# BRAZILIAN TRACTION, LIGHT AND POWER

Company, Limited-



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1947



### BRAZILIAN TRACTION, LIGHT AND POWER

- COMPANY, LIMITED -

# ANNUAL 35<sup>th</sup> REPORT

FOR THE YEAR ENDED DECEMBER 31ST, 1947



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PURVIS HALL L D ARIES

JUN 4 1948

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### BRAZILIAN TRACTION, LIGHT AND POWER

-COMPANY, LIMITED-

(Incorporated under the Laws of the Dominion of Canada)

#### PRINCIPAL OPERATING SUBSIDIARIES

THE RIO DE JANEIRO TRAMWAY, LIGHT & POWER COMPANY, LIMITED
THE SÃO PAULO TRAMWAY, LIGHT & POWER COMPANY, LIMITED
BRAZILIAN TELEPHONE COMPANY
BRAZILIAN HYDRO ELECTRIC COMPANY, LIMITED
SÃO PAULO ELECTRIC COMPANY, LIMITED
THE SAN PAULO GAS COMPANY, LIMITED
THE CITY OF SANTOS IMPROVEMENTS COMPANY, LIMITED
SOCIÉTÉ ANONYME DU GAZ DE RIO DE JANEIRO
COMPANHIA FERRO CARRIL DO JARDIM BOTANICO

#### BOARD OF DIRECTORS

HENRY BORDEN, C.M.G., K.C.
E. G. BURTON, C.B.E.

JAMES A. ECCLES
E. C. FOX
G. BLAIR GORDON
WALTER GOW, K.C.
RT. HON, THE VISCOUNT GREENWOOD, P.C.

A. P. HOLT
S. H. LOGAN
C. D. MAGEE
BEVERLEY MATTHEWS, C.B.E., K.C.
W. E. PHILLIPS, C.B.E., D.S.O., M.C., LL.D.
H. B. STYLE
G. R. F. TROOP, C.A.

NORMAN D. WILSON

#### **OFFICERS**

President Henry Borden, C.M.G., K.C.

> Vice-President E. C. Fox

Vice-President (Administration)
ARNOLD GAINE, M.B.E.

Vice-President and Treasurer G. R. F. TROOP, C.A.

Secretary
OSBORNE MITCHELL

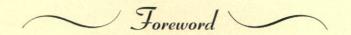
Assistants to the President
F. A. Schulman (Legal) C. H. N. Ashlin

Principal Bankers
The Canadian Bank of Commerce

General Solicitors
BLAKE, ANGLIN, OSLER AND CASSELS, TORONTO

Auditors Clarkson, Gordon & Co., Toronto

HEAD OFFICE - - - 25 King Street West, Toronto 1, Canada
LONDON AGENTS - - - - Canadian-Brazilian Services Limited,
147-8, Leadenhall Street, London,
E.C.3, England.



### BRAZILIAN TRACTION, LIGHT AND POWER COMPANY, LIMITED

is a Canadian corporation which through its Operating Companies has for upwards of 36 years been supplying electric energy, gas and tramway service in the highly industrialized and progressive states of Rio de Janeiro and São Paulo and in the Federal District of Rio de Janeiro as well as telephone service in these centres and in the state of Minas Geraes. These three states and the Federal District, situated in South-eastern Brazil, comprise an area of 342,000 square miles and have a population of approximately 20 millions. Included in this area are the cities of Rio de Janeiro, the capital city of Brazil, with a population of nearly 2 millions, São Paulo, the largest and most rapidly growing industrial centre in South America, with a population of approximately 1¾ million, and Santos, one of Brazil's most important seaports.

Through its Operating Companies, Brazilian Traction, Light and Power Company, Limited produces and distributes approximately 65% of the total power produced in Brazil and supplies over 80% of the telephones in service in the country.

# Thirty-fifth Annual Report

#### TO THE SHAREHOLDERS

Your directors submit herewith the following report on the Company's affairs, together with the audited financial statements for the year 1947 including the consolidated balance sheet of the Company and its operating subsidiary companies in Brazil as at 31st December, 1947. All figures in the report expressed in dollars are in United States currency unless otherwise indicated.

As may be seen from the information contained herein, the year 1947 has witnessed a further growth in the Company's services with the exception of transportation which shows a considerable reduction due to the relinquishing during the year of the tramway system in the city of São Paulo.

# Comparative Statement of Earnings 1944-1947

The following statement shows the combined earnings and charges of the operating companies and of Brazilian Traction for the past four years, excluding inter-company items.

	Year ended 31st December			
	1944	1945	1946	1947
Gross earnings from operations Interest on temporary investments Other miscellaneous income	\$58,342,514 690,306 140,381	\$65,150,899 807,746 221,733	\$78,253,700 689,508 117,673	\$92,578,431 359,489 144,388
Total Revenue	\$59,173,201	\$66,180,378	\$79,060,881	\$93,082,308
Less: Operating expenses including provision for taxes Depreciation	\$27,785,992 6,227,040 1,000,000	\$35,219,518 5,528,381 1,000,000	\$47,079,254 5,490,531 1,000,000	\$57,097,476 6,601,311 1,000,000
Total Operating expenses, depreciation and amortization	\$35,013,032	\$41,747,899	\$53,569,785	\$64,698,787
Net Revenue before capital charges	\$24,160,169	\$24,432,479	\$25,491,096	\$28,383,521
Less: Bond interest Sinking funds and other financial charges	\$ 1,483,700 742,251	\$ 1,455,845 764,118	\$ 1,464,359 925,256	\$ 1,435,429 966,708
Total Capital charges	\$ 2,225,951	\$ 2,219,963	\$ 2,389,615	\$ 2,402,137
Net Revenue for the year	\$21,934,218	\$22,212,516	\$23,101,481	\$25,981,384

Increase in gross earnings from operations for 1947 over 1946 amounted to 18.31% as compared with 20.11% for 1946 over 1945. This continuing increase was due to increased sales, increased tariffs and improved exchange rates over those prevailing during the first half of 1946.

Operating expenses for 1947 increased 21.28% over 1946 as compared with 33.67% for 1946 over 1945. This increase was principally due to rising labour costs and higher prices for materials. The following is a tabulation of percentage of total operating expenses before depreciation and amortization to gross earnings from operations over the past four years.

1944	1945	1946	1947
47.63%	54.06%	60.16%	61.67%

# Capital Expenditures and Loan Negotiations

The cash expenditures on capital account by the operating companies during the past four years were as follows:

1944 1945 1946 1947 \$11,944,742 \$19,439,456 \$34,069,204 \$47,986,435

Capital expenditures during 1947 were 18% higher than had been estimated at the beginning of the year due chiefly to increased cost of materials and increased payrolls resulting from the putting into effect of Sunday day of rest pay in August, to which reference is made later in this Report. In early October, 1947, steps were taken to curtail certain aspects of the construction programme, the most important of these being the Paraíba-Piraí diversion project, work on which was stopped.

Pending the completion of outside financing, the capital budget for 1948 has been set at \$30,000,000.

