

Notes on Three little-known Species of the *Alberganus*-Group of the Genus *Erebia*

By B. C. S. WARREN, F.R.E.S.

An outstanding feature of the *Erebia* species is the simplicity of structure of the male genitalia. Yet in spite of this the formation of the claspers enables one to recognise at a glance any of the fourteen groups into which the known species of the genus fall.

The present paper was undertaken with the object of recording that *Erebia dabanensis* is a North American species; but it was found necessary to deal with the two other species that are most closely connected to *E. dabanensis* at the same time: namely *E. kozhantshikovi* and *E. youngi*.

At the time of writing my Monograph of the genus (1936), most specimens of *E. dabanensis* in collections were from the East Sayan Mountains. The two specimens from which the species was described were said to have been, "... trouvée le 10 Juillet dans les montagnes nommés Chamar—Daban . . . Irkoutsk", that is a little south of Lake Baikal. All specimens supplied by Staudinger were from a few localities in the East Sayan (including the Khamardaban Mountains), and the Tunkun Mountains. At a later date the species was recorded from the district of the Schuihya River in the Polar Urals. These I have never seen. Just before publication of my work, Staudinger obtained some specimens from the Anadyr Mountains, in the extreme N.E. of Siberia. A little later he sent me 2 male and one female of these; dissection proved them to be *dabanensis*. The species therefore had a far greater range in distribution than it was supposed to have. It may possibly therefore, have spread far to the west also.

E. youngi was the only species of the three recognised in North America. There were at that time only a few specimens known. One that I had obtained through the kindness of Dr. J. McDunnough, from the Canadian National Collection, was the only one to have been dissected. A short time afterwards a few specimens were recorded from a locality 30 miles west of Aklavik (Leussler, 1935). I had then mounted the genitalia of some 15 specimens of the three species, and felt satisfied they were distinct species. A certain amount of structural variability was present in both *E. dabanensis* and *E. kozhantshikovi*. Subsequent work by Dr. dos Passos showed this was the case in *E. youngi* also. A few comments on this variation are necessary. The most striking feature of the claspers in the *alberganus*-group species is the distal, or terminal part. This is a compound structure, composed of the parts known as the "shoulder" and "head" of the clasper, merged into one solid piece. The proximal part, or body of the clasper, is featureless, the distal, variable both in size and shape. An idea of the appearance of this part and some of its variation is given by the photograph in my Monograph; *E. dabanensis* pl. 41, figs. 379, 380, 381, and pl. 42, fig. 384; *E. kozhantshikovi* pl. 41, figs. 382, 383; *E. youngi* pl. 42, fig. 385. The dorsal ridge of the distal part carries a complete range of spines extending over its entire length. In *E. dabanensis* the length of the spined ridge is greater than that of the corresponding ridge of the proximal part; in *E. youngi* it is markedly shorter; in *E. kozhantshikovi* the two are practically equal. In the fig. 382, previously mentioned, the distal ridge appears the shorter, but this is the

result of twisting in mounting the specimen. Taken as a whole, the clasper in *E. dabanensis* and *E. kozhantshikovi* is obviously greater in length than the dorsal structures (tegmen and uncus), taken together. In *E. youngi* it is approximately equal to them, or slightly less or greater. Finally, the spine "system" of the claspers (a very reliable character in all *Erebias*) is distinctive. In *E. dabanensis* the spines are coarse and well separated; in *E. kozhantshikovi* somewhat finer and closer together; in *E. youngi* very fine and touching. Whatever purpose these spines serve the coarser are evidently the most effective, the finer consequently require to be more numerous and hence closer together.

