

high solubility, non-reactivity with gastric contents, reliability of analytical determination, etc. Not until Gorham (52) introduced phenol red and Bloomfield and Keefer (13) introduced phenolphthalein were investigators in possession of reasonably satisfactory substances for the purpose. Although other substances have been proposed, e.g.,  $\text{Na}_2\text{SO}_4$  by Sary and Mahler (128) phenol red and phenolphthalein seem to be the only ones which have been extensively adopted by other workers. (Lewin (79), Gaither (45), Martini and Beck (87), Lanz (76), Bulger, *et al* (20) and Wilhelmj (139)). In our own laboratory we have investigated both these substances and have discovered that the use of phenolphthalein is completely invalidated by the fact that its solubility in stomach contents is much lower than its concentration in the original test-meal, and therefore most of the indicator

precipitates out within the gastric cavity (Penner, Hollander and Saltzman (103)). We are now using phenol red, for which we have developed a simple and reliable analytical procedure, in a systematic study of gastric analysis procedure to be reported on later (Hollander, Penner and Saltzman (60)). As yet, none of the results with dilution indicators reported on humans have been of significant value, for the several reasons stated above. It is questionable whether the dilution indicator method for evaluating volumes of pure secretion can ever be simplified sufficiently to be used as a routine clinical procedure. For research purposes, however, the technique contains many possibilities and the concept which underlies its use is of sufficient importance to merit its further investigation.

(To Be Continued)

## A Disposable Non-breakable Hard Enema Tip\*

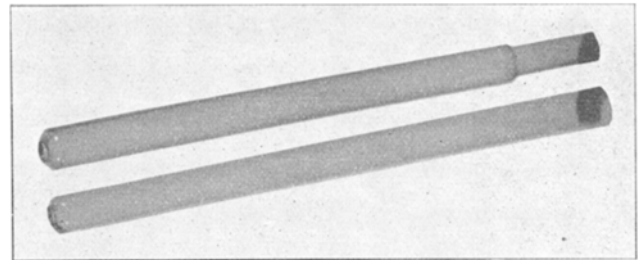
By

MANFRED KRAEMER, M.D., F.A.C.P.†  
NEWARK, NEW JERSEY

SOFT rubber catheters, hard rubber and glass enema tips are in common use for administering enemas. These tips have certain common and individual disadvantages. They are all so expensive that they cannot be discarded after a single usage. They must be cleaned and sterilized each time they are used. While easy to sterilize, all are difficult to clean and even after frequent rinsings small bits of stool or barium adhere to their inner walls. The feces can be seen inside a glass tip and removed, but are often overlooked when opaque tips are used. Soft rubber tips are painful when introduced and in patients with fissures or other peri-anal lesions their introduction may be impossible. Rubber tips change in texture after several sterilizations. As manufactured, hard rubber tips are too short and the hand of the nurse becomes soiled with stool when she removes the tip from the tubing of the enema bag. For six years I have routinely used long glass tips for administering barium enemas. There is always the danger of breakage when these tips are inserted and in many hospitals their use is prohibited.

Through the co-operation of Mr. Herman Lerner of the Hygienic Tube and Container Company of Newark, I have had made a hard tip of a transparent, non-

flammable plastic (cellulose acetate) simulating glass but unbreakable. These tips can be made so cheaply that they may be used once and discarded. I have substituted these tips for my glass ones and find them equally satisfactory. There is no fear of break-



age and subsequent trauma. Since the tips are used but once, the time consumed in cleaning and sterilizing is saved. The tips used are shown in the accompanying illustration. As the plastic is easily workable, tips can be manufactured to meet individual preferences. The tips cannot withstand boiling. If sterility is essential, they can be cleaned with soap and water and sterilized in alcohol, phenol or bichloride solutions.

Courtesy Miss Hazel Dearth, supervisor floor nurses at Presbyterian Hospital, tried the tips for routine enemas. They were time saving and economical as compared to soft rubber catheters usually employed

\*From the Gastro-Intestinal Clinic, Newark Presbyterian Hospital.  
†Chief, Gastro-Intestinal Clinic, Newark Presbyterian Hospital; Gastro-Enterologist, St. James Hospital.  
Submitted July 16, 1938.