even multiple.

Now it will be seen that the time of the full load train between stations is as follows:—

Between	Eastbound.	Westbound.
St. Anne		
6.1	15.31	11.49
Giroux		
5.1	17.06	12.25
Labroquerie		
7.3	21.11	16.61
Marchand		
6.3	19.32	12.01
Bedford		

It is evident that the capacity of this line is determined by the amount of traffic which can be handled between Labroquerie and Marchand, in 24 hours, for this piece of line is the determining element on this district, as it requires the longest time to operate between these two stations, and no more tonnage can be hauled over the division, than can be hauled between these two points in a given time.

By a rearrangement of the passing tracks, this particular throat may be made to disappear, but the new throat will appear as the interval between passing tracks which takes the greatest time to operate, the ideal condition being reached when the time required to run between all passing tracks is equal.

The maximum tonnage over our particular district, assuming that no change is made in the passing tracks, can be determined as follows:—The time taken by an eastbound train between Labroquerie and Marchand is 21.11 mins., and by a westbound train 16.01 mins., and allowing 3 mins. for a train to head out of Labroquerie passing track, and 3 mins. to head in to Marchand passing track, the total time taken for two trains to run between these passing tracks is 43.72 mins., or an average of 21.86 mins. a train. If we let C be the tonnage capacity of the line in 24 hours; W, the average tonnage rating of the locomotive on the division; and T, the average time for a train, between the passing tracks which require the longest time to operate on a given district, then in the case above

$$C = \frac{60 \times 1200 \times 24}{T} = 79{,}056 \text{ tons, or } 54.9$$

tons a minute. If the clearance rule is in effect requiring inferior trains to clear superior trains by five mins., the tonnage will be reduced to 70,920 tons, a loss of 8,136 tons in the 24 hours.

The above is the result obtained by using one class of locomotive and with no interference from passenger trains. If we introduce one passenger train each way we will still further reduce the capacity of the line. For, assuming the speed of the passenger train will be 30 m.p.h. between the two stations above, the distance being 7.3 miles, it would take 14.6 mins. to run between the stations; that is the line between the two stations is tied up, so far as freight movement is concerned, for 14.6 mins. for each passenger, or in tons $54 \times 14.6 = 776$ tons cut off the 24 hour capacity of the line for each passenger train.

If we assume in our example, two passenger trains each way, the reduction in tonnage would be $776 \times 4 = 3{,}112$ tons, leaving now $70{,}920 - 3{,}112 = 67{,}808$ tons. The effect of the passenger trains to cause additional delay in this particular case will be very slight, and could probably be made to show no further delay, by careful scheduling, as this section is too short to get the effect. If a full division is being considered,

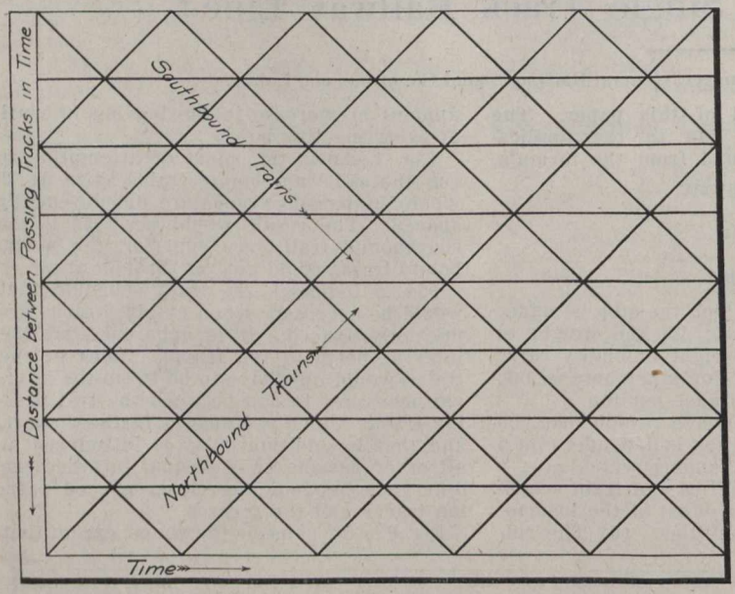

Fig. 2.—Passing Tracks Equally Spaced, with Leaving Time of Trains at Twice the Passing Track Interval Apart.