In 1946 Dr. dos Passos sent me 3 male and 2 female specimens from a series of an *Erebia* he had obtained from the McKinley National Park, in Alaska. I dissected the males and to my great surprise found that 2 were *E. dabanensis* and one *E. youngi*. This was the first occasion when *E. dabanensis* was recognised to be a North American species. This discovery of course raised other questions concerning the two species and also the race described as "*E. herscheli*" by Leussler in 1935. All this necessitated much work that could only be done in America, and in early 1946 Dr. dos Passos and I myself were working on the Argynninae, so the question of these *Erebias* was left for a more convenient time. It has remained in abeyance until last autumn (1968), when I chanced to be looking over my microscope slides of *Erebia*. Then I brought the matter to Dr. dos Passos's notice and he without further delay dissected another 15 of his Alaskan specimens as well as some from Yukon and the N.W.T. He had previously dissected others and the total result gave 10 *E. dabanensis* and 13 *E. youngi*, the latter including the holotype of *E. herscheli*. Of these, 8 *E. dabanensis* and 4 *E. youngi* were taken in the McKinley Park area, some actually on the same day. Some of the series he had described as *E. youngi rileyi* (dos Passos 1947), proved to be *E. dabanensis* and some *E. youngi*. The *herscheli* all proved to be *E. youngi*, which agreed with the one specimen of this insect of the extreme north that I had dissected. Later Dr. dos Passos sent me photographs of all these slides. The *E. dabanensis* varied as the Palaearctic insects, the *E. youngi* (including *rileyi* and *herscheli*) also varied but to lesser degree. It should be remembered that when comparing the relative proportions of parts of the claspers, these structures must be kept in absolute profile, for they are affected by both a longitudinal curvature and a slight, inward twist, as in most *Erebia* species. The form of the claspers can therefore be distorted in mounting the specimen, and efforts to correct a false appearance may often push the dorsal structures off their true profile. Slight pressure by the cover glass in mounting is the only method to maintain a true profile position of all the parts, and it is only in such position that the actual shape and dimensions of the various parts can be appreciated. Some workers profess to avoid any pressure in mounting, and condemn the use of it as distortion; but they overlook that it is of no value to show a picture that conceals the real formation. Even under moderately tight cover glasses one cannot always be sure of preventing movement, owing to the ever present difficulty of controlling the quantity of balsam under the cover. An example of this is the slight alteration in the clasper in my fig. 382, which I previously mentioned.

Two important facts are now established: *E. dabanensis* is a North American species, and it and *E. youngi* exist together and fly at the

same period, in central Alaska. The distribution of *E. dabanensis* may be extensive, for one specimen came from the neighbourhood of Slana in south Alaska, which is not far from Palmer.

An unfortunate fact must be considered. So far as the available material goes, it is doubtful if *E. dabanensis* and *E. youngi* can be distinguished by their superficial appearance. It is possible that in the future fresh specimens may enable some distinction to be noted. Another trouble is uncertainty concerning the types of *E. youngi*. The type-locality lies in the *dabanensis*-zone of Alaska, so the type-series might include both species, as was the case in the description of the name "*rileyi*". This emphasises the superficial similarity of these species and how essential it is that there is no uncertainty about the actual type, which must be dissected if it is to be of any value. Dr. dos Passos has undertaken to clear up these points; and also whether "*herscheli*" can be distinguished from *E. youngi*.

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Some Aspects of the Fauna of the Nuba Mountains, Sudan

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The Nuba Mountains of southern Kordofan lie between 10° 30' and 12° 30' N, 29° 00' and 31° 00' E. They consist of a series of ranges of large granitic outcrops covered with comparatively shallow soil in the *Acacia*—tall grass forest region of the Sudan (Plate 1a). The general appearance of the landscape is of a vast plain interspersed with large *jebels*. The maximum elevation (Jebel Heiban) is 1,345 m. (4,500 ft.). In the valleys and plains separating these hills there is often dark, heavy soil and the vegetation is predominantly thorny.

The area does not appear to have been investigated zoologically, but is of botanical interest owing to the species flourishing there which really belong to more southern regions. For example, on Jebel Daier the most northerly massif may be found the bamboo *Oxytenanthera abyssinica* Munro and various other trees and shrubs characteristic of the south. Especially striking is the pink-flowered poison-tree *Adenium honghel* A. D.C. and the 'tebeldi' or baobab *Adansonia digitata* L. The large, broad-leaved *Ficus platyphylla* Del. is characteristic of flatter ground; the ebony *Diospyros mespiliformis* Hochst. and *Celtis integrifolia* Lam. near the sandy edges of water-courses. In valleys and on heavier soils, the thorny flora consists of 'talh', *Acacia seyal* Del. with *A. albida* Del. Both tall and short grasses are present, the most important of the former being *Hyparrhenia* spp. The candelabra *Euphorbia calycina* N. E. Br. and the sausage-tree *Stereospermum kunthianum* Cham. are also not uncommon in the area (Andrews, 1948).

As we had not previously visited this part of the Sudan, my wife and I decided to spend the Christmas vacation 1967 there, with our two



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