

mechanic has, until lately, received in this country. We have travelled over every part of the New England States and particularly noted how far better off in every way, is the native American to the Canadian mechanic. Every member of the family of the former, over a certain age, contributes by some Home Industry, with his or her earnings in whatever shape of industry it was been obtained, to add to the comfort of their home. There are few American mechanics who do not possess a comfortable *home-stead*, and in country villages, handsome cottages and gardens,—perfect models of neatness and comfort. We have frequently visited these homes, and therefore do not speak from hearsay, and have received therein that description of sensible and frugal hospitality which it would be well for many of us to imitate, where the wine bottle is never seen upon the table, the refreshments offered to their guests made by the hands of the hostess or her daughters, or gathered from a well cultivated garden. In almost every house of a well-to-do mechanic will be found a piano, a family well educated, and often some of them accomplished musicians. Have the means that have brought these comforts, these social enjoyments of a high order been gained by the head of the family alone? by no means—every member has been taught some useful trade or art, some Home Manufacture, the sale of which has afforded the additional means that have increased the comforts and pleasure of home. The American Mechanic is hardly ever at a loss to earn a livelihood during a time of depression, his ingenuity is for ever at work, and instead of being borne down by a falling off in business, he turns his attention to manufacturing many useful articles, which if not saleable at the time would realize money sooner or later. His whole industrial efforts are devoted to maintain himself until trade revived.

We by no means wish to draw any disparaging comparison between the Canadian and American mechanic, for we know full well that the States are indebted to the talent and experience of our own people,—which they have sought for and obtained at any price,—for the high position she at present holds in Arts and Manufactures. We simply wish to point out, in all kindness, that our mechanics are generally two deficient in those resources upon which they might fall back upon for a temporary support in a time like this, and to instil into their minds the great necessity of husbanding their means in times of prosperity. In a future number, therefore, it shall be our object to point out and illustrate the ways and means by which mechanic's family may, by Home Industry, always obtain sufficient employment to support themselves during times of depression, instead of passing their time in wearying idleness and despondency which too frequently leads to a greater misfortune still, namely

INTEMPERANCE.

THE WINDSOR HOTEL.—The following is a list of the contractors for this hotel:—Masonry, etc., Daniel Wilson; brickwork, T. W. Peel; ironwork, H. R. Ives & Co., plastering, W. J. Cook; painting, John Murphy; carpentering, John Allan; roofing, Joseph James & Co.; steam-heating, etc., C. Garth & Co.; ranges and kitchen utensils, Bramball, Dean & Co., Chicago; plumbing and gasfitting, Robert Mitchell & Co.; annunciators, speaking tubes, etc., the Western Electric Manufacturing Company, Chicago; air ducts, drains, etc., Daniel Wilson.

DRIVING BELTS.—A new style of machinery belt suggested by J. F. Reigart, of Washington, consists of a flexible wire or rope covered with balls of vulcanized rubber.

THE BRITISH NORTH AMERICAN BOUNDARY COMMISSION.

THE expedition organised by the British and United States Governments with the object of the determining and marking out of the course of the boundary between the territories of the two Powers, has long since concluded all the field operations, and the official reports are in a fair way towards completion, and we are in a position to lay the general results of the work before our readers. The staff of the British Commission consisted of Major Cameron, R.A., commissioner; Captain Anderson, R.E., chief; and Captain Featherstonhaugh, R.E., and Lieutenant Galway, R.E., assistant astronomers, as well as Captain Ward, R.E., secretary; Mr. G. Mercer Dawson, geologist; besides the surgeon and assistant surveyors, &c. The western portion of the boundary, extending from the Pacific to the Rocky Mountains, had been marked out by the previous Boundary Commission during the years 1858 to 1862. This constituted about one-third of the length of the entire boundary to be surveyed, but as we pointed out in *THE ENGINEER* of August 22, 1872, it might be estimated as furnishing about half the amount of work to be performed, for the labour entailed by clearing tracks 20ft. wide through the dense forest which covered the ground to the west to the Rocky Mountains was very great. The second expedition has accomplished its task, and has not disappointed any expectations as to time, having performed its active operations in one winter and two summer campaigns. To accomplish this, the officers have had to work under circumstances as difficult, and at times as harassing, as may well be conceived, so that the greatest credit is due to them, and especially to Captain Anderson, the chief astronomer, for the character and accuracy of the work he has done.

The work may be briefly summed up as follows: The boundary to be surveyed was divided into three sections, each of which furnished the work of one campaign. (1) Commencing at a position—A on the map—called north-west point, at the western extremity of the natural frontier line formed by the chain of lakes, the boundary runs due south till it arrives at 49 deg. N. latitude, at a point B which falls in the Lake of the Woods, when it turns due west along the forty-ninth parallel—which it never again leaves—passing over much open swamp and bad ground till it arrives at Pembina station, C, on the Red River, about ninety miles west of the Lake of the Woods. (2) The parallel forming the boundary was to be traced over wild prairie land till it arrived due south of the Wood Mountain—D on the map—about 440 miles west of Pembina, (3) The forty-ninth parallel, extending from the Wood Mountain to the eastern point E, determined by Major Haig and Captain Darrah at Akimani, west of Lake Waterton, which concluded the boundary to be traced, was about 400 miles in length, running over a good deal of prairie land, finally traversing the wooded country bordering the Rocky Mountains.

The plan of operations was to complete the hundred miles, crossing over the swamps in the winter 1872-73, when the frost admitted of the work being performed. A centre or base for further operations was then formed at Pembina. After the necessary preparations, the parties pushed over the second section, arriving at the Wood Mountain in the autumn of 1873, and then tracing their steps to Pembina, to winter and to obtain the necessary supplies for the third section of their work, which was accomplished in the autumn of 1874.

Many details connected with the first portion of the work will be found in extracts from Captain Anderson's report in the *Geographical Magazine*, October, 1874. We do not propose to go into such details, but rather to pass on to the final results. We give our readers to geographical features of the map brought out in the geographical report already in print. The English and American parties travelled together, establishing joint camps, and observing at the same stations, and there was no sensible discordance in their results. It may possibly be remembered by some readers that on the previous expedition, when the English and Americans took separate stations, a considerable disagreement was found in their results. This was found to be due to the effect produced on the level by the irregular formations of the ground of each position, which varied greatly at the part of the boundary. The same effect was very distinctly observable on this occasion, but it was less in amount, and it no longer constituted a disagreement between English and American astronomers, but rather it caused both to agree on the tracing of a slightly crooked parallel of latitude. This is not a serious matter, for even if the ground were a consideration, it may be presumed that each side would in turn get the benefit of the irregularity. The latitude observations were chiefly made with a zenith telescope, and the results, as far as we have seen, are excellent. The variation of a single obser-