in each separate series, and a title page, table of contents, and complete index furnished when the accumulated numbers warrant the closing of a volume.

It would be rash to anticipate a large subscription list; it would be in the beginning at least quite insignificant. But the stations are under obligation (moral, if not legal) to publish and publish properly what they do. Publication is in fact the inspiration of the investigator—the most precious part of his reward. Whether station workers should receive copies of the published work in their own lines free (*and exchanges with scientific journals inaugurated!*) could be settled later, but let us hope that the decision would not be in the negative.

Would this scheme of publication interfere with the patronage of existing scientific journals? I can not for a moment think that such would be the unfortunate case. On the contrary, they are bound to gain with the greater advance of scientific investigation in this country. The work done by college professors, students and independent investigators will not, under the circumstances, grow less, but more—and they now furnish the existing journals with the large proportion of the copy. Even with the establishment of an *Adams Journal* there would be, as now, some things the station workers would wish to publish, and could properly publish, in the existing periodicals. My own journal, so intimately connected with one line of station work, has been enriched heretofore by valuable contributions on mycological taxonomy from station workers, and I do not anticipate that there will be any conflict or that loss of patronage need be predicted.

W. A. KELLERMAN

OHIO STATE UNIVERSITY,
October 19, 1907

A "CENSUS OF FOUR SQUARE FEET"

TO THE EDITOR OF SCIENCE: The article by Mr. W. L. McAtee in SCIENCE for October 4, 1907, "Census of Four Square Feet," is extremely interesting, but some of his deductions therefrom, as far as insect and arachnid life are concerned, are wide of the mark. He concludes that insects are more abundant in the meadows than in the woodlands. But he has failed to take account of the trees and their fauna in the woodland. In the meadow the insect fauna is mostly concentrated on or near the ground; in the woodlands, on the contrary, the bulk of insect life is on the trees. There are many families of insects which rarely or never occur in meadows or on the forest floor, but do occur abundantly in trees. Four square feet of some forest trees would produce a great many specimens of insects; for example, a tree infested by Scolytids or with Coccidæ. Four square feet of foliage infested with Tingitids would have hundreds of specimens; if infested with gall-mites, would have millions of specimens. Four square feet of dog-wood blossom in the spring, if shaken, would produce a thousand minute Coleoptera. Four square feet of tree bark sometimes has hundreds of specimens of Psocidæ. These are all groups of insects practically unrepresented in meadows or on the forest floor, and some of them are food for birds. Even four square feet of forest floor with a few decaying fungi would produce hundreds of beetles and in some cases thousands of mites.

His figures for the meadow are not at all large; there are many spots where the Thysanura are much more numerous and where the mites would swell the figures to many thousands.

Many samples of meadow taken at different seasons would doubtless give an approximate idea of the insect and arachnid fauna of meadows; but no amount of samples of forest floor can give an adequate idea of the sylvan insect and arachnid fauna. Insects are more easily discovered in meadows than in woodlands, but the two regions are so variable that a comparison from selected spots has little significance.

NATHAN BANKS

THE OCCURRENCE OF HEROS IN YUCATAN

IN a recent paper by Mr. Thomas Barbour and myself,[1] which reported upon a collection

[1] Barbour, Thomas, and Leon J. Cole, "Vertebrata from Yucatan: Reptilia, Amphibia and

of fishes from Yucatan, we stated that *Heros affinis* and *Heros urophthalmus* had apparently been reported previously only from Lake Peten, Guatemala. In some unaccountable manner we overlooked, at the time of writing our paper, the report by Evermann and Goldsborough,[2] published in 1902, upon fishes collected in Mexico and Central America. Dr. Evermann has kindly called my attention to the fact that the species mentioned were both obtained in Yucatan by Mr. E. W. Nelson, as recorded in the paper referred to. It so happens that Mr. Nelson had specimens from exactly the same places that I obtained them, namely, *H. affinis* at Progreso and *H. urophthalmus* at Progreso and at Chichen-Itza. Some of my specimens apparently came even from the same watering trough at the latter place, but I was successful in obtaining them directly from both the Great and Sacred Cenotes as well.

In the same connection it is interesting to note that "Mr. Nelson heard that cat-fish occur in a well [cenote] at Chichen-Itza, but did not see any specimens" (*loc. cit.*, p. 138). From the Sacred Cenote I obtained two specimens of one species of catfish, and from another cenote, some three or four miles to the eastward, eleven examples of another. Both of these appeared to be new, and have been described and figured by Mr. Barbour and myself as *Rhamdia sacrificii* and *Rhamdia depressa*, respectively.

One would not have suspected the presence of these catfishes in the Sacred Cenote, as they were at no time seen swimming about. The two specimens described were obtained for me by the Indians, upon hooks baited and sunk to the bottom. At the other cenote mentioned, however, the catfish were much in evidence, swimming about in a large school near the surface. As Mr. Nelson probably did not visit this cenote, these facts may explain why he did not see catfish at Chichen-Itza. I do not understand, however, why he did not see the mojarras (*Heros urophthalmus*) in the cenotes when he was there in February, as I saw them commonly during the whole period of my stay from February 13 to April 9. Furthermore, I found that they were not especially difficult to catch, in spite of the fact that I had to resort to boyhood's method of using a bent pin for the purpose, not having suitable hooks at hand.

It would be interesting to know whether there is any basis for the belief of the natives that the fish disappear from these cenotes during certain seasons, as it would furnish evidence as to the existence of the supposed underground connection of these curious water-holes. On the one hand, unless there are such connections, it seems hard to account for the apparently general distribution of *Heros urophthalmus* throughout the peninsula (unless we take into account the possible assistance of human agency); while, on the other hand, the segregation of two species of catfish in two cenotes only three or four miles apart is difficult to explain if there do exist subterranean connections of any considerable size.

Leon J. Cole

Pisces," *Bull. Mus. Comp. Zool.*, Vol. 50, No. 5, pp. 146–159, pls. 1 and 2, 1906.

[2] Evermann, B. W., and E. L. Goldsborough, "A report on fishes collected in Mexico and Central America, with notes and descriptions of five new species," Bull. U. S. Fish Com. for 1901, pp. 137–159, 1902.

Occurrence of the Fresh-Water Medusa, Limnocodium, in the United States

On August 17, the writer received at the laboratory of the Bureau of Fisheries, Woods Holl, a few medusæ with the request for their identification. They had been sent from Washington on the fifteenth in a small bottle and were living when received and continued to live for more than a week, though gradually declining.

A cursory examination showed them to be a species of the fresh water medusa, *Limnocodium*, the occurrence of which in considerable number in Regents Park, London, in 1880 marked our first accurate knowledge concerning a medusa of this habitat. It was described by both Allman and Lankester, and its characteristics and something of its life history critically observed.