After careful consideration of the possibilities for large scale long-term financing, your Company entered into discussions with the International Bank for Reconstruction and Development with respect to obtaining capital for carrying out its hydro-electric and telephone construction programme in Brazil. As a result of these discussions the Company has made application to the International Bank for a loan designed to cover the foreign currency content (U.S. dollar and other non-Brazilian) of its capital expenditure programme for those services. The estimated amount required is the equivalent of between 75 and 90 million U.S. dollars for the years 1947 to 1951 inclusive. The proposed loan is conditioned upon a guarantee by the Brazilian Government of your Company's obligations to the International Bank.

The negotiations with the International Bank are still proceeding and a Bill is now before the Brazilian Congress under which authority is sought by the Brazilian Government to guarantee to the International Bank repayment of such a loan if satisfactorily negotiated.

The Annual Meeting in June will also be held as a special general meeting and the share-holders will be asked to sanction a borrowing by-law to enable the directors to conclude arrangements for borrowing from the International Bank when all details have been negotiated and the necessary legislation enacted in Brazil.

### Brazilian Exchange - 1947

The exchange situation during 1947 deteriorated considerably and there were delays in the liquidation of exchange commitments by banks. Regulations were issued in June instructing all banks dealing in exchange to turn over to the Bank of Brazil 30% of the export bills purchased by them. Subsequently, as from January 8th, 1948, this percentage was raised to 75%.

These regulations also introduced a system of priorities for the distribution of exchange and re-established restrictions in respect of remittances of capital, interest and profits. Once Government requirements have been met, top priority is given to payment of imports of articles deemed essential, followed immediately thereafter by remittances of the nature referred to above.

In November, 1947, the Finance Committee of the Chamber of Deputies approved a resolution, to become effective January 1st, 1948, reinstating the 5% tax on remittances, abolished in 1946. This tax is payable on transfers of funds for the payment of imports and will add

to the Company's operating and capital costs. It does not apply to remittances for interest, dividends and amortization of foreign capital invested in Brazil, nor to remittances in payment of certain basic materials essential to the country's welfare.

The cruzeiro at closing sight rates of exchange on New York and London on the 31st days of December in 1946 and 1947 stood as follows:

									1946	1947
Free Market on New York -	-	-		-	-	_	-	-	5.34 cents	5.34 cents
Free Market Sterling Area -	-	-	-	-	-	-	-	-	3-46/256d	3-47/256d

The current assets and liabilities of the operating companies in Brazil were valued at the end of the year in dollars at the closing sight rate on the "Free Market" for exchange on New York.

The combined earnings of the operating companies, expressed in dollars, which are published monthly and which also appear in total in the tabulated statement on page 4 of this report, are calculated at the remittance rate, or at the rate at which remittances could have been effected, for the month in which the earnings were made.

### Dividends Paid

In addition to the usual quarterly dividends on the small outstanding balance of the preference shares, two dividends were paid during the year on the ordinary shares of the Company, viz: \$1.00 on June 2nd and \$1.00 on December 1st (Canadian Funds).

# Electric Power Supply

The high rate of load growth, as commented on in the last report, has continued. The generation for 1947 compared with 1946 is shown by the following tabulation:

RIO SYSTEM			1946	1947	Increase Over 1946
Maximum Demand (kw) Energy (kwh)	-		231,600 1,177,000,000	260,700 1,316,000,000	29,100  or  12.6% 139,000,000  or  11.8%
SÃO PAULO SYSTEM  Maximum Demand (kw)  Energy (kwh)	-	-	384,000 2,169,000,000	424,000 2,358,000,000	40,000 or 10.4% 189,000,000 or 8.7%

In general, the river flows during the year were abundant due to the heavy rainfall of about 20% above average. As a result, at the end of 1947 the reserve storage in the reservoirs of both systems was greater than had been anticipated. In view of the substantial increase in the consumption of energy, this gain in water supply is a most opportune and favourable development which, in itself, has permitted some slowing down of the hydro-electric construction programme. It must be recognized, however, that the whole system is operating without any adequate spare capacity and there is a risk of being unable to maintain service in emergencies.

#### RIO SYSTEM

At the end of the year the total installed capacity of the Rio System was 296,816 kw. Of this amount 171,572 kw was in the high-head (1100 feet) Fontes power plant (formerly termed Lages plant) supplied from the Lages reservoir and 112,685 kw in the relatively low-head (105 feet) run-of-river Ilha dos Pombos plant. The balance of installed capacity is represented by the 12,000 kw reserve steam plant and three small hydro-electric plants.



FONTES POWERHOUSE SHOWING EXTENSION FOR THE NEW UNITS

FONTES POWERHOUSE SHOWING THE EXTENSION IN THE FOREGROUND WITH NEW UNITS



The capacity at the Fontes plant includes unit "C", of 35,000 kw nominal capacity, which went into service in March, 1947. Other work done during the year consisted of preparatory work on the powerhouse extension for future units and a further raising in height of the Lages dam to provide 18 feet of additional storage in the reservoir.

The installation of unit "D" in the Fontes plant, referred to in last year's report as probably being ready for service in 1949, has been postponed until the Paraíba-Piraí diversion becomes effective.

The Paraíba-Piraí diversion, mentioned in earlier reports, is briefly a means of providing water for the operation of future units at the Fontes power plant. By means of pumping in two stages with a total lift of 145 feet, water will be brought  $15\frac{1}{2}$  miles from the Paraíba River at a point called Santa Cecilia, to the Fontes power plant where it will develop power under a head of over 1000 feet. This project, which will utilize parts of existing water courses with reverse flow, will require the construction of pumping stations at Santa Cecilia and Vigário, with dams at Santa Cecilia, Sant'Ana and Vigário, a  $3\frac{1}{4}$  mile tunnel from Santa Cecilia to the Piraí River above the Sant'Ana dam, and tunnels from the upper end of the Vigário pool to the valve house at Fontes. When fully completed this long-range development will permit increasing the capacity of Fontes to roughly four times its present size, and a considerable amount of additional capacity will be added when the auxiliary plant of the Lages development is constructed a short distance downstream from the present Fontes plant. The complete development of the pumping project will result in the diversion and raising of 160 cubic metres of water per second from the Paraíba River with four units of equal rating in each pumping station. The initial stage will consist of one pumping unit in each location.







SANTA CECILIA DAM PIERS AND PUMP HOUSE FOUNDATIONS

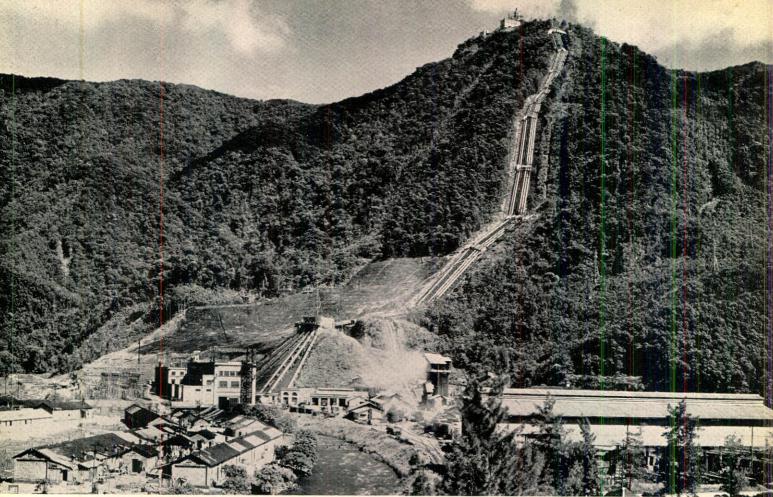
Construction work on the Paraíba-Piraí diversion project was carried on actively under contract with the Companhia Morrison-Knudsen do Brasil S.A. until early October, 1947, when it was decided, pending completion of further financing operations, to postpone this project, and the work was gradually brought to an orderly shutdown. All the preparatory work connected with this project was finished during the year, 2060 feet of the Santa Cecilia tunnel were driven, the access shaft for the Vigário tunnel was completed, and five out of nine main piers together with the base of the Santa Cecilia dam in the Paraíba River were placed. All this work was carried out in a satisfactory and expeditious manner and can be resumed, when conditions permit, with a minimum of extra expense.

