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Желѣзнодорожное Дѣло
ЖУРНАЛЪ

Engineering ideas 110 years ago focused on new solutions in the field of transport civil engineering, discussing design of railway tunnels under rivers, lakes, and sea straits. Not all of them have been built till now, e.g. the tunnel under Bering strait. Mechanical engineers thought about new type of wagons to carry perishable goods, and electrical engineers developed projects to use tidal energy as a source of power supply.

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Car for transporting live fish. – A petition of the French capitalist G. Gallio for permission to test a new improved wagon for transporting live fish over long distances on the railway between Astrakhan and St. Petersburg was filed with the Ministry of Railways. This wagon is a new one for railway technology, since it is designed for a significant amount of fish, up to 250 poods [pood is equal to 16 kg] and needs the equal amount of water, while existing similar wagons require 7 and 6 poods of water per pood of fish. The carrying capacity of the newly invented wagon reaches up to 750 poods, including 200 poods of a weight of a special device, which continuously supplies the tank with water and fish with ozone. G. Gallio had already got along with Astrakhan firm of Sapozhnikov about transporting a consignment of sterlet from Astrakhan to Petersburg, and then from Astrakhan to Paris *(Gol. Pravdy, No. 964, December 8, 1908).*

(Zheleznodorozhnoe delo [Railway Business], 1909, No. 1, p. 11).

Underground railways. – Allgemeine Zeitung devoted a large article to the issue of underground roads. The idea of constructing underground railways under rivers and sea straits might represent a news, the newspaper says, only because it has not yet found widespread application in practice. So far, there are only three such railways; all of them are located in the vicinity of New York and pass under sea channels.

From the beginning of the last century, this thought occupied the minds of scientists and technicians. As it is known, in 1802, the French engineer Mathieu presented to the Consul N. Bonaparte his project of a railway tunnel connecting England and France between the cities of Dover and Calais. But this project still remains in the field of speculation, as well as a number of others, for example, the project of connecting Italy and Sicily through an underground tunnel under the Strait of Messina; further – Spain and Morocco, through a tunnel under the Strait of Gibraltar; this project was developed in detail at one time, with the tunnel length being determined at 32 km, and the cost of 123 million francs; the project of James Burton, who set out to build an underwater underground tunnel 40,6 km long between Scotland and Ireland also made a lot of noise.

Of all the projects of this kind, the Danish project, involving construction of a double-track railway under the Great Belt Strait, has the best chance of a more or less expeditious

implementation. This road, which is supposed to connect the Danish islands of Zealand and Funen, will be 18 kilometers long and will reduce travel time between Copenhagen (located on the island of Zealand) and the Danish part of the continent by an hour and a half. The main significance of this road is strategic; due to it, Denmark will not, as now, be militarily completely dependent on the blockade by the enemy of the Strait of Belt. This consideration determines the success of the Danish project.

The most grandiose, not to say fantastic project, which so far has almost no chance of implementation, is the project of railway communication between Asia and America under the Bering Strait. At first it was supposed to build a railway bridge across the strait, but, in view of the danger posed by floating ice frequent in this area, it was required to abandon this plan once and for all – and stop on the only possible, at least, only conceivable project of the underwater underground tunnel. But the grandeur and fabulous courage of this project makes it at first glance completely impracticable, and only the many benefits that such a road promises to world trade make specialists work on development of this project. The main obstacle is not so much depth as the width of the Bering Strait, fluctuating between 75 and 92 kilometers. What can a tunnel of this length cost, under extremely adverse climatic conditions, one can imagine if we take into account that the largest of the existing tunnels – Simplon railway tunnel, is 19 kilometers long. Unsurprisingly, most tend to consider this project as an utopia; its future depends entirely on the success of technology and engineering *(SPb. Ved., No. 709)*.

(Zheleznodorozhnoe delo [Railway Business], 1909, No. 21–22, p. 136).

Use of the power of sea waves. – The Italian officer Edoardo Pirantello recently arranged a device on the coast of Rimini, aimed at utilizing the energy of sea waves. The Pirantello experiments, according to Technische Rundschau, have been successful; with the obtained energy, it was possible to light several light bulbs, as well as to decompose water electrolytically, using the resulting hydrogen to drive explosive engines. The experiments of Pirantello interested Italian society, and now a company has been formed in Florence that has set as its goal arrangement of new devices based on the model of the apparatus of the named inventor.

The main part of the apparatus is a pneumatic float of a special device; shock waves from this float are transmitted to the gear wheel, and the chain and wheel are arranged so that the teeth of the wheel move only in one specific direction, not responding to shock made by the waves in the opposite direction. The definite one-way rotational movement obtained in this way is transmitted to the flywheel and then receives the desired practical application. Further results of experiments with the new apparatus are still unknown, so it still does not seem possible to judge how the invention will turn out to be practical (*Vestnik putei soobshcheniya*, *No. 51, December 20, 1908*).

– In Zheleznodorozhnoe delo of 1897, p. 521, the same invention was reported to be made in England.

(Zheleznodorozhnoe delo [Railway Business], 1909, No. 7, p. 55). ●