

XII. Revision of Palaearctic species of the genus
Sphingonotus Fieber
 (Orth. Acrid.)

BY

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History of the genus.

In 1852 Fieber (Fieber in Kelch: Grundlage zur Kenntnis der Orthopteren Oberschlesiens, p. 2) had separated *Oedipoda coeruleans* Linné from the genus *Oedipoda* into a separate subgenus *Sphingonothus*, without, however, giving any diagnosis. In 1853, the same author (Lotos, Bd. III, p. 124) gave a diagnosis of this subgenus and amended the name (which was not grammatically correct) to *Sphingonotus*.

Fischer (1853; Orthop. Eur., pp. 52, 297) considered *Sphingonotus* a synonym of *Oedipoda*, calling it *Sphinctonotus*.

On making up the key to the genera, Stål (Bihang. K. Sv. Vet. Ak. Hand., Bd. 4, 1876, p. 25), included *Sphingonotus* as an independent genus, giving it Fischer's incorrect name *Sphinctonotus*.

Brunner von Wattenwyl (Prod. Eur. Orth., 1882, pp. 149-150), speaks of the genus as *Sphingonotus*, considering *Sphinctonotus* a synonym.

In 1914, Uvarov (Mitt. Kauk. Muz., Bd. VIII, p. 140) established a new genus *Heliopteryx* which in this work has been shown to be identical with the genus *Sphingonotus*.

Uvarov (Konowia, Bd. II, 1923, pp. 29-30) described a new genus *Vosseleria*. In 1924 (Min. Agr. Egypt, Bull. Nr. 41, p. 31) he showed

that some of the species of this genus were synonymous with those of the genus *Helioscirtus*, some species were put into other allied genera, and some were referred to a new genus *Vosseleriana* Uvarov, which is now considered by me a synonym of genus *Sphingonotus*.

As the result of studying the genus *Sphingonotus* and its allies, it has emerged that at the present moment, the genus includes 107 species and subspecies. Up to the present work, the genus *Sphingonotus* contained 80 different systematic units, but 6 of them proved to be synonyms and 3 were species not belonging to this genus. Thus the actual number of systematic units under the name of *Sphingonotus* was 71, as compared with the 107 now known, 36 new species and subspecies having been added in the present paper, 32 of them absolutely new (25 described by me and 7 by S. A. Predtetschensky) and 4 having been transferred from allied genera.

The history of the genus *Sphingonotus* has had, broadly speaking, three phases in its development:

1. The works of Saussure (1884-1888) in which he established 29 new units (19 of them included in the genus at present).
2. Uvarov's works (1914-1933) where he has described 26 new units (24 of which remain at present) and cleared up many uncertain names.
3. Short works on this genus by other authors.

The three following species which were included in the genus *Sphingonotus* had to be taken out of it:

Sphingonotus granulatus Brullé (*Acridium granulatum* Brullé in Barker-Webb, Hist. Nat. Iles Canaries, Ins., vol. II, part 2; p. 77, pl. 5, fig. 14) has narrow wings pointed towards the apices, with very weakly separated apical lobes and median keel of the pronotum interrupted by only one transverse furrow. The presence of these characters points to the fact that this species should be included in the genus *Oedipoda*.

S. bengalensis Saussure (Mem. Soc. Phys. Hist. Nat. Genève, xxx, 1888, p. 80) should be separated into a distinct genus owing to the peculiar structure of its head, sternum, pronotum, hind femur and extremely dense venation of elytra.

S. acrotylodes Werner (Zool. Jahrb., Syst., Bd. 27, 1909, p. 115;

pl. 6, fig. 12) the type of which I have studied belongs to the genus *Leptopternis* and is very close to (perhaps even identical with) *L. maculata* Vosseler.

The material examined.

The materials used in preparation of this work were the large collections of the Zoological Institute of the Academy of Sciences U. S. S. R., Leningrad, which contain a series of types and paratypes. The most interesting of these collections were those of P. K. Kozlov and D. A. Clements from Mongolia, Tibet and Northern China; N. A. Zarudny from Persia and Baluchistan; L. D. Moritz from Persia and Kirghizia; A. N. Kaznakov from Pamirs, and P. A. Veltitshev from Tadjikistan.

Owing to the kind cooperation of Dr. B. P. Uvarov, I had at my disposal vast materials from the British Museum of Natural History, consisting of almost all types and paratypes of the species and subspecies described by Dr. B. P. Uvarov, as well as his own collections from Spain and Asia Minor.

I offer my sincere thanks to Pr. Dr. M. Beier — who supplied me with almost the whole collection of *Sphingonotus* from the Vienna Natural History Museum, which contained a large number of types; to Pr. Dr. R. Ebner, who sent me the European *Sph. coerulans* and his personal collection of *Sphingonotus* for examination; Pr. Dr. Willy Ramme who gave me the opportunity of examining the paratypes of *Sph. pamiricus* described by him; Pr. Dr. Y. Sjöstedt who sent me for examination the paratypes of *Sph. erythropterus* described by him.

On S. A. Predtetschensky's request I have included the following new species described by him: *Sph. rufipes*, *Sph. fuscus*, *Sph. isfaghanicus*, *Sph. dentatus*, *Sph. mistshenkoi*, *Sph. arenosus*, and *Sph. coerulipes kermanicus*.

I have also used my own collections from Kazakstan and Turkmenia; N. T. Olsufiev's collections from Kazakstan, Daghestan, and Leningrad district; P. P. Bogush's from Kirghizia; S. A. Predtetschensky's from the lower course of Volga, Central Russia, Ural delta and Turkmenia; Bey-Bienko's from Zaisan and Transcaucasia; F. K. Lukiano-

vitch's collection from Transbaikal district and S. P. Zhdanov's from North Caucasus.

I am very grateful to all the above mentioned for lending me their collections.

I offer my sincere gratitude to the Zoological Institute of Academy of Sciences U. S. S. R. and to its director S. A. Zernov for giving me the opportunity of examining the materials in the Institute; I am extremely grateful to Dr. E. F. Miram for her help and to I. T. Musatov, a great authority in entomological literature, who helped me with the latter.

I am sincerely grateful to G. Y. Bey-Bienko for the help in the work and advice on literature, and to S. A. Predtetschensky for some very valuable suggestions. In conclusion, I should like to offer my sincerest thanks to Dr. B. P. Uvarov for taking a special interest in this work and the trouble connected with its translation and publication.

Systematic position of the genus and its geographical distribution.

Among the related genera, the genus *Sphingonotus* Fieber occupies the central position, not only in containing a great number of

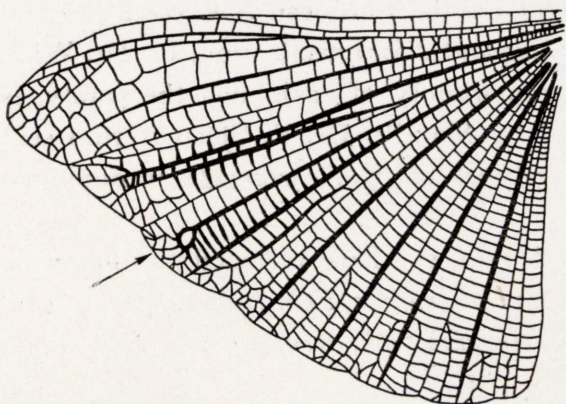


Fig. 1.—*Helioscirtus moseri*, ♂. The arrow points to the supernumerary vein.

species, but also in its wide geographical distribution. On one side the following genera are very close to it, viz. *Bryodema* Fieber, *Angaracris* Bey-Bienko, *Uvaroviola* Bey-Bienko, *Compsorhipis* Saussure and *Thalpomena* Saussure, while on the other side there is a series of very nearly related genera — *Helioscirtus*

Saussure, *Orinhippus* Uvarov, *Leptopternis* Saussure, and *Hyalorhipis* Saussure.

The genus *Sphingonotus* is the nearest to the genus *Helioscirtus* differing from it mainly by the absence of the supernumerary vein in front of the first axillary vein of wings, and by the more irregular and sparser venation of the latter. The supernumerary vein of wings of males in the genus *Helioscirtus* is distinct and straight (Fig. 1), in the females it is less developed, but still distinct though somewhat irregular.

The comparative study of representatives of related genera, led me to the conclusion that the separation of genera *Heliopteryx* Uvarov, *Vosseleriana* Uvarov and *Sphingonotus* Fieber was artificial.

The only character separating the genus *Heliopteryx* (Uvarov, Mitt. Kauk. Mus., Bd. VIII, 1914, p. 140) is a short radial streak of the dark wing fascia, found in the only representative of this genus (*H. humeralis* Kuthy). This character is also expressed to a lesser or greater degree in some species of *Sphingonotus* with a dark fascia on the wings, and appears to be only of secondary importance, and not of generic value. As to the other genus *Vosseleriana* (Uvarov, Min. Agr. Egypt, Bull. Nr. 41, 1924, p. 31) the only character which separates it from *Sphingonotus* is the wide and short wings. If we compare the maximum width and length in the two representatives of genus *Vosseleriana* (*V. fonti* Bolivar, and *V. somali* Uvarov) they have the following respective proportions 1 : 1.54 and 1 : 1.56, while in the genus *Sphingonotus* these proportions fluctuate between 1 : 1.49, and 1 : 2.00. It is obvious that the short and wide wings can only have a specific and not a generic value.

From the above, I came to the conclusion that the genera *Heliopteryx* and *Vosseleriana* are synonymous with *Sphingonotus*.

The area of distribution of *Sphingonotus* is very wide, its representatives occurring in the Galapagos Islands, Mexico, West Indies, Brazil, in North and South Africa, in Europe (the Northern boundary in Western and Middle Europe passes approximately along the latitude 60° N., but farther East, in the Urals, this boundary descends to 55° N. The Northern boundary runs approximately along the latitude 55° N. in the whole of Asia except in its Northern and South Eastern ¹ regions, and in North-Western Australia.

| | Number of endemic species and subspecies. | Number of species and subspecies common with other regions. | Total number of species and subspecies. |
|--|--|--|--|
| Galapagos Islands..... | 1 | — | 1 |
| Mexico..... | — | 1 | 1 |
| Brazil..... | 1 | — | 1 |
| West Indies..... | 2 | 1 | 3 |
| Canary Islands, Cape Verde Islands, Madeira.. | — | 3 | 3 |
| Europe..... | 3 | 11 | 14 |
| Mediterranean Islands..... | 4 | 4 | 8 |
| North Africa..... | 11 | 12 | 23 |
| South Africa..... | 4 | — | 4 |
| Somaliland..... | 4 | 2 | 6 |
| Asia Minor..... | 3 | 6 | 9 |
| Arabia, Sinai, and neighbouring islands..... | 4 | 10 | 14 |
| Caucasus and neighbouring regions..... | — | 13 | 13 |
| Iran (Palestine, Syria, Iraq, Persia, Afghanistan). | 13 | 19 | 32 |
| Central Asia (Kazakstan, Uzbekistan, Kirghizia, Turkmenistan, Tadjikistan)..... | 6 | 18 | 24 |
| Pamir and Kashmir..... | 4 | 5 | 9 |
| Western and Northern India..... | 2 | 12 | 14 |
| Tibet and Tsaidam..... | 1 | — | 1 |
| Eastern Siberia and Russian Far East..... | — | 1 | 1 |
| Mongolia..... | — | 7 | 7 |
| Manchuria and Korea..... | — | 1 | 1 |
| Japan..... | 1 | — | 1 |
| China..... | 1 | 2 | 3 |
| N.-W. Australia..... | 1 | — | 1 |

As can be seen from the above table the greater majority of species and subspecies (97)² are distributed in the Palaearctic region, in its desert and semi-desert areas (Iran, N. Africa, Central Asia).

The number of species living in other regions is much smaller. Thus, in South Africa there are only four species — *Sph. nigripennis* (Serville), *Sph. scabriculus* (Stål), *Sph. capensis* (Saussure) and *Sph. lobulatus* (Karny). The first two species belong to the group *lucasi*, widely distributed, mainly in the desert and mountain regions of North Africa. As to the other two species, I hesitate to place them into any group, since they have scarcely been studied.

There are 3 species in West Indies and Mexico — *Sph. haitensis*

¹ The exceptions in South Eastern Asia are: Southern, Central and Eastern India, and the whole of Indo-China.

² Species from Abyssinia, Somaliland and Yunnan are also included, for although these countries are not in the Palaearctic region, they, together with the latter form an area of continuous distribution.

(Saussure) [Haiti, Cuba, Porto-Rico, Mexico], *Sph. cubensis* Saussure [Cuba], *Sph. jamaicensis* [Jamaica]. All these species belong to the group *coerulans* distributed chiefly in Europe and Western Asia — the most primitive group in the genus *Sphingonotus*.

There is only one species on Galapagos Islands — *Sph. fuscoirrotatus* (Stal) which also belongs to the group *coerulans*.

In Brazil there is one species — *Sph. brasilianus* Saussure, which has been scarcely studied, but is very peculiar and possibly will have to be removed from the genus *Sphingonotus*.

Finally, in N.-W. Australia (Kimberley) there is one species—*Sphingonotus erythropterus* Sjöstedt, approaching the group *halocnemi*, which is distributed chiefly in Western and Central Asia, but with some representatives in North Africa, and Eastern Asia. The presence of strongly developed arolia between the tarsal claws leads one to suppose that this species passes the greater part of its life on vegetation, as does *Sph. halocnemi* Uvarov, in which the arolia are also more strongly developed than in other species of this genus (but less so than in *Sph. erythropterus*).

The present discontinuous distribution of the genus *Sphingonotus* suggests its great age. This conclusion is supported by the occurrence of small groups of species and of isolated species in such widely separated areas as Galapagos Islands, Mexico, West Indies and Australia, all these species belonging or allied to the groups widely distributed in the Palaearctic region.

Such distribution can only be explained on the basis of Wegener's theory¹ of continental movements. According to Wegener a continuous continent «Pangaea», surrounded on all sides by the primary ocean, existed in the Palaeozoic. In the Jurassic it began to split up along two meridional lines. These lines separated Europe-Africa from South America, and Africa from India. The final separation of America from Africa occurred only after the Eocene. The connection between Africa and India also existed up to the Eocene; that between Australia and India until the Jurassic; between Antarctica and South America until the Miocene, and between Antarctica and South America, as well as between Europe and North America until the Quaternary.

¹ Wegener (A.): «Die Entstehungen der Kontinente und Ozeane». 4. Aufl., Brannschweig, 1929.

From the above, we must conclude that direct exchanges of living organisms between the now existing continents could have occurred only in the very distant geological times. In the case of *Sphingonotus*, we have full reasons to conclude that this genus arose not later than at the beginning of the Tertiary period.

Unfortunately the complete absence of fossils related to the genus *Sphingonotus*, and our very insufficient knowledge of exotic faunas, make it impossible, at present, to advance even a suggestion as to the centre of origin of this purely desert genus.

The presence of a large number of endemic species in Iran and North Africa, suggests that these areas are the main present day centres of the *progressive* development of the genus.

Genus *Sphingonotus* Fieber.

1767. *Gryllus* (*Locusta*) Linné, Syst. Nat., vol. 1, pars II, p. 701 (partim).
 1775. *Gryllus* Fuessly, Verz. Schweiz. Insekt., p. 22 (partim).
 1785. *Acrydium* Fourcroy, Entom. Paris, pars I, p. 180, n.° LVII (partim).
 1831. *Oedipoda* Serville, Ann. Sc. Nat., vol. xxii, pp. 264, 287, n.° xx (partim).
 1836. *Acridium* Costa, Faun. Reg. Nap., p. 1 (partim).
 1838. *Gryllus* Rambur, Faune Ent. Andal., vol. II, p. 78 (partim).
 1838. *Oedipoda* Burmeister, Handb. Ent., vol. II, p. 640, n.° 13 (314) (partim).
 1839. *Oedipoda* Serville, Hist. Nat. Insect. Orth., p. 718, n.° xxiii (partim).
 1846. *Oedipoda* Fischer de Waldheim, Ent. Imp. Ross., vol. IV, p. 275, n.° IX (partim).
 1852. *Oedipoda* (*Sphingonotus*) Fieber, in Kelch, Grund. Kenn. Ort. Ober., p. 2, n.° 5.
 1853 Mai. *Oedipoda* subgenus *Sphingonothus* Fieber, Lotos, vol. III, p. 124, n.° 4.
 1853 Sept. *Sphinctonotus* Fischer, Orthop. Eur., p. 52.
 1873. *Sphinctonotus* Stål, Rec. Orth. 1. Acrid., pp. 118, 135.
 1882. *Sphingonotus* Brunner von Wattenwyl, Prodr. Eur. Orth., p. 149 (partim).
 1884. *Sphingonotus* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxviii, Nr. 9, pp. 60, 195, 196 (partim).
 1888. *Helioscirtus* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxx, Nr. 1, p. 74 (partim).

1888. *Sphingonotus* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxx, Nr. 1, p. 76 (partim).
 1902-1905. *Sphingonotus* Jacobson and Bianchi, Priam. lozh. Ross. Imp., pp. 170, 192, 272.
 1910. *Sphingonotus* Kirby, Synon. Cat. Orth., vol. III, p. 271, n.º 382 (partim).
 1914. *Sphingonotus* Kirby, Faun. Brit. India, pp. 129, 153 (partim).
 1914. *Heliopteryx* Uvarov, Mitt. Kauk. Mus., vol. VIII, p. 140 (Syn. nov.).
 1923. *Vosseleria* Uvarov, Konovia, vol. II, p. 30 (partim).
 1924. *Vosseleriana* Uvarov, Min. Agr. Egypt., Bull. Nr. 41, p. 31 (Syn. nov.).
 1927. *Sphingonotus* Uvarov, Saran. Sred. Az., pp. 110, 128.

Body slender, usually of various soil-like shades.

Frons vertical, sometimes somewhat sloping; frontal ridge flat sometimes concave, constricted below the ocellus, lower down the margins of the ridge are wider apart and obliterated. Vertex sloping, concave; its margins obtuse, weakly raised. Foveolae of vertex elongated, triangular, indistinct, flat or weakly concave, sometimes almost absent. Antennae filiform, longer than head and pronotum taken together, sometimes shorter in females.

Pronotum with three transverse furrows strongly constricted in prozona; the first furrow almost in the middle of prozona; metazona flat or weakly convex, wide; posterior angle rounded, obtuse or right-angled; median keel sometimes raised in front of the first transverse furrow, absent between the furrows, always low and linear in metazona. Transverse furrow of mesosternum straight.

Basal parts of elytra densely veined, slightly coriaceous, with more sparse venation near apex, transparent; intercalary vein in discoidal area much nearer to discoidal vein, than to the ulnar vein. Wings wide, elongated triangular, sometimes quadrant-like, transparent, bases of different colours, with or without a dark fascia; venation normal, axillary veins very slightly thickened; no supplementary vein in front of the first axillary vein.

Posterior femora fairly slender. Posterior tibiae shorter than the femora, with 6-10 spines on both sides; spurs of normal length.

Anal plate of ♂ triangular, pointed; genital plate of ♂ short, obtuse, recurved. Lower and upper valvae of ovipositor of ♀ indistinctly dentate at the sides.

Genotype: *Gryllus (Locusta) coeruleans* Linné.

The palaearctic species of genus *Sphingonotus* form a series of groups within the genus, with good morphological differences characteristic of each group:

1. Group *Savignyi* is characterised by a distinctly S-shaped granular intercalary vein in the discoidal area of elytra; almost colourless, triangular wings with slightly thickened axillary veins; very wide basally femora and strongly sloping, almost vertical fastigium. The group consists of the following species: *arabicus*, *savignyi*, *canariensis canariensis*, *canariensis orientalis*, *fonti*, *finotianus*, *hierichonicus*, *pictus pictus* and *pictus onerosus*.

2. Group *Vitreus* is characterised by very sparse venation of the apical part of elytra (the second branch of the median vein of elytra of ♂♂ and ♀♀ gives off only one branch); sturdy body; and almost round eyes. In this group are included: *vitreus*, *halophilus*, *tzaidamicus* and *rufipes*.

3. Group *Pamiricus* is characterised by short and wide elytra and wings and sparse venation of elytra. This group consists mostly of mountain species: *ebneri*, *minutus*, *kirgisticus*, *pamiricus pamiricus*, *pamiricus occidentalis* and *zebra*.

4. Group *Maculatus* is characterised by very distinct spots on elytra; and light coloration of the inside of posterior femora with 2 dark fasciae. The group consists of one species — *maculatus*.

5. Group *Halocnemi* is characterised by weak venation of elytra of males (the second branch of the median vein gives off 2 branches in the apical part). The group contains a large number of species: *halocnemi*, *fuscus*, *isfaghanicus*, *miramae*, *femoralis*, *montanus*, *dentatus*, *bey-bienkoi*, *lucidus*, *fallax*, *ganglbaueri* and *albipennis*.

6. Group *Rubescens* is characterised by strongly developed venation of long elytra of males (second branch of median vein gives off 3-4 branches in the apical part), and by slender body. The group contains the following species: *theodori theodori*, *theodori iranicus*, *afghanicus*, *elegans*, *rubescens rubescens*, *rubescens fasciatus* and *mistshenkoi*. *Sph. theodori iranicus* represents a connecting link between the groups *Halocnemi* and *Rubescens*.

7. Group *Yunnaneus* is characterised by sparse peculiar venation of the elytra, gray coloration of inner sides of posterior femora; gray wings with a dark diffuse fascia and a straight intercalary vein in

the discoidal area of elytra. The group contains one species — *yunnanensis*.

8. Group *Atropurpureus* is characterised by wavy upper margin of posterior femora and very dense venation of elytra. One species — *atropurpureus*.

9. Group *Candidus* is characterised by sturdy body and yellow inner sides of femora with 1-2 weak fasciae. The group consists of *vosseleri*, *arenosus*, *candidus candidus* and *candidus personatus*.

10. Group *Carinatus* is characterised by structure of the sternum, very sturdy body and dark inner surfaces of femora with 2 light complete fasciae. One species — *carinatus*.

11. Group *Lucasii* is characterised by strongly wrinkled and coarsely punctured pronotum, dark inner sides of femora with 2 light complete fasciae. The group is formed by the following species: *somali*, *lucasii*, *eurasius eurasius*, *eurasius cyprius*, *predtetschenskyi*, *nadigi* and *maroccanus*.

12. Group *Azurescens* is characterised by smooth pronotum and dark inner sides of posterior femora with 2 light complete fasciae. The group contains the following species: *luteus*, *tricinctus tricinctus*, *tricinctus angulatus*, *azurescens azurescens*, *azurescens arenarius*, *azurescens linosae*, *uvarovi*.

13. Group *Coerulans* is characterised by smooth basal parts of lower valvae of ovipositor of ♀, dark inner sides of posterior femora with one complete light fascia, and small eyes. The group is formed by the following species: *coerulans coerulans*, *coerulans corsicus*, *coerulans exornatus*, *coerulans cyanopterus*, *coerulans caspicus*, *kashmirensis*, *uvarovites* and *mongolicus*. *Sph. coerulans corsicus* and *Sph. coerulans exornatus* represent intermediate forms between the groups *Azurescens* and *Coerulans*. *Sph. coerulans caspicus* is intermediate between the groups *Coerulans* and *Coerulipes*.

14. Group *Coerulipes* is characterised by distinct callous tubercles on the basal parts of lower valvae of ovipositor of ♀, dark inner sides of posterior femora with one light fascia, and by large eyes. The group consists of the following species: *turcicus*, *coerulipes coerulipes*, *coerulipes djakonovi*, *coerulipes zaisanicus*, *pilosus* and *collenettei*. *Sph. coerulipes kermanicus* is intermediate between the groups *Rubescens* and *Coerulipes*.

15. Group *Nebulosus* is characterised by coarsely wrinkled pronotum; dark fascia on wings which reaches the posterior margin; by the apical part of the second branch of the medial vein of elytra of ♂♂ with 2 branches. The group includes: *nebulosus nebulosus*, *nebulosus discolor*, *nebulosus anatolicus*, *nebulosus violascens* and *nebulosus persa*.

16. Group *Balteatus* is characterised by smooth pronotum, dark fascia on wings which does not reach the posterior margin, and by the 2nd branch of the median vein of the elytra of ♂♂ with 3-4 branches in the apical part. The group consists of: *balteatus balteatus*, *balteatus himalayanus*, *balteatus balucha*, *balteatus latifasciatus*, *balteatus roseus*, *longipennis*, *japonicus* and *humeralis*.

17. Group *Octofasciatus* is characterised by smooth pronotum, presence of a dark spot at the apex of wing as well as of a dark fascia; very weakly raised median keel in prozona of pronotum. The group includes: *octofasciatus*, *obscuratus obscuratus*, *obscuratus lameeri*, *obscuratus transcaspicus*, *obscuratus brunneri*, *obscuratus latissimus*.

18. Group *Salinus* is characterised by strongly wrinkled pronotum, strongly raised median keel in prozona of pronotum, thick posterior femora and black inner sides of the latter with one complete light fascia. One species — *salinus*.

19. Group *Satrapes* is characterised by the structure of ovipositor of ♀, which has a large tooth-like projection on the outer margin of upper valvae, and by slender posterior femora. The group includes: *satrapes satrapes* and *satrapes decarinatus*.

Key to the species and subspecies.

- 1 (2) Wings with a dark, narrow, diffuse fascia along posterior margin (fig. 2) (in ♀♀ the fascia is scarcely marked). Inner sides of posterior femora for the greater part blue-black, with one complete light fascia (fig. 3) (*Savignyi* group). Arabia.....
..... 1. **Sph. arabicus** sp. n.
- 2 (1) Wings with a dark fascia in the middle, or without one.
- 3 (18) Inner sides of posterior femora for the greater part yellow with one complete blackish fascia (fig. 4). Wings with a dark fascia,

which is sometimes absent (*Sph. fonti*) in which case the posterior femora are very thick (their length 3.3 times their maximum width) and wings short triangular (their length 1.5 times their maximum width).

- 4 (9) Wings with a distinct dark, complete, fairly wide fascia.
- 5 (8) Bases of wings colourless.
- 6 (7) Larger: length of body of ♀♀ from 30 mm., ♂♂ from 22 mm.; elytra of ♀♀ from 29.0 mm, of ♂♂ from 23.0 mm., posterior

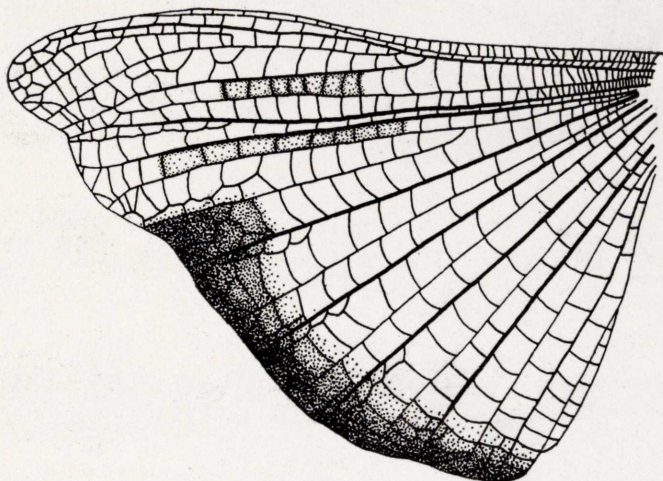


Fig. 2.—*S. arabicus*, paratype ♂.

femora of ♀♀ from 13.5 mm., of ♂♂ from 10.5 mm. Apices of wings dark, sometimes only slightly so, with distinct black veins. Canary Islands, N. Africa, Sudan, British Somaliland, Palestine, Iran, Caucasus, Central Asia, Kashmir, S. India.....

..... 2. **Sph. savignyi** Saussure.

- 7 (6) Smaller. Length of body of ♀♀ from 18.0-27.0 mm., ♂♂ from 13.0-19.0 mm., elytra of ♀♀ from 19.0-26.0 mm., of ♂♂ from 14.0-20.0 mm., posterior femora of ♀♀ from 8.0 to 12.5 mm., of ♂♂ from 7.0-9.5 mm. Apices of wings dark. Cape Verde Islands, Canary Islands, Sudan, British Somaliland.....

..... 3. **Sph. canariensis canariensis** Saussure.

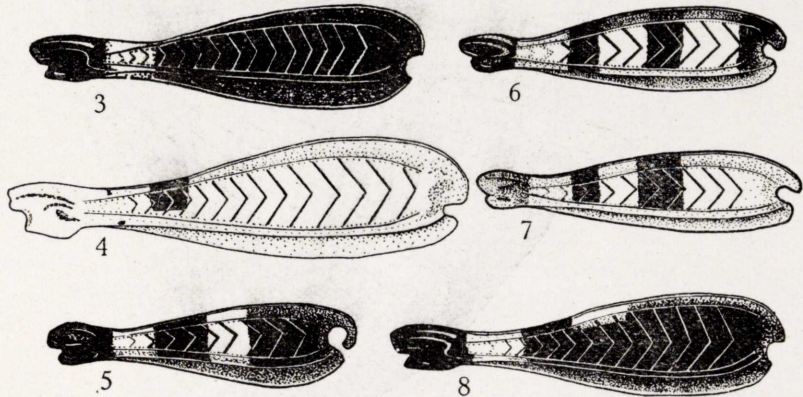
- 8 (5) Bases of wings light blue. S. Arabia.....

..... 3a. **Sph. canariensis orientalis** subsp. n.

- 9 (4) Wings without a dark fascia, or only with traces of the latter.
- 10 (11) Wings colourless *without any traces of dark fascia*, very short and wide; their length 1.5 times their maximum width. Elytra not reaching the apices of posterior tibiae by a long distance. Morocco.....

..... 4. **Sph. fonti** (I. Bolivar).

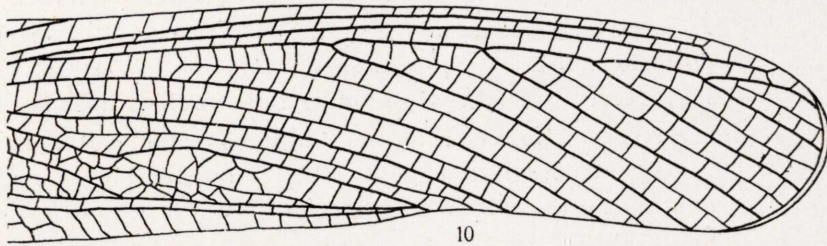
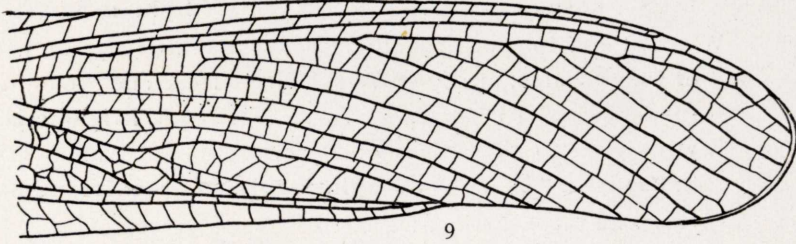
- 11 (10) Wings blue or bluish at bases, with traces of a dark fascia; their length 1.6-1.8 times their maximum width. Elytra reaching the apices of posterior tibiae.
- 12 (13) Apical part of the 2nd branch of medial vein of elytra of ♂♂ gives off 3 branches (fig. 9). Morocco, Algeria, Tunisia.....
..... 5. **Sph. finotianus** (Saussure).
- 13 (12) Apical part of 2nd branch of medial vein of elytra gives off 2 branches (fig. 12).
- 14 (15) Antennae of ♂ twice as long as head and pronotum taken to-



Figs. 3-8.—3, *S. arabicus*, paratype ♂, inner side of hind femur; 4, *S. savinyi*, ♂; 5, *S. fallax*, allotype ♂; 6, *S. zebra*, paratype ♂; 7, *S. maculatus*, ♂; 8, *S. rubescens rubescens*, ♀.

- gether. Median keel of pronotum strongly raised in front of the first furrow. Palestine..... 6. **Sph. hierichonicus** Uvarov.
- 15 (14) Antennae of ♂ slightly longer than head and pronotum. Median keel of pronotum weakly raised in front of the first furrow.
- 16 (17) Head of ♀ strongly projecting above the pronotum. Length of elytra of ♀ 5.5 times their maximum width. Egypt, Sinai, Arabia....
..... 7. **Sph. pictus pictus** Werner.
- 17 (16) Head of ♀ scarcely projecting above the pronotum. Length of ♀ elytra 5.9 times their maximum width. S. Persia, British Baluchistan 7a. **Sph. pictus onerosus** subsp. n.
- 18 (3) Inner sides of posterior femora for the greater part dark or gray, with 1-2 light fasciae (figs. 3, 5 and 8), sometimes light with 1-3 dark fasciae (figs. 4, 6 and 7), then the wings without a dark fascia, slender (their length 4 times their maximum width).
- 19 (26) Apical part of the 2nd branch of the medial vein of elytra of ♀ gives off one branch (fig. 11) (*Vitreus* group).
- 20 (25) Posterior tibiae dirty bluish or whitish; wings colourless.

- 21 (22) Elytra narrow, their length 6 times their maximum width; venation in the basal third dense. Width of interspaces between meso and metasternal lobes 2.5 times their length. Egypt..... 8. **Sph. vitreus** Saussure.
- 22 (21) Elytra short and wide, their length almost 5 times their maximum width; venation in the basal third sparse. Width of interspaces between meso and metasternal lobes twice their length (fig. 21).
- 23 (24) Posterior tibiae in both sexes considerably shorter than the femora.

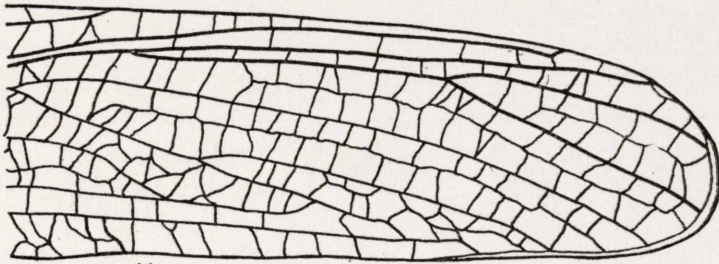


Figs. 9-10.—9, *S. coerulipes coerulipes*, ♀; 10, *S. japonicus*, ♀.

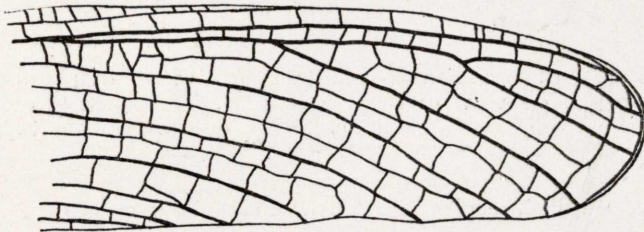
- Posterior femora thick. Antennae very fine. Wings quadrant-like. Kazakstan..... 9. **Sph. halophilus** Bey-Bienko.
- 24 (23) Posterior tibiae in both sexes slightly shorter than the femora. Posterior femora slender. Antennae thick. Wings elongated, triangular. Tzaidam..... 10. **Sph. tzaidamicus** sp. n.
- 25 (20) Posterior tibiae bright orange-red. Bases of wings with a faint violet shade. Iran... 11. **Sph. rufipes** Predtetschensky sp. n.
- 26 (19) The apical part of the 2nd branch of the medial vein of elytra gives off 2-4 branches (figs. 9, 10 and 12).
- 27 (176) Wings without a dark apical spot, with a dark median fascia, or without one.
- 28 (175) Bases of wings not red.
- 29 (152) Wings without a dark fascia (body fairly large), sometimes with a dark fascia, when body is medium (length of body of ♀♀ 22-27 mm., ♂♂ 13.0-22.0 mm.; elytra of ♀♀ 22-30 mm., ♂♂ 18-26 mm.; posterior femora ♀♀ 14-14.5 mm., ♂♂ 9.0-11.0 mm.).
- 30 (41) Elytra wide and short; their length 5-5.3 times their maximum width.

