

The question remains: how do the beetles effect entrance to a coffin buried many feet in the earth? In the present instance Dr. Spilsbury feels certain that the mature beetles could not have done so, and indeed it is probable, if only on account of their numbers, that they had matured from larvae that had developed there. As the beetle is seldom found away from grave-yards, it is tolerably certain that the eggs could not have been laid upon the corpse before the coffin was closed (as may be the case with *Phora*, although burial took place in the month of February). The probability seems in favour of the newly hatched larva having effected entrance, but whether the beetle burrows down to oviposit on the surface of the coffin, or whether she lays her eggs on the surface and the young larvae burrow down, or whether the eggs were laid on the sods with which the bottom of the grave was lined, we have no evidence. In any case in the course of the ten months during which in this instance, the corpse had been buried the beetles had evidently passed through at least one life-cycle, thus proving that their presence on a corpse cannot be taken, as claimed by M. Mégnin, as evidence that two years have elapsed since burial.

British Museum (Natural History).

February 1922.

THREE NEW ORTHOPTERA FROM PALESTINE AND N.W. PERSIA.

BY B. P. UVAROV, F.E.S.

The following new species of Orthoptera from Palestine and one new subspecies from N.W. Persia are described from collections sent to the Imperial Bureau of Entomology by Dr. P. A. Buxton, at present Government Entomologist at Jerusalem. The types are preserved in the British Museum collection.

1. *Sphingonotus coerulans* L., subsp. *coerulipes*, n.

One male and two females taken 25th–26th August, 1919, at Kazvin, N.W. Persia, differ from the typical (European) specimens of *S. coerulans* by the following characters, which compel me to separate them as a distinct geographical race:—

Frontal ridge of the ♀ between the antennae somewhat convex, with the margins slightly diverging downwards, just below the ocellum constricted and distinctly impressed, disappearing before it reaches half-way between the ocellum and clypeus. False vein in the discoidal field perfectly straight, parallel to the hind radial; the hind discoidal area about three times as broad as the fore discoidal. Hind femora on the inner side bluish black, with a broad pale ring before the apex. Hind tibiae sky-blue, with the inside of their

base black, and a pale streak along the basal quarter of the outer side. Wings faintly bluish basally.

In the paratype male the frontal ridge in its lower part is more raised as in the female and almost reaching the clypeus, but still its margins are far less raised than in the typical *coerulans*.

	♀ (type).	♂ (paratype).
Length of body.....	25 mm.	16 mm.
„ pronotum.....	5	3.5
„ elytra	26	16
„ hind femora.....	13	9

These three specimens have been previously named by me in my paper on the Orthoptera of Mesopotamia* as *S. coerulans* L., but when I revised the whole material of the genus *Sphingonotus* in the British Museum, I came to the conclusion that there is more than one species (with additional geographical races) of *Sphingonotus* with hyaline wings in the deserts of the Western Asia. Thus, the typical *S. coerulans coerulans* seems to be confined to the more northern parts of the country, and Dr. Buxton's collection contains a long series of very typical specimens, taken at the Southern coast of Caspian Sea—at Enzeli, Gilan, and Menjil. The series of specimens from Baghdad and Amara proved to be *S. mecheriae* Krauss, described from the Algerian Sahara. One specimen from Enzeli belongs to *S. rubescens* Walk., which is probably identical with *S. aegyptiacus* Sauss., and represents a very good species which will be redescribed by me elsewhere; there is also one specimen of it in Dr. Buxton's Palestine lot, taken at Amman, Transjordan, alt. 2500 ft., 21. vii. 1921. A small lot of Mesopotamian Orthoptera sent in by Mr. Y. Ramachandra Rao included one more species of that group taken at Baghdad, 15. vii. 1920—*S. vosseleri* Krauss, also described originally from the Algerian Sahara. It is obvious that the Asiatic species of *Sphingonotus* with hyaline wings should be revised on the basis of large series of specimens.

2. *Sphingonotus angulatus*, sp. n. (Fig. 1.)

