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II.

A Case of Egg Within Egg. F. H. HERRICK.

A SMALL egg of the fowl, measuring 21 by 17 mm., was taken from the yolk of an apparently otherwise normal egg. The included egg possesses a hard shell, shell membrane, albumen and yolk. Various kinds of inclusions belonging to this type have been recorded in the domestic fowl due to fusion of two egg-like bodies in the oviduct of the hen. Small eggs of this character are sometimes laid. They sometimes contain albumen and no yolk, and probably never have a blastoderm. The idea has already been expressed, and is apparently well founded, that the small egg represents the fragment of a normal egg which was ruptured and threw off a part of its substance at the time of leaving the ovary, such fragments being treated in the oviduct like full-sized ova.

Secondary Abdominal Pregnancy with Histolysis of the Fœtus. F. H. HERRICK.

THE case reported occurred in the cat, where rupture of the uterus, leading to intra abdominal birth, had resulted in the following conditions: (1) Abnormal development of peritoneal structures (thickenings, adhesions, fenestration of the membranes, and tag-like outgrowths over them); (2) fragmentation of the fœtus, and attachment of the parts to the omenta by overgrowth, the result of extensive proliferation in the constituent cells of these membranes; (3) the more or less complete replacement of the soft embryonic tissues by the proliferating cells.

On the Early Development of Cerebratulus. W. R. COE.

THE processes concerned in the maturation and fertilization of the ovum of *C. marginatus* agree closely with those which have been described by Kostanecki and Wierzejski for *Physa*, and by Child for *Arenicola*.

The centrosome arising from the spermatozoon divides early. The division of its aster is accompanied with the formation of a delicate central spindle. The spermasters eventually degenerate, although their rays often remain even after the cleavage-asters have appeared. Their centrosomes usually become lost to view. Occasionally, however, it can be demonstrated, with a good deal of certainty, that they do not actually end their existence, but retain their identity and become the centers of the cleavage asters.

The centrospheres of the cleavage asters increase enormously in size. They are not artifacts, for they may be seen in the living egg. The centrosomes are very minute. They divide early, and the asters of the second cleavage begin to form about them quite within the body of the centrosphere, as in the *Thalassema*.

The eggs of *Micrura caeca* and *Cerebratulus leidy* furnish almost ideal examples of the regular spiral type of cleavage. The first two cleavages are almost exactly equal in size. In the third division the upper four cells are slightly larger than the lower four. A very regular blastula results. The marked backward inclination of the enteron is evident from the very beginning of gastrulation.

At the end of the first day the enteron becomes divided into two distinct regions. Pseudopod-like processes of cells grow out to separate the two cavities and almost completely. The posterior blind sack of columnar cells is not definitely cut off from communication with the exterior, however, and food may enter by a temporary opening between the cell-processes.

Large cells of the larval mesenchyme, which wandered into the segmentation cavity at the beginning of the gastrulation, multiply rapidly and arrange themselves in certain definite positions, as in *C. lacteus*. Most of them send out branching and

anastomosing fibrous processes, which become attached to the adjacent wall of the body, or of the enteron, to form the larval musculature. The others remain as parenchyma cells.

Fission and Regeneration in Cerebratulus. C. B. WILSON.

FOR three years, while investigating the embryology of *Cerebratulus lacteus*, Verrill, very few perfect specimens were found at the close of the breeding season, while there were many with regenerating papillæ. Last summer a perfect male and female were secured and kept for ten weeks. The genital products were discharged simultaneously three different times at intervals of several days. Then both worms dismembered the posterior half of their bodies without provocation.

The anterior fragments at once regenerated, growing in three weeks' time papillæ measuring 50 mm. in the female and 38 mm. in the male. The posterior fragments lived ten days and died without any signs of regeneration. But others have been kept alive several weeks under less favorable conditions and have yielded perfectly healthy sexual products. We are led to conclude, therefore, that *Cerebratulus* often dismembers voluntarily at the close of the breeding season, but, while the anterior fragments regularly regenerate, the posterior ones seldom if ever do so. Careful anatomical examination shows that actual fission is accomplished chiefly by means of the transverse muscles of the body-walls. There are no indications of the rows of nuclei found by Blenham in *Carinella*.

Sections of papillæ show that in regeneration the longitudinal muscles contain numerous transverse fibers; in the early stages the two kinds are about equal.

The large lateral nerve cords are regenerated from ectoderm cells. Two parallel longitudinal invaginations appear on the

ventral surface of the papilla. The ectoderm between them contains no gland cells: a shallow longitudinal groove soon separates this ectoderm into halves. In the center of each half nerve fibers are formed from modified ectoderm cells.

They then migrate to their normal position, while both groove and invaginations quickly disappear and the ectoderm becomes filled with gland cells.

The Female Genital Tract in Melophagus. H. S. PRATT.

MELOPHAGUS OVINUS, a dipterous insect, is peculiar because of the unusual length of its uterine life, the young animal being born as a fully grown larva. This long uterine life has been the cause of a profound modification of the entire genital tract. The uterus is unusually large; two pairs of glands pour a milk-like food into the uterus which feeds the growing larva; the proximal portions of the oviducts are fused and function as a permanent receptaculum seminis; the ovary possesses a very thick peritoneal covering composed of branched muscle and connective-tissue fibres which forms a sac and encloses the two ovarioles; these are composed each of two follicles and a germarium, no terminal thread being present, and are attached by the germarium to the inner distal surface of the peritoneal sac, their lower ends hanging free within the sac. There are thus in the two ovaries at any one time eight follicles, each containing a developing ovum. A single egg is produced every two to four weeks; it passes into the uterus, being fertilized on the way, and there remains two to four weeks until the young animal is born, an old larva. The two ovaries, and within each ovary the two ovarioles, alternate in furnishing the next egg.

Intracellular Differentiations in Gland Cells of Phascolosoma Gouldii. MARGARET LEWIS NICKERSON.

IN the epidermis of this Gephyrean are