

INVESTMENTS AND FINANCE

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transportation is constantly springing up there and contributions of growing importance are being made to this commerce by Canada. Three of the northwestern Canadian provinces produced last year 453,000,000 bushels of grain, or slightly more than ten times the amount they produced in 1900. The railroads alone have found themselves unable to transport this volume of freight; hence a resort to the Great Lakes water route to Buffalo, and thence by rail to the seaboard. Already in Canada serious attention is being given to the problem of enlarging the Welland Canal, so that boats from the Great Lakes of large size may pass through it. An estimate shows that the needed improvements would cost about \$50,000,000. These improvements would give thirty feet of water and enable ships 300 feet long and 80 feet wide to pass through. Mr. Couly believes our own Government in time will cooperate with Canada in further improvements, leading eventually to a waterway which will make it possible to load cargoes of grain at the northwestern end of Lake Superior and carry them to Europe in one bottom. He does not believe it possible to make an estimate of any value as to the volume of ore that will eventually be brought down from Lake Superior before the deposits are exhausted.

THE ELECTRIFICATION OF RAILROADS

Railroad managers, looking to the future, are giving much thought to schemes

for electrification. Already much work of this sort has been done on the trunk lines for short distances from large cities. Notable among these roads are the New York Central, New Haven, and Long Island. Later enterprises are those which have been undertaken by the Norfolk and Western and St. Paul, in mountain regions where power is derived from running streams. A writer in the New York Times *Annalist* believes the country is "on the eve of big railway electrification." Managers may not be talking of immediate electrification—in fact, they are doing this only in a few instances. The talk in general "shades from mere curiosity to the point of getting advice about economies." A significant sign is the demand which has arisen for engineers who have already been engaged on steam railroad work, but are also skilled as electrical engineers. Among the interesting points set forth by *The Annalist* are the following:

"To do away with the smoke nuisance and the danger of steam locomotives in the half-tunnel, half-open line down into the center of New York, the New York Central and New Haven roads were forced by the local government to give up steam and adopt electricity. The railroads did not at first take kindly to the enforced change. To-day, with the great new terminal practically completed, with hundreds of suburban and distance trains running in and out daily through the two-decked tunnels, you will be told by the railway officials that steam operation into New York with present-day traffic would be impossible, and the nearest approach to satisfactory steam service would require real estate costing fifty times what electrification has cost.

"Because it can get long trains in motion quickly the electric locomotive can work them in and out of a terminal much more efficiently than a steam engine. But that is not the greatest difference in efficiency. The steam locomotive can run only a limited distance without having its fires pulled and an overhauling. The necessary getting about of the locomotive requires an addition to the trackage under the very best conditions. Electrification of a terminal that has reached its maximum capacity with steam locomotives is said to double and even treble its capacity. The steam locomotive has already given up the contest in congested terminal situations.

"Whenever the growth of metropolitan population has caused the capacity of terminals to be taxed, there is always a second reason for electrification; the reason for which the New York Central has electrified its suburban zone and for which all the railways centering at London are adopting the motive power. This comes out of the ability of the electric train to quickly stop and to quickly and smoothly get into motion again.

"The frank reason why the London roads are electrifying is that they must do it to get back traffic lost to the rival subway and omnibus system. The same thing has happened in a number of American situations. The Manhattan Elevated Railway in New York saved itself by electrification. The Long Island Railway met the competition of traction lines and built up a handsome income in the same way. The West Jersey and Sea Shore, owned by the Pennsylvania, turned deficits into profits by electrifying across New Jersey from Philadelphia to the coast resorts. The great steam locomotive has surrendered the operation of great tunnels to the electric locomotive. There

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are now 27 1/4 miles of electrified tunnels on seven American steam railways.

"The fighting ground at the moment in this country between the steam and the electric locomotive is in such mountain situations as the two in which electrification has just won out. There are scores of big situations like them in the United States where similar change of motive power will come within a short time. Here electricity is invading the field of freight haulage, where it was but a short time ago believed that the steam locomotive could never be approached."

THE WORLD'S RAILWAY MILEAGE

Statistics of new railway mileage for all the world indicate that, while the United States leads in actual figures of increase, the relative increase is not greatest here. The statistics come down no later than the year 1911, when activity was great. The total for the world in that year was 17,151 miles, the total mileage in existence for all countries being 665,842. Of the 17,151 miles constructed in 1911 there were built in this country 5,394 miles. As to relative increase, however, it appears that during five years our showing was only 7.3 per cent. of increase, while the increase for the whole world was 10.5 per cent. Of course, all this means that in relative increases, new countries, in which railroads are matters of quite recent years, naturally make the better showings. A writer in the *New York Times Annalist* says in detail:

"In this relative growth, it is interesting to note, the leadership is being taken by railroads of Asia and Africa, and prospects are that in the next few years these continents will be more prominent in the world's mileage expansion. From 1907 to 1911, in comparison with our own gain of 7.3 per cent., Asia increased 15.9 per cent., and Africa 37.3 per cent., the largest relative continental gain in the world.

"Most of Africa's relative gain is due to the roads of the South African Union (Cape Colony, Natal, Central South Africa, and Rhodesia), which expanded 39.9 per cent. in five years, and those of the German colonies, which increased 87.2 per cent. Moreover, the largest relative gain in the world is in Belgian Congo, which grew in five years by 91.1 per cent.

"After Africa and Asia, the largest relative continental gains for five years are Australia with 13.3 per cent., and North and South America with 11.0 per cent. Europe is the smallest, with only 5.6 per cent.

"Only one country in North and South America shows a smaller relative five years' growth than the United States, that being Newfoundland, with only 2.1 per cent. Against our 7.3 per cent. growth, on the other hand, Canada shows 13.1 per cent., Central America 27.2 per cent., the West Indies (Cuba, Dominican Republic, Porto Rico, Haiti, and Jamaica) 35.6 per cent., and the South American countries from 7.8 per cent. in Bolivia to 47.4 per cent. in Paraguay, the largest in the Western Hemisphere. Argentina is a close second with 43.5 per cent.

"As to actual mileage, the rank of the world's nations is unchanged. America possess by far the longest mileage in 1911 with 335,437 miles, of which the United States alone, the foremost railway country of the world, had 246,000 miles. This was 36,000 miles more than all the railroads of Europe, which totaled 210,000 miles. Asia possess 65,000 miles of railroad in 1911; Africa 25,000, and Australia 20,000 miles."

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