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Embryology of the Gonads of the Marsh Hawk, Circus hudsonius

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time of the embryos. Embryos of different ages have been exposed to low temperatures for various periods of time. When not at low temperatures they have been kept at 28° C. Control groups have been kept at 28° C. from the time of laying. Eggs of *M. diff.* exhibit a developmental block, or diapause, and so consideration must be given both the period when visible morphological changes are occurring and the period of developmental block. Examination of the control groups indicates that there is a great deal of variation in the duration of the developmental block. This variation is not entirely random, and it appears that eggs laid by young females (eggs collected early in a season) have a longer diapause than eggs laid by older females (eggs collected late in a season). Experiments indicate that only with a very few combinations of temperature, exposure, and morphological stages is it possible to reduce the time from egg laying to hatching below that of controls kept at 28° C.

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EMBRYOLOGY OF THE GONADS OF THE MARSH HAWK, CIRCUS HUDSONIUS

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The gonads of Circus hudsonius are bilateral and nearly symmetrical organs throughout the life of the bird. The right and left ovaries are equal in size at all stages. The embryonic testes are likewise equal in size and shape, both possessing a conspicuous cortex. Some cortical elements of the right testis persist until the bird is at least four months of age, completely disappearing by the age of seven months. The cortex of the left testis occurs in small islets dispersed over the ventral surface of the organ. These cortical elements may persist slightly longer than those of the right side, but have also completely disappeared at the age of seven months.

It is also to be noted that no right oviduct has been observed. Only the left oviduct develops. The right ovary however, becomes functional with respect to the formation of ova even though no oviduct is present to subserve it. The right oviduct is therefore

considered to have disappeared earlier than the right ovary in the phylogenetic history of the Aves.

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THE CYTOLOGY OF DEVELOPING MUSCLE

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Development of myofibrils in myotome muscle of chick embryos may be divided into two phases. During the first, with which the present observations are concerned, "primary" fibrils arise in the cytoplasm of the presumptive muscle cells. During the second period the number of myofibrils increases, apparently by splitting of the primary fibrils.

At the beginning of the first phase, filamentous mitochondria become oriented parallel to the long axis of the myoblast, and coincidentally, homogeneous, unstriated, lightly staining fibrils arise in the cytoplasm. Fibrils and mitochondria may play an indirect part in fibril formation. However, the fibrils are apparently formed from the many granules (distinguishable from mitochondria) which at first fill the cytoplasm. The granules disappear progressively as the fibrils appear, and the cytoplasm becomes clear.

During this time the nuclei become large, stain lightly, and divide amitotically without division of the cytoplasm. The nucleoli are prominent and apparently divide before division of the nucleus. The Golgi material (plentiful at this time) extends in long streamers from the ends of the nuclei.

The close of the first developmental phase is marked by decrease in size of nuclei and nucleoli, and decrease in amount of Golgi material associated with each nucleus. The Golgi material now exists as a small cap of material at each end of the nucleus. The primary fibrils (now striated) are situated at the periphery of the muscle cell.

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