Nineteenth Meeting.

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An experiment on the localization problem in the egg of Cerebratulus.

By **NAOHIDÉ YATSU.**

[*From the Zoological Laboratory of Columbia University.*]

In the egg of *Cerebratulus marginatus* Zeleny found, in separating at the 8-cell stage the upper animal blastomeres from the lower vegetative ones, that the third cleavage plane cuts off the basis of entoderm from that of ectoderm. I repeated the same experiment on the egg of *Cerebratulus lacteus* and found that the condition is somewhat different. In this form the third cleavage does not always separate the entodermic stuff from the ectodermic, so that the embryo from the animal-half sometimes invaginates and sometimes does not. But in shifting the third cleavage plane to the equator by compressing the egg immediately after the first division (in doing this, the second cleavage is suppressed until pressure is relieved, the third cleavage of the normal egg appearing next to the first) and in separating the animal-half from the vegetative, the former always gave rise to the embryos without gut, anenterons. From this it may be concluded that in the egg of *Cerebratulus lacteus*, a little before or at the time of the third cleavage, the entodermic basis extends farther above than that of *Cerebratulus marginatus.*

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Experiments upon the total metabolism of iron and calcium in man.

By **H. C. SHERMAN.**

[*From the Havemeyer Laboratory, Columbia University.*]

Each of the experiments was of three days duration and the same healthy man served as subject throughout. On a diet of

crackers and milk, which furnished 0.0057 gram iron and 2.65 grams calcium oxide (Exp. I), there was equilibrium with respect to iron, and a storage of calcium. When the diet consisted of crackers and egg-white with 0.0065 gram iron and 0.14 gram lime (Exp. II), or of crackers alone with 0.0071 gram iron and 0.13 gram lime (Exp. III), there were losses of both iron and calcium. These losses occurred through the intestine, but were evidently not due to intestinal putrefaction, since the ratio of sulphur in ethereal to that in simple sulphates in the urine was determined in Exp. III and found to be as 1 : 25. The results appear to confirm the suggestion of Von Wendt that a deficiency of calcium in the diet may lead to a loss of iron as well as of calcium from the body. There was a slight tendency toward diarrhea in each of the periods in which loss of iron and calcium occurred. The iron requirement evidently varied greatly, the average daily output for three experiments being 5.5, 8.7 and 12.6 milligrams respectively.

The lime requirement was found by further experiments (IV and V) to be about 0.75 gram of calcium oxide per day.

The experiments were conducted at Columbia University in coöperation with the U. S. Department of Agriculture and will be described in detail in a bulletin of the Office of Experiment Stations of that department.

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The cause of the treppe.

By **FREDERIC S. LEE.**

[*From the Physiological Laboratory of Columbia University, at the College of Physicians and Surgeons.*]

The treppe is usually ascribed to increased irritability caused by activity. The cause of the increased irritability has remained obscure. In studying the depressing action on muscle of its fatigue substances the author often observed augmentation of activity instead of depression. A more careful investigation of this phenomenon shows that it may be produced by all of the three recognized fatigue substances — namely, carbon dioxide, monopotassium phosphate, and paralactic acid. When a muscle is irrigated with an indifferent fluid containing one of these substances in