

"SINGING" EARTHWORMS

AN article in the *Literary Digest* of October 9, 1926, has been sent to me by Professor Jesse E. Hyde, of Western Reserve University, because he remembered my mentioning the observation of sound-producing earthworms. The article reports, under the heading "When the Earthworms sing Together" the observation of Professor Mangold, of Freiburg, Germany, that "the earthworms possess voices and that they actually are in the habit of uttering slight sounds, and that they do this not singly but in series marked by definite and varying rhythm."

Seeing that the fact that earthworms make noises had not been known before, as I had assumed, I wish to record the observation that also American earthworms produce sound.

It was first pointed out to me by Mrs. Ruedemann about a decade ago, on a sultry May evening, that the earthworms in our garden back of the house could be distinctly heard. Being incredulous at first, I sat quietly on a chair until I also heard an exceedingly fine rasping noise all around me. It was a chorus of almost unbelievably small voices in the dark. To find out whether the little musicians were really earthworms, I got a flashlight and when the voices, after the quiet resulting from the disturbance of walking over the ground, were again in full chorus, turned the light upon a point close to me, from which I was sure a rasping sound arose. The light revealed a large earthworm, partly stretched out of its burrow. I spotted several more afterwards. We two have since heard the singing every year, always on warm spring evenings about and after dusk. Mrs. Ruedemann also heard it last spring about 4 o'clock in the afternoon on a warm May day after a rain, and then she could see the "singing" worms all partly stretched out of their burrows.

From the rasping character of the sound and the position of the worms I inferred that the noise was made by the drawing of the setae over some hard object at the edge of the burrow, and the time of the year suggested that the concert is connected with the mating season of the worms. Professor Mangold, on the other hand, concludes that the sound is made through the mouth and is more of the character of clicks, which however may "sometimes become so rapid as to form a buzzing noise." These noises were made only in the burrows in his aquarium.

A member of the museum staff, Mr. Jacob Van Deloo, tells me that he heard the sound frequently, when a boy.

Not being aware that this "musical talent" of the earthworms was unknown to naturalists, I failed to catch some of the musicians for identification. Dr.

S. C. Bishop, of the New York State Museum, intends to make a study of this, this spring.

RUDOLF RUEDEMANN

N. Y. STATE MUSEUM,
ALBANY, N. Y.

ENGLISH VERSUS METRIC SYSTEM

THERE has been considerable agitation for replacing our English system of weights and measures with the metric system.

One of the most striking examples of the unscientific way in which the English system of weights and measures has grown up and the confusion that it introduces is given in the following sentence taken from a paper on "The Effect of flooding with Sea Water on the Fertility of the Soil," by H. J. Page and W. Williams, of the Rothamsted Experimental Station, Harpenden, England, and published in the *Journal of Agricultural Science*, Vol. XVI, Pt. 4, pp. 551-573 (1926).

The land is typical strong wheat and bean land which can ordinarily be expected to give a yield of four to five quarters of wheat per acre.

I am supposed to be familiar with the English language, and yet the quantity, "a quarter of wheat," was a new term to me. I accordingly looked it up in Funk and Wagnall's New Standard Dictionary (unabridged) and found that the following possibilities present themselves.

- (1) The fourth of a hundred weight (this would mean 25 pounds).
- (2) By the old reckoning, the fourth of a hundred weight, where the hundred weight is 112 pounds, namely, 28 pounds.
- (3) Eight bushels, with the parenthesis following it (in some localities, 8 $\frac{3}{4}$ or 9 or 12 or 16 bushels, etc.).
- (4) A fourth of a ton. (Query: Is a short ton, 2,000 pounds, or a long ton, 2,240 pounds, meant?)

Apparently the dictionary had not helped me very much in deciding what the authors meant by "a yield of four to five quarters of wheat." It would have been just as intelligible to me if they had stated "two or three cart loads" and had neglected to state the size of the cart. Accordingly, I asked some of our graduate students from Canada what was meant and they said that we would have to find out what a "quarter" meant at the particular grain market where the wheat was sold, in order to decide what the authors meant in this scientific paper.

If the English system of weights and measures can