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*.

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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.

sufficed to cure the ophthalmia but a larger quantity appeared to be necessary to secure restoration of growth. Inasmuch as Cooper[4] has reported the presence of vitamin A in orange peel, special precaution was taken in our work to avoid contamination of the juice with the latter.

Owing to the comparative richness of orange juice in carbohydrates, so that 10 c.c. represent a not inconsiderable intake of non-protein calories, it is important that the proportion of protein and essential salts in the rest of the ration be large enough to promote growth at the normal rate. The data now available from animal feeding experiments indicate the presence of vitamins A, B, and C in the orange and the possibility of conserving them, in part at least, undeteriorated by suitable processes of desiccation. With respect to the proportions of these different vitamins present our experiments indicate that volume for volume orange juice is as rich as is milk in vitamin B, but somewhat less rich in vitamin A. According to the data furnished by Givens and McClugage,[5] orange juice is much richer than milk in vitamin C.

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Studies in experimental plethora in dogs and rabbits.

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The object of the present communication is to present the functional changes produced by repeated transfusions in the blood-making and blood-destroying apparatus, and in metabolism, and the structural changes in the viscera of dogs and rabbits. In an attempt to throw further light on the relation of the spleen to blood formation and blood destruction, we first studied the effect of splenectomy in artificial plethora, and tried to find evidence of increased enzyme action in the spleen removed at a time when blood was being destroyed in greatly increased quantities. Not only were these efforts barren of results, but it was

[4] Cooper, PROC. SOC. EXPER. BIOL. AND MED., 1921, xviii, 243.

[5] Givens and McClugage, *Am. J. Dis. Child.*, 1919, xviii, 30.