A MACHINE TO ASSIST IN RHESUS-GROUPING

BY

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The routine examination of blood during the antenatal period for the rhesus factor has become an important function of many hospital laboratories. The area served by this department provides more than 10,000 such specimens a year, and it was important to find a method of performing the agglutination test with anti-D serum involving as little effort or chance of confusion as possible. The device to be described employs the tube test, and the reading of the results is simplified by the projection of a small lantern image of the red cell sediment on a screen.

Description of Apparatus

The machine consists of a circular rack revolving round a vertical axle. Above is suspended a dark-

ground illuminator: below is fixed a small lantern projection lens. The rack consists of two circles of one-eighth gauge steel plate (13 in. diameter) drilled to take two concentric rings of $\frac{1}{2}$ -in. $\times$ 3-in. tubes with a bottom plate of $\frac{1}{4}$ -in. plate glass. All three are joined to a hollow-threaded central shaft. The compound projection lens is made of two biconvex lenses, each 3 cm. diameter and of 6 cm. focal length and placed directly under the outer ring of tubes. The holes are numbered to take 32 tests.

Method of Use

The inner row of tubes is used for the preparation of the washed red cell suspensions. The outer circle of holes is then loaded with the reaction tubes. One large drop of red-cell suspension is then transferred from each inner tube to the corresponding reaction tube. A very small drop of anti-D serum is then added to each reaction tube and the whole rack is placed in the incubator. After periods of one and two hours the rack is placed on the axle and readings are taken. In actual practice the positive results are usually clearly readable after about half an hour.

Advantages Claimed

The machine is useful for the mass testing of routine specimens. As with the Chown method, rapid settling out of agglutinated particles occurs, but with rather less economy of serum. At the same time, the advantages of a tube test are retained. By the device described, the reading of the result of the tube test is simplified, and the lantern images correspond well with the microscopic findings.

I am grateful to the hospital engineer, Mr. F. G. Bradley, and his staff, who constructed the rack.

FIG. 1.—The rack.

FIG. 2.—(a) Negative result. (b) Positive result after one hour's incubation.