## The Handling of Snow and Care of Track in Winter.

Canadian Railway and Marine World for December contained two papers on this subject, written in competition for the prize offered by the Canadian Northern Ry. management to roadmasters on its lines east of Port Arthur, viz., the paper by R. J. Munroe, Roadmaster at Joliette, Que., to which the prize was awarded, and a paper by W. M. Jocklin, Track Inspector, Port Arthur, which was highly commended by the judges. Through the courtesy of L. C. Fritch, Assistant to President, C. N. R., we are enabled to publish in this issue four other papers which were submitted in the competition, as follows:—

## By H. B. Cassidy, Roadmaster, Quebec.

Cleaning tracks of ice and snow around frogs, switches and interlockers is very important, and should be handled promptly, as accumulation of snow in such places forms ice and strains the connecting parts around switches and guard rails. Prompt attention is required during stormy weather by men in charge to see that they are kept clear of snow and ice, and it is the duty of every roadmaster to impress upon foremen the necessity of attending to this work promptly. Where foremen allow carelessness to creep in, it is quickly noticed, switch points become strained and will not close properly, guard rails will turn out of their place and in such cases the track spreads, causing derailments. The only secret to this work is prompt attention and to have the work well done. The same applies to interlocking plants, otherwise the adjustment will be affected, very often doing away with the use of signals at a very particular time, necessitating the use of hand signals in stormy weather.

Leaky locomotives, particularly yard ones, are the worst enemy trackmen have, especially in this part of the country where there is so much snow and cold weather. Every effort should be made on the part of the mechanical department to avoid this, as it often necessitates extra men to keep tracks clear, thus increasing the maintenance of way department's pay roll. If the money expended in this way was applied to the leaky locomotives good results would be obtained.

Patrolling the Track.—Track should be patrolled by competent men every day. In the event of a foreman not being able to go over his section every day, it should be patrolled by a competent man, capable of knowing by the look of the track whether it is spreading or not during the winter.

The interested trackman endeavors to educate himself, and it has always been my policy to endeavor to educate every man to know the look of track and what causes it to spread, such as being out of line and surface, and what action the trains are liable to have on such track. Owing to our climate track often becomes very rough in the course of 24 hours; in this case the competent, interested man will be able to see at a glance what is liable to happen and report it to his foreman, who will make every effort, evan if other work should suffer, in order to get out and have the track shimmed and put back to proper shape again.

Shimming Track.—Every foreman should be carefully instructed in this work, shimming first the rail which is lowest, which is very often the case where track heaves badly, bringing it to surface, shimming joints, centres, and quarter, and havirg shim spiked to proper line by going back a short distance from the work to see that the line is maintained when the rails are

being spiked, every second tie shimmed and spiked and the other side brought to surface, shimmed in the same way, in all cases using the gauge. The work of fininshing the shimming can then be completed quickly. Shims should never be driven in by force but fitted so as to avoid raising or humping the rail. In bad curves or cuts, work of this nature should not be done without first being well protected.

A foreman should never undertake to shim a bad place that he cannot finish before the approach of a regular time card train. Good judgment must be used on his part and on the other hand he must not be so much afraid as to think that he cannot get through with a certain piece of work in the way of shimming before the arrival of a train.

Spikes must be put through all shims over ¼ in. and track well braced. Shimming 3 ins. and up should have a long shim every third tie, all the way underneath both rails, and every second tie as the shim gets greater. In doing heavy shimming such as this, the foreman must keep himself well protected by the use of proper signals.

