hold as immediately responsible for metamorphosis) has been greatly postponed. A pronounced darkening of the axolotl resulted from these injections of anterior lobe substance, the specimen becoming after repeated injections a jet black

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Reactions of the capillary endothelium in peptone shock.

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The fundamental reacting tissues in peptone shock are not the same as the fundamental reacting tissues in the acute anaphylactic shock of dogs. Canine anaphylactic shock is dependent upon liver function[1]. Canine peptone shock is not dependent upon hepatic function, since reactions apparently identical with those of the intact animal are produced by intravenous injections of peptone into dehepatized (Dale and Laidlaw's Eck-fistula[2]) dogs and into eviscerated dogs.

Marked peptone reactions are demonstrable in isolated canine tissues. These reactions are produced by perfusing the tissues with Ringer's solution containing 1 per cent. Witte's peptone. More marked reactions are obtained by perfusing with defibrinated-blood-peptone mixtures, or with uncoagulated-blood-peptone mixtures. The principal reactions of the isolated canine tissues thus far studied are:

(a) *Liver.* Marked increase in perfusion resistance, reaching a maximum by the end of ninety seconds. The resistance then gradually decreases, and is almost completely restored to normal by the end of eight minutes.

(b) *Lungs.* Reactions similar to those of the liver, but more pronounced, with little or no tendency to recovery by the end of eight minutes.

(c) *Intestines.* Distinct decrease in perfusion resistance, reaching a maximum by the end of ninety seconds. Slight tendency to recovery by the end of eight minutes.

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[1] W. H. Manwaring, *Zeitschr. f. Immunitätsf.*, 1911, viii, 1.

[2] H. H. Dale and P. P. Laidlaw, *Jour. Physiol.*, 1918-19, lii, 351.

(d) *Hind Quarters.* Reactions similar to those of the intestines, but with less tendency to recovery by the end of eight minutes.

We have endeavored to determine the mechanism of the changed perfusion resistance by histological methods. The tissues have been fixed by perfusion methods at various stages of the peptone reaction. The following appear to be the dominant physiological factors thus far studied:

(a) *Liver.* Marked capillary vaso-constriction with stasis and diapedesis in certain areas. Partial capillary occlusion by leucocytic deposits in later stages of the shock. Marked increase in tissue lymph, with dilation and even rupture of the lymphatics, edema of the connective tissue structures, and mechanical separation of the capillary endothelium from the parenchymatous cells. Swelling and vacuolization of the parenchymatous cells.

(b) *Lungs.* Marked capillary vaso-constriction.

From these observations we believe that the dominant circulatory factors in canine peptone shock are reactions of the capillary endothelium. According to this conception the fundamental physiological reactions in peptone shock are:

(a) Pulmonary and hepatic capillary vaso-constriction.

(b) Capillary vaso-dilation in other parts of the body.

(c) Increased capillary permeability most marked in the liver.

The reactions in the extra-hepatic and extra-pulmonary capillaries are similar to the endothelial reactions recently described by Dale and Laidlaw[3], Rich[4], and others in histamine shock.

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[3] H. H. Dale and P. P. Laidlaw, *Jour. Physiol.*, 1918-19, lii, 355.

[4] A. R. Rich, *Jour. Exper. Med.*, 1921, xxxiii, 287.