the apical margin. 21-28 mm. long. *Eckloni* Dahlb.
- (5) 6. Wings clouded all over, the apical margin darker. 28-32 mm. long. *Saussurei* Kohl
- C. Body without metallic lustre, mostly black and yellow, seldom brownish or dark ferruginous. Petiole often yellow, straight or curved. Clypeus flat, its produced anterior margin bilobed in the middle. Second joint of the flagellum distinctly longer than the third. With one exception, the claws of the hind legs are toothed like the other claws. Second cubital cell sometimes narrower and sometimes wider on the radius than the third. Dorsum of epinotum with a well-defined, raised median area which is usually longitudinally grooved in the middle. subgenus *Pelopoeus* Latr.

♀♀ and ♂♂

- (2) 1. The anterior outer corners of the posterior coxae, viewed from above, are subrectangular. *spirifex* Linn.
- (1) 2. The external border of the posterior coxae, viewed from above, distinctly rounded from front to back.
- (4) 3. Pilosity brown or reddish brown; the anterior and dorsal faces of the pronotal collar form a continuous curve (fig. 4). *fulvohirtum* Arnold
- (3) 4. Pilosity black; the anterior and dorsal faces of the pronotal collar meet subrectangularly. (Fig. 4a). *Quartinae* Grib., and *complex* Kohl



*S. (Chalybion) laevigatum* Kohl (figs. 1, 1a and b). *Verh. Zool. Bot. Ges. Wien*, xxxvii, p. 155, ♂, ♀. 1888.

*Pelopoëus chalybaeus* Smith (nec Van der Linden). *Cat. Hymen. B.M.* iv, p. 229, ♀. 1856.

♀. 20–24 mm. long. Antennae black, sometimes the second and third joints of the flagellum reddish brown; tarsi dark brown, mandibles ferruginous, their apices black; the rest of the body is dark metallic blue or blue-purple. Wings dark brown, with a violaceous lustre. Head and thorax with a fairly abundant, exerted, greyish white pilosity; the petiole at the base with a similar but scanty pilosity. Whole body shining, the face and temples somewhat duller than the other parts. Clypeus convex, subcarinate lengthwise in the middle, sparsely and finely punctured (chiefly at the sides), the anterior margin with five lobes. Face closely rugulose-punctate, the rest of the head finely, very shallowly and very sparsely punctured. Sides of pronotal collar impunctate, the dorsal face of the same, the mesonotum and scutellum very finely, shallowly and sparsely punctured. Sides of the thorax behind the pronotum convex, finely and shallowly punctured, the punctures becoming gradually larger and farther apart towards the posterior end. The metapleurae lie in the same plane as the mesopleurae and the sides of the epinotum and the suture between them and the epinotum is entirely obliterated. Dorsum of epinotum finely and closely punctured and transversely striate between the punctures; it is slightly raised lengthwise in the middle, feebly concave on each side in the posterior half, as long as the mesonotum, scutellum and metanotum combined. The declivity of the epinotum is oblique, strongly striated transversely and punctured. Abdomen with only a microscopic puncturation. Second joint of the flagellum a little shorter than the third. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus half of the third joint. Dorsal face of the pronotal collar deeply impressed in the middle, convex from front to back, shorter than the sloping anterior face, the shoulders rounded. Petiole as long as the first joint of the hind tarsus, shorter than the hind femur, which is not quite one-fourth longer. Second cubital cell always narrower on the radius than the third cubital cell.

♂. 12–18 mm. long. Mandibles without a tooth on the inner margin. Clypeus with three small teeth on the anterior margin. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the third joint. Fourth and fifth sternites with a microscopic, brownish, adpressed pile. Otherwise like the ♀.

Widely distributed throughout tropical and South Africa.

The *S. cubitaloide* Strand (*Jahrb. Nassau Verh. Naturh.* lxxiii, p. 47, ♂, 1910) is only a variety of this species with black pilosity, blackish mandibles and a second cubital cell more narrowed above than usual. (R.M. and T.M. colls.)

*S. Sommereni* Turner. *Ann. Mag. N.H.* v, No. 27, p. 267, ♀. 1920.

“♀. Viridi-cyanea; mandibulis basi, scapo, flagello articulis 5 basalibus, tegulis, pedibusque, coxis exceptis, rufo-ferrugineis; alis hyalinis, apice late infumatis, venis ferrugineis; capite thoraceque albo-pilosis.

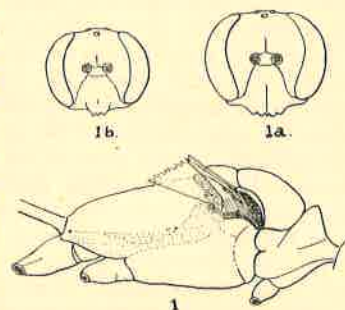


Fig. 1. *Sceliphron laevigatum*, ♀, thorax. a. ♀, head. b. ♂, head.



Long. 17-20 mm.

Clypeus with a row of five small teeth on the apical margin, slightly convex; second and third joints of the flagellum subequal. Mesonotum rather closely punctured, more closely than in *chalybeum* Smith (= *laevigatum* Kohl), and less deeply grooved in the middle than in that species. Otherwise similar to *chalybeum* Smith.

*Hab.* Kabete, near Nairobi, E. Africa (Dr van Sommeren); 3 ♀♀.

Possibly an extreme local variety of *S. chalybeum*, but the very great colour-differences, especially of the legs and wings, and the distinctly closer puncturation of the mesonotum, seem sufficient to merit specific rank. The colour of the basal antennal joints in *chalybeum* appears to be subject to considerable variation."

*S. (Chalybion) Schulthessi-Rechbergi* Kohl. *Ann. K.K.N.H. Mus. Wien*, xxxii, p. 73, ♀. 1918.

"♀. 24.5 mm. long. Dark steel-blue, with black pilosity. Wings dark brown with a blue-violet lustre. Mandibles fusco-ferruginous, the second and third joints of the flagellum of the same colour. Legs metallic blue and black, without red colour. Mandibles with a tooth on the inner margin before the apex. Clypeus well arched, with a median carina, and with five lobes on the anterior margin, the middle one small. The interocular distance on the vertex is nearly equal to the length of the second joint of the flagellum plus two-thirds of the following joint, and is a little less than the distance between the eyes across the clypeus. Second joint of the flagellum four times longer than wide, and about as long as the third. Pronotal collar deeply impressed in the middle. The groove-like depression on the sides of the pronotal collar is open in front, as in the nearest related species (*laevigatum*, *fuscipenne* and *tibiale*), whereas in the other members of the *Chalybion* group it is closed. The mesonotum has a median longitudinal impression, as in the nearest related species. Petiole feebly curved, somewhat longer than the first joint of the hind tarsi, but shorter than the hind tibiae. Sternites without an adpressed pile. The third cubital cell is trapezoidal, and somewhat wider on the radius than the second. The claws of the first two pairs of legs are dentate, but whether this is so with the hind pair cannot be ascertained since the apical tarsal joints are lacking in the type. Clypeus only slightly punctured. Face densely punctured and also slightly rugose, the vertex moderately, the temples and occiput feebly and sparsely punctured. Pronotal collar punctured, the anterior face transversely striate on the lower half. Mesonotum densely punctured, especially at the sides, and with feeble rugae here and there behind. Mesopleurae densely punctured and also striolate. The metapleurae and the sides of the epinotum are distinctly punctured and transversely striate, but the posterior third of the metapleurae is less closely punctured. Declivity of the epinotum strongly, transversely striate. Dorsum of the epinotum feebly swollen lengthwise in the middle, shallowly depressed on each side of the middle, closely and transversely striate all over, and punctured between the striae.

*S. Schulthessi-Rechbergi* differs from all the nearest related species by the much coarser puncturation of the mesonotum, and also by the greater length of the petiole.

Kissantu, Inkissi River, Belgian Congo."

This insect appears to me to be only a variety of *laevigatum* with a stronger puncturation. Apart from that character, the only points in which it differs from *laevigatum* are the very slightly greater interocular width of the vertex and the longer petiole. However, the proportions of those parts are variable within the species, as Kohl himself acknowledges in the introductory chapter in his monograph of the genus.



*S. (Chalybion) Heinii* Kohl. *Denkschr. d. K. Akad. Wiss. Wien*, LXXI, p. 26, ♀, p. 29; ♂. 1906. *Ann. K.K.N.H. Mus. Wien*, XXXII, p. 56, ♀, ♂. 1918.

"♀. 13-16 mm. long. Like *S. bengalense* Dhlb., but smaller and more slender. The blue colour of the body is replaced in parts by violet and is darker than in *bengalense*. Mandibles with a tooth on the inner margin at some distance from the apex. Clypeus of the usual shape, with five lobes or lappets on the anterior margin. Face with silvery white pubescence. The distance between the eyes on the vertex is equal to the length of the second joint of the flagellum plus three-fifths of the following joint; across the clypeus the width is a little greater. Second joint of the flagellum a little shorter than the third. The median impression of the pronotal collar is distinct, and the hollows on the sides are closed in front. The metapleurae are only slightly depressed, in which character this species is transitional to the *tibiale* group. The dorsum of the epinotum is slender and elongate; its length is greater than that of the mesonotum and postscutellum united. It is clearly flattened, more so than in *bengalense* in which the median longitudinal area is still somewhat prominent. Petiole only slightly curved, almost straight, nearly as long as the first joint of the hind tarsus. The sternites have no adpressed pile. The claws of the hind legs are without a tooth. The second cubital cell is narrower on the radius than the third.

The clypeus has a scattered puncturation which is not easily seen on account of the pubescence, but the face is closely and distinctly punctured. Vertex, temples, occiput and pronotal collar with small scattered punctures. Puncturation of the mesonotum distinct but nowhere dense, of the mesopleurae only moderately dense. The metapleurae are smooth and shining and are punctured only on the margins; they are therefore sharply marked off from the mesopleurae and the sides of the epinotum. The dorsum of the epinotum is closely and finely, transversely striate, the declivity coarsely so.

♂. 10-13 mm. long. Smaller and even more slender than the ♀, and agreeing with that sex in the specific characters. Clypeus not arched to quite the same extent as in *bengalense*, the carina not distinct. On the vertex the least distance between the eyes is equal to the length of the second and third joints of the flagellum, but across the clypeus it is a little less. Viewed from the side the contour of the mesothorax below is almost a straight line. Sternites 4 and 5 with a yellowish grey sericeous pubescence."

South Arabia and Erythraea.

*S. (Chalybion) Gredleri* Kohl. *Ann. K.K.N.H. Mus. Wien*, XXXII, p. 67, ♀. 1918.

"♀. 14.5 mm. long. A very graceful and slender wasp, much more so than the smallest examples of *S. bengalense* Dhlb., which it resembles in the tone of the blue colour, and in the white pilosity and pubescence.

Mandibles ferruginous. The second joint of the flagellum is brownish red below, which indicates a variability of colour in the antennae. The clouding of the wings is only slight. Second joint of the flagellum a little shorter than the third. The least distance between the eyes on the vertex is equal to the length of the second and third joints of the flagellum, and a little more than that across the clypeus. The median part of the clypeus is less arched than usual in *Chalybion* species; its anterior margin has three strong, ferruginous teeth in the middle. Pronotal collar depressed in the middle; the depressions on the sides of the collar are hardly closed in front. Scutellum fairly flat. The metapleurae are somewhat depressed and therefore on a lower level than the elongate mesopleurae. The epinotum is long; the dorsum is hardly shorter



than the meso- and metanotum united, and lacks an apical pit. The declivity is not steep, and in profile forms only a blunt angle with the dorsum. The petiole is feebly arcuate, longer than in any other known species of *Chalybion*; it is as long as the first two joints of the hind tarsus. The claws of the hind legs are apparently unarmed. The first and second transverse cubital veins are almost in contact on the radius (perhaps not always so), and therefore the second cubital cell is only half as large as the third. The sternites have no sericeous pubescence. The face is closely punctured, but the vertex, occiput and temples are almost impunctate. Pronotal collar punctured, the anterior face transversely striate. Mesonotum very coarsely and closely punctured, the mesopleurae with somewhat finer and less close puncturation. Epimerum of the metapleurae, above and in front of the depression, almost impunctate and smooth, the rest of the metapleurae with short transverse striae and some punctures. Epinotum above and behind transversely striate, with isolated punctures between the striae. Posteriorly the striae are a little stronger."

Boma Sundi, Lukula River, Belgian Congo.

*S. (Chalybion) bengalense* Dahlbom. *Hymen. Eur.* 1, p. 433, 1845. Kohl, *loc. cit.* p. 55, ♀, ♂.

♀. 13-18 mm. long. Metallic greenish blue, a much paler blue than that of *laevigatum* Kohl. Wings pale brown, paler than in *laevigatum*, the apical margin darker. Tarsi blackish. Mandibles black, with a tooth on the inner margin before the apex. Pilosity white. Face fairly closely and finely punctured at the sides, sparsely and rather coarsely in the middle. Clypeus, vertex and temples sparsely and finely punctured. Mesonotum shining, strongly but not closely punctured, the pronotum with slightly smaller punctures and a few transverse rugae on the anterior face of the collar. Mesopleurae as strongly punctured as the mesonotum but more closely. Metapleurae finely and closely punctured in front, sparsely behind, the punctures large and deep near the posterior margin. Scutellum and postscutellum sparsely and fairly finely punctured, the former only feebly impressed down the middle, much less deeply than in *laevigatum*. Dorsum and declivity of epinotum transversely and closely rugose, punctured between the rugae, the punctures larger and more abundant on the declivity than elsewhere. The clypeus is less convex than in *laevigatum*, but has a distinct median longitudinal carina; there are five lappets on the anterior margin. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus three-fifths of the third joint, and not less than the distance between the eyes across the clypeus. The grooves at the sides of the pronotal collar are not quite closed in front. The dorsal face of the pronotal collar is much less gibbous than in *laevigatum*, and the anterior face is not subvertical as in that species but slopes forwards at a low angle. Metapleurae depressed in front, not lying in the same plane as the mesopleurae. Dorsum of epinotum, measured from the base to the apical fovea, as long as the mesonotum and scutellum united. The basal half is less convex transversely than in *laevigatum*. Petiole feebly arcuate, about as long as the hind tibia. Claws of the hind legs with a very small tooth which is sometimes almost obsolete. Second cubital cell narrower on the radius than the third. Fourth sternite with a band of adpressed blackish pile at the base.

♂. 11-17 mm. long. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus three-fourths of the following joint. Clypeus with three small teeth in the middle of the anterior margin. Mandibles without a tooth on the inner margin. Fourth and fifth sternites with a micro-



scopic, silky, grey pubescence. Otherwise like the ♀. Widely distributed in the Oriental and Australian regions. In the Ethiopian region it has been recorded from Mozambique.

*S. (Chalybion) fuscipenne* Smith. *Cat. Hym. B.M.* iv, p. 229, ♀. 1856.

♀. 17-22 mm. long. Mandibles and anterior half of the median area of the clypeus ferruginous. The rest of the head and all the thorax black, without metallic lustre. Scapes and first five joints of the flagellum bright ferruginous. Legs brownish red, with a faint metallic violaceous lustre. Petiole and abdomen purplish steel-blue. Tegulae brown. Wings dark brown, with a violaceous lustre. The pilosity on the head and thorax is fairly long and moderately abundant, and of a reddish brown colour. The face has a decumbent white pubescence. Abdomen with a pruinose pubescence, not clearly visible except at a certain angle, and absent from the third and following sternites. Anterior half of the clypeus sparsely and finely punctured, and slightly shining, the posterior half a little more closely punctured. Face dull, closely and finely punctured, also with a slight rugulosity here and there. Vertex, occiput and temples slightly shining, sparsely and finely punctured. Sides of pronotal collar shining and impunctate; the anterior and dorsal faces of the collar, the mesonotum and scutellum moderately shining, sparsely and shallowly punctured, the punctures not larger than those on the vertex. Metanotum dull, closely and finely punctured. Meso- and metapleurae shining, more closely and more coarsely punctured than the mesonotum; the punctures are, however, fairly small. Sides of epinotum punctured a little more strongly than the metapleurae; the dorsum shining and transversely striate, the striae obsolete in the middle, which is punctured; the declivity closely and transversely striate, with punctures between the striae. Clypeus convex, with a faint trace of a median longitudinal carina, the anterior margin with five small lappets. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the following joint, and slightly less than the distance between the eyes across the clypeus. Second and third joints of the flagellum subequal. Pronotal collar impressed in the middle above. The scutellum is shallowly impressed lengthwise in the middle. Epinotum long, nearly as long as the rest of the thorax, the declivity very oblique. Petiole feebly arcuate, a little longer than the first joint of the hind tarsus. Sternites without adpressed pile, the apical sternite sparsely and finely punctured. Claws of the hind legs without a tooth. Second cubital cell narrower on the radius than the third.

♂. 14-18 mm. long. Coloured like the ♀. Clypeus with three small teeth on the apical margin. Mandibles without a tooth on the inner margin. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum, and not less than the distance between the eyes across the clypeus. Fourth and fifth sternites with a brown silky pile. Otherwise like the ♀.

West Africa, from Senegambia to the Gaboon.

*S. (Chalybion) tibiale* Fab. (Plate IX, fig. 2). *Spec. Insect.* I, p. 444, 1781.

♀. 18-23 mm. long. Anterior tarsi, middle and hind tibiae and tarsi, scapes and first five joints of the flagellum, ferruginous; mandibles fusco-ferruginous, darker at the base and apex. The rest of the body is dark steel-blue, with violet reflections. Sometimes the legs are entirely violet-blue. Wings dark brown, with a violaceous and coppery lustre. Pilosity long, abundant and black. Face dull, closely and finely punctured, the clypeus a little more sparsely so. Vertex, occiput and temples sparsely punctured and



slightly shining. Pronotal collar finely punctured; mesonotum finely and not very closely punctured, but more abundantly than in *laevigatum*, and with faint transverse rugae on the posterior third. Scutellum more sparsely punctured than the mesonotum. Mesopleurae and sides of the epinotum moderately shining and fairly closely punctured, the punctures larger than those on the mesonotum. Metapleurae more strongly and much less closely punctured than either the mesopleurae or the sides of the epinotum. Episternal suture distinct. Dorsum of epinotum raised lengthwise in the middle, almost carinate there, finely and transversely striate, punctured between the striae at the base and at the sides. Declivity transversely rugose and punctured between the rugae. Abdomen smooth and shining, the apical segment with a few shallow punctures. Mandibles with a tooth on the inner margin a little behind the apex. Clypeus convex, subcarinate in the middle, the anterior margin with five lappets. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the following joint. Pronotal collar impressed in the middle above. Mesonotum impressed lengthwise in the middle anteriorly. The groove at the side of the pronotal collar is not closed in front. Metapleurae on the same level as the mesopleurae and the sides of the epinotum. The dorsum of the epinotum is as long as the mesonotum and postscutellum united; the declivity slopes very little from the level of the dorsum, the junction of the two faces forming a very wide angle. Petiole only very slightly arcuate, as long as the basal joint of the hind tarsus plus half of the second joint. Claws of the hind legs with a tooth. Fourth sternite dull, with a brown adpressed pile.

♂. 14-19 mm. long. Mandibles without a tooth on the inner margin. Antennae entirely black. Punctuation of the head and pro-mesonotum distinctly stronger than in the ♀. Clypeus with three small lobes on the anterior margin. Petiole nearly as long as the basal joint of the hind tarsus. Fourth, fifth and sixth sternites dull, with a greyish pile. Otherwise like the ♀.