- Wings wide and short, somewhat quadrant-like; their length 1.6-1.1 times their maximum width (*Pamiricus* group).
- 31 (32) Wings colourless. Algeria..... 12. **Sph. ebneri** sp. n.
- 32 (31) Bases of wings blue.
- 33 (38) Elytra with two dark fasciae.
- 34 (37) Elytra not reaching the apices of posterior tibiae by a long distance. Antennae fine.
- 35 (36) Width of metazona of pronotum equal to its length. Venation of wings dense; all veins dark. Head and pronotum with dense hairs. Eastern Iran..... 13. **Sph. minutus** sp. n.
- 36 (35) Width of metazona of pronotum greater than its length. Venation of wings sparse; nearly all veins light. Head and pronotum with sparse hairs. Kirghizia..... 14. **Sph. kirgisticus** sp. n.
- 37 (34) Elytra reach to the apices of posterior tibiae. Antennae thick. E. Pamirs..... 15. **Sph. pamiricus pamiricus** Ramme.
- 38 (33) Elytra with three distinct fasciae.
- 39 (40) Inner sides of posterior femora for the greater part dark with 2 complete light fasciae (fig. 5). Elytra reaching the apices of posterior tibiae. Wings with sparse venation. Western Pamirs. 15a. **Sph. pamiricus occidentalis** subsp. n.
- 40 (39) Inner sides of posterior femora for the greater part light with 3 complete dark fasciae (fig. 6). Elytra not reaching the apices of posterior tibiae by a long distance. Wings with dense venation. Tadjikistan 16. **Sph. zebra** sp. n.
- 41 (30) Elytra long, their length 5.5-6 times their maximum width. Wings elongated, triangular.
- 42 (129) Inner sides of posterior femora for the greater part dark with several light fasciae, one of them sometimes incomplete (figs. 5 and 8), then wings without a dark fascia or light (yellow, gray, bluish) with 1-3 dark fasciae (figs. 4, 6, 7).
- 43 (88) Width of sternum equal to its length or less; width of interspace between mesosternal lobes 1.5-1.8 times greater than its length (fig. 19).
- 44 (87) Wings gray, blue, bluish or colourless.
- 45 (46) Elytra with 3 distinct complete dark fasciae, interspaces between them without dark spots. Inner sides of posterior femora for the greater part light with 2 dark fasciae (fig. 7). (*Maculatus* group). Volga region, Central Asia, N. and E. Iran, British Baluchistan... .. 17. **Sph. maculatus** Uvarov.
- 46 (45) Elytra with 2 complete dark fasciae or with dark spots which do not form fasciae.
- 47 (86) Bases of wings blue, bluish or colourless, without a dark fascia; sometimes the dark fascia is present, then the inner sides of poste-

- rior femora are for the greater part dark with 2 complete light fasciae (fig. 5).
- 48 (81) Inner sides of posterior femora are for the greater part dark with 2 light (sometimes blue) fasciae (fig. 5), or light with 1-3 dark fasciae (figs. 4, 6, 7).
- 49 (74) Apical part of 2nd branch of mediam vein of elytra of ♂ gives of 2 branches (fig. 12). (*Halocnemi* group).
- 50 (53) Elytra with dark spots which do not form fasciae.



11

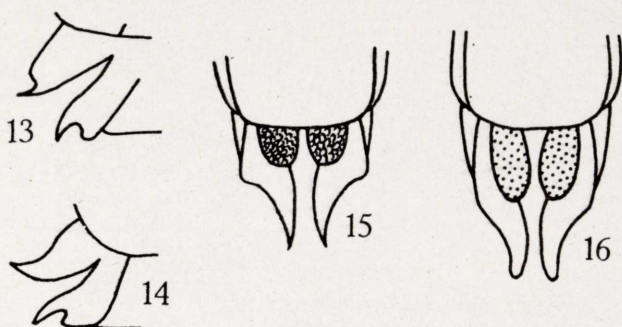


12

Figs. 11-12.—11, *S. tzaidamicus*, type ♀; 12, *S. fallax*, allotype ♂.

- 51 (52) Bases of wings faintly blue, almost colourless. Posterior tibiae whitish. Elytra reaching the apices of posterior tibiae. Kazakhstan, Kirghizia, Kara-Kalpak region 18. **Sph. halocnemi** Uvarov.
- 52 (51) Bases of wings dark bluish. Posterior tibiae blue. Elytra not reaching to the apices of posterior tibiae by a short distance. W. Iran..... 19. **Sph. fuscus** Predtetschensky sp. n.
- 53 (50) Elytra with distinct dark fasciae.
- 54 (63) Inner sides of posterior femora for the greater part yellow or greenish, with 1-3 dark fasciae (figs. 4, 6, 7).
- 55 (56) Apices of upper valvae of ovipositor of ♀ with a tooth like excision (fig. 13). Apical part of 2nd branch of medial vein of elytra of ♀ gives off 2 branches. Inner sides of posterior femora for the greater part yellow with one dark fascia (fig. 4). Central Iran..... 20. **Sph. isfaghanicus** Predtetschensky sp. n.

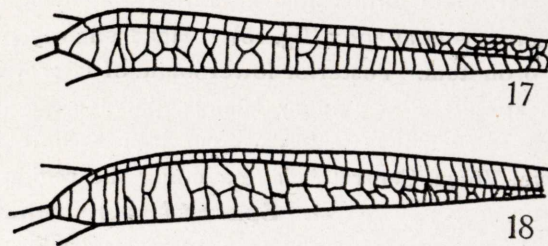
- 56 (55) Apices of upper valvae of ovipositor of ♀ without a tooth like excision (fig. 14). Apical part of the 2nd branch of median vein of elytra of ♀ gives 3 branches (fig. 9); sometimes 2 (fig. 10), then the inner sides of posterior femora are for the greater part greenish with 1-2 dark fasciae (figs. 4, 7).
- 57 (58) Elytra not reaching the apices of posterior tibiae by a long distance. Turkmenistan..... 21. **Sph. miramae** sp. n.
- 58 (57) Elytra reaching the apices of posterior tibiae.
- 59 (62) Inner sides of posterior femora for the greater part yellow with



Figs. 13-16.—13, *S. isfaghanicus*, type ♀, side view of ovipositor; 14, *S. mistshenkoi*, type ♀, side view of ovipositor; 15, *S. femoralis*, ♀, ovipositor from below; 16, *S. coeruleans coeruleans*, ♀, ovipositor from below.

- 1-2 dark fasciae (figs. 4, 7). Posterior femora of ♀ with 8 spines on the outer side.
- 60 (61) Posterior femora thick, their length almost 3 times their maximum width. Length of elytra 6 times their maximum width. Basal parts of lower valvae of ovipositor of ♀ rough (fig. 15). Sudan, Arabia, S.-E. Iran, British Baluchistan..... 22. **Sph. femoralis** Uvarov.
- 61 (60) Posterior femora slender; their length 4 times their maximum width. Basal parts of lower valvae of ♀ ovipositor smooth (fig. 16). Arabia, British Baluchistan..... 23. **Sph. montanus** sp. n.
- 62 (59) Inner sides of posterior femora for the greater part bluish-green with one blackish fascia. Posterior tibiae of ♀ with 6-7 spines on the outer side. S.-W. Iran..... 24. **Sph. dentatus** Predtetschensky sp. n.
- 63 (54) Inner sides of posterior femora for the greater part, brownish-black with 2 complete light fasciae (fig. 5).
- 64 (73) Posterior femora whitish or bluish.
- 65 (72) Wings *without any traces* of a dark fascia.
- 66 (71) Vertex of ♂ narrow, its maximum width 1.25-1.5 times the width of frontal ridge between antennae.

- 67 (68) Apical part of the 2nd branch of medial vein of elytra of ♀ gives off 2 branches (fig. 12). Eyes round. E. Kirghizia, Mongolia. N. China..... 25. **Sph. bey-bienkoi** sp. n.
- 68 (67) Apical part of 2nd branch of medial vein of elytra of ♀ gives off 3 branches (fig. 9). Eyes oval.
- 69 (70) Intercalary vein in discoidal area of elytra, parallel throughout its length to discoidal vein (fig. 17). Pamirs..... 26. **Sph. lucidus** sp. n.
- 70 (69) Intercalary vein in discoidal area of elytra distinctly S-shaped, very near to discoidal vein at apex (fig. 18). Kashmir..... 27. **Sph. fallax** sp. n.

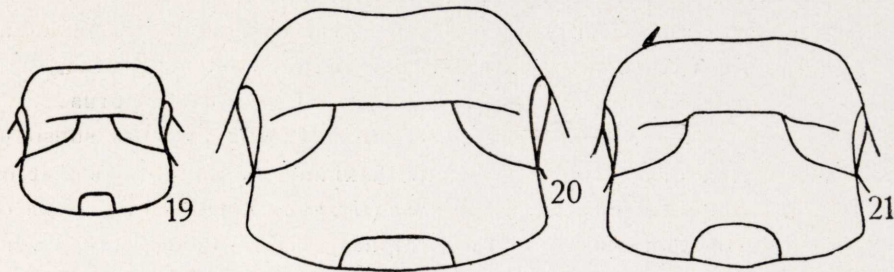


Figs. 17-18.—17, *S. miramae*, type ♀, discoidal area of elytra; 18, *S. rubescens rubescens*, ♂, ditto.

- 71 (66) Vertex of ♂ wide, its maximum width almost twice the width of frontal ridge between the antennae. Sokotra Island..... 28. **Sph. ganglbaueri** Krauss.
- 72 (65) Wings colourless with a smoky fascia. Intercalary vein in discoidal area of elytra distinctly S-shaped, near to discoidal vein at apex (fig. 18). Abd-El-Kuri Island, Sokotra Island..... 29. **Sph. albipennis** Krauss.
- 73 (64) Posterior tibiae orange-yellow. Central and Eastern Iran..... 30a. **Sph. theodori iranicus** subsp. n.
- 74 (49) Apical part of 2nd branch of median vein of elytra of ♂ gives off 3 branches (fig. 9). (*Rubescens* group).
- 75 (76) Inner sides of posterior femora for the greater part yellow with 1-2 dark fasciae (figs. 4, 7). Posterior tibiae orange-yellow. Sinai, Asia Minor, Palestine, Iran..... 30. **Sph. theodori theodori** Uvarov.
- 76 (75) Inner sides of posterior femora, for the greater part dark with 2 light fasciae (fig. 5). Posterior tibiae whitish or dirty blue.
- 77 (78) Wings *absolutely* colourless. Elytra without dark fasciae. Posterior tibiae with 9 spines on the outer side. N. Afghanistan..... 31. **Sph. afghanicus** sp. n.

- 78 (77) Bases of wings bluish. Elytra with 2 dark fasciae. Posterior tibiae with 8 spines on the outer side.
- 79 (80) Posterior femora very slender. Posterior tibiae whitish-yellow. Intercalary vein in discoidal area of elytra straight, parallel along ist whole length to the discoidal vein (fig. 17). Turkmenistan, Mongolia..... 32. **Sph. elegans** sp. n.
- 80 (79) Posterior femora thick, wider at bases. Posterior tibiae blue. Intercalary vein in discoidal area of elytra curved, near to discoidal vein at apex (fig. 18). N. Uzbekistan, S.-E. Kazakstan, Kirghizia. 33a. **Sph. rubescens fasciatus** subsp. n.
- 81 (48) Inner sides of posterior femora brownish-black or blue with 2 light fasciae, one of them incomplete (fig. 8).
- 82 (83) Intercalary vein in discoidal area of elytra S-shaped, very near to discoidal vein at apex (fig. 18). Head slightly projecting above the pronotum. Posterior lower angle of lateral lobes of pronotum attenuated. Canary Islands, Salvages, N. Africa, Greece, European Turkey, Crete, W. Asia, Iran, Kasmir, India, Caucasus, Lowei Volga, Central Asia (excluding the region North of Tashkent)..... 33. **Sph. rubescens rubescens** (Walker).
- 83 (82) Intercalary vein in discoidal area straight, parallel to discoidal vein (fig. 17). Head strongly projecting above the pronotum. Posterior lower angle of lateral lobes of pronotum widely rounded.
- 84 (85) Inner sides of posterior femora for the greater part dark blue; femora very slender, their length 4.5 times their maximum width. Elytra with faint dark spots which do not form distinct fasciae. W. Iran..... 34. **Sph. mistshenkoi** Predtetschensky sp. n.
- 85 (84) Inner sides of posterior femora for the greater part black; femora thicker, their length 4 times their maximum width. Elytra with dark fasciae. S. Iran57c. **Sph. coerulipes kermanicus** Predtetschensky subsp. n.
- 86 (47) Wings grayish with a dark smoky fascia. Intercalary vein in discoidal area of elytra straight, parallel to discoidal vein (fig. 17). Inner sides of posterior femora for the greater part gray with 1-2 darkish fasciae (figs. 4, 7). (*Yunnaneus* group). S.-W. China. 35. **Sph. yunnaneus** Uvarov.
- 87 (44) Wings black with purple base. (*Atropurpureus* group). British Somaliland..... 36. **Sph. atropurpureus** Uvarov.
- 88 (43) Width of sternum greater than its length; width of interspace between mesosternal lobes 2-3 times its length (figs. 20 and 21).
- 89 (96) Inner sides of posterior femora for the greater part yellow with 1-2 sometimes very faint, dark fasciae (figs. 4, 7). (*Candidus* group).
- 90 (91) Elytra slightly darker at bases, in the rest with several very indistinct spots. Wings *absolutely* colourless, shiny. Algeria, Egypt, Irak..... 37. **Sph. vosseleri** Krauss.

- 91 (90) Elytra with small evenly distributed dark spots. Bases of wings bluish.
- 92 (95) Apical part of the 2nd branch of the median vein of elytra of ♀ gives off 2 branches (fig. 12), in ♂ one branch (fig. 11).
- 93 (94) Elytra not reaching the apices of posterior tibiae by a long distance. Iran..... 38. **Sph. arenosus** Predtetshensky sp. n.
- 94 (93) Elytra just reaching the apices of posterior tibiae. Sardinia..... 39. **Sph. candidus candidus** Costa.



Figs. 19-21.—19, *S. halocnemi*, ♀, sternum; 20, *S. carinatus*, ♀, sternum; 21, *S. coeruleans coeruleans*, ♀, sternum.

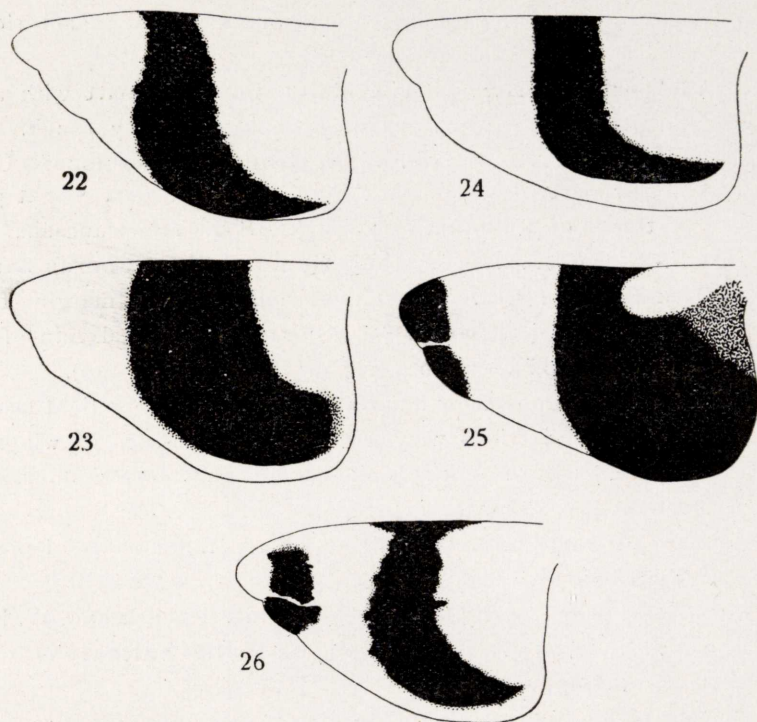
- 95 (92) Apical part of 2nd branch of median vein of elytra of ♀♀ gives off 3 branches (fig. 12). W. Italy..... 40. **Sph. candidus personatus** Zanon.
- 96 (89) Inner sides of posterior femora for the greater part dark with 2 complete light fasciae (fig. 5).
- 97 (98) Width of interspaces between meso and metasternal lobes 2.75-3 times their length (fig. 20). Lateral lobes of pronotum almost square (*Carinatus* group). N. Africa, Cyprus, W. Asia, Iran, Volga region, Caucasus, Central Asia, W. Mongolia..... 41. **Sph. carinatus** Saussure.
- 98 (97) Width of interspaces between meso and metasternal lobes 2-2.25 (fig. 21) times their length; sometimes 2.5 times, then the wings are with a distinct dark fascia.
- 99 (112) Pronotum coarsely punctured, with coarse tubercles and wrinkles, specially in metazona, seen even with a naked eye (fig. 76). (*Lucasii* group).
- 100 (101) Wings without a dark fascia. Abyssinia, British Somaliland..... 42. **Sph. somali** (Uvarov).
- 101 (100) Wings with a dark fascia.
- 102 (111) Lower posterior angle of lateral lobes of pronotum attenuated. Wings bluish at base, dark fascia narrow. Posterior tibiae whitish-yellow or uniformly bluish.
- 103 (110) Median keel of pronotum strongly raised, in front of the first furrow crest-like. Posterior tibiae whitish-yellow.

- 104 (107) Elytra not reaching the apices of posterior tibiae.
- 105 (106) Intercalary vein in discoidal area of elytra curved, near to discoidal vein at apex (fig. 18). Algeria... 43. **Sph. lucasii** Saussure.
- 106 (105) Intercalary vein in discoidal area of elytra straight, parallel throughout its whole length to discoidal vein (fig. 17). Algeria, Tripoli, Egypt, Syria, Palestine, N. Iran, Caucasus, Kalmyk steppes, Volga region, Turkmenistan, Uzbekistan, British Baluchistan..... 44. **Sph. eurasius eurasius** sp. n.
- 107 (104) Elytra reaching the apices of posterior tibiae.
- 108 (109) Vertex of ♂ fairly narrow, somewhat elongated; its maximum width twice that of frontal ridge between antennae. Length of metazona of pronotum 1.5 times that of prozona. Cyprus..... 44a. **Sph. eurasius cyprius** subsp. n.
- 109 (108) Vertex of ♂ wide, square; its maximum width 3 times that of frontal ridge between antennae (fig. 79). Length of metazona of pronotum equal to that of prozona. Arabia, Baluchistan, W. India 45. **Sph. predtetschenskyi** sp. n.
- 110 (102) Median keel of pronotum weakly raised, in front of the first furrow scarcely marked (fig. 80). Posterior tibiae bluish. Morocco.... 46. **Sph. nadigi** Uvarov.
- 111 (102) Lower posterior angle of lateral lobes of pronotum widely rounded. Bases of wings blue, dark fascia wide. Posterior tibiae whitish with 2 wide bluish rings. Morocco..... 47. **Sph. maroccanus** Uvarov.
- 112 (99) Pronotum finely punctured and finely wrinkled, seems almost smooth to the naked eye. (*Azurescens* group).
- 113 (114) Bases of wings bright yellow. Algeria. 48. **Sph. luteus** Krauss.
- 114 (113) Bases of wings blue or colourless.
- 115 (124) Wings with a dark fascia, sometimes only with slight traces of the latter.
- 116 (117) Dark fascia of wings very strongly extended inwards to the very base, leaving free only a narrow stripe at the anterior margin. Algeria, Tunis, Tripoli, Barka, Egypt..... 49. **Sph. tricinctus tricinctus** (Walker).
- 117 (116) Dark fascia leaves free the transparent basal third or half of wing.
- 118 (123) Wings with a distinct dark fascia.
- 119 (122) Basal parts of lower valvae of ovipositor smooth, without distinct callous tubercles (fig. 16).
- 120 (121) Inner sides of posterior femora for the greater part brown, with 2 light fasciae, one of them sometimes incomplete (figs. 5, 8). Length of elytra 5.5 times their maximum width. Palestine..... 49a. **Sph. tricinctus angulatus** Uvarov.
- 121 (120) Inner sides of posterior femora for the greater part gray, with a

- black spot below the light subapical fascia. Length of elytra 6 times their maximum width. Algeria.....
 50a. **Sph. azurescens arenarius** (Lucas).
- 122 (119) Basal parts of lower valvae of ovipositor of ♀ with distinct callous tubercles (fig. 15). Spain, Portugal, N. Africa.....
 50. **Sph. azurescens azurescens** (Rambur).
- 123 (118) Wings with a faint dark area in the middle. Linosa Island.....
 50b. **Sph. azurescens linosae** Salfi.
- 124 (115) Wings *without any traces* of a dark fascia.
- 125 (128) Elytra reaching the apex of posterior tibiae; intercalary vein in discoidal area curved, very near to discoidal vein at apex (fig. 18).
- 126 (127) Smaller: length of body ♀♀ 20-21, ♂♂ 14-14.5; elytra ♀♀ 18.5-20, ♂♂ 14.5-15.5; posterior femora ♀♀ 8.5-9.0 mm., ♂♂ 7.0-8.5 mm. Corsica..... 51. **Sph. uvarovi** Chopard.
- 127 (126) Larger: length of body ♀♀ from 23.0, ♂♂ from 17.5 mm.; elytra ♀♀ from 24.5, ♂♂ from 20.0; posterior femora ♀♀ from 10.0, ♂♂ from 9.0 mm. Portugal, Spain, Balearic Islands, Corsica, Sardinia..... 52b. **Sph. coerulans corsicus** Chopard.
- 128 (125) Elytra not reaching the apices of posterior tibiae; intercalary vein in discoidal area straight, parallel along its whole length to discoidal vein (fig. 17). S. Italy, Sicily, Greece, Bulgaria, S.-W. part of European U. S. S. R.....
 52a. **Sph. coerulans exornatus** Nedelkov.
- 129 (42) Inner surfaces of posterior femora black or blue-black with one complete light fascia (fig. 3) (*Coerulans* group).
- 130 (149) Body with sparse short hairs. Vertex short and wide.
- 131 (140) Basal part of lower valvae of ovipositor of ♀ smooth, without distinct callous tubercles (fig. 16).
- 132 (133) Wings without a dark fascia. Central and S. Europe.....
 52. **Sph. coerulans coerulans** (Linné).
- 133 (132) Wings with a dark fascia.
- 134 (139) Width of interspace between mesosternal lobes 2-2.5 times its length. Width of sternum greater than its length (fig. 21). Wings with a diffuse dark fascia. Foveolae of vertex distinct.
- 135 (138) Posterior and lower margins of lateral lobes of pronotum almost straight; posterior margin in its lower part scarcely overlaps the meso-episternum. Length of wings almost 1.75 times their maximum width.
- 136 (137) Posterior femora slender, slightly widened at bases. Head, mesosternum and lower parts of meso-episternum coarsely and densely punctured. Valvae of ovipositor of ♀ short. N. Europe.....
 52c. **Sph. coerulans cyanopterus** (Charpentier).
- 137 (136) Posterior femora thick, greatly widened at bases. Head, mesoster-

- num and lower parts of meso-episternum with shallow, sparse punctures. Valvae of ovipositor of ♀ elongated. Kashmir, N. India 53. **Sph. kashmirensis** Uvarov.
- 138 (135) Posterior and lower margins of lateral lobes of pronotum very wavy; posterior margin in its lower part overlaps the meso-episternum (fig. 83). Length of wings twice their maximum width. Asia Minor 54. **Sph. uvarovites** sp. n.
- 139 (134) Width of interspace between mesosternal lobes 1.5-1.75 times its length. Width of sternum equal to its length (fig. 19). Wings with a dark fascia. Foveolae of vertex absent. Transbaicalia, Russian Far East, Mongolia, Manchuria, Korea, N. China 55. **Sph. mongolicus** Saussure.
- 140 (131) Basal parts of lower valvae of ovipositor rough, with distinct callous tubercles (fig. 15). (*Coerulipes* group).
- 141 (148) Length of elytra of ♀ 5.5-5.6 times their maximum width. Posterior tibiae dirty whitish-blue.
- 142 (143) Head coarsely punctured. Lateral lobes of pronotum square (average height of lobe equal to its width) (fig. 81). Venation of wings sparse. Western and S.-W. shores of Caspian sea 52d. **Sph. coerulans caspicus** subsp. n.
- 143 (142) Head finely punctured. Lateral lobes of pronotum vertical (average height of lobes greater than width) (fig. 86), sometimes square, then the wings with a black fascia. Venation of wings dense.
- 144 (145) Antennae of ♀ 1.5 times as long as head and pronotum. Wings with a distinct dark fascia. Asia Minor 56. **Sph. turcicus** Uvarov.
- 145 (144) Antennae of ♀ slightly longer than head and pronotum. Wings sometimes with a fascia-like darkening.
- 146 (147) Body slender with dense hairs. Head projecting above the pronotum. Bases of wings bluish. Crimea, Caucasus, Kalmyk region, Lower Volga... 57a. **Sph. coerulipes djakonovi** subsp. n.
- 147 (146) Body very sturdy, almost naked. Head not projecting above the pronotum. Bases of wings dirty-bluish with a greenish shade. Eastern part of Central Volga region, N. and N.-E. Kazakstan, W. Mongolia... 57b. **Sph. coerulipes zaisanicus** subsp. n.
- 148 (141) Length of elytra 6-6.25 times their maximum width. Posterior tibiae bright blue. Transcaucasia, Eastern part of Asia Minor, N.-W. Persia 57. **Sph. coerulipes coerulipes** Uvarov.
- 149 (130) Whole body with dense long hairs. Vertex narrow elongated, sometimes short and wide, then wings with a dark fascia.
- 150 (151) Wings without a dark fascia. Asia Minor, Transcaucasia, N. and N.-W. Persia, S. Turkmenistan... 58. **Sph. pilosus** Saussure.
- 151 (150) Wings with a dark fascia. British Somaliland 59. **Sph. collenettei** (Uvarov).

- 152 (29) Wings with a wide black fascia, reaching to the posterior margin (fig. 22); sometimes the dark fascia of wings does not reach the posterior margin (figs. 23, 24), then body is larger (length of body of ♀♀ from 34.0 mm., ♂♂ from 26.0 mm.; elytra of ♀♀ from 34.0 mm., ♂♂ from 30.0 mm.; posterior femora of ♀♀ from 15.0 mm., ♂♂ from 13.0 mm.). Posterior femora blue-black on



Figs. 22-26.—22, *S. nebulosus nebulosus*, ♂; 23, *S. balteatus balteatus*, ♂; 24, *S. longipennis*, ♂; 25, *S. obscuratus latissimus*, ♂; 26, *S. salinus*, ♂.

the inner sides with one light fascia (fig. 3) or dark brown with 2 light fasciae (fig. 5).

- 153 (162) Dark fascia of wings reaches posterior margin (fig. 22). Apical part of 2nd branch of median vein of elytra of ♂ gives off 2 branches (fig. 12) (*Nebulosus* group).
- 154 (159) Bases of wings of uniform blue or greenish-blue, sometimes milky with very faint mauve shade.
- 155 (158) Bases of wings bluish or milky. Pronotum slightly rough in metazona; its posterior angle rounded.
- 156 (157) Bases of wings dirty-bluish. Elytra not reaching the apices of posterior tibiae. Eastern part of Central Volga region, Kazakstan, Kirghizia, Turkmenistan, N. and E. Tadjikistan, W. Mongolia. 60. **Sph. nebulosus nebulosus** (Fischer de Waldheim).

- 157 (156) Bases of wings milky with very faint greenish-mave shade. Elytra reaching the apices of posterior tibiae. S. and S.-E. Tadjikistan, Baluchistan, E. Persia 60a. **Sph. nebulosus discolor** Uvarov.
- 158 (155) Bases of wings greenish-blue. Metazona of pronotum strongly wrinkled, tuberculate; its posterior angle acute. Asia Minor.... 60d. **Sph. nebulosus anatolicus** Uvarov.
- 159 (154) Bases of wings of 2 colours, bluish or dark blue in anterior part and purple in posterior part.
- 160 (161) Anterior half of wings pale bluish, posterior part with a dirty purple shade. Metazona of pronotum slightly rough. Uzbekistan..... 60b. **Sph. nebulosus violascens** Uvarov.
- 161 (160) Anterior part of wings dark blue, posterior part bright purple. Metazona of pronotum very rough. S.-E. Transcaucasia, N. and N.-W. Iran..... 60c. **Sph. nebulosus persa** Saussure.
- 162 (153) Dark fascia of wings does not reach posterior margin (figs. 23 and 24). Apical part of the 2nd branch of medial vein of elytra of ♂ gives off 3 branches (fig. 9). (*Balteatus* group).
- 163 (174) Inner sides of posterior femora blue-black with one light fascia.
- 164 (173) Dark fascia of wings very wide (fig. 23). Bases of wings blue, purple, purplish-pink or pink. Posterior femora slender, slightly widened at bases.
- 165 (170) Bases of wings faintly purple or blue. Inner sides of posterior tibiae blue or bluish-gray.
- 166 (167) Bases of wings faintly purple. S. Arabia, Perim Island, W. India.. 61. **Sph. balteatus balteatus** (Serville).
- 167 (166) Bases of wings blue.
- 168 (169) Dark fascia of wings very wide, almost reaching the inner margin of wing. Inner sides of posterior tibiae bluish-gray. Baltistan.... 61a. **Sph. balteatus himalayanus** Uvarov.
- 169 (168) Dark fascia of wings fairly wide, not reaching the inner margin of wing by a long distance. Posterior tibiae blue on the inner sides. Baluchistan..... 61b. **Sph. balteatus balucha** Uvarov.
- 170 (165) Bases of wings pinkish-purple or pink. Inner sides of posterior tibiae purplish-pink or pink.
- 171 (172) Bases of wings pinkish-purple. Inner sides of posterior tibiae purplish-pink. Egypt, Sinai..... 61c. **Sph. balteatus latifasciatus** (Walker).
- 172 (171) Bases of wings pink. Inner sides of posterior tibiae pink. Somali. 61d. **Sph. balteatus roseus** Uvarov.
- 173 (164) Dark fascia of wings narrow (fig. 24). Bases of wings bluish-green, sometimes almost colourless. Posterior femora thick, strongly widened at bases. Afghanistan, N. and N.-E. India..... 62. **Sph. longipennis** Saussure.

- 174 (163) Inner sides of posterior femora, for the greater part, brown with 2 complete light fasciae (fig. 5). Japan..... 63. **Sph. japonicus** Saussure.
- 175 (28) Bases of wings crimson-red. Transcaucasia, N.-E. Turkey, N.-W. Iran..... 64. **Sph. humeralis** Kuthy.
- 176 (27) Wings with a dark median fascia and with a distinct dark apical spot (figs. 25, 26).
- 177 (178) Elytra with 2 very distinct black fasciae, interspaces between fasciae and apical third of elytra-without dark spots. Bases of wings red. Pronotum smooth. Inner sides of posterior femora blackish-blue with 2 complete light fasciae (fig 5). (*Octofasciatus* group). E. Kazakstan, Uzbekistan, Turkmenistan, Transcaucasia, Iran, Palestine, N. Africa... 65. **Sph. octofasciatus** (Serville).
- 178 (177) Elytra with irregular dark fasciae, interspaces between fasciae and the apical third of elytra with dark spots. Bases of wings bluish, light bluish, colourless or pink; then the pronotum is distinctly wrinkled and inner sides of posterior femora blue-black with one light fascia (fig. 3).
- 179 (190) Upper margin of upper valvae of ovipositor of ♀ without a tooth-like projection (fig. 14). Inner sides of posterior femora for the greater part black or blue-black, with one light fascia (fig. 3).
- 180 (189) Bases of wings dark or light blue.
- 181 (184) Apex of wings colourless (fig. 26). Posterior tibiae with 8 spines on the outer side.
- 182 (183) Fascia of wings much narrowed anteriorly, apex of wing with large distinct spots. Barka, Lybia, Egypt, Sinai..... 66. **Sph. obscuratus obscuratus** (Walker).
- 183 (182) Fascia of wings much narrowed anteriorly, apex of wing with small diffuse spots. Algeria..... 66 a. **Sph. obscuratus lameeri** Finot.
- 184 (181) Whole apex of wing dark (fig. 25). Posterior tibiae with 9-10 spines on the outer side.
- 185 (186) Fascia of wings narrow, not reaching the posterior and inner margins. S. Turkmenistan..... 66 d. **Sph. obscuratus transcaspicus** Uvarov.
- 186 (185) Fascia of wings wide, always reaching the posterior and inner margin (fig. 25).
- 187 (188) Fascia of wings leaves a transparent basal third. Intercalary vein in discoidal area of elytra curved, very near to discoidal vein at apex (fig. 18). Iran, S. Tadjikistan, W. Afghanistan..... 66 b. **Sph. obscuratus brunneri** Saussure.
- 188 (187) Fascia of wings extending inwards to the very base, leaving free only a narrow stripe at the anterior margin. Intercalary vein in


- discoidal area of elytra straight, parallel to discoidal vein (fig. 17).
E. Kazakstan, Uzbekistan, W. Mongolia.....
..... 66c. **Sph. obscuratus latissimus** Uvarov.
- 189 (180) Bases of wings pink (*Salinus* group). Lower Volga, Kazakstan,
Turkmenistan, Tadjikistan, Daghestan, Azerbaidjan
..... 67. **Sph. salinus** (Pallas).
-  190 (179) Upper margin of upper valvae of ovipositor with
distinct tooth-like projection (fig. 27). Posterior femora
on the inner sides, for the greater part blue-green with 2
light fasciae (fig. 5). (*Satrapes* group).
- 191 (192) Bases of wings colourless sometimes with grayish
green shade. Median keel of pronotum strongly raised
in front of the first furrow. Palestine, Irak, Iran (except
S.-W. part), Transcaucasia, Turkmenistan, Uzbekistan, S.-E.
Kazakstan, Tadjikistan.....
..... 68. **Sph. satrapes satrapes** Saussure.
- 192 (191) Bases of wings light blue. Median keel of pronotum weakly raised
in front of the first furrow, almost absent (fig. 80). S.-W. Iran...
..... 68a. **Sph. satrapes decarinatus** Uvarov.

Fig. 27.—
S. satrapes
satrapes, ♀,
side view of
ovipositor.

I. Group SAVIGNYI

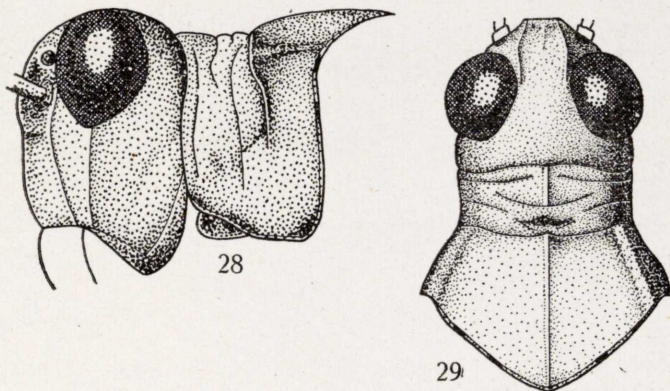
1. *Sphingonotus arabicus* sp. n.