Preparatory work for the installation of the fifth unit, rated 47,000 kW, in the Ilha dos Pombos plant was continued during the year. This unit was originally planned to come into service early in 1949, but according to the revised construction schedule it is not expected to be operating before 1950.

Principal additions to the Rio distribution system consisted of 7,590 kVA of distribution transformer capacity to supply the low voltage network, the installation of 87 conductor miles of overhead line and 4.6 miles of underground cable for the high voltage distribution services.

### SÃO PAULO SYSTEM

At the end of the year the total installed capacity of the São Paulo system was 460,650 kw. The principal generating station is the Serra do Cubatão high-head plant with an installed capacity of approximately 340,000 kw. Other principal hydro-electric stations in this system



SERRA DO CUBATÃO HYDRO-ELECTRIC PLANT SHOWING POWERHOUSE, PENSTOCKS AND SURGE TANK (STATIC HEAD 2358 FT.)

are: Itupararanga—56,124 kw, Parnaíba—26,172 kw, Rasgão—18,539 kw, Porto Gois—10,905 kw. The balance of the generating capacity is represented by a number of small hydroelectric plants, the Paula Souza reserve steam plant of 8,000 kw capacity, and a few Diesel sets of very small capacity in isolated areas. With the exception of the Serra do Cubatão plant, which operates from storage, lack of adequate river flow makes the firm capacities of the other plants mentioned somewhat less than the installed capacities.

The installed capacity at Serra do Cubatão given above includes the new generating unit of 65,000 kw which was placed in service in April, 1947. Notwithstanding this addition to the system capacity, the difficulties resulting from the demand exceeding the generating capacity of the plants still prevailed.

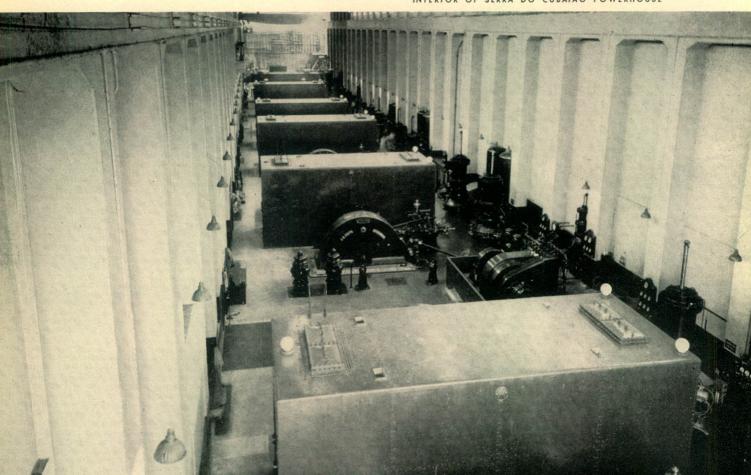
The installation of unit No. 6 at Serra do Cubatão (a duplicate of unit No. 4) with its penstock and powerhouse extension was carried out during the year and the unit was placed in service on April 22nd, 1948. Unit No. 8, also a duplicate machine, and the penstock for it are now in process of manufacture, but the date of completion and entry into service has been postponed to June, 1950.

During 1947 a major problem in foundation engineering was encountered in the vicinity of the Serra do Cubatão power plant. Preliminary excavation late in 1946 for the westerly extension of the powerhouse unbalanced an old slide formation on the adjacent foothills and a large mass

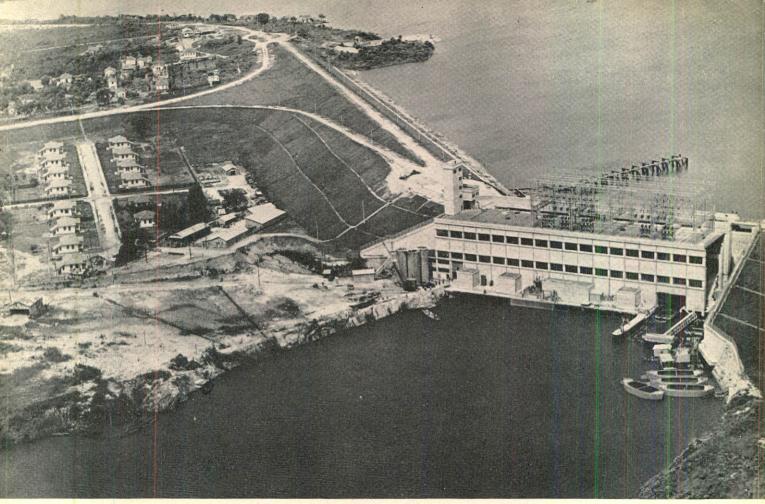
of earth, weighing over one million tons, began gradually to shift downhill, eventually moving a total of 24 feet in four months during the heavy rainy season of 1947. To prevent possible damage to the powerhouse, a series of drainage tunnels and drill holes were driven to drain the mass and bring the slide to rest. The incident, however, demonstrated that, instead of extending the powerhouse in a westerly direction for unit No. 8, it is necessary to make the future extension for that unit on the east end. The surface area west of the penstocks and power station has been cleared and covered with coal-tar pitch to prevent rain water from saturating this region. These provisions, together with sub-surface drainage have prevented a recurrence of this experience during the rainy season of 1948.

On the Pinheiros Canal, which forms part of the water course for the water diverted from the Tieté River to the Cubatão plant, dredging by the Company's forces continued during the year and 517,000 cubic metres of material were removed. Concurrently a contract for the excavation of about 470,000 cubic metres of earth and rock was completed by Companhia Morrison-Knudsen do Brasil S.A. The canal is now ample for the installed pumping capacities of the Pedreira and Traição plants. The second Pedreira pump, with a nominal capacity of 42 cubic metres of water per second, was installed and placed in service during the year. This new pump will have contributed approximately  $13\frac{1}{2}$  feet to the rise of the Rio Grande reservoir by the end of the 1947-1948 rainy season, which represents sufficient energy to supply the entire demand of the São Paulo system for four months.

