



ON THE QUESTION OF ADAPTATION OF RAILWAYS TO INCREASED COMMERCIAL TRAFFIC

(Concerning the note of the engineer Shukhtan in №№ 29–30).

The journal «Zheleznodorozhnoe delo» №№ 29–30 published a very interesting article of the engineer Shukhtan, entitled «Adaptation of railways to increased commercial traffic». This note represents an encouraging phenomenon, revealing a desire to put on the serious and scientific ground quite dark and little developed issues of construction and operation of the railways. We say «encouraging» in a general sense, as it is always encouraging to see how a ray of light breaks into the darkness, and particularly encouraging at the moment when one can often hear an opinion that everything can be achieved not by labor and knowledge, but by energy, and even severity, and if the situation is bad, it is only because of lack of adequate energy and efficiency that, according to this view, can conquer all.

In the note, which our attention was drawn to, among other things, an experiment on determination of the length of siding and passing tracks, depending on the size of the movement, was made.

This idea has a good base and requires further development, but we can proceed to it only empirically.

We can recognize the truth of that, the more correct is movement of trains performed, the more correct is the schedule executed, the less siding tracks are necessary in order to put the trains, which are late. On the other hand, the correctness of movement, at the moments of its violation due to different reasons, is likely to be recovered, where the number of siding tracks is enough and a late train does not block a way to another train on schedule. And as the correct movement of trains, i.e. the strict implementation of the schedule is dependent on a variety of reasons, many of which are at the mercy of God, then, consequently, precise arithmetical calculation for determination of the normal length of siding tracks cannot be done.

Therefore, it is necessary to go experimentally, empirically.

But, besides the method of calculation, which is offered by the author, it is necessary to add another. To determine the ratio of the number of hours of train delays to the number of train-kilometers, and to compare with a percentage of length of siding tracks to the total length of the railway. We are convinced that these two ratios will be in inverse proportion to each other.

It would be desirable to make such calculations for a large number of roads, and then we could get a series of numbers, which could find, although approximately, the common ratio of the length of siding tracks to the total length of the road.

But to get useful numbers we should take not the total number of siding tracks, many of which have special purpose, such as the tracks to load and unload, but only those tracks which are used for crossing and trains reception. Our thought can be confirmed with the following example from the practice of business¹).

In his article engineer Shukhtan gives the following figures: coefficient of useful siding tracks on Kursk-Kharkov-Azov road 2, on Tambov-Saratov 3,6.

We can certify for personal responsibility, that on Tambov-Saratov — delay of a freight train on the same haul of the traction area for an hour of time is an exceptional phenomenon on its rarity, whereas on Kursk-Kharkov-Azov the same one hour delay, is phenomenon, which is already comforting, as the rare train was late for three hours or more.

Let's assume such train delay on Azov road is affected by other reasons, but how much influence was made by the lack of siding tracks at stations can be easily seen from the fact that at it historically were developed official forms for telegraphic communication of chiefs of stations with each

¹ This question in our literature was extensively developed by I. I. Richter in art. «Technical organization of railway stations», «Zheleznodorozhnoe delo», 1883, pp. 149, 155, 166, 178, 185, 199, 213 and 234. In this article the author elaborated on the need for a precise study on the capacity of stations under available data about train delays, as well as on the need to supply reports with information, necessary for matching means and operations of stations of each road. Ed.

other with respect to the departure of trains, i.e. form of dispatches of requests and responses on the track for all sorts of cases of delays in the movement. Such forms would seem to be up to 20, and many of them were related to different cases of overloading of stations with cars.

The historical way of drawing up such forms is clearly proved by the facts of the incidents that occurred because of this overloading. At the same time on Saratov road there were no cases of refusal to accept the train due to station overloading, and meanwhile the movement of Azov road at the section of Belgorod–Kursk is equivalent to the movement of Saratov road on the section Kirsanov–Tambov, since the maximum exchange in Kursk and Tambov is the same — 300 cars²).

So, based on this example, it is safe to say that a sufficient number of siding tracks, needed not only for increased but also for normal traffic, provides significant benefits in economic terms and saving unproductive lay-over of rolling stock, increasing its speed, and especially important in terms of safety.

In view of this the experience of study of this issue, at least empirically, can give beneficial results.

Turning to further comments of the engineer Shukhtan regarding the location of tracks at stations, we want to draw the reader's attention to the benefits that bring the individual turnout tracks for maneuvering in economic terms.

On Tambov–Saratov railway prior to 1883 the percentage of useless run to the total ranged from 35 to 40%. With the end of reconstruction of large stations, the base of which was mandatory arrangement of special turnout tracks, the road management could introduce an award for saving against 25% ratio of the useless run to the total. And from 10% to 15% of useless run, i.e. about 150 thousand miles a year, with the arrangement of turnout tracks have disappeared by themselves.

In addition, two shunting locomotives decreased on the road, i.e. its productive forces increased.

The same result, as far as we know, turned on Kharkov–Nikolaev road after the same reconstruction of its large stations. And this result is obtained because in case of special turnout tracks for maneuvering a producing steam locomotive runs non-stop for passing trains.

² In this case, not the contractual, but the actual maximum of exchange is more important. The number of loaded cars arriving from Azov road to Kursk very often exceeded and exceeds the contractual maximum, sometimes even up to 50%. Ed.

