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## Effects of Exposure to Low Temperatures on Developmental Time of Embryos of the Grasshopper, *Melanoplus differentialis* (Orthoptera)

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solution. This was followed by a decrease (50%) and this, in turn, was followed by an increase (ranging from 75% to 90%). A rapid decrease ensued which dropped to 2% in the highest concentration used. The explanation for this increase in percentage, with increasing concentration, may be supplied by other experiments. It has been found that when eggs, which have previously been allowed to develop for ten days in wet sand (also true for diapause eggs), were placed in hypertonic solutions, a number of the embryos tend to simulate blastokinesis even though they may not have reached that stage morphologically.

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### THE EFFECT OF VITAMINS ON A COCCIDIAN INFECTION

ELERY R. BECKER AND NEAL F. MOREHOUSE

The writers have shown in previous publications that a diet deficient in both vitamins B and G has a limiting effect on the number of oocysts eliminated during the process of immunization. Later they proved that this limiting effect is due either wholly or in part to the absence of the thermostable growth factor present in yeast. This factor was called vitamin G, but in view of the general belief of workers in nutrition that vitamin G is a composite, that designation should be construed only in the general sense. The factor has now been shown to be present in wheat germ, grain mixtures, and certain other materials.

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### EFFECTS OF EXPOSURE TO LOW TEMPERATURES ON DEVELOPMENTAL TIME OF EMBRYOS OF THE GRASSHOPPER, MELANOPLUS DIF- FERENTIALIS (ORTHOPTERA)

HAROLD C. BURDICK

Experiments have been designed to study the effects of four temperatures below developmental zero (hatching) on the hatching

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*

ALLAN J. STANLEY

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