A Simple Viewer for Prothrombin Determination and Other Coagulation Tests

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Various technics have been employed in observing the end points in performing prothrombin determinations. Some of these entail the use of wire loops (1), direct visual observation of the clot (2), and use of densitometers (3). In our laboratories we have adopted the method of Quick (2). We have found that with the aid of an improvised viewer, observations of any physical clot can be studied and noted. This application has also been used with other coagulation tests. The use of this viewer brings to light any formation of coagulation that is otherwise difficult to observe and is occasionally overlooked in other technics.

MATERIALS AND METHOD

CONSTRUCTION

This improvised clot viewer (Fig. 1) consists of a Quebec Colony Counter manufactured by the American Optical Company which has been fitted with a No. 2 metal can from which both ends have been removed. The size of the can is elective provided proper magnification can be obtained when reducing the dimension of the can. A 3-inch, arc-like slit is made along the radial edge of the can as shown in Fig. 1. With the use of a pair of metal cutting shears, two ½-inch perpendicular cuts are made along the edge of the can three inches apart. Since the metal is somewhat flexible, the slit can be formed by bending the three-inch segment in the form of a hem very easily by hand. Two holes can be punched with a nail to coincide with the two thumb-
Fig. 1. A useful combination for prothrombin determination and other clotting tests. (Interval timer, Precision Scientific Company, Chicago)
screws located on the face of the colony counter. The can is painted black, preferably with a nonreflecting paint. Before inserting the can in position, remove the existing ruled glass plate. Extend the magnifying glass to its limit and place the can beneath is so that the bottom edge of the can (section with slit) is flush with the face of the viewer. The can is made fast by replacing the thumbscrews and pushing the magnifying glass down to meet the top of the can.

For convenience, slits can be made on opposite sides to accommodate left- or right-handed operators. Temperature control can be easily achieved for any requirement. This is accomplished by changing the size of the illuminating lamp which is an integral part of the colony counter. A small thermometer attached inside can serve as an indicator. The apparatus is now ready for use and can be applied to a variety of tests using different technics.

PROCEDURE

Tubes containing clotting mixtures are removed from the water bath and inserted into the slot and viewed through the magnifying glass. The test tube is tilted until the clot is observed, and the time is noted. Customarily, tubes are placed under the viewer a few seconds before clotting is anticipated. The temperature controlled by the illuminating lamp will keep the test at similar incubation temperature if one should fail to approximate the clotting time.

DISCUSSION

We have found this instrument very helpful and adaptable for use by all of our laboratory technical staff. It has proved invaluable in performing some of the more difficult clotting tests used in coagulation studies. With this viewer we are able to demonstrate reproducible results with improved precision.

This instrument has been in use daily by the Clinical Laboratories of the Boston Veterans Administration Hospital and the Research Laboratories of the West Roxbury Veterans Administration Hospital for the past ten years.

SUMMARY

1. A clot viewer has been described, which is an adaptation of a colony counter and requires little or no money to construct.

REFERENCES