(Figs. 2, 3, 28, 29.)

♀ (type). Body medium, sturdy, with sparse hairs.

Head laterally compressed, with coarse, sparse shallow punctures, weakly projecting above the pronotum. Eyes regularly oval, weakly projecting sideways; their vertical diameter 1.5 times the horizontal one, and almost equal to subocular distance. Frons vertical. Frontal ridge flat, slightly widened between the antennae, greatly obliterated between the median ocellus and clypeus, flat in profile with a slight excision at the median ocellus; margins thick, obsolete; surface coarsely punctured. Fastigium of vertex strongly sloping. Vertex narrow, slightly concave; margins not strongly raised; median keel very weak but distinct; maximum width of vertex very slightly greater than width of frontal ridge between the antennae. Foveolae of vertex distinct, coarsely punctured. Antennae slender, slightly longer than head and pronotum together.

Pronotum weakly constricted in prozona, transverse furrows very deep; the first furrow passes just behind the middle of prozona; interspaces between transverse furrows weakly tuberculate; metazona almost flat, coarsely punctured and finely wrinkled, almost twice as long as prozona; posterior angle obtuse, weakly rounded; shoulders weakly projecting; median keel very weak in front of the first furrow, absent between the furrows, thin and linear in metazona. Lateral lobes ver-



Figs. 28-29.—*S. arabicus*, paratype ♂.

tical, coarsely punctured in metazona, anterior margin wavy, anterior lower angle obtuse; posterior margin straight, posterior lower angle weakly attenuated; lower margin slightly wavy, obliquely-ascendant.

Sternum sparsely punctured; its width equal to its length; width of interspaces between meso and metasternal lobes 1.5 times their length. Lower parts of meso-episternum coarsely punctured. Valvae of ovipositor with short pointed apices; basal parts of lower valvae slightly rough.

Elytra almost parallel-sided, reaching the apices of posterior tibiae; their length 5 times their maximum width; venation fairly sparse, somewhat irregular; the apical part of the 2nd branch of the medial vein gives off 3 branches; intercalary vein distinctly S-shaped, very near to intercalary vein at apex, with distinct tubercles throughout its whole length (these can be easily seen if magnified by 10). Wings triangular with sparse venation; their length 1.46 times their maximum width; axillary veins slightly thickened in the middle.

Posterior femora fairly slender, their length is 3.8 times their

maximum width. Posterior tibiae slightly shorter than the femora with 8 spines on the outer, 10 on the inner sides.

General coloration dark grayish-brown. Head grayish-blue. Ocelli orange. Antennae brown with light rings and bases. Elytra slightly coriaceous; basal third, the indistinct median fascia and several spots in the apical part — brownish-black; veins brownish. Bases of wings dirty-bluish with a faintly marked, diffuse dark fascia along the posterior margin; veins dark. Inner sides of posterior femora for the greater part blue-black with a complete light subapical fascia; apex black. Posterior tibiae dirty blue; inner sides of bases black.

♂ (allotype). As female, but smaller. Dark fascia along posterior margin of wing distinct.

| | Type ♀ mm. | Allotype ♂ mm. | Paratypes ♂♂ mm. |
|-------------------------|---------------|-------------------|---------------------|
| Length of body | 29.0 | 22.5 | 22.0-23.5 |
| — pronotum..... | 4.2 | 4.0 | 4.0- 4.2 |
| — elytra..... | 26.0 | 19.5 | 21.0-23.0 |
| — posterior femora..... | 11.5 | 9.0 | 9.5-10.0 |
| — tibiae..... | 10.0 | 8.0 | 8.5- 9.0 |

PATRIA.—Arabia: Medina, 17.VI.1931, 1 ♂ (Philby). Yemen: Sana, 15.IX, 1 ♂; 28.IX, 1 ♀ (type); 19.X.1931, 1 ♂ (Zhenzhurist).

The short elytra and wings, somewhat thickened axillary veins of wings, and the S-shaped, tuberculate intercalary vein in discoidal area of elytra, show that this species is near to the group of *Sphingonotus savignyi*. It differs from all species of this group by wing coloration, position of dark fascia of wings, shape of pronotum and coloration of inner sides of posterior femora.

Type and allotype in the Zoological Institute of the Academy of Sciences, Leningrad. One ♂ paratype in British Museum (Natural History) London.

2. *Sphingonotus savignyi* Saussure.

(Fig. 4.)

1813. ** Savigny, Descr. de l'Egypt. Orthopt., Pl. 7, fig. 13.
1883. *Sph[ingonotus] savignyi* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxviii, Nr. 9, pp. 198, 208, n.° 20 [types ♀ and ♂; Egypt, Nubia, Egypt. Sudan].
1883. [*Sphingonotus savignyi*] stirps *apicalis* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxviii, Nr. 9, p. 208, n.° 20a [Turkestan, Persia, Kashmir: Ladak].
1888. [*Sphingonotus savignyi* Sauss.] var. *major* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxx, Nr. 1, p. 84.
- 1902-1905. *S[phingonotus] savignyi* Jacobson and Bianchi, Priam. Lozhn. Ross. Imp., pp. 193, 275.
- 1902-1905. [*Sphingonotus savignyi* Sauss.] var. *apicalis* Jacobson and Bianchi, Priam. Lozhn. Ross. Imp., p. 275.
1910. *S[phingonotus] savignyi* Kirby, Synon. Cat. Orth., vol. III, p. 277, n.° 36.
1914. *Sphingonotus savignyi* Kirby, Fauna Brit. India, pp. 154, 155, n.° 180 [Sind: Karachi].

♀. Body large, fairly slender, with sparse hairs.

Head laterally compressed, not strongly projecting above the pronotum, finely, sparsely punctured. Eyes oval, projecting sideways; their vertical diameter 1.5 times the horizontal one and equal to subocular distance. Frons vertical. Frontal ridge flat, weakly concave at the ocellus, widening below it, obliterated and not reaching the clypeus; in profile flat, not projecting at all; margins thick, rounded; surface weakly punctured. Fastigium of vertex weakly sloping. Vertex wide, slightly concave; maximum width of vertex 1.5 times the width of frontal ridge between the antennae. Foveolae of vertex indistinct, punctured. Antennae slender, slightly longer than head and pronotum together.

Pronotum constricted in prozona; transverse furrows distinct; the first furrow just behind the middle of prozona; metazona slightly convex, coarsely punctured, twice as long as prozona; posterior angle obtuse, rounded; shoulders rounded; median keel weakly raised in front of the first furrow, absent between the furrows, thin and linear in metazona. Lateral lobes vertical, densely punctured; ante-

rior margin weakly undulating, anterior lower angle obtuse; posterior margin straight, posterior lower angle weakly attenuated; lower margin undulating.

Sternum finely and sparsely punctured; its width equal to its length; width of interspaces between meso and metasternal lobes 2 times their length. Lower parts of meso-episternum sparsely and coarsely punctured. Valvae of ovipositor with short, weakly attenuated apices; basal parts of lower valvae rough.

Elytra narrowed towards the apices, apex obliquely truncate; reaching, or almost reaching, the apices of posterior tibiae; their length almost 5.5 times their maximum width; venation fairly sparse, apical part of the 2nd branch of medial vein gives off 3 branches; intercalary vein distinctly S-shaped, very close to discoidal vein at apex, coarsely granular. Wings triangular with fairly sparse venation; their length about 1.6 times their maximum width.

Posterior femora fairly thick, their length about 3.8 times their maximum width. Posterior tibiae slightly shorter than the femora, with 8-9 spines on the outer, 10-11 spines on the inner sides.

General coloration reddish-gray with whitish and dark spots. Head whitish. Ocelli yellow. Antennae brown with light rings. Elytra in the apical third transparent; basal third, median fascia and several spots in the apical half—brownish; veins light. Wings absolutely colourless, transparent, with a dark, narrow, curved fascia which does not reach the posterior margin and almost reaches the inner angle; apex with a dark spot (sometimes very faint, with just a few darkish veins); veins light. Inner sides of posterior femora for the greater part pale buff with a blackish fascia near to the slightly darkened apex. Posterior tibiae yellowish, inner sides of bases black.

♂. As the ♀, but smaller. Apical part of the 2nd branch of median vein of elytra gives off 2 branches.

| | ♀ ♀ — mm. | ♂ ♂ — mm. |
|-------------------------|-----------------|-----------------|
| Length of body..... | 30.0-38.0 | 22.0-32.0 |
| — pronotum..... | 5.2-6.5 | 3.5-5.3 |
| — elytra..... | 29.0-37.0 | 23.0-31.0 |
| — posterior femora..... | 13.5-16.5 | 10.5-13.0 |
| — — tibiae..... | 10.5-14.5 | 9.0-11.5 |

GEOGRAPHICAL DISTRIBUTION. — Canary Islands, N. Africa, Sudan, British Somaliland, Obok, Palestine, Arabia, Iran, Caucasus, Central Asia, British Baluchistan, Kashmir, Sind, W. India.

SPECIMENS EXAMINED. — 102 ♀ ♀, 131 ♂ ♂.

3. *Sphingonotus canariensis canariensis* Saussure.

1884. *Sph[ingonotus] azurescens* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxviii, Nr. 9, p. 203, n.° 9 [Massaua] (not Rambur).
1884. [*Sphingonotus savignyi*] stirps *canariensis* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxviii, Nr. 9, p. 208, n.° 20b [type ♂; Cape Verde Islands].
1888. [*Sphingonotus hesperidum*] Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxx, Nr. 1, p. 78, n.° 15a.
1888. *Sph[ingonotus] canariensis* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxx, Nr. 1, p. 84, n.° 16a.
1892. *Sph[ingonotus] canariensis* Krauss, Zool. Anz., vol. xv, Nr. 390, p. 167, n.° 30 [Canary Islands].
1907. *S[phingonotus] azurescens* Karny, Sitzungsber. k. Ak. Wissens. Mat.-Nat. kl., Abt. I, vol. cxvi, p. 358, n.° 84 [Egypt. Sudan] (not Rambur).
1910. *S[phingonotus] canariensis* Kirby, A Synon. Cat. Orth., vol. vii, p. 277, n.° 37.
1930. *Sphingonotus canariensis* Uvarov, Ann. Mag. Nat. Hist., Ser. 10, vol. vi, p. 179, n.° 7 [British Somaliland: Buran].

♀. Body medium, sturdy, with sparse hairs. Head densely and finely punctured, weakly projecting above the pronotum. Eyes oval, weakly projecting sideways; their vertical diameter slightly greater than the horizontal one and equal to subocular distance. Frons vertical. Frontal ridge weakly concave at the ocellus, widened between the antennae, constricted below the ocellus, gradually widening between ocellus and clypeus, and gradually obliterated; straight in profile; margins thick; surface sparsely punctured. Fastigium of vertex sloping, almost vertical. Vertex concave, fairly wide; margins distinctly raised; median keel distinct, extending on to frontal ridge; maximum width of vertex 1.5 times the width of frontal ridge between the antennae. Temporal foveolae fairly distinct, triangular, punctured. Antennae slender, longer than head and pronotum together.

Pronotum constricted in prozona, weakly saddle-shaped; transverse furrows distinct, fairly deep; the first furrow in the middle of prozona; the second furrow sometimes confluent with the first in the middle; interspace between 2nd and 3rd furrows with a deep concavity in the middle; metazona convex, densely punctured and finely wrinkled, twice as long as prozona; posterior angle obtuse, rounded, margins slightly wavy; shoulders rounded; median keel weakly raised in front of the first furrow, absent between the furrows, low in metazona. Lateral lobes vertical, densely and finely punctured in metazona; anterior margin bisinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle weakly attenuated, pointed; lower margin obliquely ascendant, with a slight excision in front of anterior angle.

Sternum finely and sparsely punctured; its width slightly greater than its length; width of interspaces between meso and metasternal lobes twice as great as their length. Lower parts of meso-episternum densely and coarsely punctured. Valvae of ovipositor with elongated, pointed apices; basal parts of lower valvae with distinct callous tubercles.

Elytra narrowed towards the apices, not quite reaching the apices of posterior tibiae; their length 5.5 times their maximum width; venation sparse, the apical part of the 2nd branch of medial vein gives off 2 branches; intercalary vein very slightly curved, almost straight, and almost parallel to discoidal vein, finely granular. Wings narrow, elongated, triangular; venation sparse; their length 1.8 times their maximum width.

Posterior femora thick, widened at bases; their length almost 3.5 times their maximum width. Posterior tibiae much shorter than the femora with 6-8 spines on the outer, 9-10 on the inner sides.

General coloration yellow-grayish-brown. Ocelli yellowish-brown. Antennae yellow with brownish rings; bases yellow. Elytra weakly coriaceous in the basal third; apical third transparent; basal third, median transverse fascia and several fairly large spots in the apical third—brownish; veins light. Bases of wings *absolutely* colourless, transparent with a narrow, dark, curved fascia in the middle, which almost reaches the inner margin but does not reach posterior margin by a long distance, gradually narrowed towards the inner

margin; veins light, except at the very apex. Inner sides of posterior femora yellow with one black fascia near the apex; inner side of apex black. Posterior tibiae blue or bluish, inner sides of bases black.

♂. As the ♀, but smaller. Vertical diameter of the eye slightly greater than subocular distance. Maximum width of vertex slightly greater than width of frontal ridge between the antennae.

| | ♀ ♀ mm. | ♂ ♂ mm. |
|-------------------------|------------|------------|
| Length of body..... | 21.0-24.5 | 17.0-19.0 |
| — pronotum..... | 4.0- 4.5 | 3.0- 3.5 |
| — elytra..... | 21.5-25.5 | 17.0-19.5 |
| — posterior femora..... | 9.5-12.5 | 9.0- 9.5 |
| — — tibiae..... | 8.0-11.0 | 7.5- 8.0 |

GEOGRAPHICAL DISTRIBUTION.—Cape Verde Islands, Canary Islands, Anglo-Egyptian Sudan, Eritrea, British Somaliland.

SPECIMENS EXAMINED.—7 ♂♂, 6 ♀♀.

Cape Verde Islands: St. Vincent, 26.XII.1895, 1 ♀ (Austen) (topotype); St. Vincent, 7.IV.1927, 1 ♂ (Burr) (topotype).

Sudan: Talodi, 29.V.-21.IX.1926, 2 ♀♀, 3 ♂♂ (Cowland and Rutledge); Aroma, 30.IX.1926, 1 ♀; Sinkat, 15.X.1926, 1 ♀, 1 ♂; Gebel Moya, 25.V.1928, 1 ♂ (Johnston); Gebel Arasch-Kol, 13.IV.1905, 1 ♂ (Werner).

Eritrea: Massaua, 1 ♀ (Hildebrant).

3a. *Sphingonotus canariensis orientalis* subsp. n.

(Figs. 30, 31.)

1931. *Sph[ingonotus] savignyi canariensis* Krauss, Denks. Ak. Wissens. Wien. Math.-Nat. kl., vol. LXXI, p. 10, n.° 13 [South Arabia].

Similar to typical *Sph. canariensis canariensis*, differing from it by the following characters:

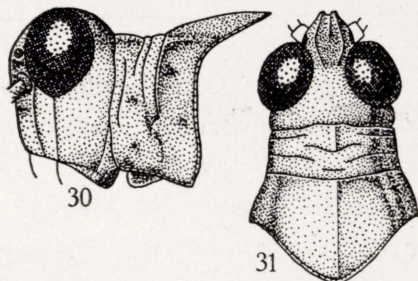
♀ (type). Frons weakly sloping. Intercalary vein of elytra more curved, nearer to discoidal vein at apex.

Coloration as in the typical race. Bases of wings bluish, dark fascia at anterior margin narrowed; veins almost all dark.

♂ (allotype). As ♀, but smaller.

| | Type ♀ — mm. | Allotype ♂ — mm. | Paratypes ♀♀ — mm. | Paratype ♂ — mm. |
|---------------------|--------------------|------------------------|--------------------------|------------------------|
| Length of body..... | 26.5 | 16.0 | 22.0-25.5 | 14.5 |
| — pronotum..... | 4.5 | 3.2 | 3.5- 4.2 | 3.0 |
| — elytra..... | 24.5 | 17.0 | 20.0-23.5 | 16.5 |
| — posterior femora | 11.5 | 8.5 | 9.5-11.0 | 8.0 |
| — — tibiae. | 10.0 | 7.0 | 8.0- 9.5 | 6.5 |

PATRIA.—Yemen: Sanaa, 2-10.X.1930, 3 ♀♀ (including type), 2 ♂♂ (Zhenzhurist). Type and allotype in the Zoological Institute



Figs. 30-31.—*S. canariensis orientalis*, allotype ♂.

of Academy of Sciences, Leningrad; 1 ♀ paratype in the British Museum (Nat. Hist.), London.

4. *Sphingonotus fonti* (Bolivar).

1902. *Helioscirtus fonti* Bolivar, Bol. Soc. Esp. Hist. Nat., vol. II, p. 291
[type ♂; Morocco: Rio de Oro].
1910. *H[elioscirtus] fonti* Kirby, A Synon. Cat. Orth., vol. III, p. 281, n.º 4.
1923. *Vosseleria fonti* Uvarov, Konowia, vol. II, p. 30.
1924. *Vosseleriana fonti* Uvarov, Bull. Min. Agr. Egypt, Nr. 41, p. 31.

♀. Body medium, sturdy, with dense short hairs.

Head densely and finely punctured, not projecting above the pronotum. Eyes short, oval, weakly projecting sideways; their vertical

diameter slightly greater than the horizontal one and almost equal to subocular distance. Frons vertical. Frontal ridge flat, slightly concave at the ocellus, slightly wider between the antennae, completely obliterated below the ocellus; margins weak; surface with sparse punctures; flat in profile. Fastigium of vertex strongly sloping, almost vertical. Vertex fairly narrow, slightly wrinkled, weakly concave; margins scarcely marked; maximum width of vertex slightly greater than width of frontal ridge between the antennae; median keel absent. Foveolae of vertex very indistinct, punctured. Antennae slender, slightly longer than head and pronotum together.

Pronotum compressed in prozona; transverse furrows distinct, but shallow, in places obliterated; the first furrow behind the middle of prozona; interspaces between furrows rough; metazona almost flat; coarsely punctured and coarsely wrinkled; almost twice as long as prozona; posterior angle obtuse, rounded; shoulders weakly projecting, rounded; median keel distinctly though weakly raised in front of the first furrow, distinct and linear in metazona, scarcely perceptible between the furrows. Lateral lobes vertical, in metazona coarsely punctured and finely wrinkled; anterior margin bisinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle broadly rounded; lower margin obliquely-ascendant, weakly undulating.

Sternum finely and densely punctured in anterior part, its width almost equal to its length; width of interspaces between meso and metasternal lobes 1.75 times their length. Lower parts of mesoepisternum finely and densely punctured. Valvae of ovipositor with short blunt apices, basal parts of lower valvae smooth.

Elytra slightly narrowed towards the apex, not reaching the apices of posterior tibiae by a long distance; their length 5.4 times their maximum width; venation dense, apical part of 2nd branch of medial vein gives off 3 branches; intercalary vein curved, near to discoidal vein at apex, finely granular. Wings short and wide, strongly narrowed towards the apex, triangular; their length 1.5 times their maximum width; venation fairly sparse.

Posterior femora thick; their length 3.3 times their maximum width. Posterior tibiae considerably shorter than the femora, with 8 spines on the outer, 9 on the inner sides.

General coloration reddish-gray. Ocelli dark brown with brown rings. Elytra opaque; basal third, diffuse median fascia and several small spots in the apical part—dark brown; veins light. Wings *absolutely* colourless; veins in anterior part darkish. Inner sides of posterior femora, for the greater part, yellow with blackish diffuse fascia near the dark apex. Posterior tibiae whitish-yellow, with two brownish fasciae on the inner sides; inner sides of bases black.

♂. As ♀, but smaller.

| | ♀ — mm. | ♂ (after Bolivar) — mm. |
|-------------------------|---------------|-------------------------------|
| Length of body..... | 22.0 | 19.0 |
| — pronotum..... | 4.0 | 3.5 |
| — elytra..... | 19.5 | 19.0 |
| — posterior femora..... | 10.5 | — |
| — — tibiae..... | 9.0 | — |

GEOGRAPHICAL DISTRIBUTION.—MOROCCO.

SPECIMENS EXAMINED.—I ♀.

Morocco: Rio de Oro, 1914, 1 ♀ (Riggenbach). This species has been described by Bolivar (1902) as *Helioscirtus fonti*. In 1923 Uvarov had placed it into a new genus *Vosseleria* and later (1924) into genus *Vosseleriana*, which I do not consider distinct from *Sphingonotus*, and thus *Vosseleriana fonti* must be included into the latter genus.

5. *Sphingonotus finotianus* (Saussure).

1885. *Helioscirtus finotianus* Saussure, Le Natur., vol. VII, p. 28 [type ♂; Algiers].
1888. *H[elioscirtus] finotianus* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxx, Nr. 1, p. 75, n.° 2.
1902. *Sphingonotus finotianus* Vosseler, Zool. Jahrb. Abt. Syst., vol. xvi, p. 370, n.° 38 [Tunis: Gafsa].
1910. *S[phingonotus] finotianus* Kirby, A Synon. Cat. Orth., vol. III, p. 273, n.° 10.

♀. Body medium, fairly hairy.

Head very densely punctured, moderately projecting above the pronotum. Eyes oval weakly projecting sideways; their vertical dia-

meter 1.5 times the horizontal one and equal to subocular distance. Frontal ridge almost parallel sided, weakly concave, completely obliterated between the ocellus and clypeus; its surface densely punctured; margins thick; flat in profile. Fastigium of vertex strongly sloping, almost vertical. Vertex wide, weakly concave, margins slightly raised, median keel scarcely marked; maximum width of vertex 1.75 times the width of frontal ridge between the antennae. Foveolae of vertex indistinct, densely punctured. Antennae slender, considerably longer than head and pronotum.

Pronotum compressed in prozona, slightly saddle-shaped; transverse furrows distinct, the first furrow just behind the middle of prozona; anterior margin with an excision in the middle; metazona convex, densely punctured and coarsely granular, almost twice as long as prozona; posterior angle greater than 90° , very slightly rounded, its margins weakly undulating; shoulders rounded; median keel very weakly raised in front of the first furrow, absent between the furrows, very low and linear in metazona. Lateral lobes vertical; anterior margin bisinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle weakly attenuated; lower margin obliquely-ascendant, straight.

Sternum finely punctured; its width slightly greater than length; width of interspaces between meso and metasternal lobes twice their length. Lower part of meso-episternum densely punctured. Valvae of ovipositor with pointed apices; basal parts of lower valvae slightly rugose.

Elytra narrowed towards the apices, their length almost 5.4 times their maximum width; venation dense, apical part of 2nd branch of median vein gives off 3 branches; intercalary vein distinctly S-shaped, very close to discoidal vein at apex, finely granular. Wings triangular, wide, their length 1.6 times their maximum width; venation dense; axillary veins somewhat thicker in the middle.

Posterior femora thick; their length about 3.5 times their maximum width. Posterior tibiae much shorter than the femora, with 8-9 spines on the outer and 9-10 on the inner sides.

General coloration brownish-ochreous. Head whitish. Antennae brown, with dark rings. Elytra coriaceous; basal third, median fascia and several spots in the apical half—brown (sometimes this

pattern is very faint); veins light. Wings transparent, bluish at bases, with traces of a blackish median fascia, which does not reach the anterior and inner margin by a long distance, and just does not reach the posterior margin; veins in apical part blackish. Inner sides of posterior femora for the greater part yellow with one blackish fascia near the black apex.

♂ as the ♀ but smaller. Vertical diameter of the eye slightly greater than the subocular distance.

| | ♀ ♀ — mm | ♂ ♂ — mm. |
|-------------------------|----------------|-----------------|
| Length of body..... | 23.5-25.0 | 20.0-22.0 |
| — pronotum..... | 4.8- 5.1 | 3.2- 3.5 |
| — elytra..... | 24.5-27.5 | 22.0-23.0 |
| — posterior femora..... | 11.5-12.5 | 10.5-10.8 |
| — — tibiae..... | 9.5-10.5 | 8.2- 8.5 |

GEOGRAPHICAL DISTRIBUTION.—Morocco, Algeria and Tunis.

SPECIMENS EXAMINED.—2 ♀ ♀ and 2 ♂ ♂.

Algeria: Ain Sefra, 2 ♀ ♀, 1 ♂; Mecheria, 1 ♂ (Coll. Brunner von Wattenwyl).

6. *Sphingonotus hierichonicus* Uvarov.

1923 (1924). *Sphingonotus hierichonicus* Uvarov, Bull. Soc. R. Ent. [Egypt, p. 197, n.° 78, figs. 4, 5 [type ♂; Palestine: Jericho].

♂. Head strongly prominent above the pronotum. Eyes large, strongly projecting sideways and distinctly so upwards, broadly oval in shape; the subocular distance equal to the horizontal diameter of an eye; interocular space (on the vertex) distinctly widened backwards, narrower in front than the transverse diameter of an eye viewed from above. Face distinctly reclinate. Frontal ridge broad, depressed, obliterated below the ocellum, above it with the surface slightly convex between the two lateral submarginal sulci. Fastigium of the vertex very strongly sloping, almost vertical, scarcely projecting before the eyes, very indistinctly carinated laterally and not at all

carinated in front; the surface very feebly concave, the middle line slightly elevated without forming a carina; temporal foveolae almost obliterated, minute, elongate. Occiput strongly sloping backwards. Antennae nearly twice as long as head and pronotum taken together.

Pronotum strongly constricted in the prozona, which is also distinctly below the level of the metazona. Anterior margin broadly bi-sinuate. Submarginal (false) sulcus not strongly impressed. The first true sulcus well developed, broadly bowed in the middle. The second sulcus scarcely perceptible, obliterate in the middle. The interspaces between the sulci scarcely convex; between the second and third sulcus there is a pair of tubercles connected by an obtuse transverse ridge. The third sulcus sharp and straight. Metazona almost twice as long as the prozona, and distinctly broader than it is long; its surface very slightly rugulose, convex; shoulders rounded, scarcely prominent. Median keel scarcely perceptible on the prozona before the first sulcus, and fine, linear on the metazona. Hind angle very obtuse, broadly rounded. Lateral lobes much deeper than long; their lower margin practically straight, oblique, with a small triangular projection just before the hind angle which is rounded.

Elytra reaching to about the middle of the hind tibiae, transparent, hyalinous, with sparse reticulation. Interlary vein sinuate, in the apical third almost touching the radial vein; the hind discoidal area with one row of fairly regular transversely elongated cells. The interulnar area with a straight false vein and one row of irregular cells on each side of it.

Hind femora broad and short, somewhat suddenly narrowed before the apex as it is usual in the group.

General coloration reddish ochraceous. Antennae with pale and dark-gray rings. Elytra with the basal part ochraceous deepening gradually into chocolate-brown apical margin of the fascia, which is oblique and irregularly, but not deeply, dentate. Submedian fascia indistinct, emitting only a small spot before the radial veins. The apical third with indefinite and very pale ochraceous spots. The membrane hyaline; veins and veinlets very pale ochraceous, except on the fasciae. Wings faintly bluish, with traces of an interrupted broadly rounded brownish fascia. Hind femora outwardly of pure ochraceous colour, with a distinct blackish pre-apical fascia, and scar-

cely perceptible brownish basal and median spots on the upper outer area; the base of the knee and the minor knee-lobe brown; the inside and the lower inner sulcus stramineous. Hind tibiae greyish-blue, of a darker shade on the inside, with a pale subbasal ring, and the base black from inside:

| | ♂ (after Uvarov) |
|----------------------|------------------|
| | — mm. |
| Length of body | 16.0 |
| — pronotum..... | 3.0 |
| — elytra..... | 17.0 |
| — hind femur..... | 8.5 |

GEOGRAPHICAL DISTRIBUTION.—Palestine.

Unfortunately I could not study this species owing to absence of specimens. A good description by Uvarov enabled me to elucidate the relationship of this species with other species of the genus *Sphingonotus*; the above description is that of Uvarov slightly re-arranged.

7. *Sphingonotus pictus pictus* Werner.

1905. *S[phingonotus] niloticus* var. *picta* Werner, Sitzungsber. k. Ak. Wissensch. Math.-Nat. kl., vol. cxiv, Abt. I, p. 418, n.º 16 (58)
[type ♂; Egypt: Mokattam Gebirge].
1927. *S[phingonotus] pictus* Uvarov, Min. Agr. Egypt, Bull. Nr. 41, p. 28, Pl. II, figs. 34, 35; Pl. III, fig. 37.

♀. Body small, sturdy with sparse long hairs.

Head finely and sparsely punctured, moderately projecting sideways; their vertical diameter slightly greater than the horizontal one and equal to subocular distance. Frons vertical. Frontal ridge flat, slightly concave, widened between the antennae, constricted below the ocellus, greatly obliterated between the ocellus and clypeus, not reaching the latter; flat in profile, straight; margins thick, obsolete; surface sparsely punctured. Fastigium of vertex strongly sloping, almost vertical. Vertex slightly concave, its margins raised; median keel scarcely distinct; maximum width of vertex 1.5 the width of frontal ridge between antennae. Foveolae of vertex indistinct, punc-

tured. Antennae slender, considerably longer than head and pronotum together.

Pronotum compressed in prozona, weakly saddle-shaped; transverse furrows distinct, deep; the first furrow in the middle of prozona; interspace between 2nd and 3rd furrows with transverse concavity in the middle; metazona slightly convex, coarsely punctured and weakly wrinkled, twice as long as prozona; posterior angle obtuse, rounded, shoulders rounded; median keel weakly raised in front of the first furrow, absent between the furrows, linear in metazona. Lateral lobes vertical; anterior margin wavy, anterior lower angle obtuse; posterior margin straight, posterior lower angle attenuated, somewhat dentate; lower margin wavy, obliquely ascendant.

Sternum finely and sparsely punctured; its width scarcely greater than its length; width of interspaces between meso and metasternal lobes twice their length. Lower parts of meso-episternum coarsely and sparsely punctured. Valvae of ovipositor with short pointed apices; basal parts of lower valvae slightly rough.

Elytra slightly narrowed towards the apices, reaching the apices of posterior tibiae, or sometimes extending just beyond; their length 5.5 times their maximum width; venation sparse, fairly regular; apical part of 2nd branch of median vein gives off 1-2 branches; intercalary vein irregular, slightly curved, approaching discoidal vein at apex. Wings triangular, their length 1.7 times their maximum width; venation sparse.

Posterior femora short and thick; their length 3.5 times their maximum width. Posterior tibiae slightly shorter than the femora with 6-8 spines on the outer and 10 on the inner sides.

General coloration yellowish-pink. Head whitish. Ocelli yellow-brown. Antennae light with darkish rings apically. Elytra transparent; basal third, transverse median fascia and several spots in the apical part brownish; veins light. Bases of wings almost colourless, sometimes slightly bluish, with traces of a narrow, very diffuse, dark fascia in the middle; nearly all veins light. Inner sides of posterior femora for the greater part yellow with one dark fascia near the apex. Posterior tibiae dirty-whitish-blue, inner sides of bases black.

♂. As the ♀, but smaller. Eyes more projecting than in ♀, their vertical diameter slightly greater than subocular distance.

| | ♀ ♀ | ♂ ♂ |
|-------------------------|-----------|-----------|
| | mm. | mm. |
| Length of body..... | 18.5-24.0 | 13.5-16.5 |
| — pronotum..... | 3.2- 4.1 | 2.5- 3.2 |
| — elytra..... | 19.5-23.5 | 14.5-17.5 |
| — posterior femora..... | 8.5-10.7 | 7.2- 8.5 |
| — — tibiae..... | 7.0- 9.2 | 6.2- 7.5 |

GEOGRAPHICAL DISTRIBUTION.—Egypt, Sinai, Arabia.

SPECIMENS EXAMINED.—5 ♀ ♀, 6 ♂ ♂.

Egypt: Mokattam Gebirge, 14.VIII.1904, 1 ♂ (Werner) (type); Maadi, VII, 1 ♂; Wadi Zeblab, IX, 1 ♂ (Innes); Wadi Hof, 27.X.1916, 1 ♀.

Arabia: S. Hedjaz: Ashaira, 12.VIII, 1 ♂; Taif, 10.X, 1 ♀; Mantala, 15.X, 1 ♂; Fara, 16.X, 1 ♀; Gharif, 16.X.1931, 1 ♀, 1 ♂ (Philby); Keshin, 1902, 1 ♀ (Hein).

First indication for Arabia.

7a. *Sphingonotus pictus onerosus* subsp. n.

Similar to the typical race differing from it by the following characters:

♀ (type). Body larger. Median keel of pronotum scarcely distinct, almost absent in front of the first furrow. Length of elytra 5.9 their maximum width. Apical part of 2nd branch of median vein gives off 2 branches (in paratype ♀ — 3 branches). Wings elongated triangular, their length 1.76 times their maximum width.

Coloration as in the typical race. Bases of wings blue. Inner side of apices of femora black.

♂ (allotype). As the ♀, but smaller. Elytra and wings more narrow than in ♀. Similar to ♂ of the typical race.

| | Type ♀ | Allotype ♂ | Paratypes ♀♀ | Paratype ♂ |
|---------------------|--------|------------|--------------|------------|
| | mm. | mm. | mm. | mm. |
| Length of body..... | 27.5 | 15.5 | 25.5-28.0 | 16.5 |
| — pronotum..... | 5.0 | 2.8 | 4.5- 5.2 | 3.0 |
| — elytra..... | 26.5 | 18.5 | 24.5-29.5 | 18.0 |
| — posterior femora | 12.0 | 8.5 | 11.5-13.5 | 9.0 |
| — — tibiae. | 10.0 | 7.0 | 9.5-11.5 | 7.5 |

PATRIA.—S. Persia: Bushir to Buruzdjun, 21.V.1927, 1 ♂ (Siazov).
 British Baluchistan: Pasni, 8.IV.1933, 1 ♂; Ormara, 26.IV.1931,
 4 ♀♀ (including type) (Sharif). Type and allotype in British Museum
 (Nat. Hist.), London, 1 ♀ paratype in Zoological Institute of Aca-
 demy of Sciences, Leningrad.

II. Group VITREUS

8. *Sphingonotus vitreus* Saussure.

1888. [*Sphingonotus coeruleans*] var. *vitrea* Saussure, Mem. Soc. Phys. Hist.
 Nat. Gen., vol. xxx, Nr. 1, p. 79 [type ♀; Egypt].
 1902-1905. [*Sphingonotus coeruleans*] var. *vitrea* Jacobson and Bianchi,
 Priamokr. Lozhn. Ross. Imp., p. 273.
 1910. *S*[*phingonotus*] *coeruleans* var. *vitrea* Kirby, Synon. Cat. Orth.,
 vol. III, p. 274.
 1913. *Sphingonotus chakouri* Rehn, Bull. Soc. Ent. Egypte, p. 46.
 1924. *Sphingonotus vitreus* Uvarov, Min. Agric. Egypt, Bull. Nr. 41, p. 27,
 Pl. III, figs. 32, 33, 36.