The canal and pumping plant system now permit the diversion of large quantities of water (70 cubic metres per second) from the Tieté River, assuring an ample supply of water to the



INTERIOR OF SERRA DO CUBATÃO POWERHOUSE



PEDREIRA PUMP HOUSE SHOWING RIO GRANDE RESERVOIR AND UPPER END OF PINHEIROS CANAL

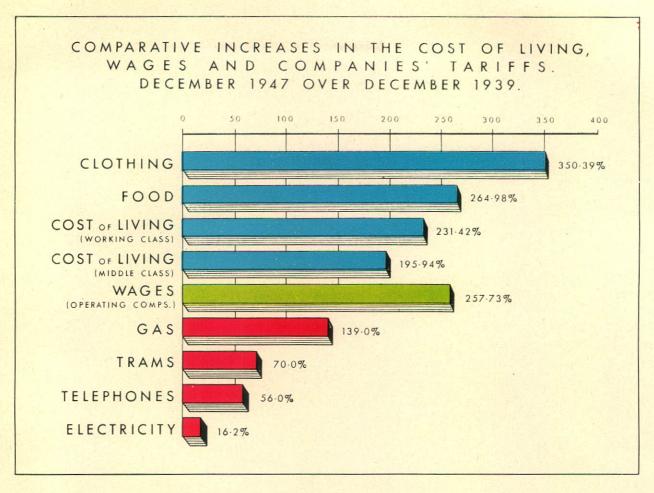
Serra do Cubatão generating plant. In order that there may be no serious interruption to the pumping of this water through a possible failure of the single pumping unit at Traição, a duplicate unit for this station is on order and is expected to be in service in 1950.

Considerable work was done during the year in reinforcing the São Paulo distribution system. In the city of São Paulo the situation was much improved by the installation of 23 new feeders of 3800 volts, as well as new transformers totalling 24,345 kva. Another factor which contributed to these improved conditions was the installation of 12,690 kvar of static condensers. The shortage of equipment, however, particularly transformers and oil switches, is still retarding the further expansion of the system.

#### SERRA-LAGES TRANSMISSION LINE

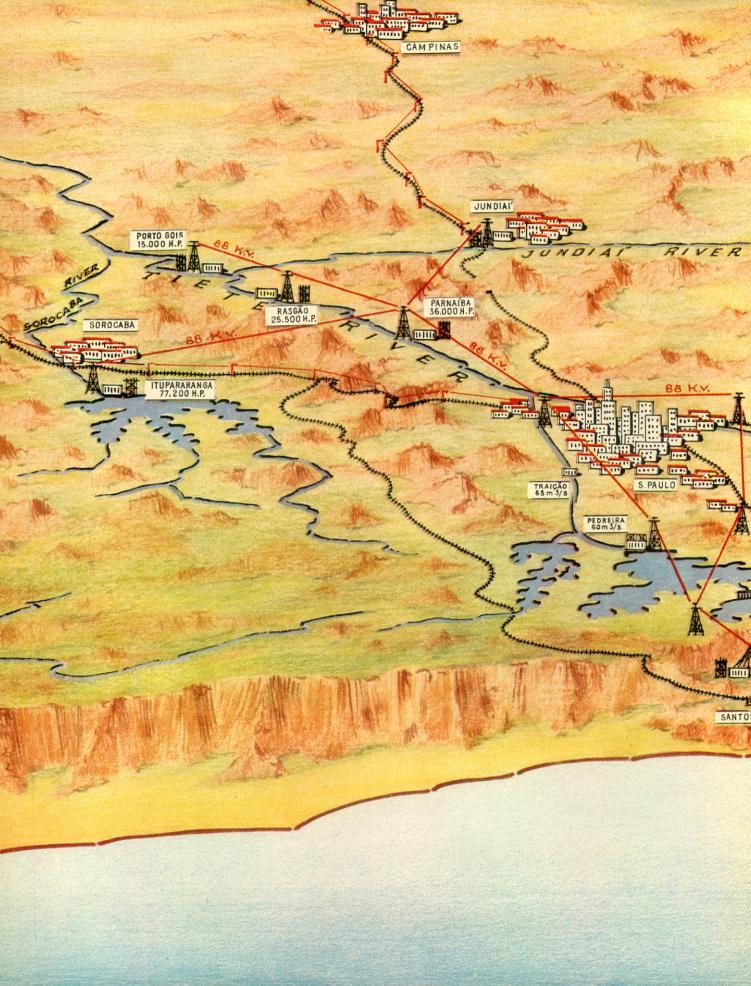
The erection of this 230,000 volt transmission line, over 200 miles in length and connecting the Rio and São Paulo systems, referred to in last year's report, was virtually completed in the early part of the year, but use of the line was delayed owing to the change of location rendered necessary by a projected government aviation field close to the original right-of-way and also to delays in receiving the transformers for the São Paulo end of the line. Negotiations with the Air Ministry for relocation of the line were completed in September and erection of the final section was finished early in 1948. It is expected that the line, including the transformers, will be ready for use in July, 1948.

Work is also continuing on the manufacturing of the 50,000 kw frequency-changer intended to integrate the 50-cycle Rio system and the 60-cycle São Paulo system so as to obtain full





