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The rôle of the accelerator nerves in bulbar anemia.

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In a previous report¹ on the action of the vagus in bulbar anaemia induced by temporary occlusion of the head arteries, it was shown that, after division of both vagi, the heart rate does not change during the anaemic rise of blood-pressure, but remains at whatever maximum rate was attained after vagotomy.

It has been thought desirable to find out the effect on heart rate during the cardio-vascular response to bulbar anaemia, of removal of the stellate ganglia through which run the accelerator fibers to the heart. Accordingly, in a series of cats, after a control occlusion had been done according to the usual method,² the stellate ganglia were excised and further occlusions were done. Following is a typical result of such an experiment.

	Heart rate before occlusion	20 secs. after occlusion	130 secs. after occlusion	20 secs. after release
2nd occlusion, control	150	96	236	192
3d occlusion, with stel- lates removed	120	60	180	132

It is evident from the above table, that, with the accelerators eliminated, the vagi are over-active in holding the heart rate down. Under such conditions, recovery of the medulla after the circulation has been restored to the head arteries may, at times, be somewhat difficult, owing to the combination of low blood-pressure and slow heart rate. Moreover, this activity of the vagus is in evidence at a time when blood-pressure is at spinal level and all other signs of bulbar activity are in abeyance. In the experiment which has been given above, the vagi were sectioned in the recovery period, and heart rate increased immediately from 94, at which it had been for about five minutes, to 156; while blood-pressure rose from 40 to 70 millimeters of mercury.

¹ Coombs, *Am. J. Physiol.*, 1924, lxviii, 124.

² Stewart, *et al.*, *J. Exp. Med.*, 1906, viii, 289.

With both vagi and stellates divided, the heart rate during the remaining occlusion period in the above experiment, remained between 156 and 162, which one would consider relatively constant. Whether the adrenals play any part in the maintenance of heart rate in the denervated heart under conditions of bulbar anaemia, is, at present, under investigation.

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Effect of dyes on the penetration of arsenic into the central nervous system and the spinal fluid.

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The study of the relation between the antiseptic action and the chemical constitution of synthetic dyes dates back to the period of Paul Ehrlich¹ who began with one group of dyes known as azo dyes, including trypan red, trypan blue and trypan violet. The other group of dyes consisted of basic tryphenyl-methane dyes, including para-fuchsin, methyl violet, pyronin G and other similar substances, known as neurotrophic dyes because of their ability to stain nerve tissue.

McIntosh and Fildes² reported that arsenic could not be found in the brain tissue, due to a lack of affinity between the brain substances and the inability on the part of the drugs to penetrate into the brain. *In vitro* experiments show that this is purely a question of physical penetration. The same authors³ classified the dyes as, (1) those which stain the central nervous system, and (2) those which do not stain the central nervous system. They conclude that these variations were dependent upon the

¹ Ehrlich, Paul, and Hata, S., *The Experimental Chemotherapy of Spirilloses*. London: Rebman Limited, 1911.

² McIntosh, James, *The Fixation of Arsenic by the Brain after Intravenous Injections of Salvarsan*, *Proc. Roy. Soc.*, London, 1914, lxxxviii, (B), 320.

³ McIntosh, James, and Fildes, Paul, *Brain*, 1916, xxxix, 478.