♀. Similar in size and the pattern of wings to *Sphingonotus callosus* Fieb., but differing from it in the shape of the head, sculpture of the pronotum, and the shape and position of the discoidal intercalate vein.

Antennae distinctly longer than the head and pronotum together, very slightly flattened, with the apex somewhat attenuate. Face with scattered puncturation, in profile somewhat reclinate; frontal ridge in profile rotundato-prominent between the antennae, feebly, but distinctly depressed just below the ocellum, practically straight and distinctly reclinate in the rest; when

* Journal of the Bombay Nat. Hist. Soc., xxvii, No. 4, p. 804, No. 22 (1921).

seen from the front it is gradually widened from the fastigium towards the ocellum, distinctly constricted below the latter and gradually widened farther downwards, disappearing just before the clypeus; its surface not strongly impressed; the margins above the ocellum sharp and smooth, below it thick, rounded and callous, irregular. Temporal foveolae scarcely margined, slightly impressed, indistinct, elongato-oval. Fastigium of the vertex strongly sloping, in profile widely rounded, impressed, with an indistinct median carinula; its margins scarcely elevated in the front half and more so in the hind half where they are thick, callous, and slightly convergent backwards; the maximal width of the fastigium is just before the eyes and measures more than a half of its length and twice as much as the maximal width of the frontal ridge. Occiput smooth, but not shining. Lateral facial keels practically straight, feebly divergent downwards, fairly thick, callous, disappearing before they reach the clypeus. Cheeks somewhat swollen, smooth, with the

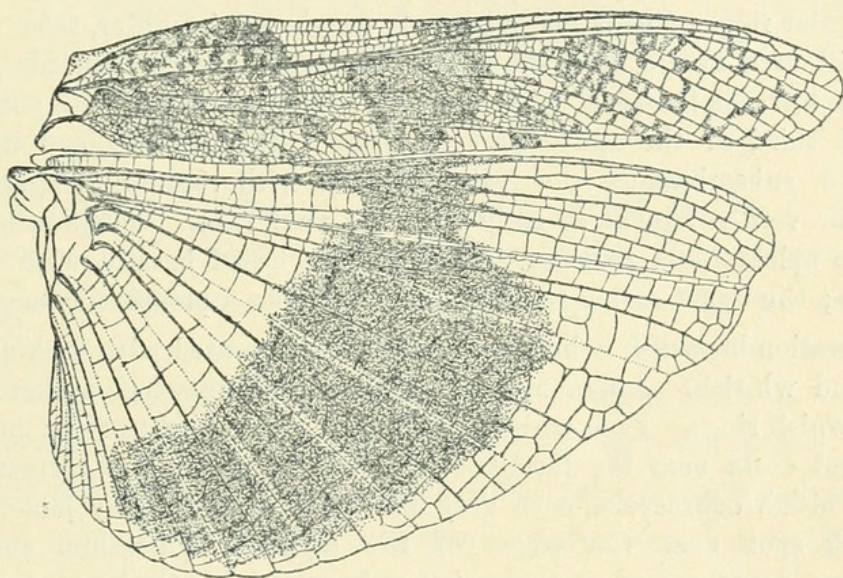


Fig. 1.—*Sphingonotus angulatus*, sp. n.

puncturation more dense at the lower margin and scattered elsewhere. Eyes perfectly oval, their maximal length subequal to two-thirds of their height; their lower end almost acutely angular. Pronotum strongly constricted in the prozona, which is a little longer than one-third of the whole pronotal disc and regularly convex; the fore margin slightly rotundato-prominent with a shallow emargination in the middle; the first and second transverse sulci, well distinct, narrow, bent backwards in the middle, parallel to each other; the fore part of the prozona (*i. e.*, that between the fore margin and the first sulcus) somewhat raised tectiformly, but without a distinct median carinula, with two shallow impressions sideways of the raised middle part; no trace of the median carina between the first and the third sulcus; two transversely elongate callous tubercles between the second and the third sulcus; the metazona feebly convex, slightly rugulose, with a feeble median keel: the hind margin obtusely rounded, with the sides slightly sinuate; shoulders distinctly prominent, rounded; lateral lobes much higher than long, their front margin practically straight, the front angle obtuse, not rounded, the lower margin strongly oblique, scarcely sinuate before the middle, the hind angle acutely attenuate sideways, the hind margin practically straight. Episternum

