(2) This 5,5-dichloroxyhydrouracil reacts with barium hydroxide immediately at ordinary temperature giving the purple colored barium salt of dialuric acid.

(3) Both uracil and cytosine can be detected successfully in minute quantities by application of the technique discussed in this paper.

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A NYLON BLOOD AND PLASMA FILTER[1]

THE storage of blood and plasma has become commonplace within the last few years. However, these products frequently develop precipitates despite the use of what appears to be an adequate amount of sodium citrate as the anticoagulant. Although it is desirable that fresh blood be filtered immediately before administration to the patient, this precaution is mandatory when stored blood or plasma is used.

Materials such as cotton gauze, fiber glass braid, glass beads and stainless steel screens have been employed for filtration with varying degrees of success. More recently, Novak[2] has advocated a viscose rayon cloth.

During the past eight months we have been using a nylon[3] filter which has the following desirable characteristics: (1) It removes all clots without clogging; (2) it does not shed lint into the filtrate; (3) it is simple to clean, assemble, and sterilize by autoclaving, and (4) it is inexpensive so that the filter bag may be discarded after being used once.[4] The filter fabric has approximately 30,000 orifices per square inch; a double row of stitches with very fine nylon thread eliminates any danger of leakage. The bag has a filtration surface of approximately 50 sq. cm.[3] This is more than ample for the complete filtration of at least 500 ml of blood or 3,000 ml of plasma. Our failure to observe frequent clogging of this fine mesh filter is probably related to the fact that the nylon filaments are very smooth with round cross sections and aqueous solutions spread over the surface of the fabric without absorbing much moisture. The filtration of blood through the nylon fabric yields results that are comparable to those obtained with a standard 200-mesh screen.[5]

Fig. 1 shows the assembled filter. In use, the cannula is inserted into the appropriate orifice in the rubber-stoppered blood bottle, and the filter with its glass-covered drip tube remains suspended from the inverted bottle. The reservoir, tubing and 18-gauge needle are filled with saline. When the flow into the vein is definitely established, the filter assembly is inserted into the saline reservoir tube and the rate of blood flow is adjusted with the clamp to about 10 ml per minute. The unit simplifies the administration of blood or plasma because it includes the filter, the Murphy drip principle and the saline reservoir for starting the transfusion. No instance of sensitivity to nylon has been observed in over 1,000 blood and plasma infusions. No reactions have followed the administration of plasma in over 200 cases and the incidence of reaction with the use of whole blood has been very low. A further analysis of these data will be presented in a separate communication.

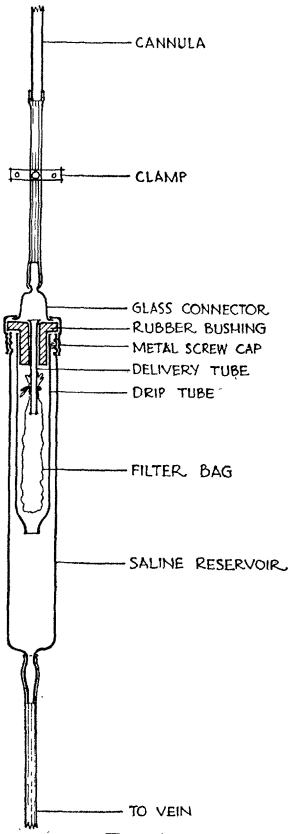

FIG. 1.

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[1] Presented before the Academy of Surgery, Philadelphia, April 5, 1943, as a contribution from the Philadelphia General Hospital, Solution Room Committee, which also includes Dr. J. H. Clark, Dr. H. I. Hneleski, Dr. J. G. Reinhold and Dr. W. G. Turnbull.

[2] M. Novak, SCIENCE, 97: 248, March, 1943.

[3] The specially woven fine nylon fabric is known as "Hematex." The filter and fabric are available from Frederick H. Rhodes, Madison, N. J.

[4] Due to the current critical value of nylon the bags have been washed and used repeatedly. Immediately after use, the bag is rinsed blood-free in saline. At the end of the day, the accumulated bags are washed thoroughly in Dreft, a sulfonated fatty acid detergent marketed by the Procter and Gamble Company. The bags are then rinsed thoroughly in distilled water, boiled in distilled water for about 15 minutes, air-dried, assembled in sets with tubing and autoclaved. Each filter has been used at least twenty-five times.

[5] I am indebted to Dr. Max Strumia, Bryn Mawr Hospital, Bryn Mawr, Pa., for his kindness in performing this comparative test.