

P. B. Hawk presented a paper of which the following is an abstract:

FURTHER STUDIES ON THE INFLUENCE OF COPIOUS
WATER DRINKING WITH MEALS.

The subjects of these experiments were young men who were placed on a uniform diet, and all urine and feces were collected in twenty-four hour periods and analyzed. Each experiment consisted of three parts, a *preliminary period* of six days during which time the subjects were brought into "nitrogen equilibrium." During this period 900 cc. of water was daily ingested, 300 cc. of this amount being taken with meals. The second period or "*water period*" was five days in length and during each of these 1000 cc. of water above that already mentioned was taken at each meal. The *third period* was from three to eight days in length and during this period the amount of water ingested was the same per day as in the preliminary period. The daily drinking of three liters of water with meals, for a period of five days by these three normal young men, who

were in a condition of nitrogen equilibrium through the ingestion of a uniform diet, was productive of the following findings:

1. An increase in body weight, aggregating from one and one-half to two pounds in five days.

2. An increased excretion of urinary nitrogen, the excess nitrogen being mainly in the form of urea, ammonia and creatine.

3. A decreased excretion of creatinine and the coincident appearance of creatine in the urine. The decreased creatinine output is believed to indicate that the copious water drinking has stimulated protein catabolism. The appearance of creatine is considered evidence that the water has caused a *partial* muscular disintegration, resulting in the release of creatine, but not profound enough to yield the total nitrogen content of the muscle. The output of creatine is therefore out of all proportion to the increase in the excretion of total nitrogen.

4. An increased output of ammonia which is interpreted as indicating an increased output of gastric juice.

5. A decreased excretion of feces and of fecal nitrogen the decrease in the excretion of fecal nitrogen being of sufficient magnitude to secure a lowered excretion of both the bacterial and the non-bacterial nitrogen.

6. A lower creatinine coefficient.

7. A more economical utilization of the protein constituents of the diet.

8. A decreased excretion of fecal extractive nitrogen.

9. A strikingly lowered output of carbohydrate in the feces, thus indicating a more economical utilization of the ingested carbohydrate.

10. The increased body weight; the lessened output of feces and fecal nitrogen; the decrease in bacterial and extractive nitrogen of the feces; the more economical utilization of the protein and the carbohydrate constituents of the diet, all continued throughout the final period on a plan similar to that established during the water period, instead of returning to the conditions in force during the preliminary period. These facts indicate that the influence of the water is not simply temporary.

11. The general conclusion to be reached as the result of these experiments is contrary to the current medical teaching, and is to the effect that the drinking of a large amount of water by normal individuals, with meals, was attended by many desirable and by no undesirable features.
