B. P. UVAROV, 1934

A new grasshopper genus of intermediate sub-family characters, and other interesting Orthoptera from Morocco.

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XLVII.—*A new Grasshopper Genus of intermediate Sub-family Characters, and other interesting Orthoptera from Morocco.* By B. P. Uvarov.

Owing to the kindness of Monsieur P. Regnier I have received some Orthoptera collected by his collaborators, mainly by Monsieur Rungs, in various parts of French

Morocco. Of particular interest were M. Rungs' captures in the recently pacified areas of the southern Moroccan Sahara, which still remains practically unexplored.

Apart from several species not yet recorded from Morocco, the collection included a specimen of a remarkable wingless grasshopper, which it proved difficult to place in one of the recognized subfamilies of Acrididæ, while it exhibited characters of two distinct subfamilies at the same time.

The presence of several species new to the country in this relatively very small collection indicates that the Orthopterous fauna of Morocco is still far from being exhausted by the recent studies of Werner, and the latest total of 252 species (Werner, Sitzber. Akad. Wiss. Wien, mat.-nat. Kl. Abt. i. vol. cxli. 1932, p. 112) cannot yet be regarded as approaching the final.

It is to be hoped that a thorough exploration of the southern territories will be undertaken by resident entomologists, and particular attention paid to small wingless forms.

Acrididæ.

Anamesacris *, gen. nov.

Although lacking the prosternal tubercle, this genus should be placed in the subfamily Catantopinæ next to the genus *Dericorys*, from which it differs by the fusiform apterous body, the absence of the abdominal tympanum, and the structure of the vertex.

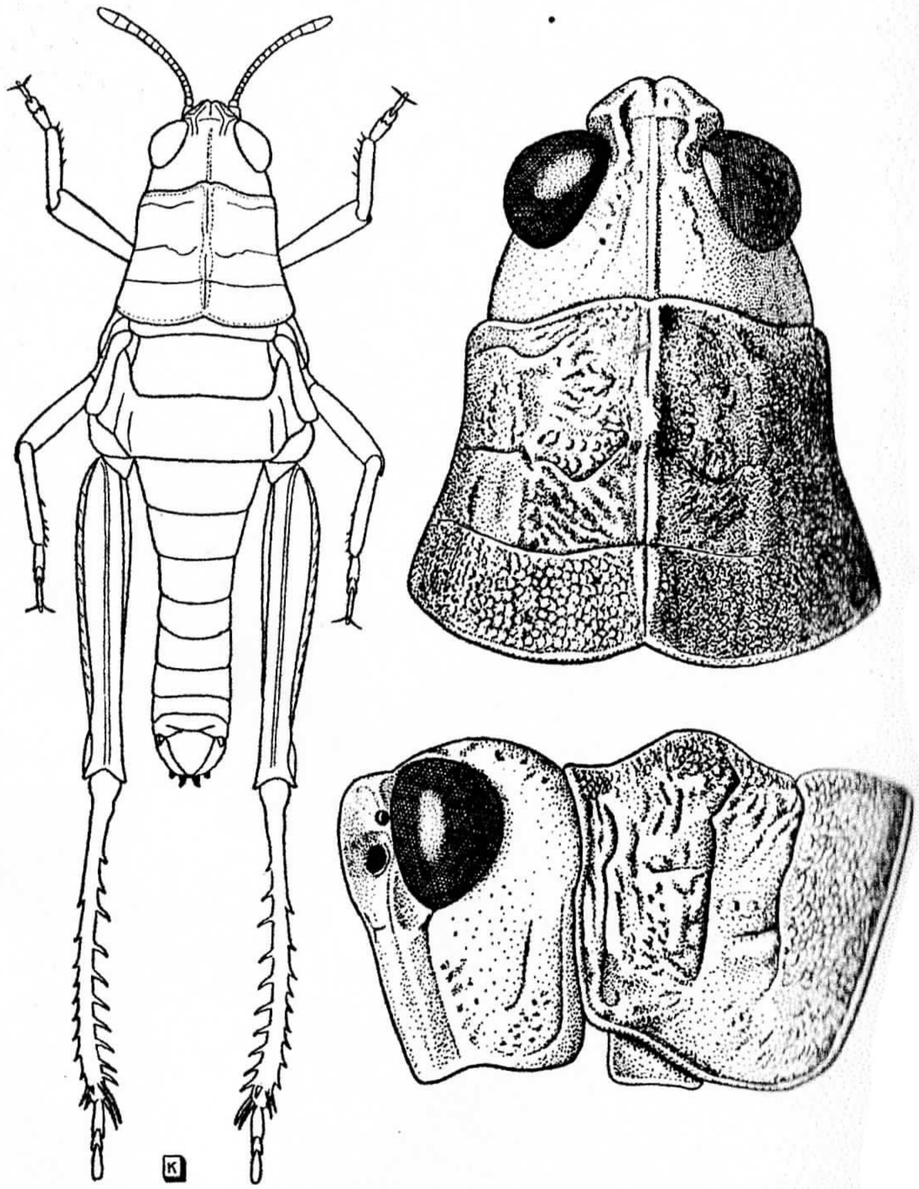
Antennæ short and thick, rounded.

