

1916

ANNUAL REPORT

OF THE DIRECTORS OF

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

TO THE STOCKHOLDERS

FOR THE YEAR ENDING

DECEMBER 31, 1916



NEW YORK, 1917

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
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American Telephone and Telegraph Company

JANUARY 1, 1917

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REPORT OF THE DIRECTORS
OF
AMERICAN TELEPHONE AND TELEGRAPH
COMPANY.

NEW YORK, March 12, 1917.

TO THE STOCKHOLDERS:

Herewith is respectfully submitted a general statement covering the business of the Bell System as a whole, followed by the report of the American Telephone and Telegraph Company, for the year 1916.

To understand the actual operations of the telephone service as given by the American Telephone and Telegraph Company and associated companies, as a whole, the combined revenue and expenses and balance sheet must be considered.

The associated companies are the operating units, and their statements cover the actual operations in their respective territories; while the American Telephone and Telegraph Company is the central administration, the financing, developing and supervising administration. In its statements of earnings and expenses, the gross revenue is from: dividends and interest upon capital invested in the business through the associated companies; payments of the associated companies towards the maintenance and expenses of the central administration; net revenue of the long-distance lines; and miscellaneous. Its expenses cover only the central administration of the whole system, and none of the telephone service operating expenses.

Combining the accounts and excluding all duplications and inter-company matters—including interest, dividends and other payments to the American Telephone and Telegraph Company by the associated companies—the actual operations of the service, the actual revenues and expenses, are thereby shown.

This explanation is made that there may be no excuse for misstating the costs and profits of the telephone service.

BELL TELEPHONE SYSTEM IN THE UNITED STATES.

SUBSCRIBER STATIONS.

At the end of the year the number of telephone stations which constituted our system in the United States was 9,847,192, an increase during the year of 695,971, of which increase 577,380 were owned by the Bell companies and 118,591 were Bell connected stations. Of the total number of stations in the system 6,545,490 were owned and operated by Bell companies and 3,301,702 by local, co-operative and rural independent companies or associations having sublicense or connection contracts; the so-called connecting companies.

THE WIRE SYSTEM.

The total mileage of wire in use for exchange and toll service was at the end of the year 19,850,315 miles, of which 1,344,770 were added during the year. Of the total mileage 17,167,405 miles were exchange wires and 2,682,910 miles were toll wires. Ninety-three per cent. of the total wire mileage is copper wire. 11,468,525 miles, or 58 per cent. of the mileage, including 760,160 miles of toll wires, is in underground cables, and this percentage

steadily increasing. The underground conduits represent a cost of \$101,100,000 and the cables in the conduits 121,900,000, a total in underground plant of \$223,000,000.

Attention was called last year to the mileage of "phantom circuits." During 1916, 25,153 miles of "phantom circuits" were added, making 221,994 miles of these phantom circuits" at the end of the year. These are additional service circuits which can be superimposed on ordinary circuits when there are at least two continuous circuits (four wires or more) for considerable distances, and represent one of the many economic as well as efficient innovations introduced in the Bell System, and only possible in a system where there must be a large number of continuous circuits between distant points.

The wire mileage owned and operated by connecting companies is not included in any of these figures. At the end of the year the approximate mileage of connecting companies' toll wires was 420,000 miles, which added to the 2,680,000 miles of toll wires operated by the Bell companies, makes a total of over 3,000,000 miles of such wires bringing together in one comprehensive, intercommunicating system all the cities and towns and practically all of the rural communities throughout the United States.

TRAFFIC.

Including the traffic over the long-distance lines, but not including connecting companies, the daily average toll connections was about 890,000, and of exchange connections about 28,530,000, as against corresponding figures in 1915 of 819,000 and 25,184,000; the total daily average for 1916 reaching 29,420,000, or at the rate of about 9,789,700,000 per year. This is an average of approximately 100 calls per year for every man, woman and child in the United States.

PLANT ADDITIONS.

The net amount added to plant and real estate by all the companies, excluding connecting companies, constituting our system in the United States during the year 1916 was \$66,224,728, distributed as follows:

Real Estate	\$ 4,632,272
Equipment	16,138,004
Exchange Lines	25,601,588
Toll Lines	10,403,936
Construction Work in Progress, etc.....	9,448,928
	<hr/>
	\$66,224,728

PLANT ADDITIONS OF PREVIOUS YEARS.

