"Four sets of sash were fitted with cracks of 1/16, 1/8, 3/16 and 1/4 in. Each set was tested with clearances varying from 1/32 to 1/4 in. Each test was repeated a number of times because no two tests gave exactly the same leakage, and it was necessary to obtain average results. Before duplicating any test the window was opened and closed, and the stops were removed and then returned to as nearly the same position as possible. The weatherstripped sashes were tested in the same way.

"Fig. 6 gives the results of tests on a plain wood window with various clearances. The tests proved that the size of the crack around the perimeter of the sash has no appreciable effect on the leakage. Therefore the results apply to any window of the type tested with a crack

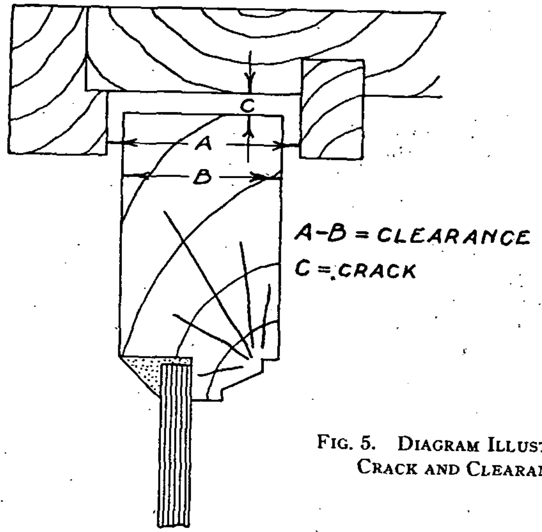

FIG. 5. DIAGRAM ILLUSTRATING CRACK AND CLEARANCE

of from 1/16 to 1/4 in. In practice most new sashes are fitted with the crack at least 1/16 in., and this crack becomes greater as the sash dries out and shrinks. It should be clearly understood that each curve is the average obtained from a number of tests, and the results of any one test may vary from the given curve by four or five per cent. The figure shows that the leakage increases rapidly with increase in clearance for plain wood windows."

This same report shows that for windows equipped with the better type of weatherstripping there is only a 15 per cent increase in air leakage for an increase in clearance from $\frac{1}{16}$ to 1/4 in. Tests to date have shown no consistent results on the effect of locking plain double-hung wood windows. Some tests show a decrease and others even show an increase in infiltration. The authors in discussing the results of the St. Louis double-hung metal sash window tests state that the infiltration loss through such metal windows can be reduced about 10 per cent by locking a non-weatherstripped window; and an average additional 56 per cent by applying weatherstripping of the types studied, to the locked window.

Tables 15 and 16 show the heat losses in B.t.u.'s per hour per foot of crack for plain windows and weatherstripped windows to heat the incoming air from 0 to 70 deg. fahr. The tables also show the radiation in square feet that must be installed to take care of these heat losses. This radiation is based on a heat emission factor of 240 B.t.u. per square foot.

For example, consider a double-hung window at a wind velocity of 15 miles per hour. For a plain non-stripped window, Table 15 shows

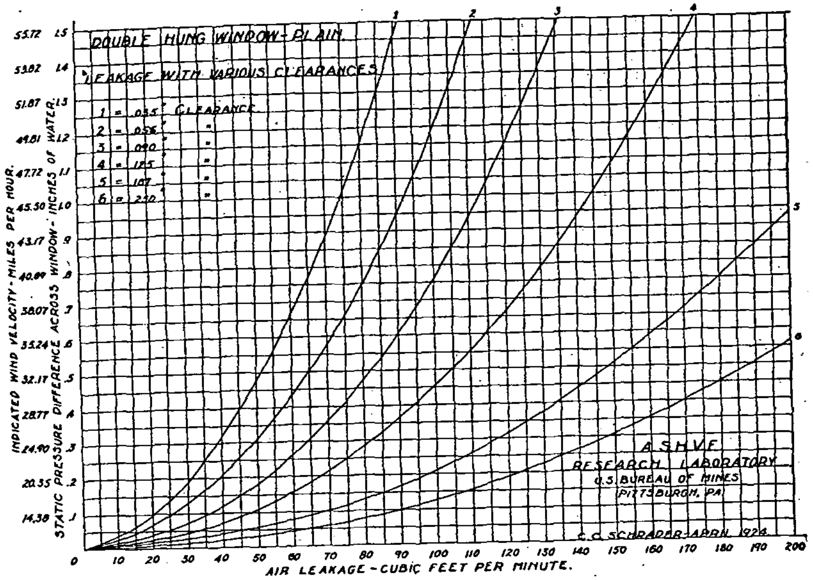

FIG. 6. LEAKAGE THROUGH PLAIN WOOD WINDOW WITH VARIOUS CLEARANCES

Note.—The above curves show the leakage for the total crack. To obtain the leakage in cubic feet per hour per foot of crack, multiply by 60 and divide by 18.25.

that 0.65 sq. ft. of radiation is required to take care of the infiltration loss per foot of crack. This table shows for the weatherstripped window, a corresponding radiation requirement of 0.12 sq. ft. per foot of crack, indicating that the application of good weatherstripping has brought about a reduction of 0.53 sq. ft. in the radiation required per foot of crack.

Assuming the heating system costs $2.00 per square foot of radiation installed and weatherstripping to cost $0.30 per lineal foot installed, there would result for each $0.30 invested in weatherstripping, a reduction of $1.06 in the initial cost of the heating system. For any particular installation the costs applying to that locality and for that particular type of construction should be used in making such a cost analysis. No attempt is made here to figure the reduction in operating cost due to the application of weatherstripping, as this varies greatly depending on how the plant is operated.