♀. Body small, sturdy with sparse hairs. Head with sparse, small punctures, projecting above pronotum. Eyes almost round, strongly protruding sideways; their vertical diameter almost equal to the horizontal one and equal to the subocular distance. Frons oblique. The frontal ridge weakly impressed, almost parallel-sided, slightly widened at the middle ocellus, slightly constricted below it, widened and obliterated between the ocellus and clypeus, not reaching the latter, almost flat in profile; margins thick, greatly obliterated; surface with scattered small punctures. Facial keels obsolete. Subocular furrow not deep. Fastigium of vertex strongly sloping, almost vertical. Vertex short, weakly concave; margins weakly raised; median keel weak, scarcely visible; maximum width of vertex slightly greater than that of the frontal ridge between the antennae. Foveolae of vertex weakly concave, triangular. Antennae fine, slightly longer than head and pronotum together.

Pronotum compressed in prozona, saddle-shaped; transverse furrows distinct but weak, the first furrow at the middle of the prozo-

na, the second furrow interrupted in the middle, the space between the second and third furrows deeply concave in the middle; metazona concave, covered with small dense punctures, its length 1.5 times greater than the length of prozona; posterior angle obtuse, rounded; shoulders not projecting, rounded; median keel weakly raised in front of the first furrow, disappearing between the furrows, low and linear in metazona. Lateral lobes vertical, with dense small punctures in the posterior part; anterior margin bisinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle broadly rounded; lower margin obliquely ascendant, weakly undulating.

Sternum very sparsely and minutely punctured, its width considerably greater than its length; width of interspaces between the meso and metasternal lobes 2.5 times greater than their length. The lower parts of meso-episternum with solitary small punctures. Valvae of the ovipositor with long pointed apices; basal parts of the lower valvae smooth, without distinct callous tubercles.

Elytra narrow, weakly narrowed at apex, not reaching the apices of posterior tibiae; their length 5.5 times greater than their maximum width. Venation in the basal third dense, sparse in the rest; the second branch of the median vein gives off one branch in the apical part; intercalary vein weakly curved, slightly approaching to the discoidal vein at apex, minutely tuberculated. Wings fairly wide, triangular; venation sparse; their length almost 1.6 times their maximum width.

Posterior femora thick, widened at the base. Posterior tibiae slightly shorter than the femora, with 8 spines on the outer and 11 spines on the inner sides.

General coloration light yellow-brown. Antennae yellow-brownish with weak brown rings. Elytra weakly coriaceous, the apical third transparent; the basal third, the very weak median fascia, and several very weak spots in the apical third are all brownish; veins light. Wings *absolutely* colourless, transparent, glittering, all veins light. Head, sternum and abdomen yellowish-white. Posterior femora brownish-blackish inside with 2 light fasciae, one of them incomplete. Posterior tibiae whitish-yellow with a blue-green shade.

♂ as female, but smaller.

Coloration as in female.

| | ♀ ♀ — mm. | ♂ (after Rehn) — mm. |
|-------------------------|-----------------|----------------------------|
| Length of body..... | 17.5-19.0 | 13.0 |
| — pronotum..... | 3.5- 4.0 | 2.6 |
| — elytra..... | 16.0-16.5 | 12.0 |
| — posterior femora..... | 8.5- 9.5 | 7.0 |
| — — tibiae..... | 8.8-11.5 | — |

GEOGRAPHICAL DISTRIBUTION.—Egypt.

SPECIMENS EXAMINED.—2 ♀ ♀.

Egypt: Second Oasis, 11.X.1914, 1 ♀ (Adair); Cairo, 1 ♀ (Lederer).

9. *Sphingonotus halophilus* Bey-Bienko.

1911. *Sphingonotus coerulans* var. *vitrea* Ikonnikov, Rev. Rus. d'Entom., vol. xi, p. 108 [Nor-Zaisan].
 1929. *Sphingonotus halophilus* Bey-Bienko, Eos, vol. v, p. 121 [type ♂; Lake Zaisan].
 1929-1930. *Sphingonotus halophilus* Bey-Bienko, Trans. Siber. Inst. Agr. Forest., vol. XIII, Nr. 1-2, pp. 181, 183, 191, n.º 69.

♀. Body small, sturdy, almost naked.

Head with small punctures, very weakly projecting above pronotum. Eyes almost round, protruding sideways; their vertical diameter almost equal to the horizontal one and equal to subocular distance. Frons oblique. Frontal ridge impressed, obliterated below the ocellus, not reaching the clypeus, almost parallel-sided, margins distinct; weakly concave in profile and weakly projecting at the base of the antennae; its surface minutely punctured. Fastigium of vertex almost vertical. Vertex narrow, weakly impressed, margins low; median keel almost absent; maximum width of vertex slightly greater than the width of frontal ridge between the antennae. Foveolae of vertex very indistinct, punctured. Antennae fine, equal in length to head and pronotum together. Pronotum in prozona without constriction; transverse furrows distinct, first furrow a little behind the middle of prozona; metazona flat, coarsely and densely punctured, its length 1.5 times that of prozona; posterior angle obtuse, rounded; shoulders

rounded; median keel very weak in front of the first furrow, hardly raised, disappearing between the furrows, fine and linear in metazona. Lateral lobes almost square; anterior margin weakly undulating, anterior lower angle rounded, a little greater than 90° ; posterior margin straight, posterior lower angle rounded; lower margin undulating.

Sternum very sparsely and minutely punctured; its width slightly greater than length; width of interspaces between lobes of meso and metasternum almost twice their length. Lower parts of mesoepisternum sparsely and minutely punctured. Valvae of ovipositor with short pointed apices; basal parts of lower valvae slightly rugose, almost smooth.

Elytra short, wide, parallel-sided, not reaching by a long distance the apices of posterior tibiae, their length 5.3 times greater than their maximum width; venation sparse, regular; second branch of median vein with one branch in the apical part; intercalary vein straight, parallel to the discoidal vein, very minutely tuberculated. Wings short, wide, sector-like, posterior edge widely rounded; their length 1.64 times greater than their maximum width; venation sparse.

Posterior femora short, widened at the base; their length 3.2 times greater than their maximal width. Posterior tibiae considerably shorter than the femora, with 7-8 spines on the outer, 10 on the inner side.

General coloration light gray with dark markings. Head, sternum and abdomen whitish ventrally. Eyes brownish. Antennae dark with light rings. Elytra slightly transparent; basal third, median fascia and several spots in the apical half—brownish black; sometimes the dark pattern is weakly expressed; veins light. Wings *absolutely* colourless, transparent, veins dark. Posterior femora brownish-black inside with a light band at apex. Posterior tibiae whitish, their bases black on inside; tarsi whitish.

♂ as female, but smaller. Antennae slightly longer than the head and pronotum together.

| | ♀ ♀ — mm. | ♂ ♂ — mm. |
|-------------------------|-----------------|-----------------|
| Length of body..... | 18.0-18.5 | 13.0-15.5 |
| — pronotum..... | 3.0- 3.1 | 2.7- 2.9 |
| — elytra..... | 14.0-14.5 | 12.0-12.5 |
| — posterior femora..... | 8.0- 8.2 | 6.5- 7.0 |
| — — tibiae..... | 6.0- 6.2 | 5.0- 5.5 |

GEOGRAPHICAL DISTRIBUTION.—Eastern Kazakstan.

SPECIMENS EXAMINED.—4 ♀ ♀ and 4 ♂ ♂.

Eastern Kazakstan: Topolev mys, Lake Zaisan, 25-26.VIII.1928, 3 ♀ ♀, 4 ♂ ♂ (type and paratype) (Bey-Bienko); Semitau, 3.VIII.1895, 1 ♀ (Zubovsky).

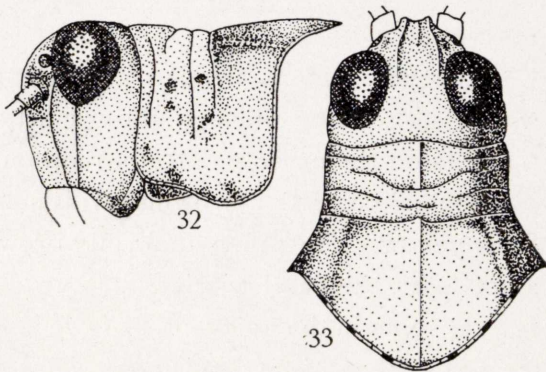
Lives on dry salt-pans.

10. *Sphingonotus tzaidamicus* sp. n.

(Figs. 11, 32, 33.)

♀ (type). Body small, sturdy, with very sparse hairs.

Head laterally compressed, sparsely and minutely punctured, not projecting at all above the pronotum. Eyes short, oval, weakly projecting laterally; their vertical diameter slightly greater than the horizontal one, and almost equal to the subocular distance. Frons weakly oblique. Frontal ridge impressed, parallel-sided, obliterated near the clypeus, margins thick; in profile projecting at the base of antennae; its surface weakly punctured.



Figs. 32-33.—*S. tzaidamicus*, type ♀.

Fastigium of vertex sloping at about 45°. Vertex narrow, weakly concave, margins distinct; median keel weak but distinct; maximum width of vertex slightly greater than the width of frontal ridge be-

tween the antennae. Foveolae of vertex indistinct, punctured. Antennae fairly thick, equal in length to head and pronotum together.

Pronotum without a constriction in prozona; transverse furrows weak: the first furrow at the middle of prozona, the second furrow with a deep impression in the middle; metazona flat, coarsely punctured, its length 1.5 times that of prozona; posterior angle obtuse, rounded; shoulders rounded; median keel very weakly raised in front of first furrow, absent between the furrows, thin and linear in the metazona. Lateral lobes almost square; anterior margin straight, anterior lower angle 90° , rounded; posterior margin straight, posterior lower angle broadly rounded; lower margin weakly ascendant with an excision in the middle.

Sternum sparsely punctured; its width equal to its length; width of interspaces between meso and metasternal lobes 1.5 times their length. Lower parts of meso-episternum sparsely and shallowly punctured. Valvae of ovipositor with short pointed apices, basal parts of lower valvae slightly rugose.

Elytra parallel-sided, not reaching the apices of posterior tibiae by a long distance; their length 5.5 times greater than their maximum width; venation sparse, irregular; the second branch of median vein gives off one branch in the apical part; intercalary vein straight, parallel to the discoidal one, minutely tuberculated. Wings elongate-triangular with sparse venation; their length 1.66 times greater than their maximum width.

Posterior femora slender; their length 4 times their maximum width. Posterior tibiae slightly shorter than posterior femora, with 9 spines on the outer and 10 on the inner side.

General coloration brownish with dark markings. Head whitish. Eyes yellow. Antennae uniformly brown. Elytra transparent in the apical part; the basal quarter, the diffuse transverse median fascia and several spots in the apical part brownish-black; veins darkish. Wings transparent, *absolutely* colourless; veins darkish. Sternum and abdomen whitish. Posterior femora brownish black inside, with two complete light bands. Posterior tibiae dirty-white with a dark spot in front of the light base, with two dark diffuse bands inside; tarse whitish.

♂ (allotype). As female, but smaller. Eyes more convex than in female; their vertical diameter slightly greater than the subocular

distance. Vertex without a median keel. Antennae slightly longer than head and pronotum together. Posterior tibiae with 8 spines on the outer side.

| | Type ♀ — mm. | Allotype ♂ — mm. | Paratype ♀ — mm. |
|------------------------------|--------------------|------------------------|------------------------|
| Length of body | 20.0 | 13.50 | 21.50 |
| — pronotum | 4.0 | 2.75 | 4.25 |
| — elytra | 19.5 | 14.00 | 19.50 |
| — posterior femora | 10.0 | 7.50 | 11.00 |
| — — tibiae | 8.5 | 6.50 | 9.50 |

PATRIA.—Eastern Tsaidam: Range Barun-Tzasaka, end of VIII. 1900, 1 ♀ (type), 1 ♂ (allotype); Eastern Tsaidam, about 9,200 ft. beginning of VIII.1900, 1 ♀ (paratype) (Kozlov).

This new species is nearest to *Sphingonotus halophilus* Bey-Bienko, differing from the latter by elongated triangular wings, slender posterior femora, longer posterior tibiae and by structure and form of head and pronotum.

Type and allotype in the Zoological Institute of the Academy of Sciences, Leningrad.

11. *Sphingonotus rufipes* Predtetschensky sp. n.

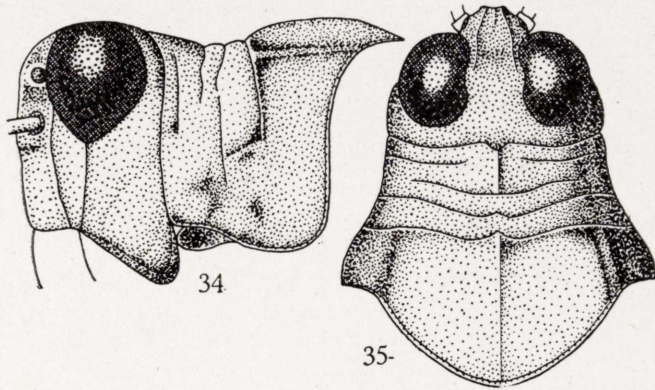
(Figs. 34, 35.)

♀ (type). Body small, robust, with very sparse short hairs.

Head large, feebly constricted laterally, sparsely, finely and not deeply punctured, strongly projecting above the pronotum; cheeks feebly projecting outwards. Eyes large, short oval, strongly projecting outwards; their vertical diameter scarcely larger than the horizontal one and equal to the subocular distance. Frons vertical. Frontal ridge impressed, almost parallel-sided, constricted under the median ocellus completely obliterated between the median ocellus and clypeus; almost flat in profile, projecting slightly at the base of antennae, slightly concave at the median ocellus; margins thick, distinct; surface with minute punctures. Fastigium of vertex strongly sloping, almost vertical. Vertex fairly narrow, slightly impressed

in the posterior part; margins hardly marked, almost absent; median keel absent; maximum width of vertex 1.75 times greater than the width of frontal ridge between the antennae. Lateral facial keels obliterated. Subocular furrows deep. Temporal foveolae indistinct, punctured. Occiput strongly sloping. Antennae fine, slightly longer than head and pronotum together.

Pronotum weakly constricted in the anterior part, weakly saddle-shaped; transverse furrows distinct, the first furrow slightly behind the



Figs. 34-35.—*S. rufipes*, type ♀.

middle of prozona; interspace between furrows smooth; metazona convex, densely punctured, one and a half times the length of prozona; posterior angle obtuse, broadly rounded; shoulders rounded; median keel very weakly raised in front of the first furrow, absent between the furrows, very low in metazona. Lateral lobes almost square, densely punctured in the posterior part; anterior margin bisinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle broadly rounded; lower margin strongly undulating, slightly obliquely ascendant.

Sternum very sparsely punctured; its width a little greater than its length; interspace between meso and metasternal lobes twice as broad as long. Lower parts of meso-episternum with sparse, coarse punctures. Valvae of ovipositor with fairly elongated, pointed apices; basal parts of lower valvae with 2-3 distinct callous tubercles.

Elytra almost parallel-sided, broad and short, often not reaching the apices of posterior tibiae; their length almost 5 times greater than their maximum width; venation fairly sparse; intercalary vein curved

approximated apically to the discoidal vein; second branch of median vein giving off one branch in the apical part. Wings short and broad, slightly elongated, triangular, venation fairly sparse; length 1.7 times their maximum width.

Posterior femora slender; their length four times their maximum width. Posterior tibiae slightly shorter than the femora, with 6 spines on the outer and 9 on the inner sides.

General coloration pinkish-grey. Head whitish. Ocelli yellowish-brown. Antennae pinkish-white, their bases pale. Elytra faintly transparent; their basal third, the narrow transverse median fascia and some spots in the apical part—all brown; veins pale. Bases of wings slightly bluish; veins slightly darkened. Sternum and the underside of abdomen yellow. Posterior femora pinkish-yellow inside, with a dark indistinct band near apex; apex pinkish-yellow; the lower inner sulcus pinkish-yellow with an indistinct dark spot. Posterior tibiae reddish-yellow; tarsi whitish.

♂ (allotype). As the female, but smaller. Vertical diameter of the eye slightly greater than the subocular distance. Frontal ridge disappears in front of clypeus. Vertex more concave than in the female. Posterior tibiae with 10 spines on the inner side.

| | Type ♀ mm. | Allotype ♂ mm. | Paratypes ♀♀ mm. |
|-------------------------|---------------|-------------------|---------------------|
| Length of body..... | 21.5 | 14.50 | 21.5-22.5 |
| — pronotum..... | 4.0 | 2.75 | 3.8- 4.0 |
| — elytra..... | 19.5 | 13.50 | 18.0-19.5 |
| — posterior femora..... | 11.0 | 8.00 | 10.0-11.0 |
| — — tibiae..... | 9.5 | 7.00 | 8.5- 9.5 |

PATRIA.—Iran: Yezd, 12.VIII.1931, 3 ♀ ♀ (including the type), 1 ♂ (allotype) (S. Predtetschensky).

This new species is similar and related to *Sphingonotus halophilus* Bey-Bienko, differing from it in structure of the head and the pronotum, in the form of elytra and wings, in long posterior femora and in reddish-yellow posterior tibiae.

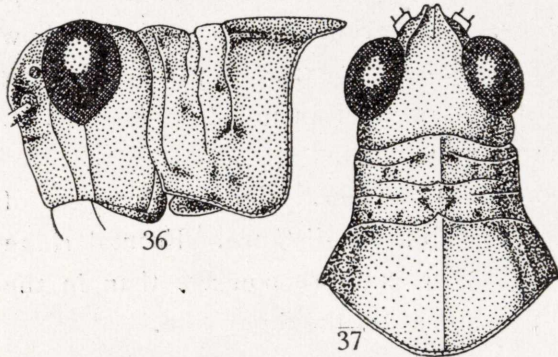
Type and allotype in the Zoological Institute of the Academy of Sciences, Leningrad.

III. Group **PAMIRICUS**12. **Sphingonotus ebneri** sp. n.¹

(Figs. 36, 37.)

♀ (type). Body small, almost naked.

Head densely punctured, does not project above the pronotum at all. Eyes short oval, weakly projecting sideways; their vertical diameter slightly greater than the horizontal one and equal to subocular distance.

Figs. 36-37.—*S. ebneri*, type ♀.

Frons sloping. Frontal ridge weakly concave at the ocellus, gradually widening and not reaching the clypeus by a long distance; its surface punctured; straight in profile. Vertex wide, weakly concave; median keel scarcely marked; margins weakly

raised; maximum width of vertex almost twice the width of frontal ridge between the antennae. Foveolae of vertex indistinct, punctured. Antennae slender, slightly longer than head and pronotum taken together.

Pronotum not constricted in prozona; transverse furrows distinct, deep; the first furrow just behind the middle of prozona; first and second furrows confluent in the middle; metazona flat, finely and densely punctured, very weakly wrinkled, its length slightly greater than that of prozona; posterior angle obtuse; widely-rounded; shoulders not projecting; median keel strongly raised in front of the first furrow, absent between the furrows, distinct and linear in metazona. Lateral lobes almost square; anterior margin bisinuate, anterior lower

¹ I dedicate this interesting species to Professor Dr. Richard Ebner (Austria, Vienna).

angle obtuse, rounded; posterior margin straight, posterior lower angle rounded, slightly dentate; lower margin obliquely ascendant, straight.

Sternum sparsely punctured, its width equal to its length; width of interspaces between meso and metasternal lobes 1.75 times their length. Lower parts of meso-episternum sparsely punctured. Valvae of ovipositor with short pointed apices, basal parts of lower valvae weakly tuberculate.

Elytra parallel sided, their length 5.3 times their maximum width; venation fairly sparse, apical part of 2nd branch of median vein gives off 2 branches; intercalary vein straight, parallel to discoidal vein, finely granular. Wings elongated, triangular, their length 1.68 times their maximum width.

Posterior femora fairly slender; their length 3.8 times their maximum width. Posterior tibiae slightly shorter than the femora with 8 spines on the outer, 9 on the inner sides.

General coloration yellowish-pinkish-brown. Head whitish. Ocelli yellow. Antennae yellowish-brown, with brown rings. Elytra fairly transparent; basal third, weak interrupted median fascia and several very faint spots in the apical part yellow-brown. Wings transparent, *absolutely* colourless, veins in apical part dark. Inner sides for the greater part yellow, with 2 scarcely marked dark fasciae; apex yellow. Posterior tibiae faintly yellow, with two bluish fasciae on the inner sides; inner sides of bases black.

Male unknown.

| | Type ♀ — mm. |
|-------------------------|--------------------|
| Length of body..... | 20.5 |
| — pronotum..... | 3.9 |
| — elytra..... | 17.5 |
| — posterior femora..... | 9.5 |
| — — tibiae..... | 8.0 |

PATRIA.—Algeria: El Mreir, 1 ♀ (type) (Brunner von Wattenwyl).

This new species is near to *Sph. minutus*, differing from it by peculiar structure of head and pronotum, venation of elytra and coloration of wings.

Type in the Vienna Museum of Natural History.

13. *Sphingonotus minutus* sp. n.

(Figs. 38, 39.)

♂ (type). Body small, fairly robust, with fairly dense short hairs.

Head with minute very sparse punctures, scarcely projecting above the pronotum. Eyes almost round, feebly projecting laterally;

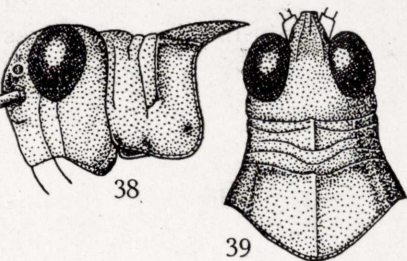
their vertical diameter almost equal to the horizontal one, and equal to the subocular distance. Frons oblique.

Frontal ridge very slightly impressed, almost parallel-sided, feebly dilated between the ocellus and clypeus; in

profile feebly projecting between the antennae; margins thick, almost obsolete; surface with scattered punctures.

Facial keels distinct but very low.

Subocular furrow feebly impressed. Fastigium of vertex sloping at

Figs. 38-39.—*S. minutus*, type ♂.the angle of 45° . Vertex narrow, concave, smooth; margins indistinctly raised; no median keel; maximum width of vertex scarcely larger than width of frontal ridge between the antennae. Foveolae of vertex very indistinct. Occiput almost horizontal. Antennae fairly fine, slightly longer than the head and pronotum together.

Pronotum feebly constricted in prozona; transverse furrows distinct, weakly impressed; the first furrow slightly behind the middle of prozona; interspaces between furrows smooth; metazona flat, with minute, dense punctures, its length slightly greater than that of prozona; posterior angle obtuse, rounded, margins straight; shoulders not projecting, rounded; median keel very weakly raised in front of first furrow, absent between the furrows, very low and linear in metazona. Lateral lobes vertical, with small dense punctures in metazona; anterior margin bisinuate, anterior lower angle almost 90° , rounded; posterior margin straight, posterior lower angle broadly rounded; lower margin straight, very feebly obliquely ascending.

Sternum with minute, scattered punctures, its width slightly greater than its length; width of interspace between mesosternal lobes 2.5 times greater than length, width of interspace between me-

tasternal lobes 2 times greater than its length. Lower parts of mesoepisternum with scattered minute punctures.

Elytra parallel-sided, short and broad, not reaching by far the apices of posterior tibiae; their length 5 times greater their maximum width; venation sparse; the second branch of median vein gives off one branch in the apical part; intercalary vein distinct, straight, parallel to the discoidal vein throughout its whole length, minutely tuberculate. Wings wide and short, with feebly developed apical lobes; venation dense; their length 1.64 times their maximum width.

Posterior femora slender; their length 4 times their maximum width. Posterior tibiae considerably shorter than posterior femora, with 9 spines on the outer, 10 on the inner sides.

General coloration reddish-brown. Head, sternum and abdomen yellow-brownish. Eyes yellow-brown. Antennae almost uniformly brown, their bases yellow-brown. Elytra slightly transparent; basal quarter, median transverse fascia and several faint spots in the apical half—all brown; veins light brownish. Wings bluish at base, transparent; veins dark. Posterior femora, on the inner side for the greater part brown with two complete light bands; apices slightly darkened. Posterior tibiae dirty-whitish yellow with two greyish-brown bands on the outer side; bases dark-brown inside; tarsi whitish.

Female not known.

| | Type ♂ — mm. |
|-------------------------|--------------------|
| Length of body..... | 13.0 |
| — pronotum..... | 2.5 |
| — elytra..... | 12.5 |
| — posterior femora..... | 7.0 |
| — — tibiae..... | 6.0 |

PATRIA. — Iran: N. Khorasan, Turbet-i-Kheidari, 17.VIII.1928, 1 ♂ (type) (L. Moritz).

This new species is very near to *Sphingonotus kirgisticus* sp. n., but differs from it in the structure of pronotum, dense venation and form of wings.

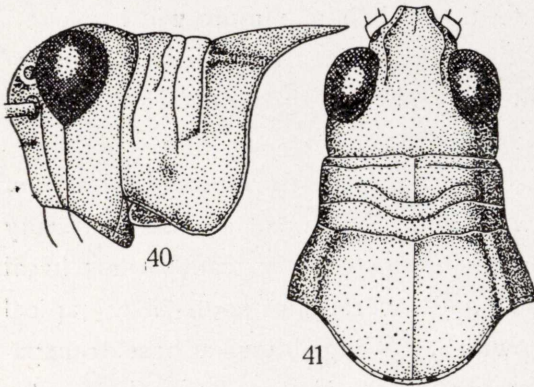
Type in the Zoological Institute of Academy of Sciences, Leningrad.

14. *Sphingonotus kirgicus* sp. n.

(Figs. 40, 41.)

♀ (type). Body small, sturdy, with sparse hairs.

Head finely punctured, projecting slightly above the pronotum. Eyes short oval, weakly projecting laterally; their vertical diameter slightly greater than the horizontal one and equal to the subocular

Figs. 40-41.—*S. kirgicus* type ♀.

distance. Frons vertical. Frontal ridge flat, weakly impressed at the ocellus, slightly widened between the antennae, narrowed under ocellus and obliterated between the ocellus and clypeus; in profile slightly projecting at the base of antennae; margins thick, indistinct; surface densely and minutely punctured. Fastigium of

vertex moderately sloping. Vertex narrow, elongated, weakly concave; margins weakly raised; median keel weak, almost absent; maximum width of vertex scarcely greater than the width of frontal ridge between the antennae. Foveolae of vertex indistinct, punctured. Antennae fine, scarcely longer than head and pronotum together.

Pronotum weakly compressed in the anterior part; transverse furrows moderately impressed; the first furrow immediately behind the middle of prozona; second furrow interrupted by the median callous tubercle; interspaces between furrows slightly rough; metazona flat with very dense minute punctures, its length 1.5 times that of prozona; posterior angle obtuse, broadly rounded; shoulders weakly projecting, rounded; median keel weakly raised in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes vertical, densely and finely punctured in the posterior part; anterior margin bisinuate, anterior lower angle obtuse; posterior margin straight, posterior lower angle widely rounded; lower margin obliquely ascendant, undulating.

Sternum finely and sparsely punctured, its width slightly greater than its length; width of interspaces between lobes of meso and metasternum almost two times as great as their length. Lower parts of meso-episternum densely and coarsely punctured. Valvae of ovipositor with short, pointed apices; basal parts of lower valvae punctured, smooth, without distinct callous tubercles.

Elytra weakly narrowed apically, not reaching the apex of posterior tibiae by a long distance; their length almost 5 times their maximum width; venation sparse, the apical part of the second branch of median vein gives off two branches; intercalary vein straight, parallel to discoidal vein, minutely tuberculated. Wings wide, very weakly narrowed apically, venation sparse; their length 1.63 times their maximum width.

Posterior femora slender; their length 4 times their maximum width. Posterior tibiae slightly shorter than posterior femora, with 9 spines on the outer, 10 on the inner sides.

General coloration pinkish-yellow-brown. Head and sternum whitish. Ocelli dark yellow. Antennae uniformly brownish, their bases light. Elytra transparent; basal third, the weak median transverse fascia, and some weak spots in the apical part—brownish; veins light. Wings faintly blue at bases; veins darkish. Posterior femora for the greater part black on inside, with two light bands, one of them incomplete; apex dark on inside; lower inner furrow light with a single dark fascia. Posterior tibiae dirty bluish, with two greyish-blue bands inside; base darkish on the inner side.

♂ (allotype). As female, but smaller. Frontal ridge obliterated close to the clypeus. Vertex more strongly impressed than in female. Second branch of median vein of elytra gives off 1-2 branches in the apical part.

| | Type ♀ — mm. | Allotype ♂ — mm. | Paratype ♀ — mm. |
|-------------------------|--------------------|------------------------|------------------------|
| Length of body..... | 19.0 | 13.00 | 19.5 |
| — pronotum..... | 4.0 | 2.75 | 4.2 |
| — elytra..... | 17.0 | 13.00 | 18.5 |
| — posterior femora..... | 10.0 | 8.50 | 10.2 |
| — — tibiae..... | 8.5 | 7.00 | 8.7 |

PATRIA. — Kirghiz Republic, village Rybachie, near Pishpek, 12.VII.1923, 1 ♀ (type), 1 ♂ (allotype) (L. Moritz); 8.VII.1928, 1 ♀ (M. Berg).

This new species is very similar to *Sphingonotus pamiricus pamiricus* Ramme but differs from it by the structure of the head and pronotum, by the fine and longer antennae and by the longer posterior femora.

Type and allotype in the Zoological Institute of the Academy of Sciences, Leningrad.

15. ***Sphingonotus pamiricus pamiricus*** Ramme.

(Figs. 42, 43.)

1930. *Sphingonotus pamiricus* Ramme, Mitt. Zool. Mus. Berlin, vol. xvi, p. 212, Pl. I, figs. 2 a, 2 b, 4 [type ♂, Central Pamir].

♀. Body small, sturdy, with long hairs.

Head small, uniformly and coarsely punctured, scarcely projecting above the pronotum. Eyes almost round with a somewhat pointed lower angle, weakly projecting laterally; their vertical diameter almost equal to the horizontal one and smaller than the subocular distance. Frons vertical. Frontal ridge impressed, obliterated below the ocellus, not reaching clypeus; in profile strongly projecting forwards at the base of antennae; with a concavity at the ocellus; margins thick distinct; surface punctured. Fastigium of vertex sloping at the angle of 45°. Vertex narrow, long, concave; its maximum width slightly greater than that of the frontal ridge between the antennae; margins sharply defined; median keel very weak. Foveolae of vertex indistinct, somewhat triangular, coarsely punctured. Antennae thick, slightly longer than head and pronotum together.

Pronotum without a constriction in prozona; transverse furrows distinct, the first furrow just behind the middle of prozona; metazona flat, coarsely punctured and minutely wrinkled, its length 1.5 times that of prozona; posterior angle obtuse, rounded; shoulders rounded; median keel weakly raised in front of the first furrow, absent between the furrows, fine and linear in metazona. Lateral lobes vertical, coarsely punctured in posterior part; anterior margin weakly undulating,

anterior lower angle obtuse; posterior margin straight, posterior lower angle broadly rounded; lower margin undulating, obliquely ascendant.

Sternum sparsely punctured; its width slightly greater than its length; width of interspace between meso and metasternal lobes 2.25 times greater than its length. Lower parts of meso-episternum sparsely punctured. Valvae of ovipositor with elongated, pointed apices, basal parts of lower valvae smooth.

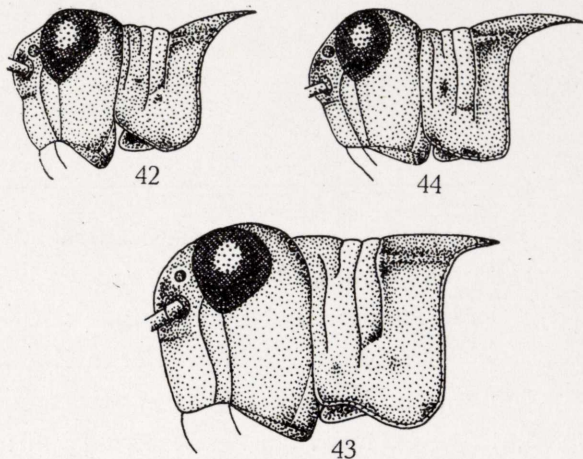
Elytra short and broad, almost reaching the apices of posterior tibiae; their length 5.3 times greater than their maximum width; venation sparse, the apical part of the second branch of median vein gives off two branches;

intercalary vein straight, parallel to discoidal vein, minutely tuberculated. Wings short and broad, outer margin somewhat lobate; their posterior margin broadly rounded; their length 1.58 greater than their maximum width; venation very sparse.

Posterior femora slender, their length 4 times their maximum width. Posterior tibiae considerably shorter than posterior femora, with 9 spines on the outer, 9-10 on the inner sides.

General coloration brown-grey. Head whitish with grey marks. Ocelli yellow. Antennae uniformly brown. Elytra weakly coriaceous, the basal third, the weak median fascia and some (very few) indistinct spots in the apical half—dark; veins darkish. Wings slightly bluish at bases; veins dark. Sternum and abdomen whitish. Posterior femora for the greater part blackish inside, with two light bands, one of them sometimes incomplete. Posterior tibiae whitish; bases black inside; tarsi whitish.

♂, as female, but smaller. Vertical diameter of eye almost equal



Figs. 42-44.—42, *S. pamiricus pamiricus*, ♂; 43, the same, ♀; 44, *S. pamiricus occidentalis*, allotype, ♂.

to subocular distance. Frontal ridge strongly constricted below the ocellus. Vertex narrower and more concave than in female. Apical part of the second branch of the median vein of elytra gives off one branch.

| | ♀ ♀ mm. | ♂ ♂ mm. |
|-------------------------|------------|------------|
| Length of body..... | 18.5-21.0 | 13.5-15.0 |
| — pronotum..... | 3.6- 4.0 | 2.4- 2.8 |
| — elytra..... | 18.0-19.5 | 15.3-15.5 |
| — posterior femora..... | 9.5-10.5 | 7.5- 8.0 |
| — — tibiae..... | 7.5- 8.5 | 6.2- 6.7 |

GEOGRAPHICAL DISTRIBUTION.—Central and Eastern Pamir.

SPECIMENS EXAMINED.—3 ♀ ♀ and 3 ♂ ♂.

Central Pamir: Djol-Boeruljuk, 4,020-4,150 met., 23.VII.1928, 1 ♀, 1 ♂ (paratypes) (Reinig) (Berlin Zool. Mus.); River Kakui-Bel, 3,700 met., 14.IX.1928, 1 ♀, 1 ♂ (Gorbunov); Kok-Djar, 12-15.VIII.1928, 1 ♀ (Razmirovitch). Eastern Pamir: Taghdumbash, Karachucar valley, ca 13,500 ft., 15.VII.1913, 1 ♂ (R. W. G. Hingston) (Brit. Mus.).

15 a. *Sphingonotus pamiricus occidentalis* subsp. n.

(Fig. 44.)

As the typical *Sph. pamiricus*, but differs from it in the following characters:

♀ (type). Frons slightly oblique. Frontal ridge very weakly impressed; margins obliterated. Pronotum weakly constricted in prozona; length of metazona twice that of prozona. Wings elongate-triangular; their length 1.71 times greater than their maximum width; venation denser than in typical form.