Face oblique. Frontal ridge somewhat projecting forward between the antennæ, forming a distinct, if obtuse and rounded, angle with the fastigium of vertex. The anterior part of the fastigium is flat and almost horizontal, forming an angle with its posterior part, which is convex; the horizontal part is split into two by a fine median furrow continuing a very short way down the frontal ridge; the convex posterior part with a low median carinula continued on to the occiput.

Pronotum thick, conical, not constricted, with a low hump in the prozona. Median carina low, thick, with

* An Acridid of intermediate characters.

a fine sulcus along the middle, intersected only by the typical sulcus, which is placed far behind the middle. Hind margin obtusely excised in the middle, with the sides rounded.



Anamesacris saharæ, gen. et sp. n., ♀.

Prosternum very slightly incrassate anteriorly, without a tubercle. Mesosternal lobes small, rounded, very broadly separated. Metasternal lobes broadly separated.

Abdomen tapering from the inflated mesothorax,

metathorax, and the first tergite to the apex. Tympanum represented by a minute opening.

Valvæ of the ovipositor short, with strong basal teeth, the upper ones almost concealed under the parts of the last tergites.

Hind tibia slightly curved, armed with the apical spines on both sides. Arolia between claws of all legs very small.

Anamesacris saharæ, sp. n.

♀.—Antennæ not reaching beyond the middle of the pronotum, slightly incrassate towards the apex.

Face and lower part of cheeks callously rugose. Frontal ridge moderately expanded between antennæ, constricted under the ocellum, and strongly expanded towards the clypeus, its surface slightly concave, the margins thick, rounded. Lateral facial keels thick, irregularly rounded-angulate. Fastigium of vertex broadly pentagonal, with the apex concave and incised.

Pronotum densely covered with low, rounded, callous tubercles, which are more or less elongate transversely in the prozona and more round in the metazona, where they are placed more densely and confused.

Mesonotum, metanotum, pleuræ, and the first tergite confusedly rugulose and punctured, with a faint trace of a low median carinula.

General coloration greyish-buff. Hind femur with three faintly visible brownish fasciæ above. Hind tibia with the spines bright red in their basal halves and black apically; the inner ones each provided with a small black spot inwards of the base.

Length of body 24; pronotum 5; hind femur 11 mm.

Described from a single female taken at Tafilalet, Moroccan Sahara, in May 1933 by M. Rungs.

Type in the British Museum of Natural History.

