

it is not surprising that some of the largest structures to-day require overhauling and in some cases reconstruction. Ample funds being available for the purpose, the next few years will be devoted to gradually replacing several of the bridges, relaying some portions of the track, lowering gradients and otherwise improving the physical condition of the line. The expenditure will be spread over a number of years, so that the dividend-earning capacity of the railway will not in any way be seriously interfered with.

Week by week and month by month the traffics on the Mexican Railway are showing an encouraging improvement, and it may be said with truth that no more careful or successful management is to be found than that in connection with this railway. The convenience and comfort of passengers are intelligently studied, while the handling of the heavy freight between the Port of Veracruz and the Capital is skilfully and carefully conducted. The passenger traffic of the Mexican Railway figures in the proportion of one-third in the general returns, the grand scenic journey between Veracruz and Mexico City being one of the greatest attractions for tourists.

The railway carries three classes of passengers, the third class numbering about 5 times as many as the first class, and about 7 times as many as the second class. Nevertheless, the total fares earned between the first- and third-class passengers show but little difference on balance. Upon a line which practically receives two-thirds of its earnings from the carriage of merchandise, the question of efficient rolling-stock naturally figures largely in the mind of the management. The rolling-stock is composed of the following: 88 engines, including passenger (29), goods (25), Fairlie double-header type (24), tank (2) and shunting (8); 75 passenger vehicles, including all classes, that is, first, second and third saloon, service, observation, postal and luggage; 1,360 goods vehicles (including a special order of 300 freight cars now being fulfilled and delivery of which commenced in June last), comprising goods, pulque, cattle, coal, wood, platform, and service wagons. The passenger coaches used upon this railway are constructed at the Company's own shops located at Apizaco. The Company has also this year started its own

CHAPTER XXXI

British-owned railways—The Mexican Railway—Track, rolling-stock, scenery and management—The Southern Railway—Scenic attractions—Future prospects—The “Merger” lines (the National, the International, and the Interoceanic Railways)—The National Tehuantepec Railway—Competition with Panama Canal.

THE Mexican Railway, one of the two wholly British-owned lines in the Republic, and which was the pioneer railway enterprise in Mexico, was commenced in 1857, the original concession being accompanied by a sufficiently handsome subvention for a term of 25 years, the Government, at the same time, agreeing not to subsidise any other railway between Veracruz and Mexico City, for 65 years from that date.

The length of track owned by the Mexican Railway is as follows:—

	Kilometres.	Completed (about).
Veracruz to Mexico City	424	1873
Apizaco to Puebla	47	1875
Ometusco to Pachuca	46	1890
Total	517	

The main line runs through the States of Veracruz, Puebla, Hidalgo and Mexico, serving *inter alia* the towns of Cordoba, San Marcos, Puebla, San Juan, Orizaba and Pachuca (branch line). The ruling grade varies from 1.2 between Apizaco and Puebla, and 4.5 between Zapote and Esperanza. Some of the most entrancing scenery in the world is traversed by this line for a great portion of its route, and so far as construction is concerned, the Mexican Railway may be regarded as one of the best-built and best-equipped lines in the country. Considering that its bridges, viaducts, and other constructional works have been in use for close upon half a century,

Express service, which had hitherto been conducted by the Wells Fargo Co.

The General Manager, Mr. Walter Morcom, who joined the Company on May 1st, 1904, has introduced from time to time many valuable improvements, bringing with him to his task some years of ripe railway experience, he having been upon one of the big Canadian lines, and more recently General Manager of the Mexican Southern Railway.

The Mexican Southern Railway, which, like the Mexican, is a British-owned enterprise, is the youngest line of all. It was registered as a joint-stock company in London in 1889, the concession having originally been granted in the name of the famous General Ulysses Grant, at one time President of the U.S.A., from whom it was acquired by Messrs. Read, Campbell and Company, Limited, of London, who later on transferred it to the present Company. Two years were expended in completing the line, which passes through an exceedingly difficult country, where some of the most formidable physical obstacles have had to be encountered and overcome.

The Southern line runs from the city of Puebla to the City of Oaxaca, the track being almost due east and paralleling the Interoceanic line as far as Amozoc. The grade commences to mount at this last-named place, after which it descends gradually until the line has fallen no less than 5,826 ft. to the lowest point, Quiotepec, which is but 1,767 ft. above the sea. In this journey some of the most majestic scenery is passed, the whole trip forming a succession of surprises and a peep into veritable wonderland. The Cañon de los Cues, with the deathly silence unbroken save by the laboured panting of the little locomotive, with no sign of life beyond perhaps the solitary eagle wheeling aloft like a speck of black against the deep azure of the sky; the awe-inspiring, stupendous masses of rock, conduce to form a picture which, no matter how often it be seen, nor how long it be studied, can never fail to impress the spectator with its savage magnificence.

