man should await his advice that this has been done before cutting off the engine. Car inspectors should be present to make an immediate examination and to bad order all defective brakes. Such repairs as ordinary brake pipe leaks, defective hose and wrong piston travel, which require little time, should be made, but cars requiring heavy brake repairs should be marked for the repair tracks.

Here is where judgment must be exercised, as perishable or other very important loads, as well as empties needed at once for such lading, must not be delayed. Neither should other less important cars be held in numbers far greater than the local force can repair in a day if such force is as great as the regular amount of work, including such repairs, would keep busy. The car foreman and the yard master should consult to adjust this, but when the former removes bad order marks without repairs having been made, he should fill out and apply an air brake defect card to better insure prompt repairs at the earliest practicable date. However, it does not follow that the repairing of defective brakes cannot be done without delay to cars which should go forward promptly. The Minneapolis, St. Paul & Sault Ste. Marie has largely solved this problem at an important terminal yard by assigning a short track in the yard for air brake repairs to such cars. With a few men and the necessary repair materials, such cars are often ready for the first train out, are never actually delayed, and few are allowed to go forward without repairs. This is but one detail of a very comprehensive scheme of improvement in freight brake maintenance effected by this road.

As one repair point on a large system cannot maintain all freight car brakes, it is obvious that each terminal should do its share, but this does not mean that other than the outgoing test should be made on through trains at the points with small facilities. A brake well repaired will go for a long period without becoming defective, but the too common failure to do so is due to inadequate repairs. To reduce the cost of brake cleaning by leaving cylinders and auxiliary reservoirs loose on the car is to insure leaky pipes. The same result follows if the brake pipe and retaining valve pipe are not well secured. That most serious fault, brake cylinder leakage, will develop sooner than it should, sometimes immediately after the cleaning, unless a suitable lubricant is employed and packing leathers are replaced when a good inspection and a careful test would show that they should be. The practice often followed of cleaning and testing triple valves on the car cannot insure good work. Neither is it common practice to test hose with soap suds while under maximum pressure and remove those found porous, or to examine the retaining valve weight and clean the case and small vent port. Until these and other details are given better attention in shops and on repair tracks, it will not be possible to effect the economy in time and money in terminal brake testing and the consequent repairs that will otherwise follow.

The M. C. B. requirement that cars in interchange must have retaining valves should imply the maintenance of this part and its pipe by the owning road. It is not sufficient to say that the mountain road may make needed repairs at the owners' expense, as this means undue delay to traffic. However, inspections show that the average efficiency of brakes is otherwise much lower on the cars of level grade roads, a condition for which there is no warrant as that for the average mountain grade road is enough below 100 per cent. efficiency to justify making it the minimum.

That the regular terminal test of freight train brakes misses many of the defects which nullify the object sought in attaching air brakes, is conclusively demonstrated by the following: Within a few months competent parties made a test on several freight trains at the summit of a mountain grade, following a similar test by regular inspectors at the preceding division terminal, and out of which trains bound down this grade were supposed to leave with 100 per cent. efficient brakes, based on such test. The tests consisted of charging to 70 lbs., making a service reduction of 15 lbs.

Per Cent Good Brakes by Test.		Tons per Good Brake by Test.		Cars per Train.
Standing.	Thermal.	Standing.	Thermal.	
97.7	68.8	42.6	59.5	61
91.0	75.0	45.0	54.6	56
100.0	60.0	40.7	67.6	58
98.1	53.7	42.5	77.6	54
98.1	52.8	43.8	81.5	53
96.4	53.5	41.7	75.0	56
88.9	67.2	46.2	61.2	55

and rapidly examining for any brakes failing to apply or leaking off and incorrect piston travel. To show conclusively the oversights of the ordinary terminal brake test the infallible thermal brake test was made on each train at the foot of the grade. The customary plan was there followed of considering three cars with "warm" wheels equal to one with "normal" wheels; that is with a good brake. In addition to showing the results in percentage, they are given in "tons per good brake," derived by dividing the train tonnage by the number of good brakes.

The first train was a test train and had 2,501 tons. The other six were regular trains and ran from 2,252 to 2,367 tons, averaging 2,286 tons. Each train had a considerable percentage of foreign cars. No tests of or repairs to retaining valves were made.

The big returns from good brakes are mainly concealed, consisting of the more expeditious train movement they make possible and the avoidance of accidents, neither of which can ordinarily be shown in dollars and cents. Their observable expenses, consisting of initial cost, maintenance, flat and cracked wheels and delays to cars and trains for brake testing and repairs, are so readily seen and tabulated as to generally render even more obscure their great but intangible credit account. The pressing need is for a more accurate and practical appreciation of the fact that good brake maintenance is economy and for better directed efforts toward improved brake maintenance with a minimum increase in time and money spent. In this the active cooperation of the yard master and the superintendent will aid greatly. Too often their efforts are directed toward showing why trains cannot be held or switching done for brake work, rather than how to accomplish the desired results with the least delay or additional switching.

THE CITY AND SUBURBS PLANS ACT.

The following is the text of the new Act respecting Surveys and Plans of Land in Certain Cities and Their Suburbs, passed by the Legislature of Ontario:

Where any person is desirous of surveying and subdividing into lots with a view to the registration of a plan of the survey and subdivision, any tract of land lying within or within five miles of a city, having a population of not less than 50,000, he shall submit a plan of the proposed survey and subdivision to the Ontario Railway and Municipal Board for its approval.

The Board shall have authority before approving of the proposed plan to require such changes to be made in it as the Board may deem proper as to:—