

unimportant. With thousands of British and continental emigrants, it alone suffices to determine their choice of the far West to Canada, and many a young Canadian farmer has gone to Iowa and Nebraska under the impression that these States are less subject to zero temperatures and untimely cold than his own country.

In producing in the minds of Englishmen an exaggerated idea of the cold of Canadian winters, probably the chief sinner was a former Governor of Upper Canada—Sir Francis Bond Head. In "The Emigrant," a book published when the public and personal interest in Canada as a field for immigration was at its height, and spicy and readable throughout, and doubly interesting to Canadians on account of its crude speculations and marvellous departures from "exactness," Sir Francis devotes much space to picturing the "awful intensity" of Canadian frosts. He may be pardoned his very crude philosophizing on the way Canadian ice goes on "accumulating cold" throughout the winter till at length it becomes "infinitely colder" than English ice, and how, though Lake Ontario does not freeze, "the temperature of the water sinks infinitely below the freezing point;" but when he tells how a company of soldiers had their faces frozen in walking a hundred yards, and how when writing his despatches in his warm house in Toronto, heated by stoves in every room, and hot air pipes besides, he has often found a lump of ice gathering under his pen, it is difficult to believe that the worthy ex-Governor is not emulating Munchausen. When so-called information can thus be given on the authority of a Governor, it is scarcely a matter for surprise that the *London Times* should refer to the possibility of the Americans, in case of war, crossing Lake Ontario on the ice; that the *London Illustrated News* should write of Canadians being clothed in bear-skins and deer-skins; or that a Philadelphia newspaper, in noticing the splendid display of Canadian fruits at the Centennial Exhibition, should state that "from far north Canada come grapes grown under glass." Even in late years the desire of travellers to embellish their narratives by imposing on the credulity of British readers in respect to Canadian cold has led to most astonishing exaggerations. A writer describing incidents in Quebec, where he had spent a year or more, states that "the mercury does not rise to zero for four months together." A famous Scottish singer whose name is almost a household word in the rural parts of Ontario, writing in a British magazine an account of a journey round the globe, crosses the Western States and is imprisoned on the railway near Chicago in a blizzard, which for intensity has never been equalled in Ontario, but he no sooner carries the record of his travels to the Canadian frontier at Sarnia than his sense of the credulity of his countrymen in regard to Canadian winters so overcomes him that he forthwith proceeds to describe a sleigh-ride in which he drove *over the tops of houses* buried in the snow.

Sources of information which are popularly looked upon as in great measure trustworthy are also affected by the popular delusion. In an article on the United States in the current edition of "Chambers's Encyclopedia," it is stated regarding the States surrounding the great lakes, that "in winter when the lakes are frozen over a degree of cold is experienced *greater* absolutely and relatively than anywhere else in the States." For this imaginary condition of things some explanation must be invented, and the excessive cold is said to be largely owing "to the low lying situation forming as it were a vast basin into which is poured from all sides the cold and therefore heavy currents of air chilled by terrestrial radiation during the winter season." Another article in the same excellent work refers to the lake region, with "its frozen lakes" forming in winter a truly unbroken continental mass.

One of the most popular errors in regard to the climate of North America is expressed in the saying, "the winters grow milder as you go West." With a slight exception, this saying is true only when the starting point is very far West, say beyond the Mississippi, or in the Red River Valley. It would be true for a starting point not far from the Atlantic coast were it not for the existence of the great lakes. The explanation of the last statement is that the Pacific and the Atlantic are unequal in their influence. East winds in our latitude are merely surface winds, blowing only a few hundred miles towards the cyclonic or low barometer areas which almost invariably travel from west to east. Hence the comparative warmth of the Atlantic is borne but a short distance inland. On the other hand the west wind is the prevailing wind of temperate latitudes, blowing not only along the surface but in the upper regions of the atmosphere. With the drift of the atmosphere, too, the cyclones move. Hence the ameliorating influence of the Pacific is carried far inland, almost to the centre of the continent. There the drift from the west begins to have a different action. In the interior of the continent great heat in summer and intense cold in winter are developed, and these are carried eastward. Were the continent unbroken, as in the case of Asia, the meridian of greatest cold would