The great Pass from the Cañon to the summit, Las Sedas, is reached only after a long and somewhat exhausting pull round many a sharp curve and across many a dangerous-

looking, but nevertheless perfectly safe, gorge. From Huitzo to Etila the grade is again downward, and thence onward the run is over a flat and tolerably smooth stretch of country. Wonderfully rich valleys are passed, where scarcely an uncultivated piece of land is to be found, the whole territory of Oaxaca through which the Southern Railway passes being a veritable Garden of Eden, green as an emerald, abundantly watered, and producing nearly every plant, vegetable and fruit known to man.

Passing as it does through so slightly populated a country, the traffics of the Southern Railway are nothing like as considerable as those of other lines of the Republic, but they are nevertheless increasing in importance, and in view of the opening-up of many new mines in the State of Oaxaca, in all probability the railway will shortly be called upon to carry heavy freights of machinery and appliances both for new railway construction and mining operations. The prospects of the line are undoubtedly brighter to-day than they have been since its inception, for a great field of activity has recently been opened between Oaxaca City and Ejutla, where the famous Taviche and other mining districts are being actively developed.

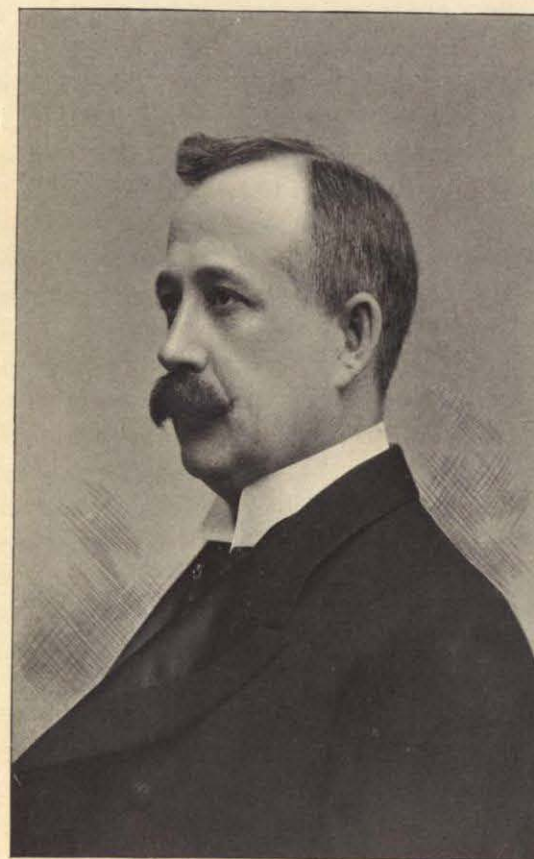
The management of the Mexican Southern Railway is in the hands of Mr. W. Morkill, who has been many years recognised as an able railway administrator. He keeps a keen eye upon all matters with a special view to reducing working expenses to as low a point as possible, commensurate with the efficient conduct of the railway. And the Southern, owing to the many miles of wholly unprofitable line through which it must run upon its way from Puebla to Oaxaca, needs especially careful and capable handling. This it undoubtedly receives.

The National Lines of Mexico, more popularly known as the "Merger," consist of the National, the International and the Interoceanic Systems, combined under one management, and in which the Government of the Republic hold, and have held since 1903, the preponderating interest. The National Railroad was conceived as far back as 1857, but it was several years before the conception resulted in any definite scheme of construction. Like most other railways built in the Republic,

with, perhaps, the single exception of the Mexican, the early days were fraught with serious financial troubles. The original Mexican National Construction Co., very soon after starting in business, found itself short of funds, and the well-known London house of Matheson and Co. had to come to the rescue. The organisation thenceforward went through a number of reconstructions, during which time, however, no cessation in track-building ensued, and the line was continually being added to. Out of the total length of 3,500 miles owned and worked by the National Lines of Mexico, the National claims 1,696, the principal lengths being as follows:—