The net amounts added in seventeen years have been as follows:

1900.....	\$31,619,100	1909.....	\$28,700,100
1901.....	31,005,400	1910.....	53,582,800
1902.....	37,336,500	1911.....	55,660,700
1903.....	35,368,700	1912.....	75,626,900
1904.....	33,436,700	1913.....	54,871,900
1905.....	50,780,900	1914.....	50,045,300
1906.....	79,366,900	1915.....	32,863,700
1907.....	52,921,400	1916.....	66,224,700
1908.....	26,637,200		

making a total for the seventeen years of \$796,048,900.

MAINTENANCE, DEPRECIATION AND RECONSTRUCTION.

During the year \$84,906,000 was applied out of revenue to current maintenance and depreciation, an increase of \$8,846,000 as compared with 1915. Current maintenance increased \$3,752,000, averaging 3.9 per cent. of the average plant in service, which compares with 3. per cent. in 1915.

The provision for depreciation of plant during the year was \$49,983,000, an average of 5.6 per cent. of the cost of plant and an increase over 1915 of \$5,094,300.

Plant which originally cost about \$44,000,000, but which had reached its limit of serviceable life, was removed and replaced by new and improved construction, or sold

as compared with \$42,000,000 in 1915. After deducting this amount less salvage from the provision for depreciation, the balance, about \$25,000,000, increases the reserves for such depreciation and obsolescence, which must be provided for out of current expenses, but cannot be currently determined or expended. As stated in last year's report, it is the continuing policy of the Bell System to provide out of earnings each year such amounts as represent the estimated wear and tear, obsolescence and inadequacy of plant accruing during that year, so that when any plant comes to be retired sufficient reserve has been gradually acquired to meet the loss of capital due to such retirement. This is the sound and conservative policy for the protection and guaranty of the future of the plant, and it is the only way by which telephone users pay for the wear of the plant incident to, or concurrent with their use, instead of passing this cost on to the future users. Lack of recognition of this principle has caused many failures in all industries, and particularly in the telephone business. This principle is now generally accepted and the practice is firmly established by the accounting rules of the Interstate Commerce Commission and the various state commissions.

GROWTH AND PROSPECTS.

The general and unprecedented business activity of the country during the past year has thrown on the Bell System a heavy burden of traffic, taxing our facilities to the utmost and necessitating the rapid increase of those facilities which is indicated by the statistics.

It was stated in last year's report that during 1916 we should carry on the work of new construction on about the same scale as experience had shown was advisable during normal times. The program called for additions to plant aggregating about \$57,000,000, and an expected

gain of about 400,000 subscriber stations. The actual additions cost over \$66,000,000, and the stations increased by over 577,000. This is the largest gain ever made in any year and the increase in traffic was greater than in any previous year. The toll wire mileage added also exceeded any previous year.

The continued policy of the Bell System mentioned in several previous reports is to construct *in advance* of actual needs, partly to provide for emergencies and partly for economical reasons to avoid frequent reconstruction. This policy has justified itself many times over during the past year. Even under the most favorable conditions the rush of new subscribers and the rapid increase in traffic would have been difficult to provide for. But in 1916 not only did the prices for raw materials average almost double their normal cost, but at times it was not possible to get them in the quantities required. In these circumstances the advance construction in cables, buildings and switchboards was of prime importance as it enabled us to meet demands, which could not otherwise have been met. Notwithstanding the great increase in cost of materials the average investment per station decreased during the year from \$149 to \$146. In consequence of this absorption into service of the surplus plant, the program of construction during 1917 must not only meet the expected growth in stations but must also provide for the restoration of the normal plant surplus in whole or in part.

Without these provisions for future growth and demands, the companies could not have provided for the traffic which was offered. As it was, the quality of the service was at times and in some places not quite up to the high standard set in recent years, yet at no time and at no place did it break down, and by the end of the year it was on substantially a normal basis.

The prospects for the current year indicate a con-

tinuing station gain and a heavy traffic. To provide for growth and restore normal surplus plant and necessary advance construction our estimates of additions to plant during the year aggregate about \$90,000,000, by far the largest program ever undertaken, but necessitated by the conditions as we now see them.

The funds for these expenditures have already been provided by the new financing explained elsewhere, and the construction work is proceeding rapidly.

OPERATING RESULTS.

The American Telephone and Telegraph Company and associated companies constitute one operating entity, and to understand or correctly determine the actual costs and charges of the telephone service and the ultimate distribution of the revenue, their accounts must be consolidated.

The following tables show the business for the year of the Bell Telephone System including the American Telephone and Telegraph Company and its associated holding and operating companies in the United States, but not including connecting independent or sub-licensee companies, or the Western Electric Company except as investments in and dividends from those companies are included respectively in assets and revenue. All inter-company duplications are eliminated in making up these tables so that the figures represent the business of the system as a whole in its relations to the public.

