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A REPRESENTATIVE OF AN OLD WORLD SUBFAMILY OF ACRIDIDAE IN SOUTH-WESTERN NORTH AMERICA

BY B. P. UVAROV, D.Sc.

British Museum of Natural History

In 1889 L. Bruner described a curious Acridid from Lower California which he called '*Dracotettix monstrosus* and placed into the subfamily Pyrgomorphinae (Proc. U. S. Nat. Mus., XII, 1889, p. 49). Later on, he removed the genus, while describing two more species of it, again from California, to the subfamily Catantopinae, in the vicinity of *Tropinotus* (Biologia Centrali-Americana, Acrid., p. 226, 1907). This position of the genus appeared to satisfy other American orthopterists.

Having had a recent occasion to examine a pair of specimens of *Dracotettix monstrosus*, I was immediately struck by the great resemblance of the insect to members of the subfamily Pamphaginae, hitherto known only from the Old World. A more detailed study confirmed the correctness of this impression, supported by the following morphological data.

The structure of antennae in *Dracotettix*, while not impossible for a member of Catantopinae, is certainly such as is very common amongst genera of Pamphaginae with moderately specialized antennae. In *Dracotettix* they are fairly stoutly built, and the basal joints are distinctly incrassate, thus exhibiting a tendency to a differentiation into ensiculus and flagellum of the more highly specialized Pamphaginae.

The frontal ridge of *Dracotettix* is of a type very characteristic for Pamphaginae, though similar structure of the ridge can be observed in certain genera of Catantopinae. It is, however, the structure of the fastigium of vertex which proves beyond any doubt the Pamphagine affinity of *Dracotettix*. The fastigium is oval in shape, strongly concave, with acute raised margins which tend to bifurcate near the eyes, although becoming less distinct posteriorly. The bifurcated fastigial margins are amongst the essential characters of the subfamily Pamphaginae and the degree of their development in *Dracotettix* is exactly the same as in *Lamarckiana*, one of the most typical genera of that sub-

family. It is interesting to note that *Dracotettix* shares with *Lamarckiana* another detail in the structure of the fastigium, namely, the absence of an apical median sulcus which is well developed in many other genera of Pamphaginæ, but not in all of them. Its absence in *Dracotettix*, therefore, cannot be used as an argument against including the genus into Pamphaginæ.

The structure of pronotum in *Dracotettix* appears very different from that in all known Old World Pamphaginæ, because of the strongly developed lateral carinæ, while the median carina and the transverse sulci are of the type to be expected in the subfamily. However, a tendency to the development of lateral pronotal carinæ can be observed in many genera of Pamphaginæ, not closely related to each other, such as *Ocneridia* (e.g. *canonica* Fisch.), *Euryparyphes*, *Nocarodes*, *Adephagus*, and especially *Akicera*. In the last named genus, the lateral carinæ are developed particularly well, and it is interesting to note that the general shape of the median carina in *Dracotettix* is also very similar to that in *Akicera*.

Apparently, the reason for including *Dracotettix* into Catantopinae was the presence of a prominent prosternal tubercle. I had already an opportunity to point out (Ann. & Mag. Nat. Hist., ser. 10, vol. XIV, 1934, p. 469) that this character has no absolute value, and the tubercle may be well developed, or almost absent, in species of Catantopinae belonging to the same genus (e.g. *Dericorys*). On the other hand, the tubercle is well developed in many Pamphaginæ, but always arising from the anterior margin of the prosternum, not from its disc. The tubercle in *Dracotettix* is exactly of this type characteristic for Pamphaginæ, since it is flattened in front and with the anterior edges formed by the prolongation of the anterior margin of prosternum, while its posterior surface is sloping and rugose. On this character alone, *Dracotettix* should be referred to Pamphaginæ without any hesitation.