Laredo to Mexico City, 803 miles; Monterey to Matamoros, 207 miles; Mexico City to Gonzalez, 232 miles; Acambaro to Uruapán, 143 miles; Laredo to Corpus Cristi, 160 miles; Cedral to Potrero, 12 miles; Vanegos to Machuda, 30 miles; Gonzalez to Jaral del Valle, 53 miles; Michoacán to Pacific, 56 miles—total, 1,696 miles. Considerable improvements and betterments have been introduced from time to time, and at present the National Railway are constructing in many different directions, notably the Jarita-Columbia branch, a length of 30 kilometres, which was completed and opened to traffic on July 1st this year. A new depôt is being constructed at Monterey at a cost of £15,000, while a steel bridge to effect a connection between the National lines and the St. Louis, Brownville and Mexican Railway is being constructed at a cost of £50,000. The Company's shops are situated at Santiago, a district of Mexico City, and have lately been completely overhauled and electrical machinery introduced.

The Interoceanic Railway was launched in 1888 by a special charter, the idea being to construct a line from Veracruz, on the Gulf of Mexico, to Acapulco on the Pacific Ocean, hence the title "Interoceanic." The line is, however, far short of its ultimate destination, and likely to remain so. It is owned by a British corporation, but it is managed, as I have said, by, and as part of, the National Lines. The track runs through a highly diversified kind of country, but unfortunately the Interoceanic is a narrow-gauge line, and before it can hope to enter as a strong competitor with other lines, such as the Mexican, it will have to be transformed into a broad-gauge. This it is proposed to effect as soon as financial resources



MR. M. V. WATSON, VICE-PRESIDENT UNITED STATES AND MEXICAN TRUST CO., KANSAS CITY.—see p. 276

permit. Moreover, many of the present curves will have to be straightened out, and bridges, culverts and other structural work will have to be materially altered and brought up-to-date. The total length of line operated is 736 miles.

From a dividend-paying point of view the Interoceanic has been sadly disappointing, and but for the fact that it is one of the group under Government ownership, in all probability by this time it would have gone into the hands of a receiver. The £10 ordinary shares stand at between 40s. and 45s., since, in front of them, are £1,000,000 of 7 per cent. cumulative preference shares, standing at £10 to £11, upon which nothing has been paid for some years, while for 1903-1904 only 6 per cent. was paid on the 7 per cent. B debentures, which naturally rank before the cumulative preference shares.

When the average rate of exchange advanced (in 1903) from 19½d. to 22¼d. per dollar, the earnings, translated into sterling, showed an advance from £65,439 to £147,626, being equal to 125½ per cent. This indicates sufficiently clearly what an extraordinary effect a stable monetary system has upon a foreign-owned railway company.

The following year (1904) the average rate of exchange rose yet further to about 23¾d. per dollar, as against the 22¼d. during the preceding year. The value of the Mexican dollar to-day is still higher (24d.), and the fact should be substantially reflected in the financial statement of the Interoceanic Railway for the present year.

The Interoceanic Railway, moreover, is year by year showing an advance both in its passenger and freight traffics, and is benefiting largely by the general prosperity of the country. As an instance of this it may be said that there was an increase of no less than £57,500 in nett receipts up to the end of June 1906, while the last twelve months have proved even more encouraging.

The International Railroad was designed with the same idea as the Interoceanic; but whereas the latter was intended to connect the two oceans, the Atlantic and Pacific, the former had the desire to consolidate the commercial relations of the two sister Republics, by connecting them by a line of railway—a bold and arduous undertaking, in truth; not only was it accomplished, however, but it disproved the

forecast of the Cassandras and Solomon Eagles by resulting in a profitable undertaking. Mr. C. P. Huntingdon, the great American Railway pioneer, was mainly instrumental in the construction of this line. It commenced operations in 1882, starting from the border town, Ciudad Porfirio Diaz, and, six years later, had extended as far as the town of Torreon (State of Coahuila), which is to-day one of the most prosperous and busy cities in the Republic. The next extension was to Durango, the centre of the rich mineral district of that name, which was reached in 1902. In 1900 the line was open as far as Santiago Papasquiario, and in 1902 it had reached Tepehuanes. The ultimate destination of the line, namely the Port of Mazatlán, on the Pacific coast, has not yet been attained; but so progressive has been the railway's career that it would only be just to assume that one day it may reach there. The International serves the rich coal-fields of Coahuila, and furnishes an outlet for the coal and coke of the famous San Esperanzas Mines. The mineral traffics of the railway are very considerable, and contribute more than two-thirds of its revenue. It has a number of branch lines, such as Reata to Monterey, 72 miles; Durango to Tepehuanes, 125 miles; Sabinas to Hondo, 14 miles; Tlahualilo to Torreon, 58 miles; San Pedro to Hornos, 15 miles; Horizonte to Bermejillo, 14 miles; Mandora to Cuatrociénegas, 42 miles; and Pedricena to Vilardeña, 6 miles. The business of the Company has shown remarkable improvement during the past seven years, and unquestionably the Mexican Government did a good stroke of business when it bought up so much of the stock of this line as an investment.