Cape Province and Transvaal, not recorded from S. Rhodesia or Natal. (T.M. coll.)

*S. (Hemichalybion) Eckloni* Dahlbom (fig. 2). *Hymen. Eur.* 1, p. 434, 1845.

♀. 20-28 mm. long. Head black, clypeus more or less ferruginous. Mandibles ferruginous, black at the base and apex. Antennae ferruginous, the last five joints black. Thorax and abdomen, excluding the petiole, dark metallic blue. Petiole and most of the hind legs orange yellow, only the coxa, apical thirds of the femur and tibia, and apical half of the basal joint of the tarsus being black; the apical joint of the tarsus brownish. Of the fore legs, the upper face of the femur, the apical third of the same below, the tibia and tarsus are ferruginous, the rest black. The middle coxae, trochanters and femora black, excepting the apex of the latter which, like the tibia, is ferruginous; the tarsus yellow, with the apical joint brownish. Face and clypeus with a sparse greyish yellow pubescence, the clypeus also with some longer outstanding hairs. The pilosity of the rest of the head and of the thorax is black, fairly dense and not long. Abdomen with a microscopic pubescence on the tergites, and a patch of black, adpressed pile on the fourth sternite. Face and clypeus dull, closely and fairly finely punctured, the clypeus with a smooth median longitudinal line. Vertex and temples very shallowly and rather sparsely punctured, the former also feebly aciculate. Mesonotum dull, mesopleurae moderately shining, both closely punctured, the punctures not large. Pronotal collar more shallowly punctured than the mesonotum, the scutellum a little more strongly but less closely so. Metapleurae sunk below the level of the mesopleurae but on the same plane as the sides of the epinotum, shining and



striate-punctate anteriorly, sparsely punctured posteriorly. Epinotum dull, closely and transversely striate and punctured between the striae; the dorsum strongly gibbous and longitudinally carinate in the middle. Mandibles without a tooth on the inner margin. Median area of the clypeus strongly convex, slightly produced in front, the anterior margin with a small excision in the middle. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum (it may, however, amount to as much as the second and third plus three-fourths of the fourth joint). The interocular distance across the clypeus is greater than across the vertex. Pronotal collar deeply impressed in the middle above, the anterior face flat and subvertical. The groove on the sides of the collar is closed in front. Dorsum of epinotum as long as the mesonotum. Petiole almost straight and somewhat variable in length; it is at least as long as the first joint of the hind tarsus plus a third of the second joint, but may be as long as the first and second united. Claws of the hind legs with a sharp tooth at the middle. Wings hyaline, the fore wing infuscated at the apex beyond the cells; the third cubital cell is much wider on the radius than the second.

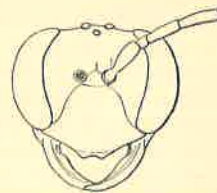


Fig. 2. *Sceliphron Eckloni*, ♀.

♂. 13–22 mm. long. Sternites without adpressed pubescence, but the third to sixth have short, exserted, black hairs. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum, plus three-fifths of the fourth joint. The interocular distance across the clypeus is a little greater. Otherwise like the ♀.

Distributed throughout the Ethiopian region, but not recorded apparently from the Cape Peninsula. A common insect, frequently seen in houses, with an inconvenient partiality for building its mud-nests at the angles of walls, or on furniture, books and boxes.

*S. (Hemichalybion) brachystylus* Kohl. *Verh. Zool. Bot. Ges. Wien*, xxxviii, p. 154, ♀. 1888. *Ann. K.K.N.H. Mus. Wien*, xxxii, p. 83, ♂. 1918.

♀. 20–24 mm. long. Head and thorax black, without any metallic blue lustre. Clypeus black, rarely entirely ferruginous. Scares and first joint of the flagellum ferruginous. Abdomen black, sometimes with a faint bluish sheen. Legs coloured as in *Eckloni*. Sculpture like that of *Eckloni*. The clypeus is less produced in front, so that the anterior margin is more arcuate than in *Eckloni*, and the median emargination is even shallower. The interocular distance on the vertex is variable, but always less than across the clypeus; it is not less than the length of the second and third joints of the flagellum, but may be as great as the length of the first three joints. The length of the petiole is also variable, but is usually equal to the length of the first joint of the hind tarsus plus half of the second joint.

♂. 12–21 mm. long. Fourth to sixth sternites without exserted black hairs, but with a silky adpressed pile. Otherwise like the ♀.

West, Central and East Africa, Transvaal and Natal. Not recorded from Southern Rhodesia.

*S. (Hemichalybion) Saussurei* Kohl.

*Pelopoeus Spinolae* Sauss. (non Lep.). *Reise der Novara II*, 1 Abt. p. 27, ♀. 1867. Kohl, *Ann. K.K.N.H. Mus. Wien*, xxxii, p. 82. 1918.

"This species differs from *Eckloni* as follows: (1) the shape is much more compressed; (2) the greater size (30–32 mm. ♀; 28 mm. ♂); (3) the deeper infuscation of the wings; (4) and apparently also the somewhat shorter

petiole; this is equal to the basal joint of the hind tarsus or a trifle more. The structural characters and the sculpture are like those of *Eckloni*. The interocular distance, as in that species, is also variable."

Cape Town, 2 ♀♀, 1 ♂, in the Vienna Museum.

*S. (Pelopoeus) spirifex* Linn. (figs. 3 b and c). *Syst. Nat. Ed. 10 a*, p. 570. 1758.

♀. 20-29 mm. long. Black. Scapes in front dirty yellow, mandibles castaneous. The following parts are bright chrome yellow: fore and middle tibiae, the apices above of the fore and middle femora, the hind trochanters, the basal half of the hind femora, the first two joints of the hind tarsi more or less, and the petiole. Fore and middle tarsi reddish brown. Wings hyaline, the extreme apex of the fore wing feebly clouded; the veins dark brown. Pilosity on the head and thorax black, fairly long and abundant. Face and clypeus with a very fine greyish pubescence. The middle lobes of the clypeus are sometimes fusco-ferruginous. Clypeus finely punctured and dull. Face dull, finely and closely punctured, with a slight rugulosity at the sides. Pronotal collar above and in front dull, shallowly and finely punctured, the sides

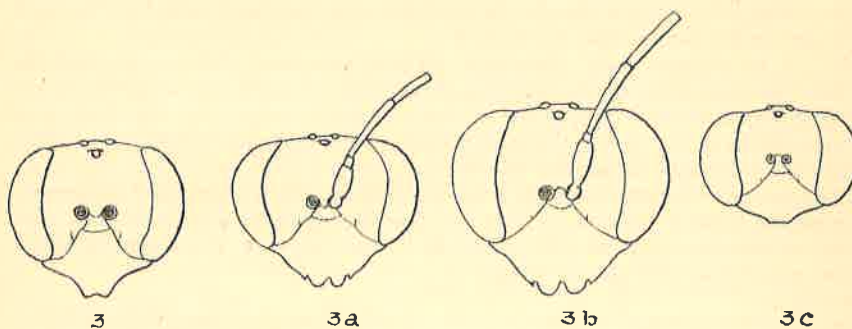


Fig. 3. *Sceliphron Quartinae*, ♂. a. ♀. b. *Sceliphron spirifex*, ♀. c. ♂.

moderately shining and impunctate. Mesonotum dull, closely and more or less transversely rugulose. Mesopleurae and metapleurae shining, finely punctured, the punctures becoming gradually scantier and smaller towards the posterior angle of the metapleurae; the latter are smooth and impunctate in the anterior upper angle. The metapleural pit, just above the middle coxae, is deep and pyriform. Scutellum and postscutellum longitudinally and finely rugose. Dorsum of epinotum with a raised, scutiform median area which is widely and longitudinally grooved in the middle and distinctly defined all round by a narrow marginal groove which is widest and deepest at the apex of the dorsum. The whole epinotum is strongly and closely striate; obliquely so on the sides where the intervening spaces are shining, transversely on the declivity, and obliquely on the dorsum. Apical sternite sparsely and finely punctured; the rest of the abdomen smooth and impunctate, fairly dull and covered with a microscopic, blackish pubescence. Mandibles without a tooth on the inner margin. Anterior margin of the clypeus with two rounded lappets in the middle. Interocular distance on the vertex less than across the clypeus, equal to the length of the second joint of the flagellum. The second joint is one-sixth longer than the third. Pronotal collar very shallowly impressed in the middle above; the grooves at the sides of the collar are not open in front. Dorsum of epinotum as long as the mesonotum. Petiole straight, as long as the hind femur. The coxae of the hind legs, seen from above,



are subangularly dilated outwardly in front. Second cubital cell usually narrower on the radius than the third, rarely as wide.

♂. 15–24 mm. long. Scape entirely black. Anterior margin of the clypeus convex, shallowly and arcuately emarginate in the middle. The sculpture of the face and pro-mesonotum is stronger than in the ♀; the mesonotum is transversely rugose and punctured between the rugae. The pronotal collar is more deeply impressed in the middle, and the anterior face is more oblique, not subvertical as in the ♀. The distance between the eyes on the vertex is about the same as across the clypeus, and is equal to the length of the second and third joints of the flagellum. The second joint of the latter is relatively a little longer than in the ♀, being somewhat more than one-sixth longer than the third. Petiole as long as the hind tibia plus one-third of the basal joint of the hind tarsus. Third to fifth sternites with a band of dark brown, velvety pile at the base. Otherwise like the ♀.

Very common and widely distributed throughout the Mediterranean sub-region and the Ethiopian region.

*S. (Pelopoeus) Quartinae* Gribodo (figs. 3, 3 a, 4 a). *Ann. Mus. Civ. Stor. Nat. Genova* (2), xxxv, p. 298, ♂, ♀. 1884.

*S. Voeltzkovii* Kohl. *Voeltzkov Reise in Ost-Afr.* II, p. 370, ♀ (race). 1909.

♀. 15–22 mm. long. Colour like that of *spirifex* but the scapes are entirely black, and the black on the apical part of the posterior femora is less extensive, barely extending beyond the apical third. (The race *Voeltzkovii* Kohl has fusco-ferruginous scapes, the apical part of the petiole black, and the anterior and middle tibiae blackish.) Wings hyaline, tinged with yellow, the veins yellowish brown. Pilosity black, shorter and less abundant than in *spirifex*. On the whole, the sculpture is similar to that of *spirifex*, but somewhat stronger on the mesonotum; the puncturation of the mesopleurae is relatively larger, and the striation of the epinotum much finer and a little closer. The striation on the raised area of the epinotal dorsum, except at its extreme base, is almost transverse, not oblique as in *spirifex*, and on the sides of the segment there are fine punctures between the striae which are not present in *spirifex*. Mandibles with a sharp tooth on the inner margin near the apex. Clypeus with the usual two rounded lobes on the anterior margin; it is also feebly carinate in the middle over the basal half. Interocular distance on the vertex less than across the clypeus, and equal to the length of the second joint of the flagellum plus two-thirds or three-fourths of the third joint. The second joint is nearly half as long again as the third. The head is wider than in *spirifex*, the greatest width of the face, measured from the inner margins of the eyes, being equal to the distance between the anterior ocellus and the anterior fourth of the clypeus, whereas in *spirifex* it is equal to the distance between the anterior ocellus and the middle of the clypeus. The posterior ocelli are a little farther from the eyes than they are from each other. The pronotal collar is less deeply impressed in the middle than in *complex* Kohl, but the proportions of the dorsum of the epinotum and the declivity are the same as in that insect. The median longitudinal groove on the epinotal dorsum is narrower and deeper than in *spirifex*, but not so narrow as in *complex*. The petiole is almost straight, and is as long as the posterior femur plus half the length of the trochanter. The posterior coxae are not angularly dilated in front. Claws of

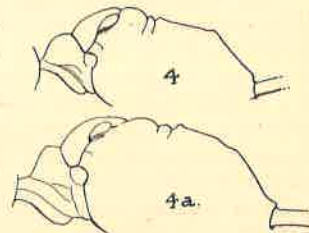


Fig. 4. *Sceliphron fulvohirtum*, ♀, profile of thorax. a. *Sceliphron Quartinae*, ♀, profile of thorax.



the hind legs with a tooth near the middle. Second cubital cell wider on the radius than the third, rarely equally wide.

♂. 12-21 mm. long. Interocular distance on the vertex greater than across the clypeus, nearly equal to the length of the second and third joints of the flagellum. Mandibles edentate on the inner margin. Petiole as long as the posterior femur and trochanter combined. The sculpture is stronger than in the ♀, especially on the epinotal dorsum; the median groove there is wider and deeper than in the ♀, or than in *spirifex* ♂. The anterior margin of the clypeus is produced into a short lobe which has rounded lateral angles, with the margin between them feebly concave. The dorsal face of the pronotal collar is longer and less arcuate than in *spirifex* ♂.

Widely distributed in East Africa from the Soudan to Port Elizabeth, also recorded from West Africa, Transvaal and Sicily.

*S. (Pelopoeus) complex* Kohl. *Ann. K.K.N.H. Mus. Wien*, xxxii, p. 107, ♀. (March) 1918.

*S. massaicum* Turner. *Ann. Mag. N.H.* iii, No. 16, p. 393, ♀. (April) 1918.

♀. 21 mm. long. In view of the variability within the species of the width of the vertex and of the length of the petiole, the admission of this form to specific rank does not seem justified. Apart from the slight differences already mentioned in the description of *Quartinae*, it differs from that species only as follows:

The interocular distance on the vertex is equal to the length of the second joint of the flagellum plus one-third of the following joint. The third joint is three and a half times longer than wide, whereas in *Quartinae* it is four times. It approaches the race *Voeltzkovii* in having the apical half or two-thirds of the petiole black, also in having the legs black, excepting the anterior femora and tibiae which are fusco-ferruginous in front, and the scapes more or less fusco-ferruginous in front. The petiole is as long as the hind femur and trochanter united, or is equal to the length of the hind tibia plus half the basal joint of the hind tarsus. The wings are slightly darker, with a faint violaceous reflection.

I have seen a specimen of *massaicum* Turner from the Masai Reserve, B.E. Africa, which agrees entirely with Kohl's description of *complex* except in having the scapes and tegulae entirely black. Without having seen the type of the race *Voeltzkovii* I hesitate to sink *complex* in synonymy, but it will probably be necessary to do so.

Kohl gives the habitat of *complex* as Samlia River, N. Gamio, and Turner records *massaicum* from Uganda and East Africa.

*S. (Pelopoeus) fulvohirtum* n.sp. (fig. 4).

♀. 18 mm. long. Allied to *Quartinae*, but a smaller and more slender insect, with a narrower thorax. Colour like that of *Quartinae*, but the pilosity of the head and thorax is not so dense, and is of a brownish colour, or, in some lights, reddish brown.

Sculpture of the thorax finer. The mesonotum is reticulate-rugulose; mesopleurae not shining as in *Quartinae*, but almost dull, much more closely punctured, the punctures somewhat elongate, and towards the sternum somewhat wavy, so that the sculpture there is almost rugulose. The sides of the epinotum are obliquely rugulose and dull, with very small punctures in between. The upper half of the declivity of the epinotum is reticulate-rugulose, the lower half transversely rugulose. The dorsum of the epinotum is transversely striate, and relatively, in view of its smaller size, much more closely and more finely so than in *Quartinae*. The pronotal collar is longer and rounder,



the anterior face not falling away so steeply from the dorsal face as in *Quartinae* (see figs. 4, 4 a); the dorsal face is hardly impressed at all in the middle. The dorsum of the epinotum, measured from the base to the apex of the raised median area, is shorter; it is a trifle more than one-third the length of the petiole, whereas in *Quartinae* it is nearly half as long. The petiole is as long as the hind trochanter and femur united. The second joint of the flagellum is only one-third longer than the third joint (nearly one-half longer in *Quartinae*). Wings distinctly tinged with yellow; the second cubital cell is as wide as the third on the radius. Claws of the hind legs with a distinct tooth in the middle.

♂. 16-19 mm. long. Pilosity longer and a little paler than in the ♀. It differs from *Quartinae* in the sculpture in the same way as in the ♀, but on the anterior third of the mesonotum the transverse-oblique rugulosity is absent, being replaced by a few deep and not very small punctures. The petiole is variable in length; in two specimens it is even longer than in the other sex, being very nearly as long as the posterior coxa, trochanter and femur combined, and in two other specimens it is shorter than that by only half the length of the coxa. Second joint of the flagellum not quite one-third longer than the third joint (in *Quartinae* ♂ the second joint is half as long again as the third). The face is slightly wider than in *Quartinae* and the median area of the clypeus is a little less produced in front.

In two of the four ♂♂ examined, the second cubital cell is wider on the radius than the third, in the other two it is as wide.

1 ♀, 3 ♂♂, Sanyati River, S. Rhodesia (R. H. R. Stevenson); 1 ♂, Umtali, S. Rhodesia (G. Arnold). September-October. Types in coll. Stevenson.

#### Genus SPHEX Linn.

*Syst. Nat. Edit. x*, No. 216, pp. 569-72. 1758.

*Fauna Suecica*, p. 411. 1761.

*Ammophila* Kirby. *Trans. Linn. Soc.* iv, p. 195. 1798.

CHARACTERS. Eyes large, reaching the base of the mandibles, their inner margins usually parallel in the ♀, more or less convergent below in the ♂. Mandibles stout, armed with one or two teeth on the inner margin. Apical joint of the antennae truncate. Episternal suture present in the majority of the species. Epinotal dorsum with a scutiform median area which is usually well-defined from the rest of the segment by a difference of sculpture and pubescence. Abdomen petiolate, the petiole being formed by the first sternite only (petiole one-jointed), or by the first sternite and by the first tergite placed behind the sternite, thereby making the petiole two-jointed. The apical tergite does not entirely cover the apical sternite; pygidial area absent. Legs spinose, more strongly so in the ♀ than in the ♂, the anterior tarsi with a long comb in the ♀. The first four joints of the anterior tarsus, or at least the basal joint, are with few exceptions asymmetrical in the ♀, the apex on the outer side being produced into a lobe. The middle coxae are not contiguous. Claws usually simple, but in the subgenus *Parapsammophila* armed with one or two teeth near the base.

Fore wing. Radial cell short, the radius ending on the costa. Three cubital cells present, or (subgenus *Coloptera*) only two, in which case the apparent second is formed by the fusion of the second and third. In some species (not present in the Ethiopian region), the third cubital cell is stalked on the radius.

Hind wing. The cubital vein arises a little beyond the end of the submedial cell. The basal lobe is very large, ends near the anal sinus, and as in *Sceliphron*



and *Chlorion*, can be folded over, the line of folding being distinctly defined. Retinaculum continuous, beginning at the origin of the radius.

Distribution. Both hemispheres.

The prey consists of hairless caterpillars, and the nest, which is placed in the ground, is a short and oblique tunnel ending in a pocket. The number of caterpillars in each nest varies with the species. Some store one or two large ones, others may use five or six small caterpillars. In *Wasps*, *Social* and *Solitary*, the Peckhams have given an interesting record of their observations on the habits of some North American species.

In the following descriptions it is to be understood that the width of the head includes the eyes. In measurements of the petiole, the length of the joints is to be taken on the dorsal surface, which in the case of the first joint does not include the whole of the sternite, since on the ventral surface the sternite is continued more or less under the first tergite. The hairy covering in these insects is of four kinds; the longer, outstanding hairs or *pilosity*, the short and more or less decumbent hairs on the head and thorax, or *pubescence*, a covering of rather woolly hairs which is often mixed with the pubescence, or *tomentum*, and lastly, a microscopic or pruinose pubescence which occurs on the abdominal segments.

