

TABLE III.

Antifibrinolytic Titer of Susceptible and Resistant Serums.

An arbitrary fibrinolytic unit was adopted, equal to approximately three times the minimum 30-minute lytic unit for serum-free fibrin. This arbitrary lytic unit was mixed with serial dilutions of susceptible and resistant serum, the mixtures incubated 30 minutes, then tested against the same serum-free fibrinogen-thrombin complex.

Dilution of neutralizing serum	Serum from susceptible plasma-clot				Serum from resistant plasma-clot			
	10 min.	30 min.	1 hr.	2 hr.	10 min.	30 min.	1 hr.	2 hr.
1:3	0	0	0	0	0	0	0	0
1:9	0	0	0	0	0	0	0	0
1:27	0	+	+	+	0	0	0	0
1:81	+	+	+	+	0	0	0	±
1:243	+	+	+	+	0	0	+	+
Control (no antiserum)	+	+	+	+	+	+	+	+

capable of neutralizing our arbitrary fibrinolytic unit in dilutions as high as 1:9. Serum from our most resistant plasma neutralizes the same lytic unit in dilutions as high as 1:81.

7683 C

Dorsal Roots of Spinal Nerves and Regulation of Skin Temperature.*

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Stricker¹ first showed that stimulation of the dorsal roots of spinal nerves produced a vasodilatation in peripheral blood vessels. This observation has been confirmed by Bayliss,² Ranson and Wightman³ and others. Hinsey and Gasser⁴ showed that the fibers mediating vasodilatation on stimulation of the dorsal roots were ones whose potentials were found in the C-spike of the action potential. Vasodilator reflexes over the dorsal roots were demonstrated in positive experiments by Bayliss⁵ and Fofanov and Tschalussow.⁶ Recently

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¹ Stricker, M., *Sitzber. d. k. Akad. d. Wiss., Wien Math. nat. Kl.*, 1876, **74**, 173.

² Bayliss, W. M., *J. Physiol.*, 1901, **26**, 173.

³ Ranson, S. W., and Wightman, W. D., *Am. J. Physiol.*, 1922, **62**, 392.

⁴ Hinsey, J. C., and Gasser, H. S., *Am. J. Physiol.*, 1930, **92**, 679.

⁵ Bayliss, W. M., *J. Physiol.*, 1902, **28**, 276.

⁶ Fofanov, L. L., and Tschalussow, M. A., *Pflüger's Arch.*, 1913, **151**, 543.

Bishop, Heinbecker and O'Leary⁷ and Zuckerman and Ruch⁸ have again obtained positive results which tend to show that the vasodilator fibers in the dorsal roots are accessible to reflex stimulation.

The observations of Hinsey and Cutting,⁹ Hinsey,¹⁰ and of Zuckerman and Ruch⁸ showed that the skin temperatures in deafferented hind limbs were lower than in the opposite normally innervated limbs. These observations could either be attributed to an overaction of the vasoconstrictor pathways or to an absence of a dorsal root vasodilator mechanism in the colder limb. Zuckerman and Ruch state that when a limb is connected only with the spinal dorsal roots, it shows a different behavior than the opposite completely denervated limb (method of denervation is not stated; unless a bilateral abdominal sympathectomy was performed in addition to cutting the lumbosacral spinal roots, the denervation would not have been complete). The former fell in temperature much less than the denervated limb and usually less than the normally innervated skin. Hinsey observed that when a deafferented limb was sympathectomized, it became warmer than the opposite normally innervated limb.

The experiments here reported were carried out on 4 young adult cats. In the first operation, the abdominal sympathetic trunks were removed bilaterally from 2L-7L inclusive. By this operation, the vasoconstrictor pathways to both hind limbs were broken. After about 4 weeks, the right hind limb was deafferented by cutting the dorsal roots of 4L-2S inclusive. Thus the right hind limb was connected with the spinal cord only by ventral root somatic motor fibers while the left limb was supplied with both somatic sensory and motor fibers. If the dorsal roots are mediating efferent impulses to the vessels of the skin, the right hind limb should show a difference under certain conditions as compared to the opposite limb. Skin temperatures from both of the fore limbs and the hind limbs were recorded with a thermocouple. The animals were subjected to different room temperatures from 6 to 30°C. The skin temperatures were recorded immediately after placing the animals in the different room temperatures and after they had been there from 10 to 60 minutes. In these 4 animals which we have followed for 4 weeks, we have no indication whatsoever that there is any significant difference between the skin temperatures in the 2 hind limbs. This state-

⁷ Bishop, G. H., Heinbecker, P., and O'Leary, J. L., *Am. J. Physiol.*, 1933, **106**, 647.

⁸ Zuckerman, S., and Ruch, T. C., *Am. J. Physiol.*, 1934, **109**, 116.

⁹ Hinsey, J. C., and Cutting, C. C., *Anat. Rec.*, 1932, **52**, 57.

¹⁰ Hinsey, J. C., *Am. J. Physiol.*, 1934, **109**, 53.

ment holds for all the room temperatures used and is true immediately after the room temperature is changed and after a period for adaptation has elapsed. The maximal differences between the fore and hind limbs occurred at room temperatures between 16° and 20°C. and tended to decrease as the temperature became colder or warmer. After a period of 30 minutes in a room temperature of 30°C., the temperatures in the fore and hind limbs were essentially equal (confirmation of Reichert¹¹).

These experiments do not support a reflex control of the blood vessels of the skin *via* the dorsal roots, as evidenced by skin temperature in the cat. With the thoracolumbar sympathetic innervation bilaterally removed, unilateral section of the dorsal roots does not produce a difference in the skin temperatures on the 2 sides under the experimental conditions we have used. We believe that the lower skin temperatures which Hinsey reported for deafferented limbs are to be attributed to an over-action of the vasoconstrictor mechanism in the absence of some inhibitory control from the somatic afferent supply to the respective limbs. We realize that, if there are afferent neurones situated in the sacral chain ganglia such as Schwartz¹² has reported in the stellate and lumbosacral chain ganglia of the cat, they were not removed in our experiments. If the vasomotor effects which Rosenblueth and Cannon¹³ have described in sympathectomized animals are due to dorsal root efferent conduction, they were not reflected in the skin temperatures of the foot-pads as we recorded them.

7684 C

Concerning Gonadotropic Substances in Mare Serum.

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Evans *et al.*¹ have shown that there is a wide distribution of a substance in the urine and blood serum of mammals which resembles prolactin, in that when it is mixed *in vitro* with the pituitary synergist the effect upon the ovary of the immature rat is enhanced. Evidence

¹¹ Reichert, F. L., *PROC. SOC. EXP. BIOL. AND MED.*, 1932, **29**, 473.

¹² Schwartz, H. G., *Am. J. Physiol.*, 1934, **109**, 593.

¹³ Rosenblueth, A., and Cannon, W. B., *Am. J. Physiol.*, 1934, **108**, 599.

¹ Evans, H. M., Simpson, M. E., and Austin, P. R., *J. Exp. Med.*, 1933, **58**, 561.