TABLE 1. WINTER CLIMATIC CONDITIONS[a]—(CONCLUDED)

Col. 1 Prov. of Canada	Col. 2 Station[b]	Col. 3 Elevation[c] ft	Col. 4 Period of Record[d]	Col. 5 Lowest Temp. on Record[d] °F	Col. 6 Average Annual Min. Temp.[e] °F	Col. 7 Winter Design Temp.[n] 1% °F	Col. 8 2½% °F	Col. 9 5% °F	Col. 10 10% °F	Col. 11 Avg. Wind Vel.[o] Mph
Ont.	North Bay.....A	1210[c]	1925–1950	−46	−33	−24	−20	−16	−11	11.3
	Ottawa.....A	339[c]	1921–1950	−38	−26	−18	−15	−11	−7	11.1
	Peterborough.....C	648[c]	1921–1950	−38	−21	−15	−11	−6	−1	
	Sioux Lookout.....A	1227[c]	1931–1950	−50	−39	−38	−33	−29	−24	8.5
	Sudbury.....C	837[c]	1921–1950	−45		−21	−17	−12	−5	
	Timmins.....C	1100[c]	1921–1950	−55	−34	−30	−26	−22	−17	
	Toronto.....C	379[c]	1921–1950	−22	−7	−4	0	5	10	14.1
	Toronto.....A	578[c]	1938–1950	−24	−13	−9	−4	1	6	12.1
	Windsor.....A	637[c]	1921–1950	−10	−2	0	3	7	11	12.3
P. E. I.	Charlottetown.....C	74[c]	1921–1950	−23	−11	−6	−3	0	4	11.3
Que.	Arvida.....C	375[c]	1932–1950	−42	−31	−23	−19	−16	−11	8.2
	Knob Lake.....A	1605[c]	1948–1950	−59	−48	−44	−40	−34	−30	
	Mont Joli.....A	150[c]	1943–1950	−28		+14	−11	−8	−3	13.3
	Montreal.....C	187[c]	1921–1950	−29	−16	−12	−9	−6	−2	12.3
	Montreal.....A	98[c]	1942–1950	−28	−20	−14	−11	−8	−4	13.1
	Port Harrison.....C	66[c]	1942–1950	−49	−42	−43	−39	−35	−31	13.4
	Quebec City.....C	296[c]	1921–1950	−32	−19	−16	−12	−9	−4	12.4
	Seven Islands.....A	190[c]	1944–1950	−43		−23	−20	−17	−12	
	Sherbrooke.....C	620[c]	1921–1950	−39	−24	−15	−12	−9	−5	8.2
	Three Rivers.....C	50[c]	1921–1950	−43	−24	−17	−13	−10	−5	
Sask.	Prince Albert.....A	1414[c]	1921–1950	−56	−46	−48	−41	−37	−30	4.9
	Regina.....A	1884[c]	1921–1950	−54	−39	−39	−34	−30	−25	12.1
	Saskatoon.....A	1645[c]	1921–1950	−54	−41	−45	−37	−33	−26	9.7
	Swift Current.....A	2677[c]	1921–1950	−54	−34	−39	−33	−29	−24	14.6
Y. T.	Dawson.....C	1062[c]	1921–1950	−73	−54	−62	−56	−50	−39	
	Whitehorse.....A	2289[c]	1941–1950	−62	−51	−49	−43	−37	−26	8.7

[a] United States data compiled from *U. S. Weather Bureau* Records for years indicated, and Canadian data from the Climatological Atlas of Canada for years indicated.

[b] Col. 2. The stations followed by letter A are airport stations; all others are city office stations and are followed by letter C.

[c] Col. 3. The elevations marked c are ground elevations of the station. All other elevations given are the actual elevations of the thermometer bulb above mean sea level.

[d] Col. 4. The periods of record indicated apply only to the lowest temperature ever recorded shown in Col. 5, and generally extend from a summer month of the first year indicated through the spring months of the last year indicated. The periods marked by * terminated in December of the year indicated

[e] Average of readings of one lowest temperature obtained for each year for period of record. For Canada, in some cases, more than one location have been used.

[f] For period October to April, inclusive.

[g] It should be noted that Col. 8 applies only to airports, as these data for city stations are not available at this time. The temperature shown is the minimum hourly out-door temperature which has been equalled or exceeded 97½ percent of the total hours in December, January and February for the period of record. It is pointed out that in most cases the airport stations are outside of the city and these data would apply primarily to rural areas.