A revision of the South African species of the genus was made by the author in the *Proc. Rhodesia Scientific Association*, vol. XVIII, pt 2, 1919-20, and the Palaearctic species were monographed by Kohl in the *Ann. K.K.N.H. Mus. Wien*, vol. XXI, 1906. The latter work also includes a few species of the Ethiopian region. The descriptions of *gracillima* Tasch., *propinqua* Tasch., and *cyanipennis* Lep., which are unknown to me in nature, have been copied from Kohl's work.

There are also several other species which have not been considered in the following pages. Their original descriptions are so inadequate, being based mainly on colour, that it is almost impossible to identify the species. These species are:

*erythropus* Smith. *Cat. Hymen. B.M.* iv, p. 213. 1856.

*insignis* Smith. *Ibid.* p. 213, ♀, ♂. 1856.

(*Coloptera*) *proxima* Smith. *Ibid.* p. 225, ♀. 1856. (Possibly synonymous with *Saussurei* Du Buysson.)

*confusa* Costa. *Ann. Mus. Zool. Nap.* II, p. 3. 1864.

*Wahlbergi* Dahlbom. *Hymen. Eur.* I, p. 431. 1845.

*rubigenosa* Lep. *Hist. Nat. Ins.* III, p. 372, ♀. 1845.

*rubriceps* Tasch. *Zeitschr. Naturw.* XXXIV, p. 432, ♂. 1869. (Probably synonymous with *bonae-spei* Lep.)

*Koppensfelsi* Tasch. *Ibid.* LIII, p. 777, ♀, ♂. 1880. (Probably synonymous with *beniniensis* Pal. Beauv.)

Of the several species described by Cameron in Sjöstedt's Kilimandjaro-Meru Expedition results, some are undoubtedly synonyms, and the rest are unrecognisable. Some Egyptian and Mediterranean species, whose distribution extends as far as Khartoum, have not been included in these pages, and in the key to the species, those of which I have not seen specimens have also been omitted.

#### KEY TO THE SPECIES OF *SPHEX*, ♀♀

- (4) 1. Wings with two cubital cells. Episternal suture obsolete or nearly so. Claws unarmed. Pulvillus present. Petiole 2-jointed; the stigmata of the first tergite are situated well behind the middle of the segment. (Subgenus *Coloptera* Lep.)
- (3) 2. Anterior angles of the pronotal collar raised to form obliquely truncated tubercles; scutellum and metanotum very much raised and tubercular in the middle. tuberculiscutis Turner



- (2) 3. Anterior angles of the pronotal collar rounded and not tubercular; scutellum slightly, metanotum more distinctly tubercular in the middle. *Saussurei* Du Buysson
- (1) 4. Wings with three cubital cells.
- (14) 5. First tergite subdilated posteriorly, more or less pyriform or funnel-shaped, the petiole proper 1-jointed and composed only of the first sternite. Episternal suture present.
- (11) 6. The stigmata of the first tergite are situated at, or a little behind, the middle of the segment. Claws bidentate, the pulvillus present. The third cubital cell is usually more or less barrel-shaped. (Subgenus *Parapsammophila* Tasch.)
- (8) 7. Body and legs black; first two joints of the antennae and the clypeus in greater part ferruginous; wings dark, with metallic blue or purplish lustre. *ludovicus* Smith
- (7) 8. Legs red, at least not entirely black; wings hyaline or subhyaline. Head, thorax and petiole with at least some red colour.
- (10) 9. Scutellum saddle-shaped, raised at the sides, concave transversely and feebly convex longitudinally. *herero* Arnold
- (9) 10. Scutellum not saddle-shaped, flat or moderately convex transversely. *consobrinus* Arnold
- Psammophila* (6) 11. Stigmata of the first tergite placed in the anterior half of the segment, or almost at the middle; claws unarmed, rarely unidentate. (Subgenus *Psammophila* Dahlbom)
- (13) 12. Pilosity of the head and thorax black. Posterior ocelli twice as far from the eyes as they are from each other. Second joint of the flagellum about one-half longer than the third. Length 22-27 mm. *Sheffieldi* Turner
- (12) 13. Pilosity of the head and thorax whitish. Posterior ocelli half as far again from the eyes as they are from each other. Second joint of the flagellum about three-fifths longer than the third. Length 16.5-21 mm. *Tydei* Guill., var. *capensis* Lep.
- (5) 14. First tergite of abdomen elongate, hardly wider than the first sternite, making the petiole 2-jointed. Stigmata of the first tergite placed behind the middle of the segment, or sometimes at the middle. Claws unarmed. (Subgenus *Sphex* Linn.)
- Ammophila* (16) 15. Large species, 30-32 mm. long. Anterior border of pronotal collar sharply marginate, forming a sharp angle with the almost vertical anterior face; the dorsal face with not more than three straight, more or less complete transverse carinae, the spaces between them finely pubescent and dull. *vulcania* Du Buysson
- (15) 16. Dorsal face of pronotal collar differently formed, not distinctly marginate in front; if distinctly rugose or striate, then the spaces between are shining.
- (28) 17. Pronotal collar more or less striato-rugose.
- (21) 18. Large species, 28-30 mm. long. Mesonotum, and sometimes also the pronotum, with a dense blackish pilosity; the spaces between the rugae on the pronotal collar dull.
- (20) 19. Abdomen finely pubescent; thorax with at least some traces of red colour; dorsal face of pronotal collar as long in the middle as at the sides. *beniniensis* Pal. Beauv.
- (19) 20. Abdomen glabrous; thorax entirely black; dorsal face of pronotal collar shorter in the middle than at the sides, the anterior face more oblique. *beniniensis*, var. *calvus* Arnold
- (18) 21. Smaller species, 19-27 mm. long. Pronotum with a sparse pilosity or none at all.
- (25) 22. Pronotum half as long as wide behind, at least half as long as the mesonotum; head clearly wider than the thorax.
- (24) 23. Pronotum black, the collar strongly striated transversely. *Braunsi* Turner

- (23) 24. Pronotum red, the collar finely striated transversely. *laticeps* Arnold
- (22) 25. Pronotum much shorter, fully three times wider than long in the middle, and not one-third as long as the mesonotum; head not much wider than the thorax.
- (27) 26. Whole body densely pubescent, the thorax also tomentose; the spaces between the rugae on the pronotal collar are dull.  
*beniniensis*, race *tomentosus* Arnold
- (26) 27. Pubescence nowhere dense; pro- and mesonotum without visible pubescence; pronotal collar with five to seven transverse, sharply defined rugae, some of them interrupted, the spaces between smooth and shining.  
*tenuis* Pal. Beauv.
- (17) 28. Pronotal collar smooth or punctured, without rugae.
- (30) 29. Pronotal collar smooth, excavated in front on each side of the middle, so that viewed from above it is bluntly trituberculate, the shoulders forming the outer tubercles.  
*Peringueyi* Arnold
- (29) 30. Pronotal collar not trituberculate.
- (34) 31. Pronotal collar fairly long, the middle part raised to form a blunt cone or tubercle. Anterior margin of the clypeus convex.
- (33) 32. Head in front barely wider than long; inner margins of the eyes slightly convergent above; nearly half of the clypeus projects beyond the base of the eyes.  
*dolichocephala* Cameron
- (32) 33. Head in front one-fifth wider than long; inner margins of the eyes parallel or slightly divergent above; clypeus less produced in front.  
*conifera* Arnold
- (31) 34. Pronotal collar not tubercular in the middle.
- (44) 35. Pronotum short, not nearly half as long as the mesonotum.
- (39) 36. Clypeus abruptly truncate in front, the truncate and lateral margins meeting in a sharp angle.
- (38) 37. Abdomen entirely black, the apical half clothed with a very conspicuous silvery pubescence which obscures the ground-colour.  
*egregia* Mocs., race *transvaalensis* Cameron
- (37) 38. First tergite underneath, the whole of the second and the basal half of the third abdominal segments, ferruginous; the apical half of the abdomen with a thin pruinose pubescence.  
*egregia*, race *litoralis* Arnold
- (36) 39. Anterior margin of the clypeus convex, or if slightly truncate, not sharply angular on each side of the truncation.
- (41) 40. Face, anterior half of the clypeus and the vertex (excepting the ocellar area) fairly closely punctured with large and moderately deep punctures.  
*punctaticeps* Arnold
- (40) 41. Face and vertex sparsely and shallowly punctured.
- (43) 42. Sides of thorax without any red colour; pilosity long and silvery white.  
*bonae-spei* Lep.
- (42) 43. Sides of thorax usually with some red markings; pilosity shorter and greyish.  
*bonae-spei*, var. *ferrugineipes* Lep.
- (35) 44. Pronotum long, at least half as long as the mesonotum, and with a well-defined median longitudinal impression on the posterior half.  
*dolichodera* Kohl

KEY TO THE SPECIES OF *SPHEX*, ♂♂

- (4) 1. Wings with two cubital cells. Episternal suture obsolete or nearly so. Claws unarmed. Pulvillus present. Petiole 2-jointed, the stigmata of the first tergite are placed well behind the middle of the segment.  
(Subgenus *Coloptera* Lep.)
- (3) 2. Anterior angles of the pronotal collar raised to form obliquely truncate tubercles; scutellum and metanotum very much raised and tubercular in the middle.  
*tuberculiscutis* Turner



- (2) 3. Anterior angles of pronotal collar rounded, not tubercular; the scutellum slightly, the metanotum more distinctly, tubercular in the middle.  
Saussurei Du Buysson
- (1) 4. Wings with three cubital cells.
- (10) 5. First tergite subdilated posteriorly, more or less pyriform or funnel-shaped, the petiole proper 1-jointed and composed only of the first sternite. Episternal suture present.
- (9) 6. The stigmata of the first tergite are placed at, or a little behind, the middle of the segment. Claws bidentate, the pulvillus present.  
(Subgenus *Parapsammophila* Tasch.)
- (8) 7. Wings dark brown, with a violaceous or steely-blue lustre; pilosity black; third cubital cell barrel-shaped.  
ludovicus Smith
- (7) 8. Wings hyaline; pilosity whitish; third cubital cell widest at the base.  
herero Arnold
- (6) 9. Stigmata of first tergite placed in the anterior half of the segment, or almost at the middle; claws unarmed, rarely unidentate.  
(Subgenus *Psammophila* Dahlbom) tydei Guillou, var. *capensis* Lep.
- (5) 10. First tergite of the abdomen elongate, hardly wider than the first sternite, making the petiole 2-jointed. Stigmata of the first tergite placed behind the middle of the segment, or sometimes at the middle. Claws unarmed.  
(Subgenus *Sphex* Linn.)
- (12) 11. Large species, 25-28 mm. long. Clypeus produced considerably beyond the face, narrowed in the middle, truncate at the apex, semi-circularly excised in the middle of the truncated margin, the projecting portion with two oblique carinae enclosing a concave depression.  
vulcania Du Buysson
- (11) 12. Clypeus differently formed.
- (16) 13. Head in front longer than wide; pronotum subtubercular in the middle.
- (15) 14. Clypeus produced, nearly half of it projecting beyond the base of the eyes, angularly excised at the apex, with a median carina extending from about the middle to the angle of the excision; stipites thick throughout, semi-circularly excised at the apex, the excision ending in a stout tooth above and several spines below.  
dolichocephala Cameron
- (14) 15. Clypeus less produced, the portion beyond the base of the eyes considerably less than the portion behind, the anterior margin transverse, not carinate; stipites gradually attenuated towards the apex and without an apical excision.  
conifera Arnold
- (13) 16. Head in front wider than long, or at least as wide as long.
- (20) 17. Pronotum long, a little more than half as long as the mesonotum.
- (19) 18. Pronotal collar rugoso-striate transversely.  
Braunsi Turner
- (18) 19. Pronotal collar smooth.  
dolichodera Kohl
- (17) 20. Pronotum short, much less than half as long as the mesonotum.
- (26) 21. Pronotum smooth, more or less punctured, not striate or rugose.
- (23) 22. Large species, 27-30 mm. Clypeus produced, the anterior margin truncate in the middle and subrectangular on each side of same. Stipites abruptly narrowed at the apical third.  
egregia Mocs., race *transvaalensis* Cam. and var. *litoralis* Arn.
- (22) 23. Smaller species, less than 25 mm. long. Clypeus and stipites differently formed.
- (25) 24. Face and vertex, excepting the ocellar area, fairly closely punctured with large and moderately deep punctures; stipites abruptly narrowed a little beyond the middle, the narrow part curved inwards.  
punctaticeps Arnold
- (24) 25. Face and vertex sparsely and shallowly punctured; stipites gradually narrowed at about the apical third.  
bonae-spei and var. *ferrugineipes* Lep.





carina behind the impressed anterior portion, nearly one-fourth wider than long in the middle. Eyes feebly convergent below. Third joint of antenna hardly half as long again as the fourth (nearly twice as long in the ♀). Side of epinotum more pilose than in the ♀. First tergite a little narrower, otherwise like the ♀.

Sawmills, Umgusa River; Victoria Falls; Matopos; Salisbury, S.R. The males are usually more plentiful than the females. Not recorded from the Union, but will probably be found to occur in Natal and Zululand.

Race *gigantea* Kohl (as species). *Ann. K.K.N.H. Mus. Wien*, xvi, p. 142, ♀, 1901.

♀. 43-52 mm. long. Apart from its much greater size, the entirely black clypeus, the slightly more densely punctured mesopleurae and the colour of the wings, which have a coppery-violaceous lustre, this form does not differ in any way from the type of the species.

Congo: Mlanje, Nyasaland (S. A. Neave).

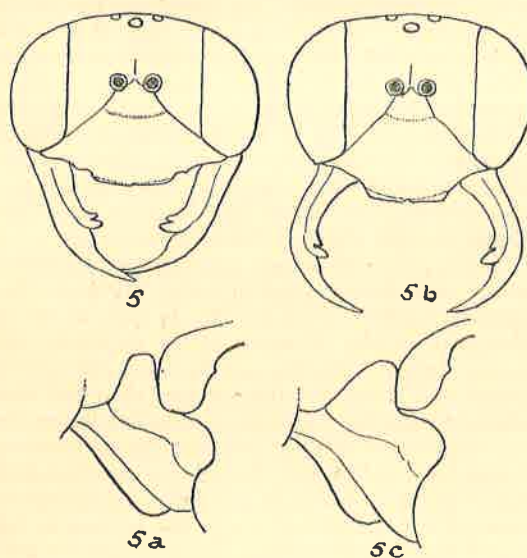


Fig. 5. *Sphex herero*, ♀, head. a. ♀, pronotum. b. *Sphex consobrinus*, ♀, head. c. ♀, pronotum.

*S. (Parapsammophila) herero* n.sp. (figs. 5, 5 a, 6, 6 a and b).

♀. 27-29 mm. long. Black; the following parts are ferruginous: basal two-thirds of the mandibles, lower surface of the head, the lower half or more of the temples, clypeus, scapes, first two joints of the flagellum underneath, pronotal collar except at the sides, anterior lateral angles of the mesonotum, pronotal tubercles, tegulae, a spot just below them on the episternum and another behind on the epimerum, the first sternite (petiole) except at the apex and the first tergite underneath. Coxae and trochanters more or less black, the anterior femora outwardly and the middle and hind femora inwardly sometimes streaked with black; the posterior tibiae inwardly near the apex with a triangular black mark; the apical half of the fifth tarsal joints and the claws blackish. Otherwise the legs are reddish ochreous. Wings hyaline, tinged with yellow, the apical margin faintly fuscous, the veins dark



brown. Head and pro-thorax with a reddish outstanding pilosity, on the mesonotum darker and shorter. The epinotum and sides of the thorax have a sparse but fairly long grey pilosity. Lower part of the face with a thin pruinose pubescence. The abdomen has also a pruinose pubescence. Clypeus slightly shining, sparsely and shallowly punctured. Face and vertex shallowly punctured, the punctures small and close together at the sides below, larger and more scattered elsewhere. Collar of pronotum dull, shallowly, sparsely and finely punctured. Mesonotum closely and not coarsely rugose, sharply punctured between the rugae which diverge outwards and forwards from the middle; behind, the middle third of the segment has some large, elongate punctures and there is a smooth median longitudinal line extending from the anterior margin to about the middle. Scutellum and metanotum sparsely and sharply punctured, mesopleurae sparsely punctured and slightly shining above, striato-punctate below. Dorsum of the epinotum transversely, finely and fairly closely striato-rugose, the rugae directed slightly posteriorly from a thin median raised line; the sides closely rugulose-punctate. The whole thorax fairly dull. Abdomen smooth, the apical tergite with a few shallow punctures. Head one-quarter wider than long. Inner orbits parallel. Median area of the clypeus nearly flat, moderately produced in front, about as long as wide, the anterior margin feebly convex, the anterior corners rectangular. Interocular distance on the vertex equal to the length of the first four joints of the flagellum. The second joint of the flagellum is nearly as long as the third and fourth united. Temples, seen from the side, as wide as the eyes. Collar of pronotum about four times wider than long, its anterior face vertical and nearly flat transversely, the dorsal face feebly convex transversely, the shoulders prominent but not angular. Mesonotum wider across the tegulae than long in the middle, and a little longer than the epinotal dorsum. Scutellum concave transversely and convex longitudinally, raised at the sides, wider than long. Metanotum raised in the middle, as high as the scutellum, the raised portion flattened on top. Dorsum of the epinotum strongly convex transversely, sloping steeply from the middle outwards. Petiole as long as the posterior femora and about one-third longer than the first tergite. The latter is twice as long as its apical width and one-fourth longer than the second tergite. First four joints of the anterior tarsi strongly asymmetrical, the apices being produced into lobes outwardly, the lobe of the first joint being fully half as long as the joint itself. Claws of middle and hind legs with two small teeth near the base. First abscissa of the radius as long as the second, the latter as long as, or longer than, the third. The third cubital cell is not barrel-shaped, being widest below (in the type twice as wide on the cubitus as on the radius, in other specimens somewhat less). The second recurrent vein is nearly interstitial with the second transverse cubital vein.

♂. 21-22 mm. long. Black. Mandibles reddish ochreous, the apical third black. Clypeus varying from reddish ochreous to pale ferruginous, with a broad and indistinctly defined black line down the middle, not reaching the apical margin. Extreme base of the petiole and the sides and ventral surface of the first tergite brownish yellow. Tegulae pale brown. Legs in greater part pale reddish ochreous, with the following parts more or less dark brown: the upper surface of the coxae, trochanters, femora, fore and middle tibiae, the apical half or more of the hind tibiae on the inner side, the apices of the first four joints of the middle tarsi, the last joint of all the tarsi, and the third and fourth joints of the hind tarsi. Wings hyaline, the apical part beyond the cells almost clear, at least not distinctly clouded as in the ♀. Head and thorax, excepting the mesonotum and median area of the epinotal dorsum, clothed with a dense, greyish silvery and very fine pubescence, almost pruinose on



the vertex, occiput, pronotum and sides of the thorax. In addition, these parts excepting the clypeus have an abundant, long, white pilosity. The posterior coxae above are also pilose. Abdomen with a pruinose pubescence, the apical margins of the segments narrowly testaceous. The sculpture of the head is entirely obscured by the dense pubescence. The mesonotum is more finely sculptured than in the ♀; it is dull, closely and finely punctured, with a trace of transverse rugulosity in the middle. The scutellum is saddle-shaped as in the ♀. The sculpture of the rest of the thorax is like that of the ♀, but a little finer, and much obscured by the pubescence. The median area of the epinotal dorsum lacks the median longitudinal line which is present in the ♀. Eyes moderately convergent below; the interocular distance on the vertex equals the length of the second-fourth joints of the flagellum. The second joint is nearly twice as long as the third. The clypeus is as long in the middle as it is wide at its widest; it has a feeble median longitudinal carina and the anterior margin is strongly convex. Petiole half as long again as the first tergite. Eighth ventral plate subpyriform, with the narrow end (apex) truncate and shallowly emarginate. Stipites long, moderately widened outwardly just beyond the middle, then gradually narrowed to the apex, which is not very acute; the apical third of the inner margin has a few long setae. The sagittae are lanceolate and acute at the apex. Otherwise like the ♀.

