

BRAZIL RAILWAYS FEW IN NUMBER: SERVICE IS GOOD

Travel and Transportation in Biggest South American Republic

COUNTRY ON EVE OF GREAT BUILDING ERA

Has Not One-Twelfth of the Mileage of the United States. Territory Greater Than That of This Country and Has Far More Good Land in Proportion Than Here

The Great Chute to Santos—Strange Features of Travel in Tropical Mountains—On the Government Railways—A Big Company Managed by Americans—in the Heart of the Amazon Valley.

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WASHINGTON, D. C.

During the past few months I have traveled over the most important of the railway systems of Brazil. I have seen the best part of the trunk line that goes from Rio de Janeiro to Montevideo, and have gone north, west and south over the roads that radiate from the city of Sao Paulo. I went from Santos to Sao Paulo over a line that produces more revenue per mile than any other on the western hemisphere. It is only 124 miles long, but its dividends on its common stock are 14 per cent, and it pays a good rate on the preferred stock and bonds. That rail way is one of the best managed in all South America. There are few roads better built, and few that have cost so much or paid so well. The line is a broad gauge, and its average cost, including the terminals, has been more than \$150,000 per mile. The gross income now approximates \$40,000 a mile, and the traffic is bound to increase.

The Chute Sao Paulo road is the great coffee chute from the plantations to the sea. Along the Atlantic shores of Brazil runs a range of mountains two or three thousand feet high. Back of these mountains are great plateaus, the products of which have to be carried down to the seacoast. It is only here and there that there are passes in the mountains, and it is in these passes occur that the chief railroads are. They have been built from the ports to the interior to carry out the crops. This was the reason for the Sao Paulo railway. It was to take the coffee down to the steamers, and today, I venture, it transports perhaps half of all the coffee consumed by the world.

During the past season the road has been carrying from ten to twelve million pounds of coffee a day, and that down grades that render ordinary rail roading out of the question. The drop from the plateau to the sea is about 3,000 feet, and the most of this drop occurs within a distance of less than six miles. It is only on the plateau and coast levels that ordinary locomotives and ordinary trains can be used. The great climb is made in cars that run on cables from station to station much like the old cable street railways of the United States.

I took the train at Santos and was carried over a flat plain to the foot of the mountains, where the cars were attached to the cables. We crossed a steep ascent over four planes of equal length, the gradients being 8 or 10 per cent to the mile. When we arrived at the mountains the locomotive was taken off and the cars hauled up by a rope consisting of six strands of steel wire wrapped about a hemp cord. This rope was supported and guided by small wheels placed between the rails, and it was moved by engines at the several stations. Behind our train was a special locomotive to prevent our speedy descent if the wire ropes should

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fail, and there were brakes, automatic and otherwise, that gave us additional security. There were engine houses at the four stations and a car house at the bottom. I asked as to the maximum weight of the trains that were hauled up the incline and was told that it was about 145 tons. The usual train consists of six cars. These weigh 114 tons and the locomotive brake weighs thirty-one tons. The time taken on the incline is eight minutes, and the ordinary day's service provides for about 5,000 tons up and down. The road is now double tracked and there are plans for making a new road along the same route.

I venture there is no American trunk line that has better improvements than the Sao Paulo railway, and none which has cost so much in such a short distance. The grade is so steep and the rainfall so heavy that the roadway has been lined with drains and gutters from bottom to top. The gutters are of brick, and they are as beautifully constructed as those of a city park. The bricks are covered with tar to prevent the vegetation from springing up between them. The concrete work is equal to that of the Panama canal. In place the streams, flowing down the mountains, are carried under the track in pipes or in open work of concrete; and here and there long terraces of stone uphold the embankments. The culverts are as well finished as though they were in the streets of a city, and there are abutments and waterpools that look as though they were made by a sculptor.

The terminals of the road are of the same nature. The station at Sao Paulo is one of the finest in South America. The cars are finished like the Pullmans of the United States, and the engines are polished as though they were jewels.

The ride over the Sao Paulo railway is through some of the most beautiful scenery of the tropics. Leaving Santos on your way to the mountains you pass through a dense jungle of vegetation like that at the foot of the Himalayas. Everything is intensely tropical. The woods are so thick that you cannot see more than twenty feet from the track. Here and there tall palms rise above the other growth, and there are trees loaded with orchids of many varieties. The orchids seem to choose the dead trees as their homes. They wrap themselves around the gray limbs and make them green again. The same conditions obtain all the way up the mountains. On my way I saw millions of orchids and I could have gotten wagon load at any stop within a few yards of the track. They were free and I could have had all I wished for the asking. Some of the trees are bent down with the weight of the orchids. The trunks and branches are ground together with creepers and vines.

