excellent source of rotenone, provided the plant can be obtained in quantity.

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ON THE PROPERTIES OF THE ELECTRON

SOME of the main difficulties of the Bohr atom disappear, the writer has shown,[1] if the electron possesses the property that it absorbs radiant energy during its motion, which induces a decrease of its electrical field and under certain conditions ejects again the energy as radiation. A deduction of these properties was given based on thermodynamics and kinetic theory, which will be further elaborated in subsequent papers. The results may also be obtained in other ways, one of which will be pointed out here.

Suppose that an electron gas kept at constant temperature is subjected to a powerful magnetic field. The path of each electron will now possess greater curvature than before, resulting in an increased transformation of its kinetic energy into radiant energy, due to the acceleration it undergoes. A limiting case is that the concentration of the electrons is so small that in most cases they pass clear across the chamber. Thus the kinetic energy of the electrons will continually decrease. But this is manifestly an absurd result. Hence each electron will on the average recover its velocity during collision. This can take place only at the expense of the surrounding radiant energy, since the kinetic energy lost took this form. If radiation has the orthodox form, namely, that it consists of continuous electromagnetic waves, the electron can recoup the lost energy only by the gradual absorption of radiant energy which is stored up as internal energy. Since the emission of radiation due to the acceleration of the electron depends on the curvature of its path, the rate of absorption of radiant energy will similarly be dependent. The increase in velocity during a collision of the electron can be caused only by an increase in its field during the process, its internal energy supplying the necessary energy. Hence its field decreased during its mean free path. These are the results obtained before.

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MANAYUNKIA SPECIOSA (LEIDY) IN THE DULUTH HARBOR

IN the course of a biological investigation of the Duluth Harbor, specimens of *Manayunkia speciosa* (Leidy) were taken in the dredge samples. Dr. Leidy described this annelid in the *Proceedings* of the Academy of Natural Sciences of Philadelphia, 1883. There are some additions to be made and some differences in the description that will place this form in its proper place in an analytical table or key.

In general the worm answers to his description. The mature specimens measure about 2.9 mm, although individuals in the act of fission may reach 4.9 mm. These latter were the ones that Dr. Leidy made his description from, although he did not actually see them divide. The worm is somewhat transparent with some pigment around the branchial lobes, and the general shape is as he described it, except the seventh segment, which is no different from the rest except that it is about twice as long as the preceding segments. It is at this point that the worm divides, and, as Dr. Leidy rightly guessed, the expanded forepart of this segment is the beginning of a head for the new individual.

It has the characteristic tentacles and ciliated branchiae of the Sabellidae, but in the original description the collar was overlooked. This collar is open at the back with the ends flaring out but coming together when the worm is in a relaxed condition. There are no setae on the collar, but there are two pigment spots under it similar to the eyespots of the Oligochaeta. The ciliated branchiae are on branchial lobes which expand laterally. At the base of each branchia is a pigment spot. These can be seen only in the more mature individuals, the younger ones having fewer or none at all. I have counted up to ten on one lobe.

The pseudohemal system has a green fluid. This flows from two hearts at the base of the branchial lobes into the tentacles, then back down each side of the esophagus, uniting into a single vein which runs the length of the body ventral to the digestive tract. It flows through three pairs of loops, one pair in each of the last three segments, to a vein which forms a sheath around the digestive tract. Here it is pumped by a series of muscular contractions back to the head end of the body to begin circulation again. I failed to find the loops in any of the other segments as Dr. Leidy suggested they were.

The digestive tract is ciliated for the whole length. This seems necessary in view of the fact that the muscular contractions driving the pseudohemal fluid are from the posterior to the anterior end in opposition to the contents of the digestive tract.

The testes and ovaries are located as he described them. The female opening is between the fifth and sixth segment. In the one case where I was fortunate enough to observe the eggs being laid they measured .135 mm x .095 mm.

The setae and uncini are about as he described them except the pectinate uncini of the last three segments, which have from three to five rows, composed of six or seven teeth each.

[1] *Phil. Mag.*, 7: 493, 1929.