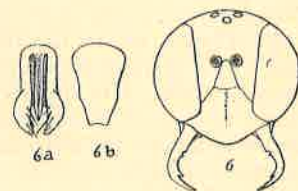


Fig. 6. *Sphex herero*, ♂. a. Genitalia, dorsal view. b. 8th ventral valve.

Kaross, Outjo and Otjikondo, S.W.A. 2 ♀♀, 4 ♂♂; Bulawayo and Gwaai River, S.R. (Stevenson). The types, from Kaross, in South African Museum coll.

*S. (Parapsammophila) consobrinus* n.sp. (figs. 5 b and c).

♀. 29 mm. long. Closely allied to *S. herero*, and with much the same sort of colouring. It differs from it as follows:

Only the anterior half of the median area of the clypeus is ferruginous, the rest is black. Scapes and first joint of the flagellum ferruginous, the rest black. Pronotum black, only a spot on the sides of the collar and the upper margin of the propleurae fusco-ferruginous. Legs ferruginous, the femora slightly suffused with black only at the base; tarsal joints and claws ferruginous. Petiole black. Vertex and occiput very shallowly, sparsely and finely punctured, much more finely so than in *herero*. Anterior half of the mesonotum transversely and finely rugose, very feebly punctured between the rugae; the middle third behind the centre of the segment shining, sparsely and finely punctured. Scutellum nearly flat, not raised at the sides and saddle-shaped as in *herero*. Postscutellum convex transversely and lengthwise. Dorsum of epinotum without the fine median raised line which is present in *herero*; shining, the oblique rugae stronger than in *herero*. Clypeus longer than in *herero*, two-thirds as long as wide, the anterior margin of the median area more distinctly depressed. Pronotum longer; seen in profile the convex dorsal face is continued into the oblique anterior face by a low curve; in *herero* the flattened dorsal face joins the subvertical anterior face by an abrupt curve, so that the junction of the two faces is subrectangular. Petiole shorter than in *herero*, not longer than the first tergite. Veins, excepting the costa and the stigma brownish ochreous, not black as in *herero*. Otherwise like that species.

Willowmore, February, 1 ♀ (Dr H. Brauns). Type in coll. Brauns.



*S. (Parapsammophila) cyaneipennis* Lep. *Hist. Nat. Ins. Hym.* III, p. 370, ♀. 1845. Kohl, *Ann. K.K.N.H. Mus. Wien*, XXI, p. 297, ♀, ♂. 1906.  
*S. reticollis* Ach. Costa, *Ann. Mus. Univ. Nap.* II, p. 111, ♂, ♀. 1864.

"26-38 mm. long (♂ 26-32 mm., ♀ 30-38 mm.). Black. The following parts are partially brownish red: the head, thorax, the whole of the prothorax, the mesonotum in front of the tegulae, a spot below the base of the wings, the legs and antennae more or less, and sometimes a part of the epinotum. Wings brown, with a violet or blue and violet lustre. Pilosity castaneous brown.

♀. Clypeus almost flat, broadly truncate in the middle in front, the truncation with a distinct dentiform angle on each side. Inner margins of the eyes almost parallel, very slightly convergent towards the vertex. Posterior ocelli nearer to each other than they are to the eyes. Second joint of the flagellum almost as long as the third and fourth united, not quite so long as the distance between the eyes and one of the posterior ocelli. Pronotal collar discoid, steeply declivous in front, the dorsal face with a small impression in the middle. Mesonotum rugose, the rugae somewhat anastomosed. The rugae are distinct, with the spaces between them punctured. In the sculpture of the mesonotum *cyaneipennis* ♀ differs from *ludovicus* ♀: in the latter species rugae are clearly developed only in the middle posteriorly, whence the puncturation stands out distinctly elsewhere. Mesopleurae coarsely and not closely punctured. Scutellum and postscutellum longitudinally striate. Dorsum of epinotum in the middle coarsely reticulate-rugose, the sides behind the stigmata sharply transversely striate. The dorsum of the epinotum in this as in the other species of the *Parapsammophila* group falls sharply away from the middle outwardly, so that it is not flat but appears conspicuously raised in the middle. Petiole not twice as long as the first tergite, a little shorter than the hind femur, and about as long as the first joint of the hind tarsus plus half of the second. Legs strongly spinose. Basal joint of the fore tarsi, and also the four following joints, asymmetrical, strongly produced outwardly at the end. The basal joint of the tarsus bears 8 to 9 spines on the outer margin. The third cubital cell is narrowed above and below, barrel-shaped; as a rule it is a little wider on the radius than on the cubitus. The second cubital cell is strongly narrowed above on the radius.

♂. Eyes distinctly convergent below. Clypeus not carinate, flat, impunctate, glabrous, and at the point where the eyes are nearest together not so wide as the length of the first two joints of the flagellum, but about equal to that of the third and fourth. The face in *ludovicus* and *unguicularis* ♂ appears, however, somewhat wider.

The inner margins of the eyes converge towards the vertex more than in *ludovicus*; at the level of the posterior ocelli their distance apart is equal to that across the clypeus, plus the distance between the eye and one of the posterior ocelli. The latter are about as far from each other as they are from the eyes. The sixth to twelfth joints of the flagellum, as in *ludovicus*, are swollen below, the swollen portion traversed with a smooth, raised line. The mesonotum is densely punctured, rugose between the punctures, the rugae stronger in the middle behind. The seventh sternite is emarginate, and the following sternite is also shallowly emarginate in the middle. The spatha of the genital armature, viewed from the side, is swollen."

Egypt, Nubia and Senegal.

*S. (Parapsammophila) unguicularis* Kohl. *Ann. K.K.N.H. Mus. Wien*, XVI, p. 142, ♂. 1901.

"Statura media, nigra, nigro pilosa, abdomen subcinereo-tomentosum. Alae nigro-fuscae, violaceo-coeruleo resplendentes, collare antice ad per-



pendiculum praeruptum. Margines interni oculorum clypeum versus paulum converguntur. Oculi ad clypeum longitudine antennarum flagelli articularum  $1m + 2d + \text{dimidiati } 3t$ , fere longitudine artic.  $3t + 4t$  approximati sunt. Ocelli posteriores inter se paulo minus distant quam ab oculis. Flagelli articuli 6-12 subtus haud nodose incrassati, sed carinula longitudinali instructi.

Collare antice ad perpendiculum praeruptum. Dorsulum punctatum et rugosum. Scutellum rugis longitudinalibus instructum. Mesopleurae et mesosternum punctata rugis fere carent. Segmenti mediani area dorsalis in parte media valde grosse rugosa, utrinque oblique strigosa. Petiolus pedum posticorum articulo  $1m + \text{dim. } 2d$  longitudine circiter aequalis. Segmentum octavum in parte ventrali postice emarginatum.

♂. 22 mm. Altogether similar to the ♂ of *ludovicus* Smith, for a dwarf specimen of which species it might easily be mistaken. But, in addition to the smaller size, it differs from that species in many points. The face is proportionately wider, the least distance between the eyes across the clypeus being equal to the combined length of the first, second and half the third joints of the flagellum, only slightly less than that of the second and third, more than that of the third and fourth (in *ludovicus* equal to the length of the second plus two-thirds of the third joint, or equal to the length of the third and fourth united). The puncturation and striation of the mesonotum is coarser than in *ludovicus*; the sculpture of the epinotum is also much coarser, especially the reticulate rugosity on its dorsum. The ventral valve of the eighth abdominal segment is emarginate, not straight as in *ludovicus*; the form of the ninth ventral valve also differs from that of *ludovicus*, and approximates more to that of *A. miles*, the spatha, seen from above, becoming narrowed and lancet-shaped apically, seen from the side, laterally compressed as in *ludovicus*. The stipes is not so acuminate as in *ludovicus*.

Delagoa Bay."

S. (*Parapsammophila*) *testaceipes* Turner. *Ann. Mag. N.H.* (9), 1, No. 1, p. 90, ♂. 1918.

"♂. Niger, albo-pilosus; mandibulis, apice excepto, clypeo in medio nigro-lineato, tegulis, pedibusque rufo-testaceis; coxis posticis, trochanteribus femoribusque posticis supra, tarsis intermediis posticisque articulo apicali, unguiculisque nigris; alis hyalinis, venis fusco-ferrugineis. Long. 25 mm."

"♂. Clypeus broadly rounded at the apex, subdenticulate in the middle of the apical margin, clothed with delicate silver pubescence, which extends on to the front. Head and sides of the thorax rather densely clothed with long white hairs, the hairs on the mesonotum and dorsal surface of the median segment cinereous. Eyes convergent towards the clypeus, where they are separated by a distance slightly exceeding twice the length of the scape and first joint of the flagellum combined. Posterior ocelli separated from the eyes by a distance scarcely equal to the length of the third joint of the flagellum. Head and pronotum punctured-rugulose, the clypeus shining and almost smooth; mesonotum rugulose; dorsal surface of median segment closely transversely striate, the striae slightly curved in the middle. First joint of the petiole a little longer than the hind femur; second tergite longer than the apical breadth; seventh tergite broadly truncate at the apex; eighth sternite long, the sides almost parallel, the apex rather broadly truncate. Mesosternum not produced anteriorly. Tarsal unguis with two teeth close to the base; pulvilli large. Second recurrent nervure almost interstitial with the second transverse cubital nervure; second abscissa of the radius much longer than the third; third transverse cubital nervure rather strongly curved outwardly in the middle.



*Hab.* Valley of the Ruaha River, German East Africa (S. A. Neave), December 1910."

The above description would fit *S. herero* ♂ very closely but for the sculpture of the mesonotum and the shape of the eighth sternite. It may prove to be the ♂ of *S. consobrinus* since the scutellum is apparently not saddle-shaped, and the pronotum is black.

*S. (Psammophila) Tydei* Guillou, var. *capensis* Lep. (Plate X, figs. 2, 9, 10).

*Ann. Soc. Ent. France*, x, p. 319, ♀. 1841.

(var.) *Lepeletier. Hist. Nat. Ins. Hymen.* III, p. 368, ♂. 1845.

♀. 16.5–20 mm. Black, first tergite, second segment and the basal half or more of the third abdominal segment ferruginous, the first tergite and extreme margin of the second sometimes more or less blackish. Head, pro- and mesonotum and abdomen shining, legs moderately shining, the rest of the body dull. Head, pro- and mesonotum coarsely, closely and deeply punctured, the sides of the pronotum and propleurae obliquely striate, the meso- and metapleurae closely punctured and dull, the spaces between the punctures aciculate. Epinotum closely and fairly finely rugoso-punctate. Face clothed with a silvery pile, which diminishes towards the ocelli; thorax clothed with a long, dense and greyish-white pilosity, legs with a very fine whitish pubescence and a few long hairs, especially on the coxae; a few long whitish hairs around the articulation of the petiole. Head from one-fourth to two-fifths wider than long. Face wider than long; clypeus from two-thirds to twice as wide as long, the anterior margin feebly convex, with a small round excision on each side of the median area. Second joint of the flagellum three-fifths longer than the third. Posterior ocelli separated from the eyes by a distance equal to the length of the third joint of the flagellum; they are half as far again from the eyes as they are from each other. Pronotum convex transversely, and convex from front to back above, the anterior face vertical. Petiole half as long again as the first tergite, as long as the posterior metatarsus or sometimes a little shorter; first tergite not more than two-thirds as long again as wide behind, usually only half as long again. Anterior metatarsus not strongly asymmetrical, the pecten not dense. Second cubital cell trapezoidal, receiving both recurrent veins; third cubital cell widest below the middle; wings yellowish, with a darker and well-defined apical infuscation beyond the cells. Claws without teeth.

♂. 16–19 mm. Sculpture and colour like that of the ♀, but the whole or greater part of the first tergite is often dark, and on the second and third dorsal segments of the abdomen the dark colour of the apical margin frequently extends over the greater part of the segments, leaving only the base reddish. The pruinose bloom on the abdomen is longer, more abundant and much more conspicuous than in the ♀, and the pilosity is denser and usually longer than in the ♀, especially on the face and cheeks. This character is, however, rather variable; in one or two specimens before me, the pronotum is less hirsute than the rest of the thorax, not hiding the puncturation. Head in front, with mandibles closed, almost triangular; the eyes convergent below but not strongly so. The face is two-thirds wider above than below; clypeus usually a little longer than, or at least as long as the anterior margin is wide, the latter feebly concave; from two-fifths to one-half of the clypeus projects beyond the anterior margin of the face. First sternite thinner than in the ♀, also a little longer, being from two-thirds to twice as long as the first tergite; the latter much narrower than in the ♀, being at least twice as long as wide apically. Abdomen narrower than in the ♀. Otherwise like that sex.

Common everywhere in the sub-continent.



*S. (Psammophila) Sheffieldi* Turner. *Ann. Mag. N.H.* (9) 1, No. 1, p. 89, ♀. 1918.

♀. 22-27 mm. long. Black, the first and second tergites and basal third of the third tergite, the apex of the petiole below and the second and third sternites, red. Apart from its larger size, this species differs from *Tydeicapensis* as follows:

Wings more deeply tinged with yellow. Pilosity of the head and thorax long, dense and black; the face has a fine underlying silvery pubescence. On the sides of the thorax and on the epinotum there is a whitish pilosity intermixed with the black. The puncturation of the head is distinctly coarser and closer than in *capensis*, especially on the vertex and temples. The puncturation of the pro-mesothorax is also closer, the sculpture of the mesonotum being reticulate-punctate, the punctures almost contiguous. The mesonotum has a median longitudinal carina from the middle to the base. Dorsum of epinotum strongly reticulate-punctate, with a feeble median carina which does not reach the apex. Petiole as long as the basal joint of the hind tarsus, the basal third punctured and clothed with black hairs. Posterior ocelli twice as far from the eyes as they are from each other. The median area of the clypeus is slightly more produced than in *capensis*, and the lateral angles of its anterior margin are distinctly rectangular. Second joint of the flagellum half as long again as the third. Third cubital cell narrower than in *capensis*, nearly twice as wide on the cubitus as on the radius; the second abscissa of the radius is a little wider than the third, whereas in *capensis* it is narrower or only just as wide.

Mlanje, Nyasaland. March-May.

*S. (Coloptera) Saussurei* Du Buysson (Plate X, figs. 3, 8). *Ann. Soc. Ent. France*, LXVI, p. 357, ♀. 1897. Arnold, *Proc. Rhod. Sc. Assn.* XVIII, part 2, p. 34, ♂. 1919-20.

♂. 19 mm. Black, first and second joints of the antennae, mandibles except their apices, a median spot on the anterior margin of the clypeus, the upper surface of the pronotum, a sharply defined spot on each side of the mesonotum starting just behind the anterior margin and reaching the tegulae, the pronotal tubercles and tegulae, burnt-sienna red. Legs including the coxae, ferruginous, the middle and posterior tarsi brown, a narrow streak on the inner surface of all the coxae or of the middle and hind pairs, the femora and middle and hind tibiae, brown or brownish black. First joint of the petiole dark red, the first tergite, and the second tergite below, reddish brown.

Clypeus and lower half of the face, the pronotal tubercles and a narrow oblique streak on the posterior margin of the mesopleurae with silvery-golden pubescence, a patch of similar pubescence on each side of the epinotum above the petiole. Rest of the head with an exceedingly fine whitish pubescence. Sides of thorax with a microscopic greyish pile. Otherwise, excepting a few long hairs on the cheeks, glabrous. Abdomen with a sparse pruinose pubescence.

Head somewhat dull, very finely aciculate. Pro- and mesonotum nitidulous, very regularly and transversely carinate or rugose (the pronotum with 7 or 8 carinae), the scutellum and post-scutellum longitudinally striate, pro- and mesopleurae deeply and fairly closely punctured, with or without a superficial rugosity super-imposed. Dorsum of epinotum transversely rugose, somewhat reticulate-rugose at the base, the sides and declivity rugoso-punctate, the punctures deep.

Head, seen from above, roundly triangular, or semicircular, the occipital margin being very narrow; seen from in front, subcircular, as wide as long. Inner orbits parallel in their lower half, very feebly divergent in the upper,



the width of the face across the clypeus equal to the length of the second and third antennal joints combined. Clypeus one-third longer than wide, its posterior margin sharply angular, the anterior portion narrowed, produced, feebly excised in the middle; the distance between the posterior ocelli as great as their distance from the eyes.

Pronotum three-fourths wider than long, convex transversely above; post-scutellum, seen in profile, raised in the middle. Dorsum of epinotum nearly twice as long as the declivity, their junction distinctly angular; first joint of the petiole as long as the second, and as long as the posterior tibiae; second tergite two-thirds longer than its apical width. Tarsal claws without teeth, pulvillus well developed; posterior tarsi cylindrical. Wings with two cubital cells, the second subtrapezoidal and receiving both recurrent veins, twice as wide on the cubitus as on the radius.

♀. 20-25 mm. First joint of antenna ferruginous, the rest blackish with the second to fifth more or less blackish brown below. Face nearly one-third wider than long; inner orbits slightly convergent above, parallel below. Width of face across the clypeus equal to the length of the first three antennal joints combined. Clypeus two-thirds wider than long, the anterior margin convex, slightly emarginate in the middle, not produced. Distance between the posterior ocelli a trifle less than their distance from the eyes. Otherwise like the ♂.

This species differs from *S. (Coloptera) barbara* Lep. and *judaeorum* Kohl by the structure of the posterior tarsi, the sculpture of the mesopleurae and by the colour of the pro- and mesonotum.

A scarce species. Sawmills and Khami River, S.R.; Mfongosi, Zululand (W. E. Jones).

*S. (Coloptera) tuberculiscutis* Turner (figs. 7, 7 a-d). *Ann. Mag. N.H.* (9) III, No. 16, p. 396, ♀, ♂. 1919.

