

that across the Volga at Samara. It was built for the purpose of joining together the European and Asiatic railway systems.

Although it was finally decided to push ahead with the northern or Siberian route, in the first instance, the southern or Turkestan has since been extended eastward to Chinese Turkestan. This will, in the end, be the principal thoroughfare to the East, being more direct, and having many other advantages over that through Siberia.

While engaged in these studies, he became impressed with the fact that great areas in western Asia, formerly the home of the peoples who now inhabit Europe, had become desiccated and uninhabitable because of the loss of equilibrium between rainfall and evaporation, and that the same calamity was threatening southeastern Europe. Further examination showed that the only remedy for this state of things was to be found in restoring the water areas which, in past years, had furnished the requisite surfaces for evaporation, and thus supplied to the clouds the moisture for a greater rainfall.

He found that by excavating an artificial strait between the Black and Caspian seas, it would not only fill up and thus enlarge the water areas, but would supply means whereby the world's shipping could gain access to Moscow in Eastern Europe and to Orenburg in Western Asia.

These conclusions were shown to the Russian Government and were made the subject of an essay, published in the London Times, which attracted world-wide attention.

He afterwards formulated plans for ship navigation between Cronstadt and Riga in the North, and the Black Sea, at the South.

Later on, after returning to America, he took up the subject of subways for trolley railways and tunnel railways for the steam lines under Boston. These are now partly built and still others are under advisement, as the outcome of his labors in that behalf, in which he was the pioneer in America.

The great West had, however, so strongly attracted him that he went to Minnesota, where he formulated plans and conducted many surveys for bringing the Red River and the Upper Mississippi into navigable connection with Lake Superior.

It was while engaged in studies of these operations that he perfected the methods (now patented in the United States and in Canada) by which large barges and large ships can be safely, expeditiously and economically raised or lowered between very high and very low water-levels, and which he now proposes to utilize, in a short-cut shipway between Georgian Bay and Lake Ontario.

Since he has considered the need and importance of such a work, he has changed and revised the conclusion which he expressed in a report to the New York State Canal Commissioners made at their request a few years ago about the desirableness of enlarging the Erie Canal, but not about the methods proposed by him.