

It was found that the dye penetrating into the sap had a maximum absorption at 660 m μ and a secondary maximum at 610 m μ . These are the absorption maxima for methylene blue. It is therefore concluded that methylene blue penetrates *Nitella* sap as such. This corroborates the previous results obtained by the writer with *Valonia*.

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Persistence of Denatured Horse Proteins in the Canine Circulation.*

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In previous papers^{1, 2} it was shown that horse proteins injected intravenously into normal dogs are retained quantitatively in the canine circulation for at least 6 days. During this retention, however, the proteins undergo marked denaturation. By the end of 4 days they will call forth no recognizable anaphylactic reaction even on massive transfusion into hypersensitive dogs. By the end of 6

TABLE I. *High Dilution Tests.*

Dogs injected intravenously on different days with 2 cc. horse serum per kg. of body weight. Blood samples withdrawn on the same day. Sera from these samples tested in parallel dilutions with rabbit precipitin. (For details of technique see previous papers.) +++, ++, +, (+), visible precipitate; ttt, tt, t, (t), (f), turbidity or opalescence; 0, no demonstrable reaction.

Dilution	6-day Sample	30-day Sample
1: 32	++(+)	tt
1: 64	++(+)	(+)
1: 128	++	+
1: 256	++	+
1: 512	+(+)	+
1: 1,024	+	(+)
1: 2,048	+	(+)
1: 4,096	(+)	(+)
1: 8,192	tt(t)	(+)
1: 16,384	t(t)	tt
1: 32,768	t	t
1: 65,536	(t)	(t)
1:131,072	0	0

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¹ Manwaring, W. H., Marino, H. D., McCleave, T. C., and Boone, T. H., *J. Immunol.*, 1927, xiii, 357.

² Manwaring, W. H., Marino, H. D., and Azevedo, J. L., *J. Immunol.*, 1928, xiv, in press.

days they cease to act as sensitizing agents for normal dogs. We have endeavored to follow subsequent changes in these proteins.

Titration by means of a specific horse-protein-precipitating rabbit serum indicate that the proteins are further altered, denaturated or inhibited. By the end of 30 days they give little or no demonstrable reaction with rabbit precipitin, if tested in low dilutions.

That this negative reaction is not due to an absence of horse proteins from the 30-day blood sample is indicated by continuing the titration to higher dilutions (Table I). In dilutions above 1:1000, the 6-day and 30-day samples give practically identical precipitates and turbidities.

The horse proteins thus further altered are apparently retained quantitatively for at least 4 months (latest titration thus far made). Within the limits of the experimental error the 4-month and 30-day blood samples give identical precipitates in all dilutions.

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A Rubber-Opposed Haemodromograph Used to Measure Reflux in Aortic Insufficiency.

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The measurement of blood flow throughout the cardiac cycle has been accomplished by use of instruments of rather low efficiency due to their heavy construction and the use of more sensitive instruments has been restricted by the difficulties attending their use. We have attempted to construct a simple instrument for use in studying reflux. The lever of the aortic haemodromograph is of fine aluminum wire, the fulcrum a water-tight strip of rubber dam fixed between 2 metal plates. An oval aluminum vane, 6x8 mm., fixed at one end of the lever projects into the aorta at right angles to the direction of flow; the connection is made air-tight by an oval shoe and threaded washer (Fig. 1). The length from vane to fulcrum is 2 cm., from fulcrum to the strand of rubber used to damp the lever is 5 cm., and a fine brass wire projects 3 cm. above this, its shadow registering on the moving film. The haemodromograph for the carotid is incorporated in the side of a brass tube, 4.5 mm. in diameter, which is introduced between cut ends of the vessel. The lever is damped 5 mm. from its fulcrum, the vane extends 4 mm.