♀. 21-22 mm. long. Black, the following parts ferruginous: mandibles excepting the black apex, clypeus, scapes and first five joints of the flagellum, prothorax, sides of the mesonotum in front, the upper part of the mesopleurae under the wing-bases, tegulae, scutellum, postscutellum, ventral surface of the petiole, the second tergite, the apical tergite, the sternites somewhat diffusely, and the legs. All the femora are blackish above. Face, sides of clypeus, pronotal tubercles, posterior margin of the mesopleurae, sides and apex of the epinotum with a very fine, silky, pale golden pubescence. On the posterior margin of the mesopleurae this pubescence is very dense, and, as in *Saussurei*, forms a conspicuous, oblique and shining band. Temples and last sternite with a few, long, outstanding, yellowish hairs. Wings hyaline, tinged with yellow, the veins black. Head microscopically rugulose and fairly dull, except the middle of the clypeus and the temples which are slightly shining. Prothorax smooth and shining. The pronotal collar has the anterior angles produced into truncate tubercles, wider than long. Mesonotum transversely and regularly rugose, the rugae straight or cariniform<sup>1</sup>. Scutellum and meta-

<sup>1</sup> The sculpture consists of numerous carinae. The terms "striate" and "rugose" have been used somewhat loosely by many writers, including the author. Strictly speaking the word "rugose" should be used to indicate a sculpture consisting of raised lines, more or less wavy, and "striate" to indicate incised lines or sulci lying below the general surface. It is, however, not always possible to be quite precise, e.g. when the raised lines are not wider than the spaces between them, it is a matter of personal interpretation which term should be employed. "Striato-rugose" and "rugoso-striate" indicate these intermediate conditions. In the present instance the use of the word "carinate" is ambiguous and likely to lead to confusion, since in the usual sense it means that the whole area which is being described is furnished with a single keel. The terms "plicate" or "ribbed" might perhaps be more suitable in this case.



notum longitudinally plicate, both raised in the middle to form an elongate, flattened tubercle sharply marginate on each side. Mesopleurae slightly shining, sharply but not closely punctured. Dorsum of epinotum dull, closely and finely rugose; the sides and declivity of the segment and the metapleurae dull, closely rugose and strongly punctured between the rugae.

Mandibles with a large blunt tooth on the inner margin beyond the middle. Anterior margin of the median area of the clypeus feebly convex, rectangular at the corners. Inner margins of the eyes almost parallel. Second joint of the flagellum nearly half as long again as the third. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. First joint of the petiole slightly longer than the second, and a little shorter than the hind femur; the whole petiole longer than the thorax. Anterior tarsi with a rather short comb, only the basal joint asymmetrical at the apex. Pulvillus well developed. Second abscissa of the radius about half as long as the first.

♂. 22–25 mm. long. Pubescence of the face very dense and bright golden. The pronotal collar has two or three transverse rugae in the middle, but the anterior lateral tubercles are less developed than in the ♀, and are more convex or not so clearly truncate as in the other sex. Clypeus triangularly produced, the apex rounded. Stipes angularly bent before the middle, the posterior margin roundly dilated below the middle, the apex narrow and bifid. Otherwise like the ♀.

British East Africa.

Turner in his description says the first joint of the petiole in the ♀ is as long as the hind femur and trochanter combined, and in the ♂ even longer; but in the specimens which I have seen, from Mtito Andei and Tiwa River, and determined by Turner himself, the first joint is certainly a little shorter than the femur alone.

*S. (Coloptera) crassifemoralis* Turner. *Ann. Mag. N.H.* (9) IV, No. 19, p. 48, ♂. 1919.

“♂. Nigra; mandibulis, apice excepto, flagello articulis sex basalibus, pronoto lateribus, callis humeralibus, tegulis, mesonoto utrinque ante tegulas, petiolo subtus, sternitis, in medio nigro-suffusis, tergito septimo, pedibusque ferrugineis; femoribus, trochanteribus intermediis posticisque coxisque posticis, supra nigris; tibiis posticis supra nigrolineatis; alis sordide flavo-hyalinis, apice leviter infumatis, venis ferrugineis; pronoto mesonotoque fortiter transverse striatis; scutello postscutelloque fortiter longitudinaliter striatis, convexis, haud lamellato-productis; tergito septimo apice late truncato. Long. 22 mm.”

“♂. Clypeus broadly truncate at the apex, broader than long. Eyes distinctly, but not very strongly convergent towards the clypeus; posterior ocelli nearly half as far again from the eyes as from each other, and twice as far from the hind margin of the head as from each other. Head strongly narrowed behind the eyes, the clypeus and front densely clothed with pale golden pubescence. Propleurae coarsely rugulose; mesopleurae and sides of

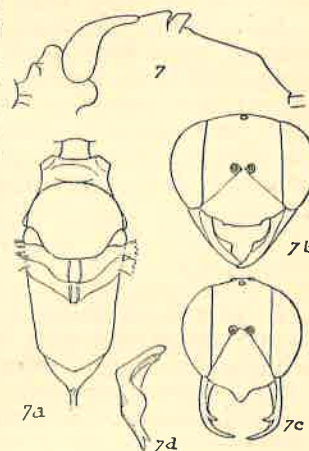


Fig. 7. *S. tuberculiscutis*, ♀, profile of thorax. a. Thorax, dorsal view. b. ♀, head. c. ♂, head. d. ♂, left stipes.



median segment irregularly obliquely striated, coarsely punctured between the striae; a broad band of pale golden pubescence on the mesopleurae behind, a patch of same below the humeral calli, and a patch on each side of the median segment at the apex. Dorsal surface of the median segment coarsely obliquely striate-reticulate. First joint of the petiole a little shorter than the hind femur and trochanter combined; second tergite subtriangular, a little longer than its apical breadth. Hind femur stout and massive as compared with the allied species; pulvillus large.

*Hab.* Southern slopes of Mt Elgon, 5100 to 5800 ft. (S. A. Neave), June; Valley of Nzoia River, N. Kavirondo, 5100-5400 ft. (S. A. Neave), June. Nearly allied to *S. Saussurei* Buyss., and *S. tuberculiscutis* Turner, but it is a more robust species, and differs in the simple scutellum and postscutellum, which are produced in a lamelliform manner in the two species mentioned. The clypeus is very different to that of *tuberculiscutis* ♂, also the pronotum, and the petiole is shorter. Type in British Museum."

*S. vulcania* Du Buysson (Plate X, figs. 5-7). *Ann. Soc. Ent. France*, LXVI, p. 256, ♂. 1897. Arnold, *Proc. Rhod. Sc. Assn.* XVIII, part 2, p. 35, ♀. 1919-20.

♀. 32 mm. Black; head, prothorax above, tegulae and sometimes the posterior lateral margins of the mesonotum, sometimes a lenticular spot on each side of the dorsum of the epinotum, first 3-6 joints of the antennae and the legs in greater part, dark castaneous red; a patch of variable size between the ocelli, blackish. The inner sides of the anterior and middle femora, the posterior femora except at their apices and the inner sides of the posterior tibiae, dark brown or piceous. In specimens from Rhodesia, the middle tarsi and the whole of the hind legs are piceous, and the two spots on the epinotum are sometimes absent.

The amount of red on the antennae is variable, in some Rhodesian specimens only the first two joints and the lower side of the third being red. Apical half of the mandibles black. Abdomen black, with a very faint greenish-blue metallic shimmer. Face and clypeus with a sparse black pilosity. Anterior face of the pronotum with black hairs, sides of thorax and epinotum with long whitish hairs. Clothed all over with a very fine greyish pubescence, even on the legs, giving the insect a rather dusty appearance; on the last three abdominal segments this pubescence is denser and pruinose. Dull, head closely and microscopically alutaceous, the clypeus near the anterior margin with a few large, the vertex with a few small and shallow punctures. Dorsum of pronotum sharply marginate in front, with two or three strong transverse rugae behind, the anterior face smooth.

Mesonotum transversely rugoso-striate, the striae on the anterior third often interrupted in the middle by a longitudinally impressed line. Scutellum and post-scutellum closely and sharply striate longitudinally. Dorsum of epinotum transversely and more or less obliquely striate, the striae becoming rugae in the middle. Sides of thorax rugoso-striate, reticulate or shagreened between the striae, which are more or less vertical.

Head, seen from in front, nearly one-third wider than long; inner orbits slightly convergent above, parallel along their lower three-fourths. The width of the anterior margin of the face is equal to the length of the first three antennal joints combined. Clypeus rhomboidal, nearly twice as wide as long in the middle, not very convex. Distance between the posterior ocelli clearly less than their distance from the eyes. Anterior face of pronotum only a little longer than the dorsal, the latter three and a half times wider than long, with well-marked anterior lateral angles. Posterior half of the dorsum of



the epinotum semicircularly marginate, the margin ending at the stigmata; the dorsum is twice as long as the declivity, which it joins angularly. First joint of petiole not quite as long as the posterior femur or the second joint, the latter moderately incrassate posteriorly; second tergite a little longer than wide. Claws unarmed, pulvilli wanting. Wings smoky-brown, darker over the apical margin, with a slight violaceous tinge; both recurrent veins enter the second cubical cell, which is nearly three times wider on the cubitus than on the radius, the third cubital cell as wide on the cubitus as on the radius.

♂. 25-28 mm. Pilosity a little more abundant and longer than in the ♀, the face and clypeus clothed with a silvery or golden pubescence which is sufficiently dense to hide the integument. Colour like that of the ♀, but the head, excepting the clypeus, is entirely black. The sculpture is everywhere stronger than in the ♀, especially on the upper surface of the thorax. The dorsum of the epinotum is usually transversely striate, but is sometimes rugose, or rugoso-reticulate. The colour of the legs is darker, the red being confined to the inner face of the anterior femora, middle femora and tibiae, and the hind tibiae. Head narrower than in the ♀; inner orbits almost parallel; clypeus longer than wide, narrowed anteriorly and produced, hollowed out above the projection, the latter rectangular at the corners and deeply emarginate in the middle, appearing almost bidentate (Plate X, fig. 6). Wings paler than in the ♀. Petiole and abdomen narrower; pulvilli present. Otherwise like the ♀.

Widely distributed, but not plentiful. Cape Prov., Transvaal, Natal and Rhodesia.

*S. beniniensis* Pal. Beauv. (Plate XI, fig. 40). *Insect. rec. en Afr. et Amér.* p. 48. 1837.

*S. lugubris* Gerst. Peters: *Reise n. Mossamb.* v, p. 480. 1862.

♀. 28-30 mm. Not unlike *vulcania* Du Buyss., superficially. Black, the head and mandibles, excepting the teeth, dark ferruginous, the space between the ocelli and two patches round the front and sides of the anterior ocellus, black. These black patches are variable in shape and extent, sometimes coalescing to form a W-shaped mark. First two joints of the antennae ferruginous, the third ferruginous below and over the basal half above. Prothorax dark ferruginous, the neck, the propleurae and anterior face of the pronotum black, the black sometimes extending to a variable width in the middle over the dorsal face of the pronotum and along its posterior margin. A roundish spot on each side of the mesonotum in front of the tegulae dark red (occasionally absent), tegulae brown or ferruginous, the rest of the thorax and abdomen black. Abdomen with a greenish tinge, more apparent on the fourth and fifth segments, not hidden by the thin pruinose pubescence, which is denser on those segments than on the rest. Prothorax, mesothorax, sides of metathorax and epinotum, with black, coarse and exserted hairs, on the sides of the epinotum sometimes intermixed with greyish hairs.

An inconspicuous greyish tomentum sometimes present on the sides of the thorax and epinotum. Legs ferruginous, the middle and hind coxae, trochanters and femora more or less black on their inner faces, the anterior coxae, trochanters and femora with a black streak on their inner faces. Face and vertex dull, sparsely and shallowly punctured; clypeus with larger but still shallow punctures.

Head in front one-fifth wider than long; inner margins of the eyes feebly convergent above; the distance between the posterior ocelli barely shorter than their distance from the eyes. Clypeus convex in the middle, feebly concave laterally, the anterior margin convex, slightly reflected, and shallowly indented in the middle. Pro- and mesonotum transversely striato-rugose, the



spaces between the rugae moderately shining, indistinctly punctured. The anterior face of the pronotum subvertical, the dorsal face from two and a half to three times wider than long, hardly shorter in the middle than at the sides. Scutellum and postscutellum sharply and longitudinally striate; dorsum of epinotum transversely and coarsely striato-rugose, also partly reticulate, the rugae strongest at the sides. Sides of thorax closely and vertically rugose, the spaces between the rugae fairly closely punctured. The dorsum of the epinotum is two and a third times longer than the declivity, which it joins in an obtuse angle. The joints of the petiole subequal, the whole petiole almost as long as the head and thorax together. Wings dark brown or pale brown, darkest near the base, with a violaceous lustre; first and second abscissae of the radius equal in length, or the second a little shorter, second cubital cell twice as wide on the cubitus as on the radius, the third cubital cell widest a little below the middle.

♂. 22-24 mm. Face with a silvery-grey pubescence. Head black, the scapes reddish, the rest of the antennae black. On the thorax the red colour is confined to a small spot on each side of the pronotum, to the propleurae and tegulae. The metallic shimmer on the abdomen more pronounced than in the ♀, more bluish. Legs darker, the upper surfaces of all the tibiae and femora black, the posterior legs black except the inner and lower faces of the coxae and trochanters, and the bases and apices of the femora. Sides of thorax with a dense grey pilosity. The pro- and mesonotum more distinctly punctured between the striae than in the ♀, and with the scutate area of the epinotum duller and more closely reticulate. Head nearly one-third wider than long; the inner margins of the eyes convergent below; the anterior margin of the clypeus feebly concave. Stipites (Plate XI, fig. 40) gradually narrowed and slightly incurved towards their apices, which are subacute, the upper margin of the apical third furnished with a row of 5 or 6 stiff bristles, and the rest of that part of the stipites finely pubescent. Otherwise like the ♀. Widely distributed and fairly abundant.

Rhodesia, Natal, Transvaal and Eastern Cape Province.

var. *calvus* Arnold (Plate XI, figs. 18-20). *Proc. Rhod. Sc. Assn.* XVIII, part 2, p. 38, ♀, ♂. 1919-20.

♀. 30-32 mm. This differs from the type species as follows:

Pilosity of the thorax very scanty, almost absent from the mesonotum and pleurae. Abdomen without visible pubescence, so that the metallic greenish colour is made more apparent. Clypeus more strongly punctured. The black maculae on the vertex more extensive, in some cases extending back to the occipital margin. Thorax entirely black. The striae on the pro- and mesonotum closer together, the spaces between them dull. The dull and rugulose anterior face of the pronotum is longer and slopes backwards and upwards more obliquely than in the type of the species, thereby reducing the length of the dorsal face, which is distinctly longer at the sides than in the middle.

♂. 24 mm. Like the ♀ in colour, but the head and antennae are entirely black, the mandibles ferruginous over the basal two-thirds. Inner faces of apical half of the anterior femora and basal half of anterior tibiae and basal fourth of hind tibiae, more or less ferruginous, the rest of the legs black. The greater part of the face and clypeus clothed with a dense silvery pubescence. Thorax with a thin greyish pile, more abundant on the pleurae. Clypeus, cheeks and thorax with a fairly long greyish-white pilosity, fairly abundant all over except on the dorsum of thorax. The last four abdominal segments with a thin pruinose pubescence. Sculpture similar to that of the ♀, but a little less coarse, the head more closely punctured. Head, seen from in front,



one-fourth wider than long; inner orbits distinctly convergent below, the distance between them across the vertex being at least one and a half times greater than their distance across the clypeus; posterior ocelli slightly nearer to each other than they are to the eyes. Clypeus only slightly produced, the anterior margin transverse, not excised in the middle. Petiole nearly one-fourth longer than the head and thorax combined. First segment of petiole as long as the second, and as long as the posterior tibia. All the tarsi with pulvilli (absent in the ♀). Otherwise like the ♀.

Umgusan and Sawmills, S.R.; Zululand. Types in the Rhodesia Museum.

race *tomentosus* Arnold. *Loc. cit.* p. 39, ♀.

♀. 23.5 mm. This form differs from the type of the species in its smaller size and also in the following features:

The whole body, including the femora and tibiae, is clothed with a very fine greyish pubescence, which on the thorax is tomentose and to a certain extent hides the sculpture. On the clypeus the pubescence is dense and silvery, on the abdomen pruinose, masking the metallic sheen of the integument. The black macula on the vertex is confined to the interocellar space and to a narrow  $\perp$ -shaped extension on each side of same. The prothorax, excepting the neck, the anterior angles of the mesonotum, a spot below the tegulae, the posterior border of the mesopleurae, the metapleurae just above the coxae, the posterior corners of the epinotum and a more or less elliptical patch on each side of the dorsum of the epinotum, ferruginous. Legs ferruginous, the inner and upper surfaces of all the trochanters and femora, and the posterior coxae, blackish. First six joints of the antennae ferruginous, the rest darker and becoming increasingly so towards the apical joint. Wings yellowish fuscous, with a very faint violaceous shimmer.

Windhoek, S.W.A. Protectorate. (F. Wilde.) Type in the Transvaal Museum.

*S. tenuis* Pal. Beauv. (Plate XI, figs. 21-23). *Insect. rec. en Afr. et Amér.* p. 48. 1837.

*S. rugicollis* Lep. *Hist. Nat. Ins. Hymen.* III, p. 373, ♂. 1845.

*S. coeruleornata* Cam. *Ann. Trans. Mus.* II, p. 135, ♂. 1910.

*S. maculifrons* Cam. *Ibid.* p. 134, ♀. 1910.

*S. guineensis* Ritsema. *Tijdschr. v. Ent.* XVII, p. 192, ♀. 1874.

This species is remarkably variable in size and colour, and in both sexes shows a distinct amount of variation in the width of the face. The species is closely related to *beniniensis* Pal. Beauv.; in the males I can see no difference in the structure of the genitalia. It differs from *beniniensis* chiefly in its lesser size and in the sculpture of the pronotum.

In the following description I have chosen examples intermediate in size and colour.

♀. 19.5-27 mm. Head ferruginous, an M-shaped spot on the vertex black; first and lower surface of the second and third joints of the antennae ferruginous, the rest black; mandibles ferruginous, their apices black. Thorax black, a transverse band on the prothorax ferruginous, often interrupted above in the middle; tegulae ferruginous. A more or less triangular spot on the mesopleurae with its apex reaching the coxae, ferruginous, and a longitudinal streak of the same colour on the sides of the epinotum just above the posterior coxae. First segment of petiole black, the second blackish above and reddish below, the apex of the former red. Second abdominal segment red below, black on the basal half above, the apical half ferruginous and gradually infuscate towards the apical margin; sometimes entirely black or dark brown.



The other abdominal segments steely blue above, black below, the apical margins more or less ferruginous. Legs red, all the coxae in front and behind, the trochanters, femora and posterior tibiae more or less black or streaked with black. Clothed all over with a greyish silvery and short pubescence, forming a dense pile on the face and clypeus; the apical half of the abdomen with pruinose pubescence. Pilosity on the head brownish, fairly dense and exerted on the clypeus and cheeks. On the thorax the pilosity is shorter, greyish on the sides and on the epinotum. Head alutaceous, dull except on the occiput, shallowly punctured, the puncturation stronger behind the ocelli and above the antennal sockets. Clypeus sparsely and coarsely punctured. Pronotum like that of *S. Saussurei* Du Buysson, strongly and transversely sulcate-striate, the carinae (of which there are about five on the dorsal surface) extending right down the sides.

Mesonotum transversely and strongly rugose, the rugae somewhat curved behind. Scutellum and post-scutellum longitudinally striate, the dorsum of the epinotum transversely reticulate-rugose, the meso- and metapleurae and sides of epinotum obliquely reticulate-rugose and rugulose between the striae.

Head, seen from in front, nearly one-third wider than long, the inner orbits of the eyes very slightly convergent below and above, or almost parallel, the clypeus not much produced beyond the face, slightly impressed behind the anterior margin, which is feebly concave. The distance between the posterior ocelli is less than their distance from the eyes by about the width of the ocellus. Dorsal and anterior faces of the pronotum fairly sharply delimited, but not so angularly as in *vulcania*, the dorsal face of the pronotum is three and a half times wider than long, the shoulders a little rounded. Dorsum of epinotum not quite twice as long as the very oblique declivity. The joints of the petiole subequal, each a little shorter than the posterior femora. Anterior metatarsus very slightly asymmetrical. Wings smoky yellow, veins dark ochreous brown, with only a very slight violaceous shimmer; the form of the cubital cells is very much like that of *beniniensis* but the second is less narrowed on the radius, and the third is widest below the middle, with the outer transverse cubital vein directed more obliquely inwards and more curved below (Plate XI, fig. 21).

