A VACUUM STOPCOCK

DURING the winter of 1908 work was undertaken on the gas production of *Bacillus coli* in synthetic culture media. The method of work consisted of growing the organism in high vacuum. In the course of this work considerable difficulty was experienced in maintaining absolutely tight stopcocks and as a result a stopcock was devised that appears to satisfy the conditions for a gas-tight stopcock.

The ordinary stopcocks had to be reground with jeweler's rouge, and while this precaution rendered the stopcock gas-tight under constant temperature conditions, it was found that the changes in temperature from room to incubator caused the two ground surfaces, assisted by the resilience of the lubricant, to separate and thus make the stopcock leak. To overcome these difficulties the stopcock had to be tied into place and mercury placed in the exposed lead.

The stopcock devised to overcome these difficulties is explained by the two diagrams. The passage from X to Y leads through an obliquely drilled plug as in the ordinary improved vacuum stopcock. At A a small bulb takes the place of the ordinary open end. Into the center of the plug, and in the same plane as the oblique drilling, a drilling is made as far as the level of the lead X. From

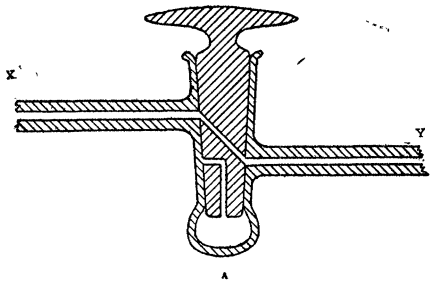

FIG. 1

this point it continues at a right angle as indicated in the diagram. The operation of the stopcock is as follows. The stopcock being in the position indicated in Fig. 1, the plug is turned through 180°, thus bringing it into the position indicated in Fig. 2. The stopcock is then connected with the pump and the small bulb exhausted. Turning the plug through another 180° will open the passage from X to Y and then it may be opened and closed at will without the small bulb A ever coming into communication with the passage.

In the above arrangement the atmosphere is exerting its pressure to hold the plug in place, thus overcoming the resilience of the

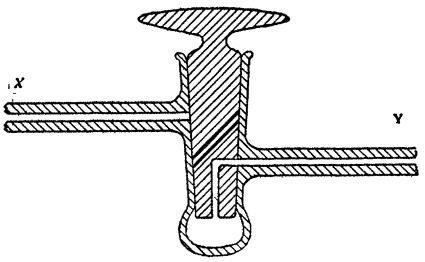

FIG. 2

lubricant and pressing the two ground surfaces together constantly, in spite of the temperature changes that tend to let one surface expand away from the other. The lubricant is composed of gutta-percha, hard paraffin wax and a heavy mineral oil; and answers admirably. Many similar lubricants are described in the literature.

The above stopcocks were very neatly constructed by Eimer and Amend.

BROWN UNIVERSITY FREDERICK G. KEYES

SOCIETIES AND ACADEMIES

THE AMERICAN MATHEMATICAL SOCIETY

THE one hundred and fortieth regular meeting of the society was held at Columbia University on Saturday, October 31. A single morning session sufficed for the brief program. The president of the society, Professor H. S. White, occupied the chair. The attendance included twenty-one members. The following new members were elected: Professor J. A. Brewster, St. Angela's College; Professor W. H. Butts, University of Michigan; Dr. C. F. Craig, Cornell University; Professor T. A. Martin, Mt. Union College; Professor M. T. Peed, Emory College; Mr. G. E. Roosevelt, New York City; Mr. L. M. Saxton, College of the City of New York. Four applications for membership were received. The total membership of the society is now 605.

A list of nominations of officers and other members of the council was adopted and ordered placed on the official ballot for the annual election at the December meeting. It was decided to hold the annual meeting at Baltimore, on Wednesday and Thursday, December 30–31, in affiliation with