DISCUSSION AND CORRESPONDENCE

A CASE OF SYNCHRONIC BEHAVIOR IN PHALANGIDÆ

A RECENT article in this journal by Wallace Craig on "Synchronism in the Rhythmic Activities of Animals" recalls to mind an observation that I made near Austin, Texas, in 1909. At the time of the observation I made some field notes from which the following description is taken.

While engaged in hunting various species of rock lizards I located a vast colony of "harvestmen," which I identified as belonging to the genus *Liobunum,* resting during the day on the under side of an overhanging shelf of rock on a precipitous hillside. In a somewhat circular area of nearly five feet in diameter the harvestmen were packed closely together in almost unbelievable numbers. I estimated that there were between one and two thousand in the colony. When I first saw them they were all hanging from the ceiling, as it were, perfectly motionless, but when I came within about six feet of them they began a curious rhythmic dance. Without changing their foot-holds they raised their bodies up and down at the rate of about three times a second, and, curiously enough, the movement of the entire lot was in the most perfect unison. This performance was kept up for over a minute and then stopped gradually as though from exhaustion. I then poked a few of the nearest individuals with a stick and these immediately resumed the rhythmic up-and-down movement, which spread quickly over the whole group, but died down in less than half a minute. When I once more stirred up a few individuals they gave a few rhythmic responses, which stirred the whole colony again, but only slightly. After this a number of individuals began to crawl about and it was no longer possible to stimulate the rhythmic behavior.

When the colony was first seen it was noted that the long legs of neighboring individuals were closely interlocked and this mechanism was sufficient to account for the transmission of stimuli from one part of the colony to another. It should be noted especially that the rhythm was not perfectly synchronous at the beginning, but became so after a few seconds.

Possibly synchronic flashing in fire-flies may be explained as the result of a somewhat similar transmission of stimuli. One flash stimulates others, which at first might lag slightly; but soon a synchronism is built up in a limited region, such as one bush or one tree. Such a synchronism might be transmitted to a whole field.

It would be interesting to know whether any other naturalist has observed the type of behavior herewith described for the Phalangidæ.

H. H. NEWMAN

UNIVERSITY OF CHICAGO

THE SUPPOSED SYNCHRONAL FLASHING OF FIREFLIES

I WAS very much interested in reading the article by H. A. Allard, entitled "The Synchronal Flashing of Fireflies," which appeared in SCIENCE, November 17, 1916. Some twenty years ago I saw, or thought I saw, a synchronal or simultaneous flashing of fireflies (Lampyridæ). I could hardly believe my eyes, for such a thing to occur among insects is certainly contrary to all natural laws. However, I soon solved the enigma. The apparent phenomenon was caused by the twitching or sudden lowering and raising of my eyelids. The insects had nothing whatsoever to do with it. Many times in the past twenty years I have proved that my solution was correct.

PHILIP LAURENT

TRIMMED MAGAZINES AND EFFICIENCY EXPERTS

TO THE EDITOR OF SCIENCE: I have been reading your article on page 13 of SCIENCE for January 5 entitled "Science and the Cost of Paper" and am very sorry that the price of paper has increased to such an extent that you have to make a material change in SCIENCE. I understand your position and am not objecting the slightest to what you are doing; but I do want to make a protest against this popular efficiency humbug, because it seems to me that people are running the efficiency matter into the ground. It's all nonsense for any efficiency expert to say that the opening