

cells showed an increase of 23% three minutes after the contraction of the spleen. Repeated experiments on the same dogs and on other dogs showed a correlation between the contraction of the spleen and the increase in the peripheral hematocrit reading. In the experiments with guinea pigs and rabbits, only slight, if any contraction of the spleen after adrenalin injection, bleeding or shock was produced. In accordance with this fact, erythrocyte counts and hematocrit determinations from the peripheral blood showed no notable increase after the administration of adrenalin. The spleen of rats showed distinct contraction after adrenalin, although the contraction is not as marked as in the dogs. These results are in accord with the experiments of Lauda and Haam,³ who found that the spleen of rats is able to express only 3.3% of the total hemoglobin of the animal.

The important facts shown in our series of radiographs of splenic contraction in various animals are as follows: 1. Excellent contractions are obtained in dogs. The increase in the peripheral hematocrit determination is dependent upon the degree of contraction of the spleen. 2. The spleen of a rabbit and guinea pig has slight, if any, contractility powers. 3. The spleen of the albino rat shows contractions which are distinctly visible, but not as marked as the spleen of the dog. 4. Different results obtained in investigations concerning the variation of hematocrit blood volume in different animals can be explained by the fact that a different degree of contractility exists in the spleens of dogs, guinea pigs, rabbits, and rats.

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Observations on Decerebration by Embolism.

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Langley,¹ Mellanby,² and Eddins and Murray³ have used intra-carotid injection of starch as a method of decerebration for cats or rabbits. Observations in this laboratory on more than 40 dogs "decerebrated" with starch suspension (10%, 0.5 cc. per kg. or 2 cc.

³ Lauda, E., and Haam, E., *PROC. SOC. EXP. BIOL. AND MED.*, 1931, **29**, 260.

¹ Langley, J. N., *J. Physiol.*, 1912, **45**, 239.

² Mellanby, J., *J. Physiol.*, 1919, **53**, 1.

³ Eddins, Nora, and Murray, Margaret M., *J. Physiol.*, 1924, **59**, 271.

total; opposite carotid tied before injection) showed irregular results. While superficial resemblance to decerebrates as regards muscle tone pattern, etc., was not infrequent, the method appeared unreliable, a result naturally to be expected in view of the inevitably large rôle played by chance in the ultimate distribution of the embolizing particles. About one in 4 of the animals ceased breathing after injection.

Lycopodium spores, comparatively much less variable in size, more stable chemically⁴ and on the average larger, are particles more readily identifiable in microscopic sections. The spore is a 3-sided pyramid with convex base.⁵ Four spores are formed from a sphere of radius 21 microns.⁴ There are about 95,000 spores per mg. against about 10,000,000 for rice starch.⁴ Inclusion in lycopodium suspension of lampblack,⁶ red oxide of iron, or the less permanent soluble dyes, methylene blue, crystal violet or diazine green, has enabled us to locate with moderate accuracy in gross sections the distribution of embolic material in the brain, so that its irregularity is plain, and the functional variation from animal to animal explicable. Attempts to explain functional results on an anatomical basis have proved interesting. Thus in an embolized dog, still breathing, but with relaxed limbs, the irregular posterior distribution of the embolic mixture extended to the pons-medulla junction and might conceivably have cut off the blood supply of the nuclei of Deiters. In the non-breathing the posterior limit was as a rule in the medulla or even the cord, in the few moving animals not even as far as the mid-brain.

The animals used for lycopodium embolism were: 35 dogs, 1 pig, 2 calves, 13 rabbits, 14 cats, 1 rhesus monkey.

We concluded that experimental cerebral embolism (1) as a method for decerebration, is as yet unreliable, (2) is useful for demonstrating by use of small groups of animals such simple relations as that embolism of the bulb may affect the persistence of respiration or central cardiac inhibition (failure of veratrum response), etc. We have found the entire operation is quite practicable under local anesthesia.

⁴ Wallis, T. E., *Pharmaceut. J. and Pharmacist*, 1919, **103**, 75.

⁵ United States Pharmacopoeia, X.

⁶ Dawson, W. T., *Am. J. Physiol.*, 1930, **93**, 635.