rotundato-triangular, about twice as long as it is high. Mesosternal lobes separated by an interspace about twice as broad as it is long, and distinctly broader than one of the lobes. Metasternal interspace almost twice as broad as it is long. Elytra about five times as long as their maximal width, gradually and not strongly narrowed towards the obliquely rounded apex; more than the basal half densely reticulated, subcoriaceous; mediastinal area rather broad, quickly narrowed at the apex, with a distinct false vein; scapular area in its middle a little narrower than the mediastinal, sinuate, gradually narrowed towards the apex, with a false vein beyond the middle, not reaching the apex of the area; radial veins distinctly sinuate; discoidal area densely and irregularly reticulated, somewhat broader than the mediastinal area in its broadest part; the false discoidal vein well developed, though in the apical part somewhat irregular, in the basal half subparallel to the hind radial vein, and beyond the middle approaching to the latter, but not touching it; interulnar area in its broadest part as wide as the discoidal area, with about five irregular rows of cells and a scarcely developed, irregular, false vein; the interfurcal area at its base about half as broad as the discoidal, slightly narrowed towards the apex, with 3-4 very irregular rows of cells; more than the basal third of the apical part of elytra rather densely and irregularly reticulated, subcoriaceous, the rest hyalinous with regular elongated cells; the axillar vein confluent apically with the anal vein. Wings rather broad, with two apical lobes rounded. Hind femora broad basally, with the apex attenuate; the upper carina regularly bent, without a preapical emargination.

Coloration brownish ochraceous, densely marmorated with dark chocolate-brown and whitish. Antennae pale ochraceous, somewhat darker apically, with brownish rings. Face whitish, with dark grey puncturation; margins of the frontal costa near the fastigium and not far above the clypeus, black; cheeks whitish ochraceous with grey marmoration, dark grey punctures and one black spot near the edges of the clypeus. Fastigium and vertex ochraceous, densely marmorated with velvety-black. Occiput of a lighter shade than the vertex, with an indefinite dark median fascia and sharply defined from above blackish postocular fasciae. Pronotum ochraceous; its middle part marmorated with black and velvety-brown, while the sides of the disc are paler, forming an X-shaped design; the two callous tubercles in the middle of the disc, before the hind sulcus, white; hind margin with three pairs of brown spots; the lateral lobes with an indistinct dark fascia along the upper margin and with a velvety-brown spot in the middle, surrounded by whitish. Elytra ochraceous; the basal third densely marmorated with chocolate-brown, the colour being darker along the apical border, which is irregular and oblique; the postmedian fascia brownish, distinctly interrupted between the radial veins and suddenly widened behind them; the apical third part of the elytra with irregularly scattered brownish spots, more dense at the base of that part where an indefinite fascia is formed by them. Wings hyalinous; a broad black fascia starts from the middle of the fore margin and runs towards the hind angle, but neither reaches the latter nor touches the hind margin; the fascia is distinctly constricted at the anal vein, and its post-anal part is then suddenly widened, being in its broadest part more than twice as broad as the preanal part; its outer margin is very convex, while the inner one is only so feebly; the veins and veinlets in the apical lobes are brownish.

Fore and middle legs with brown ringlets. Hind femora with three indefinite dark fasciae on the upper side, and still more indistinct ones on the outer side; the inner side pale with the basal half and a preapical ring black. Hind tibiae pale, with the base and tips of the spines black.

♂ (paratype). Differs from the ♀ in having more distinct transverse fasciae on the elytra, the postmedian one being very distinctly interrupted between the radial veins; the fascia of the wings is much narrower and not sharply defined, interrupted at the anal vein; the two apical lobes infumate.