Coloration as in the typical form. Elytra with three transverse, dark fasciae. Posterior femora black on the inside with one complete light fascia. Posterior tibiae with a greyish ring at base.

♂ (allotype). As female, smaller. Very similar to the male of the typical form.

Coloration as in female.

| | Type ♀ | Allotype ♂ | Paratypes ♀♀ | Paratypes ♂♂ |
|--------------------------|--------|------------|--------------|--------------|
| | mm | mm. | mm. | mm. |
| Length of body | 18.0 | 12.5 | 17.0-20.0 | 12.0-14.0 |
| — pronotum | 3.8 | 2.4 | 3.2- 3.8 | 2.2- 2.8 |
| — elytra | 18.5 | 15.0 | 18.5-20.5 | 15.0-16.0 |
| — posterior femora | 9.5 | 7.5 | 9.5-10.0 | 7.0- 8.0 |
| — — tibiae. | 8.0 | 6.2 | 8.0- 8.5 | 5.8- 6.7 |

PATRIA.—Western Pamir: Lake Jashil-Kul, 1 ♀ (type), 4 ♂♂ (Borschevskü); Langar and Gunt, Roshan, 17.VIII.1897, 2 ♀♀ (Kaznakov).

The presence of three dark fasciae on elytra makes this subspecies somewhat similar to *Sph. zebra* sp. n. Type and allotype in the Zoological Institute of the Academy of Sciences, Leningrad. One paratype (male) in the British Museum (Natural History), London.

16. *Sphingonotus zebra* sp. n.

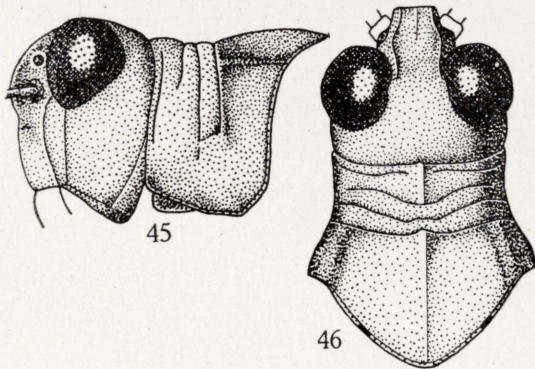
(Figs. 6, 45, 46.)

♀ (type).

Body medium size, sturdy, with fairly sparse, long hairs.

Head coarsely but not deeply punctured, weakly projecting above the pronotum, cheeks projecting laterally. Eyes small, somewhat irregular, almost round, do not project laterally; their vertical diameter almost equal to the horizontal one, and less than subocular distance. Frons almost vertical. Frontal ridge flat, weakly widened and slightly impressed at the ocellus, weakly constricted below the ocellus and almost immediately completely obliterated; in profile weakly projecting at the base of antennae with an impression at the ocellus; margins thick, strongly obliterated; its surface with large dense punctures. Facial keels scarcely visible. Subocular furrow very distinct. Fastigium of vertex gradually sloping. Vertex not strongly impressed; margins weakly elevated; median keel scarcely noticeable; maximum width of vertex 1.60 times greater than width of frontal ridge between the antennae. Foveolae of the vertex indistinct, punctured. Antennae fairly fine, equal in length to head and pronotum.

Pronotum constricted in prozona, weakly saddle-shaped; transverse furrows distinct; the first furrow slightly behind the middle of prozona; metazona somewhat convex, densely and coarsely punctured and very slightly wrinkled, its length almost twice that of prozona; posterior angle obtuse, widely-rounded; shoulders not projecting, rounded; median keel very weakly raised in front of the first furrow,



Figs. 45-46.—*S. zebra*, allotype ♂.

absent between the furrows, very low and linear in metazona. Lateral lobes vertical, punctured in posterior part; anterior margin weakly undulating, anterior lower angle obtuse, rounded; posterior margin straight vertical, posterior lower angle widely-rounded; lower margin

obliquely-ascendant, excised at the anterior angle.

Sternum sparsely punctured; its width slightly greater than its length; width of interspace between the mesosternal lobes 2.25 times greater than length, width of interspace between the metasternal lobes 2 times greater than its length. Lower parts of meso-episternum densely, but not deeply, punctured. Valvae of ovipositor with short, weakly pointed apices; basal parts of lower valvae rough, with slight callous tubercles.

Elytra narrowed towards the apex; apex receding backwards and forming an angle with the anterior margin, obliquely truncated; not reaching by a long distance the apices of posterior tibiae; their length 5 times their maximum width; venation sparse, the second branch of median vein gives off two branches apically; intercalary vein straight parallel throughout its whole length to the discoidal vein. Wings wide, elongated triangular, with sparse venation; their length 1.75 times greater than their maximum width.

Posterior femora fairly slender; their length almost 4 times as great as their maximum width. Posterior tibiae considerably shorter than posterior femora with 9 spines on the outer, 10 on the inner sides.

General coloration yellowish-grey. Head and cheeks whitish. Ocelli brown. Antennae brownish with light rings, bases light. Elytra feebly transparent with three distinct complete dark fasciae and several long dark spots in the apical third; interspaces between dark fasciae without dark marks; veins light. Wings blue at base, colourless in the apical third; veins of anterior and apical parts dark. Sternum whitish. Posterior femora for the greater part yellowish-white on the inside, with two complete black fasciae, bases and apices black, with two oblique dark spots on the upper and outer side. Posterior tibiae whitish, with a bluish-green shade at apex, with a brown ring in the middle; base black inside; tarsi pale.

♂ (allotype). As female, smaller. Vertical diameter of eye equal to subocular distance. Antennae longer than head and pronotum together.

Coloration as in female. The very apices of wings darkened.

| | Type ♀ mm. | Allotype ♂ mm. | Paratypes ♀♀ mm. | Paratypes ♂♂ mm. |
|---------------------|---------------|-------------------|---------------------|---------------------|
| Length of body..... | 26.5 | 18.5 | 19.5-27.5 | 15.5-18.5 |
| — pronotum..... | 4.5 | 3.25 | 3.25-5.0 | 2.5-3.5 |
| — elytra..... | 22.0 | 17.0 | 19.00-23.5 | 14.5-17.5 |
| — posterior femora | 11.5 | 10.0 | 9.00-12.00 | 8.5-10.5 |
| — tibiae. | 10.0 | 8.5 | 7.50-10.5 | 7.0-9.0 |

PATRIA. — Tadzhikistan, Hissar range, Khan-Takhta, 2,775 m., 3.VIII-4.IX.1933, 29 ♀♀ (including type), 19 ♂♂; Ishak-Maidan, 2,960 m., 21.VIII.1933, 8 ♀♀, 6 ♂♂ (Veltistchev).

This new species is the most nearly related to *Sphingonotus pamiricus pamiricus* Ramme, differing from it in: — Structure of the head and pronotum, venation and form of wings, the characteristic striped coloration, and in the coloration of posterior tibiae on the inner side.

Lives on screes in purely xerophytic habitats (cushions of *Acantholimon*, *Astragalus*, *Arenaria griffithi*, etc.).

Type and allotype in Zoological Institute of the Academy of Sciences, Leningrad. 2 paratypes (male and female) in the British Museum (Natural History), London.

I am extremely grateful to Mr. P. A. Veltistchev for supplying me with the interesting material of this species.

IV. Group **MACULATUS**17. **Sphingonotus maculatus** Uvarov.

(Fig. 7.)

1925. *Sphingonotus coeruleans maculatus* Uvarov, J. Bomb. Nat. Hist. Soc., vol. xxx, Nr. 2, p. 264 [type ♀; South-East Kazakstan, Uzbekistan, Tadzhikistan].
1927. *S[phingonotus] coeruleans maculatus* Uvarov, Saran. Sred. Az., pp. 129, 134, fig. 142, n.º 2a [Lower Volga region; South Kazakstan, Turkmenistan].
1928. *Sphingonotus maculatus* Predtetschensky, Com. Inst. Astr. Def. Plant., vol. II, Nr. 1, p. 103.

♀. Body of medium size, fairly slender, almost naked.

Head sparsely punctured, projecting above the pronotum. Eyes oval, weakly projecting sideways; their vertical diameter 1.5 times greater than the horizontal one, and equal to subocular distance. Frons vertical. Frontal ridge flat, weakly dilated between the antennae, constricted below the ocellus, completely obliterated half way between the ocellus and clypeus; flat in profile; margins thick; surface with scattered punctures. Fastigium of vertex strongly sloping, almost vertical. Vertex weakly impressed, margins distinct; median keel weak; maximum width of vertex 1.5 times greater than width of frontal ridge between the antennae. Foveolae of vertex indistinct, weakly punctured. Antennae fine, slightly longer than head and pronotum taken together.

Pronotum constricted in prozona, weakly saddle-shaped; transverse furrows distinct; the first furrow passing behind the middle of prozona; metazona slightly convex, coarsely punctured and very finely furrowed, its length two times greater than that of prozona; posterior angle obtuse, rounded; shoulders rounded; median keel weak and hardly noticeable in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes vertical, densely and finely punctured in metazona; anterior margin weakly undulating, anterior lower angle obtuse; posterior margin straight, posterior lower angle

attenuated; lower margin obliquely-ascendant with an excision at the middle.

Sternum with very fine, scattered punctures, its width almost equal to its length; width of interspaces between meso and metasternal lobes almost twice their length. Lower parts of meso-episternum sparsely punctured. Valvae of ovipositor with short, pointed apices; basal parts of lower valvae with very distinct callous tubercles.

Elytra parallel-sided, not reaching the apices of posterior tibiae by a short distance; their length 5.5 times their maximum width. Venation dense, the apical part of the second branch of the median vein gives off 2-3 branches; intercalary vein straight, parallel to discoidal vein, minutely tuberculated. Wings elongate-triangular with dense venation; their length 1.63 times their maximum width.

Posterior femora slender; their length 4 times their maximum width. Posterior tibiae slightly shorter than the femora, with 8-10 spines on the outer, 10 on the inner sides.

General coloration dirty buff. Head whitish. Ocelli yellow. Antennae brownish with light rings, bases light. Lateral lobes usually with a blackish spot in the middle. Elytra coriaceous opaque; the basal third, two complete distinct fasciae and several spots in the apical part — blackish-brown, interspaces between fasciae without dark spots; veins light. Wings bluish at bases; veins dark. Inner sides of posterior femora, for the greater part, yellow with two blackish complete fasciae, and blackish apices. Posterior tibiae dirty-white, yellow at apices, sometimes somewhat bluish; bases black on the inner sides; tarsi yellow.

♂. As female, but smaller. Vertical diameter of the eye slightly greater than the subocular distance. Antennae somewhat finer than in female.

| | ♀ ♀ — mm. | ♂ ♂ — mm. |
|-------------------------|-----------------|-----------------|
| Length of body..... | 20.0-31.0 | 15.5-22.5 |
| — pronotum..... | 3.0- 5.0 | 2.5- 3.5 |
| — elytra..... | 18.5-28.0 | 14.5-21.5 |
| — posterior femora..... | 9.0-14.5 | 7.5-11.0 |
| — — tibiae..... | 8.0-13.5 | 6.5-10.0 |

GEOGRAPHICAL DISTRIBUTION.—Lower course of Volga; Kazakstan, Kirghiz Republic, Uzbekistan; Tadzhikistan, Turkmenistan, N. Iran, British Baluchistan.

SPECIMENS EXAMINED.—422 ♀ ♀ and 717 ♂ ♂.

Lives in clayey semi-deserts, sometimes penetrating into salty grounds with sparse vegetation.

Specimens from Kirghizia are characterised by very small size and somewhat blue posterior tibiae.

V. Group HALOCNEMI

18. *Sphingonotus halocnemi* Uvarov.

1910. [*Sphingonotus coerulans* L.] var. 2 Uvarov, Hor. Soc. Ent. Ros., vol. xxxix, p. 375 (Lake Tungurluk-Sor).
 1925. *Sphingonotus halocnemi* Uvarov, J. Bomb. Nat. Hist. Soc., vol. xxx, Nr. 2, p. 265 [type ♂; Kazakstan, Lake Tungurluk-Sor].
 1927. *Sphingonotus halocnemi* Uvarov, Sarantch. Sred. Asii, pp. 129, 134, n.º 3.
 1931. *Sphingonotus halocnemis* Voronstovskii, Trudy Komp. Nautch. Issl. Inst. K. K. A. O., Nr. 1, p. 18, n.º 20 [lower course of R. Amu-Daria].

♀. Body small, slender, with short sparse hairs.

Head strongly projecting above the pronotum. Eyes oval, projecting sideways; their vertical diameter 1.5 times the horizontal one and equal to subocular distance. Frons weakly sloping. Frontal ridge flat, parallel-sided, weakly dilated below the ocellus, obliterated at the clypeus; flat in profile; margins strongly obliterated; its surface sparsely punctured. Fastigium of vertex sloping at the angle of 45°. Vertex impressed, narrow; margins very distinct; median keel hardly noticeable; maximum width of vertex 1.5 that of the frontal ridge between the antennae. Foveolae of vertex indistinct. Antennae fine, slightly longer than head and pronotum together.

Pronotum constricted in prozona; transverse furrows distinct, deep; the first furrow passing behind the middle of prozona, the second furrow confluent with the first in the middle; the interspace between the first and third furrows with an impression in the middle; metazona almost twice as long as the prozona, flat, coarsely punctured; posterior

angle obtuse, rounded; shoulders weakly projecting; median keel very weakly raised in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes vertical; anterior margin weakly undulating, anterior lower angle obtuse; posterior margin straight, posterior lower angle rounded; lower margin straight, obliquely ascendant, with a slight excision in the middle.

Sternum finely, sparsely punctured; its width equal to its length; width of interspaces between meso and metasternal lobes 1.5 times their length. Valvae of ovipositor with long, fine, curved, pointed apices; basal par of lower valvae weakly tuberculate.

Elytra parallel-sided, narrow, reaching the apices of posterior tibiae; their length 6 times their maximum width; venation sparse, regular, the apical part of the second branch of median vein gives off 2-3 branches; intercalary vein almost straight, slightly curved at the apex, minutely tuberculate. Wings elongate-triangular with sparse venation; their length 1.85 times their maximum width.

Posterior femora slender; their length almost 4 times their maximum width. Posterior tibiae slightly shorter than the femora, with 8 spines on the outer, 10 on the inner sides.

General coloration brownish-grey with dark dots and spots. Head whitish with grey spots. Antennae brownish with light rings. Elytra transparent; the basal third and spots which do not form definite fasciae in the remaining part — brownish-grey; veins darkish. Wings transparent colourless, sometimes faintly bluish at base; veins dark in anterior part. The inner sides of posterior femora, for the greater part, blackish-brown, with two complete light, fasciae. Posterior tibiae yellowish-white with a black spot above the light base.

♂ as female, but smaller. Vertical diameter of the eye slightly greater than the subocular distance. The apical part of the second branch of median vein of elytra gives off 1-2 branches.

| | ♀ ♀ mm. | ♂ ♂ mm. |
|-------------------------|------------|------------|
| Length of body..... | 16.5-20.5 | 13.0-14.0 |
| — pronotum..... | 3.2- 3.7 | 2.2- 2.5 |
| — elytra..... | 17.5-21.0 | 15.0-16.0 |
| — posterior femora..... | 8.5-10.0 | 6.5- 7.5 |
| — — tibiae..... | 7.0- 8.5 | 5.5- 6.5 |

GEOGRAPHICAL DISTRIBUTION.—W. and S. Kazakstan, W. Kirghiz Republic, Kara-Kalpakia.

SPECIMENS EXAMINED.—11 ♀♀ and 16 ♂♂.

W. Kazakstan: Lake Tungurluk Sor near Kalmykov, 20.VI.1909, 1 ♀ (cotype), 8 ♂♂ (including 3 ♂♂ cotypes) (Uvarov); Korlibai, VII.1931. 2 ♀♀, 2 ♂♂ (Lupora).

S. Kazakstan: Kara-Keshken, Kzyl-Orda district, 17.VII.1928, 2 ♀♀, 2 ♂♂ (Olsufiev); Solo-Tube, Kzyl-Orda district, 10-30.VII.1928, 4 ♀♀, 2 ♂♂ (Mischenko).

W. Kirghiz Republic: Sary-Bulack, near Frunze, 1933, 2 ♀♀, 2 ♂♂.

Lives in bushes of *Halocnemum strobilaceum*, on damp salty grounds.

19. **Sphingonotus fuscus** Predtetschensky sp. n.

(Figs. 47, 48.)

♂ (type). Body small, slender, with sparse hairs.

Head finely and sparsely punctured, moderately projecting above the pronotum. Eyes large, regularly oval, moderately projecting sideways; their vertical diameter 1.5 times greater than the horizontal one and slightly longer than the subocular distance. Frons vertical. Frontal ridge slightly impressed, almost flat; weakly dilated between the antennae, slightly constricted below the ocellus, obliterated between the ocellus and clypeus; its surface finely punctured; margins weakly marked; quite flat in profile. Fastigium of vertex strongly sloping. Vertex narrow, weakly impressed; its margins weakly raised; median keel hardly noticeable; maximum width of vertex scarcely greater than width of median keel between the antennae. Foveolae of vertex indistinct, weakly impressed, punctured. Antennae fine, longer than head and pronotum together.

Pronotum constricted in prozona; transverse furrows distinct; the first furrow behind the middle of prozona; interspace between the second and third furrows with an impression in the middle; interspaces between the furrows smooth; posterior part densely and finely punctured, flat, its length 1.5 times that of prozona; posterior angle almost equal to 90°, rounded, its margins straight; shoulders rounded;

median keel hardly noticeable in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes vertical, densely and finely punctured in metazona; anterior margin bisinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle broadly rounded; lower angle moderately obliquely-ascendant, undulating.

Sternum finely punctured, its width equal to its length; width of interspaces between the lobes of meso and metasternum 1.5 as great as their length. Lower parts of meso-episternum densely and finely punctured.

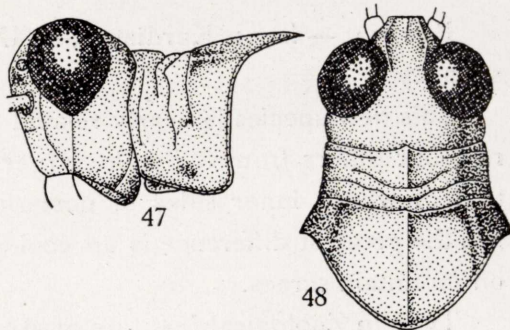
Elytra parallel-sided, not reaching the apices of tibiae by a short distance; their length 5.7 times their maximum width; venation sparse;

the apical part of the second branch of median vein gives off 2 branches; intercalary vein somewhat irregular, slightly approaching to the discoidal vein at apex, finely granular. Wings narrow, elongate-triangular, their length 1.8 times their maximum width; venation very sparse.

Posterior femora slender, their length almost 4 times their maximum width. Posterior tibiae slightly shorter than the femora, with 6-7 spines on the outer, 10 on the inner sides.

General coloration greyish-brown. Head greyish-blue. Ocelli yellow-brown. Antennae brownish; bases light. Elytra transparent; the basal quarter faintly brownish, the remaining parts of elytra quite clear, without any spots; veins brownish. Wings transparent, bluish at bases; apical part colourless with dark veins. Inner sides of posterior femora, for the greater part, blackish-brown with two complete bluish fasciae; apex black inside; lower furrow dirty-blue on the inner side. Posterior tibiae bluish; bases black on the inner sides; tarsi whitish.

Female unknown.



Figs. 47-48.—*S. fuscus*, type ♂.

| | Type ♂ mm. |
|-------------------------|---------------|
| Length of body..... | 17.5 |
| — pronotum..... | 3.0 |
| — elytra..... | 16.0 |
| — posterior femora..... | 8.5 |
| — — tibiae..... | 7.0 |

PATRIA.— Iran: Kurdistan, 4.IX.1931, 1 ♂ (type) (Predtetschensky).

This new species is nearly related to *Sphingonotus halocnemi* Uvarov, but differs from it by the larger size, structure of head; coloration of wings, inner sides of posterior femora, and posterior tibiae, but the greatest difference is an ecological one, as this species lives on mountain screes.

Type in Zoological Institute of Academy of Sciences, Leningrad.

20. ***Sphingonotus isfaghanicus*** Predtetschensky sp. n.

(Figs. 13, 49, 50.)

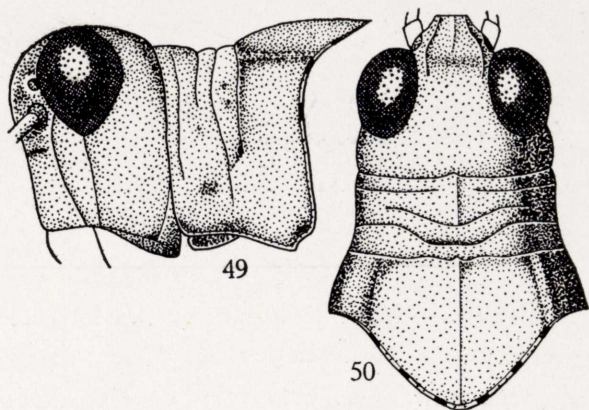
♀ (type). Body of medium size, somewhat sturdy, with sparse short hairs.

Head with sparse fine punctures, does not project strongly above the pronotum. Eyes irregular ovals, weakly projecting sideways; their vertical diameter slightly greater than the horizontal one and almost equal to subocular distance. Frons very weakly sloping. Frontal ridge flat, slightly impressed at the ocellus, almost parallel-sided, completely obliterated below the ocellus; margins hardly visible; in profile projecting slightly at bases of antennae; its surface in sparse punctures. Fastigium of vertex moderately sloping. Vertex fairly wide, but strongly impressed; margins weakly raised; median keel distinct; maximum width of vertex almost 2 times that of the frontal ridge between the antennae. Foveolae of vertex triangular. Antennae slightly longer than head and pronotum together.

Pronotum constricted in prozona; transverse furrows distinct but weak; the first furrow just behind the middle of prozona; interspaces

between the furrows slightly rough; metazona flat, finely and densely punctured, its length 1.5 times that of prozona; posterior angle obtuse, rounded, its margins straight; shoulders not projecting, rounded; median keel very weakly raised in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes vertical, densely and finely punctured in metazona; anterior margin bisinuate, anterior lower angle almost 90° rounded; posterior margin straight; posterior lower angle weakly attenuated; lower margin weakly obliquely-ascendant, undulating.

Sternum with sparse, fine punctures, its width equal to its length; width of interspaces between meso



Figs. 49-50.—*S. isfaghanicus*, type ♀.

and metasternal lobes 1.8 times greater than length. Lower parts of meso-episternum sparsely and finely punctured. Valvae of ovipositor with pointed apices; upper valvae with an excision, in the form of a tooth, on the outer margin; basal parts of lower valvae smooth.

Elytra almost parallel-sided, almost reaching the apices of posterior tibiae; their length 5.35 times their maximum width; venation fairly sparse, the apical part of the second branch of median vein gives off 2 branches; intercalary vein straight, parallel throughout its length to the discoidal vein, minutely tuberculated. Wings elongate-triangular; their length 1.76 times their maximum width; venation sparse.

Posterior femora sturdy, expanding at bases; their length 3.27 times their maximum width. Posterior tibiae considerably shorter than posterior femora, with 8-9 spines on the outer, 10 on the inner sides.

General coloration yellow-grey. Ocelli light yellow. Antennae yellow with brownish-grey rings. Elytra slightly transparent; the basal third, the diffuse median fascia and several indistinct spots in

the apical part—brownish-grey; veins light. Bases of wings faintly blue; veins slightly darkened in the apical part. Posterior femora yellow on the inner side, with very faintly marked darkish fascia below the yellow apex. Posterior tibiae whitish-yellow; bases whitish-yellow on the inner side.

Male unknown.

| | Type ♀ — mm. |
|-------------------------|--------------------|
| Length of body..... | 19.5 |
| — pronotum..... | 3.9 |
| — elytra..... | 19.5 |
| — posterior femora..... | 9.5 |
| — — tibiae..... | 7.5 |

PATRIA.—Iran: Isfaghan, 30.VIII.1931, 1 ♀ (type) (S. Predtetschensky).

This new species is very near to *Sphingonotus miramae* sp. n., differing from it by the structure of the head, pronotum and ovipositor, by venation of elytra, short posterior tibiae, and by coloration of posterior femora on the inner side.

Type in the Zoological Institute of the Academy of Sciences, Leningrad.

21. *Sphingonotus miramae* sp. n.

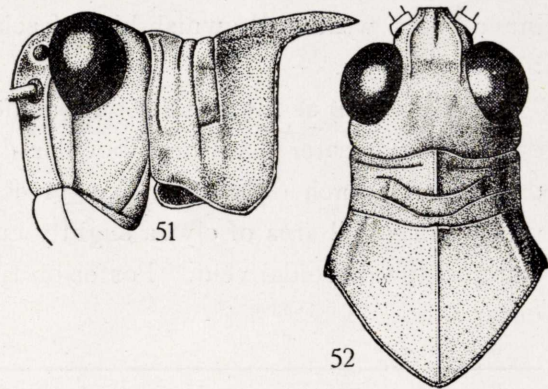
(Figs. 17, 51, 52.)

♀ (type). Body medium size, fairly slender with sparse short hairs.

Head compressed laterally, not strongly projecting above the pronotum, with sparse, fine punctures, almost smooth. Eyes regularly oval, weakly projecting sideways; their vertical diameter 1.5 times greater than the horizontal one and equal to the subocular distance. Frons vertical. Frontal ridge flat, parallel-sided, obliterated between the ocellus and clypeus; its margins obliterated; in profile projecting slightly at the bases of antennae, with a small excision at the ocellus. Fastigium of vertex moderately sloping. Vertex impressed; its margins moderately raised; median keel weak; maximum width of vertex 1.5 times that of the frontal ridge between the antennae. Facial

keels obliterated. Subocular furrow weak. Foveolae of vertex indistinct, weakly impressed, punctured. Antennae fine, slightly longer than head and pronotum together.

Pronotum constricted in prozona, transverse furrows very distinct; the first furrow just behind the middle of prozona; interspaces between the furrows smooth; metazona weakly convex, with dense, fine punctures, its length twice of prozona; posterior angle is equal to 90° , rounded, its margins straight; shoulders rounded; median keel very weakly raised in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes vertical, densely and finely punctured in metazona; anterior margin bi-sinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle rounded, somewhat dentate; lower angle moderately obliquely-ascendant, undulating.



Figs. 51-52.—*S. miramae*, type ♀.

Sternum finely and sparsely punctured, its width equal to its length; width of interspaces between the meso and metasternal lobes 1.5 times greater than length. Lower parts of meso-episternum densely and finely punctured. Valvae of ovipositor with pointed apices; basal parts of lower valvae with minute callous tubercles.

Elytra slightly narrowed towards the apices, not reaching the apices of posterior tibiae; their length 5.5 times their maximum width; venation moderately sparse, the apical part of the second branch of the median vein gives off 3 branches; intercalary vein straight, parallel throughout its whole length to the discoidal vein, minutely tuberculated. Wings elongate-triangular, their length 1.78 times their maximum width; venation sparse.

Posterior femora fairly thick; their length 3.7 times their maximum width. Posterior tibiae considerably shorter than the femora, with 9 spines on the outer, 10 on the inner sides.

General coloration reddish-ochraceous. Ocelli light yellow. Antennae brownish with light rings and bases. Elytra feebly chitinous; the basal third, the median transverse fascia and some large spots in the apical half—brownish; veins light. Wings transparent, faintly blue at bases; apical part colourless; almost all veins dark. Inner sides of posterior femora, for the greater part, yellowish with 3 black fasciae; apices light on the inner side. Posterior tibiae whitish-yellow; the inner sides with a brownish-blue fascia not far from base; bases black on inside.

♂ (allotype) as the female, but smaller. Vertical diameter of the eye slightly greater than the subocular distance. The apical part of the second branch of median vein gives off 2 branches; intercalary vein in discoidal area of elytra slightly curved, its apical part approaching to the discoidal vein. Posterior tibiae with 8-9 spines on the outer side.

| | Type ♀ — mm. | Allotype ♂ — mm. | Paratypes ♀♀ — mm. | Paratypes ♂♂ — mm. |
|---------------------|--------------------|------------------------|--------------------------|--------------------------|
| Length of body..... | 20.5 | 16.0 | 18.5-22.5 | 15.0-17.0 |
| — pronotum..... | 4.0 | 2.8 | 3.7- 4.5 | 2.8- 3.5 |
| — elytra..... | 22.0 | 17.5 | 20.0-23.5 | 17.0-18.5 |
| — posterior femora | 11.5 | 9.5 | 10.5-12.0 | 9.0-10.0 |
| — — tibiae. | 9.5 | 7.5 | 8.5-10.0 | 7.0- 8.0 |

I dedicate this species to Miss E. Miram, Curator of Orthoptera at the Zoological Institute of the Academy of Sciences, Leningrad.

PATRIA.—Turkmenistan: Kaakhka, 9-10.VII.1933, 1 ♀ (Yegoriev), Mew, 26.VI.1929, 2 ♀♀ (Mischenko); Bairam-Ali, 11.VI-5.VII.1930, 62 ♀♀, 7 ♂♂ (Bogush); Bairam-Ali, 17.V.-2.VII.1931, 176 ♀♀ (including the type) 65 ♂♂ (Bogush).

Uzbekistan: Farab, 1 ♀ (Andrusov).

This new species is very near to *Sphingonotus isfaghanicus* Predtshensky sp. n., differing from it by the structure of head, pronotum, ovipositor and posterior femora, also by coloration of the inner sides of posterior femora.

An interesting peculiarity of this species is the facility with which it reacts to artificial light all specimens having been obtained in this way. In 1929 in Merv, I obtained 2 ♂♂ in this same way. I care-

fully examined the environs of the town but never found the species in its natural conditions.

Type and allotype in the Zoological Institute, of the Academy of Sciences, Leningrad 4 paratypes (2 ♀ ♀ and 2 ♂ ♂) in the British Museum (Natural History), London.

It is my pleasant duty to offer my sincere gratitude to P. P. Bogush for supplying me with abundant material of this species.

22. *Sphingonotus femoralis* Uvarov.

(Fig. 15.)

1907. *S[phingonotus] coeruleans* Karny, Sitzungsab. k. Ak. Wissensch. Mat.-Nat. kl., vol. cxvi, Abt. I, p. 358, n.º 83 [Egypt. Sudan] (not Linné).
1931. *Sph[ingonotus] coeruleans* Krauss, Denksch. Ak. Wissensch. Wien, Mat.-Nat. kl., vol. lxxi, half vol. II, p. 9, n.º 12 [South Arabia] (not Linné).
1933. *Sphingonotus femoralis* Uvarov, Proc. Zool. Soc. Lond., p. 225, n.º 22, text-fig. 3 [type —; S. Arabian desert; Somali: Behin].

♀. Body of medium size, fairly sturdy, with sparse hairs.

Head sparsely, not coarsely punctured, strongly projecting above pronotum. Eyes regularly oval, projecting sideways; their vertical diameter 1.5 times greater than the horizontal one and equal to sub-ocular distance. Frons vertical. Frontal ridge impressed at ocellus, dilated between the antennae, obliterated below the ocellus, almost reaching clypeus; in profile very weakly projecting at bases of antennae; margins obliterated, fine; surface with sparse, shallow punctures. Fastigium of vertex not strongly sloping. Vertex narrow, weakly impressed; margins weakly but distinctly raised; median keel very weak, sometimes almost completely absent; maximum width of vertex slightly greater than width of the frontal ridge between the antennae. Foveolae of vertex feebly impressed, indistinct. Occiput sloping. Antennae fine, slightly longer than head and pronotum.

Pronotum constricted in prozona; transverse furrows distinct but weak; first furrow passing behind the middle of prozona; metazona slightly convex, with fine delicate punctures and several slight wrinkles,

its length twice that of the pronotum; posterior angle a little greater than 90° , slightly rounded; shoulders weakly projecting, rounded; median keel weakly raised in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes vertical, very finely punctured in metazona; anterior margin undulating, anterior lower angle obtuse; posterior margin straight, posterior lower angle sharply attenuated, dentate; lower margin weakly undulating, obliquely-ascendant.

Sternum very sparsely and finely punctured, its width equal to its length; width of interspaces between meso and metasternal lobes 1.75 times their length. Lower parts of meso-episternum sparsely and shallowly punctured. Valvae of ovipositor with elongated, pointed apices; basal parts of lower valvae rough with some callous tubercles. Hind margin of genital plate with a strong excision in the middle.

Elytra weakly narrowed at the apices, reaching the apices of posterior tibiae; their length almost 6 times their maximum width; apical half with very sparse regular venation, the apical part of the second branch of median vein gives off 2-3 branches; intercalary vein slightly curved, slightly approaching to the discoidal vein in the apical part, minutely tuberculated. Wings narrow, elongate-triangular with very sparse venation; their length 1.85 times their maximum width.

Posterior femora thick; their length 3 times their maximum width. Posterior tibiae slightly shorter than femora, with 8 spines on the outer and 10 on the inner sides.

General coloration greyish-ochreous or yellowish-pink. Head, sternum and abdomen whitish-grey or whitish-yellow. Ocelli yellow-brown. Antennae light with brownish rings. Elytra transparent in the apical part; basal third, complete distinct median fascia and several, sometimes faint, spots in the apical part-brown; veins light. Wings colourless, sometimes with a very faint bluish shade at the bases; veins dark. Posterior femora faintly yellow for the greater part of the inner side, with two black fasciae, sometimes the fascia nearest to the base disappears completely, or on the other hand it may expand and cover the whole base; apex on the inner side black. Posterior tibiae faintly blue with a light fascia in front of the base; base black on inside; tarsi whitish-yellow.

♂. As female, but smaller. Eyes projecting sideways more strongly than in the female; their vertical diameter greater than the subocular distance. The apical part of the second branch of the median vein gives off 2 branches.

| | ♀ ♀ — mm. | ♂ ♂ — mm. |
|-------------------------|-----------------|-----------------|
| Length of body..... | 20.0-25.5 | 13.5-16.5 |
| — pronotum..... | 3.5- 4.5 | 2.5- 3.0 |
| — elytra..... | 20.0-25.5 | 15.0-18.0 |
| — posterior femora..... | 9.5-11.5 | 7.0- 8.5 |
| — — tibiae..... | 8.0-10.0 | 6.0- 7.5 |

GEOGRAPHICAL DISTRIBUTION.—Western part of Egyptian Sudan; S. part of Arabian desert (Uvarov, 1933); Arabia, Hedjaz; S. E. Iran; British Baluchistan.

SPECIMENS EXAMINED.—13 ♀ ♀ and 27 ♂ ♂.

Eastern part of Egyptian Sudan: Kassala, Sinkrat, Bageir, Wadi-Medani (Johnston).

Arabia: S. W. Najd, Turaba, Medina, S. Arabian Desert, Mecca, S. Hedjaz, Wadi Sharaya (Philby, Brit. Mus.).

S. E. Iran: Kiaguraka, Ghé, Mekran, R. Razy, Bampur (Zarudny).

British Baluchistan, Pasin (Brit. Mus.).

23. **Sphingonotus montanus** sp. n.

