movements of the œsophagus and stomach. The ingenious method, mixing food with subnitrate of bismuth and observing the process of swallowing and the movements of the stomach by means of the X-rays and the fluoroscope, had been announced previously. The details of the movements were described.

Professor Porter, who has been engaged for several years upon an experimental study of the mammalian heart, presented the results of his latest work. Among other things he described an ingenious method which he had devised for the study of the currents of blood in the root of the aorta. A small cylinder, made of hen's feather covered with lead foil, is fastened by a very short silk tether to the end of a probe, which is passed through the carotid artery and aorta down to the semi-lunar valves. The cylinder is so constructed as to have the same specific gravity as the blood. Its movements accordingly do not differ from those of an equal mass of blood. The lead foil makes the cylinder opaque to the Röntgen rays, so that its movements may be seen with the fluoroscope after the removal of the ribs. Thus the direction of the currents of the blood in the aorta is made visible.

Mr. F. W. Barrows discussed the results of his experimental studies on the effect of inanition on the structure of nerve-cells. In famished rats a decided shrinkage in the size of the cells and the nuclei was observed, and a still greater shrinkage in the nucleoli. The cells stain faintly with osmic acid, and the protoplasm shows a fine vacuolation. The general effects are similar to those produced by intense activity.

A number of papers were read by title in the enforced absence of their authors. At the joint session of the Affiliated Societies, Professor J. Loeb (Chicago) represented the physiologists in a paper entitled 'The Physiological Problems of To-Day.' This has already been published in Science, p. 154.

A revised constitution was adopted by the Society. The project for a catalogue of physiological literature by the Concilium Bibliographicum of Zürich was presented by Professor Porter. The cordial thanks of the Society were extended to the authorities of Cornell University for the many courtesies shown during the meeting.

Frederic S. Lee,
Secretary.

Columbia University.

American Morphological Society (II.). Preliminary Notice of a New Species of Endoproct — Loxosoma Davenportii — from the Massachusetts Coast. W. S. Nickerson. (Read by title only.)

The specimens upon which this notice is based were found in Cotuit Harbor, Mass., and, as they differ in several important respects from any species hitherto found, it is proposed to describe them under the name *Loxosoma Davenportii*. The specimens were about two millimeters long. Each had a cylindrical stalk or foot, which passed without abrupt transition into a slightly expanded body containing a U-shaped digestive tube, etc. The body terminated at its free end in a lophophore carrying from eighteen to twenty-seven tentacles. The foot was destitute of a lateral expansion and of a foot gland, such as are found in several other species of this genus. Buds occurred attached to the anterior side of the body, nearly over the junction of the œsophagus with the stomach. Ovaries were present in all the individuals, but testes could not be found. Whether the species has separate sexes or is protandric must be left undetermined. There are three characteristics in which *Loxosoma Davenportii* differs markedly from other species of this genus. The first of these is the possession of a single

row of large cells lying in the wall of the body and extending along the mid-dorsal line from the base of the stalk to the vicinity of the arms. A second but not invariable characteristic is the presence of one or more flask-shaped organs attached to the wall of the body near the basal end of the stomach and projecting slightly forward. The third characteristic is a modification of the epithelial wall of the vestibule shown by those individuals which have developing larvæ, and consisting in part of irregular, tongue-shaped projections, whose free ends may be invaginated and filled with a yolk-like material. This substance may float out into the vestibule. The modified epithelium, as well as this yolk-like substance, forms a source of food for the developing larvæ.

Pleurivalent Spermatids and Giant Spermatozoa and their Relation to the Centrosome Question. F. C. PAULMIER. (Presented by E. B. Wilson.)

AMONG the spermatids in *Anasa tristis* occasionally occur those whose nuclei are double or quadruple the usual size, the cell body being correspondingly enlarged. While otherwise normal, the double ones have two centrosomes and two axial filaments.

These giant spermatids are due, the double ones to the non-completion of the second spermatocyte division, the quadruple ones to the non-completion of both divisions.

In the normal univalent spermatid the single centrosome persistent throughout the period of spermatocyte growth and division apparently disappears and comes into view later upon the other side of the nucleus. Is this disappearence real or only apparent?

In the bivalent spermatids the two centrosomes of the second division apparently disappear and two reappear at a later stage in the Nebenkern. In the quadrivalent ones the four centrosomes of the first division (the original two having divided early in preparation for the second division) apparently disappear, and later four appear in the Nebenkern.

This fact that the same number of centrosomes which disappear —namely, two or four—always reappear seems to prove that the disappearance is only apparent and indicates that the centrosome persists in some form, perhaps hidden by the chromatin.

The Maturation of the Egg under Different Conditions. A. D. MEAD.

THE behavior of the Chætopterus ovum when subjected to different conditions shows that many of the phenomena of maturation and karyokinesis, which usually appear to be correlated with one another, are in reality independent.

When the egg is allowed to remain unfertilized in normal sea-water the maturation proceeds only as far as the metaphase of the first spindle. When, however, the egg is (*a*) fertilized with one spermatozoon, (*b*) fertilized with several spermatozoa, or (*c*) placed unfertilized in a solution of potassium chloride, the polar globules are extruded in a perfectly regular and uniform manner, and certain characteristic changes in the contour of the egg take place in all.

Although these phenomena are the same, the appearance of the greater part of the cytoplasm of the egg is widely different in the various cases. To illustrate: The formation of the second polar globule, the reconstitution of the egg-nucleus and its migration toward the egg center, occurs in the same manner whether (*a*) the egg contains a sperm-nucleus and one huge sperm-amphiaster, whether (*b*) it contains a number of sperm-nuclei and sperm-amphiasters, or whether (*c*) it contains no sperm-nucleus or radiation in the cytoplasm.

Some Activities of the Polar Bodies in Cerebratulus. E. A. ANDREWS.