The variations in colour in this sex range are as follows:

In the form in which the red colour is most extensive (Algoa Bay, leg. Brauns), the following parts are ferruginous: the whole of the head excepting the macula on the vertex, a spot on each anterior corner of the mesonotum, the whole of the pronotum excepting the neck, the mesopleurae and mesosternum, the sides and lower lateral angles of the epinotum, an elongate spot on each side of the dorsum of the epinotum and lying within the scutate area of same, a transverse spot on the scutellum, the first tergite below, the second tergite and all the ventral surface of the second-sixth segments.

In the more melanic forms, the whole of the thorax is black, excepting a transverse band on the posterior half of the pronotum which is more or less widely interrupted with black in the middle.

The macula on the vertex varies considerably in extent and shape, and in one specimen before me extends over the whole of the head, excepting the back of the cheeks, the anterior margin of the clypeus and two patches just above the antennal sockets.

♂. 15-22.5 mm. Very variable in size and coloration. Head entirely black, mandibles ferruginous, the apices black; scapes more or less ferruginous underneath. Colour of thorax as in the ♀, and varying as follows. The dorsal surface and sides of the pronotum may be entirely red, or the central black spot may spread so much as to leave only a small ferruginous spot on



each side. Occasionally the first three joints of the flagellum are more or less red.

The triangular red patch on the mesopleurae and the longitudinal streak on the sides of the epinotum may be as in the ♀ or larger, in which case the red colour extends over the whole of the lower half of the declivity of the epinotum, or the red colour may be absent from the thorax except on the dorsum of the pronotum and the tubercles. The latter is more frequently seen in Rhodesian and Natal specimens. In the forms with red on the mesopleurae there is also sometimes a small red spot just under the tegulae. The colour of the abdomen is similar to that of the ♀, but in all the specimens which I have seen, the second segment is never ferruginous above, and only faintly so on the ventral surface, the metallic colour of the other segments is a little more pronounced than in the ♀, varying from a greenish blue to violet blue. The colour of the legs is very variable, but is usually darker than in the ♀. Pubescence and pilosity more abundant than in the ♀, the erect hairs on the dorsum of the thorax and on the head darker and longer. Face usually more closely punctured than in the ♀. The sculpture elsewhere like that of the ♀, but very variable in details. In some specimens, chiefly Rhodesian, the transverse striation of the mesonotum is very sharp and distinct, as much as in *S. Saussurei*, in others it may be rugulose between the striae and duller.

Head, seen from in front, about one-fourth wider than long, not very convex above. Inner orbits of the eyes always distinctly convergent below, the degree of convergence somewhat variable; usually the distance between them on the vertex is as great as the length of the eye, and the distance between them at their nearest approximation below is not more than the width of the eye seen from in front. Ocelli as in the ♀. Clypeus as long as, or a little longer than wide, not much produced beyond the face, the anterior margin arcuate. Otherwise like the ♀.

Fairly abundant throughout the subcontinent.

*S. Braunsi* Turner (Plate XI, figs. 24, 25, 27). *Ann. Mag. N.H.* (9), III, No. 16, p. 395, ♀, ♂. 1919.

♀. 19 mm. Black, mandibles excepting their apices, tegulae and posterior half of pronotal tubercles reddish ochreous; first tergite excepting the extreme base, the whole of the second abdominal segment and the base of the third tergite, ferruginous; third-sixth ventral segments reddish brown. Anterior femora except at the base, the anterior tibiae and tarsi, the apex of the middle femora and the inner face of the middle tibiae, the middle tarsi and last four joints of posterior tarsi, ferruginous.

Pubescence very sparse everywhere, even on the face and clypeus, not hiding the sculpture; a dense patch only on the epinotum on each side of the insertion of the petiole; abdomen without any pruinose bloom. A few long whitish hairs on the clypeus, cheeks and lower surface of pronotum, otherwise without any pilosity.

Head microscopically and closely punctured, slightly shining, the clypeus more strongly punctured on its middle third, which is very shining. Pro- and mesonotum very strongly and transversely striate, the striae on the posterior part of the latter oblique; a sharply impressed median longitudinal line on the anterior half of the mesonotum; scutellum longitudinally striate, the postscutellum also, but reticulate at the sides; epinotum transversely reticulate-rugose and coriaceous between the rugae.

Head, seen from in front, nearly one-third wider than long, considerably wider than the thorax (Plate XI, fig. 24). The distance separating the posterior ocelli from the eyes is nearly twice as great as the distance between the ocelli;



inner margins of the eyes parallel or nearly so. A well-defined median impression extends from the level of the antennal sockets to the anterior ocellus. Clypeus scarcely produced beyond the face, its median area slightly tumid, emarginate in front. Third antennal joint rather long, as long as the fourth and fifth combined. Mandibles short and stout, the apical tooth short. Pronotum long, not more than twice as wide behind as long, its anterior face oblique and merging gradually into the dorsal, the anterior angles rounded. Dorsum of epinotum two and a half times longer than the declivity. Petiole rather short, barely longer than the thorax, its first joint a little longer than the second and as long as the posterior femur. Anterior metatarsi not markedly asymmetrical. Wings pale ochreous, the nervures and stigma dark brown; second cubital cell nearly twice as wide on the cubitus as on the radius, the third cubital cell widest in the middle, a little wider below than above, the third transverse cubital vein strongly convex outwardly.

♂. 15.5 mm. The inner face of the anterior femora except at the base, the anterior tibiae and base of metatarsi, the middle femora outwardly and below except at the base, the middle tibiae and the extreme base of the posterior femora red, the rest of the legs black. Third abdominal segment red at the base above, the ventral surface ferruginous except on the apical margin, otherwise coloured as in the ♀, but the first and second tergites are of a brighter red.

Clypeus and face below the antennal sockets clothed with a dense silvery pile; the pubescence on the thorax more apparent than in the ♀ but in no way hiding the sculpture. The latter similar to that of the ♀, but more delicate on the sides of the thorax. Head in front one-fourth wider than long, the inner orbits strongly convergent towards the clypeus, which is very little wider than long, only slightly produced beyond the face, and emarginate in the middle. Ocelli as in the ♀. Mandibles very short and stout. Pronotum longer than in the ♀, barely more than one and a half times wider than long. Otherwise like the ♀. Willowmore, C.P. (Dr H. Brauns).

*S. laticeps* n.sp. (figs. 8, 8 a, b).

♀. 16 mm. long. Mandibles excepting the black apex, anterior margin of the clypeus and the scapes, yellowish red, the rest of the head black. Prothorax ferruginous, the rest of the thorax black, but the scutellum and postscutellum have a dark reddish tinge at the sides. Tegulae reddish ochreous. First joint of the petiole black above, fusco-ferruginous below. The second joint of the petiole (first tergite), the whole of the second abdominal segment, the third sternite and basal two-thirds of the third tergite, ferruginous, the other abdominal segments black. Fore legs, including the coxae and trochanters, ferruginous; middle pair of legs ferruginous, with the coxae and trochanters above, and all the tarsi dark brown. Hind pair of legs black or very dark brown, the apical third of the femora below, and the tibiae on the outer face, ferruginous. Wings flavo-hyaline, the veins brown.

Clypeus and lower part of the face with a dense whitish pubescence. Lower outer margin of the mandible, the temples, prosterna and anterior femora with a row of long yellowish hairs. The mesopleurae and epinotum, excepting the median dorsal area, with a very short, decumbent and yellowish pubescence, scanty except on the declivity of the epinotum. Face, clypeus, vertex, occiput and temples microscopically reticulate and fairly dull, except the anterior half of the clypeus which is shining and has a few large punctures. Pronotal collar

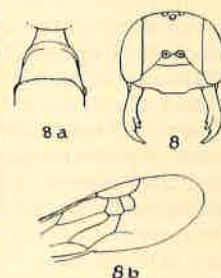


Fig. 8. *Sphex laticeps*, ♀.  
a. Pronotum. b. Forewing.



elongate, shaped like that of *S. Braunsi*, half as long as wide at the base, the anterior angles rounded, the anterior face merging into the dorsal by a low curve; dull, finely, closely and transversely striate, the sculpture much finer than in *Braunsi*. Mesonotum fairly dull, with a median longitudinal impressed line, finely and fairly closely transversely rugose, or striato-rugose. The scutellum closely and longitudinally striate, the striae a little divergent posteriorly. Metanotum dull, finely rugulose. Meso- and metapleurae, and sides of the epinotum dull, coriaceous, with a few feeble, oblique rugae. Median area of the epinotal dorsum dull, closely and transversely rugose, the rugae somewhat thinner than in *Braunsi*. Face and clypeus as in *Braunsi*, but the inner margins of the eyes are quite parallel. Head in front one-quarter wider than long. Posterior ocelli not quite twice as far from the eyes as they are from each other. Interocular distance on the vertex equal to the length of the first three joints of the flagellum. The second joint is two-thirds longer than the third joint. First joint of the petiole a trifle longer than the second. The second is not so slender as in *Braunsi*, being only four times as long as its apical width, whereas in *Braunsi* it is five times as long. Second tergite as long as wide at the apex. First and second abscissa of the radius of equal length, the third a little shorter.

Warmbad, Koakoveld, S.W. Africa. February, 1907. Type in South African Museum.

*S. Peringueyi* n.sp. (figs. 9, 9 a, b).

♀. 25 mm. long. Mandibles ferruginous, the apical third black. Head and thorax black, the tegulae reddish ochreous. First joint of the petiole black, the second black above, ferruginous below. Second tergite, second-fifth sternites and sides of the third-fifth tergites ferruginous. The latter on the dorsal surface and the apical abdominal segment are black; the apical margins of the second-fifth tergites narrowly testaceous. Fore and middle coxae black above, ferruginous below. Fore and middle legs ferruginous, the femora with a black streak above. Hind legs, including the coxae and trochanters, black; the base of the tibiae and of the tarsal joints fusco-ferruginous. Wings hyaline, tinged with fuscous, the apical margin a little darker, the veins dark brown. Clypeus and lower half of the face with a white pubescence, intermixed with a white, outstanding pilosity. Pronotal tubercles, mesopleurae and mesosternum, and sides of the epinotum with a fine, whitish tomentum, intermixed with a few longer hairs. Abdomen with a very inconspicuous pruinose pubescence. Anterior half or more of the median area of the clypeus coarsely, fairly closely and shallowly punctured. Face dull, sparsely and finely punctured; a deeply impressed line extends from the anterior ocellus to the clypeus. Vertex and occiput almost dull, with a few widely scattered, small punctures. Temples shining and impunctate. Pronotum slightly shining, with a few small punctures on the collar. Mesonotum nearly dull, shallowly and sparsely punctured, the punctures not much larger than those of the face. At the sides near the tegulae and over the posterior fourth in the middle there is a trace of a feeble, transverse rugosity. Scutellum more strongly and more closely punctured than the mesonotum, impressed longitudinally in the middle. Metanotum sparsely punctured. The mesopleurae, metapleurae and sides of the epinotum are dull, closely and finely

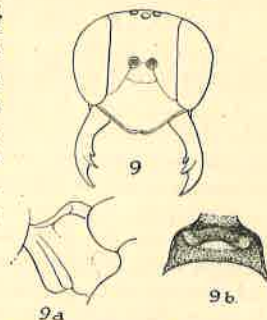


Fig. 9. *Sphex Peringueyi*, ♀, head. a. Pronotum profile. b. Dorsal view.



rugulose-punctate, here and there also coriaceous, the sculpture considerably obscured by the tomentum. Median area of the epinotal dorsum dull, closely and fairly finely rugose, the rugae transverse in the middle and oblique at the sides. The tori in front of the epinotal stigmata are of a cinnamon colour. Abdomen dull, without sculpture, except the last sternite which is moderately shining and sparsely, finely punctured. Clypeus fairly convex in the middle, the anterior margin narrowly depressed, transverse in the middle and oblique at the sides. Inner margins of the eyes almost parallel. Second joint of the flagellum two-thirds longer than the third. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. Posterior ocelli almost as far from each other as they are from the eyes. Pronotal collar fairly long, only two and a half times wider than long in the middle. It is raised in the middle and excavated on each side of the middle, the excavation sloping forwards; viewed from above, it therefore appears bluntly trituberculate, the rounded shoulders forming the outer tubercles, and resembles to a certain extent the pronotal collar of *S. tuberculiscutis*. Mesonotum almost as long as wide in the middle. Median area of the epinotal dorsum nearly as long as the mesonotum. First and second joint of the petiole of equal length; the second tergite is four-fifths the length of the first, and a little more than one-third longer than wide at the apex. First abscissa of the radius a little longer than the second, the latter two and a quarter times longer than the third.

Tradouw Pass, Swellendam district, Cape Prov. November, 1 ♀. Type in South African Museum.

*S. egregia* Mocs. race *transvaalensis* Cam. (Plate X, figs. 4, 12; Plate XI, figs. 28, 41). *Ent. Nachr.* VII, p. 327, ♀, ♂. 1881. Cameron, *Ann. Trans. Mus.* II, p. 134, ♂. 1910.  
race *promontorii* Kohl. Arnold, *Proc. Rhod. Sc. Assn.* p. 43. 1919-20.

♀. 27-33 mm. At first glance not unlike *vulcania* Du Buyss., and equalling it in size, but easily distinguished by having the dorsum of the pronotum smooth and rounded, not marginate and striate as in that species, and by the abdomen, which is without metallic lustre.

Black; the clypeus except the posterior margin, the first 5 or 6 joints of the antennae, the mandibles except the apical third, the pronotum, tegulae, anterior legs, middle legs excepting the inner sides of the coxae, trochanters and femora, dark ferruginous; posterior tarsi dark reddish brown. Clothed all over with a microscopic greyish pubescence, not hiding the sculpture; fourth, fifth, and sixth abdominal segments with a dense silvery pile, very conspicuous when seen at a certain angle. Cheeks, clypeus, mandibles, anterior femora and tibiae with long brownish hairs, thorax with a very scanty greyish pilosity on the sides and below, the face with fairly abundant greyish hairs intermixed with the longer brown ones. The whole body dull. Head sparingly and shallowly punctured, the vertex almost impunctate. Clypeus produced beyond the face, the produced portion convex, strongly punctured, its anterior margin straight and forming a sharp angle with the sides. Inner orbits almost parallel; posterior ocelli separated from each other by a slightly shorter distance than they are from the eyes.

Pronotum shallowly punctured, the dorsal surface convex from side to side and lengthwise, much shorter than the subvertical anterior face. Mesonotum finely and transversely rugoso-striate, the scutellum and post-scutellum longitudinally striate, coriaceous between the striae, dorsum of epinotum closely and fairly finely rugose, somewhat punctured and coriaceous between the rugae, sides of thorax coriaceous with a superficial rugosity superimposed.



Dorsum of epinotum submarginate, one and a half times as long as wide, three times longer than the declivity, which it joins in an obtuse angle. First joint of petiole a trifle longer than the second, as long as the posterior femur. Second tergite twice as long as wide behind. Wings brownish, darker near the base and along the costa, with a faint violaceous shimmer; third cubital cell twice as wide on the cubitus as on the radius, the third transverse cubital vein curved. Pulvilli well developed, the anterior metatarsus moderately asymmetrical.

♂. 27 mm. Colour as in the ♀, but as a rule only the first two antennal joints are entirely red, the third to fifth being more or less black above. Sculpture as in the ♀ but finer, except on the upper face and clypeus where the puncturation is stronger than in the other sex; pubescence and pilosity more abundant and longer, especially on the posterior half of the epinotum; the last four abdominal segments with a dense, shining and silvery-grey pile, completely hiding the ground colour. Face and clypeus densely clothed with silvery-golden pubescence which becomes thinner towards the vertex. Head in front very little wider than long, the inner orbits moderately convergent below. Clypeus long, a little longer than wide, much produced beyond the face, the produced portion being nearly one-third of its total length, shaped as in the ♀. The posterior ocelli are separated from each other by a little shorter distance than they are from the eyes. Otherwise like the ♀.

S. Rhodesia, Natal, Cape Province and Transvaal. Moderately common. Its prey is usually a large greyish noctuid caterpillar.

race *litoralis* Arnold. *Proc. Rhod. Sc. Assn.* XVIII, part 2, p. 45, ♀, ♂. 1919-20.

♀. 27 mm. A coastal form of *egregia*, from which it differs mainly in colour and sculpture.

Black, first two or three antennal joints, anterior half of the clypeus and basal two-thirds of the mandibles, the front and middle pair of legs excepting the coxae and trochanters at their base posteriorly, the base and apical third of the posterior femora, the posterior tibiae and tarsi, the second joint of the petiole excepting a median longitudinal streak of black above, the second abdominal segment and basal half of the third, bright red. The pronotum with a narrow band on the dorsum widening at each side, and the tegulae, dark red. Distribution of pubescence and pilosity on the head and thorax like that of the type of the species, but a little longer and more whitish, the pilosity on the head yellowish grey, not brown. The last four abdominal segments with a thin pruinose pubescence, not silvery and much less apparent than in *egregia-transvaalensis*. Face rugulose and more strongly punctured than in the type of the species, and the clypeus more sparingly and more delicately punctured. Otherwise the sculpture elsewhere is like that of *egregia-transvaalensis*, but a little finer. Shape of the head and clypeus as in *egregia-transvaalensis*. Dorsal face of pronotum shorter. Wings tinged with ochreous and with a faint violaceous shimmer on the apical third; veins, costal margin and stigma yellowish brown. Venation and shape of the cubital cells exactly like those of the type species.

♂. 27 mm. This differs from the type of the species as follows:

Legs bright ferruginous with black markings as follows, the basal half of the anterior coxae, the basal half of the middle coxae, a dorsal stripe on the middle trochanters and femora, the whole of the posterior coxae, trochanters and femora, except the outer apical fourth of the latter. Claws and pulvilli black. First joint of antenna dark ferruginous, the rest black. On the pronotum the red colour is confined to a spot on each side. The pilosity, especially on the sides of the thorax, is a little longer than in the type species. Ventral



surface of first tergite, the second segment except a longitudinal median streak of black above, the third segment on its basal third, red; the remaining segments black and covered with a sparse greyish pubescence. The puncturation of the pronotum is slightly stronger. Otherwise like the type of the species.

The coastal region of the Eastern Cape Province. (Brauns, O'Neil.) Types in the Rhodesia Museum.

At first glance this insect appears to be very different from *egregia-transvaalensis*, but the differences are superficial, affecting chiefly the colour. The amount of red on the legs is rather variable, but is always of a bright brick red. In the ♀ the clypeus may sometimes be entirely black, and also the pronotum, except for a small spot on each side.

A form intermediate between this race and race *transvaalensis* Kohl, from Pinetown, Natal (Transvaal Museum coll.), has the wing dark as in *transvaalensis*, but the first and third tergites are more or less red, and the pubescence on the abdomen less pronounced.

*S. dolichocephala* Cameron (Plate X, figs. 13-16; Plate XI, figs. 26, 31). *Ann. Trans. Mus.* II, p. 135, ♂. 1910. Arnold, *Proc. Rhod. Sc. Asscn.* XVIII, part 2, p. 46, ♀. 1919-20.

