It is well known that the use of excess quantities of an anticoagulant such as sodium oxalate interferes with certain analytical procedures such as deproteinization. Folin-Wu filtrates were made on the samples but no interference with successful deproteinization was detected at any of the concentrations used.

These experiments indicate that sodium hexametaphosphate can be added to the list of blood anticoagulants, and may have certain advantages over existing agents.

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Barium in the Mammalian Retina.*

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Ramage and Sheldon[1] discovered the existence of Ba in the chorioid of ox eyes. They believed that Ba increased in quantity with age and report that it is not present in calves' eyes in sufficient quantity to be detected by their method of flame excitation of the spectrum. Furthermore they say that Ba is not present in the chorioids of human, sheep, pigs, horses, dogs and many sea fish. Ramage and Sheldon failed to find this element in the retina although they could detect it in the iris and the pigment of the chorioid. It is of some significance that they found Ba in the chorioids of all neat cattle beyond 3 years in age. Gerlach and Müller[2] examined eyes from a wide variety of animals including man and discovered Ba in the chorioid of most of them. It was not present uniformly in human chorioids and there appear to be no age peculiarities in its distribution. These writers also describe Ba in the retinæ of ostrichs, rabbits, cats, cattle and in one human.

The material in the present series consisted of 19 pigs, 17 ox, 24 sheep and 12 kitten eyes. The spectrographic method used was that described by us in an earlier paper (Scott and Canaga[3]). We used as identifying lines the 4535.5 and 4934.1 Å. These lines are quite sensitive and can be definitely located with little trouble. An

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1 Ramage and Sheldon, *Nature*, 1931, **128**, 376.

2 Gerlach and Müller, *Arch. f. path. Anat. u. Physiol.*, 1936, **296**, 588.

3 Scott and Canaga, PROC. SOC. EXP. BIOL. AND MED., 1939, **40**, 275.

attempt was made to localize Ba in the tissue by separating the retina into 2 layers. Experiments showed that the retinæ split easily along the internal limiting membrane giving one layer which consisted largely of nerve fibers and another which was made up of pigmented epithelium, rods and cones and their nuclei, neuroglial and bipolar cells.

Barium was observed in all specimens examined and was apparently evenly distributed throughout the substance of the retina at least insofar as our rough localization permitted us to estimate. The presence of pigment in the one layer apparently had little or nothing to do with the amount of Ba found. Previously mentioned work seemed to suggest that Ba was associated with the pigment. Spectrographic studies indicate that Ba is not found in any appreciable quantities in other tissues, certainly not in the quantities observable in the retina. Our own experience with some hundreds of samples supports this statement. In fact only one instance is on record in our files and that is the consistent finding of Ba in skeletal muscle the nerve supply of which had been severed 6 months before the examinations were made. In these samples only traces of Ba could be found.

Since a large number of our series consisted of retinæ from neat cattle it is of some interest that Blumberg and Rask[4] found traces of Ba in milk. However, Ramage and Sheldon state that they have been advised that Ba is more apt to be found in milk which has soured in glass containers. We do not attach much significance to this in relation to Blumberg and Rask's findings as they used pyrex glassware throughout. Our experiments involved digesting the retinæ and other tissues in nitric acid in pyrex vessels. Only the retinæ showed Ba in their spectra. Evidently, therefore, an element, quite active photoelectrically, is present in tissue wherein light is translated into nerve impulses.

[4] Blumberg and Rask, *Nutrition*, 1933, **6**, 285.