control dogs to whom 1 cc. of the dye was administered by the usual intravenous route. No obvious explanation of the delay in excretion was apparent, but, as might be expected, analysis of the data shows that the amount of dye absorbed is a function of the length of vessel included between the ligatures.

6966

## Response of Tissue of the Intima to Injurious Agents.*

ELIZABETH M. RAMSEY AND LOUIS K. ALPERT.
(Introduced by Raymond Hussey.)

*From the Department of Pathology, Yale University School of Medicine.*

A series of experiments was designed to investigate the nature of the reaction exhibited by the intima when brought in contact with an injurious agent. Eleven arteries in 8 dogs were subjected to the experiment. The common carotid artery was isolated and doubly ligated according to the procedure previously outlined.[1] Various strengths of turpentine, ranging from 15% in mineral oil to the crude substance, and 30% to 75% croton oil in mineral oil were injected into the lumen of the vessel by syringe or through a cannula. The injurious agent was allowed to remain in contact with the intima for periods varying from 2 minutes to 48 hours and then the portion of the artery between the ligatures was removed for microscopic examination. As controls, to determine how much reaction was caused by the operative procedure alone, histological preparations were made of the arteries which were used in the phenolsulphonphthalein experiments.[1] In these the endothelium was uniformly intact and well stained. The muscular, elastic and fibrous tissue elements of the media showed no changes. There was no necrosis or hemorrhage in any of the coats and no exudate at any point in the vessel wall proper. Surrounding some of the vessels lying in the connective tissue outside the adventitia were small collections of polymorphonuclear leucocytes, but in no instance were these seen infiltrating the adjacent tissue. Microscopic examination of the

*This investigation is supported by funds from the Josiah Macy, Jr., Foundation.

[1] Ramsey, E. M., and Alpert, L. K., PROC. SOC. EXP. BIOL. AND MED., 1933, **30**, 1432.

arteries exposed to an injurious agent showed destruction of the endothelium lining the vessel. In the instances where the weaker dilutions of turpentine were employed, poorly stained remnants of this layer could be seen, but with the other injurious agents it was completely absent. When 50% and 75% croton oil and higher dilutions of turpentine were used the nuclei of the muscle cells in the inner third of the media were pyknotic and a slight fraying of the elastic fibers in the media, including the internal elastic lamella, was present. This latter change appeared to be of a corrosive type. There was no exudate in the intima or the tissues immediately beneath the internal elastic lamella, but as the adventitia was approached a sparse scattering of small round cells and occasional polymorphonuclear leucocytes was observed in 2 instances. Small clumps of polymorphonuclear leucocytes were seen surrounding the vessels in the periadventitial connective tissue in all the sections, but the number of cells did not exceed that observed in the controls. From these observations it must be deduced that the tissues of blood vessel walls differ strikingly from other tissues in the body with respect to their response to the injurious agents employed.

## 6967

## Possible Relationship Between Cod Liver Oil and Muscular Degeneration of Herbivora Fed Synthetic Diets.*

L. L. MADSEN, C. M. MC CAY AND L. A. MAYNARD.

*From the Laboratory of Animal Nutrition, Cornell University, Ithaca, N. Y.*

We have made numerous attempts to formulate a satisfactory synthetic diet for herbivorous animals. In a previous communication,[1] in which partial success with an adult goat was recorded, it was reported that the synthetic diet caused paralysis in rabbits with a histological picture of muscle degeneration. These studies have been continued with goats, rabbits and guinea pigs, using diets as follows:

* Supported by a grant from the Heckscher Research Fund.

[1] Woodward, J. C., and McCay, C. M., PROC. SOC. EXP. BIOL. AND MED., 1932, **30**, 241.