

fections. An entirely satisfactory explanation for these low values, however, is not apparent. This is a topic to which we plan to give further study.

With the method it is possible to demonstrate a considerable decline in the activity of the saliva as a result of the glandular fatigue produced by the continuous secretion of saliva during paraffin chewing. Our results likewise indicate that the method is a very suitable one to employ in demonstrating the diurnal variation.

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Parathyroids and calcium metabolism.

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Larvæ of the salamanders *Amblystoma maculatum*, *Amblystoma opacum* and *Eurycea bislineata* when fed on thymus exhibit severe tetanic convulsions. In contradiction to other amphibian larvæ which do not show this reaction, they possess no parathyroids; the tetanic convulsions of the thymus-fed salamanders are identical with a true parathyreoprival tetany.

The tetanic action of the thymus is due to the presence in the organ of the tetany toxin which can be antagonized only by the parathyroids, but not by the substances contained in normal food. The addition to the thymus diet of normal diet in amounts sufficiently large to keep a salamander larva in a perfectly normal condition does not prevent the tetanic convulsions. Tetany is caused by a toxic substance contained and excreted by the thymus.

Calcium salts, when dissolved in the water in which the thymus-fed larvæ live, do suppress, to some extent, the tetanic convulsions. Magnesium salts, however, assert the same action and are still more effective than calcium salts. The suppression of the tetanic convulsions by the salts of calcium is not a specific action of the calcium.

Neither calcium nor magnesium is able to prevent the development in the thymus-fed larvæ of severe and permanent lesions of the muscular system, lesions which are caused probably by

injuries inflicted upon the central nervous system by the tetany toxin. These nervous lesions develop even in the presence of calcium or magnesium and even without any convulsions at all, and finally lead to the death of the animals.

The most dangerous and important action of the tetany toxin is its highly injurious effect upon the central nervous system as expressed by the lesions of the muscular system (permanent spasmodic contractions and paralysis). The most important function of the parathyroids is to prevent the tetany toxin from coming in contact with the central nervous system, and this function cannot be substituted by any substance such as calcium or magnesium, since these substances do not antagonize the tetany toxin.

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Malignancy of the crown gall and its analogy to animal cancer.

By ISAAC LEVIN and MICHAEL LEVINE.

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In a study reported recently on the influence of X-Rays on the development of the crown gall the writers have come to the conclusion that this growth presents an ideal material for the cellular study of the cancer problem. Dr. Erwin F. Smith, of Washington, considers this parasitic disease of plants to be identical with human cancer to such an extent that since crown gall is caused by a microorganism he maintains that all human cancers must be due to the same parasite. It seemed desirable to repeat Smith's experiments from the standpoint of human pathology and this was the object of the present investigation.

A large number and a great variety of plants were inoculated with a pure culture of *Bacterium tumefaciens* and a gross and microscopical study of the resulting crown galls was made. The analysis of the material shows that a certain number of these plant-tumors behave morphologically as well as biologically as benign growths. They grow very slowly, do not interfere with the development of the inoculated plant, compress but do not injure the neighboring normal tissues. Other crown galls appear to