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PERIODIC VARIATIONS IN NORMAL URINE.

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Innumerable analyses of urine have shown that even what may be considered normal samples exhibit considerable differences in composition. The purpose of the experiments here reported was to ascertain whether under ordinary conditions the urine of a single individual shows wide fluctuations in composition within short periods of time, and whether any regularities in these fluctuations could be established.

The experiments were made on urine from one of the writers, a student of twenty-three years, five feet ten inches in height, and weighing one hundred and forty pounds, of sedentary habits, and in fair general health. During the period of experiment, which extended almost continuously from March 8th to April 26th, some slight fever was experienced at times, apparently malarial, but otherwise the health conditions were quite normal.

OUTLINE OF THE EXPERIMENTS.

The experimental work included the determination for known time intervals of the volume excreted, the reaction with litmus paper, the color, the specific gravity, the percentage of urea. From these data there were calculated the volume per hour, the total solids per hour, the urea per hour, and the solids other than urea per hour.

In the following pages the word "excretion" means the entrance of the urine into the bladder; the urine was passed as completely as possible at the beginning and at the end of each period of excretion, and in many cases at other times during the period.

No attempt was made to control the diet, which was of a normal mixed character throughout, three meals being taken at about 7.30 a.m., 12 m. and 5.30 p.m., respectively, and no food at other times during the experiments in Series IV.