Snow ploughs and flangers should be properly equipped and in readiness for the first storm of the season, and should always have a clawbar, spiking hammer, track gauge, two track wrenches, some track spikes and bolts ready in the event of a derailment. A competent foreman should be in readiness and should have the privileges of going over the road a few times before it is necessary to run the plough, in order to be acquainted with the different changes along the line, such as sidings which have been put in and other changes made during the summer. Ploughs should only be run when really necessary, as it is known that there is no revenue from running them when they are not necessary, in this case good judgment must be used, as in many cases ploughs and flangers are not put over the road at the proper time. For example there may not be much of a storm and trains may get through with probably very slight delay. If the storm ends at that, the line should be cleaned out immediately, as locomotives team much better hauling trains, they are not picking up snow from the centre of the track nor bothered with side drifts, and it also gives section men an opportunity to get over their sections and see the conditions of their track and to perform the work required. If it is possible to keep trains running until the storm is over it is always better to do so and then make one run of the plough and clean the road. In extremely bad storms and where it is not advisable to cancel trains, ploughs should be kept running as often as possible to keep the road open.

It is an easy matter to throw 2 ft. or even more of snow out of a cut where a plough can be run at a fairly good rate of speed, in order to throw the snow far enough from the track, but if 2 ft. or more of snow gets into cuts and is allowed to remain there during a storm, it does not take long to fill the cut level, so that the running of ploughs frequently is necessary where cuts are bad and storms heavy. Great care should be taken when ploughs stall in the snow, to see that after being pulled out of the snow bank that there is no ice on the flange along the rails, and that the face of the snow bank where the plough backed out is broken with shovels, so as to avoid breaking the front of the plough or causing derailment from the ice in the flange when taking the second run into the bank.

By E. Meyers, Roadmaster, Toronto.

Drainage is an important matter in connection with maintenance of track. The track should be well drained at all seasons. All cuts and ditches should be well cleaned out in the autumn before the wet season sets in, and ditches well opened at the mouth of cuts, so that water may get away freely. Culverts snould also be well cleaned out in the autumn, and during the early part of the spring, ice and snow should be removed from culverts and mouths of ditches before the snow melts in the spring, so that the water can be freely drained off from the right of way.

Snow fences for cut protection should be erected 25 or 30 ft. outside of the right of way fence, according to the condition of the cutting. For instance, if it is a deep cut it will occupy a larger part of the right of way, whereas a small cut will not be nearly the width and not so open as a larger cut; there ore one has to use judgment as to the distance for setting up snow fence. All snow fencing should be erected before the frost sets deeply in the ground, and two stakes should be driven in, one at each end of fence panel, and the leg of snow fence nailed to the stake with one nail at each end, so as to prevent fencing being blown down by wind and broken. When taking down snow fencing in the spring it should be piled in small piles and on two old ties in a level spot, so as to not to warp the snow panels. The piles should be 200 ft. or more apart, as a protection in case of one pile taking fire.

Handling of Snow Ploughs and Flangers. -It is not advisable to have the same man assigned to operate both snow plough and flanger, as in the event of a heavy storm coming up while the flanger is out on the line with the snow plough man in charge, there might not be an experienced man available to take charge of the plough. Another reason is that a cheaper man can be obtained to run the flanger; for instance a section laborer should be taught to perform this work at laborer's rate which is much lower rate than that paid to a man competent to run a snow plough. The flanger should be run over the line often, as it is very cheaply handled and a great benefit to the track. Even if the flange is not very heavy, the flanger should be run in order to keep the flange free from accumulating hard snow and ice. With a bad flange it is difficult for trains to operate over the road with a heavy tonnage and it is also dangerous. Running the flanger quite frequently often saves the necessity of running the snow plough, and avoids a good deal of expense. Dispatchers should be kept posted in regard to storms by trainmen on the line, also by agents at different points, and should order out snow plough when necessary. During a heavy storm freight trains should be side tracked at once, until the snow plough has cleared the track and the storm has ceased. Freight trains which are left running on the main line during a storm often tie up the road for a long time, whereas if freight trains are side tracked and snow plough is kept running immediately ahead of passenger trains, the passenger service can be kept moving with little or no detention. For each division there should be two snow ploughs. From the Ottawa Division there should be a snow plough at Rosedale and one at Trenton, also one at Ottawa, and one at Trenton, for. Ottawa Division. One flanger at Trenton and one at Ottawa is quite sufficient.

Shimming is also an important feature of track maintenance. A track poorly shimmed is dangerous, and is often the cause of rails breaking and track spreading. Shim-