

gram-positive than on gram-negative organisms. Finally we tested two inorganic salts which, however, acted with about the same degree of rapidity on both types of organisms.

Our results so far do not permit of any definite explanation of these differences in the action of the various agents upon the gram positive and gram negative bacteria.

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### Further Experimental Data on the Sympathetic Innervation and Tonus of Skeletal Muscles.

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In previous communications<sup>1</sup> we reported the results of tonus measurements carried out on the *quadriceps femoris* and *triceps brachii* muscles under normal innervation and following elimination of the sympathetic, in case of the *quadriceps femoris*, and either the sympathetic or the somatic nerve supply, in case of the *triceps brachii* muscles. The results of these measurements indicate that an important component of the tonus of a resting muscle, as manifested by the resistance it offers to passive extension, is mediated through its sympathetic innervation.

The majority of our tonus measurements, the results of which were previously reported, were carried out on cats and dogs under light ether anesthesia. In some instances measurements carried out in this manner were compared with measurements carried out on the same animal while in the waking state. In all these instances the tonus curves obtained while the animal was under light ether anesthesia were essentially similar to those obtained while the animal was in the waking state.

Nevertheless, it has been objected that even light ether anesthesia may vitiate the results of tonus measurements. In order to obviate this objection, and to secure additional checks on our previous experiments, tonus measurements were carried out on a goodly number of animals (cats and dogs) following section of the brain stem just above the midbrain. As observed by Magnus (1916),<sup>2</sup> the tonus of skeletal muscles is not appreciably

altered by section of the brain stem at this level. Animals successfully operated in this manner exhibit no voluntary movements, but their spinal and medullary reflex mechanisms remain intact. Spinal and medullary reflexes, especially those involved in progression, are readily elicited, in such animals, as soon as the immediate shock of the operation has subsided.

The tonus curves both of the *quadriceps femoris* and *triceps brachii* muscles with intact innervation obtained following section of the brain stem are essentially similar to the tonus curves of these muscles obtained while the intact animal was under light ether anesthesia. Likewise, the tonus curves of these muscles previously deprived of their sympathetic or (in case of the triceps) somatic innervation obtained following section of the brain stem are essentially similar to the corresponding curves obtained while the animal was under light ether anesthesia before section of the brain stem.

The results of the present series of experiments in general corroborate the results of our experiments in tonus measurement previously reported, and afford additional evidence in support of the theory that an important component of the tonus exhibited by skeletal muscles, in the absence of contractile effort, is mediated through the sympathetic nervous system.

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<sup>1</sup> Kuntz, A., and Kerper, A. H., *PROC. SOC. EXP. BIOL. AND MED.*, 1925, xxiii, 77; 1926, xxiii, 367; *Am. J. Physiol.*, 1926, lxxvi, 121.

<sup>2</sup> Magnus, R., *Pflüger's Arch.*, 1916, clxiii, 405.

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#### The Occurrence of a Physiologically Active Substance in Cultures of the Gas Bacillus.

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Cultures of the gas bacillus which have been enriched with carbohydrate utilizable by the microbe for its energy requirement, contain a substance, possibly substances, which will both induce immediate contracture in isolated guinea pig small intestine im-