86 (1833)

Effect of prostatectomy on integration of muscular movements of the white rat.

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An attempt to study the effect of prostatectomy on muscular coördination and efficiency was made by means of the so-called "rope problem." White albino rats are trained to walk across a room over a tightly stretched rope starting from a platform at one end and ending at another platform on which food is placed at the other end of the room. This problem or method of study is an excellent one for the development of muscles and training of their coördination. The animals at first cannot cross the rope at all and slip off it repeatedly, hanging by the front legs. After fifty trials, however, they learn to coördinate their movements and eventually can run over the entire length of the rope rapidly and without swaying or slipping off. After such a prolonged trial one notices a marked improvement in the tonus and strength of the entire musculature of the animals. In the present investigation the effect of prostatectomy was studied on the coördination of muscular movements. Two sets of experiments were performed. In the one group of rats, the animals were trained on the rope until they mastered the problem perfectly. They were then prostatectomized and allowed to recover. After recovery the animals were quickly retrained and it was found that there was no evident change in the integration of muscular movements produced by the extirpation of the prostate glands. In the second set of experiments, another group of rats were prostatectomized after seven trials on the rope before they had completely mastered the problem. The animals were allowed to rest and after recovery from the operation training on the rope was again begun. It was soon noticed that this group of rats learned to run across the rope very poorly and indeed after even a much longer period of training than the first group of rats (80 trials) in this second group of

animals rhythmic progression was very poorly established. The progression of the animals was much slower and more difficult. The muscles showed frequent tremblings and especially the muscles of the hind legs showed marked weakness. This was not exhibited by control rats in which laparotomy was performed but in which the prostates were not excised. In this second group of animals, futhermore, a marked improvement in muscular efficiency was manifested after feeding of dried prostate and certain other glands, which will be described more fully in the complete paper to appear in the *Journal of Urology*.

87 (1834)

Vitamin A in oranges.

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In an earlier paper dealing with citrus fruits[1] we stated that preliminary tests indicated that dried orange juice contains some vitamin A. This conclusion was based on the fact that when the equivalent of 10 c.c. juice was furnished daily to rats on a diet practically devoid of vitamin A, the symptoms which characteristically ensue upon such a dietary régime did not develop within the period of 190 days during which our observations continued. For example, the now well known ophthalmia[2] was either cured or averted.

A reinvestigation of the subject has substantiated our earlier conclusion. In a number of rats maintained on a diet consisting of casein, starch, lard and salt mixture,[3] together with 0.2 gm. of dried brewery yeast as a source of vitamin B, the characteristic ophthalmia associated with a lack of vitamin A was completely cured within a few days after the daily administration of either 10 c.c. of fresh orange juice or the same amount of juice desiccated, admixed with starch, in a current of hot air. Five c.c. of juice

[1] Osborne and Mendel, *J. Biol. Chem.*, 1920, xlii, 465.

[2] Osborne and Mendel, *J. Am. Med. Assn.*, 1921, lxxvi, 905.

[3] Osborne and Mendel, *J. Biol. Chem.*, 1919, xxxvii, 572.