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THE STRIDULATION OF THE SNOWY TREE-CRICKET (*ŒCANTHUS NIVEUS*).

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I.—INTRODUCTION.*

Dolbear (1897), in writing of the chirping of a common cricket, which was probably the Snowy Tree-cricket (*Œcanthus niveus*), described the regularity of rate as "astonishing, for one may hear all the crickets in a field chirping synchronously, keeping time as if led by the wand of a conductor." In an adjoining field, he said, the rate was the same, but the beat was different; that is, the notes did not occur at the same instant. He expressed the relation of the rate to the temperature by the formula $T = 50 + \frac{N-40}{4}$, where T is the temperature Fahrenheit, and N is the number of chirps per minute. For convenience, the formula may be reduced to $T = 40 + \frac{N}{4}$. Dolbear does not say that the cricket referred to is *Œcanthus niveus*, though he has generally been so interpreted. Folsom (1906) conjectures that he refers to a species of *Gryllus*, but I see no reason for this assumption, except Dolbear's mention of daytime chirps, which are comparatively rare with *Œcanthus niveus*. It seems more probable, as Edes (1899) suggests, that the cricket found chirping in the daytime was another species which Dolbear confused with *Œcanthus*. Certainly his formula and statements agree more closely with *Œcanthus niveus* than with any species of *Gryllus*.

Carl A. and Edward A. Bessey (1898) derived from observations made on *Œcanthus niveus* previous to the publication of Dolbear's paper the formula $T = 60 + \frac{N-92}{4.7}$, which differs notably from Dolbear's in making the increase of rate 4.7 instead of 4 per degree rise in temperature. They stated, moreover, that below 60° the rate was higher than would be expected from the formula, thus making it evident that the curve of temperature could not be represented by a linear equation.

Edes (1899) found that while all the individuals of *Œcanthus niveus* performed in the same tempo, yet the chirps did not occur at the same instant. Using some observations of his own and those of Walter Faxon, he tested Dolbear's formula, and found that the increase of 4 per degree in the rate was nearly correct, but the different sets of data disagreed in

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