[h] Col. 9 indicates the maximum wind velocity which occurred at temperatures the same as, and lower than, the temperatures shown in Col. 8.

[i] Col. 10 records design temperatures in use by A.S.H.V.E. Members as reported by Chapter Secretaries for the various stations. Where these were not available the design temperatures from an *ACRMA* publication and various other sources have been inserted.

[j] The wind velocities indicated in Col. 11 were furnished by the *U. S. Weather Bureau* and corrected through Feb. 1948.

[k] A bulletin prepared by A.S.H.V.E. and *U. S. Weather Bureau* for annual weather data of city of Detroit indicates 6 as design temperature based on Dec. to March, inclusive.

[m] Computed for Reading by Karl Shelley and O. F. Smith.

[n] The winter design temperatures for bases of 1, 2½, 5 and 10 percent are the Fahrenheit temperature values at or below which 1, 2½, 5 and 10 percent of the January hourly outdoor temperatures occur, for the 10 years 1941 to 1950. The tabulated values are based on hourly temperature observations for some of the cities and upon the difference between the mean monthly temperature and the design temperature for the remainder of the cities listed.

[o] Most of the wind speeds are based on periods ending in 1947 which are somewhat shorter than the periods for the minimum temperatures. The three months, December, January and February were used.

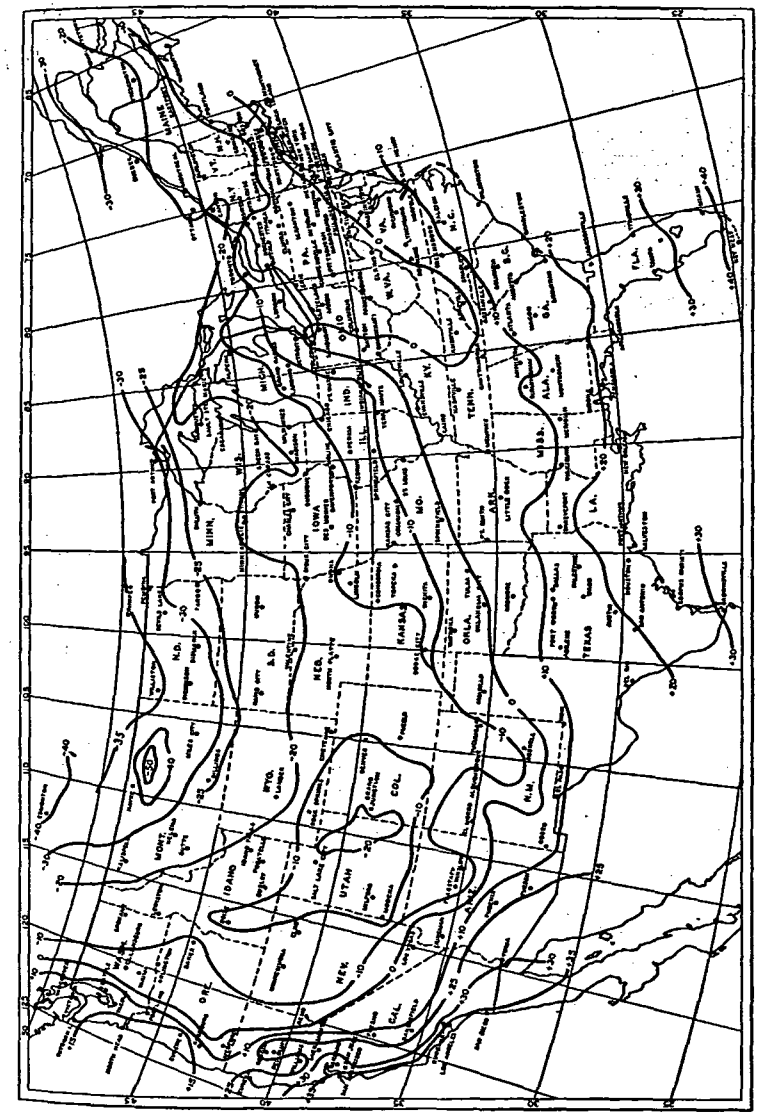

FIG. 1. ISOTHERMS OF WINTER OUTDOOR DESIGN TEMPERATURE

tween the 0 F and 10 F isotherms would normally have a design temperature of 5 F although sharp changes in elevation must be taken into consideration in mountainous areas where large differences in climate may occur within relatively small distances. This map will be of considerable value in selecting design temperatures for cities and towns not listed in Table 1.

The design temperatures in Column 10 of Table 1 are often used with a design wind velocity of 15 mph. However, Column 11 shows that the