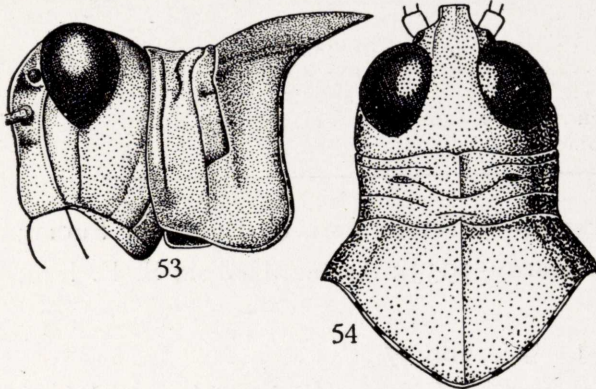
(Figs. 53, 54.)

♀ (type). Body of medium size, fairly slender, with sparse hairs.

Head compressed laterally, sparsely, coarsely, but not deeply punctured, weakly projecting above the pronotum. Eyes regularly oval, not strongly projecting laterally; their vertical diameter almost 1.5 times greater than the horizontal one and equal to the subocular distance. Frons vertical. Frontal ridge flat, slightly impressed at the ocellus, dilating between the antennae, constricted below the ocellus and completely absent between the ocellus and clypeus; margins thick, strongly obliterate; its surface punctured; flat in profile. Fastigium of vertex sloping at the angle of 45°. Vertex weakly impressed,

margins obliterate; median keel weak; maximum width of vertex slightly greater than width of frontal ridge between the antennae. Foveolae of vertex indistinct, finely punctured. Antennae fine, slightly longer than head and pronotum together.

Pronotum weakly constricted in prozona; transverse furrows distinct; first furrow passes behind the middle of prozona; metazona al-



Figs. 53-54.—*S. montanus*, type ♀.

most flat, densely and finely punctured, its length almost twice that of prozona; posterior angle obtuse, rounded; shoulders rounded; median keel weak in front of the first furrow, low and linear in metazona. Lateral lobes vertical; anterior margin undulating, anterior lower angle obtuse, rounded;

posterior margin straight, posterior lower angle almost 90° , widely-rounded; lower margin feebly obliquely-ascendant; surface, especially in the posterior part densely punctured.

Sternum with sparse shallow punctures, its width is equal to its length; width of interspace between the mesosternal lobes twice its length. Lower parts of meso-episternum coarsely, but not deeply punctured. Valvae of ovipositor long, fine; apices pointed; basal parts of lower valvae smooth.

Elytra parallel-sided, reaching the apices of posterior tibiae; their length 5.5 times their maximum width; venation sparse, fairly regular; apical part of the second branch of median vein gives off 3 branches; intercalary vein straight, parallel to the discoidal vein, minutely tuberculated, placed in the anterior third of discoidal area. Wings elongate-triangular with sparse, fairly regular venation; their length 1.7 times their maximum width.

Posterior femora slender; their length 4 times their maximum width. Posterior tibiae slightly shorter than posterior femora, with 8 spines on the outer, 10 on the inner sides.

General coloration light ochraceous with whitish spots. Ocelli yellow. Antennae darkish with light rings. Elytra slightly coriaceous, transparent in the apical half; the basal third, distinct median fascia and several very indistinct spots in the apical part—brown; veins yellow. Wings blue at base; veins light. Posterior femora for the greater part of the inner side yellow, with a dark fascia near the dark apex. Posterior tibiae yellowish-green, bases black on inside; tarsi yellowish.

♂ (allotype). As the female, but smaller. Vertex more strongly impressed than in female.

| | Type ♀ mm. | Allotype ♂ mm. | Paratypes ♀♀ mm. | Paratypes ♂♂ mm. |
|---------------------|---------------|-------------------|---------------------|---------------------|
| Length of body..... | 23.0 | 16.5 | 20.5-24.5 | 15.50-17.5 |
| — pronotum..... | 4.0 | 3.0 | 3.5- 4.0 | 2.75- 3.0 |
| — elytra..... | 22.0 | 16.0 | 21.5-25.0 | 17.5 -18.0 |
| — posterior femora | 10.0 | 8.0 | 10.0-12.0 | 8.0 - 8.5 |
| — — tibiae. | 8.5 | 6.5 | 8.5-10.5 | 6.50- 7.0 |

PATRIA.—Arabia: Medina, 16.VI.1931, 1 ♂ (Philby).

India, Baluchistan: Ziarat, 8000 ft., 6.VIII.1929, 3 ♀♀ (including the type), 1 ♂ (J. Evans); Ziarat, 8000 ft., 1-15.VIII.1930, 1 ♀ (W. Evans); Ziarat, Juniper Forest, 7500 ft., 3.V.1930, 1 ♂ (W. Evans); Near Quetta, 5500 ft., 15.VIII.1930, 1 ♀ (W. Evans); Quetta, 21.VIII.1931, 1 ♀ (Y. R. Rao); Quetta, 12.VIII.1932, 3 ♀♀, 1 ♂; Charman, 4500 ft., 17.VIII.1930, 2 ♀♀ (W. Evans); S. slopes of Khojok, Zanges, 6000 ft., 18.VIII.1930, 2 ♀♀ (W. Evans); Urak valley, 16 miles from Quetta, 7000 ft., 24.VIII.1930, 1 ♀ (W. Evans); Zonalai; Fort Sanderwar Rd., 4000 ft., 28.VIII.1930, 1 ♂ (W. Evans); Raighora, Loralai-Ziarat Rd., 1.IX.1930, 1 ♂ (W. Evans). (British Museum).

This new species is very similar and near to *Sphingonotus maculatus* Uvarov, but differs from it by structure of head, pronotum, ovipositor, and coloration of posterior femora on the inner side.

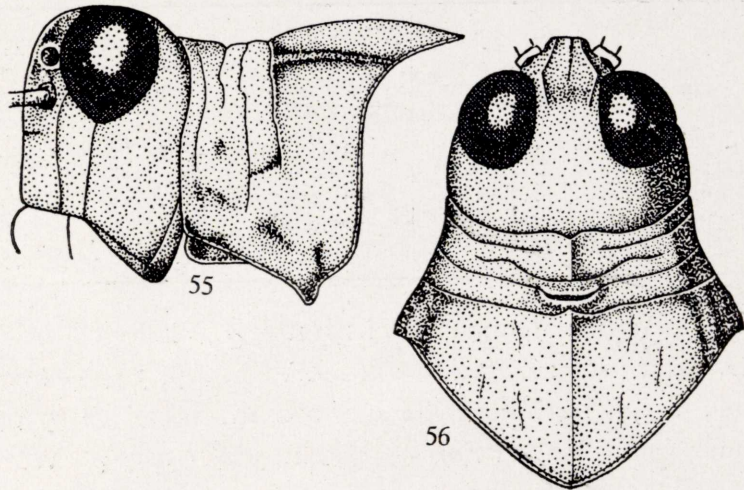
Type and allotype in the British Museum (Natural History), London. Two paratypes (male and female) in the Zoological Institute of the Academy of Sciences, Leningrad.

24. *Sphingonotus dentatus* Predtetschensky sp. n.

(Figs. 55, 56.)

♀ (type). Body medium size, with very short sparse hairs.

Head large, laterally compressed, very finely and very sparsely punctured, fairly strongly projecting above the pronotum; genae not projecting outwards. Eyes small, short oval, slightly projecting laterally; vertical diameter slightly greater than the horizontal one and equal to subocular distance. Frons vertical. Frontal ridge flat,

Figs. 55-56.—*S. dentatus*, type ♀.

slightly impressed at the median ocellus, feebly dilated between the antennae, and slightly constricted below the ocellus, completely obliterated between the latter and clypeus; in profile flat, not projecting at the base of antennae; margins thick, obliterate; surface with scarcely marked sparse punctures. Fastigium of vertex strongly sloping. Vertex broad, weakly concave in the anterior part and deeply concave in its posterior part; margins distinct, elevated; median keel hardly marked; maximum width of vertex 1.75 times greater than the width of frontal ridge between the antennae. Lateral facial keels obliterate. Subocular furrow feebly impressed. Temporal foveolae indistinct, weakly punctured. Occiput slightly sloping. Antennae slender, slightly longer than head and pronotum together.

Pronotum feebly constricted in the prozona, transverse furrows

distinct, first furrow just behind the middle of prozona; interspace between furrows very slightly rugulose; metazona convex, densely but not deeply punctured, very slightly rugulose, twice as long as the prozona; posterior angle obtuse, feebly rounded; shoulders not projecting, rounded. Median keel slightly raised in front of the first furrow, absent between the furrows, very low in metazona. Lateral lobes vertical, densely and finely punctured in the posterior part; anterior margin bi-sinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle acute; lower margin slightly undulating, obliquely-ascendant anteriorly.

Sternum very sparsely punctured; its width equal to its length; interspace between meso and metasternal lobes 1.5 times as broad as long. Lower parts of mesoepisternum almost smooth, very sparsely punctured. Valvae of ovipositor with elongated, pointed apices; bases of lower valvae smooth, feebly punctured, without callous tubercles.

Elytra long, narrowed to the apices, reaching the apices of posterior tibiae; their length 6 times greater than the maximum width; venation fairly dense; intercalary vein straight, throughout its whole length parallel to the discoidal vein, feebly tuberculated; apical part of the 2nd branch of median vein width 2-3 branches. Wings long, fairly narrow, elongate-triangular, venation sparse; their length 1.76 times the maximum width.

Posterior femora thick; their length 3.6 times their maximum width. Posterior tibiae slightly shorter than the posterior femora, with 7 spines on the outer, 10 on the inner sides.

General coloration pinkish-yellow. Head yellowish. Ocelli yellow. Antennae yellowish-brown with pale rings; bases pale. Elytra weakly transparent; their basal third brownish-yellow; the incomplete, faint, transverse, median fascia and some very indistinct spots in the apical part also brownish-yellow; veins pale. Bases of wings bluish; veins in the apical part darkened. Sternum and abdomen yellow. Posterior femora pale greenish-blue on the inside, with a dark spot before the yellow transverse fascia; apex pale greenish-blue; lower inner furrow pale greenish-blue. Posterior tibiae dirty blue on the inside with a yellowish-white ring before the base; apices yellow; bases black on the inside; tarsi yellow.

♂ (allotype). As the female, but smaller. Posterior lower angle of lateral lobes only slightly acute. Posterior tibiae with 6 spines on the outer, 8 on the inner sides.

| | Type ♀ — mm. | Allotype ♂ — mm. | Paratypes ♀♀ — mm. | Paratypes ♂♂ — mm. |
|---------------------|--------------------|------------------------|--------------------------|--------------------------|
| Length of body..... | 24.5 | 14.5 | 22.5-23.0 | 14.5 -17.5 |
| — pronotum..... | | 2.75 | 3.9- 4.4 | 2.75- 3.2 |
| — elytra..... | 24.0 | 17.50 | 20.0-23.5 | 15.5 -18.5 |
| — posterior femora | 11.5 | 8.00 | 10.0-11.5 | 8.0 - 8.5 |
| — — tibiae. | 9.5 | 6.50 | 8.0 9.5 | 6.5 - 7.0 |

PATRIA.—Iran: Loristan, 20.30.VIII.1931, 6 ♀♀ (including the type), 6 ♂♂ (S. Predtetschensky).

This new species is nearest to *Sphingonotus bey-bienkoi* sp. n., but differs from it in the following characters: structure of the head and pronotum, shape of eyes, number of spines on posterior tibiae, and coloration of posterior femora on the inside. Type and allotype in the Zoological Institute of Academy of Sciences, Leningrad.

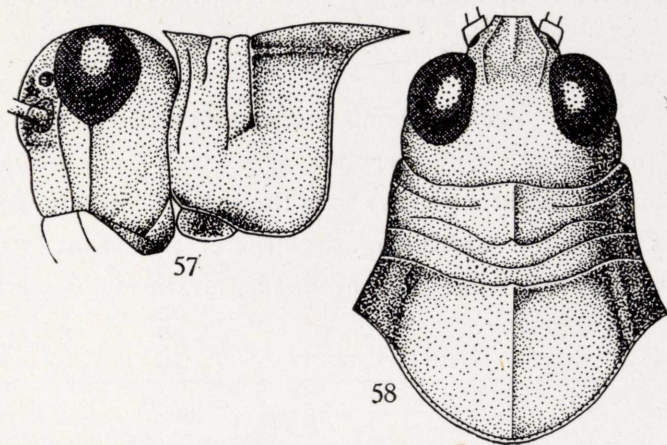
25. *Sphingonotus bey-bienkoi* sp. n.

(Figs. 57, 58.)

♀ (type). Body of medium size, sturdy, almost naked.

Head weakly compressed laterally, finely and sparsely punctured, not projecting at all above the pronotum. Eyes almost round, projecting laterally; their vertical diameter almost equal to the horizontal one and equal to subocular distance. Frons vertical. Frontal ridge flat, slightly impressed at the ocellus, completely obliterated between the ocellus and clypeus, not reaching the latter; flat in profile, not projecting at all; margins divergent, thick, obliterate; surface sparsely punctured. Fastigium of vertex strongly sloping, almost vertical. Vertex wide, weakly impressed, margins somewhat obliterated; median keel distinct; maximum width of vertex 1.5 times the width of frontal ridge between the antennae. Foveolae of vertex indistinct, coarsely punctured. Antennae fine, slightly longer than the head and pronotum together.

Pronotum without a constriction in prozona; transverse furrows distinct, but weak; first furrow just behind the middle of prozona; metazona flat, coarsely and densely punctured, its length 1.5 times that of prozona; posterior angle slightly greater than 90° , rounded; shoulders rounded; median keel very weak, scarcely noticeable in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes almost square, densely and coarsely punctured in metazona; anterior margin undulating; anterior lower



Figs. 57-58.—*S. bey-bienkoi*, type ♀.

angle obtuse, rounded; posterior margin straight, posterior lower angle broadly-rounded; lower margin weakly undulating.

Sternum with fine, sparse punctures; its width equal to its length; width of interspaces between meso and metasternal lobes twice their length. Lower parts of meso-episternum coarsely punctured. Valvae of ovipositor with elongated, pointed apices; basal parts of lower valvae rough, with distinct callous tubercles.

Elytra slightly narrowed towards the apices, do not reach the apices of posterior tibiae by a very short distance; their length 5.5 their maximum width; venation sparse, the apical part of the second branch of median vein gives off two branches; intercalary vein somewhat irregular, slightly approaching the discoidal vein apically, minutely tuberculated. Wings elongate-triangular with sparse venation; their length 1.78 times their maximum width.

Posterior femora fairly slender, their length almost 4 times their

maximum width. Posterior tibiae slightly shorter than posterior femora, with 8 spines on the outer, 10 on the inner sides.

General coloration brownish. Head, sternum and the lower parts of abdomen whitish. Ocelli yellow. Antennae brown with light rings and bases. Elytra fairly transparent; the basal third, two indistinct incomplete transverse fasciae, and some faint spots in the apical quarter—blackish-brown; veins pale. Wings transparent, slightly bluish at bases; veins dark. Posterior femora blackish brown for the greater part of the inner sides with two light complete fasciae. Posterior tibiae faint dirty-blue with a light fascia at the dark base; tarsi yellowish-white.

♂ (allotype). As the female, but smaller. Head projecting above the pronotum. Eyes very strongly projecting sideways; their vertical diameter slightly greater than the subocular distance. Vertex narrow; its maximum width slightly greater than that of the frontal ridge between the antennae. Antennae 1.5 times longer than head and pronotum together.

| | Type ♀ — mm. | Allotype ♂ — mm. | Paratypes ♀♀ — mm. | Paratypes ♂♂ — mm. |
|---------------------|--------------------|------------------------|--------------------------|--------------------------|
| Length of body..... | 23.5 | 16.5 | 18.5-25.0 | 14.5-17.0 |
| — pronotum..... | 4.5 | 2.25 | 3.2-4.5 | 2.25-2.75 |
| — elytra..... | 23.5 | 23.5 | 17.0-24.0 | 15.7-16.5 |
| — posterior femora | 11.0 | 11.0 | 8.5-12.0 | 7.5-8.0 |
| — — tibiae. | 9.5 | 9.5 | 7.0-10.5 | 6.5-7.0 |

I dedicate this new species to my friend G. J. Bey-Bienko, the author of many extremely interesting works on the orthopterous fauna of Central Asia.

PATRIA.—Kirghiz Republic: Sara-Bulak near Pishpek, 7.VII.1933, 2 ♀♀, 2 ♂♂. Northern Mongolia; Urga, 25.VII.1909, 1 ♀ (Kozlov); Kobdo, 15.VI.1911, 1 ♀ (Urganova); Malyi Namyr, 11.VIII.1911, 1 ♀, 1 ♂ (Urganova). Central Mongolia: Mishik-Gun, N. Khalkha, 13.IX.1925, 2 ♀♀, 1 ♂; Sopren Khuduk, Tyrmis Khuduk, 12-13.IX.1925, 1 ♀; Kholt, N. Gobi, 4.VIII.1926, 2 ♀♀; Ulan-bulak, Dun-dusaikhan, Cent. Goby, 3.VII.1909, 2 ♀♀, 2 ♂♂; Uitsznich-Khuduk, Khutsench-Shanda, 15-16.VII.1909, ♀♀ (Kozlov). S. Mongolia: Baishintu, S. Ala-Shan, 6-8.VII.1908, 2 ♀♀ (including the type);

Nan-Shan, 25.VII.1908, 1 ♀. N. W. China: Stream, Sen-Chu, basin of Blue Rider, Province Yan-Su, 12,000 ft., beginning of III, 1900, 1 ♀ (Kozlov).

This new species is nearest to *Sphingonotus dentatus* Predtetschensky sp. n., but differs from it in the characteristic structure of the head and pronotum, almost round eyes, large number of spines on posterior tibiae and coloration of the inner side of posterior femora.

Type and allotype in the Zoological Institute of the Academy of Sciences, Leningrad. Two paratypes (male and female) in the British Museum (Natural History), London.

26. ***Sphingonotus lucidus*** sp. n.

(Figs. 59, 60.)

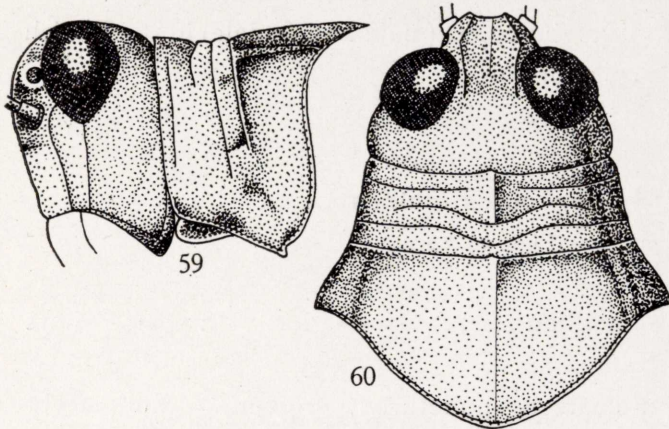
♀ (type). Body of medium size, fairly slender, with sparse short hairs.

Head sparsely and coarsely punctured, projecting moderately above the pronotum. Eyes oval, weakly projecting sideways; their vertical diameter almost 1.5 times greater than the horizontal one, and almost equal to subocular distance. Frons sloping. Frontal ridge impressed, dilated between the antennae, compressed below the ocellus, dilated between the ocellus and clypeus and obliterated just in front of clypeus; margins thick; surface with large dense punctures; flat in profile. Facial keels distinct. Subocular furrow weak. Fastigium of vertex strongly sloping. Vertex impressed, short; margins distinctly raised; median keel weak, hardly noticeable; maximum width of vertex slightly greater than that of frontal ridge between the antennae. Foveolae of the vertex indistinct, punctured. Occiput moderately sloping. Antennae fine, 1.5 times longer than head and pronotum together.

Pronotum strongly constricted in prozona; transverse furrows very distinct, the first furrow just behind the middle of prozona; interspaces between the furrows slightly rough; metazona flat, densely and finely punctured, its length 1.5 times greater than prozona; posterior angle obtuse, broadly-rounded, its margins straight; shoulders not projecting, rounded; median keel weakly raised in front of the first furrow,

absent between the furrows, very low and linear in metazona. Lateral lobes vertical, densely and finely punctured in metazona; anterior margin bisinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle weakly attenuated; lower margin obliquely-ascendant, undulating.

Sternum very sparsely punctured, its width subequal to its length; width of interspaces between meso and metasternal lobes 1.5 times



Figs. 59-60.—*S. lucidus*, type ♀.

greater than length. Lower parts of mesoepisternum with fine dense punctures. Valvae of ovipositor with pointed apices; basal parts of lower valvae rough with callous tubercles.

Elytra parallel-sided, not reaching the apices of posterior tibiae by a short

distance; their length 5.5 times greater than their maximum width; venation very sparse; apical part of the second branch of median vein gives off 3 branches; intercalary vein distinct, straight, parallel throughout its whole length to the discoidal vein, minutely tuberculated. Wings elongate-triangular; their length 1.83 times their maximum width; venation very sparse.

Posterior femora slender, long; their length 4.2 times their maximum width. Posterior tibiae slightly shorter than the femora, with 8 spines on the outer, 10 on the inner sides.

General coloration greyish-yellow. Head whitish. Antennae yellowish-grey with brown rings. Elytra transparent; the basal third, the diffuse median transverse fascia and several diffuse spots in the apical part—all brown; veins light. Wings transparent, faintly bluish at base; veins darkish in the apical part. Femora for the greater part of the inner side brownish-black with two complete light fasciae; apices of inner sides brownish-black. Posterior tibiae whitish-blue; bases black on the inside.

♂ (allotype). As the female, but smaller. Vertical diameter of the eye slightly greater than the subocular distance. Elytra narrower than in female, their length 5.9 times greater than their maximum width; apical part of second branch of the median vein gives off 2 branches.

| | Type ♀ mm. | Allotype ♂ mm. | Paratypes ♀♀ mm. | Paratypes ♂♂ mm. |
|---------------------|---------------|-------------------|---------------------|---------------------|
| Length of body..... | 22.5 | 17.5 | 21.5-23.5 | 14.0 |
| — pronotum..... | 4.2 | 3.0 | 3.8- 4.0 | 2.5 |
| — elytra..... | 24.5 | 18.0 | 22.0-24.5 | 16.5 |
| — posterior femora | 11.5 | 8.5 | 10.5-11.5 | 8.3 |
| — — tibiae. | 10.0 | 7.0 | 9.0-10.0 | 6.8 |

PATRIA.—Western Pamir, Shugnan: Meden-Shor R. Shakh-Dara, 27.VII.1897, 2 ♂♂; Kharog, at the confluence of rivers Gunt and Shakh-Dara, 11.VII.1897, 1 ♀; Sardym, R. Gunt, 16.VIII.1897, 2 ♀♀ (including the type) (Kaznakov).

This new species is nearest to *Sphingonotus miramae* sp. n., differing from the latter by very sparse venation of wings and elytra; fine, long antennae; very slender posterior femora; and by coloration of the inner sides of posterior femora.

Type and allotype in the Zoological Institute of the Academy of Sciences, Leningrad. One paratype (female) in the British Museum (Natural History), London.

27. *Sphingonotus fallax* sp. n.

(Figs. 5, 12, 61, 62.)

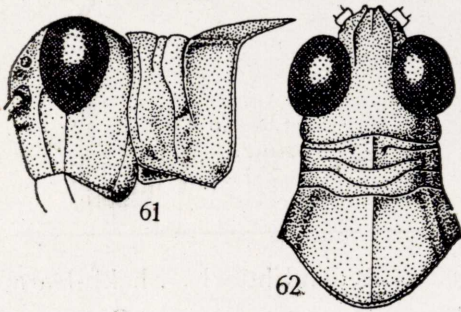
1884. *Sph[ingonotus] coerulans* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxviii, p. 200, n.º 3 [Himalaya] (not Linné).

1914. *Sph[ingonotus] coerulans* Uvarov, Rev. Rus. Ent., vol. xiv, p. 234 [Himalaya: the river Nubra] (not Linné).

♀ (type). Body medium, slender, with sparse hairs.

Head finely punctured, weakly projecting above the pronotum. Eyes short, oval, weakly projecting sideways; their vertical diameter slightly greater than the horizontal one and almost equal to subocular

distance. Frons weakly sloping. Frontal ridge weakly concave at the ocellus, slightly widened between the antennae, somewhat constricted below the ocellus; margins thick; surface finely punctured; almost flat in profile. Fastigium of vertex moderately sloping. Vertex short, fairly concave; margins distinctly raised; median keel distinct; maximum width of vertex 1.5 times the width of frontal ridge between



Figs. 61-62.—*S. fallax*, allotype ♂.

the antennae. Foveolae of vertex very indistinct. Antennae slender, about 1.5 times longer than head and pronotum together.

Pronotum weakly constricted in prozona; transverse furrows distinct, very deep; the first furrow in the middle of prozona; metazona flat, finely and densely punctured, very delicately wrinkled, it is twice longer than prozona; posterior angle obtuse, widely rounded; shoulders rounded; median keel very weak in front of the first furrow, absent between the furrows, low in metazona.

Lateral lobes vertical, finely and densely punctured in metazona; anterior margin bisinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle rounded, somewhat dentate; lower margin obliquely-ascendant, undulating.

Sternum finely, sparsely punctured, its width equal to its length; width of interspaces between meso and metasternal lobes 2.25 times their length. Lower parts of meso-episternum densely and finely punctured. Valvae of ovipositor with short blunt apices; basal parts of lower valvae rough.

Elytra parallel-sided, reaching the apices of posterior tibiae; their length 6 times their maximum width; venation sparse, apical part of 2nd branch of median vein gives off 3 branches; intercalary vein S-shaped, very near to discoidal vein at apex, finely granular. Wings elongated, triangular, narrow, their length 1.8 times their maximum width; venation sparse.

Posterior femora very slender; their length about 4.5 times their maximum width. Posterior tibiae slightly shorter than the femora with 7-8 spines on the outer, 9-10 on the inner sides.

General coloration brownish-gray. Head somewhat whitish. Ocelli yellow. Antennae brownish with light rings and bases. Elytra transparent; basal third, transverse median fascia and several spots in the apical half—brown; veins light. Wings transparent, slightly bluish at bases; veins almost all dark. Inner sides of posterior femora, for the greater part brownish-black with two complete light fasciae; inner sides of apices brownish-black. Posterior tibiae whitish, somewhat yellow at apices; inner sides of bases black.

♂ (allotype). As the ♀, but smaller. Vertical diameter of the eye slightly greater than the subocular distance. Apical part of 2nd branch of median vein of elytra gives off 2 branches. Posterior tibiae with 8-9 spines on the outer side.

| | Type ♀ mm. | Allotype ♂ mm. | Paratype ♂ mm. |
|--------------------------|---------------|-------------------|-------------------|
| Length of body | 28.0 | 18.0 | 17.5 |
| — pronotum | 4.5 | 2.8 | 2.7 |
| — elytra | 30.2 | 20.5 | 18.5 |
| — posterior femora | 13.0 | 9.0 | 8.8 |
| — — tibiae..... | 11.5 | 7.5 | 7.3 |

PATRIA.—Kashmir: Karakoram ridge, mouth of river Nubra 5.VIII., 2 ♂♂; Panamik, on r. Nubra 11.000 ft., 8.VIII.1912, 1 ♀ (type) (Avinov).

This new species is near to *Sph. lucidus*, but differs from it by the following characters: structure of head, pronotum and ovipositor, S-shaped intercalary vein in discoidal area of elytra, and by very slender posterior femora. Lives on sands.

Type and allotype in the Zoological Institute of Academy of Sciences, Leningrad.

28. *Sphingonotus ganglbaueri* Krauss.

1931. *Sph[ingonotus] ganglbaueri* Krauss, Denks. Ak. Wiss. Wien, Math.-Nat. Kl., vol. LXXI, half vol. II, p. 21, n.º 9, Pl. II, fig. 4 [type ♂, Sokotra Island.

♂. Body slender with long, fairly dense hairs.

Head densely punctured, projecting above the pronotum. Eyes

short oval, strongly projecting sideways; their vertical diameter slightly greater than the horizontal one and almost equal to subocular distance. Frons weakly sloping. Frontal ridge almost parallel-sided, weakly concave, completely obliterated between ocellus and clypeus; margins thick; its surface densely punctured; flat and not projecting in profile. Fastigium of vertex strongly sloping, almost vertical. Vertex wide, almost square, very slightly concave; median keel scarcely marked; margins very weakly raised; maximum width of vertex almost twice the width of frontal ridge between the antennae. Antennae fairly thick, thickened at apices, equal in length to head and pronotum together.

Pronotum constricted in prozona, slightly saddle-shaped; transverse furrows shallow; the first furrow in the middle of prozona; metazona convex, densely and not finely punctured, finely wrinkled; its length twice that of prozona; posterior angle slightly greater than 90° , pointed, its margins weakly undulating; shoulders projecting; median keel very weakly raised in front of the first furrow, scarcely marked, absent between the furrows, very low and linear in metazona. Lateral lobes vertical; anterior margin bisinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle widely rounded; lower margin obliquely-ascendant, straight.

Sternum densely punctured, its width equal to its length; width of interspaces between meso and metasternal lobes twice their length. Lower parts of meso-episternum densely and coarsely punctured.

Elytra almost parallel-sided; their length 5.25 times their maximum width; venation fairly sparse; apical part of the 2nd branch of median vein gives off 2 branches; intercalary vein S-shaped, very near to discoidal vein at apex, finely granular. Wings wide, triangular; their length 1.63 times their maximum width; venation dense; axillary veins somewhat thickened in the middle.

Posterior femora fairly thick; their length about 4 times their maximum width. Posterior tibiae slightly shorter than the femora with 8 spines on the outer, 9 on the inner sides.

General coloration yellow-ochraceous. Head whitish. Antennae uniformly yellow-ochraceous. Elytra weakly chitinized, transparent in the apical part; basal third, narrow median transverse fascia and several faint spots in the apical part—yellow-brown; veins light.

Wings transparent, almost colourless, with a very faint bluish shade at bases; veins in the apical part slightly darker. Inner sides of posterior femora for the greater part brownish-black with two complete light fasciae; inner sides of apices black. Posterior tibiae dirty-bluish, yellowish at apices, inner sides of bases black.

♀ unknown.

| | ♂ mm. |
|--------------------------|----------|
| Length of body | 21.0 |
| — pronotum | 4.2 |
| — elytra | 21.5 |
| — posterior femora | 9.5 |
| — — tibiae | 8.0 |

GEOGRAPHICAL DISTRIBUTION.—Sokotra Island.

SPECIMENS EXAMINED.—I ♂ (type).

Island Sokotra, II.1899; I ♂ (Simony) (Coll. Wien. Natur. Hist. Museum).

29. **Sphingonotus albipennis** Krauss.

1902. *Sphingonotus albipennis* Krauss, Anz. k. Ak. Wissensch. Math.-Nat. kl., vol. xxxix, Nr. VII, p. 57, n.° 12 [type ♀, ♂; Island Sokotra].
1907. *Sph[ingonotus] albipennis* Krauss, Denks. Ak. Wiss. Wien, Math.-Nat. kl., vol. LXXI, p. 20, n.° 8, Pl. II, fig. 3 [Island Abd-el-Kyuri].

♀. Body of medium size, with long fairly dense hairs.

Head densely punctured, weakly projecting above the pronotum. Eyes short oval, weakly projecting sideways; their vertical diameter scarcely longer than the horizontal one and almost equal to subocular distance. Frons almost vertical. Frontal ridge weakly impressed, slightly dilated between the antennae, weakly constricted below the ocellus, completely obliterated between the ocellus and clypeus; margins thick; surface densely punctured; in profile projecting at the bases of antennae, with a slight excision at the ocellus. Fastigium of vertex

moderately sloping. Vertex elongated, impressed; median keel weak; margins weakly raised; maximum width of vertex slightly greater than the width of frontal ridge between the antennae. Foveolae of vertex indistinct, punctured. Occiput weakly sloping. Antennae fine, slightly longer than head and pronotum together.

Pronotum weakly constricted in the prozona, slightly saddle-shaped; transverse furrows distinct; the first furrow just behind the middle of prozona; interspace between the second and third furrows with an impression in the middle; interspaces between furrows slightly rough; metazona convex, its length 1.5 times that of prozona, densely and finely punctured; posterior angle 90° , broadly rounded, its margins weakly undulating; shoulders slightly projecting, rounded; median keel very weakly raised in front of the first furrow, hardly noticeable, absent between the transverse furrows, very low and linear in metazona. Lateral lobes vertical, densely and finely punctured in metazona; anterior margin bi-sinuate, anterior lower angle obtuse, rounded; posterior margin weakly undulating, posterior lower angle broadly-rounded; lower margin obliquely-ascendant, undulating.

Sternum densely and finely punctured, its width equal to its length; width of interspaces between meso and metasternal lobes 1.5 times greater than their length. Lower parts of meso-episternum densely and finely punctured.

Elytra parallel-sided reaching the apices of posterior tibiae; their length almost 5.6 times their maximum width; venation fairly sparse; the apical part of the second branch of median vein gives off 2 branches; intercalary vein distinctly S-shaped, almost touching the discoidal vein at the apex, minutely tuberculated. Wings wide, triangular; their length about 1.63 times their maximum width; venation sparse; axillary veins slightly thickened in the middle.

Posterior femora slender, their length 4 times their maximum width. Posterior tibiae slightly shorter than the femora, with 8-9 spines on the outer, 9-10 on the inner sides.

General coloration sulphur-yellow. Head whitish. Antennae uniform sulphur-yellow. Elytra weakly coriaceous, transparent in the apical part; the basal third, transverse median fascia and some weakly marked spots in the apical half brownish-yellow; veins light. Wings transparent, absolutely colourless; somewhat whitish at bases,

with a very faint dark fascia, which may be almost absent; veins in the apical part, and the axillary veins darkish. Inner sides of posterior femora brownish-black, with two light complete fasciae; apex black on inside. Posterior tibiae yellow, with orange tinge, bluish on the inside; bases black on the inner sides.

♂. As female, but smaller. The apical part of the second branch of the median vein gives off 1-2 branches. Intercalary vein in the discoidal area touches the discoidal vein in the apical part.

| | ♀ mm. | ♂♂ mm. |
|--------------------------|----------|-----------|
| Length of body | 28.0 | 21.0-22.5 |
| — pronotum | 5.0 | 4.2- 4.6 |
| — elytra | 31.0 | 23.0-25.0 |
| — posterior femora | 13.5 | 10.0-12.0 |
| — — tibiae | 11.5 | 8.5-10.5 |

GEOGRAPHICAL DISTRIBUTION.—Sokotra and Abd-el-Kuri Islands.

SPECIMENS EXAMINED.—1 ♀, 2 ♂♂.

Sokotra I., 1900, 1 ♂ (Coll. British Museum). Island Abd-el-Kuri, I.1899, 1 ♀, 1 ♂ (Simony) (types) (Coll. Wien. Natur. Hist. Museum).

VI. Group RUBESCENS

30. *Sphingonotus theodori theodori* Uvarov.

1923 (1924). *Sphingonotus coerulans theodori* Uvarov, Bull. Soc. R. Ent. Egypte, p. 195, n.° 77, figs. 2 and 3 [type ♀; Palestine: Jericho, Wadi Kelt.].

♀. Body medium, almost naked, with sparse hairs.