I went from Sao Paulo to Rio de Janeiro over the Central railway of Brazil. This road is owned by the federal government. It is about 1,200 miles long, and it carries over 25,000,000 passengers a year. It goes northward from the capital up the Rio Sao Francisco to Pirapora, a distance of about 600 miles, and from Rio southward to Sao Paulo, following the trunk line between the two chief cities of the republic.

The distance from Sao Paulo to Rio is about as far as from New York to Washington, and the trip takes twice as long and cost twice as much. Leaving Sao Paulo you travel all the way through the highlands. You pass through beautiful valleys spotted with trees, and in places the scenery is not unlike the rolling parts of Ohio and Pennsylvania. In the distance the trees look much like oaks, but when you come closer you see palms and bamboos and other tropical growth.

The more level land is devoted to farming. Here there are fenced fields with gates leading into them. The farmhouses are of brick covered with stucco. They are mostly small, those of the common people being of only one story and not more than fifteen feet square. There are many art hills. At these peaks they are hillocks, made to a height of two and three feet, and are often as regular as though they were made with the plow and the hoe. Now and then the railway crosses a coffee plantation. The trees cover the sides of the hills; their leaves are of such a bright green that they seem to be varnished. The plants grow well and produce abundantly.

which goes through the central portion, shocks stand up as in the states at harvest time. The town houses have gardens surrounding them. There are orchards of oranges and lemons as well as peaches and pears.

Along the track you pass now and then clumps of bamboo. There are often flowering trees near the stations. The crowds that come to the trains are typically Brazilian. They are dark faced and mallow. Some are negroes, and on the whole the crowd is not unlike that at any depot in our southern states. The most of the people dress in white cotton.

The travel is comfortable. Much of the rolling stock comes from our country, and the cars have their seats on both sides of aisles like our cars at home. The entrances are at the ends, and there is often a washroom in the middle. The engines are Baldwin imported from Philadelphia. On the train to Rio my conductor was a negro as black as any you will find in the Congo. He spoke English as well as Portuguese, and was very polite.

My ticket from Rio to Sao Paulo cost me over 4 cents a mile. The amount was over 32,000 reis, or a little less than \$10. This did not include my sleeper or baggage. The sleeping car rates are about 80 per night, and my trunk, which weighed 150 pounds, was charged for at the rate of 60. No baggage is carried free in Brazil. We had our meals on the train. They were served table d'hote style, at \$1.33 a plate, with an extra price for hard drinks. At most of the stations are restaurants, and at almost every stop coffee is served. The coffee comes in cups the size of half an egg shell. Each cup costs 2 cents.

Brazil is one of the great railway countries of the future. Its territory is greater than the United States proper, and it has far more good land in proportion to its size. Acre for acre, it will produce more food than the United States, and, cultivated intensively, it could feed and clothe the whole world. Nevertheless, it has only about 18,000 miles of railways in operation, and something like 2,000 more in projection or construction. It has not one twelfth as much track as we have, and it is at the beginning of its railway era.

The United States is already grid ironed with tracks, and we have, all told, a mileage of about 250,000. It would gridle the world about ten times. Our first road was built in 1830, and the first one in Brazil was not opened to traffic until twenty years later. The most of the railways of Brazil have been constructed within the past ten years, and from now on they will rapidly grow. At the time the European war broke out there were a number of new lines under way that have since been stopped for lack of funds.

In 1914, Brazil bought about \$9,000,000 worth of freight cars of the United States and Europe. Last year she bought only \$1,000,000 worth, and this year her purchases will be practically nothing. She imported \$11,000,000 worth of steel rails in 1914, and she is now buying none. Some of her large enterprises, for instance, the Brazil Railway Company, have gone into the hands of receivers, and it will need the advent of peace abroad to rejuvenate the era of railroad construction.

At the close of the war the roads will be pushed just as rapidly as money can be found to pay for the construction. Until now the capital for the public works of this continent has come from Europe. A large part has been from England, and another large part from France and Belgium. The Sao Paulo road, of which I have written, is owned in London, and the Brazil Railway Company, although it is managed by citizens of the United States, depends almost entirely upon Franco-Belgian capital. This company has a capital of \$50,000,000. It is incorporated in the State of Maine. The Germans own a short railroad in the southern part of the roads operating in the central states have been financed for the most part by Brazilians.

As it is now, the government owns or leases about 7,000 miles of the present system, and many of the other roads have been built by the aid of liberal concessions. In some cases the government guarantees an interest on bonds issued for constructing the lines, and in others it gives also concessions of lands. The Brazil Railway Company has received a grant of some millions of acres toward the construction of new lines in southern Brazil, and it has now under lease or in actual ownership more than a half million acres of forests, six million acres of possible farms and more than eight million acres said to be excellent pasture.