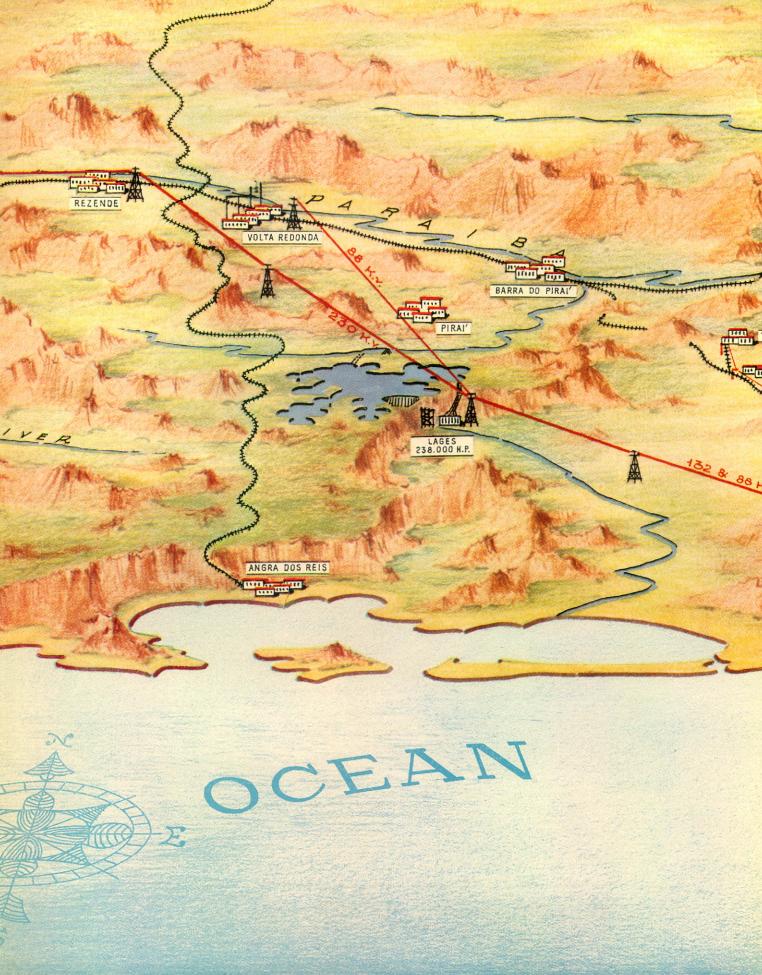




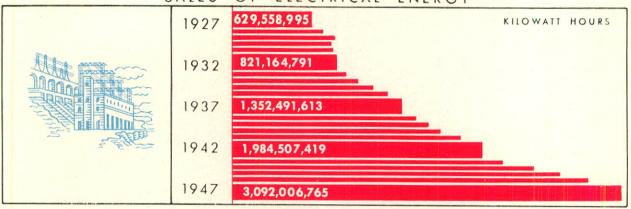




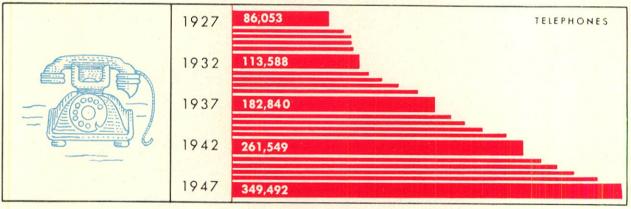




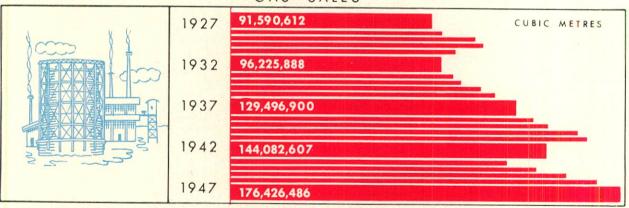




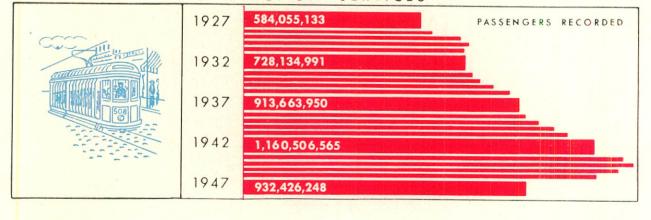
### TELEPHONES IN SERVICE



### GAS SALES



### TRACTION SERVICES



### STATISTICS OF COMBINED COMPANIES

	1943	1944	1945	1946	1947
	ELECTRIC LIC	HT AND PO	WER		
Kilowatt-hours Sold	- 2,148,027,358	2,395,847,529	2,606,418,262	2,825,522,186	3,092,006,765
Capacity of Generating Plants (KW.)		612,570	662,570	662,570	757,466
	1,482,911	1,564,806	1,725,853	1,839,043	1,984,920
Total Consumers	654,375	662,734	694,957	731,751	768,014
			2,091.33	2,069.31	2,335.31
Transmission Lines (miles of circuit)	2,063.08	2,090.80			38,506.54
Distribution Lines (miles of wire) -	33,118.17	34,125.55	35,332.60	36,759.23	38,300.34
	TELE	PHONES			
Total Number of Telephones in Service	277,734	290,880	305,889	325,893	349,492
Average Daily Calls	4,684,549	5,113,921	5,531,667	6,159,054	6,465,860
Wire Strung (miles)	1,280,776	1,403,366	1,512,224	-1,545,874	1,652,254
Pole Lines (miles)	7,740	7,818	8,044	8,268	8,543
Total Lines (innes)	4,1,1,2	.,,,,,			
		GAS			
Gas Sold (cubic metres)	125,387,787	138,980,937	152,175,571	166,081,567	176,426,486
	165,413	170,426	178,108	181,746	190,513
Mains Laid (miles)	1,245.92	1,250.04	1,259.87	1,272.23	1,279.33
Stoves, Water Heaters and Other					
Appliances	186,271	186,962	188,181	189,465	190,635
SERVICE	TRA	CTION			
Tramways:					
Total Track (miles)	529.65	527.94	527.07	525.34	356.87
Rolling Stock:	027.00				
Passenger Cars	2,061	2,063	2,062	2,077	1,504
Freight and Service Cars	274	270	270	257	188
	2.1	2.0	2.0		100
Funicular Railway:	0.56	256	256	9.56	2.56
Total Track (miles)	2.56	2.56	2.56	2.56	2.30
Rolling Stock:					
Electric Locomotives	. 4	4	4	4	4
Passenger Cars	. 4	4	4	4	4
Freight and Service Cars	. 2	2	2	2	2
Buses:					
Route (miles)	124.60	132.37	132.37	138.13	121.20
Number of Buses	. 142	142	118	93	74
Car Miles Run:					
Tramways	77,818,387	74,969,804	74,768,681	74,690,141	60,785,201
Funicular Railway	15,550	18,132	20,025	22,591	21,427
Buses	4,883,952	5,283,569	4,578,098	4,095,829	4,092,642
Total	82,717,889	80,271,505	79,366,804	78,808,561	64,899,270
m 1 n o . 1		1,289,812,422	1,239,612,655	1,162,589,794	932,426,248
	-,,,-				
	W	ATER			
Water Sold (cubic metres)	12,737,644	13,165,587	13,007,566	13,275,009	13,976,733
Total Consumers	23,834	24,217	24,625	25,312	26,101
Trunk Mains Laid (miles)	37.96	37.97	37.68	37.76	37.67
Distribution Mains Laid (miles)	267.69	269.58	272.11	275.72	279.36

(Continued from page 12)

advantage of the interchange of power between the two systems. Although it was previously stated that this machine would be installed at Guaratinguetá, the most favourable site for its location was found to be in the vicinity of Aparecida. It is expected that this frequency-changer will be ready for service in 1950; in the meantime, the transmission line will be available when needed for the transmission of energy to Rio by operating one of the Serra do Cubatão units at 50 cycles.

#### **ELECTRIFICATION OF RAILWAYS**

The trend towards electrification of railways, both by the government and privately operated railways, is continuing in your company's territory.

The expected completion in 1948 of the work of electrification of part of the Companhia de Estrada de Ferro Santos-Jundiaí, referred to in last year's report, has been delayed due to slow delivery of materials, but considerable work of a preparatory nature is being carried out.

Work on the electrification of the Sorocabana Railway was continued during the year and electric traction has been extended as far as Laranjal, 116 miles from the city of São Paulo.

The electrification of the Companhia Paulista de Estradas de Ferro is being extended to the Baurú branch and material and electric locomotives are being received for use on the new electrified lines.

In the Rio district the work of electrification of parts of the system of the Estrada de Ferro Central do Brasil continued steadily and it is expected that in June, 1948 electric traction will be extended as far as Paulo de Frontin, 53 miles from the city of Rio de Janeiro. Progressive electrification of this railway has resulted in an increase in power consumption during 1947 for its operation of nearly 6 million KWH or 8.3% over 1946.

### Jelephone Service

Although 23,599 new subscribers were connected to the system during the year, representing an increase in the number of telephones in service of 7.24% over 1946, the shortage of materials continued and it was impossible to satisfy the demands of prospective subscribers. The number of prospective subscribers awaiting connections totalled 126,571 on December 31st, 1947.

A contract covering the construction of toll lines and the operating of toll service in the state of Espirito Santo was entered into during the year with the Government of that state and approved by Federal Decree on March 28th, 1947. According to this concession the Company must connect to its toll system various localities in that state within certain specified periods.

### Gas Service

During 1947 the difficulty in obtaining coal shipments from abroad, referred to in last year's report, was not as great as in 1946, but the quality of the coal continued to be poor. Throughout the year gas oil was difficult to obtain and the price fluctuated widely, with a tendency to rise steeply. Maintenance material in the amounts and of the kind required for the plants in 1947 was not procurable and this constituted a major problem for the Gas Companies.