Head laterally compressed, slightly projecting above the pronotum, finely and sparsely punctured. Eyes somewhat irregularly oval, weakly projecting sideways; their lower margin rounded; vertical diameter 1.5 times the horizontal one and equal to the subocular distance. Frons almost vertical. Frontal ridge weakly impressed

with coarse punctures at the fastigium, constricted below the ocellus, dilated further and becoming obliterate; flat in profile; margins obliterate. Fastigium of vertex sloping. Vertex weakly impressed, margins slightly raised; median keel weak; maximum width of vertex 1.5 times greater than width of frontal ridge between the antennae. Foveolae of vertex indistinct, coarsely punctured. Antennae fine, slightly longer than head and pronotum together.

Pronotum weakly constricted in prozona, with distinct transverse furrows, the first furrow behind the middle of prozona; metazona almost flat, coarsely punctured, its length twice that of prozona; posterior angle slightly greater than 90° , rounded; shoulders rounded; median keel slightly raised in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes vertical; anterior margin undulating, anterior lower angle obtuse; posterior margin straight, posterior lower angle rounded; lower margin obliquely-ascendant with an excision at the anterior angle.

Sternum finely-punctured, its width equal to its length; width of interspaces between meso and metasternal lobes 1.5 times their length. Lower parts of meso-episternum sparsely and coarsely punctured. Valvae of ovipositor with long, pointed apices; basal parts of lower valvae with callous tubercles.

Elytra parallel-sided, reaching apices of posterior tibiae; their length 6 times their maximum width; basal quarter with dense, irregular venation; apical half with sparse more regular venation; the apical part of the second branch of median vein gives off 2-3 branches; intercalary vein straight, parallel to discoidal vein, finely granular. Wings elongate-triangular with sparse venation, their length 1.84 times their maximum width.

Posterior femora sturdy, enlarged basally; their length 3.77 times their maximum width. Posterior tibiae slightly shorter than the femora, with 8 spines on the outer, 10 on the inner sides.

General coloration from yellow grey to greyish-black. Ocelli yellow. Antennae brownish with light rings. Elytra slightly coriaceous basally, in the rest transparent; the basal third, the weak transverse fascia and several faint spots in the apical part—brownish, in some specimens the brownish coloration disappearing completely; veins light. Wings almost colourless, veins dark in the apical part.

Posterior femora yellow on the inner sides, with an indistinct, darkish fascia; apices of the inner sides slightly darkened. Posterior tibiae bright sulphur yellow; bases black inside; tarsi yellowish.

♂ as female, but smaller. Vertical diameter of the eye slightly greater than subocular distance. The apical part of the second branch of median vein gives off 3 branches.

| | ♀ ♀ — mm. | ♂ ♂ — mm. |
|--------------------------|-----------------|-----------------|
| Length of body | 22.0-27.0 | 14.5-19.0 |
| — pronotum | 4.5- 5.0 | 2.5- 4.0 |
| — elytra | 24.0-25.0 | 17.0-22.0 |
| — posterior femora | 11.0-11.5 | 8.0-10.0 |
| — — tibiae | 9.5-10.0 | 6.5- 8.5 |

GEOGRAPHICAL DISTRIBUTION.—Asia Minor; Palestine; Sinai; S. W. Iran.

SPECIMENS EXAMINED.—4 ♀ ♀ and 10 ♂ ♂.

Asia Minor: Geubek, between Ushak and Alachehir, 6.VIII.1931, 1 ♀ (Uvarov); between Ankara and Changri, 10.VIII.1931, 2 ♀ ♀, 3 ♂ ♂ (Uvarov).

Palestine: Wadi Kelt, 23.V.27.VII.1923, 1 ♀, 1 ♂ (paratypes) (Buxton).

South-West Iran: Bushir to Buruzdjun, 21.V.1927, 3 ♂ ♂ (Siazov); Nr. Bushir, 22.V.1927, 2 ♂ ♂ (Siazov); Shiraz to Kazerun, 22.V.1927, 1 ♂ (Siazov).

30 a. *Sphingonotus theodori iranicus* subsp. n.

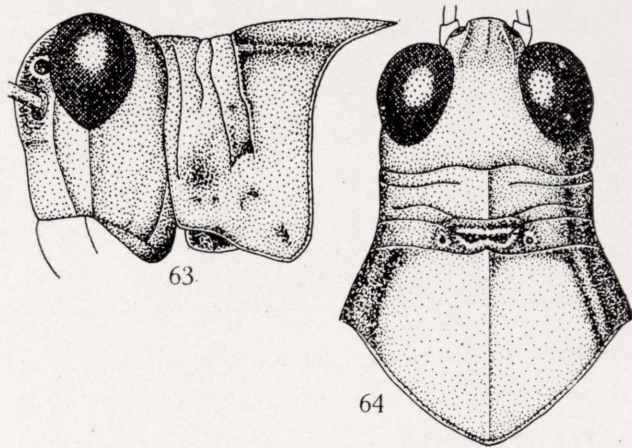
(Figs. 63, 64.)

Similar to typical *Sphingonotus theodori theodori* Uvarov, but differs from it in the following characters:

♀ (type). Vertical diameter of the eye slightly greater than the subocular distance. Maximum width of vertex only slightly greater than width of frontal ridge between the antennae. Posterior lower angle of lateral lobes of pronotum weakly attenuated. Intercalary

vein of elytra slightly curved, approaching the discoidal vein at apex. Posterior femora slender; their length four times their maximum width.

Coloration as in the typical subspecies. The dark coloration of elytra is more strongly expressed. Wings bluish at bases. Inner sides of posterior femora, for the greater part blackish-brown with two complete light fasciae. Posterior tibiae of a darker yellow colour.



Figs. 63-64.—*S. theodori iranicus*, type ♀.

♂ (allotype). As female, but smaller. The apical part of the second branch of median vein gives off two branches.

| | Type ♀ — mm. | Allotype ♂ — mm. | Paratypes ♀♀ — mm. | Paratypes ♂♂ — mm. |
|---------------------|--------------------|------------------------|--------------------------|--------------------------|
| Length of body..... | 24.0 | 16.5 | 21.5-24.5 | 14.5-16.5 |
| — pronotum..... | 4.5 | 3.0 | 4.0- 5.0 | 2.8- 3.0 |
| — elytra..... | 24.5 | 17.5 | 23.5-26.5 | 14.0-17.5 |
| — post. femora... | 10.5 | 7.5 | 9.5-11.5 | 7.0- 7.5 |
| — — tibiae .. | 9.5 | 6.5 | 8.5-10.5 | 6.0- 6.5 |

PATRIA.—N. Iran: R. Atrek, 23.VIII.1928, 2 ♀♀, 2 ♂♂ (Moritz); environs of Teheran, 7-11.VI.1927, 1 ♂ (Siazov).

W. Iran: Khouz-Ibrahim-Djar, Enerek, 12.XI.1903, 1 ♀ (Zarudny); Sade, N. of Sultanabad, 2 ♀♀ (Riabov); Isfahan, 4 ♀♀, 3 ♂♂ (Riabov's coll.)

E. Iran: Damhan, W. Khorasan, 22.X.1903, 1 ♀ (Zarudny);

Nishapur, 15.VII.1927, 5 ♀♀, 3 ♂♂ (Siazov); Birdjand, 10.VI.1928, 2 ♂♂ (Moritz); Turbet, 14.VI-7.VII.1928, 2 ♀♀, 2 ♂♂ (Moritz); Chahi-Zirut, Huseinabad, Khorasan, 3-6.VII.1901, 1 ♀ (Zarudny); Bamrud-Mudjnabad, 4.VII.1901, 1 ♀ (Zarudny); Sultan-Suleiman, W. Khorasan, 10.VII.1896; Durukh-Hezik, Nehbendan, 5.X.1898, 1 ♂; Ismailab-Hulandar, Nehbendan, 12-15.VI.1896, 1 ♂ (Zarudny).

S. E. Iran: Halichah-Dani, Kirman, 19.V.1898, 2 ♀♀; Duzab, Kirman, 18.VI.1898, 2 ♀♀ (including the type), 1 ♂; Shaandak, Kirman, 22.VI.1898, 1 ♀; Bazman, S. Kirman, 28.VI.1898, 1 ♂; R. Razy, Bampur, 9.IV.1901, 1 ♀ (Zarudny).

31. *Sphingonotus afghanicus* sp. n.

(Figs. 65, 66.)

♀ (type). Body of medium size, slender, almost naked.

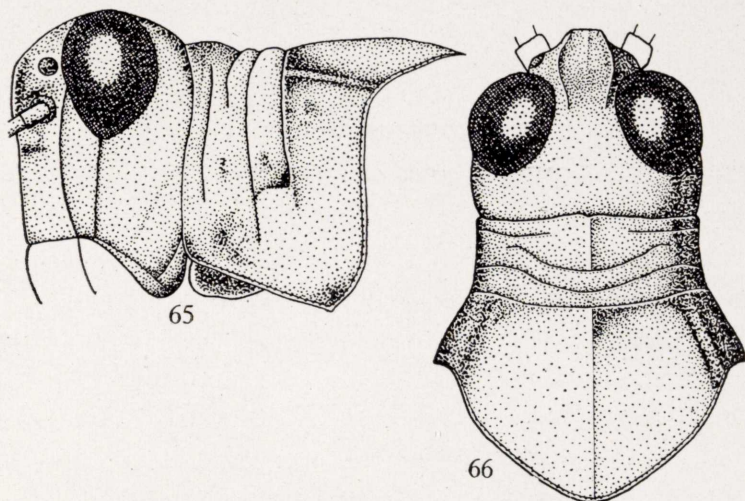
Head with fine scattered punctures, slightly projecting above the pronotum. Eyes large, oval, projecting sideways; their vertical diameter almost 1.5 times the horizontal one and slightly longer than the subocular distance. Frons vertical. Frontal ridge flat, weakly impressed at the ocellus, strongly obliterate bellow the ocellus; weakly projecting at bases of the antennae, in profile; margins thick, strongly obliterate; its surface finely and sparsely punctured. Facial keels very distinct. Fastigium of vertex moderately sloping. Vertex narrow, impressed; margins distinct; median keel very distinct; maximum width of vertex slightly greater than that of frontal ridge between the antennae. Foveolae of vertex indistinct, finely punctured. Antennae fine, considerably longer than head and pronotum taken together.

Pronotum weakly constricted in prozona; transverse furrows distinct; the first furrow behind the middle of prozona; metazona slightly convex, coarsely punctured, its length almost twice that of the prozona; posterior angle obtuse, rounded; shoulders projecting sideways, slightly rounded; median keel weakly raised in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes vertical, coarsely punctured in metazona; anterior margin slightly undulating, anterior lower angle obtuse, rounded, posterior

margin straight, posterior lower angle very weakly attenuated; lower margin obliquely-ascendant, undulating.

Sternum with fine scattered punctures, its width equal to its length; width of interspaces between the meso and metasternal lobes 1.5 times their length. Lower parts of meso-episternum coarsely punctured. Valvae of ovipositor with short pointed apices; basal parts of lower valvae with distinct callous tubercles.

Elytra parallel-sided, reaching beyond the apices of posterior tibiae; their length 6 times their maximum width; venation sparse,



Figs. 65-66.—*S. afghanicus*, type ♀.

regular, apical part of the second branch of median vein gives off 3 branches; intercalary vein sinuate, approaching to discoidal vein at apex, finely granular. Wings elongate triangular with sparse venation; their length 1.9 times their maximum width.

Posterior femora slender, their length 4 times their maximum width. Posterior tibiae slightly shorter than the femora, with 9 spines on the outer, 10 on the inner sides.

General coloration light greyish-yellow. Head, sternum and abdomen—whitish. Ocelli yellow. Antennae brownish with light rings. Elytra transparent; basal quarter and some indistinctly marked spots in the remaining parts—greyish; veins light. Wings transparent *absolutely* colourless, glittering; axillary veins, and veins in the apical part—darkish. Inner sides of posterior femora brownish-black with two

complete light bands. Posterior tibiae faintly bluish; bases black on inside; tarsi yellowish.

♂ (allotype). As the female, but smaller. Posterior tibiae with 8-9 spines on the outer side.

| | Type ♀ mm. | Allotype ♂ mm. |
|--------------------------|---------------|-------------------|
| Length of body | 27.0 | 22.0 |
| — pronotum | 5.0 | 3.5 |
| — elytra | 29.5 | 23.5 |
| — posterior femora | 12.0 | 10.5 |
| — — tibiae | 11.0 | 9.5 |

PATRIA.—N. Afghanistan: Barizendan, 14.VII.1930, 1 ♀ (type), 1 ♂ (allotype) (N. Umnov).

This new species is very near to *Sphingonotus rubescens rubescens* (Walker), but differs from it in the structure of the head, form and position of intercalary vein in the discoidal area of elytra, number of spines on the outer side of posterior tibiae, coloration of wings and the inner sides of posterior femora.

Type and allotype in the Zoological Institute of the Academy of Sciences, Leningrad.

32. *Sphingonotus elegans* sp. n.

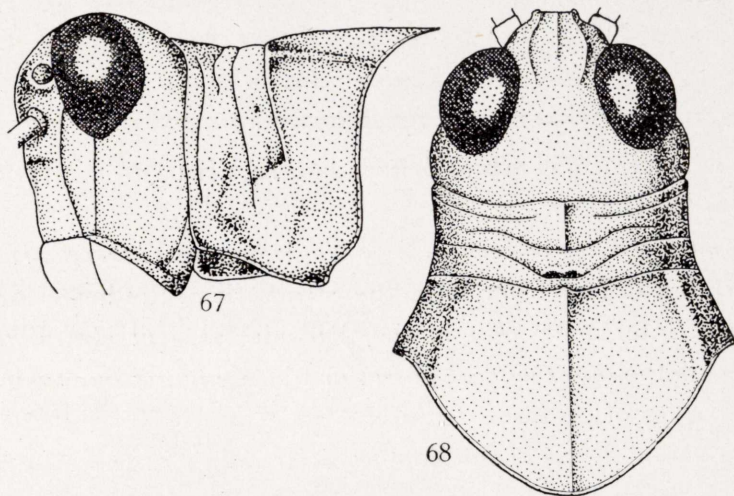
(Figs. 67, 68.)

♀ (type). Body of medium size, slender, almost naked.

Head laterally compressed, with fine scattered punctures, weakly projecting above the pronotum. Eyes oval, weakly protruding sideways, their vertical diameter about 1.5 times the horizontal one and equal to the subocular distance. Frons vertical. Frontal ridge flat, weakly impressed, dilated below the ocellus, obliterated near the clypeus; flat in profile, not projecting at all at the base of antennae; margins thick, obliterate; surface sparsely punctured. Fastigium of vertex strongly sloping. Vertex impressed, margins very distinct, median keel weak; maximum width of vertex 1.5 times

the width of frontal ridge between the antennae. Foveolae of vertex indistinct, punctured. Antennae fine, considerably longer than head and pronotum taken together.

Pronotum constricted in prozona; transverse furrows distinct; first furrow behind the middle of prozona; metazona slightly convex with coarse punctures and very fine furrows, its length twice that of prozona; posterior angle obtuse, rounded; shoulders rounded; median keel weakly raised in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes vertical, anterior



Figs. 67-68.—*S. elegans*, type ♀.

margin undulating, anterior lower angle obtuse; posterior margin straight, posterior lower angle very feebly attenuated; lower margin undulating, obliquely-ascendant.

Sternum with sparse, scattered punctures, its width equal to its length; width of interspaces between meso and metasternal lobes 1.5 times their length. Lower parts of meso-episternum not deeply punctured. Valvae of ovipositor with pointed apices; basal parts of lower valvae with distinct callous tubercles.

Elytra long, slightly narrowed towards the apex, reaching slightly beyond the apices of posterior tibiae; their length 6 times their maximum width; venation fairly sparse, regular, the apical part of the second branch of median vein gives off 3 branches; intercalary vein very distinct, straight, parallel to the discoidal vein throughout its

length, finely granular. Wings elongate triangular with sparse venation; their length 1.79 times their maximum width.

Posterior femora slender; their length 4.2 times their maximum width. Posterior tibiae slightly shorter than posterior femora, with 8-9 spines on the outer, 10 on the inner sides.

General coloration greyish-brown with dark brown spots. Head and sternum whitish. Ocelli yellow-brown. Antennae brownish with light rings, bases light. Elytra transparent in the apical part; the basal third, an incomplete (not reaching the anterior margin) median fascia and several scattered spots in the apical half—greyish-brown, veins light. Wings bluish at bases, veins blackish in the apical part. Inner sides of posterior femora for the greater part black-brown, with two complete light fasciae and light apices. Posterior tibiae yellowish with a faint bluish shade at the apex; base black on the inside.

♂ (allotype). As the female, but smaller. Vertical diameter of eye slightly greater than the subocular distance. Posterior tibiae with 8 spines on the outer side. Dark pattern of elytra very faint.

| | Type ♀ mm. | Allotype ♂ mm. | Paratypes ♀♀ mm. | Paratypes ♂♂ mm. |
|---------------------|---------------|-------------------|---------------------|---------------------|
| Length of body..... | 27.5 | 22.5 | 23.0-31.5 | 14.5-22.5 |
| — pronotum..... | 4.8 | 3.3 | 3.7- 5.0 | 3.0- 4.0 |
| — elytra..... | 28.5 | 21.5 | 24.0-30.0 | 19.0-24.0 |
| — post. femora... | 12.5 | 9.5 | 10.0-13.0 | 8.0-10.5 |
| — — tibiae.... | 11.5 | 8.5 | 9.0-12.0 | 7.0- 9.5 |

PATRIA.—Turkmenistan: Lama-Burun, Bolshie Balkhany, 7.X.1894, 2 ♀♀ (Varentzov); Kaakhka, 24.VI-11.VII.1932, 2 ♀♀ (including the type), 1 ♂ (Jegorev); Takhta-Bazar, 27-29.VI.1932, 3 ♂♂ (Bezpoiasko); Kushka, 17-20.VIII.1929, 5 ♂♂ (Predtetschensky and Mistshenko); Kara-Kala, 1-5.VII.1932, 1 ♀, 2 ♂♂ (Baliasnikov).

Kara-Kalpakia: Urga, Aral Sea, 24.VIII.1925, 2 ♀♀ (Berg).

Uzbekistan: Byr-Bulan, N. Bokhara, 6.VII.1928, 1 ♂ (Burachek); Kenimech, 14.VIII.1928, 1 ♀ (Burachek); Samarkand, 2.VIII.1933, 1 ♂ (Veltischev).

Tadzhikistan: Piandjikent, 5.VIII.1933, 4 ♀♀, 1 ♂ (Veltischev).

Western Mongolia: Khurkhu, Mongolia Altai, 6.IX.1925, 1 ♀ (Kozlov); Ortan-Khurul, 11.IX.1925, 1 ♀ (Kozlov); Shilbisyn-Gol, 16-17.IX.1925, 1 ♀, 3 ♂♂ (Kozlov); between Santakhu and Tsinishuan, 19.VIII.1898, 1 ♀ (Klementz); Bainchtto, 7.IX.1898, 1 ♀; Astapa near Turfan, 16.IX.1898, 11 ♀♀, 26 ♂♂ (Klementz).

Central Mongolia: Valley of Tuin-Gol near L. Orok-Nor, 2.VIII.1926, 1 ♀, 1 ♂ (Kiritchenko); Kholt, N. Gobi, 21.VIII.1926, 1 ♀, 1 ♂ (Kozlov).

S. Mongolia: Dyn-Yuan-In, N. Ala-Shan, 14.VII-23.VII.1908, 5 ♀♀, 6 ♂♂ (Kozlov).

This new species is very near to *Sphingonotus afghanicus* sp. n. and to *Sphingonotus rubescens fasciatus* subsp. n., but differs from them by the structure of the head and straight intercalary vein in the discoidal area of elytra; moreover it differs from *Sph. afghanicus* by coloration of wings, and from *Sph. rubescens fasciatus* by very slender posterior femora.

Near Kushka it is found on steep stony hillsides, on very open areas, among the little bushes of *Heliotropium anguzivides*.

In specimens from Mongolia fasciae of elytra are more distinct.

Type and allotype in the Zoological Institute of the Academy of Sciences, Leningrad. Four paratypes (2 ♀♀, 2 ♂♂) in the British Museum (Natural History), London.

33. *Sphingonotus rubescens rubescens* (Walker).

(Figs. 8, 18.)

1870. [*Oedipoda*] *rubescens* Walker, Zoologist (2), vol. v, p. 2304, n.° 38 [type ♂; Egypt].
1884. [*Sphingonotus coerulans* L.] var. *aegyptiaca* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxvii, Nr. 9, p. 200, n.° 3 a.
1909. [*Sphingonotus coerulans* L.] var. *aegyptiaca* Werner, Zool. Jahrb. Abt. Syst., vol. xxvii, p. 113 [Tripoli; Barca].
1910. *S*[*phingonotus*] *coerulans* var. *aegyptiaca* Kirby, Synon. Cat. Orth., vol. iii, p. 274 [partim].
1910. *S*[*phingonotus*] *rubescens* Kirby, Synon. Cat. Orth., vol. iii, p. 274, n.° 12 [Arabia, Baluchistan] (partim).
1923. *Sphingonotus rubescens* Uvarov, Novit. Zool., vol. xxx, p. 67, n.° 14, Pl. I, figs. 1-2 [Salvage Islands, Canary Islands, Libyan desert, Sinai, Transjordan, Amman, N. Persia, N. Kashmir].

1927. *S[phingonotus] rubescens* Uvarov, Saran. Sred. As., pp. 130, 134, n.° 4, fig. 157 (partim).
 1929. *Sphingonotus mecheriae mecheriae* Predtetschensky, Rep. on Appl. Entom., vol. IV, n.° 1, p. 222 [Ural-Delta] (partim).

♀. Body fairly large, very slender, with sparse hairs.

• Head compressed laterally, weakly projecting above the pronotum, with scattered punctures. Eyes oval, large, weakly projecting sideways; their vertical diameter 1.5 times greater than the horizontal one and almost equal to the subocular distance. Frons almost vertical. Frontal ridge flat, weakly impressed at the ocellus, dilating and obliterated below the ocellus, does not reach the clypeus; flat in profile, not projecting at the bases of antennae; margins thick, obliterate; surface coarsely punctured at the vertex. Fastigium of vertex moderately sloping. Vertex narrow, impressed, with distinct margins and a distinct median keel; maximum width of vertex slightly greater than width of frontal ridge between the antennae. Foveolae of vertex indistinct, punctured. Antennae fine, considerably longer than head and pronotum together.

Pronotum slightly constricted in prozona; transverse furrows distinct; the first furrow just behind the middle of prozona; the second furrow with a deep impression in the middle; metazona slightly convex with dense, fine punctures, its length almost twice that of prozona; posterior angle obtuse, broadly-rounded; shoulders rounded; median keel weakly raised in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes vertical; anterior margin undulating, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle attenuated; lower margin weakly undulating, obliquely-ascendant.

Sternum with shallow, scattered punctures; its width about equal to its length; width of interspaces between the meso and metasternal lobes 1.5 times their length. Lower parts of meso-episternum coarsely punctured. Valvae of ovipositor with short, pointed apices; basal parts of lower valvae weakly tuberculated.

Elytra long, reaching to or beyond the apices of posterior tibiae; their length 5.94 times their maximum width; apical half with sparse regular venation; apical part of the second branch of median vein gives off 3-4 branches; intercalary vein S-shaped, approaching to dis-

coidal vein at the apex, minutely tuberculated. Wings narrow, elongate-triangular with sparse venation; their length 1.84 times their maximum width.

Posterior femora fairly thick; their length about 4 times their maximum width. Posterior tibiae slightly shorter than the femora, with 7-8 spines on the outer, 10 on the inner sides.

General coloration reddish-ochraceous with darkish spots. Head and sternum whitish. Ocelli yellow. Antennae brown with light rings and light bases. Elytra transparent; basal third and several indistinct spots, which do not form distinct bands, in the remaining part—greyish-brown; veins brownish. Wings transparent, blue at base; veins dark. Inner sides of posterior femora for the greater part brown-black, with two light fasciae, one of which is sometimes incomplete or only very faintly marked. Posterior tibiae bright blue, sometimes dirty-whitish with a faint blue shade, with a light fascia at base; base black on inside.

♂. As the female, but smaller. The apical part of the second branch of median vein gives off three branches.

| | ♀♀ — mm. | ♂♂ — mm. |
|-------------------------|----------------|----------------|
| Length of body..... | 19.5-33.5 | 15.5-33.5 |
| — pronotum..... | 4.0- 6.0 | 3.0- 4.5 |
| — elytra..... | 23.5-35.0 | 17.5-27.5 |
| — posterior femora..... | 10.0-14.5 | 8.5-10.5 |
| — — tibiae..... | 8.5-12.5 | 7.5- 9.5 |

GEOGRAPHICAL DISTRIBUTION.—Canary islands, Salvages, N. Africa (Morocco, Algeria, Tripoli, Barka, Sahara, Libya, Egypt), Greece, European part of Turkey, Crete, Sinai, Syria, Palestine, Transjordan, Arabia, Iran, Baluchistan, Kashmir, India (Peshawar), Daghestan, Transcaspia, Lower course of Volga, Kazakstan (excluding the S. E. part), Uzbekistan (excluding the region North of Tashkent), Turkmenistan, Tadjikistan.

SPECIMENS EXAMINED.—120 ♀♀, 111 ♂♂.

Lives in clayey and in somewhat sandy deserts.

33 a. *Sphingonotus rubescens fasciatus* subsp. n.

(Figs. 69, 70.)

 1927. *S[phingonotus] rubescens* Uvarov, Saran. Sred. As., pp. 130, 134, n.° 4 (Uzbekistan) [partim].

Similar to typical *Sph. rubescens rubescens* (Walker), but differs from it by the following characters:

♀ (type). Maximum width of vertex 1.5 times the width of frontal ridge between the antennae. Elytra just reach the apices of posterior tibiae; their length 5.5 times their maximum width; intercalary vein in the discoidal area weakly sinuate, slightly approaching to the discoidal vein near the apex.

General coloration greyish-blue, with a reddish brown shade. Elytra with very distinct dark transverse fasciae and spots. Inner sides of posterior femora blue-black with two complete light fasciae.

♂ (allotype), as female, but smaller.

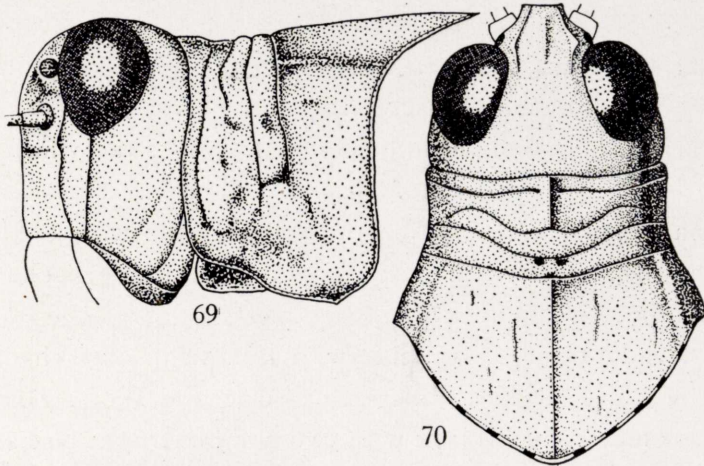
| | Type ♀ mm. | Allotype ♂ mm. | Paratypes ♀♀ mm. | Paratypes ♂♂ mm. |
|-------------------------|---------------|-------------------|---------------------|---------------------|
| Length of body. | 26.5 | 19.5 | 24.5-27.0 | 17.5-20.0 |
| — pronotum. | 4.5 | 3.2 | 4.5- 5.0 | 3.0- 3.5 |
| — elytra. | 27.5 | 20.5 | 25.0-29.5 | 19.5-21.0 |
| — post. femora. . . | 12.5 | 9.5 | 11.5-13.0 | 9.0-10.5 |
| — — tibiae. . . . | 11.0 | 8.0 | 10.0-11.5 | 7.5- 9.0 |

PATRIA.—S. E. Kazakstan: Novo-Voskresenovka, 14-18.VIII.1932, 7 ♀♀ (including the type), 8 ♂♂ (Tchetyrkina); station Tastakh, r. Bol. Almatinka, 10-11.VIII.1928, 24 ♀♀, 11 ♂♂ (Veltischev); Kur-dai near Alma-Ata, 10.VII.1925, 2 ♂♂ (Moritz); Sugarty Gorge, Alma-Ata district, 29.VI.1907, 1 ♂; valley of r. Chilik, 28.VI.1907, 1 ♂ (Nezvetskii); Kirghiz republic: Kukumeren, Frunse district, 27.VIII.1914, 1 ♀ (Michalevskaya); south of station Belorodosk, stony river bed Ak-su, 3-22.VIII.1931, 16 ♀♀, 7 ♂♂ (Zimin).

Found on screes at the foot of Alexandrovsk range, and along pebbly shores.

Intermediate form between *Sph. rubescens rubescens* and *Sph. rubescens fasciatus*:

Kazakstan: shores of r. Dneta, Kara-Kolsk district, 1 ♂ (Moritz).
Uzbekistan: environs of Tashkent, 3 ♀♀, 1 ♂ (Tarbinskii); Sailyk,
Tashkent district, 22.VII.1922, 5 ♀♀, 3 ♂♂ (Smirnov and Roden-



Figs. 69-70.—*S. rubescens fasciatus*, type ♀.

dorf); Nanai, lower course of Pskem, 80 K. from Tashkent, 7.IX.1923,
1 ♀ (Sushkin); Khumsan, 17.VIII.1922, 1 ♀, 2 ♂♂.

Type and allotype in the Zoological Institute of the Academy of
Sciences, Leningrad. Two paratypes (male and female) in the British
Museum (Natural History), London.

34. **Sphingonotus mistshenkoi** Predtetchensky sp. n.

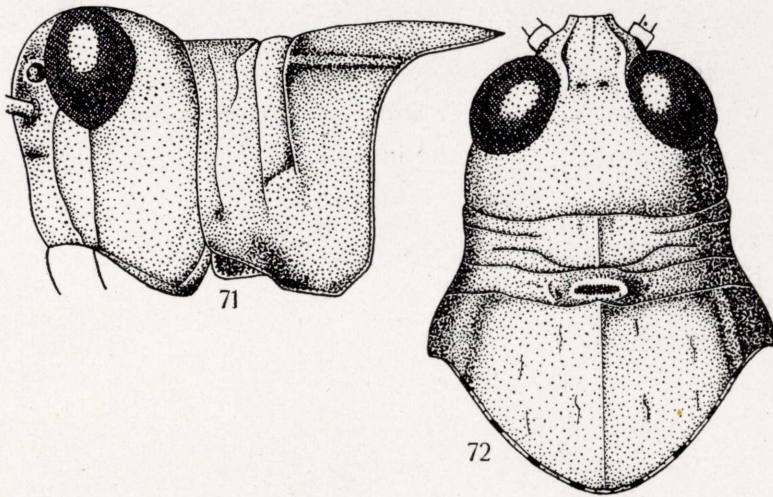
(Figs. 14, 71, 72.)

♀ (type). Body medium size, slender, with very sparse short
hairs.

Head large with minute very sparse punctures, strongly projecting
above the pronotum. Eyes large, oval, weakly projecting sideways;
their vertical diameter 1.5 times the horizontal one and equal to the
subocular distance. Frons vertical. Frontal ridge very slightly im-
pressed, almost flat, almost parallel-sided, completely obliterated
between the ocellus and clypeus; almost straight in profile, scarcely

projecting at the base of antennae; margins thick, scarcely noticeable; its surface with fine punctures. Fastigium of vertex strongly sloping, almost vertical. Vertex weakly impressed, fairly wide; margins weakly raised; median keel hardly noticeable; maximum width of vertex about 1.5 times the width of frontal ridge between the antennae. Foveolae of vertex indistinct, punctured. Occiput strongly sloping. Antennae fine, slightly longer than head and pronotum taken together.

Pronotum weakly constricted in prozona, somewhat saddle-shaped; transverse furrows distinct; the first furrow just behind the middle of



Figs. 71-72.—*S. mistshenkoi*, type ♀.

prozona; second furrow obliterated in the middle; the interspace between the second and third furrows with a deep impression in the middle; metazona weakly convex, with dense fine punctures, its length almost twice that of prozona; posterior angle obtuse, broadly-rounded, its margins straight; shoulders weakly projecting sideways, rounded; median keel very weakly raised in front of the first furrow, hardly noticeable, absent between the furrows, low and linear in metazona. Lateral lobes vertical, with dense, fine punctures; anterior margin bisinuate, anterior lower angle obtuse, weakly rounded; posterior margin straight, posterior lower angle rounded; lower margin obliquely-ascendant, undulating.

Sternum with fine sparse punctures, its width equal to its length;

width of interspaces between meso and metasternal lobes 1.75 times their length. Lower parts of meso-episternum with fine punctures. Valvae of ovipositor with elongate pointed apices; basal parts of lower valvae of ovipositor punctured, without distinct callous tubercles.

Elytra weakly constricted towards the apex, not reaching the apices of posterior tibiae by a short distance; their length 5.3 times their maximum width; venation fairly sparse and regular; second branch of median vein gives off 3 branches in the apical part; intercalary vein straight, parallel to the discoidal vein throughout its whole length, minutely tuberculated. Wings narrow, elongated, their length twice their maximum width; venation sparse.

Posterior femora long, slender; their length 4.3 times their maximum width. Posterior tibiae slightly shorter than the femora, with 9 spines on the outer, 10 on the inner sides.

General coloration greyish-yellow. Head, sternum and abdomen yellow. Ocelli light yellow. Antennae yellow with greyish-brown rings, bases yellow. Elytra slightly transparent, the basal third, median transverse fascia and some small spots in the apical half—dark. Inner sides of posterior femora blue-grey with two light fasciae, one of them incomplete, apices slightly darker. Posterior tibiae dirty-blue, with a white ring at bases; bases black on inside; tarsi whitish.

♂ (allotype). As female, but smaller. Apical part of the second branch of median vein of elytra gives off 2-3 branches. Posterior tibiae with 8 spines on the outer, 9-10 on the inner sides.

| | Type ♀ — mm. | Allotype ♂ — mm. | Paratypes ♀♀ — mm. | Paratype ♂ — mm. |
|-------------------------|--------------------|------------------------|--------------------------|------------------------|
| Length of body. | 27.5 | 21.0 | 26.0-28.5 | 21.5 |
| — pronotum. | 4.8 | 3.3 | 4.5- 5.0 | 3.8 |
| — elytra. | 26.5 | 20.0 | 24.5-27.5 | 21.0 |
| — post. femora. . . | 13.0 | 10.0 | 12.0-12.5 | 10.2 |
| — — tibiae. | 11.5 | 8.7 | 10.5-11.0 | 9.0 |

PATRIA.—Iran: Khamadan, 5.IX.1931, 5 ♀♀ (including the type); 2 ♂♂ (Predtetschensky).

This new species is nearest to *Sph. rubescens rubescens* (Walker),

differing from the latter by the structure of the head and pronotum, by the straight intercalary vein in the discoidal area of elytra, venation of elytra and shape of wings.

Type and allotype in the Zoological Institute of the Academy of Sciences, Leningrad.

VII. Group YUNNANEUS

35. *Sphingonotus yunnaneus* Uvarov.

1924 (1925) *Sphingonotus yunnaneus* Uvarov, J. Asiat. Soc. Beng. (N. S.), vol. xx, Nr. 6, p. 328 [type ♀; Yunnan: Shalu].