Of the International, as of the National and the Inter-oceanic Railways, it may be said that the management is in exceptionally strong and capable hands. Mr. E. N. Brown, President of the National Lines, is a thoroughly experienced, shrewd and painstaking official, and stands very high in the esteem of the railway and commercial community.

The Tehuantepec National is the latest completed line of the Republic, the official opening ceremonies in connection with it having been held as recently as the month of January of the current year. The route followed is practically the same as the road, which was painfully but patiently pursued

by Herman Cortés, the Spanish Conqueror. As a matter of fact, there is practically no other route which could have been adopted for any railway serving this part of the country. The history of the line is a particularly interesting one, in view of the fact that several contractors of various nationalities took up the enterprise from time to time, but one after another were compelled from physical difficulties or lack of sufficient means to carry it into effect. That the line was eventually built by a firm of British contractors is certainly a fact worth noting. The total length of the Tehuantepec Railway from the Port of Coatzacoalcos, on the Gulf of Mexico, to the Port of Salina Cruz, on the Pacific coast, is 304 kilometres (190 miles). There is also a small branch running from Juilo to San Juan Evangelista, a further distance of 28 kilometres. There are many engineering features of interest and a large number of bridges, for the mention of which, unfortunately, I have not sufficient space, but upon which I have touched at fuller length in other publications. The headquarters of the Railway are situated at Rincon Antonio.

Great alterations and improvements have been effected at the two ports of Coatzacoalcos (now known as Port Mexico) and Salina Cruz, in order to allow vessels to approach within reach of the wharves. In regard to these I have given full details in the chapter devoted to Ports and Harbours. The comparative distances which exist between other ports such as New York, New Orleans and Liverpool, and that of Panama, as compared with the distances via Tehuantepec, and the great saving in distance, and consequently in expense, effected, will be seen from the following table:

	VIA TEHUANTEPEC. Distances in Nautical Miles.	VIA PANAMA. Distances in Nautical Miles.
New York to San Francisco ...	4,226	5,495
" " Acapulco ...	2,363	3,613
" " Mazatlán ...	3,017	4,055
" " Yokohama ...	8,666	9,835
" " Honolulu ...	5,699	6,688
New Orleans to San Francisco ...	3,091	4,700
" " Acapulco ...	1,262	2,861
" " Mazatlán ...	1,759	3,458
Liverpool to San Francisco ...	7,182	8,038
" " Acapulco ...	5,274	6,085
" " Honolulu ...	8,511	9,263
" " Yokohama ...	11,478	12,500