Although rationing and some of the restrictions which have been in force for a few years were continued in 1947, the combined gas sales for the year in the cities of Rio de Janeiro, São Paulo and Santos showed an increase of 6.23% over the year 1946 with an increase in the number of consumers connected of 8,767 or 4.8%.



TOLL SERVICE - RIO DE JANEIRO

Brazilian Telephone Company, operating in the states of Rio de Janeiro, São Paulo, Minas Geraes, and in the Federal District of Rio de Janeiro, already has some 350,000 telephones in service, with some 120,000 prospective subscribers awaiting connections.



TELEPHONE OFFICES - SÃO PAULO

### Transportation

The large decrease of 19.8% in the total number of passengers carried over the Companies' systems was due principally to the sale of tramway assets in the city of São Paulo to the Companhia Municipal de Transportes Coletivos, which began operations on July 1st, 1947. As mentioned in previous reports, the Company's concession for this service expired in July, 1941, but in accordance with the wishes of the authorities, the Company continued to operate the tramways until arrangements could be concluded by the municipality for this service to be taken over. Under the terms of the agreement entered into by The São Paulo Tramway, Light & Power Company, Limited on March 12th, 1947, the sale price was fixed at Cr\$60.000.000 of which the Company received Cr\$46.000.000 in preference shares and Cr\$14.000.000 in common shares of the Companhia Municipal de Transportes Coletivos, the authorized capital of which is Cr\$250.000.000 or about 13½ million dollars. The municipality of São Paulo controls the new company through a majority holding of the common stock.

It is interesting to note that the electric tramway system in the city of São Paulo was built by The São Paulo Tramway, Light & Power Company, Limited and inaugurated on May 7th, 1900. The Company had, therefore, furnished transportation to the inhabitants of São Paulo for 47 years continuously at the original flat fare of Cr\$0,20 (latterly equal to about one cent U.S.). During this period the population of this city increased from 250,000 to approximately 1,750,000.

In the Federal District the increase in tramway fares of 3.55 centavos (Cr\$0,0355) authorized by Decree No. 22,260 of December 12th, 1946, referred to in last year's report, was put into effect on February 1st, 1947. This fare increase, however, which was granted only to cover increased labour costs, is quite inadequate and the transportation services in the Federal District continued to be operated at a considerable loss to the Company. Under the circumstances it is impossible for the service to be efficiently maintained and operated and the Company has filed an application with the municipal authorities for further fare increases.

As from July 5th, 1947, the fares on a number of tram routes operated by The City of Santos Improvements Company, Limited were increased from Cr\$0,30 to Cr\$0,40, thus giving the Company the increase in revenue authorized by Decree No. 22,260 mentioned above.

## Foreign Trade of Brazil

It is difficult to give any concise report of the economic situation in Brazil during 1947. The spiral of alarming inflation appears to have been checked; the Federal Budget was balanced with a surplus of Cr\$460.000.000; and the country's international trade showed still further increases in imports and in exports. Of great importance to your Company was the adverse balance of trade between Brazil and the United States of America—reported as exceeding \$300,000,000. This current U.S. dollar shortage is an important and pressing problem in Brazil as it is in Canada and in Europe.

The international trade of Brazil is indicated by the following table showing the exports, imports and balance of trade for the years 1943 to 1947 inclusive:

								1943	1944	1945	1946	1947
										(thousands	of cruzeiros)	
Exports	-	-	-	-	-	-	-	8,728,569	10,726,509	12,197,510	18,229,532	21,179,413
Imports	-	-	-	-	-	-	-	6,161,741	7,965,141	8,617,320	13,028,734	22,789,290
Balance o	f T	rad	e	-	-	-		2,566,828	2,761,368	3,580,190	5,200,798	-1,609,877

Note: 1,000 cruzeiros are equivalent to approximately \$53.00 at present rate of exchange.

The 1946 favourable balance of trade which established a record in Brazil's economic history was not repeated in 1947. For the first time for several years there was an unfavourable balance, the deficit being over \$80,000,000. This was mainly due to greatly increased imports which exceeded 1946 figures by 74.9%.

Because of restrictions on convertibility of currencies the economic problem of the country in relation to foreign trade is not clearly discernable and it may be that the overall figures are not a full reflection of the current position. The reported adverse balance of \$300,000,000 with the United States of America has been noted above.

Exports in 1947 in value and tonnage showed increases over 1946 of 16.09% and 3.2% respectively. Coffee and raw cotton were again the principal exports representing 51.14% of the value of total exports.

Coffee shipments in 1947 were 14,688,627 bags, a decrease of 674,517 bags or 4.3% compared with 1946. The value of coffee exported was Cr\$7.755.099.000 compared with Cr\$6.441.463.000 in 1946, an increase of 20.4%. This increase was due to a rise of 26% in the average price of coffee.

The congested conditions in the ports of Rio de Janeiro and Santos improved progressively and were almost normal during the latter half of the year. The establishment of these improved conditions is a notable achievement, considering that the tonnage of freight handled at both ports in 1947 constituted a record. This improvement is the result of measures introduced during the year to facilitate the movement of goods between the docks and customs sheds. The loading, unloading and dispatching of ships has likewise been speeded up and additional mobile handling equipment installed.

During the year further studies were carried out by interested parties in connection with the construction of the oil pipelines from Santos docks to the city of São Paulo, where a refinery for dealing with crude oil is planned. Such a project, if realized, would relieve the congested rail and road transport between these two cities of about 800,000 tons a year.

### Brazil's Industrial Development

Brazil is rapidly becoming more self-sustaining. To-day the country's production by local industry supplies about 60% of its needs. Of the estimated population of 47,000,000 at the end of 1946, it is calculated that 14,000,000 were gainfully employed, of which some 1,750,000 were engaged in industry.

The policy of the operating companies of purchasing as much material as possible, produced or manufactured in Brazil, was continued in 1947 and such purchases totalled \$11,845,000. They comprise a great variety of goods, the most important of which, in terms of dollar value, were:

Copper manufactured goods	\$2,268,000	Fuels-coal, charcoal	\$481,400
Steel and iron	1,604,300	Office supplies	465,000
Electrical machinery, and appliances	1,161,200	Clay products—bricks, pipes	
Lumber	1,056,100	and tiles, etc	436,800
Telephone apparatus appliances -	787,500	Cotton goods	333,700
Foodstuffs	586,700	Explosives and accessories -	294,100
Cement	526,400	Rubber goods—tires, tubes -	264,100

The important steel plant of the Companhia Siderurgica Nacional, at Volta Redonda, inaugurated in October, 1946 and which is connected to our Rio system by a special high-tension transmission line, is steadily increasing production, having reached approximately 60% of its full capacity at the end of 1947. Sales of electric energy for industrial purposes in the Rio and São Paulo districts continued to grow, there being an increase of such sales in the combined systems of 10.2% in 1947 compared with 1946.

Industries which showed the greatest development were:

				Percentage of 1947 total energy sales	Increase in energy consumption over 1946
Steel Mills and Foundries	-	-	-	9.2%	27.2%
Foodstuffs and Baking				1.8%	16.8%
Cold Storage				2.4%	12.1%
Railway Electrification	-	-	-	14.2%	10.6%
Electrical Materials				1.9%	9.3%
Tires and Rubber Goods	-	-	-	2.7%	8.7%
Building Loads (incl. Elevators, etc.)				3.9%	7.7%
Machine Shops and Metal Works -		-	-	6.4%	6.8%
Paper Mills and Products	-	-	-	6.8%	6.5%

Requests for new connections and extensions in existing services both in the Rio and São Paulo districts represent an additional unfilled demand of over 46,000 kw, not including the demands in São Paulo for electric heating estimated at 17,500 kw.