♀. Body of medium size, sturdy, with very sparse hairs.

Head with dense shallow punctures, very slightly projecting above the pronotum. Eyes irregularly oval, weakly projecting sideways, their vertical diameter 1.5 times the horizontal one and equal to the subocular distance. Frons weakly sloping. Frontal ridge flat, weakly impressed at the ocellus, dilated between the antennae, constricted below the ocellus, completely obliterated between the ocellus and clypeus; in profile very weakly projecting at the bases of antennae; margins thick, obliterated; surface densely punctured. Fastigium of vertex weakly sloping. Vertex weakly impressed, margins scarcely raised; median keel very low, reaching the occiput; maximum width of vertex 1.5 times that of the frontal ridge between the antennae. Foveolae of vertex very indistinct, finely punctured. Antennae thick, weakly dilating before the apex, slightly longer than head and pronotum together.

Pronotum constricted in prozona; transverse furrows distinct but weak; the first furrow behind the middle of prozona; metazona flat, coarsely punctured and with fine furrows, its length about 1.5 times that of prozona; posterior angle slightly greater than 90°, slightly rounded; shoulders projecting, rounded; median keel low in front of the first furrow, absent between the furrows, weak and linear in metazona. Lateral lobes vertical; coarsely punctured in metazona; anterior margin undulating, anterior lower angle slightly greater than 90°, roun-

ded; posterior margin straight, posterior lower angle widely rounded, somewhat dentate; lower margin weakly ascendant, undulating.

Sternum finely, sparsely punctured; its width almost equal to its length; width of interspaces between meso and metasternal lobes 1.5 times the length. Lower parts of meso-episternum with dense but not deep punctures. Valvae of ovipositor short, apices blunt; basal parts of lower valvae almost smooth, punctured.

Elytra parallel-sided, not reaching the apices of posterior tibiae by a long distance; their length 5.3 times their maximum width; venation dense; the apical part of the second branch of the median vein gives off 3 branches; intercalary vein weakly curved, nearly approaching the discoidal vein at apex. Wings broad and short, with fairly dense venation; their length 1.7 times their maximum width.

Posterior femora fairly slender; their length 4 times their maximum width. Posterior tibiae slightly shorter than the femora, with 8 spines on the outer, 10 on the inner sides.

General coloration brown-ochraceous. Head and sternum greyish. Ocelli light brown. Antennae brown with light rings and bases. Elytra coriaceous in the basal half, slightly transparent at the apex; the basal third, and several indistinct spots in the remaining part—brownish-grey; veins darkish. Wings faintly bluish at bases, with a weak greyish fascia, which does not reach either margin; veins dark. Inner sides of posterior femora greyish, with a weak brownish fascia above the base and with a light fascia before the slightly darkened apex. Posterior tibiae light-yellow, bases black on inside; tarsi yellowish.

| | ♀ ♀ — mm. |
|-------------------------|-----------------|
| Length of body..... | 25.0-28.0 |
| — pronotum..... | 5.0- 5.5 |
| — elytra..... | 23.5-25.0 |
| — posterior femora..... | 12.5-13.0 |
| — — tibiae..... | 11.0 |

GEOGRAPHICAL DISTRIBUTION.—S. W. China.

SPECIMENS EXAMINED.—S. W. China, Yunnan, 11.VII.1922, 1008 ft., 1 ♀ (cotype) (Prof. J. W. Gregory) (British Museum collection).

VIII. Group **ATROPURPUREUS**36. **Sphingonotus atropurpureus** Uvarov.

1930. *Sphingonotus atropurpureus* Uvarov, Ann. Mag. Nat. Hist., Ser. 10, vol. VI, p. 180, n.º 9 [type ♀; British Somaliland: Buran].

♀. Face vertical. Frontal ridge in profile somewhat convex between the antennae and very slightly concave in the middle third; viewed from the front it is widened between antennae; constricted below the ocellum and obsolescent towards the clypeus; the surface punctured, concave at the ocellum and below it, where the margins are well raised. Lateral facial keels well developed. Fastigium of vertex sloping forward, imperfectly marginated, the surface slightly convex along the middle and slightly concave at the sides. Temporal foveolae indistinct. Antennae filiform, longer than head and pronotum together.

Pronotum constricted in the prozona, which is moderately gibbose between the transverse sulci; the sulci deep. Front margin strongly crenate. Metazona nearly twice as long as prozona with the shoulders prominent; hind angle about 90°; hind margins undulated. Median carina slightly indicated near the front margin of the prozona and on the whole of metazona. Lateral carinae absent. Lateral lobes about half again as high as they are long; lower front angle obtuse; lower margin straight, feebly ascending forward; hind lower angle right, broadly rounded.

Elytra extending well beyond the apex of the abdomen, fairly broad, with the apex obliquely truncate. Reticulation very dense up to the apex of the discoidal field, but the membrane does not become transparent until the apical quarter. Intercalary vein well developed, sinuate, somewhat approaching the radial in the apical portion. Interular field broad, without a definite false vein.

Hind femur with the upper carina expanded and strongly undulated.

General coloration pale brownish ochraceous mottled with brownish. Elytra with indefinite small brown spots. Wings black,

with purplish tinge at the base; the apical third hyaline. Inner side of the hind femur pale yellow; knee with a blackish semilunar spot on the inside. Hind tibia dirty white, with brownish streaks on the outside.

Male unknown.

| | ♀ — mm. |
|--------------------------|---------------|
| Length of body | 29.0 |
| — pronotum | 6.0 |
| — elytra | 30.0 |
| — hind femur | 14.0 |

GEOGRAPHICAL DISTRIBUTION.—British Somaliland.

Unfortunately I have not been able to examine this species, but from Uvarov's discription I could fairly accurately determine the relationship of this species to others.

IX. Group **CANDIDUS**

37. **Sphingonotus vosseleri** Krauss.

- 1902, May. *S[phingonotus] vosseleri* Krauss, Verh. K. K. Zool.-Bot. Ges. Wien, vol. LII, p. 242, n.º 18, fig. 10 [type ♀, ♂; Algiers: Biskra].
- 1902, Sept. *Sphingonotus desertorum* Vosseler, Zool. Jahrb. Abt. Syst., vol. XVI, p. 372, n.º 41, Pl. XVII, figs. 12 a, b, 13 [Tunis: Gabes, Gafsa].
1910. *S[phingonotus] vosseleri* Kirby, Synom. Cat. Orth., vol. III, p. 274, n.º 17.

♀. Body small, sturdy, with very sparse hairs.

Head very finely and sparsely punctured, almost smooth, not strongly projecting above the pronotum. Eyes oval, fairly large, not strongly projecting sideways; their vertical diameter 1.5 times greater than the horizontal one, and slightly greater than the subocular distance. Frons strongly sloping. Frontal ridge narrow, strongly impressed, dilated at the ocellus, completely obliterated halfway between

the median ocellus and clypeus; in profile, projecting slightly at the bases of antennae; margins thick, raised; surface very feebly punctured. Facial keels distinct. Subocular furrow wide and very deep. Fastigium of vertex very strongly sloping, almost vertical. Vertex strongly impressed, margins distinctly raised, median keel weakly raised, but distinct; maximum width of vertex almost 1.5 times that of the frontal ridge between the antennae. Foveolae of vertex very indistinct, almost absent. Lateral ocelli round. Antennae fine, longer than head and pronotum together.

Pronotum very weakly constricted in prozona, somewhat wrinkled; transverse furrows distinct, the first furrow fused with the second one in the middle and placed just behind the middle of prozona; the interspace between the second and third furrows with a deep impression in the middle; metazona slightly convex, coarsely and densely punctured, its length 1.5 times that of prozona; posterior angle obtuse, broadly rounded; shoulders weakly projecting, rounded; median keel moderately raised in front of the first furrow, absent between the furrows, low and linear in metazona. Lateral lobes of pronotum almost vertical, almost square, coarsely punctured in metazona; anterior margin bisinuate; anterior lower angle almost 90° , rounded; posterior margin straight, vertical; posterior lower angle broadly-rounded, less than 90° ; lower margin undulating, obliquely-ascendant.

Sternum densely punctured in prozona; its width almost equal to its length; width of interspace between mesosternal lobes 2 times greater than its length, width of interspace between metasternal lobes 1.5 times greater than its length. Lower parts of meso-episternum densely punctured.

Elytra narrowed towards the apex, not reaching the apices of posterior tibiae by a long distance; their length almost 6 times their maximum width; venation sparse, the apical part of the second branch of the median vein gives off 2 branches; intercalary vein irregular, approaching the discoidal vein in the apical part, finely granular. Wings narrow, elongate-triangular with very sparse venation; their length almost twice their maximum width.

Posterior femora slender; their length almost 4 times their maximum width. Posterior tibiae slightly shorter than the femora; with 8 spines on the outer, 10 on the inner sides.

General coloration ochraceous. Head whitish. Ocelli yellow. Antennae brownish with light rings and bases. Elytra transparent, the basal third and several very indistinct small spots in the remaining part—brownish; veins light. Wings absolutely colourless, glittering; veins in the apical and in the anterior part of wing—dark. Inner sides of posterior femora yellow, without distinct dark fasciae; apical part slightly darker. Posterior tibiae whitish with a blue ring in the middle; bases blue on the inside, apices blue; tarsi yellowish.

♂. As the female, but smaller. Head strongly projecting above the pronotum. Eyes projecting laterally more strongly than in female. Frontal ridge almost parallel-sided.

| | ♀ mm. | ♂ mm. |
|-------------------------|-----------|-----------|
| Length of body..... | 22.0-24.0 | 12.0-15.0 |
| — pronotum..... | 3.8- 4.5 | 2.8- 3.0 |
| — elytra..... | 17.2-22.0 | 13.5-15.0 |
| — posterior femora..... | 10.0-11.5 | 7.5- 8.5 |
| — — tibiae..... | 8.5 | 6.5 |

GEOGRAPHICAL DISTRIBUTION. — Algeria, Tunis, Egypt, Mesopotamia, Arabia.

SPECIMENS INVESTIGATED. — I ♂, I ♀.

Egypt: Qassassin, 8.X.1916, I ♂ (Adair); Gemmaiza, 10.VIII.1918, I ♀ (Adair) (Coll. British Museum).

38. *Sphingonotus arenosus* Predtetschensky sp. n.

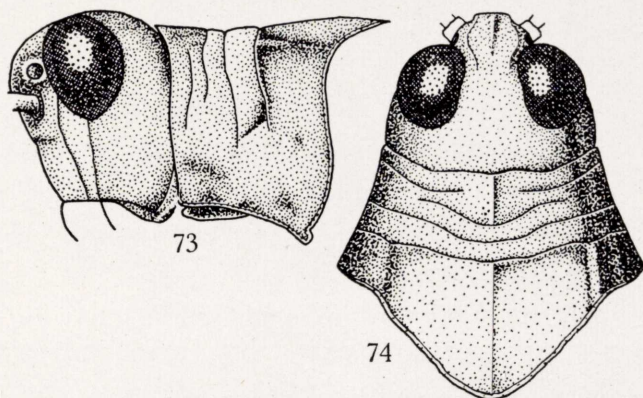
(Figs. 73, 74.)

♀ (type). Small, robust, with very sparse short hairs.

Head small, laterally compressed, sparsely and coarsely punctured, very weakly projecting above the pronotum, cheeks do not project outwards. Eyes oval, weakly projecting outwards; their vertical diameter equal in length to subocular distance. Frons weakly sloping. Frontal ridge parallel-sided, flat, very slightly impressed by the median ocellus, completely obliterated between the median ocellus and cly-

peus; in profile does not project at the base of antennae; margins thick, obliterate; surface with coarse, sparse punctures. Fastigium of vertex moderately sloping. Vertex narrow, slightly impressed; margins feebly elevated; median keel hardly marked; maximum width of vertex 1.5 times greater than width of frontal ridge between the antennae. Lateral facial keels distinct. Subocular furrow strongly impressed. Foveolae of vertex indistinct, coarsely punctured. Antennae fine, considerably longer than head and pronotum taken together.

Pronotum very weakly constricted in prozona; transverse furrows distinct; the first furrow just behind the middle of prozona; interspace



Figs. 73-74.—*S. arenosus*, type ♀.

between the furrows almost smooth; metazona flat, finely and densely punctured, markedly wrinkled, 1.5 times the length of the prozona; posterior angle obtuse, slightly rounded; shoulders not projecting, rounded; median keel very slightly raised in front of the first furrow, absent between the furrows, very low in metazona. Lateral lobes square, very weakly punctured in metazona; anterior margin bi-sinuate, anterior lower angle obtuse, rounded; posterior margin straight; posterior lower angle distinctly acute; lower margin undulating, obliquely-ascending forwards.

Sternum very sparsely and coarsely punctured; its width considerably greater than length; interspace between meso and metasternal lobes 2.5 times as broad as it is long. Lower parts of meso-episternum with coarse punctures. Valvae of ovipositor with short blunt apices; basal parts of lower valvae smooth, without callous tubercles.

Elytra narrow, parallel-sided, slightly narrowed towards the apices, often not reaching the apices of posterior tibiae; length 6 times their maximum width; venation sparse, the apical part of the second branch of median vein gives off two branches; intercalary vein curved approximated to the discoidal vein at apex. Wings long, narrow, elongate-triangular, venation sparse; length 1.8 times greater than maximum width.

Posterior femora long, slender; their length 4.4 times their maximum width. Posterior tibiae slightly shorter than posterior femora, with 8 spines on the outer, 10 on the inner sides.

General coloration brownish-grey. Head whitish with greyish spots. Ocelli yellow. Antennae brown with whitish rings; bases whitish. Pronotum with large brown spots. Elytra slightly transparent, with small brown spots; veins light. Wings almost colourless, with very faint bluish shade; veins darkened. Inner sides of posterior femora yellow, with a faintly marked darker spot near the apex; lower inner sulcus yellow. Posterior tibiae yellow; bases very slightly darkened on the inside; tarsi yellow.

♂ (allotype). Differs from the female in the following characters: smaller; vertical diameter of the eye slightly longer than the subocular distance; maximum width of vertex very slightly greater than that of frontal ridge between the antennae; length of metazona of pronotum a little greater than that of prozona; the apical part of the second branch of the median vein of elytra gives off one branch.

| | Type ♀ — mm. | Allotype ♂ — mm. | Paratypes ♀ ♀ — mm. |
|-------------------------|--------------------|------------------------|---------------------------|
| Length of body | 20.0 | 12.5 | 20.0-23.5 |
| — pronotum..... | 4.0 | 2.8 | 3.5-3.8 |
| — elytra..... | 20.0 | 13.5 | 18.5-20.5 |
| — posterior femora..... | 11.0 | 7.5 | 10.5-11.5 |
| — — tibiae..... | 9.5 | 6.5 | 9.0-10.0 |

PATRIA.—Iran: Central Khorasan, 11.VIII.1930, 2 ♀ ♀ (including type), 1 ♂; N. Kerman, 13.VIII.1931, 2 ♀ ♀ (Predtetschensky).

This new species is very near to *Sph. candidus candidus* Costa,

differing from it by shorter elytra, structure of head and pronotum, coloration of wings and posterior tibiae.

Type and allotype in the Zoological Institute of the Academy of Sciences, Leningrad.

39. **Sphingonotus candidus candidus** Costa.

1884. [*Sphingonotus coeruleans* Lin.] var. *candidus* Costa, Atti R. Ac. Sci. Fis. Math., p. 50 [Sardinia: Sorso, Porto-Torres].
 1910. *S[phingonotus] rubescens* Kirby, Synon. Cat. Orth., vol. III, p. 274, n.º 12 (partim).
 1926. *Sphingonotus candidus* Zanon, Mem. Acad. Sci. N. Lincei, Ser. II, vol. IX, p. 189.

♀. Body of medium size, sturdy, with sparse hairs.

Head with large coarse punctures, weakly projecting above the pronotum. Eyes short, oval, projecting sideways; their vertical diameter slightly greater than the horizontal one and smaller than the subocular distance. Frons vertical. Frontal ridge strongly impressed, slightly dilated between the antennae, obliterated at the clypeus-margins thick, distinct; surface with sparse punctures; in profile weakly projecting at the bases of antennae. Facial keels distinct. Fastigium of vertex sloping. Vertex impressed, margins distinctly raised, median keel hardly noticeable; maximum width of vertex slightly greater than width of frontal ridge between the antennae. Foveolae of vertex indistinct, punctured. Antennae fine, slightly longer than head and pronotum together.

Pronotum strongly constricted in the prozona, slightly saddle-shaped; transverse furrows weak; the first furrow at the middle of prozona; third furrow angular in the middle; metazona slightly convex with coarse punctures and fine wrinkles, its length 1.5 times that of prozona; posterior angle almost equal to 90°, slightly rounded; shoulders rounded; median keel very weakly raised in front of the first furrow, absent between the furrows, slightly raised in metazona. Lateral lobes vertical; anterior margin weakly undulating, anterior lower angle 90°, rounded; posterior margin straight, posterior lower angle attenuated, somewhat dentate; lower margin strongly undulating.

Sternum sparsely and finely punctured; its width considerably

greater than its length; width of interspaces between meso and metasternal lobes almost 2.5 times greater than length. Lower parts of meso-episternum finely and sparsely punctured. Valvae of ovipositor with elongated, pointed apices; basal parts of lower valvae smooth.

Elytra almost or just reaching the apices of posterior tibiae; their length almost 6 times their maximum width; venation sparse, fairly regular, the apical part of the second branch of the median vein gives off 2 branches; intercalary vein curved, approaching very closely to discoidal vein at apex, finely granular. Wings elongate-triangular with very sparse venation, their length almost 1.8 times their maximum width.

Posterior femora slender; their length almost 4 times their maximum width. Posterior tibiae slightly shorter than the femora, with 8 spines on the outer, 10 on the inner sides.

General coloration greyish-yellow, with brownish dots and spots. Head and sternum whitish. Ocelli yellow-brown. Antennae dark with light rings and bases. Elytra transparent, with densely scattered brownish spots, which do not form definite fasciae; veins light. Wings faintly bluish at bases; veins blackish at apex. Inner sides of posterior femora faint yellow with two diffuse, incomplete, brownish fasciae; apices pale. Posterior tibiae whitish-blue, with a brownish fascia near the light base; tarsi whitish.

♂. As female, but smaller. Vertical diameter, of the eye equal to the subocular distance. The apical part of the second branch of the median vein of elytra gives off one branch. Length of wings almost 2 times greater than their maximum width.

| | ♀ mm. | ♂ mm. |
|-------------------------|----------|----------|
| Length of body..... | 22.0 | 14.5 |
| — pronotum..... | 3.5 | 2.2 |
| — elytra..... | 20.5 | 15.0 |
| — posterior femora..... | 11.0 | 7.5 |
| — — tibiae..... | 9.5 | 6.5 |

GEOGRAPHICAL DISTRIBUTION.—Northern part of Sardinia.

SPECIMENS EXAMINED.—I ♀ and I ♂.

Sardinia: Sorso, X.1925, I ♀, I ♂ (Zanon) (Coll. British Museum).

40. *Sphingonotus candidus personatus* Zanon.

1836. [*Acridium coeruleans*] var. *B* Costa, Fauna d. Reg. d. Nap., p. 23, Pl. 3, figs. 2, A [Naples].

1926. *Sph[ingonotus] candidus* Costa var. *personatus* Zanon, Mem. Acad. Sc. N. Linc., Ser. II, vol. IX, pp. 184-192, n.º 92, Pl. figs. 1-6 [type ♀, ♂; Italy: Ostia (Rome)].

As the typical race *Sph. candidus candidus* Costa, differing from the latter in the following characters:

♀. In profile, the frontal ridge does not project at all between the bases of antennae. Pronotum weakly constricted in prozona not saddle-shaped; metazona flat, only slightly longer than prozona. The apical part of the second branch of the median vein gives off 3 branches.

Coloration as in the typical race, but darker grey and with denser brown dots. Wings with smoky-black fascia in the middle which does not reach the posterior and the inner margins, and may be almost absent. Apices of inner sides of posterior femora — dark.

♂. As the female, but smaller. In profile the frontal ridge projects weakly between the antennae. The apical part of the second branch of the median vein gives off 2 branches.

| | ♀♀ mm. | ♂♂ mm. |
|-------------------------|-----------|-----------|
| Length of body..... | 17.0-24.0 | 14.0-18.0 |
| — pronotum..... | 3.0- 4.5 | 2.7- 3.5 |
| — elytra..... | 20.0-23.0 | 14.0-17.0 |
| — posterior femora..... | 10.0-12.0 | 7.5- 9.0 |
| — — tibiae..... | 8.0-10.0 | 6.0- 7.5 |

GEOGRAPHICAL DISTRIBUTION.—S. W. part of Italy.

SPECIMENS EXAMINED.—3 ♀♀ and 3 ♂♂.

Italy: Ostia (Rome), IX, 3 ♀♀, 3 ♂♂ (paratypes) (Zanon) (2 ♀♀ and 2 ♂♂, Coll. British Museum).

This subspecies was described by Zanon as a variety of *Sphingonotus candidus* Costa. On examination of the material good morphological characters were found, pointing to the fact that var. *personatus* Zanon can be considered as a good subspecies of *Sphingonotus candidus* Costa.

X. Group CARINATUS

41. *Sphingonotus carinatus* Saussure.

(Fig. 20.)

1888. [*Sphingonotus coerulans* L.] var. *carinata* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxx, Nr. 1, p. 79 [type ♀; Algiers: Biskra].
1893. *Sphingonotus coerulans* L. var. *mecheriae* Krauss, Jahr. Ver. Vaterl. Nat. Würt., vol. 49, p. xcvi [♂, ♀; Algiers: Mecheriae] (Synon. nov.).
1896. *Sph[ingonotus] coerulans* (L.) var. *mecheriae* Krauss and Vosseler, Zool. Jahrb., Abt. Syst., vol. ix, p. 534, n.º 33a, Pl. 7, fig. 4 [West Algiers].
1902. *Sphingonotus mecheriae* Vosseler, Zool. Jahrb., Abt. Syst., vol. xvi, p. 370, n.º 39, Pl. 17, figs. 9a, b, 10 [Tunis].
1910. [*Sphingonotus coerulans* L.] var. 1 Uvarov, Hor. Soc. Ent. Ross., vol. xxxix, p. 375 [Kazakstan: Uralsk province].
1926. *Sphingonotus mecheriae uvarovianus* Bey-Bienko, Trans. Sib. Ac. Agr. For., vol. vi, Nr. 8, p. 12, figs. 2, 3 [♂; Kazakstan: Zaisan] (Syn. nov.).
1927. *S[phingonotus] mecheriae mecheriae* Uvarov, Saran. Sred. Az., pp. 133, 138, fig. 147, n.º 12.
1927. *S[phingonotus] mecheriae uvarovianus* Uvarov, Saran. Sred. Az., p. 138, n.º 12a.
1929. *S[phingonotus] uvarovianus* Bey-Bienko, Trans. Sib. Ac. Agr. For., vol. xiii, p. 182, n.º 72.

♀. Body fairly large, sometimes small, sturdy, with sparse hairs. Head weakly projecting above the pronotum, with dense, but not deep punctures. Eyes oval, weakly projecting sideways; their vertical diameter 1.5 times greater than the horizontal one, and almost equal to the subocular distance. Frons vertical. Frontal ridge flat, impressed, somewhat obliterated below the ocellus; flat in profile; mar-

gins distinct; its surface with shallow punctures. Fastigium of vertex moderately sloping. Vertex fairly wide, impressed, margins distinct, median keel weak; maximum width of vertex 1.5 times greater than width of median keel between the antennae. Foveolae of vertex quite distinct, punctured. Antennae fine, slightly longer than head and pronotum together.

Pronotum weakly constricted in prozona; transverse furrows distinct; the first furrow just behind the middle of prozona; metazona slightly convex with coarse punctures and fine wrinkles, its length 1.7 times greater than that of prozona; posterior angle almost equal to 90° rounded; median keel crest like and very distinct in front of the first furrow, absent between the furrows, low and linear in metazona; shoulders rounded. Lateral lobes almost square, coarsely punctured in metazona; anterior margin undulating, anterior lower angle attenuated; posterior margin straight, posterior lower angle attenuated, sometimes very weakly; lower margin straight, obliquely-ascendant, with a slight excision at the anterior angle.

Sternum with sparse, fine punctures, almost smooth; its width considerably greater than its length; width of interspaces between the meso and metasternal lobes 2.75-3 times greater than length. Lower parts of meso-episternum sparsely punctured. Valvae of ovipositor with short, slightly pointed apices; basal parts of lower valvae rough.

Elytra narrow, narrowed towards the apices, not reaching the apices of posterior tibiae by a long distance; their length almost 6 times their maximum width; venation fairly sparse, the apical part of the second branch of the median vein, gives off 2-3 branches; intercalary vein weakly curved, approaching the discoidal vein at apex, finely granular. Wings elongate-triangular, with sparse venation; their length 1.85 times their maximum width.

Posterior femora slender; their length almost 4 times their maximum width. Posterior tibiae slightly shorter than the femora with 8-10 spines on the outer, 10 on the inner sides.

General coloration greyish-buff with dark spots. Head whitish. Ocelli yellow. Antennae brown with light rings, bases light. Elytra slightly transparent; the basal third, the incomplete, transverse, median fascia and some of the weak spots in the apical part blackish-

brown; veins light. Wings bluish at bases, sometimes with a short, diffuse black band at the middle; veins black in the apical part. Inner sides of posterior femora dirty blue with two complete light fasciae, apices darker. Posterior tibiae yellow-white; bases blackish on the inside; tarsi whitish.

♂. As the female, but smaller. Vertical diameter of the eye slightly greater than the subocular distance. The apical part of the second branch of the median vein of elytra, gives off 2 branches.

| | ♀♀ — mm. | ♂♂ — mm. |
|------------------------|----------------|----------------|
| Length of body..... | 21.0-32.0 | 14.5-21.0 |
| — pronotum..... | 3.5- 5.0 | 2.2- 4.0 |
| — elytra..... | 20.0-30.0 | 13.5-20.5 |
| — posterior femora.... | 10.5-14.5 | 8.0- 9.5 |
| — — tibiae.... | 9.5-13.5 | 7.0- 8.0 |

GEOGRAPHICAL DISTRIBUTION.—N. Africa (Algeria, Tunis, Egypt), Cyprus, Sinai, Palestine, Iraq, Iran, S. W. Afghanistan, Asia Minor, Caucasus, Lower Volga, Central Asia, W. Mongolia.

SPECIMENS EXAMINED.—2,937 ♀♀ and 3,082 ♂♂.

Lives in loess deserts with sparse vegetation.

Specimens from Transcaucasia (Ordubad) and from Asia Minor sometimes with short, diffuse darkish band on wings.

On examination of the collection in the Zoological Institute of the Academy of Sciences Leningrad one female *Sphingonotus* with a label in Saussure's own hand writing «*Sph. coeruleans* var. *carinata*» (Algeria, Biskra) has been discovered.

Up to this time, the type of var. *carinata* Saussure has not been found, and that female being the only known specimen of this variety can be considered as type. On examination of var. *carinata*, it was found to be an independent species, which should be called *Sph. carinatus* Saussure (1888), with *Sph. mecheriae* Krauss (1893 and Vosseler 1902) and *Sph. uvarovianus* Bey-Bienko (1926, 1929) as synonyms.

XI. Group LUCASII

42. *Sphingonotus somali* (Uvarov).

1898. *Sph[ingonotus] callosus* Schulthess-Schindler, Ann. Mus. Civ. Stor. Nat. Genova, Ser. 2, vol. XIX (XXXIX), p. 189 (29), no. 1 [Somali; Error] (not Fieber).
1923. *Vosseleria somali* Uvarov, Konovia, vol. II, p. 30 [type ♀; Somali].
1930. *Vosseleriana somali* Uvarov, Ann. Mag. Nat. Hist., Ser. 10, vol. VI, p. 181, n.º 10 [British Somaliland: Buran].

♀. Body of medium size, fairly sturdy with short hairs.

Head with small punctures, slightly projecting above the pronotum. Eyes short oval, weakly protruding sideways; their vertical diameter scarcely longer than the horizontal one, and equal to the subocular distance. Frons almost vertical. Frontal ridge somewhat impressed, greatly widened between the antennae, narrowed below the ocellus, gradually widening and almost reaching the clypeus; margins distinct, ridge-like; flat in profile; surface sparsely punctured. Vertex wide, almost square with two consecutive deep impressions; margins distinct; median keel scarcely visible; the maximum width of vertex almost twice that of the frontal ridge between the antennae. Foveolae of vertex indistinct. Antennae narrow, longer than head and pronotum together.

Pronotum strongly constricted in the prozona; with a distinct emargination in the middle of front margin; transverse furrows distinct, deep; the first furrow just behind the middle of prozona; the second furrow confluent with the first in the middle; the space between the furrows strongly rugose; metazona weakly convex, minutely punctured and coarsely wrinkled; its length almost twice that of prozona; posterior angle obtuse, rounded, its margins slightly wavy; shoulders weakly rounded; median keel distinct in front of the first furrow, but slightly raised, absent between the furrows, distinct and linear in metazona. Lateral lobes of pronotum vertical, wrinkled in the posterior part; anterior margin bisinuate; anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle attenuate, somewhat dentate; lower margin obliquely ascendant, strongly undulating.

Sternum sparsely and minutely punctured, its breadth considerably greater than the length; the width of interspaces between meso- and metasternal lobes 2.25 greater than their length. The lower parts of meso-episternum densely punctured. Valvae of ovipositor with pointed apices; basal parts of lower valvae slightly rough.

Elytra slightly narrowed towards the apex, almost reaching the apices of posterior tibiae; their length almost 6 times their maximum width; venation dense, the apical part of the second branch of the medial vein with two branches; intercalary vein almost straight, minutely tuberculated. Wings wide, somewhat triangular, with distinctly marked apical lobes; their length almost 1.56 times their maximum width; venation dense.

Posterior femora fairly stout; their length 3.4 times their maximum width; the upper margin with a distinct excision. Posterior tibiae considerably shorter than posterior femora, with 8 spines on the outer, 10 on the inner sides.

General coloration brownish-yellow. Ocelli dark brown. Antennae brownish-yellow, with brown rings. Elytra coriaceous; the narrow, oblique transverse basal fascia, the interrupted narrow median fascia and the faintly marked spots in the apical half—dark brownish; veins light. Wings almost colourless, faintly bluish at base; veins in the apical and in the anterior part black. The greater part of the inner surface of posterior femora black with two complete pale bands; the apex of inner surface darkened. Posterior tibiae whitish-yellow; inner surface of bases darkened.

♂ as female, smaller. Frons with a distinct median keel.

| | ♀ — mm. | ♂ — mm. |
|------------------------------|---------------|---------------|
| Length of body | 21.8-22.0 | 17.5 |
| — pronotum | 3.9- 4.0 | 3.0 |
| — elytra | 19.8-21.0 | 17.5 |
| — posterior femora | 9.8-10.0 | 8.5 |
| — — tibiae | 8.0- | 6.7 |

GEOGRAPHICAL DISTRIBUTION.—Abyssinia, British Somaliland.

SPECIMENS EXAMINED.—1 ♀, 1 ♂.

Abyssinia: Katshinuaha, Tshertsher, 31.I.1899, 1 ♂ (Dmitriev).

British Somaliland: Buran, 3,000 ft., 9.IX.1929, 1 ♀ (Collenette).

This species was described by Uvarov (1923) from females only, as *Vosseleria somali*; later (1930) he put it in the genus *Vosseleriana*. I have been able to prove that *Vosseleriana somali* belongs to the genus *Sphingonotus*.

43. *Sphingonotus lucasii* Saussure.

1888. [*Sphingonotus scabriusculus* Stål] var. *lucasii* Saussure, Mem. Soc. Phys. Hist. Nat. Gen., vol. xxx, Nr. 1, p. 83 [types ♀, ♂; Algiers, Tunis].
1901. *Sphingonotus lucasii* Werner, Sitz. Ak. Wiss. Wien, Math.-Nat. cl., Abt. I, p. 278, n.° 33 (partim).
- 1902-1905. *S[phingonotus] lucasii* Jacobson et Bianchi, Priam. Lozh. Ross. Imp., pp. 192, 274 (partim).
1910. *S[phingonotus] lucasii* Kirby, Synon. Cat. Orth., vol. III, p. 277, n.° 35.

♀. Body of medium size, almost naked.

Head punctured, furrowed, weakly projecting above the pronotum. Eyes oval, small, their vertical diameter almost 1.5 times the horizontal, and almost equal to the subocular distance; slightly protruding laterally. Frons weakly sloping. Frontal ridge very concave widened between the antennae, constricted below the ocellus; margins raised throughout; surface punctured, with a longitudinal convex keel at the fastigium; very weakly projecting in profile. Facial keels very distinct. Fastigium of vertex strongly sloping, almost vertical. Vertex wide, strongly concave, margins distinctly raised; median keel very distinct in the anterior part of vertex, absent in the posterior; maximum width of vertex almost twice the width of the frontal ridge between the antennae. Foveolae of vertex distinct, triangular. Antennae narrow, slightly longer than head and pronotum together.

Pronotum constricted in the prozona, somewhat saddle-shaped; transverse furrows distinct, first furrow just behind the middle of prozona; interspaces between furrows very rough; metazona convex, densely and coarsely furrowed; its length 1.5 times that of prozona; pos.

terior angle slightly greater than 90° , rounded, its margins undulating; anterior margin with an excision in the middle; shoulders rounded; median keel distinctly raised in front of the first furrow, absent between the furrows; distinct and linear in metazona. Lateral lobes weakly vertical, with coarse punctures and fine furrows in the metazona; anterior margin bisinuate, anterior lower angle obtuse, rounded; posterior margin straight, posterior lower angle weakly attenuated, somewhat dentate; lower margin obliquely-ascendant, undulating.

Sternum finely and sparsely punctured; its width considerably greater than length; width of interspaces between meso and metasternal lobes 2.75—3.0 times the length. Lower parts of meso-episternum densely punctured. Valvae of ovipositor with pointed apices; the basal parts of lower valvae smooth.

Elytra slightly narrowed towards the apex, not reaching the apices of posterior tibiae; their length almost 5.6 times their maximum width; venation quite dense in the basal part, sparse in the apical part; the apical part of the second branch of the medial vein gives off three branches; intercalary vein bent, approaching the discoidal vein at the apex, finely granular. Wings triangular, their length almost 1.7 times their maximum width; venation sparse.

Posterior femora thick; their length almost 3.5 times their maximum width. Posterior tibiae only slightly shorter than the femora with 7-8 spines on the outer and 10-11 spines on the inner side.

General coloration ochraceous. Head whitish, sometimes with a black stripe between the eyes (? *Sph. diadematus* Vosseler). Ocelli brownish-yellow. Antennae brownish, with pale rings. Elytra transparent in the apical part; the basal third, the median transverse fascia and several spots in the apical part rusty brown; veins light. Wings transparent, blue at base with a distinct, fairly wide black wavy band which reaches the inner margin and is somewhat wider in the middle; apical part colourless with blackish veins. The inner surface of the posterior femora for the greater part brownish-black with two pale complete bands; the apex of the inner surface pale. Posterior tibiae dirty yellowish-blue; base of inner surface-black.

♂ as female, but smaller. The vertical diameter of the eye is slightly longer than the subocular distance. The apical part of the second branch of the medial vein of elytra gives off 2 branches.

(To be continued.)