A New Eocene Grasshopper

Tettigonia (Locusta) amoena n. sp. from Denmark.

By

Kai L. Henriksen.

In the year 1922 I dealt with all the fossil insect material, then present, originating in the Danish Eocene deposits (Lower Eocene Diatom-earth bed)[1]). Since then I have not seen any further insect remains from these deposits till now, when I got a very finely preserved fore wing (tegmen) of an Orthopteron, collected by Mr. J. P. ANDERSEN, cand. mag., on the isle of Fuur and kindly given by him to the Geological and Mineralogical Museum of the University of Copenhagen.

The wing is so well preserved that all the longitudinal veins and a great many of the fine cross-veins are discernible, and moreover 3 dark-coloured undulating bands across the wing membrane indicate the wing-pattern of the living insect.

The venation tells clearly enough that the animal to which the wing belonged was a Longhorned Grasshopper of the family formerly known as *Locustidae*, and now-a-days as *Tettigoniidae* (or incorrectly as *Phasgonuridae*). The venation is so well agreeing with that of the recent genus *Tettigonia (Locusta* olim) and especially with the common Danish (European) species *T. viridissima* L., that there can be no doubt that the fossil form in question belongs not only to the same subfamily *(Tettigoniinae)*, but even to the very

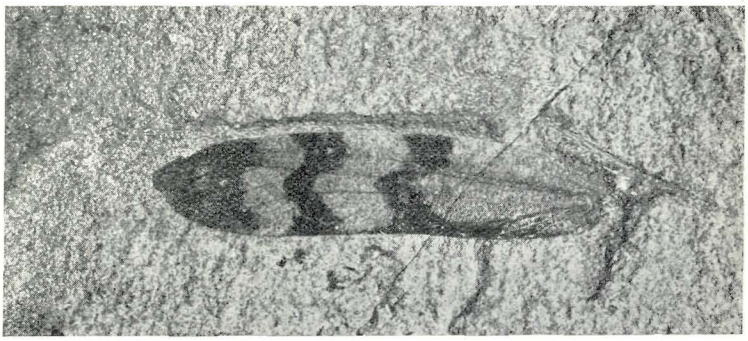
[1]) KAI L. HENRIKSEN, 1922: Eocene Insects from Denmark. Danm. Geol. Unders. 2. R. Nr. 37.

same genus *Tettigonia,* within which it is a close relative of *T. viridissima.* I propose the name *T. amoena* for it, the name alluding to the fine wingpattern.

Tettigonia (Locusta olim) **amoena** n. sp.

The outline of the tegmen is slightly curving, with about parallel fore and hind margins (i. e. not distinctly broader towards the base). The tegmen is rather broad, about 4 times as long as broad.

C o s t a is only one third of the length of the wing, and the costal area is distinctly narrower than in *T. viri-*



E. Nielsen phot.

Fig. 1. Tegmen of *Tettigonia (Locusta) amoena n. sp.* Natural size.

dissima. — S u b c o s t a, which in *T. viridissima* runs parallel to radius even to the apex of the wing, is in this species shorter; towards the middle of the wing it diverges from radius, and reaches the anterior margin of the wing at about the second third of the wing. — R a d i u s runs, nearly as in *T. viridissima,* to the apex of the wing, but has in its distal part four anterior branches going to the fore margin. — R a d i u s - s e c t o r, which takes its rise from radius a little basad to the middle of the wing, sends off four posterior branches towards the distal part of the hind margin of the wing. — M e d i a sends off — just as in *T. viridissima* — four posterior branches, the distal of which however appearing bifid near the very margin of the wing. — C u b i t u s

ends just below the rise of radius-sector (in *T. viridissima* it reaches farther distad). — The analia are rather parallel and none of the forms any closed cell, as is the case in *T. viridissima.*

The cross-veins are rather numerous, and will often show anastomoses (for instance in the costal area), and even form small closed secondary cells (for instance in the radial area just distad to the apex of subcosta), but they do not include *inter se* a reticulation by (tertiary) intercrossing veinlets.

The most conspicuous character of the wing is however the pattern: three undulating dark bands across the wing from fore to hind margin, the basal band placed a little basally to the middle of the wing and covering for instance

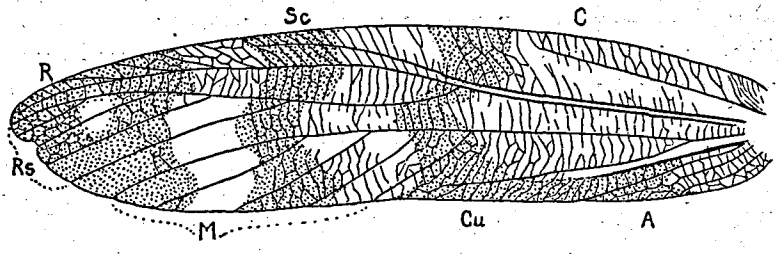


Fig. 2. Tegmen of *Tettigonia (Locusta) amoena n. sp.* C = costa, Sc = subcosta, R = radius, Rs = radius-sector, M = media, A = analia. — Only the distinctly observable cross-veins are drawn.

the point where radius-sector issues from radius, and continuing somewhat basad along the hind margin. The intermediate band is placed at about the second third of the wing, covering the distal part of subcosta. The apical band covers the entire apical fifth of the wing space and includes a small, light spot through which passes the second branch (from apex) of the radius. The little fork of the distal branch of media is found in the lowermost corner of this apical band. — No pattern similar to that described here is — as far as I know — found in any recent Tettigoniid except in the East-Indian genus *Sanna* belonging to the subfamily *Pseudophyllinae* to which the wing in hand can by no means be referred.

As no stridulating apparatus is developed in the anal area of the wing, the specimen has been a female.

Length of the wing 63 mm.

In my paper: Eocene insects of Denmark I described a Tettigoniid hindwing, named *Nymphomorpha medialis* which belongs to either the subfamily *Tettigoniinae* or to *Decticinae*. Thus the possibility is at hand that the present fore wing might belong to the same species as the said hind wing. The size might rather well agree, though the *N. medialis*-hindwing is, as far as can be judged from the preserved fragment, a little shorter than the *T. amoena*-forewing. But what I think is important: the *N. medialis*-hindwing quite misses cross-veins, of which a great number is present in the *T. amoena*-forewing; and judging from the recent grasshoppers, fore- and hind-wing of one and the same species were surely also formerly equally equipped with (or without) cross-veins — and therefore the two vings in question cannot have belonged to the same species.

Nor is it identic with any of the few other Tettigoniid wings described from Eocene deposits of foreign countries.

Copenhagen, November 15th 1929.