The Habits of Amblyopsis. By C. H. Eigenmann.

The Blind Salamanders of North America, with Specimens. By C. H. Eigenmann.

Notes on the Embryol'gy of Paragordius (Gordius) varius (leidy). By Albert B. Ulrey.

[Abstract.]

During the latter part of last summer I had the good fortune to find a lot of eggs of *Paragordius (Gordius) varius* (Leidy). This small threadworm is familiar to nearly every one as the common horsehair worm found in streams, ponds and frequently in watering troughs.

The life history of the worm is known, in a general way, to all zoölogists. It is well understood, of course, that the very common superstition regarding the origin of the worm from the horse's hair has no more foundation in fact than a superficial resemblance.

There are three well-marked phases in the life history of Gordius. First, a free living larval stage. Second, a parasitic phase in which the host is (a) some aquatic insect, and later on (b) more commonly the fish becomes infested by feeding on the insect containing the larvæ. Third, the adult or sexually mature stage.

While the general course of development has been known for a number of years, there still remains much uncertainty concerning the details of its development, and there is absolutely nothing known as to many points in its life history. As a result of these gaps in our knowledge of these animals their relationships are not well understood. Some investigators believe that their affinities are with the segmented worms, while others maintain that they are to be grouped with the Nematodes.

It was with the belief that a more complete knowledge of the details of development of these forms might throw some light on their systematic position that I began this study.

The work is beset with numerous difficulties, among which may be mentioned the extremely minute size of the egg and the well-known difficulty of sectioning eggs of this character. I have given my attention thus

far mainly to the study of the living eggs and larvæ and the methods which would enable me to section them successfully. I have made a series of photographs of the living embryo from the time of the first segmentation of the egg to the adult larval stage. A series of sections has also been made corresponding to the stages represented by the photographs.

While engaged in this part of the work some facts were demonstrated which it was believed might have some value and be of general interest to the Academy at this time.

The following notes are presented as a slight contribution to our knowledge of the embryology of the American forms of Gordiidæ:

1. Concerning the early cleavage of the egg there has been not a little disagreement among authors. Villot maintains that the cleavage is regular, while the figures of Camerano show that there is much irregularity. In a series of photographs of the eggs of *Paragordius (Gordius) varius* (Leidy) it is clearly seen that the first segmentation is total and the resulting spheres are approximately equal in size. A large number of eggs were observed showing equal segmentation. The sections prepared also show this method of division.

In other series of the photographs are shown:

2. The development of the egg until an oval mass of cells, the blastula, is formed.

3. Segmenting eggs still inclosed in the mass which binds them together into threads.

4. Surface views of the formation of the gastrula.

5. The larvæ still within the egg membrane.

6. The larvæ freed from the egg membrane, some with the proboscis extended and others in which it is retracted.

The embryos were all photographed while living except the specimens showing the protruded proboscis.

The figures, together with drawings of the sections prepared, will be published later.