The affinity of this extraordinary insect to *Dericorys* is beyond any doubt, and is evidenced by the structure of the frontal ridge, the vertex, the pronotum, and the hind tibia; at the same time the new genus exhibits a number of characters which appear to suggest that it is not even a true member of the subfamily Catantopinæ. To begin with, the structure of the prosternum, which has no trace of the typical tubercle, would not permit the inclusion of *Anamesacris* into Catantopinæ if this

character is taken as an absolute one. However, a tendency to the disappearance of the tubercle is observed in some true Catantopinæ, and in the genus *Dericorys* there is one species, *D. ramachandrai* Uv. (Ann. & Mag. Nat. Hist. ser. 10, xi. 1933, p. 249), in which the prosternum bears only a very low tubercle; it is noteworthy that in *D. ramachandrai* the elytra are somewhat abbreviated, and *Anamesacris* shows both a complete disappearance of elytra and wings and the absence of prosternal tubercle.

Another remarkable feature of *Anamesacris* is the apical furrow of the fastigium of vertex. In all Catantopinæ the fastigium is either strongly sloping, its surface being continuous with that of the frontal ridge, or it is separated from the ridge by a transverse carinula. It is only in the South American *Diedronotus* and allied genera that the fastigium of vertex has an apical furrow. This furrow is not such an insignificant character as it may appear, since a well-developed median furrow of the vertex constitutes one of the few characters by which the subfamily Pamphaginæ is distinguished. In other words, the presence of the furrow in *Anamesacris* can be regarded as a definite indication of its relationship to Pamphaginæ. Another point of affinity of *Anamesacris* with the same subfamily, if less convincing, can be seen in the shape of the frontal ridge, which is prominent between antennæ and forms an angle with the fastigium; this is, again, a feature peculiar only to a section of Catantopinæ, usually placed at the beginning of the subfamily. The short moniliform antennæ of *Anamesacris* cannot be claimed as a non-Catantopine character, but this type of antenna is more common in Pamphaginæ.

The affinity of *Anamesacris* to Pamphaginæ is particularly striking when that genus is compared with the curious little genus *Pamphagulus*, one species of which has been recently described by myself from Sinai (see Bodenheimer and Theodor, 'Ergebnisse der Sinai-Expedition,' Leipzig, 1929, p. 99) and two more by Ramme from Mauretania (Mitt. Zoolog. Mus. Berlin, xvii. 1931, pp. 193, 195). The structure of the vertex in *Pamphagulus* clearly represents a further development of the type observed in *Anamesacris*, the horizontal anterior portion becoming still more sharply separated from the convex

posterior portion, and the lateral margins, in consequence, becoming more angular in profile near the eyes. The pronotum of *Pamphagulus*, particularly in the two species of Ramme, does not differ from that in *Anamesacris*, and the same is true with regard to the prosternum, which is unarmed in both genera.

Although the position of *Pamphagulus* in the subfamily Pamphaginæ is a somewhat isolated one, there can scarcely be any doubt that the genus belongs to that subfamily. Therefore we have in *Anamesacris* a genus which is equally closely related to *Dericorys*, an unquestionable member of Catantopinæ, and to a genus of Pamphaginæ, thus linking up the two subfamilies. This is, of course, not a very unexpected phenomenon, since the subfamily divisions within Acrididæ are mostly conventional, but it is an additional argument against raising subfamilies to a family rank, which policy is not infrequently adopted merely as a result of insufficiently wide knowledge of the group.

The affinities of *Anamesacris* as discussed above permit one to make an interesting suggestion as to the origin of Pamphaginæ. It would appear that the loss of elytra and wings in a *Dericorys*-like insect might lead to an evolution in the direction of Pamphaginæ. When the face becomes more oblique and the frontal ridge more prominent between antennæ the anterior part of the fastigium of vertex sinks in relation to the posterior part and an angle with the frontal ridge is formed. At the same time the sulcus of the frontal ridge maintains its communication with the surface of the fastigium and an apical furrow of the latter is formed; a further development of that furrow would lead to a vertex of the true Pamphagine type. The disappearance of the prosternal tubercle in *Anamesacris*, as we have seen, is foreshadowed already in at least one species of *Dericorys*, while this structure in Pamphaginæ is very variable and often (*e. g.*, in *Glauia*) very similar to that in *Anamesacris*. The variation in the sculpturing of the body from *Dericorys* to *Pamphagulus* is also of interest. In *Dericorys* only a slight granulation of the pronotum can be seen, in *Anamesacris* the whole body becomes rugulose, and *Pamphagulus* is as coarsely rugulose and grained as most typical Pamphaginæ. Too great a stress,

however, cannot be placed on this character, since it is known to vary in accordance with the habitat of the insect.

