

end of the ear, thus of course preventing all formation of kernels; or if the attack is a little after the silking period, they severely damage the tip of the ear and expose the developing corn to predators and fungus rots. They are also very fond of cantaloupe and other melons.

A rather curious observation is that they did not much trouble the bulbs in storage, although at Doctors Inlet bulbs were stored in open sheds to which the grasshoppers had easy access. This seems to be because they cannot readily bite their way through the hard outer layers of the dry bulbs. Any bulbs dropped out in the field or in the open about the sheds where they were exposed to rain were readily eaten by the hoppers.

There remains the problem of why they get so extremely abundant in the neighborhood of bulb fields. It looks as if narcissus was a particularly favorable food and of course abundant in the field. Perhaps in the mixed vegetation of the uncultivated land they cannot get enough favorable food to bring large numbers of them to maturity.

It is planned another year to conduct a series of experiments using different plants as food to find if they do thrive better on certain types of vegetation. In our experimental cages where they were bred to observe oviposition, instars, etc., they were fed largely on polkweed, of which they were fond.

THE SYNONYMY, SYSTEMATIC POSITION AND BIOGEOGRAPHICAL IMPORTANCE OF A FLORIDAN TETTIGONIID (ORTHOPTERA)

BY B. P. UVAROV, British Museum (Natural History).

In 1927 Hebard described a remarkable new genus and species, *Hubbellia praestans*, from Liberty County, Florida, referring it to the Decticinae in the vicinity of *Pediodes*. The colored figure of the insect reminded me of a species described as *Locusta marginifera* Walker 1869 and considered by me in 1924 (Trans. Ent. Soc. London, 1924, p. 493, footnote) as belonging to an undescribed genus but temporarily left in the genus *Tettigonia*.

A very careful comparison of the type of *Locusta marginifera* Walker with the description of *Hubbellia praestans* Hebard did not enable me to discover any difference between the two, except that the length of the ovipositor in the type is 28.5 mm., as against 31.2 mm. given by Hebard; such a trivial difference

cannot be of taxonomic value. The only difficulty in the way of regarding the two insects as synonymous appeared to be geographical, since *Hubbellia* was described from Florida while Walker's type is labelled "Africa." However, the type specimen of *marginifera* was one of three Orthoptera included in a large collection of miscellaneous insects belonging to Mr. N. A. Vigors which, after his death in 1840, was presented to the British Museum in 1859. The other two specimens are *Euryphymus haematopus* L. from South Africa, and *Chortophaga viridifasciata* DeGeer, without a locality label, but a well-known North American species. This means that Vigors' collection included some North American insects, and one is justified in regarding the locality label of the type of *Locusta marginifera* as erroneous. The following synonymy can therefore be established:

***Hubbellia marginifera* (Walker 1869).**

1869. *Locusta marginifera*, Walker, Cat. Derm. Salt. Brit. Mus., ii, p. 284.

1906. *Phasgonura marginifera*, Kirby, Syn. Cat. Orth., ii, p. 219.

1927. *Hubbellia praestans*, Hebard, Trans. Amer. Ent. Soc., liii, p. 3 (syn. nov.).

Hebard had definitely referred *Hubbellia* to the subfamily Decticinae; but I have pointed out (Trans. Ent. Soc. London, 1924, p. 492) that the only character separating the Decticinae from the Tettigoniinae is the greater development of the free plantulae of the posterior metatarsi in the former, and Zeuner in his recent revision of the subfamilies (Proc. R. Ent. Soc. London, B, vol. 5, 1936, p. 106) has endorsed my view that there is no clear dividing line between the two subfamilies. In any case, even if the two are kept separate, *Hubbellia* should certainly be included in the Tettigoniinae, since it has the free plantulae quite as short as in *Tettigonia* itself, and certainly more reduced than in any member of the true Decticinae. Indeed, *Hubbellia* is extremely close to *Tettigonia*, though it differs strongly in the shape and particularly the texture of the elytra, while an important point of resemblance is provided by the type of structure of the female subgenital plate and of the vertex.

This assignment of *Hubbellia* makes it a member of one of the most interesting and unquestionably ancient groups, which includes only a few genera occurring discontinuously in the Old World. Its nearest relatives are *Tettigonia*, a Palaearctic genus particularly well developed in the west of the Mediterranean region; *Calliphona*, an endemic genus of the Canary Islands;

and *Psalmatophanes*, a recently described Madeiran endemic genus. The discovery of *Hubbellia* in Florida, in an environment characterized by such plants as *Magnolia*, *Taxus*, etc., suggests strongly that it may be considered as a Tertiary relic.

Supplementary Notes on *Hubbellia marginifera* (Walker)

BY T. H. HUBBELL

The female described as *Hubbellia praestans* Hebard was taken on the night of July 29, 1925, at "Camp Torreya," Liberty County, Florida. I have since repeatedly visited that locality at all seasons of the year, in the unsuccessful attempt to find additional specimens, and especially the unknown male. During the last few years lumbering operations have greatly altered the environment, and the upper slopes of the ravine have been devastated to such an extent that on my last visit, in November, 1938, I had difficulty in finding the spot where the insect was collected. Instead of the tall forest over-arching the road along the brink of the ravine, there is now in most places a thicket of tree-seedlings and brambles growing up from among felled logs. The deeper parts of the ravine were apparently less damaged. Fortunately a similar ravine just to the north of the one at "Camp Torreya" has been included in the recently established Torreya State Park, and it is hoped that this will be maintained in natural condition.

The reduced condition of the plantulae of the caudal metatarsi to which Dr. Uvarov has called attention above, together with observations on the behavior of the female taken in 1925, make it highly probable that *Hubbellia marginifera* is normally thamnophilous, or even arboreal (cf. Uvarov, l. c., 1924, p. 492). If the latter be true it would help to account for my failure to find additional specimens in spite of most careful and prolonged search, by day and night, during which I was on the alert for any strange song which might have been made by the males.

Although the unique female was taken on the lip of the ravine, and adjacent to a grassy, pine-studded field, I believe that the species inhabits the ravine forest rather than the dry, oak- and pine-covered sandy uplands of the neighborhood. Dr. Uvarov's conclusion that *Hubbellia* probably represents a Tertiary relic makes this the more likely, and is itself strengthened by the fact that these ravines, in addition to coastal plain species and glacial relics, harbor other endemic species of plants and animals known or believed to be of great antiquity. The best