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The development and function of the heart in embryos without nerves.

By **DAVENPORT HOOKER.** (By invitation.)

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The somatic muscle in frog embryos, from which the cord has been removed, was proven by Harrison (1904) to develop and differentiate normally. Such muscle tissue, when stimulated by an extremely fine needle point, will contract provided the needle perforates the skin and penetrates the muscle itself. The response produces a single quick bending of the body toward the side stimulated, the point of stimulation being the center of contraction. Other experiments show that the muscle tissue cannot be stimulated through non-nervous protoplasmic connections.

In frog embryos from which the entire nervous system has been removed at the stage immediately following the closure of the neural folds, the heart functions normally. The rate is, however, slightly lower than in normal individuals. Microscopic examination shows that the cardiac muscle of such embryos has differentiated normally. The condition of this tissue very closely parallels the results obtained by Harrison in somatic muscle.

The results of these experiments show that, in the total absence of the nervous system, somatic muscle is directly irritable, the heart will function normally and cardiac muscle like somatic muscle will differentiate normally.

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The toxicity of amyl acetate.[1]

By **WILLIAM SALANT.**

[*From the Bureau of Chemistry, U. S. Department of Agriculture.*]

From four to six cubic centimeters per kilo of amyl acetate injected into frogs caused paralysis and coma in from 15 to 30 minutes. These symptoms lasted 24 hours, with final recovery. In some cases such doses proved fatal. Larger doses were in-

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variably fatal. Experiments with 2.5 cubic centimeters per kilo administered in 2 per cent. suspension in water, failed to cause any symptons. Experiments were also made on rabbits. Amyl acetate was given by mouth in aqueous suspension or dissolved in neutral olive oil. Five cubic centimeters of amyl acetate given by mouth to rabbits weighing about 1,500 grams did not produce any symptons in any of the animals experimented upon, except one in which the dose proved fatal within 24 hours after its administration. The effect of amyl acetate on blood pressure was studied in dogs. One cubic centimeter injected directly into the circulation within 25 seconds caused a fall of blood pressure amounting to 56 per cent. When the vagi were eliminated the fall of blood pressure was still greater. In both instances there was a marked slowing of the pulse.

99 (509)

The elimination of caffein in the bile.[1]

By **W. SALANT** and **W. O. EMERY.**

[*From the Bureau of Chemistry, U. S. Department of Agriculture.*]

The elimination of caffein and its products of decomposition in the urine has been studied by a number of investigators, in dogs, rabbits and in man. Its presence in the digestive secretions has been recently made the subject of a special investigation in this laboratory. It was found in the bile removed from the gall bladder of a number of dogs poisoned with caffein. In every case appreciable quantities were found. A dog which was given 1.5 grams of caffein by mouth died four hours later. The bile removed from the gall bladder contained 4.4 milligrams of caffein. Similar results were obtained in other experiments. Experiments made on rabbits with temporary bile fistula have shown that the elimination of caffein likewise takes place by this path in these animals. Caffein was found in the bile two hours after its subcutaneous injection.

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