lie near the eastern coast, about where the influence of the eastern ocean ceases to be felt. Here, however, lie the great lakes interposing their influence, cooling at one season of the year and warming at the other, against this drift of interior heat and cold, and throwing the meridian of greatest extremes back into the centre of the continent. So great is the influence of the lakes that not only is this the effect, but the lake region is more temperate than even the Hudson valley, Vermont, and the St. Lawrence districts, where the influence of the Atlantic is still somewhat appreciable. Therefore the winters grow milder as we advance on any parallel towards the lake country, but beyond the lake region to the Missouri valley, latitude for latitude and altitude for altitude, the winters become colder and colder till the relatively coldest region of the continent is reached. The winter isothermals of the lake region all curve far southward in the Mississippi and Missouri valleys. Niagara has as mild a winter mean as central Missouri, two hundred and fifty miles further south; Goderich and Hamilton as north-western Missouri and northern Kansas; Toronto as southern and central Iowa; and Algoma above latitude 46°, as Iowa and Nebraska in latitude 42° to 43°. Quotation of the mean temperature of January for a long series of years, from the American Signal Service, will convey clearly an idea of the comparative mildness of our lake country. The lower lake region embraces the basin of Lakes Erie and Ontario, from Cornwall westward to a little beyond Detroit; the upper lake region embraces the basin of Lakes Huron, Michigan and Superior. The Upper Mississippi valley is about 200 miles broad, and extends from Cairo, Illinois, to St. Paul; the Missouri valley comprises a similar breadth from southern Missouri to Fort Sully; the extreme north-west, or middle Missouri valley, Dakota and eastern Wyoming from Yankton northward. The latitude and the mean temperature of January for these districts are as follows:

| | Extent. | Mean Lat. | Mean temperature. |
|------------------------|------------|-----------|-------------------|
| Lower Lake region..... | 41° to 45° | 43° | 25°.1 |
| Upper Mississippi..... | 37° " 45° | 41° | 23°.9 |
| Lower Missouri..... | 37½° " 45° | 41°.15' | 19°.1 |
| Upper Lake region..... | 41° " 49° | 45° | 19°.6 |
| Middle Missouri..... | 41° " 49° | 45° | 5°.1 |

In general it may be said that the winters of Ontario are warmer than those of the Mississippi and Missouri valleys, two hundred to two hundred and fifty miles further south.

When extremes of cold are considered, the superiority of the Lake region of Ontario is even more marked than in regard to mean temperature. In the West intensely cold "snaps" are more frequent and much more severe, though the resident of Kansas, Iowa, Missouri or Illinois is apt, when shivering under a "cold wave," to look pityingly on even our part of Canada and remark, "what *must* the cold be up in Canada to-day." Last January was remarkable for cold both east and west, but the deficiency of warmth from the normal was even greater in Ontario than in the Western States; but, while the lowest temperature in Toronto and Windsor was only 13° below zero, and in Durham only 22°, over much of Missouri and Kansas and over nearly the whole of Nebraska and Iowa it was 32° below zero or even lower. In the past twelve years the lowest temperature in Toronto has been 18°.4; in Hamilton, 20°.5; in Windsor, 19°.5; and in the very mildest localities in the Province not below 12°. In the shorter period of eight years the western and south-western States show the following temperatures:—Cairo, Ill., 16°; St. Louis, Mo., 21°.5; Sedalia, Mo., 33°; West Leavenworth, Kansas, 29°; Lafayette, Ark., 17°; Louisville, Ky., 19°.5; Indianapolis, Ind., 25°; Omaha, Neb., 38°; and parts of Northern Illinois, 39°. It is needless, after citing these records of places in the west, every one of them further south than the extreme southern point of Ontario, to cite the still greater frosts of the Mississippi and Missouri in latitudes corresponding to those of Ontario. In brief, it may be said that east of the Rocky Mountains, it is only south and east of a line from Lake Erie to northern Texas that the mercury does not fall so low as in the milder parts of Ontario. Montreal, with its ice carnivals and reputation for frigidity in winter, has a winter warmer than the Mississippi on the same parallel, and its record for the same period shows no temperatures so low as Missouri. In fact, even in the excessive winter of 1875, when Illinois experienced 39° below zero, Montreal had no record lower than 24° below zero, and its very lowest in a long period of years is only 25°. What the thermometer reveals regarding the winter temperatures of Ontario and the west is reflected in vegetation. With the exception perhaps of the peach belt on the east shore of lake Michigan, the west has no peach districts north of Tennessee which compare in immunity from damaging frost with the peach districts of Lakes Ontario, Erie, and Huron. And while the winter-wheat belt in Ontario extends up to latitude 45°, in the West, beyond lake Michigan, it is bounded by the northern borders of Missouri and Kansas.

A second and very prevalent misconception, chiefly existing in Eng-