The Brazil Railway Company is especially interesting to the United States. It works under an American charter and its president is Mr. Percival Farquhar, of New York. The financial complications created by the war have thrown the company temporarily into the hands of receivers, but it is believed that it will weather the storm and yet be one of the great railway systems of the hemisphere. It is now the largest system in Brazil and one of the largest in South America. It consists of a consolidation of a number of the older railroads of Brazil, together with many extensions that have been made since the company was incorporated in 1906. Its main trunk already covers parts of the rich states of Sao Paulo, Parana, Santa Catharina and Rio Grande do Sul. It holds also an interest in the Paulista railway, of the state of Sao Paulo, and the Mag-

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URGE STRONGER GENERAL STAFF

(By the Associated Press.)

London, Dec. 18.—When General Sir Iver Herbert asked Premier Asquith in the House of Commons whether any steps had yet been taken to reconstruct the great general staff of the army, he expressed the popular impatience of the country over this question, which is worrying civilians as well as military men.

The Premier's reply that the size and effectiveness of the staff was being gradually increased did not entirely satisfy the extremists. Germany's efficiency in the war is largely traceable to its general staff, and no one here denies it. But the general staff is an integral part of Germany's government and of the autocratic system. Its success now is the result of methods worked out and practiced in time of peace. In England, such a general staff would have had small scope in peace times. There has been considerable loss of interest in the British way of managing campaigns, as critics point out. It is said that only the most general instructions were given to Field Marshal Sir John French, General Ian Hamilton, and the other expedition commanders. They were told little else than to inflict the greatest possible damage on the enemy by means that appeared best to their judgment.

The policy of the British staff heretofore has been, in accord with British tradition and British prejudice, to give all possible latitude to the commander, trusting him either to succeed by his genius, or at least to muddle through. Wellington's comparison of his own campaign to an improvised harness made of rope, easy to patch up, and Blucher's to a perfect set of harness which depends for success on not breaking, still holds true to a considerable extent, or did in the earlier stages of the war.

Professional soldiers have long advocated a general staff on the Teutonic plan for Great Britain, just as they have fought for conscription. Their professional bias leads them to believe that the empire's safety and power demands the military system. But the mass of the people, on the contrary, are content with a small army of subordinate influence in time of peace, backed by a militia system. They accept the staff idea either as a war measure or because they have only a vague idea of its meaning. At any rate, they believe it will prevent more blunders of the Dardanelles type.

While the general staff will probably not assume the power and influence of the German staff, if a considerable part of the empire's safety and power depends on the service with another, and of each expedition with the armies of the allies. No important movements will be undertaken on snap judgment, like the so-called Gallipoli "gamble," and the individual judgment of commanders will be subordinated to general plans of action worked out with the allies.

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Yana railway, which operates there and in Minas Geraes, having a length of more than a thousand miles. The company also owns the Madeira-Mamoré railroad in the wilds of the Upper Amazon, and it has projects to build lines through the states of Paragary, creating a vast system that will be of incalculable value to the republic. The opening up of Paragary will be accomplished by an extension of the present roads to the Iguaçu Falls, and a connection there with the Central railway of Paragary that now ends at Assunção. Other roads will be built into the great province of Mato Grosso, and all the rich states of southern Brazil will be developed by it.

Perhaps the most interesting of the properties associated with the Brazil Railway Company is the Madeira and Mamore railway. This road is located far in the backwoods of Brazil. It is situated thousands of miles up the Amazon, in the heart of a wilderness that produces a large part of the rubber of the world. It is only 226 miles long, but its location is such that it opens up thousands of miles of river navigation. It goes around the falls of the Madeira river, into which flow the three mighty streams known as the Moxos, Beni and the Madre de Dios, all of which originate on the eastern slopes of the Andes, and are navigable for long distances above the falls.

In the past the cargoes have been carried over the falls in large boats manned by crews of fifteen men each, but the waters are so rough that many lives and much freight have been annually lost. The railway will carry passengers and freight around the falls and will thus give a new outlet from the Amazon to the Atlantic. This will benefit not only Bolivia, but Mato Grosso as well. The boats will go from the falls down the Madeira river into the Amazon, and thence a thousand miles down the Amazon out to the sea. This road is now completed, and its earnings in 1914 were more than \$1,700,000, although it, like the parent road, is in the hands of a receiver today. The Brazil Railway Company has erected hospitals in connection with the construction, and they have had a large number of American doctors in attendance.