	♀ (type).	♂ (paratype).
Length of body.....	24.5 mm.	17.5 mm.
„ pronotum.....	5	3.75
„ elytra	23	17.5
„ hind femur	10.5	9

The type is from Haifa, Palestine, 25. vi. 1921; the 17 paratypes (13 males and 4 females) are partly from the same locality, but mostly from Akka, 9-29. vi. 1921; one male is from Amman, Transjordan, 2500 ft., 30. viii. 1921.

In its general appearance this species is not unlike *S. callosus* Fieb. (specimens of which have been sent by Dr. P. A. Buxton from the same localities), but of course is easily separated by the sculpture of the pronotum and shape of the head. In these characters *S. angulatus* resembles *S. coerulans* L., but differs from it not only in the coloration of the wings (a character very unreliable in this genus), but also in the form of the discoidal false vein, which is in the new species much more sinuate and more approximated apically to the radial vein; further differences are to be found in the broader rounded hind margin of the pronotum and the more attenuate hind angles of its lateral lobes.

The general coloration, of course, varies considerably, as does also the band of the wings, which may, probably, disappear altogether; the apical lobes of the wings are in the males either infumate or with distinctly darkened veins and veinlets.

Paradrymadusa annulicornis, sp. n. (Fig. 2.)

♂. Antennae slender, very long. Pronotum rounded, with but very short and obtuse lateral keels near its hind margin, which is very broadly rotundato-truncate; lateral lobes obliquely trapezoidal; their fore margin straight, oblique, forming a very obtuse and rounded angle with the lower margin which is short and straight; hind angle more obtuse and more widely rounded than the fore angle; hind margin strongly oblique, very long, scarcely sinuate. Prosternum with two short obtuse spines. Mesosternal lobes triangular, with the sides distinctly convex. Front femora armed with three spinules along the fore lower margin and with two short spinules on the inner

knee-lobe; front tibiae with three spines along the upper side and with six spines on each margin of the lower side. Middle femora with three spinules on the fore lower carina; the outer knee-lobes with two and the inner ones with only one short spinule. Hind femora very long, strongly incrassate in the basal half; their filiform part longer than one-third of the whole femur; both lower carinae with 10-12 fairly strong spinules each; the knee-lobes unarmed. Elytra short, oval; the tympanal field strongly reticulate, coriaceous throughout. Anal segment (fig. 2) produced into two narrow conical appendages, rotundato-emarginate between them. Supra-anal plate almost hidden under the anal segment, directed vertically downwards, acutely triangular, sulcate along its middle. Cerci pilose, short, depressed dorso-

