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Contributors

Fox, Howard, 1873-1947.
Trimble, William B.
Royal College of Surgeons of England

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A SIMPLE APPARATUS FOR
THE INTRAVENOUS IN-
JECTION OF SALVARSAN

BY

HOWARD FOX, M.D.

NEW YORK

AND

WILLIAM B. TRIMBLE, M.D.

NEW YORK

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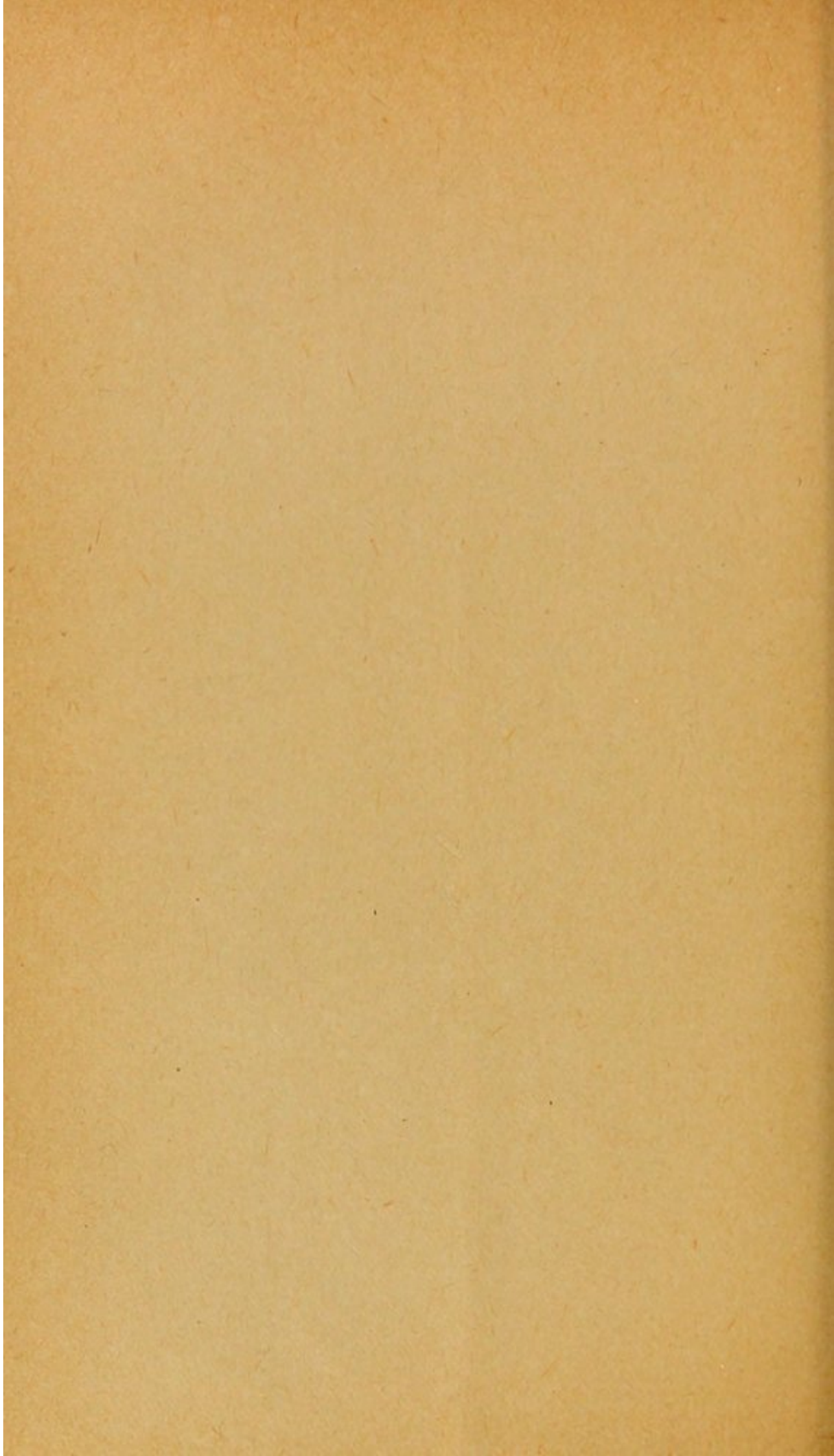
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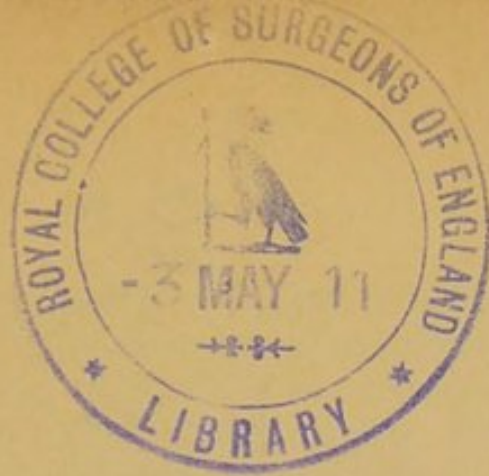
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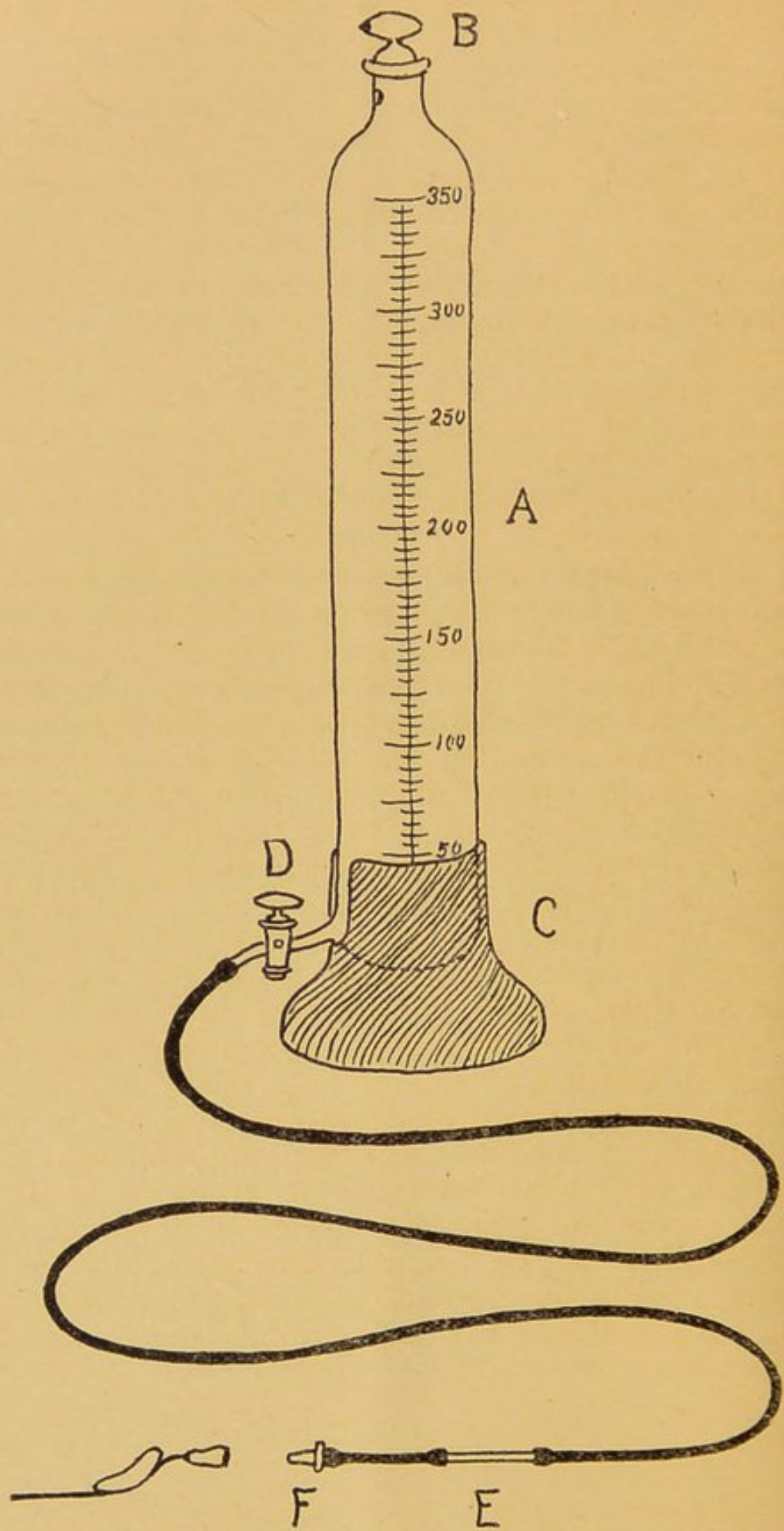
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OWING to the large number of intravenous injections of salvarsan that are at present being given, it is highly desirable that the necessary apparatus should not only be efficient, but also as simple as possible. The Schreiber method, which we used at first in the service of Dr. George Henry Fox at the New York Skin and Cancer Hospital, seemed unnecessarily complicated. An apparatus suggested by Dr. G. H. Semken was not wholly satisfactory and we have therefore modified the methods at first used and constructed a form of gravity apparatus which, in our opinion, considerably simplifies the operation of intravenous injection.

