Probably the enema has been employed as long as any therapeutic method recorded in the history of medicine. During the past 25 centuries a great variety of ingredients have been used in solutions injected into the rectum. Some of these are alum, asafetida, molasses, turpentine, vinegar, brandy, and hydrogen peroxide and it is surprising that there have not been more reports of untoward effects.

Curiously, plain water which usually is considered to be innocuous as an enema ingredient has caused some of the most disastrous effects. Repeated tapwater enemas have precipitated dangerous and even fatal water intoxication in children and adults and have caused severe potassium depletion. If "innocuous" tapwater enemas can cause such complications, a critical study of the effects of all currently used enemas seems justifiable.

The possible untoward effects of enemas are of particular interest to the proctologist for two reasons. In the first place, he employs enemas frequently while preparing the lower bowel of his patients for proctoscopic and sigmoidoscopic examination and for treatment of disease of the terminal portion of the colon. In the second place, he observes most frequently the effects of the enema and therefore is in a better position to supply accurate information regarding its physiologic and biochemical effects, both locally and systemically.

Reported hazards of repeated tapwater enemas are responsible for the increasing interest in the subject of water and electrolyte balance in the surgical patient who requires the frequent use of enemas.

One enema which has claimed our attention is a hypertonic sodium phosphate solution, containing 16 gm. of sodium biphosphate and 6 gm. of dibasic sodium phosphate per 100 cc. of solution. It is supplied in 120 cc. disposable plastic containers. This enema is now being used widely because it is easily administered, is effective in inducing evacuation, and is more effective than soapsuds enemas in providing thorough cleansing of the rectum preparatory to proctoscopic examination.

In a previous study it was shown that this hypertonic enema solution did not cause a significant loss of body water. This study disproved the belief that hypertonic evacuant enemas exert a dehydrating effect. The objective of the present study is to determine whether the sodium phosphate enema causes significant retention of sodium or loss of potassium. Sodium retention concerns the patient who is on a low-sodium regimen, and loss of potassium is important in patients on restricted food intake. The lower bowel phosphate exchange in the enema was determined to check the sodium values, and chloride exchange was used as a measure of body fluid loss.

Experimental Procedure

The study included 37 male and two female adult patients. The amounts of sodium and phosphate administered were determined from the amount of solution injected and the known concentration of sodium and phosphate. The enemas were
retained for an average of four minutes and varied from one to ten minutes. All material evacuated from the rectum was collected in a clean receptacle and precautions were employed in order to avoid contamination by urine. Solid feces were removed by filtering the material through nylon cloth. The receptacle, feces and cloth were rinsed with distilled water and the combined filtrate and washings were assayed for sodium, potassium, phosphate and chloride.