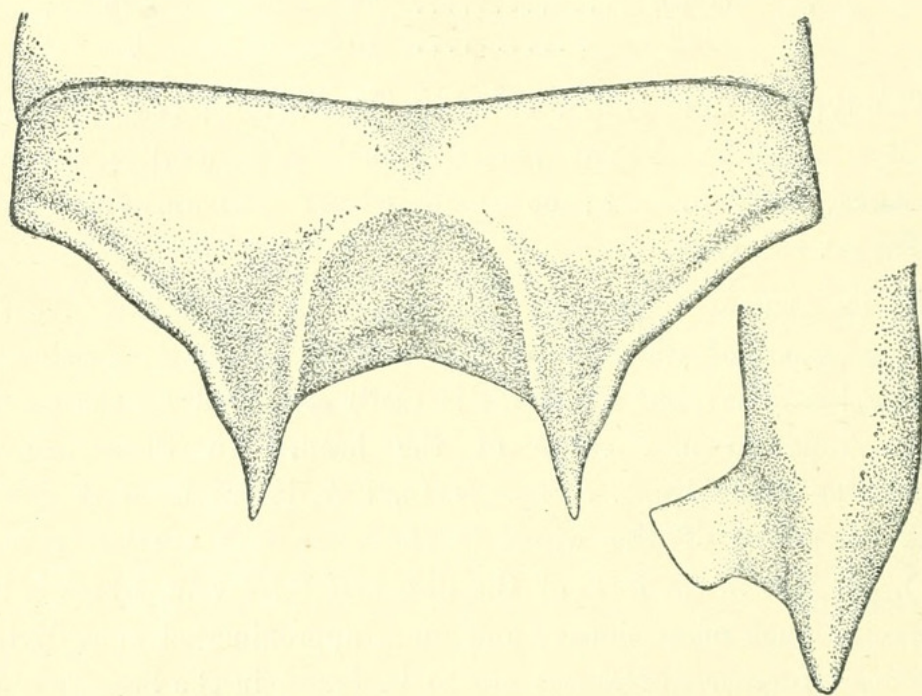


Fig. 2.—*Paradrymadusa annulicornis*, sp. n.

ventrally, conical, slightly incurved, with a strongly flattened trapezoidal tooth just beyond the middle (fig. 2). Subgenital plate with an acute triangular emargination; styli short, cylindrical.

General coloration uniform brownish-ochraceous. Antennae pale with indistinct brownish rings basally, and brownish with widely distant narrow pale rings in the rest. Pronotum above rufous, somewhat velvety; its hind margin pale, with brown points. Elytra uniformly brownish, with the cellules between the reticulation of a somewhat darker shade. All spinules of the legs with brown tips.

Length of body 33 mm.; pronotum 11 mm.; elytra 6.5 mm.; front femur 10 mm.; hind femur 34 mm.

The paratypic female in the last larval stage agrees in all characters with the described male; its ovipositor is slightly recurved, and the dimensions are as follows: length of body (somewhat contracted) 23 mm.; pronotum 11 mm.; hind femur 29 mm.; ovipositor 16 mm.

The type is from Haifa, Palestine, 14. vii. 1921; the paratype from the same locality, 12. vi. 1921.

This species is easily recognised by the very peculiar shape of the male cerci, as well as by the coloration, especially that of the antennae.

London.

January 1922.

SPHECODES SCABRICOLLIS WESM. IN SOMERSET, AND DESCRIPTION
OF ♀ OF *S. KERSHAWI* PERK.

BY R. C. L. PERKINS, M.A., D.SC., F.R.S.

In this Magazine for 1917 (p. 47) I brought forward *S. scabricollis* Wesm. as British on the evidence of a ♂ in the Kirby collection, where it stood in the series of *S. divisus* K. (*similis* Wesm.). This specimen was no doubt obtained about 120 years ago, and in the great number of British *Sphecodes* that have passed through my hands I have seen no other, nor is there any record of another.

Recently amongst some Hymenoptera sent to me for determination by Col. T. Jermyn I found a fine ♀ *Sphecodes* which was evidently new to me, and I have little doubt that this is the other sex of the *scabricollis* in Kirby's collection.

S. scabricollis is one of the rarest of European *Sphecodes*, and the ♀ is very imperfectly known. Dr. R. Meyer, in his recent work on the genus, suspects that v. Hagens confused this sex with that of the almost equally rare *S. schenkii*, the descriptions of these being almost identical, and he himself did not know the ♀ of *scabricollis*.

The following is a description of the Somerset specimen:—

Size of *S. pellucidus* (*pilifrons*), black, the apical part of the mandibles red, the last tarsal joint of all the legs more or less testaceous. The two basal abdominal segments are red and a basal spot is visible on each side of the third, which, like the preceding, is red beneath. Face very wide, the temples very strongly rounded off behind the eyes, much as in *gibbus*, the clypeus dull and less coarsely punctured than in that species; antennae blackish fuscous beneath, hardly at all inclined to rufescence. The front and vertex of the head are very roughly sculptured, in some aspects appearing very rugose, but in others the dense punctures causing the rugosity are easily seen, though they are very much less definite and deep than those of the mesonotum, and the head is quite dull as compared with the latter. Face beneath the antennae densely clothed with pale hairs, mesonotum and vertex more thinly with finer, erect ones, amongst which there appear to be a few darker hairs intermixed. Mesonotum in the middle with coarse, deep punctures, more or less irregular, and leaving considerable, smooth, polished spaces between them, but where they are close



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