SEGMENTATION IN NEMATODES: OBSERVATIONS BEARING ON THE UNSETTLED QUESTION OF THE RELATIONSHIP OF NEMATODES TO OTHER BRANCHES OF THE ANIMAL KINGDOM

I HAVE long been impressed by certain evidences of segmentation in nematodes. My first impressions arose from a study of the distribution of the setæ on aquatic forms. This distribution was in those days, and is even yet, described as irregular; the setæ are said to be "scattered" on the body. Charting all the setæ on a given specimen led to the conclusion that they were not scattered ("zerstreut"); that, rather on the contrary, they constituted a series of more or less harmonious groups. The cephalic setæ, it is well known, have an orderly arrangement. The study of a large number of cases leads me to the conclusion that those setæ, some distance behind the cephalic setæ, denominated subcephalic setæ, are also orderly in arrangement, and might, in some instances at least, be regarded as repetitive of the cephalic setæ.

Later I was able to show that the transverse striæ of the cuticle are retrorse on the posterior half of the body, and the reverse on the front half. (See Fig. 1.) This reversal in the cuticle at the middle of the body, or thereabouts, occurs in a very wide range of genera, is independent of age and of sex, and seems a character of fundamental significance.

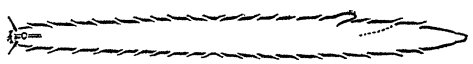

FIG. 1. DIAGRAM OF THE REVERSAL OF THE STRIÆ OF THE CUTICLE OF A NEMATODE.

Recently I have discovered that the principal cephalic organs are made up of segments which, while simple in character, bear no small resemblance to corresponding features in arthropods. The nature of these segmented appendages will be more easily understood by consulting the illustrations in Fig. 2.

The articulations in the cephalic organs of nemas are not easy to discover, owing to the small size of the organs and the transparency of the tissues. Some of these segmented organs are under muscular control, and can be extended and inflexed after the manner of the palps of insects. This is true of some of the labial organs, which unfortunately are usually so small as to be difficult to observe. The cephalic setæ, however, are larger, being particularly well developed on some marine forms, and in this case observation on living specimens affords evidence of the articulations when they might be overlooked if they were sought by other methods; for if a seta is obstructed it takes on the attitude natural to an organ composed of flexible joints and more or less inflexible segments, as shown in the upper illustration, Fig. 2. Here again, once having established the fact and learned how to make the observations, it proves that the setæ of a wide range of genera are jointed, though the number of segments is often reduced to only one or two.

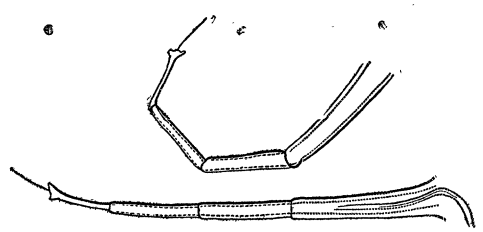

FIG. 2. CEPHALIC SETA OF A NEMATODE, SHOWING SEGMENTATION. TWO DIFFERENT ATTITUDES OF THE SAME SETA.

One recalls that a number of observers have noted the presence of longitudinal series of repetitive organs in the lateral fields of nematodes, though attention has never been called to the fact that these organs on opposite sides of the body may be symmetrical to each other. Sometimes they are exactly so.

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SOCIETIES AND ACADEMIES

THE BOTANICAL SOCIETY OF WASHINGTON

THE 119th regular meeting of the Botanical Society of Washington was held at the New Ebbitt Hotel, on March 14, 1917. Seventy-four members and sixty-five guests were present. After a dinner President T. H. Kearney introduced the re-