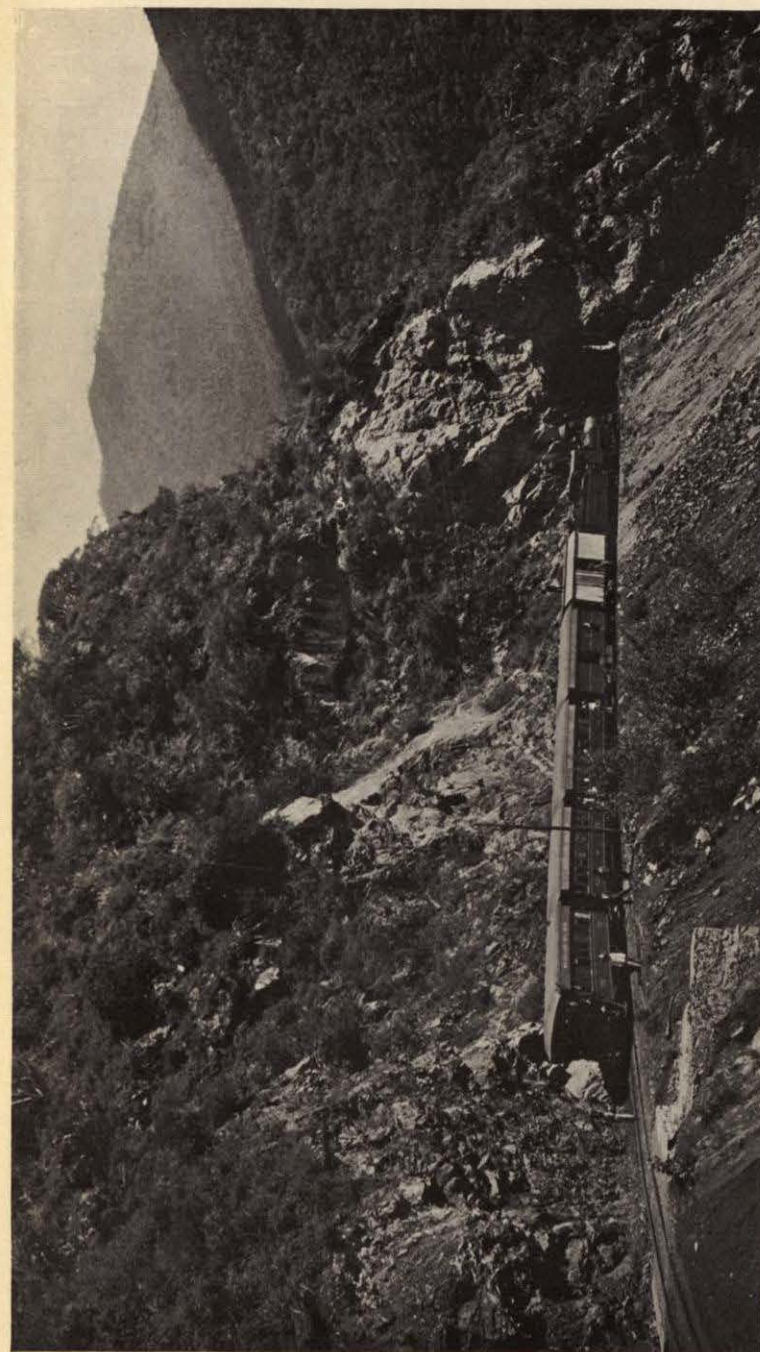
In other directions building is going on apparently without cessation. The Southern Pacific Railway has obtained a large number of concessions from the Mexican Government for the construction of lines in the northern part of the Republic. The principal of these is a concession to the Cananea, Rio Yaqui and Pacific Railroad Co., which is owned by the Southern Pacific, to construct the following lines:

- (1) From the town of Naco, on the boundary line between the United States of Mexico, and the important town of Cananea;
- (2) From the Port of Guaymas to Batamotal, following the course of the Yaqui River to Tonichi;
- (3) From the most convenient point on line (2) to Alamos;
- (4) From a point on line (3) to Agiabampo and Topolobampo;
- (5) From Tonichi to the frontier between San Bernardino and Agua Prista, and three branches, one to Nacozari, another to La Barranca, and the third to La Trinidad.

The Mexican Pacific Coast Railway Co. is also building in this district. Line (1) from Naco to Cananea, 38.6 miles, is already in operation. Line (2) from the junction with the Sonora Railroad, near Guaymas, to Tonichi, a distance of 159.5 miles; the route is under construction, but is open and in operation as far as Corral (the junction with the Alamos line), 63.4 miles. Grading and track-laying have been completed at Buenivista, a distance of 80 miles.

Line (3), Corral to Alamos, is a distance of 94 miles, of which 28 have been graded and completed, and 11 miles have been track-laid. The line between Corral and Mayo River has a maximum grade of $\frac{1}{2}$ of 1 per cent., and is part of the main line which the Company is completing to Guadalajara. A steel bridge, 1,070 feet long, is being constructed over the Yaqui River, and one of 800 feet will be required for the Mayo River crossing. Over 1,200 men are employed on the lines to Tonichi and Alamos.

The Southern Pacific Co. also holds the Mexican Pacific Coast Railway concession, granting permission to construct from Alamos, in the State of Sonora, to Guadalajara, in the



THE MEXICAN SOUTHERN RAILWAY: ON THE ROAD TO OAXACA FROM PUEBLA.—see p. 281.

State of Jalisco, touching at the City of Culiacán and Tepic and the Port of Mazatlán. From the junction point near Alamos to Guadalajara is 719 miles.