A special commission appointed to examine the subject and prepare a bill to regulate the development of oil deposits in Brazil completed its work during the year and presented a report to the Government. This report and the proposed bill are now before the Brazilian Congress.

The shortage of wheat and wheat flour reported in 1946 showed little improvement in 1947. This shortage coupled with the high price prevailing for Argentine wheat obliged Brazil to resort to other cereals for bread-making, and strengthened the Brazilian authorities' determination to encourage wheat cultivation within the country.

### Political

Following the promulgation of the new Brazilian Constitution in September, 1946, it was to be expected that the year 1947 would be of great political importance. Early in the year the return of the country to a constitutional form of government was completed by the election of State Governors and the establishment of individual State Legislative Assemblies.

As the new regime became operative, important measures were introduced having far-reaching effects. Outstanding amongst them was the outlawing of the Communist Party following a decision of the High Electoral Court declaring the party unconstitutional on the grounds that its fundamental tenets do not accept a plurality of political bodies and, therefore, are contrary to democratic principles.

### Labour Relations

The rise in the cost of living, which began to make itself felt in Brazil in 1940, increased steadily during the war years and climbed to an alarming extent in 1946 and in the first quarter of 1947, after which the Government's efforts to curb inflation and profiteering began to have a stabilizing influence on prices.

As may be seen from the chart opposite page 12, the official cost of living indices for the month of December, 1947 showed an increase over December, 1939 of 231.42% for hourly paid workers and 195.94% for salaried workers.

Labour unrest, which began to assume a serious aspect at the end of 1944 in consequence of the rapidly rising cost of living, continued throughout the next three years despite various general wage increases granted by the companies. During the first quarter of 1947, further demands for large wage increases were made by some of the employees' unions but were rejected as unjustifiable. These demands were followed by an agitation for the payment of rest days and public holidays for which provision is made under the new Brazilian Constitution of 1946. It was eventually decided that the companies would make a voluntary concession by granting Sunday day of rest pay as from August 1st, 1947, prior to the proposed implementation by legislation of the provisions in this regard contained in the Constitution.

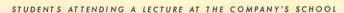
The total number of employees in the operating companies in Brazil as of December 31st, 1947, was 46,123; a decrease of 4,472 compared with December, 1946. This decrease was principally accounted for by the transfer of 4,174 traffic employees of The São Paulo Tramway, Light & Power Company, Limited to the newly formed Companhia Municipal de Transportes Coletivos which in July took over the tramway system in São Paulo.

#### COMPANY SCHOOLS

In last year's report, reference was made to the technical classes and educational schools which are conducted by some of the companies with most encouraging results. The work was continued during the year and it is satisfactory to note that in 1947 there were in Rio 1,047 students under instruction. The subjects covered included electricity, draughting, stenography, bookkeeping and classes for the general education of minors and others.

## Retirement of Mr. John Davidson

Your directors regret to announce that in keeping with his expressed desire to be relieved of his responsibilities, Mr. John Davidson tendered his resignation as a director effective December 31st, 1947, and your directors reluctantly acceded to Mr. Davidson's wishes. Mr. Davidson has had a long association with the Company as a director resident in England and the Board wish to take this opportunity of recording their appreciation of his valued services.





# Retirement of Dr. Edgard E. de Souza

On October 31st, after forty-seven years of continuous and most valuable services to the operating companies in Brazil, Dr. Edgard Egydio de Souza, Executive Vice-President of The São Paulo Tramway, Light & Power Company, Limited expressed the wish to be relieved of the active administration of that Company and to be permitted to resign. With the greatest regret the Board concurred in granting Dr. Souza's request, realizing that after so many years of strenuous work he was fully entitled to pass on his heavy responsibilities and to enjoy well-earned rest and leisure.

# Death of Mr. D. Harvey Cromar

It is with sincere regret that your directors record the death in Toronto on October 12th, 1947, of Mr. David Harvey Cromar, the Company's Secretary. Mr. Cromar was associated with your Companies for over 42 years and he is remembered with affection by all his colleagues.

## Administrative Changes

Consequent upon the resignation of Dr. Edgard de Souza, Dr. Odilon E. A. Souza, formerly General Manager of The São Paulo Tramway, Light & Power Company, Limited, was appointed Executive Vice-President of that Company and assumed his new duties on November 1st, 1947. On the same date Mr. W. L. Simpson, Chief Electrical Engineer of the operating companies in Brazil, was appointed to replace Dr. Odilon Souza as General Manager.

Due to the rapid and continuing growth of the services provided by your Operating Companies, requiring greater co-ordination and centralization of operating controls in Brazil, certain administrative changes have been put into effect.

In Brazil, a management company has been formed to centralize managerial control and coordinate operations. The Company, known as Companhia Brasileira Administradora de Serviços Técnicos, with its Head Office in Rio de Janeiro, has as its officers: Mr. Henry Borden, President; Mr. H. B. Style, Executive Vice-President; Mr. J. M. Bell, General Consultant; Major K. H. McCrimmon, Vice-President—Public Relations; Mr. H. L. Banfill, Vice-President—Operations; Mr. A. J. Ackerman, Vice-President—Hydro-Electric Construction; Mr. Malcolm J. McLeod, Acting Vice-President—Finance.

At Head Office in Toronto, a re-organization of staff has been effected. Mr. G. R. F. Troop, who for some years has been a Director and Treasurer of the Company, has been appointed Vice-President and Treasurer, Mr. Arnold Gaine has been appointed Vice-President (Administration) and Mr. Osborne Mitchell has been appointed Secretary.

# Staff

Your directors wish to record their appreciation of the loyal and efficient services of the Company's staffs, particularly during the latter part of the year when the difficulties occasioned by the suspension of certain construction work over-burdened so many of the senior members.

For the Board of Directors,

HENRY BORDEN,

Toronto, 11th May, 1948. President.

#### AUDITORS' REPORT

To the Shareholders of Brazilian Traction, Light and Power Company, Limited:

We have audited the Head Office accounts of Brazilian Traction, Light and Power Company, Limited, The Rio de Janeiro Tramway, Light and Power Company, Limited, Brazilian Telephone Company, The São Paulo Tramway, Light and Power Company, Limited, São Paulo Electric Company, Limited (and its subsidiary, The San Paulo Gas Company, Limited), The City of Santos Improvements Company, Limited and Brazilian Hydro Electric Company, Limited, and have examined the reports and statements submitted by other chartered accountants covering the capital and revenue accounts and provisions for depreciation in Brazil for the year ended 31st December, 1947. We have obtained all the information and explanations which we have required.

The aggregate profits and losses of subsidiaries, the assets and liabilities of which are not included in the consolidated balance sheet, have been fully provided for in the consolidated statement of profit and loss.

Subject to the foregoing, we report that, in our opinion, the attached consolidated balance sheet, and consolidated statements of profit and loss and earned surplus are properly drawn up so as to exhibit a true and correct view of the state of the combined companies' affairs at 31st December, 1947, and of their operations for the year ended on that date, according to the best of our information, the explanations given to us, the reports of the auditors in Brazil and as disclosed by the books of the companies.