At the beginning of the work about 60 per cent of the laborers were taken down with fever, but toward the end the average sickness was reduced to less than 8 per cent, and a new regime of tropical sanitation was inaugurated. The government is anxious to extend the road from its southern terminus to Liberdade on the Beni river, and thus open a trade route of great importance to Bolivia. The latter republic has authorized the building of a railway from its capital at La Paz to some point on the Beni, and the two roads will give an eastern outlet for the trade of the high plateau of the Andes. Bolivia has other plans for the building of railroads through its eastern territory, which in union with those of Brazil will result in opening up the vast undeveloped and to a large extent unexplored country that borders the Andes from Argentina to Colombia.

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Col. Cameron Awaiting Cocks County's Action As To National Highway

Col. Bennahan Cameron, one of the sponsors for the national highway from San Diego to Washington and through North Carolina is much interested in reports from Cocks county, Tenn., where there is a fourteen mile gap to be improved. He has just received a clipping from the Knoxville Journal and Tribune which shows that the paper is urging Cocks county to cooperate in the work. Col. Cameron was in Knoxville in the latter part of November and made a speech urging the improvement of the road.

Roads have been voted. The sum of \$37,000 has been allotted to the Cocks county lap of the highway. But a division of opinion has arisen and it is proposed by some to use this money in completely improving a few miles. Col. Cameron and other advocates of the highway are asking that the whole fourteen miles be graded so that it can be used. When he spoke in Knoxville advocating this plan he called for a show of hands on the part of those who favored his view of the matter and was gratified to find that every person present raised his hand in approval. Col. Cameron told his audience that it was up to Cocks county to keep the faith, that North Carolina was doing so and Tennessee could not afford to do less. Decision is with the Cocks county commissioners.

The uncompleted portions in North Carolina are about two miles in Madison county and five miles in McDowell county, and the work of improving these gaps is going on.

The article in the Knoxville Journal and Tribune, which was very gratifying to Col. Cameron, was as follows:

"One of the most important pieces of road work now to be done in this state and one which would be worth thousands of dollars to Cocks county, Tennessee, is the completion of what is probably the last gap of the road which will

connect the west and north with the Carolinas. This is a fourteen mile stretch between Newport and the state line where the new road from Hot Springs, N. C. to the Tennessee line now ends with no possible connection through.

"Cocks county is expending \$37,000 on this road and if the road is made passable through to the state line it will be one of the most traveled thoroughfares in the South, as North Carolina will have her state highway finished from Hot Springs to Asheville by next summer, the only other incomplete gap to Asheville and eastern points being between Hot Springs and Marshall, on which convicts are at work.

"It has been reported, however, that the Cocks county road commissioners were considering using the money for this road in macadamizing part of this road as far as possible, which would probably take it only as far as Ded Rio, leaving the worst part between Ded Rio and the state line still impassable, instead of grading it all through at once and macadamizing later. Consequently their decision in this matter is an important one and will either mean that Cocks county will get hundreds of tourists or none at all next summer, and possibly for several years.

"With the completion of its eastern branch of the Dixie highway from Cincinnati and the Memphis to Bristol highway, both of which will be through to Knoxville will be anxious to get through to the Carolinas by this route which is the only route except that there is a chance of one through Greene county, there being a road now running from that county over which automobiles have made the trip into North Carolina near the Cocks county line. There has been some talk in Greene county of improving this road to get the tourist traffic in case the route through Cocks county is not made passable for automobiles. There is a valuable plus there ready

for one of these counties to pick as the general scramble of all communities to get on the big through highways has proven that there is a general awakening as to the great value to a community of the tourist traffic which not only leaves money where it passes, but advances the place and raises property values as well.

"It remains to be seen whether or not Cocks county will take advantage of her opportunity."

Banana Meal.

Perhaps banana meal will become a common article of diet. At my rate Kingston, Jamaica, has started into the business of making banana meal, and there the inhabitants pronounce it good. The town got to making banana meal because of bad conditions in the banana business. Not being able to dispose of all the bananas careful experiments were undertaken in flour. It was discovered that 537 pounds of bananas made 138 pounds of meal. The whole sale price was put at 4 cents per pound. The return is regarded as satisfactory.

The meal as a food is regarded with satisfaction when mixed with wheat flour. Cake and bread are made from the mixture, which is composed of the flour and meal in proportions of half and half, or in mixtures where somewhat less than half of the banana flour is used. The banana meal, according to the American consul at Kingston, makes excellent ginger cakes and ginger bread. As new foods are all the time being created, with greater or less success, perhaps banana meal will be one of the new ones. It has the advantage of being nutritious.

Foreign cables report a group of Harvard alumni gathered for its annual banquet in Paris on the night of the Harvard Yale football game at Cambridge.

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