All the above lines are under the one management—viz., the Southern Pacific—but, unfortunately, it has proved itself more mindful of the interests of the “bosses” and their particular interests than of the public. The management at Tucson, Arizona, is generally unpopular, and its advent into Mexico is not regarded with overmuch enthusiasm either in railway or public circles.

The new Sonora Railway is to be constructed, 500 miles in length, to run from Carbo, a division point on the existing Sonora Railway, to Copet and Ures, and thence to some point in the valley of the Yaqui River. Construction work will be commenced from the Carbo end, and stretches of 100 miles constructed at one time. It is expected that the entire line will be completed within four years.

The National Lines of Mexico directors are seriously thinking of extensions in many new directions, and, no doubt, some will be forthcoming. The lines stand in need of three things particularly, the first being the extension into Guadalajara over the Hidalgo line; the broad-gauging of the Interoceanic line; and the extension of the Teziutlán branch of that route to the oilfields at Furbéro. Should the money not be forthcoming, however, to carry out the whole of these three plans during the present or the coming year, it is probable that an effort will be made to raise sufficient to build the line into Guadalajara. The line by the east coast is not pressing. The International Extensions contemplate a line from Tepehuanes to La Mésa de Sandia, the present terminus of the Parrál and Durango Railroad, in the north-western part of the State of Durango. A preliminary reconnaissance has been made by the engineering department, and it is believed that a suitable route touching the more profitable part of the district can be located.

Two important railway schemes are at present lying dormant for lack of sufficient means to carry them into effect, but at some date not far distant one or both is destined to be undertaken. The first is the Acapulco extension of the Mexican Central, and the other is the International extension to the

same port. The route to Acapulco is already completed as far as Balsas, on the river of that name, and the remaining distance to the port of Acapulco is short, though extremely difficult from an engineering point of view. The line would have to pass through the heart of the Sierra Madre mountains, and perhaps the most costly piece of line ever constructed in Mexico would be necessary.

A very heavy enterprise is the construction of the Veracruz Terminals, which, after many years' unsuccessful effort, have at last been determined upon. So far, I understand, the final plans have not been approved by the Government; but a corps of engineers is already at work at Veracruz surveying the ground on which the terminals will be built. The original plans have been changed many times at the suggestion of the several interests involved, and it is uncertain whether the definite approval has yet been obtained from all parties. So far as the Mexican Railway are concerned, they are out of the arrangement on account of having sold their interests for a cash sum to the Veracruz and Pacific Railroad, which is now a Government line; the Port interests have yet to come to an agreement.

In the State of Oaxaca half a dozen different lines, on a small scale, are being completed, extended or contemplated, mostly with the idea of tapping the rich mineral fields of the neighbourhood. When all these lines are joined-up with the Mexican Southern Railway by way of Ejutla, at the Oaxaca City Terminus, it will be possible to proceed direct from Mexico City to Salina Cruz, the present Pacific-coast terminus of the National Tehuantepec line. Some years must elapse, however, before this can be accomplished. The small mineral-lines to which I have referred are constructed more for immediate use than with any idea of permanency.

While construction is proceeding apace, as I have indicated, the fact must be mentioned that nearly every one of the railways is suffering from shortage of rolling-stock. Not even the Government lines are complete in this respect, and the shortage of cars continues to cause much complaint and dissatisfaction from one end of the Republic to the other. In fact, it frequently assumes very serious proportions, especially at harvest-time, when all the cars are requisitioned for service.

In the case of some of the mines in the State of Michoacan, notably the Esperanza, the absence of transport facilities means a considerable falling-off in the revenue of the undertaking, and a consequent loss to the shareholders. Shippers throughout Mexico are suffering through this paucity of railroad equipment, the seriousness of which may be gathered from the fact that the Mexican Central Line recently ordered over 2,000 additional cars, only 400 of which have been delivered; while the National Lines of Mexico are short of 1,800 cars, including 500 of the latest pattern dump-cars, 1,000 box-cars and 400 stack-cars.

The passenger-car shortage is felt very keenly on the narrow-gauge roads of the National system, and with the prospect of broad-gauging the narrow-gauge roads a fresh supply of narrow-gauge coaches is not desirable. Practically the same condition exists in the railroad world in Mexico as is complained of in the U.S.A., all the railways alike feeling the stringency occasioned by the Wagon and Steel companies being so full of orders that they cannot accept any others for another twelve or eighteen months. Some of the lines, such, for instance, as the Mexican Central, find it difficult at times to handle the enormous amount of freight offering, and this in spite of the new equipment which is continually arriving.