♀. 24 mm. Black, mandibles excepting the tips, anterior and middle tibiae, tarsi and apical half or so of the inner and lower surfaces of the femora, basal half of the hind tibiae, second, third and fourth joints of the hind tarsus, ferruginous. First joint of petiole black, the second joint excepting a black median streak above, and the second tergite and sternite, bright brick red; the ventral surface of the third-fifth segments brownish red. Abdomen without any metallic lustre. Face, cheeks and clypeus with a dense silvery pubescence, often rubbed off the anterior half of the clypeus through wear; vertex and occiput sparingly pubescent. Thorax with a dense silvery-grey tomentum, more or less hiding the sculpture in fresh specimens. In addition there is a whitish pilosity on the cheeks and sides of the thorax, on the latter somewhat sparse. The anterior tibiae have a fringe of long whitish hairs. Head dull, microscopically and closely punctured, the anterior half of the clypeus moderately shining and very coarsely rugoso-punctate.

In fresh specimens the sculpture of the thorax is hidden by the tomentum, but in worn specimens the pronotum is seen to be very finely and closely punctured, slightly shining, the mesonotum rugulose and punctate and with a few larger punctures here and there and some feeble transverse striae which are stronger on the posterior half; a deep median longitudinal impression extends from the anterior margin of the mesonotum to its middle. Scutellum and postscutellum closely and longitudinally striate, but with a shallow median longitudinal impression. Epinotum transversely rugulose above, sides of thorax rugoso-striate and punctate. Legs and abdomen with a pruinose pubescence which is not sufficiently dense to hide the colour of the integument.

Head, seen from in front, as wide as, or a trifle wider than long, feebly convex above, the inner margins of the eyes slightly convergent towards the vertex; clypeus moderately produced beyond the face, not much wider than long, the anterior margin convex, occasionally with a feeble indentation in the middle. The distance between the posterior ocelli almost as great as their distance from the eyes. Third antennal joint nearly as long as the fourth and fifth combined. Pronotum, excluding the neck, nearly two and a half times wider behind than long, the dorsum slightly gibbous in the middle and the anterior face feebly concave on each side of the middle; this gives the segment a subtuberculate appearance when seen in profile. Dorsum of epinotum convex transversely, the usual scutiform area not marginate but



indicated merely by a depressed line, within which the tomentum is sparser. The joints of the petiole of equal length, each a little shorter than the posterior femur, second tergite two-thirds longer than wide behind. Wings tinged with fuscous, a slight violaceous shimmer on the apical area, the veins dark brown; third cubital cell considerably narrowed above, nearly three times wider on the cubitus than on the radius, the third transverse cubital vein curved inwards from a point a little above its junction with the cubitus. Anterior metatarsi plainly asymmetrical, pulvilli present.

♂. 24 mm. Pronotum with a transverse red band which may be reduced in varying degree so as to leave only a red spot in the middle, or one on each side, or it may be entirely obsolete. Legs of a brighter red than in the ♀, second tergite usually with a median longitudinal black streak. Pubescence on face and clypeus bright silvery, more abundant than in the ♀. Pilosity of the cheeks more abundant, the tomentum on the thorax denser, the pubescence on the last four abdominal segments much denser than in the ♀ and forming a silvery pile which partially hides the ground colour. Otherwise colour, sculpture and pubescence as in the ♀.

Head in front one-fifth longer than wide, the inner margins of the eyes almost parallel, only slightly convergent below, clypeus triangularly produced beyond the face, the produced area being about as long as the part within the face, the apex angularly excised and with a depression behind it; a longitudinal carina runs from the middle of the depression to the angle of the apical excision. Distance between the posterior ocelli equal to their distance from the eyes. Pronotum similar to that of the ♀, but less conical when seen in profile, the anterior face being hardly excavated on each side of the middle. Seventh tergite with a median carina or tubercle somewhat widened at the base. The structure of the genital armature is quite distinctive, and unlike that of any of our other species. The stipites are thick throughout, incurved posteriorly, the inner face of the incurved area excavated, the upper margin of which ends in a stout tooth, and the lower margin fringed with numerous short and stout spines placed close together (Plate XI, figs. 31 a and b).

Willowmore, C.P. (Brauns); Pretoria (Janse). Kaross, S.W. Africa.

In specimens from Kaross, S.W. Africa, the pronotum is red, or at least the conical protuberance is partially red.

*S. conifera* Arnold (Plate XI, figs. 29, 30). *Proc. Rhod. Sc. Assn.* XVIII, part 2, p. 47, ♀, ♂. 1919-20.

Allied to *dolichocephala* but smaller, and having the same colour, pubescence and sculpture, and with the red colour on the pronotum equally variable. It differs from that species as follows:

♀. 20-22 mm. Mesonotum more strongly punctured between the striae than in *dolichocephala*. Head usually wider than in that species, about one-fifth wider than long; inner orbits parallel, not convergent above, if anything slightly divergent. Pronotum, seen from the side, narrower above and more compressed laterally, thereby appearing subconical, the anterior face steeper. In all the specimens before me, at least the last two ventral abdominal segments are black, sometimes the last three. Venation as in *dolichocephala*.

♂. 19.5-22 mm. Face and vertex slightly shining, with large and shallow punctures. Pro- and mesonotum more distinctly punctured than in *dolichocephala*. Head not so long, barely longer than wide; the clypeus, which is shaped like that of *dolichocephala*, being less produced in front, the portion beyond the face distinctly shorter than the portion within it. In addition, the anterior margin of the clypeus is not excised but transverse, and the median longitudinal carina is absent. Pronotum a little less conical than in



the ♀, but nevertheless more so than in *dolichocephala* ♂. This feature is more clearly appreciated when the segment is viewed from in front. The chief difference between the two species lies in the shape of the stipites and of the seventh tergite. The latter lacks the triangular tubercle or carina. The stipites are not equally thick throughout, but are abruptly narrowed at the posterior fourth, thence laminate, incurved and ending in a truncated point, without spines or teeth. (Plate XI, figs. 30 *a* and *b*.)

Willowmore, C.P. (Brauns); Bulawayo. Sawmills and Victoria Falls, S.R. Types in the Rhodesia Museum.

*S. dolichodera* Kohl (Plate XI, figs. 32-34). *Verh. Zool. Bot. Ges. Wien*, xxxiii, p. 383, ♂. 1883.

*S. pulchricollis* Cameron. *Ann. Trans. Mus.* II, p. 133. 1910.

♀. 22-26 mm. Black, mandibles except the apical tooth, first two joints of the antennae, pronotum, propleurae more or less, tegulae and second abdominal segment, red. Legs red, the anterior femora with a black streak on the basal half above, the middle femora with a black streak above which reaches from the base to beyond the middle; the posterior legs, except the apex of the femora, black.

Petiole more or less red, the first joint blackish at the sides, the second joint black above over the basal fourth. A very slight metallic lustre on the last four abdominal segments is sometimes visible; the apical ventral valve reddish. Cheeks and thorax with a dense silvery tomentum, which is, however, very sparse on the pro- and mesonotum. Face and clypeus with dense silvery pubescence.

Legs and abdomen finely pruinose. Cheeks, clypeus, mandibles and lower edge of propleurae with a few long whitish hairs.

Head and pronotum dull, without any large punctures. Mesonotum transversely striate, scutellum longitudinally striate and rugulose between the striae; postscutellum and sides of thorax rugulose, dorsum of epinotum more or less transversely and feebly rugose.

Head, seen from in front, about one-fifth wider than long, the inner orbits almost parallel, barely convergent above; clypeus very little produced beyond the face, its anterior margin convex; the distance between the posterior ocelli a little less than their distance from the eyes. Pronotum fairly long, only one and a half times wider behind than long, convex transversely, slightly flattened in the middle above and feebly impressed in the middle at the base, curving gradually downwards in front. Mesonotum with a well-defined median longitudinal line. Dorsum of epinotum two and a half times as long as the declivity, their junction obtusely angular. First joint of petiole as long as the second, and as long as the posterior femora. Anterior metatarsus moderately asymmetrical, its terminal spur black. Wings tinged with yellow, veins blackish. The third transverse cubital vein strongly convex outwardly, the second nearly straight, the first sigmoid; the third cubital cell is one and a half times wider on the cubitus than on the radius, and the width of the second cubital cell on the radius is twice that of the third.

The type of Cameron's *pulchricollis* is a female, and not a male as stated in his description. According to Mr Rowland Turner, Cameron's species is synonymous with Kohl's.

♂. 17-20 mm. long. Legs black, with the inner side of the fore tibiae and femora ferruginous or fusco-ferruginous; the apex of the middle femora and basal half of the middle and hind tibiae fusco-ferruginous. The pronotum is sometimes entirely black. Abdomen black, the petiole and second tergite brownish red, the first joint of the petiole sometimes black. Costa dark brown. Sculpture weaker than in the ♀. The head is considerably narrowed



behind the eyes. Second joint of the flagellum as long as the first and third united. Eyes convergent below, the interocular distance across the clypeus equal to the length of the first and second joints of the flagellum, and across the vertex equal to about the length of the first three joints of the flagellum. Petiole very long and slender, nearly twice as long as the thorax. Otherwise like the ♀.

The Rhodesian specimens are usually smaller than those from the Transvaal and Orange Free State, and the red colour is a good deal darker.

Transvaal and Orange Free State (Dr H. Brauns); Sawmills and Victoria Falls, S.R.

*S. bonae-spei* Lep. (Plate XI, fig. 36). *Hist. Nat. Ins. Hymen.* III, p. 382, ♀, ♂. 1845.

♀. 18–20 mm. Black, mandibles except the apical tooth, tegulae, first joint of petiole at the extreme base and apex, second joint at the sides and below, second abdominal segment (except a narrow median longitudinal streak of black on the upper surface, sometimes absent), third dorsal segment at the base, red. First two pairs of legs red, the coxae black at the base posteriorly, the trochanters and femora with a black streak above; posterior femora at the base and apex, the tibiae externally, and the tarsi, red.

Face, clypeus and cheeks with a dense silvery pubescence, the vertex and occiput sparsely pubescent; thorax with a silvery-grey tomentum, sparse and thin above, dense and hiding the sculpture on the sides. Abdomen and legs with a thin pruinose pubescence.

Pilosity on the head and thorax whitish. Head and thorax, excepting the middle of the pronotum above, dull. The head sparingly punctured on the upper part of the face, the punctures small and shallow, the clypeus sparsely but more coarsely punctured. Mesonotum and dorsum of epinotum finely and transversely striate, the scutellum longitudinally so, the postscutellum rugulose, the sides of the thorax rugoso-punctate.

Head in front one-fourth wider than long, the inner margins of the eyes subparallel, very feebly convergent above. Clypeus moderately produced beyond the face, the anterior margin transverse. Posterior ocelli a little nearer to each other than they are to the eyes. Pronotum very convex transversely, moderately so lengthwise, the dorsal face merging gradually into the anterior, feebly impressed lengthwise in the middle near the base. Epinotum convex transversely, without a clearly defined scutate area, the declivity short and oblique. The joints of the petiole of equal length. Second cubital cell trapezoidal, about one-fourth wider on the cubitus than on the radius, the second abscissa of the radius longer than the first, and at least three and a half times longer than the third; third cubital cell almost triangular, owing to the third transverse cubital vein curving inwards so far as to touch or almost touch the second; when not touching, the cell is never more than one-fourth as wide on the radius as on the cubitus.

♂. 17–19 mm. Colour as in the ♀, but with the black on the legs and the red on the second abdominal segment more extensive. Pubescence and tomentum as in the ♀, but the pilosity is longer and denser.

Face and vertex more strongly punctured than in the ♀. The pronotum is sparsely and fairly distinctly punctured. The sculpture of the rest of the thorax like that of the ♀, but a little coarser, the mesonotum clearly punctured between the striae.

Head in front one-fourth wider than long, the inner margins of the eyes strongly convergent below, the distance between them across the clypeus being only half as great as across the vertex. Otherwise like the ♀.

Willowmore, and Cape Province generally.



var. *ferrugineipes* Lep. (Plate XI, figs. 35, 37, 38). *Hist. Nat. Ins. Hymen.* III, p. 383. 1845. Gerstaecker, Peters: *Reise n. Mossamb.* v, p. 481, ♀, ♂. 1862.

*S. erythrospila* Cameron. *Ann. Albany Mus.* I, p. 303, ♂. 1905.

*S. dunbrodyensis* Cameron. *Ibid.* p. 322, ♂. 1905.

This variety is very variable in size and colour, and differs from the type of the species chiefly in colour and the amount of tomentum.

♀. 19-22 mm. Black, anterior margin of the clypeus, mandibles except at the apex, scapes, dorsum of pronotum more or less, pronotal tubercles, tegulae, a more or less quadrate spot under the tegulae, the greater part of the meso- and metapleurae, a semi-elliptical streak on each side of and within the scutate area of the epinotum, ferruginous. Petiole reddish underneath, the ventral surface of the abdomen and the second and third tergites red. Front and middle legs red, with more or less black on the trochanters and femora; the hind legs, excepting the outer side of the tibiae, and the tarsi, mostly black. The extent of the red on the sides of the thorax and on the second and third tergites is very variable. On the second tergite the brighter colour is often reddish brown, and confined to the apical third or fourth of the segment; the third tergite frequently has a median blackish streak extending from the base to the middle or beyond it, or it may be dark brown or black with only a trace of red at the sides. The specimens from the inland parts of the subcontinent and from Natal have usually less red than those from the Cape Province.

Head with a fine greyish-white pubescence, sparse and inconspicuous on the vertex and upper part of the face; the lower part of the latter, the cheeks and clypeus with a silvery and dense pubescence. Thorax with very short tomentum, greyish silvery, abdomen and legs with a pruinose pubescence. The sculpture of the thorax is similar to that of the type of the species, but the pro- and mesonotum are more distinctly punctured.

Head in front one-fourth wider than long, the vertex very feebly convex transversely, the inner margins of the eyes nearly parallel, the posterior ocelli a little more distant from the eyes than they are from each other. Clypeus produced very little beyond the face, the anterior margin of the median area transverse. Scutate area of the epinotum distinctly defined and marginate. The joints of the petiole subequal.

♂. 16-24 mm. Tomentum on the thorax more abundant than in the ♀, pubescence on the face longer and denser, varying in colour from golden to silvery. The red colour of the abdomen is darker, more brownish red as a rule and less extensive, on the second tergite usually confined to the apical third and on the third tergite (which may be entirely black) confined to a spot on each side. First joint of antennae often entirely black or nearly so. Otherwise like the ♀ in colour, pubescence and sculpture.

Head in front not quite one-fourth wider than long, inner margins of the eyes convergent below, the distance between them on the vertex being two-thirds greater than across the anterior margin of the face.

The clypeus projects but little beyond the face, its anterior margin feebly concave or straight. Posterior ocelli slightly closer to each other than they are to the eyes.

Common all over the subcontinent.

A very large number of this variety has been examined, and it does not seem possible to maintain its former status as a distinct species. The genitalia show a slight difference (figs. 35 and 36), the stipites narrowing somewhat more abruptly than in *bonae-spei*. Otherwise the differences are chiefly a matter of colour and pilosity. In the type of the species the sides of the thorax



are never marked with red, and the pilosity is longer and more silvery. On the other hand, the variety is usually more strongly punctured on the pronotum and mesonotum.

*S. puncticeps* Arnold (Plate XI, fig. 39). *Proc. Rhod. Sc. Assn.* XVIII, part 2, p. 52, ♀, ♂. 1919-20.

A species closely allied to *bonae-spei*, but larger and differing in the sculpture in both sexes, and in the ♂ in the form of the genitalia.

♀. 21-23 mm. Scares black or entirely red. Front and middle pairs of legs entirely red, the pronotum either entirely black or with the posterior half bright ferruginous. Otherwise like *bonae-spei* in colour, pilosity and pubescence. It differs from that species in having the whole of the face, the vertex excepting the ocellar area, and the anterior half of the clypeus fairly closely punctured with large and moderately deep punctures. Pronotum nitidulous, distinctly punctured, the punctures as large as, but less plentiful than on the face. Mesonotum indistinctly rugose transversely on the disc, more strongly rugose at the lateral margins in front, deeply and coarsely punctured between the rugae. Scutellum and postscutellum strongly and closely punctured. Dorsum of epinotum reticulate-punctate, without indications of the transverse rugosity present in *bonae-spei*. Sides of thorax rugulose and punctate, the sculpture usually hidden by the dense silvery tomentum, which is densest on the posterior half of the mesopleurae. Wings with a distinct apical infuscation. The third transverse cubital vein curved upwards and inwards towards the second but always separated from it on the radius by a space at least one-third as long (frequently half as long) as the second abscissa of the radius. In *bonae-spei* the third transverse cubital vein usually meets the second on the radius. Otherwise like the ♀ of *bonae-spei*.

♂. 22-23.5 mm. Pilosity and pubescence longer and more abundant than in the ♀, the pubescence on the face and the tomentum of the mesopleurae golden-silvery, longer than in the ♀. Anterior and middle pairs of legs, excepting the inner surface of the coxae, entirely ferruginous. Sculpture as in the ♀. Shape of the head and degree of convergence of the inner margins of the eyes as in *bonae-spei* ♂.

Stipites of the genital armature long and narrow, but shorter than the exceptionally long inner paramera (sagittae), narrowed abruptly a short distance beyond the middle, thence sharply curved inwards and ending in a round point. This narrow apical portion or lamina of the stipes is nearly as long as the basal part, and much longer than in *bonae-spei* or in any of our other species.

Salisbury and Shiloh, S.R.; Shiluvane, Transvaal (Junod); Algoa Bay (Brauns); S.W. Africa.

*S. propinqua* Tasch. *Zeitschr. f. d. ges. Naturw.* xxxiv, p. 433, ♂. 1869. Kohl, *Ann. K.K.N.H. Mus. Wien*, xxi, p. 363, ♀, ♂. 1906.

"18-26 mm. long (♂ 18-25 mm., ♀ 20-26 mm.). Black, and also to a variable degree bright ferruginous or dark blood-red in parts. In lighter examples the following parts are red: mandibles excepting the apex, the anterior half of the clypeus, the labrum, base of the antennae, the pronotal collar to a greater or lesser extent, and sometimes, although rarely, the rest of the thorax, the abdomen excepting the last two or three segments which are black and without metallic lustre, and the whole of the legs. Often the upper side of the middle and hind femora, or only of the latter, is streaked longitudinally with black. In darker specimens, the two joints of the petiole



are blackish above, often only the second joint. The first joint is only rarely entirely black. Head and thorax with whitish pubescence, often sufficiently dense to obscure the sculpture to a certain extent. Epimera of the meso- and metapleurae pubescent.... Last two tergites with a pruinose pubescence.

♀. The inner margins of the eyes are parallel; across the clypeus the distance between them is equal to the length of the second and third joints of the flagellum, plus half of the first joint. Clypeus a little wider than long, the anterior margin transverse in the middle, its lateral angles moderately rounded, not rectangular. Mesonotum transversely rugose, punctured between the rugae. Meso- and metapleurae moderately closely punctured and also somewhat indistinctly rugose. Dorsum of epinotum transversely rugoso-striate; the sides punctured and rugose. As a rule the sculpture of the pleurae is hidden by the pubescence, and for the same reason the episternal suture is not visible. The first joint of the petiole is not quite as long as the hind tibia, but is somewhat more than the first two joints of the hind tarsus.... Pulvilli present.

♂. Smaller and more slender. The least distance between the eyes, which converge towards the clypeus, is equal to the length of the first and second joints of the flagellum. The first joint of the petiole is a little shorter than the hind tibia or the length of the first three joints of the hind tarsus."

Abyssinia. Also found in Syria, Egypt and Algeria.