But the use of arrangement of special turnout tracks is not exhausted. A driver and a shunting master, without losing time in vain waiting for arrival of trains, are less fatigued, maneuvers are done carefully and accurately, than not only the cases of rolling stock damage decrease, but the trains are compiled more carefully. The cars in the train are selected in the directions of movement, placed in order of their destination, which decreases the maneuvers at the next stations.

There is no doubt that arrangement of special turnout tracts to maneuver at large stations, not only reduces the number of miles of useless run and increases the chances of safety, but has an effect on reducing the cost of rolling stock repair and accelerates its turnover³).

Let's turn to the comments about the manpower. This question is one of the most painful places of operation. On the one hand, severe economic law makes to reduce useless costs to support extra people, on the other — uneven movement on our roads puts the administration in a very difficult position.

In recent increased traffic it was even proposed to announce in newspapers a call for those wishing to enter a temporary service, with a condition of being subjected to a preliminary examination in the knowledge of traffic rules and signals. Such a method is certainly time consuming and risky in terms of the quality of those recruited through him.

Bowing before the law of the ruble, we at the same time openly say that we do not sympathize propagating custom of charging station chief and his assistant telegraphs.

This system is good only when the telegraph is replaced with the phone, as long as it resembles a dog in the fable of Krylov, who was hired to guard the yard, to heat furnaces and to water the cabbage, but has done neither the one nor the other, nor the third.

When a train passes through a station there are always moments when one and the same person has to be at the same time on the platform, and with the machine.

He will certainly disregard any of these duties and the administration needs to turn a blind eye on it, and this attitude acts in a defiling way on employees.

We are not convinced by the usefulness of such a compound of duties with examples of some foreign and Finnish railways. We had occasion to practice on one of the foreign roads with little traffic

³ See also above mentioned article of I. Richter. Ed.



and we say with certainty that the transfer of dispatches on this road went very badly, and when traffic was increasing, and the departure of the train also was also limping⁴).

In this respect, in our opinion, it is better to keep the proverb «*expensive and tasty, cheap and nasty*», the more that the high cost is not very large⁵).

We agree even less with the note's author in his opinion about shunting masters. The duties of these employees require high development of some personal qualities, namely, sharpness, speed, but not haste.

They need even a certain amount of daring, but calm and cold-blooded.

These qualities of the Russian people are common and it is easy to find such people, but it is necessary that shunting masters are well aware of their stations, so that it is all they have before their eyes, and therefore they can be elected only from among persons who served at the same station.

Sending from other roads will hardly help and only a very experienced and highly developed in its activity shunting master, after looking two or three days closer to the station, will get comfortable with it and remember it well.

In our opinion, the only remedy not to save in the number of employees in this category and while weak traffic to keep strong, shunting teams comprising of a shunting master, an assistant and one or even two couplers. The shunting team could not be less than three people.

Then, from one shunting team it is possible at the time of increased traffic to form two or even three.

The cost of supporting of strong in the number shunting teams during weak traffic can be performed by saving:

⁴ It seems that Finnish railways cannot be blamed for this lameness.

⁵ An important role is played here by the system of centralization of control of signals (not transfers), serving for the admission of trains at the station and release them from the station. In general, with a large length of our stations, obviously, too little is made in this respect. Then, regardless of the alignment of posts on telegraph with posts on motion, it is necessary to bear in mind that some of the maneuvers can be executable under the supervision of chief conductor — it does not contradict the existing rules — and, finally, that, in the case of preserving the received separation of duties of station employees on motion and telegraph, it would be quite appropriate to consider the telegraphists, as independent signalists, charging them with direct (without record of the station chief) transmitting information to an adjacent station, which is a simple notification without any administrative nature, namely, about arrival and departure of trains. Ed.

1) from the most successful maneuvers and therefore from the savings in locomotives' operation,

2) from a corresponding reduction in the number of switchers, as some switches at maneuvers can be served by couplers.

Thus, we will limit our comments on the curious article of the engineer Shukhtan and wish from the heart that his good initiative is not to be left without emulation, raised questions begin to be developed with the proposed method, by comparing the results of operation with its technical and administrative arrangement.

We should also wish that the reports of our roads allow more accurate data that would highlight little noticeable sides of operation. But we should wish even more the fulfillment of the author's thoughts expressed at the beginning of his note, i.e. that at the time of increased traffic overall transportation plans are built quickly, conformed to the actual possibility to enhance the carrying capacity of roads.

The greatest commercial carrying capacity of each road should be strictly defined and discussed. Carrying capacity of one road should be equalized with the carrying capacity of roads of further transportation of goods, and if this cannot be achieved, then that transit roads should not be blocked with useless loaded cars, which are enough and to spare and which lock transit in other areas and cause huge losses of trade and industry ruining individuals.

Using this way, we will avoid muddle and haste, which are the most against the Russian man.

But it is necessary in the preparation of such a plan to bear in mind the impossibility to achieve that on the whole vast expanse of Russia hundreds of moving trains went like clockwork. Who would draw its plan with this assumption, leaving no margin for violations of accuracy and timeliness of train movement, he falls into a big mistake. Compiler of such a plan should not forget that a favorable outcome is easy to get for a short time on one road of little length, but it is not possible — on a large length of the Russian network.

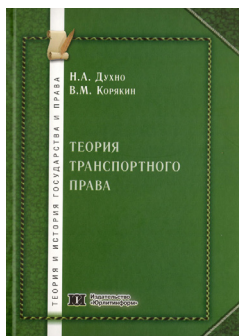
(*Zheleznodorozhnoe delo.* — 1892. — № 43–44. — pp. 438–440) ●

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