

## THE WEATHER IN RELATION TO MUNICIPAL ENGINEERING.

Some of the most difficult problems for the engineer in Canada are the result of our weather conditions. The extremes of heat and cold and dry and wet develop conditions, and make it very difficult to design plants and carry on work. Commencing with this week's issue of *The Canadian Engineer* we purpose giving, for forty stations throughout Canada, the elevation of those stations above the sea level, and the average temperature at these stations a year ago, with particular attention to the dates of the highest and lowest temperatures. Together with this we expect to be able to give the departure from the average. The engineer frequently wishes to know the probable temperature conditions of the next few weeks. One of the best guides in this matter is the temperature of preceding years, and in this table we expect to be able to furnish him with information that may act as a guide.

In the second issue of each month we have been giving the precipitation of a number of stations throughout Canada. It is the interest which has been taken in this table of precipitation that has led us to follow it with a second table on temperatures, and we wish to thank Dr. R. F. Stupart and his assistants in the Meteorological Observatory, Toronto, for the assistance they have given us in this matter and the cheerful manner in which they furnished us with information.

## ROAD-MAKING.

In a recent issue of the "Daily Colonist," Victoria, B.C., Mr. H. P. Bell, C.E., of Victoria, made some very interesting statements on the question of road-building. There is, perhaps, no class of engineering in which the public are so interested as in the work of the highway engineer, and until the present there has been no engineering work carried on in such a haphazard way as the making of new roads. Our system of surveys, which require the running of block lines and placing the roads along these lines, irrespective of the contour of the country, inevitably leads to unsuitable gradients, except where the country is level.

For the first layout of a country the block system is the most suitable, but from a highway point of view the proper procedure would be to first locate the roads and survey the lines afterwards. It is not so important that the lots be all the same size as that the farmer and the teamster shall have the highway placed where the grades are easiest and the road high, dry and firm.

Many sections of Canada are anxious for the railways. Large bonuses have been, and are still being, paid for railway construction, but we do think with the same attention and a small amount of the same money spent on the location and re-location and construction of leading highways that the transportation problem would be much simplified.

With her scattered population and her wide territory, the highway problems of Canada assume immense proportions, but it would be a great saving if even now the Provincial Governments were to undertake the re-location and construction of many of our trunk highways.

## EDITORIAL NOTE.

In an interview at Halifax, James Kent, chief manager of the C.P.R. Telegraphs, made a very interesting statement in connection with train dispatching.

Mr. Kent stated that the C.P.R. would have, at the end of this year, 2,100 miles of single track train dispatching under the control of the telephone. This year alone the C.P.R. have converted some 800 miles of telegraph dispatching system into telephone dispatching system. It is claimed that the telephone dispatching gives better service, is more elastic, and just as safe as the former telegraphic methods.

## TAMPING.\*

By J. A. Roland, R.M., Sioux City, Iowa.

In looking back over the past fifteen or twenty years, a microscope is not necessary in order to discern great improvements in all departments of the North Western.

The standard of track and equipment has gradually moved upward, and the standard of efficiency required of employees has been "pegged ahead" from time to time, to meet new conditions as they have presented themselves.

Engines of 150 tons are replacing the old 50-ton locomotives; 100,000 pound capacity freight cars are replacing the old 30,000 or 40,000 pounds capacity cars; 100-pound rail is replacing the 50-pound and 60-pound metal, and so on down the line in all departments of the service of the road.

Track that was considered good fifteen or twenty years ago, at a speed of twenty-five to thirty-five miles per hour, with the comparatively light engines and cars, would be absolutely unsafe to-day under the engines and cars now used, and at a speed of fifty to seventy miles per hour.

It must be admitted that track is the foundation of a railroad, and without a good foundation, track cannot be maintained in the excellent condition required to-day.

With a well-built, sub-grade, a liberal coat of good ballast, ties of proper size and quality and rail of sufficient weight, it would seem that the responsibility of keeping the track in good condition rests largely with the men whose duty it is to tamp the ballast under the ties.

If there is any weakness in track repairs on the North Western to-day, that weakness lies in the tamping or lack of it.

A few years ago but little tamping was done, it being the custom to raise the track high, shovel ballast under the ties loosely—and let the trains do the tamping. This practice would invariably leave the track rough, as the settling of the track would be very uneven, and does not do at all on a modern railroad to-day.

In order to maintain track in good condition under the heavy traffic and fast speed to which it is subjected at the present time, it is absolutely necessary to place it in perfect surface, and if the raise is not in excess of one inch, to tamp every tie with a modern and approved type of tamping bar. This refers to gravel ballast.

The North Western advertises "the best of everything," which should include tamping bars, but I sometimes wonder if they are not being overlooked.

Being important tools on the section, they should be made of steel, properly formed, and the blades of different thicknesses, so as to pass under the ties and disturb the old bed as little as possible.

Track foremen will find it a paying investment to exercise patience and persistency in teaching their men the art of tamping, as poor tamping always results in rough track, which means a reflection upon the ability and experience of the foremen and a discredit to the qualifications of the road-master.

\*From the North Western Bulletin, Feb., 1910.