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Some Phases of Wound Healing in an Insect (*Melanoplus differentialis*)

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BLOOD STUDIES IN CHRONIC CO ASPHYXIA

MARIAN DAVIS AND ERMA SMITH

A closed circuit respiration apparatus was devised by means of which albino rats may be exposed to varying percentages of CO-air mixture and maintained in comfort for hourly intervals. The apparatus enclosed 31 liters of air. By trial and error it was found that addition of 0.31 per cent CO to this volume of air made a mixture just sub-lethal for adapted rats placed therein for one hour. Adaptation was brought about by gradually lengthening the daily exposure interval from an initial ten minutes on the first day to one hour in the course of about three weeks.

Blood studies. (a) Co saturation. The saturation of the hemoglobin with carbon monoxide was measured by the method of Sayers and Yant (1). The percentage saturation for different intervals from two minutes to one hour after one hour exposure will be presented. The saturation at death was about 85 per cent, which is the usual lethal saturation for pure CO.

(b) Coagulation time. The coagulation time was measured in gassed and control rats using the capillary method of Mills (2). Coagulation time appears to be unchanged by exposure to CO.

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SOME PHASES OF WOUND HEALING IN AN INSECT (*MELANOPLUS DIFFERENTIALIS*)

GARTH JOHNSON

A study was made of the inflammatory processes and stages of repair following the production of wounds by incision and excision in the fifth abdominal sternite of both nymphs and adults. The following changes may be observed to take place: A clot is formed

in the wound aperture, consisting of agglutinated blood cells. Blood serum filters through this structure and hardens by evaporation of water on contact with air, thus sealing the wound. A brown deposit is formed in the clot and in the surrounding zone of injury. Pycnosis takes place in adjacent tissues. A further agglutination of blood cells follows. The hypodermis cells of the adult enlarge and assume a condition comparable to that found normally in the nymph. These cells begin secretion of materials similar to those found in the endocuticula. The blood cells undergo differentiation and elaborate a type of scar tissue in and about the wound area. The cells of the hypodermis proliferate and migrate in between the body wall and the newly formed connective tissue, thus restoring continuity between the broken layers of epithelium. New endocuticula is then elaborated by these cells at the point where the body wall has been broken.

Mechanical injury to the tissues of the body wall of the grasshopper will activate other tissues for some distance from the wound and cause agglutination of blood cells which differentiate and produce scar tissue. The rate of repair, within certain limits, is greater in large wounds than in small wounds.

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THE EFFECTS OF HOMOLOGOUS CARBAMATES ON THE RESPIRATORY METABOLISM OF BLOCKED AND ACTIVE EMBRYOS

GUY M. EVERETT

The effects of ethyl, n-propyl, and n-butyl carbamate on the respiration of blocked (diapause) and active (postdiapause) grasshopper embryos have been studied.

The three compounds are essentially similar in their narcotic action.

The oxygen consumption of active embryos is depressed approximately 50 per cent (to the diapause level) by 0.25 M ethyl carbamate or 0.025 M n-butyl carbamate. The blocked embryo is depressed only 10 per cent.

The rates of oxygen consumption expressed as cu. mm. oxygen per embryo per hour for morphologically similar blocked and ac-