

To obtain complete and immediate cessation of heart muscle contraction in culture it is necessary to use doses of 500-700,000 r. In 80% of the cultures this result was obtained with 500,000 r, in 15% with 600,000 r and in 5% with 700,000.

2. *Effect of X-rays on the contraction of smooth-muscle.* Fragments of intestine of 18-day-old chick embryos in hanging drop cultures were used. Irradiation was carried out 2-4 hours after explantation and its effect observed 10 minutes after completion of irradiation. A total of 42 cultures were irradiated.

Contractions of smooth muscle cells ceased with doses of 500-900,000 r. In 80% of the cultures doses of 500-700,000 r were sufficient to obtain this effect.

3. *Effect of X-rays on the ciliary movement.* We used freshly explanted ciliated epithelium from the oral cavity of *Buffo viridis*. A total of 80 irradiation experiments were carried out. The ciliary movement was completely arrested by doses of 1-1,400,000 r. Doses of 1,200,000-1,300,000 r arrested movement of cilia in 80% of the cultures.

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Disappearance of Radioactive Phosphorus from Heart Blood of *Limulus polyphemus*.

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The disappearance of radioactive phosphorus (P^{32}) from the heart blood of the horseshoe crab *Limulus polyphemus*, has been followed in 10 individuals, weighing from 94 to 245 g.

From 0.1 to 0.2 ml of 0.001 molar Na_2HPO_4 solution was injected into the heart at the thoracic-abdominal junction. The amounts of radioactive phosphorus in the solutions and in the samples of blood withdrawn from the heart at frequent intervals following injection were measured with a Geiger-Müller counter, and were expressed as counts per minute per milliliter of solution or per milligram of dried blood. All counts were corrected for background and for decay. The amounts injected were calculated to give equal doses of radioactive phosphorus per gram of body weight, the average dose bearing 3.5×10^5 counts per minute.

In every one of the 10 experiments, the logarithm of the concentration of radioactive phosphorus left in the blood was inversely proportional to time, the slope of the plot relating the two from zero time to 1 hour varying from -0.91 to -3.06 . At the beginning of the experiment the average number of counts per milligram of dried blood was 83, and at the end of 1 hour 97.6% of the radioactive phosphorus had disappeared from the blood. A few experiments with the lobster, *Homarus americanus*, gave essentially the same results except that the rate of disappearance was much slower.

These preliminary tests indicate that radioactive phosphorus will be useful in studying various problems in the physiology and biochemistry of the blood and tissues of *Limulus* and other invertebrates, just as it has been in the vertebrates. Several such problems are now being studied.

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Liberation of Heparin by Trypsin.

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As pointed out in a preceding report¹ the intravenous injection of trypsin into various animals produces effects remarkably similar to those of anaphylactic shock in the corresponding animals. It was first emphasized by Biedl and Kraus² that defective clotting of the blood is a common and conspicuous feature of anaphylaxis in dogs and it has been shown by numerous workers since that delayed coagulation to complete incoagulability of the blood occurs in other laboratory animals during anaphylaxis, although it may not occur so regularly. We have observed the clotting time of the blood in various animals after the intravenous injection of trypsin. We have observed definitely delayed coagulation to complete incoagulability in 8 of 10 dogs after 1 to 2 mg per kilo (Table I) and in 3 of 4 rabbits after 3 to 7 mg per kilo (Table II). We have also observed

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¹ Dragstedt, C. A., and Rocha e Silva, M., *PROC. SOC. EXP. BIOL. AND MED.*, 1941, **47**, 420.

² Biedl, A., and Kraus, R., *Wien. Klin. Wchnschr.*, 1909, **22**, 363.