CLARKSON, GORDON & Co., Chartered Accountants,

Toronto, 7th May, 1948.

# BRAZILIAN TRACTION, LIGHT AND POWER

AND ITS PRINCIPAL

COMPANY, LIMITED

### \* \*

# Assets

	31st December 1947	31st December 1946
Plant, Property and Equipment at cost	\$393,827,610	\$358,074,300
Rights, Franchises, Contracts, Goodwill, etc.	1	1
Investments in and advances to subsidiaries not consolidated:		
Investments in securities at cost	14,266,918	14,259,381
Advances	19,696,954	18,400,680
	\$427,791,483	\$390,734,362
Prepaid Expenses and Sundry Assets:		-
Sundry prepaid expenses, deferred charges, etc	\$ 2,064,704	\$ 1,179,576
Cash on deposit with trustee for sinking fund	102,744	96,711
Investments in shares representing minority interests in other	102,744	90,711
companies, at cost	3,258,547	
Guarantee deposits and sundry assets	487,513	306,873
		-
	\$ 5,913,508	\$ 1,583,160
Current Assets:	A 10.070 toc	
Cash (including Brazilian currency) in banks and on hand	\$ 10,973,406	\$ 27,018,813
Temporary investments in securities of the Dominion of Canada at cost and accrued interest (market value \$8,570,360)	0.521.701	20,000,220
Consumers' deposits lodged with government banks	8,531,791 3,547,935	30,099,238
Accounts receivable less reserve		3,148,740
Stores on hand and in transit as determined and certified by the	8,799,468	8,332,024
management and valued at not more than cost	20,883,095	17,081,873
general and valued at het more than cost		
	\$ 52,735,695	\$ 85,680,688
NOTES—		
<ol> <li>The above consolidated balance sheet and the attached consolidated statements of profit and loss and earned surplus are expressed in terms of United States currency.</li> </ol>		
(2) The current assets and liabilities of the operating companies in Brazil were valued at the closing sight rate for exchange on New York.		
(3) The current assets and liabilities in Canadian dollars and in sterling were valued at the official rates for United States dollars.		
(4) The transfer of cash balances is subject to the exchange regulations of Brazil, Canada and the United Kingdom as the case may be.		
(5) The funded debt expressed in sterling has been converted at U.S. \$4.862/3 to the £.		
(6) Commitments outstanding under contracts for construction, additional equipment, etc. were approximately \$31,000,000.		
	\$486,440,686	\$477,998,210

(WITH COMPARATIVE FIGURES AS AT 31st DECEMBER, 1946)



# Liabilities

Capital: Authorized—	31st December 1947	31st December 1946
3,934 6% cumulative convertible preference shares of a par value		
of \$100 each.		
7,920,220 ordinary shares of no par value subject to increase up to		
a total of 7,933,333 shares of no par value by conversion of preference shares.		
	** 202 400	e 202 400
Issued and outstanding— 3,934 preference shares	\$ 393,400 179,358,230	\$ 393,400 179,358,230
Earned Surplus	67,494,178	55,590,343
Entrice Surprus	\$247,245,808	\$235,341,973
Shares of subsidiaries in hands of public	\$ 1,684,193	\$ 1,684,193
	\$ 1,004,195	ð 1,004,195
Funded Debt:		
The Rio de Janeiro Tramway, Light and Power Company, Limited 5% 50 year mortgage bonds (1st April, 1958)—balance after sink-		
ing fund redemptions (£2,013,103)	\$ 9,797,101	\$ 10,615,697
5% 22 year bonds (1st October, 1950) (£271,334)	1,320,493	1,320,493
The São Paulo Tramway, Light and Power Company, Limited-		
5% perpetual consolidated debenture stock (£821,917)	3,999,996	3,999,996
São Paulo Electric Company, Limited—		
5% 50 year first mortgage bonds (1st January, 1962)—balance	4 454 047	4 772 510
after sinking fund redemptions (£915,400)	4,454,947	4,773,519
Reserves and Provisions:	\$ 19,572,537	\$ 20,709,705
Provision for depreciation (including depreciation of physical assets		
of subsidiaries not consolidated)	\$105,110,941	\$108,431,679
Provision for amortization (including sinking fund reserves)	46,356,565	44,213,665
General reserves	12,162,814	12,035,557
Provision for contingencies	19,837,745	17,465,439
	\$183,468,065	\$182,146,340
Current Liabilities:		
Accounts payable and accrued charges	\$ 22,804,796	\$ 17,542,329
Consumers' deposits (per contra)	3,547,935	3,148,740
Liability for 5% 50 year mortgage bonds of The Rio de Janeiro		
Tramway, Light and Power Company, Limited drawn for redemption in 1948	707,278	608,965
Sharewarrant and bond coupons payable, dividend cheques out-	101,210	000,903
standing and accrued interest on funded debt	7,410,074	16,815,965
	\$ 34,470,083	\$ 38,115,999
	\$486,440,686	\$477,998,210
On bel	nalf of the Board:	
	HENRY BORDEN, E. C. Fox,	Directors.
	E. C. PUX,	)

# BRAZILIAN TRACTION, LIGHT AND POWER COMPANY, LIMITED AND SUBSIDIARY COMPANIES

#### CONSOLIDATED STATEMENT OF PROFIT AND LOSS

FOR THE YEAR ENDED 31st DECEMBER, 1947 (With comparative figures for the year ended 31st December, 1946)

	Year ended 31st December 1947	Year ended 31st December 1946
Gross earnings from operations	 \$92,578,431	\$78,253,700
Interest on temporary investments	 359,489	689,508
Other miscellaneous income	 144,388	117,673
Total revenue	 \$93,082,308	\$79,060,881
Less:	4177	
Operating expenses including provision for taxes	 \$57,097,476	\$47,079,254
Provision for depreciation	 6,601,311	5,490,531
Provision for amortization	 1,000,000	1,000,000
Total operating expenses, depreciation and amortization	 \$64,698,787	\$53,569,785
Net profit before bond interest, sinking funds and other financial charges	 \$28,383,521	\$25,491,096
Bond interest	\$ 1,435,429	\$ 1,464,359
Sinking funds and other financial charges	966,708	925,256
Total interest and other financial charges	 \$ 2,402,137	\$ 2,389,615
Net profit for the year	 \$25,981,384	\$23,101,481

NOTE—Remuneration of directors (excluding executive officers) including payments by subsidiary companies amounted in 1947 to \$19,147;

Remuneration of counsel, solicitors and legal advisers and executive officers including payments by subsidiary companies amounted in 1947 to \$568,809.

### CONSOLIDATED STATEMENT OF EARNED SURPLUS

FOR THE YEAR ENDED 31st DECEMBER, 1947

Balance 31st December, 1946- - - -

Net profit for the year ended 31st December, 1947-			25,981,384
Less dividends:			\$81,571,727
Preference shares—			
\$6.00 per share		\$ 23,604	
Ordinary shares—			
\$1.00 per share paid 2nd June, 1947	\$7,026,941		
\$1.00 per share paid 1st Dec., 1947	7,027,004	14,053,945	14,077,549
Balance 31st December, 1947			\$67,494,178

\$55,590,343





CITY AND PORT OF SANTOS

