TABLE 18. INFILTRATION THROUGH ROLLED SECTION STEEL WINDOWS

Per Foot of Crack of Ventilating Sash

	Wind Velocity Miles per Hour	Industrial Pivoted 1/16 in. Crack			Architectural Projected 3/64 in. Crack			Residential Casement 1/32 in. Crack			Heavy Casement Section Projected 1/32 in. Crack		
		Leakage Cu. Ft. per Hour	Heat Loss B.t.u. per Hour 0-70°F.	Sq. Ft. Radiation	Leakage Cu. Ft. per Hour	Heat Loss B.t.u. per Hour 0-70°F.	Sq. Ft. Radiation	Leakage Cu. Ft. per Hour	Heat Loss B.t.u. per Hour 0-70°F.	Sq. Ft. Radiation	Leakage Cu. Ft. per Hour	Heat Loss B.t.u. per Hour 0-70°F.	Sq. Ft. Radiation
PART I Values actually determined by Laboratory tests.	5	65	82	0.34	25	32	0.13	17	21	0.09	10	13	0.05
	10	135	170	0.71	65	82	0.34	40	50	0.21	30	38	0.16
	15	220	278	1.16	110	139	0.58	65	82	0.34	47	59	0.25
	20	305	384	1.60	145	183	0.76	95	120	0.50	68	86	0.36
	25	380	479	2.00	190	239	1.00	125	158	0.66	90	113	0.47
	30	465	586	2.44	260	328	1.37	160	202	0.84	120	151	0.63
PART II Values for practical use; test values reduced 20 per cent to allow for building up of pressure in room, etc.	5	52	66	0.27	20	26	0.10	14	17	0.07	8	10	0.04
	10	108	136	0.57	52	66	0.27	32	40	0.17	24	30	0.13
	15	176	222	0.93	88	111	0.46	52	66	0.27	38	47	0.20
	20	244	307	1.28	116	146	0.61	76	96	0.40	54	69	0.29
	25	304	383	1.60	152	191	0.80	100	126	0.53	72	90	0.38
	30	372	469	1.95	208	262	1.10	128	162	0.67	96	121	0.50

Note.—With reasonable care in installation, leakage at contacts where windows are attached to steel framework, and at mullions, is negligible. With 3/64 in. crack, representing poor installation, leakage at contact with steel framework is about one-third, and at mullions about one-sixth, of that given for industrial pivoted windows above.

TABLE 19. INFILTRATION THROUGH A HOLLOW METAL VERTICALLY PIVOTED STEEL WINDOW, INSTALLED IN A BUILDING

Wind Velocity Miles per Hour	Leakage Cu. Ft. per Hour per Foot of Crack	Heat Loss B.t.u. per Hour 0-70 Deg. Fahr.	Square Foot Radiation
5	29.5	37	0.15
10	88.5	112	0.47
15	144.5	182	0.76
20	186.0	234	0.98
25	221.5	279	1.16
30	242.0	305	1.27

containing the same values reduced by 20 per cent in accordance with the suggestion of the authors.

According to the authors of the papers: "The values given in the tables are from the tests as made and are probably somewhat higher than those actually found in practice. They represent the leakage when the pressure drop through the window is a certain value which represents a definite wind velocity at right angles to the window. If the wind strikes the window at an oblique angle the component of the velocity at right angles to the window must be considered. Pressure difference between the outside and the inside surfaces of the window for an actual wind will be slightly less for a given velocity because of a building up of pressure within the room before the air leaks out the opposite side of the building. Attention is called to the fact that air leaks in on the windward side of the building and out on the leeward side and, since wind will blow from various directions at different times, heating for any room having only one exposure must be based on the maximum loss. The heating plant, however, need not be figured on the sum of all maximum leakages, but in general only half of the total. However, the table gives accurate comparative figures which are probably not much too high for actual practice. In order to apply these values, a further study of the overall results as found in practice should be made, and the figures modified, if necessary, to fit practical conditions."

In their discussion of results on tests of double-hung wood sash windows as presented in the TRANSACTIONS, A. S. H. & V. E., Vol. 30, 1924, p. 313, the authors state:

"The principal facts brought out in the first report were that increasing the crack around the perimeter of a plain sash did not materially increase the leakage, and that weatherstripped sash, while permitting much less leakage, showed a small increase in leakage with increase in crack. These facts were established by making several hundred tests. The present report deals with the effect of increasing the width of the stile, that is, increasing the clearance.

"Fig. 5 illustrates what is meant by crack and clearance. The crack around the sash perimeter is equal to one half the difference between the width of the frame and the width of the sash, that is, the crack is the same on each side of the sash. The clearance is the difference between the width of the stile and the thickness of the sash. These terms are chosen arbitrarily to distinguish the two principal air passages which are found in double-hung windows.