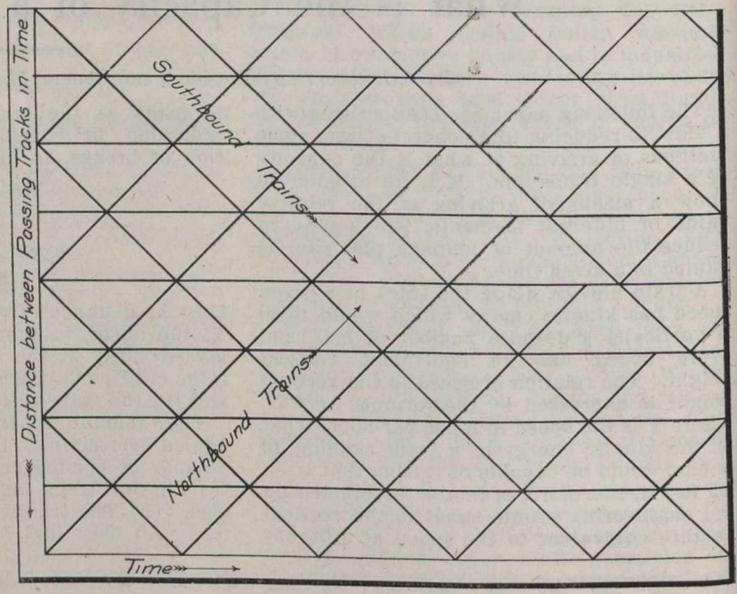

Fig. 3.—Effect on Northbound Trains of Increasing Intervals between Departure of Certain Southbound Trains.

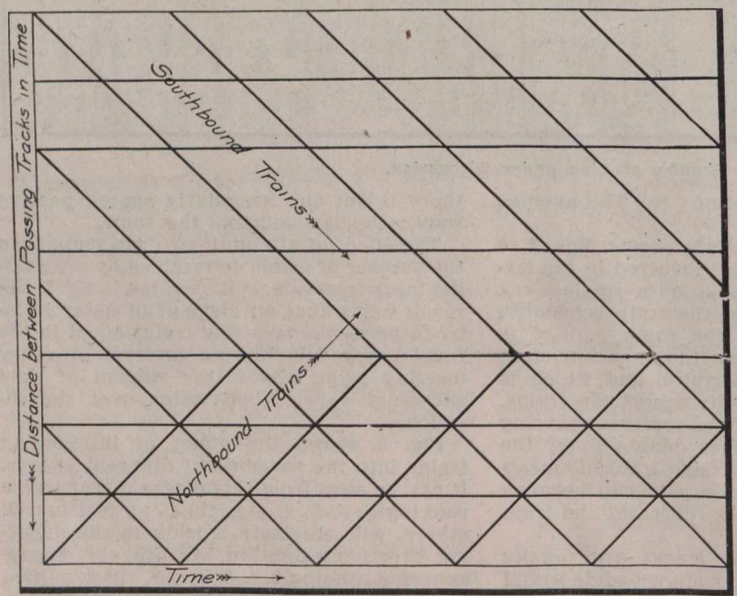

Fig. 4.—Effect of Attempting to Run Same Number of Trains as in Fig. 2 with Passing Tracks Unevenly Spaced.

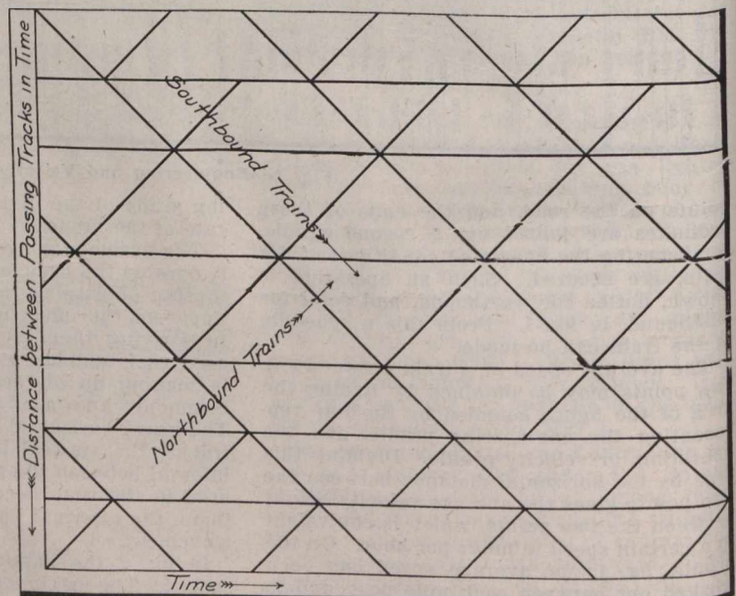

Fig. 5.—Train Schedule when Passing Tracks are Unevenly Spaced.