Our apparatus consists of a graduated glass cylinder (A) containing 350 c.c., which can be placed upon a table in an upright position in the detachable wooden base (C). The glass stopper (B) is provided with a vent so that air is admitted (to allow the escape of the contained fluid) by simply turning instead of removing it from the cylinder. The glass stop-cock (D) is fitted with a washer that re-

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tains it securely in place. A short glass tube (E) is inserted in the rubber tubing to allow detection of air bubbles and to avoid their entrance into the vein. At the end of the rubber tubing, which should be about 4 feet in length, a metal nozzle (F) is attached which fits in the Schreiber or other needle that is used. While the Schreiber needle is convenient on account of its form the caliber as a rule is too small, especially after the needle has been used several times and its interior becomes slightly rusted. Whether an ordinary straight needle or a Schreiber needle is used, we think it should have a No. 18 bore.

As the chief difficulty in intravenous injections of salvarsan is due to the proper insertion of the needle it is advisable to use only new needles or those with which the operator is well acquainted. The point should not be beveled too short, *e.g.* sharp pointed, for fear of wounding the vein after its introduction. As to whether the vein should first be exposed by cutting down upon it or whether the needle should be directly plunged through the skin into the vein is a matter of opinion. Where the operator has had considerable experience in performing venesection and is acquainted with his needle there should not be any difficulty in the majority of the cases in its proper insertion. In cases in which the veins do not become prominent after the application of a tourniquet or where the operator has not had any experience with venesection it is certainly advisable to make an incision and expose the vein. We prefer to introduce the needle through the skin into the largest accessible vein, usually the median basilic, a procedure that in our experience has not been followed by its obliteration.

In preparing the salvarsan for intravenous injection we have found it convenient to dissolve the drug in a small (25 c.c) glass cylinder. This is readily accomplished without the use of glass beads, which furthermore constitute a possible source of danger from the separation of small particles of glass. When ready for the injection the solution is poured into the large cylinder (A) and is diluted to 300 c.c. with sterile distilled water or physiological salt solution. We prefer the former as it is equally satisfactory and more easily obtained. If the salt solution is used it must be made up in the exact proportion of 0.85, or 0.9 of 1 per cent., as if for laboratory use.

After the thorough sterilization of the operator's hands and the patient's arm the needle is introduced into the vein and blood allowed to flow freely. The cylinder containing the salvarsan solution is then held by an assistant several feet above the patient's arm and the stop-cock (B) is opened. A little of the fluid is allowed to escape to see that it is free from air bubbles and the nozzle is then carefully inserted into the needle. The rapidity with which the fluid enters the circulation is regulated by the height at which the glass cylinder is held. Six or eight minutes are generally required for the 250 c.c. of fluid (the amount usually given) to flow into the vein. Before withdrawing the needle pressure should be made upon the point of injection with a piece of gauze and the needle rapidly withdrawn to avoid the entrance of an irritating solution into the tissues.