There is, however, a further highly important character supporting my view, although its presence in Pamphaginæ has been underestimated by previous workers. I refer to the specialized (rugulose, or striate) plate at the antero-inferior angle of the second abdominal tergite. Such a plate is a well-known character of the group Batrachotetrigini (*Eremobiites* of Saussure,

who also mentioned its presence in Pamphaginæ) of the subfamily Oedipodinæ, but my examination of a large number of genera of Pamphaginæ proved that it is not only present in many of them, but often more highly developed than in Batrachotetrigini. Thus, the plate is very distinct and provided with dense parallel ridges in *Lamarckiana*, *Porthetis*, *Hololopha*, *Eunapiodes*, *Ocnerodes*, *Akicera*, *Pamphagus*, while in *Acinipe*, *Amigus* and *Euryparyphes* the plate is distinct, but only granulate, not ridged. No plate, or only a very rudimentary one is observed in *Ocneridia*, *Tropidauchen*, *Nocaracris*, *Nocarodes*, *Glauia*, *Orchamus*, *Prionosthenus* and *Pamphagulus*. If, therefore, the absence of this plate cannot be regarded as a character excluding a genus from Pamphaginæ, its presence in well developed form in *Dracotettix* constitutes a very strong argument in favor of including this genus into that subfamily, or into the group Batrachotetrigini. The structure of the vertex in our genus is, however, definitely against the latter possibility.

If still further arguments are needed, the shape of posterior femur and the irregular disposition of the pinnate ridges on its externomedian area in *Dracotettix* are such as are usual for Pamphaginæ, but not for Catantopinæ. The armature of posterior tibia is also as in Pamphaginæ.

Finally, the male abdomen of *Dracotettix* is recurved towards the apex which is compressed laterally, with the subgenital plate truncate and tuberculate, as in many Pamphaginæ, but very unlike the various types of abdomen observed in Catantopinæ.

It would be superfluous to quote further minor points in support of my firm conviction that *Dracotettix* represents a genus of Pamphaginæ. Unfortunately, I have no specimens of another Californian genus *Leptoscirtus* L. Bruner, considered by American authors closely allied to *Dracotettix*, which therefore, for the time being remains the sole representative in the New World of the essentially Old World subfamily Pamphaginæ.

The distribution of Pamphaginæ is of unusual interest, as will be seen from the appended map (fig. 1). Its representatives occur mostly in dry rocky regions of South and East Africa, North-West Africa, Iberian peninsula, Western Asia and in the Canary Islands. This type of distribution is, however, not exceptional and numerous parallel cases can be quoted. For instance,

a very aberrant group Orgeriini of the family Dictyopharidæ (Homoptera) includes a considerable number of genera spread over drier parts of the Mediterranean region and into Turkestan, several genera occurring in South Africa, and has representatives in south-western North America. It is particularly significant that the genus *Orgerius* includes about 20 Mediterranean species and at least four occurring in California, Colorado and Utah (Oshanin, *Revue Russe d'Entom.*, XIII, 1913, p. 135; Melichar, *Abh.k.k. zool.-bot.Ges.Wien*, VII, Heft 1, 1912). In the Neuropterous family Bittacidæ there are two allied flightless genera, *Apterobittacus* MacLach. occurring in California, and *Anomalobittacus* Kimmins of South Africa (Kimmins, *Ann. & Mag. Nat. Hist.*, ser. 10, I, 1928, p. 395; Wood, *l.c.*, ser. 10, XII, 1933, p. 536). A type of distribution very similar to that outlined for Pamphaginæ is observed, amongst plants, in the case of the genus *Fagonia* of the order Zygophyllaceæ (Popov, *Bull. Middle Asian State Univ.* 15 1927, p. 248).

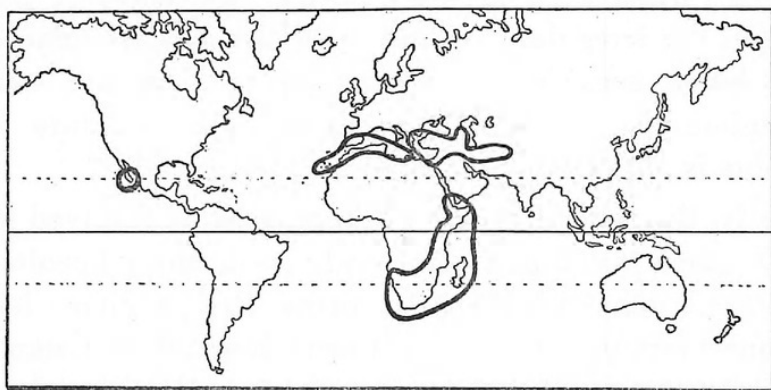


Figure 1

It may remain a matter of opinion whether discontinuous distribution of this type should be regarded as giving support to the former existence of an Atlantis, or to Wegener's theory of continental drift. In any case, there is a series of definitely established facts of an ancient faunistic and floristic relationship between the dry semi-desert and desert countries of the Mediterranean region and South Africa, on one hand, and arid south-western North America, on the other.

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