This method will be applied to man as soon as opportunities present themselves.

ADVANTAGES OF THIS METHOD

The instrument I have described overcomes the difficulties experienced with the syringe-cannula method, by striking at their causes.

1. The frequent handling of the cannulas is eliminated because connections are made not directly to them but to the cock. For this reason the cannulas ought not to be dislodged.

2. Clotting is avoided because the entire system is regularly and instantly flushed with saline, and the length of time the blood is outside of the body is reduced to a minimum. In none of the animal experiments did clotting occur.

3. Only the operator handles the blood syringe. The function of the assistant is limited to the injection of saline.

4. Fewer syringes are needed. In one experiment, 800 c.c. of blood were transfused, only two syringes being used. It is advisable, however, to have about four to meet emergencies.

5. It is time-saving because it reduces the manipulations; it minimizes the time the blood is outside of the body, and it allows of the injection of saline simultaneously with the aspiration or injection of blood. When indicated, a more rapid transfusion can be done by this than by any other method. The rate of the flow can, however, be varied at will. Blood can be sent across as slowly as one wishes, because the patency of the circuits can be relied on.

I wish to express my thanks to Dr. F. S. Mandlebaum, who so generously afforded me the privileges of the pathology laboratory of the hospital, and to Drs. Shapiro, Rosenthal and E. Mayer, who were of great assistance in the animal experimentation.

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A DEVICE FOR HOLDING SOLUTION BOTTLES IN OPERATING ROOMS*

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Each bottle shown in the accompanying photographs has as its feature a combination handle and corking device which can easily be detached from the bottle and sterilized. The

Fig. 1.—Method of attaching stoppers.

Fig. 2.—Stoppers in place and bottles in use.

chief advantage, therefore, is that the handle being sterile, the surgeon or assistant may readily obtain more iodine before or during an operation without the soiling of gloves. To those using the benzoin, iodine and alcohol method of skin preparation, for which the apparatus is especially adapted, other points of advantage are quite obvious, for instance, evaporation is prevented (the handle being equipped with a spring), solutions are not wasted, bottles are not broken, and time and trouble are saved the operating room personnel.

* From the Mayo Clinic.

LABORATORY SUGGESTIONS

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EQUIPMENT FOR SEROLOGIC WORK

In performing serologic work, certain technical methods may be evolved which will be economical of both time and labor. Each worker will naturally adapt his equipment to his own needs. We have made certain adaptations which may prove useful to others.

Removing Cotton Stoppers from Pipets.—The plugging of pipet mouth-pieces with cotton is desirable in order to avoid

Apparatus for recording differential counts.

drawing fluid into the mouth and to prevent saliva from running into the pipet. The removal of these cotton plugs is often bothersome, especially when many pipets are used and have to be cleaned.

Our laboratory assistant solved the question by suggesting the use of a dentist's broach. With this fiendish instrument most of us are painfully familiar. It is merely a bit of highly tempered fine wire, roughened so that it grips whatever it touches, and is mounted in a metal handle. With it, the bits of cotton can be removed from fifty pipets in a few minutes.

Apparatus for the Inactivation of Serum.—The inactivation of specimens of blood-serum by use of heat at 56 C. (132.8 F.) is performed much more satisfactorily in a water-bath than in a dry oven. The maintenance, however, of an unprotected water-bath at 56 C. for as short a time as half an hour is not easy, even when the equipment includes a thermostat. We have found that the following adaptation saved much annoyance:

A so-called small "physician's incubator" (Bausch and Lomb Company) was secured which is built in the form of a cylinder, with the opening at the top. It is provided with a water-jacket of an ample capacity. A round basin, 3 inches high and of circumference to fit in the incubator, was made and provided with handles to facilitate lifting it in and out. A number of small cans were secured and holes were punched in the bottoms and sides so that the water would

circulate freely when they were lifted.

The large basin is brought to proper temperature outside the incubator, the small cans containing the specimen-tubes being lifted up and down to allow the water to mix freely. When the temperature is uniform throughout the bath and at the proper point, the bath is placed inside the incubator. This is prepared in advance by filling the water-jacket with hot water, between 60 and 70 C. (140 and 158 F.). We find that if the inner bath is at the correct temperature, the exact temperature of the water in the surrounding incubator does not matter greatly as long as it is hot enough to act as an insulator and prevent heat loss. The temperature of the