*S. gracillima* Tasch. *Loc. cit.* p. 433, ♀. Kohl, *loc. cit.* pp. 323-5, ♀, ♂.

"14-20 mm. long (♂ 14-17 mm., ♀ 16-20 mm.). Slender. Black. Legs, head, thorax and abdomen bright ferruginous to a very variable degree. Often the whole insect is ferruginous, with the exception of the eyes and the apex of the mandibles. If present, the black colour of the apical abdominal segments usually shows a slight metallic lustre. Head, thorax, coxae and femora clothed with a white, silky pubescence, so that the sculpture is not visible all over, especially on the mesopleurae. Wings almost hyaline. Pronotal collar unusually long, bluntly conical, as long as wide in the middle, about as long as the second joint of the flagellum; like the mesonotum it has distinct transverse rugae. Mesonotum with a median longitudinal impression. Episternal suture absent. The coxae of the fore legs are articulated in a dish-shaped depression formed by the sternum and the mesopleurae; the depression is distinctly marginate, the margin being interrupted in the middle line of the sternum so that on each side of the excision there is a subdentate angle.... Postscutellum raised in the middle. Epinotum finely rugose, with indications of longitudinal rugae which are somewhat divergent behind. The petiole is long, in conformity with the unusually slender shape of the insect; the two joints are of equal length, and united are longer than the slender hind tarsus. The first joint alone is only slightly shorter than the hind tibia, and usually somewhat longer than the first two joints of the hind tarsus (in the ♂ almost as long as the first three joints). The spines of the tarsal comb are very fine. The row of long hairs on the temples, sides of prosternum, the under side of the anterior trochanters, and on the under and upper side of the anterior femora are well developed in the ♀. Pulvillus present, claws unarmed.... Third cubital cell distinctly large; the third transverse cubital vein is strongly arcuate outwardly.

♂. Agreeing with the ♀ in most characters. First and second joints of the flagellum united shorter than the third and fourth. The hind legs are sometimes entirely black. The last three abdominal segments are also black."

Abyssinia.



*S. lukombensis* Cameron. *Ann. Soc. Ent. Belg.* LVI, p. 398, ♀. 1912.

"Black, the antennal scape, the greater part of the basal three joints of the flagellum, apex of clypeus, base of mandibles to the base of the teeth, occiput, outer eye-orbits, prothorax, except the base of pronotum and prosternum, mesopleurae from the tubercles to the apex, apex of metapleurae broadly, the coxae, more or less of the under side of the femora and the tibiae more or less broadly red; wings hyaline, the stigma and nervures black; the third abscissa of the radius one-fourth of the length of the second, broadly roundly curved, not converging much; the second obliquely bent outwardly behind. Mesonotum strongly, irregularly striated (but not closely) on the basal two-thirds; the metanotum more finely and closely striated. Scutellum irregularly, longitudinally striated. ♀. Length 21 mm.

Lukombe (Belgian Congo), October (A. Koller).

Densely covered with a white pile, the face and clypeus also with silvery hair. There is a short depression on either side of the apex of the clypeus making it appear almost trituberculate. Prothorax smooth. Postscutellum not striated, a stout keel down its centre. The third antennal joint is almost as long as the following two united. Tarsal spines black; there is a dense line of pale golden pubescence on the basal half of the metatarsus. The pubescence is dense, giving the insect a greyish appearance. The eyes converge very slightly above; the ocelli are in an equilateral triangle, and the hinder are separated from the eyes by a little greater distance than they are from each other."

Of the several species described by Cameron as new in Sjöstedt's *Kilimandjaro-Meru Exped.* VIII, pp. 264-8, 1910, I believe that the following identifications are correct:

*S. massaica* and *S. Sjöstedti* = *S. tenuis* Pal. Beauv.

*S. meruensis*, and very probably *S. curvistriata* = *ferrugineipes* Lep.

*S. longipilosella* = *S. Tydei* Guillon, var. *capensis* Lep.

To judge by the description I do not think that there can be any doubt that his *S. (Psammophila) cyanea* is not a *Sphex* at all, but is synonymous with *Sceliphron Sommereni* Turner. In that case the latter name should be retained, although published later than Cameron's, since *cyanea* is pre-occupied (*cyanea* Fab. = *Sceliphron coeruleum* Linn.).



PLATE VIII

- Fig. 1. *Ampulex apicalis*, ♀, × 9.  
Fig. 2. *A. apicalis*, ♂, × 9.  
Fig. 3. *A. nebulosa*, ♀, × 16.  
Fig. 4. *A. mutilloides*, ♂, × 9.  
Fig. 5. *A. cyanura*, ♀, × 9.  
Fig. 6. *A. denticollis*, ♀, × 16.  
Fig. 7. *A. Arnoldi*, ♀, × 16.

- Fig. 8. *A. nigrocoerulea*, ♂, × 9.  
Fig. 9. *A. nigrocoerulea*, ♀, × 9.  
Fig. 10. *A. spiloptera*, ♀, × 9.  
Fig. 11. *A. purpurea*, ♀, × 9.  
Fig. 12. *A. toroensis*, ♀, × 6.  
Fig. 13. *A. Crawshayi*, ♀, × 6.  
Fig. 14. *A. sibirica*, ♀, × 9.



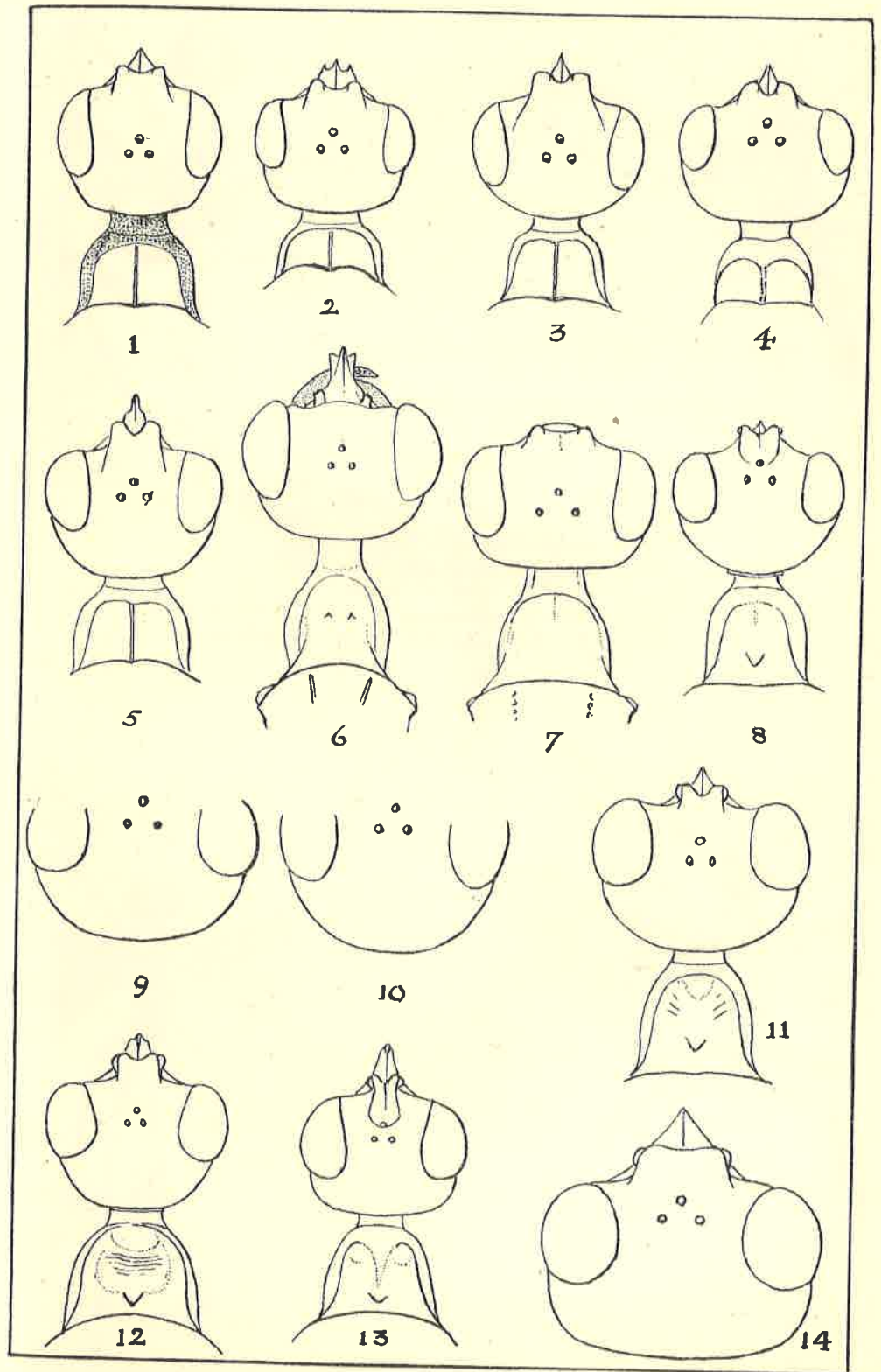
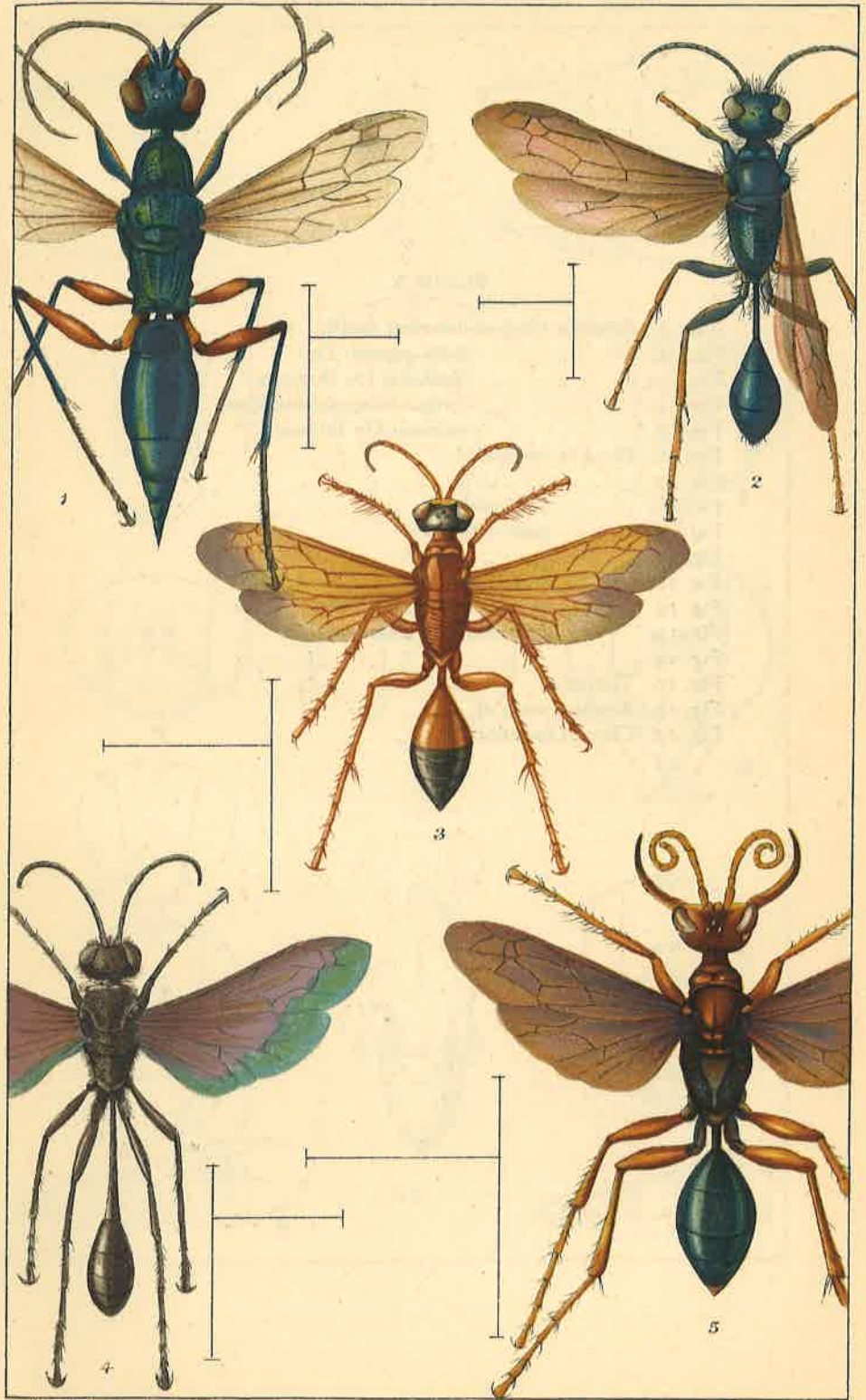




PLATE IX.

- Fig. 1. *Ampulex compressa* Fab. ♀ × 3.  
Fig. 2. *Sceliphron tibiale* Fab. ♂ × 3.  
Fig. 3. *Chlorion Paulinieri* Guérin, ♀ ×  $\frac{5}{2}$ .  
Fig. 4. *Sphex* (*Parapsammophila*) *ludovicus* Smith, ♂ × 2.  
Fig. 5. *Chlorion xanthocerus*, III. var. *instabilis* Smith, ♀ ×  $\frac{5}{2}$ .



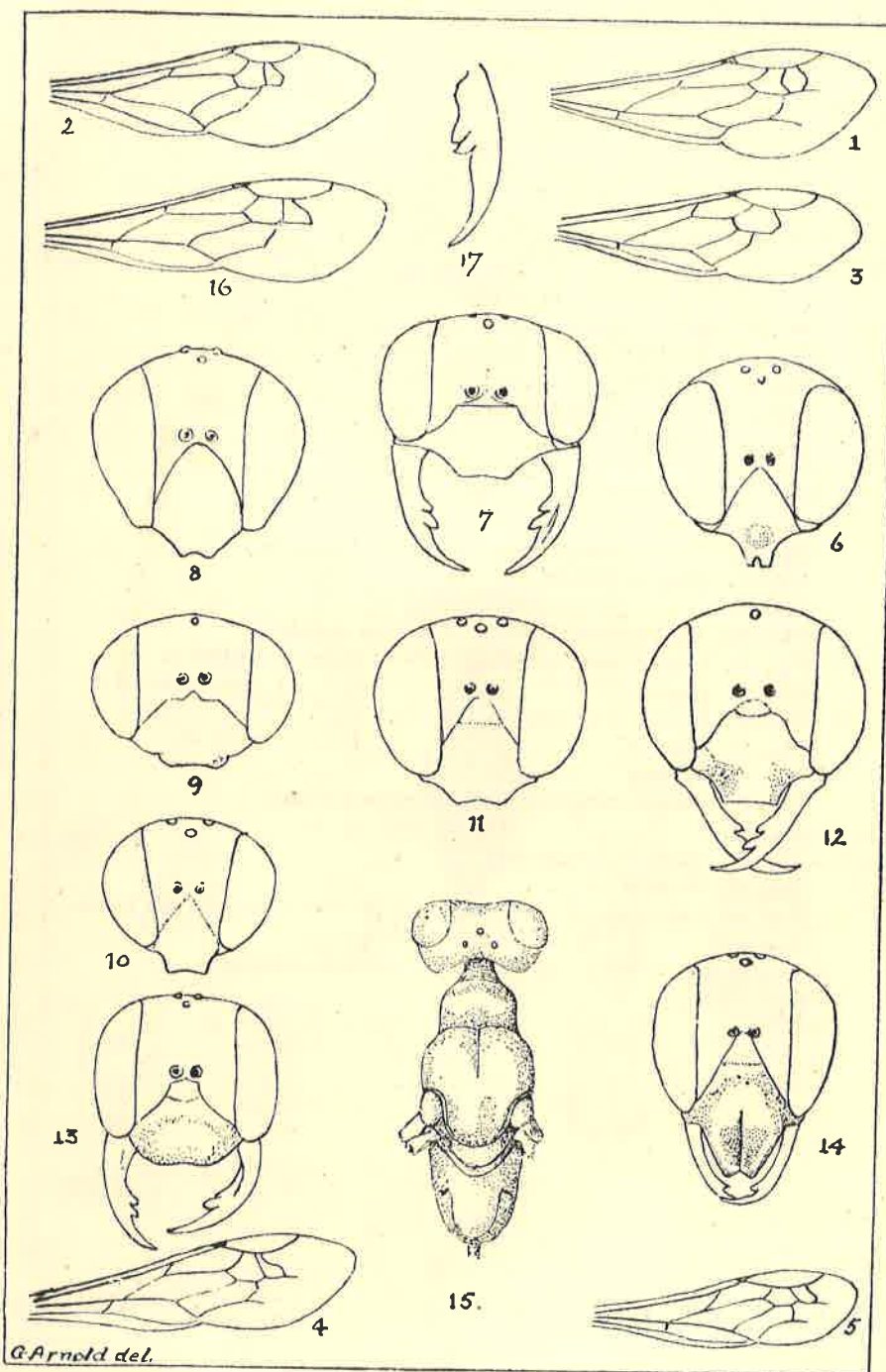


G. Arnold pinxit.

PLATE X

- Fig. 1. Anterior wing of *ludovicus* Smith  
 Fig. 2. " *tydei-capensis* Lep.  
 Fig. 3. " *Saussurei* Du Buysson  
 Fig. 4. " *egregia-transvaalensis* Cam.  
 Fig. 5. " *vulcania* Du Buysson.  
 Fig. 6. Head of *vulcania* ♂.  
 Fig. 7. " " ♀.  
 Fig. 8. " *Saussurei* ♂.  
 Fig. 9. " *tydei-capensis* ♀.  
 Fig. 10. " " ♂.  
 Fig. 11. " *ludovicus* ♂.  
 Fig. 12. " *egregia-transvaalensis* ♀.  
 Fig. 13. " *dolichocephala* Cameron ♀.  
 Fig. 14. " " ♂.  
 Fig. 15. Thorax of " ♂.  
 Fig. 16. Anterior wing of "  
 Fig. 17. Claw of *ludovicus* ♀.





# PLATE XI

- Fig. 18. Head of *beniniensis*, var. *calvus* ♀.
- Fig. 19. " " " ♂.
- Fig. 20. Wing of " "
- Fig. 21. " *tenuis* Pal. Beauv.
- Fig. 22. Head of " ♀.
- Fig. 23. " " ♂.
- Fig. 24. Head and thorax of *Braunsi* Turner ♀.
- Fig. 25. Wing of *Braunsi* Turner ♀.
- Fig. 26. Anterior half of thorax of *dolichocephala* ♀.
- Fig. 27. Head of *Braunsi* ♀.
- Fig. 28. " *egregia-transvaalensis* ♂.
- Fig. 29. Anterior half of thorax of *conifera* Arnold ♀.
- Fig. 30. *a* and *b* lateral and front view of stipes of *conifera* ♂.
- Fig. 31. *a* and *b* " " *dolichocephala* ♂.
- Fig. 32. Thorax of *dolichodera* Kohl ♀.
- Fig. 33. Head of " "
- Fig. 34. Wing of " "
- Fig. 35. Genital armature of var. *ferrugineipes* Lep. ♂.
- Fig. 36. " *bonae-spei* Lep. ♂.
- Fig. 37. Head of *ferrugineipes* ♂.
- Fig. 38. Wing of "
- Fig. 39. Left stipes of *punctaticeps* Arnold, seen from side and below.
- Fig. 40. " *beniniensis* Pal. Beauv.
- Fig. 41. " *egregia* Mocs., race *transvaalensis*.



