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Compliments of

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THE SONG-NOTES OF THE PERIODICAL CICADA.

THERE are few more interesting subjects of study than the notes of insects and the different mechanisms by which they are produced. They interest every observant entomologist; and it is difficult to record them in musical symbols that can be reproduced on musical instruments, some of the more successful and interesting attempts in this direction having been made by Mr. S. H. Scudder. I have studied closely the notes of a number of species, and have published some of the observations.¹

In the notes of the true stridulators more particularly, as the common tree-crickets and katydids, I have been impressed with the variation both in the pitch and in the character of the note, dependent on the age of the specimen, and the condition of the atmosphere, whether as to moisture, density, or temperature. Yet, with similarity in these conditions, the note of the same species will be constant and easily recognizable.

A few remarks upon Cicada septendecim will doubtless prove of interest now that the species has been occupying so much attention. I do not find that the notes have been anywhere very carefully described in detail, nor would I pretend to put them to musical scale. Writ-

¹ 3d rep. ins. Mo., 14, 153, 154; 4th do., 139; 6th do., 150-169



ing seventeen years ago, I described the notes in a general way, as follows:—

“The general noise, on approaching the infested woods, is a compromise between that of a distant threshing-machine and a distant frog-pond. That which they make when disturbed mimics a nest of young snakes or young birds under similar circumstances,—a sort of scream. They can also produce a chirp somewhat like that of a cricket, and a very loud, shrill screech, prolonged for fifteen or twenty seconds, and gradually increasing in force, and then decreasing.”¹

There are three prevalent notes, which, in their blending, go to make the general noise as described above. These are,—

First, That ordinarily known as the *phar-r-r-r-ao* note. This is the note most often heard during the early maturity of the male, and especially from isolated males or from limited numbers. It is variable in pitch and volume, according to the conditions just mentioned as generally affecting insect melodists. Its duration averages from two to three seconds; and the *ao* termination is a rather mournful lowering of the general pitch, and is also somewhat variable in pitch, distinctness, and duration. In a very clear atmosphere, and at certain distances, an individual note has often recalled that made at a distance by the whistling of a rapid train passing under a short tunnel. But when heard in sufficient proximity, the rolling nature of the note will undoubtedly remind most persons more of the croaking of certain frogs than of any thing else.

¹ 1st rep. Ins. Mo., 24.

I have heard it so soft and low, and so void of the *ao'h* termination, that it was the counterpart of that made by *Oecanthus latipennis* Riley late in autumn, and when shortened from age and debility of the stridulator.

Second, The loudest note, and the one which is undoubtedly most identified with the species in the popular mind, is what may be called the 'screech.' This is the note described by Fitch as "represented by the letters *tsh-e-e-E-E-E-E-E-e-ou*, uttered continuously, and prolonged to a quarter or half a minute in length, the middle of the note being deafeningly shrill, loud and piercing to the ear, and its termination gradually lowered till the sound expires." Dr. Fitch errs as to the length of its duration; and I have also erred in the same direction — unless, indeed, there is a still greater range than my subsequent observations would indicate.¹ It is more probable, however, that our memories were at fault; for, as I have verified this year, this shrilling ordinarily lasts from two to three seconds, though occasionally longer, and is repeated at intervals of every five seconds. This note is rarely made by solitary males, or when but few are gathered together: but it is the prevailing note in the height of the season, and is made in unison; i.e., the assembled males on a given tree, or within a given grove, are prompted to it simultaneously, so that its intensity becomes almost deafening at times. It is of the same nature as that made by the dog-day Cicada (*Cicada*

¹ Since this was written, I have heard, on two occasions, this note prolonged to twenty seconds; but this is quite abnormal, and I have no other evidence than the season (June 20) to prove that it came from *C. septendecim*.

pruinosa Say), and in its higher and louder soundings is not unlike the shrilling of that species, though by no means so sharp and continuous. It is what in the distance gives the threshing-machine sound, and it has often recalled what I have heard in a saw-mill when a log is being cut crosswise by a circular saw.

Third, There is what may be called the intermittent, chirping sound, which consists of a series of from fifteen to thirty, but usually about twenty-two, sharp notes, sometimes double, lasting in the aggregate about five seconds. This sound is so much like that ordinarily produced by the barn or chimney swallow (*Hirundo erythrogaster*), that a description of the one would answer fairly well for both. It resembles also, though clearer and of higher pitch, the note of *Microcentrum retinerve* Burm., which I have likened to the slow turning of a child's wooden rattle highly pitched. The above notes, so far as I have recognized them, are of higher pitch, but of less volume, in the smaller, *Cassinii*, form.

The other notes — viz., that made when the insect is disturbed, and a not infrequent short cry, that may be likened to that of a chick — are comparatively unimportant: but no one could do justice to the notes of this insect without embracing the three peculiar sounds which I have attempted to describe above, and which are commingled in the woods where the species is at all common; though the undulatory screech is by far the most intense, and most likely to be remembered. C. V. RILEY.