On the whole, the discovery of *Anamesacris* and *Pamphagulus*, even though they cannot be regarded as the forms actually transitional between Catantopinæ and Pamphaginæ, lends a definite support to Saussure's statement that Pamphaginæ are " des Acridiens adaptés au désert " (Spic. Entom. Genav. ii. 1887, p. 11 ; under " Acridiens " that author understood Catantopinæ).

A discovery of the males in both genera must be awaited with great interest, since their study should throw some new light on the affinities of these remarkable members of the Eremian fauna.

Amismizia puppa I. Bolivar.

Although this curious insect is not in the collection under study I thought it useful to discuss here its affinities, which have been misunderstood by previous authors.

I. Bolivar described the genus *Amismizia* as a member of Œdipodinæ related to *Egnatius*, but the insect lacks the most essential character of Egnatiini, viz., the inflexed mesosternal furrow. Moreover, the only reason for placing *Amismizia* in Œdipodinæ is the almost vertical frons, which is a character of very doubtful value. The author of the genus noticed the great resemblance of *Amismizia* to *Pezotettix* of Catantopinæ, but apparently hesitated to include it in the latter subfamily because of the absence of a definite prosternal tubercle. That tubercle, however, is not an absolute character of the subfamily Catantopinæ (see above), and the perceptibly swollen prosternum of *Amismizia* permits us to regard it as unquestionably a member of that subfamily. In the present system it should be placed in the immediate vicinity of *Pezotettix*.

Werner's suggestion (Sitzber. Akad. Wiss. Wien, mat.-nat. Kl. Abt. 1, cxli. 1932, p. 148) to include *Amismizia* in Pamphaginæ is unacceptable, since in the structure of the vertex there is not the slightest resemblance to that subfamily, and the shape of the male subgenital plate as described by him in *Amismizia* is not a character of Pamphaginæ alone.

I am grateful to Prof. F. Werner for a specimen of this species.

Sphingonotus diadematus Vosseler, 1902.

Ain Kanaiba, Morocco, 19. vi. 1933.

The first record for Morocco of this species, described this from the Algerian Sahara.

Sphingonotus luteus Krauss, 1893.

Midelt, 4. vi. 1933.

Known from Oran and Aumale in Algeria ; new for Morocco.

This species is usually regarded as a mere colour-form of *S. azurescens*, but it appears safer to consider them separately, since the systematics of the genus *Sphingonotus* are in a most unsatisfactory state, and the name *azurescens* has been applied to more than one species.

Eremogryllus quadriocellata (Werner).

1932. *Leptopternis quadriocellata* Werner, Sitzungsber. Akad. Wiss. Wien, mat.-nat. Kl. Abt. i. Bd. cxli. p. 146, fig. 10.

Ouihalam, Moroccan Sahara, 16. v. 1933, 1 ♂.

Werner described his species without stating the sex of the types, but in a letter he informed me that they were females. The male before me now unquestionably belongs to the same species, while its study permits me to refer the species to the genus *Eremogryllus* of Krauss because of the characteristic genitalia. The species differs from *E. hammadæ* Krauss by the lateral pronotal carinæ being distinct, though only in the region of the pale spots near the front margin of both the prozona and the metazona. Measurements as in *E. hammadæ*.

Tettigoniidæ.

Phaneroptera albida Walker, 1869.

Erfoud, Tafilalet, 15. v. 1933.

This species has been known only from Egypt and Arabia (see Uvarov, Bull. Min. Agr. Egypt, no. 41, 1924, p. 9), and its discovery in the Moroccan Sahara proves that the area of its distribution stretches across the continent of Africa.