The statement of earnings and expenses is presented this year in the form called for by the Interstate Commerce Commission's accounting system. In round figures the total operating revenues of the Bell System were \$264,600,000, an increase of \$30,151,000 or 12.9 per cent. over last year. Of these revenues depreciation and maintenance consumed \$84,556,000, an increase of \$8,797,000 over 1915 or 11.6 per cent.; traffic expenses

consumed \$53,749,000, an increase of \$7,963,000 or 17.4 per cent.; commercial expenses, \$25,699,000, an increase of \$2,116,000 or 9.0 per cent.; general and miscellaneous expenses, \$11,902,000, an increase of \$853,000 or 7.7 per cent.; taxes assignable to operations, \$14,916,000, an increase of \$1,915,000 or 14.7 per cent.

Including \$215,000 taxes not assignable to operations the total taxes were \$15,131,000, which is 1.70 per cent. on the outstanding capital obligations. There were net non-operating revenues of \$7,080,000, made up chiefly of interest, dividends and rents received less taxes and minor expenses connected therewith. The "total gross income," using the term officially provided by the Interstate Commerce Commission, was \$79,353,000, an increase of \$9,787,000 or 14.1 per cent. over 1915. Out of this \$22,114,000 was paid for interest, rents, etc., leaving \$35,160,000 for dividends and over \$22,000,000 to be carried into surplus.

As will be explained elsewhere, approximately \$6,000,000 was paid to the employees as additional compensation to cover the abnormal working and other conditions of the year. This payment was made late in the year, and should have been a charge against the expenditures of the year, as it covered construction, reconstruction, operation and all branches of the service, but it could not be allocated without restating the accounts of the whole year. The amount has therefore been charged against general surplus.

The total capitalization, including inter-company items and duplications but excluding reacquired securities of the companies of the Bell System, is \$1,497,760,616. Of this, \$608,333,979 is owned and in the treasury of the companies of the Bell System, and is represented to the public by the outstanding securities of the American Telephone and Telegraph Company and associated companies.

The capital stock, bonds and notes payable of the

BELL TELEPHONE SYSTEM IN UNITED STATES.

COMPARISON OF REVENUE AND EXPENSES, 1915 AND 1916.

(ALL DUPLICATIONS INCLUDING INTEREST, DIVIDENDS
AND OTHER PAYMENTS TO AMERICAN TELEPHONE AND
TELEGRAPH COMPANY BY ASSOCIATED COMPANIES
ARE EXCLUDED.)

	1915	1916	Increase
Exchange Revenues.....	\$169,155,944	\$188,888,149	\$19,732,205
Toll Revenues.....	62,929,980	72,971,668	10,041,688
Miscellaneous Revenues.....	2,338,431	2,715,463	377,032
Total Operating Revenues	\$234,424,355	\$264,575,280	\$30,150,925
Depreciation.....	\$ 44,586,841	\$ 49,631,966	\$ 5,045,125
Current Maintenance.....	31,171,272	34,923,549	3,752,277
Traffic Expenses.....	45,785,432	53,748,707	7,963,275
Commercial Expenses.....	23,583,274	25,698,913	2,115,639
General and Miscellaneous Ex- penses.....	11,049,191	11,902,470	853,279
Total Operating Expenses.	\$156,176,010	\$175,905,605	\$19,729,595
Net Operating Revenues..	\$ 78,248,345	\$ 88,669,675	\$10,421,330
Uncollectible Revenues.....	\$ 1,703,210	\$ 1,480,502	\$222,708*
Taxes.....	13,001,903	14,916,448	1,914,545
Operating Income.....	\$ 63,543,232	\$ 72,272,725	\$ 8,729,493
Net Non-Operating Revenues.	6,022,932	7,080,384	1,057,452
Total Gross Income.....	\$ 69,566,164	\$79,353,109	\$ 9,786,945
rent and Miscellaneous De- ductions.....	\$ 3,384,407	\$ 3,735,470	\$ 351,063
Interest Deductions.....	18,095,643	18,378,931	283,288
Total Deductions.....	\$ 21,480,050	\$ 22,114,401	\$ 634,351
Balance Net Income.....	\$ 48,086,114	\$ 57,238,708	\$ 9,152,594
educt Dividends.....	32,897,065	35,160,119	2,263,054
urplus Earnings.....	\$ 15,189,049	\$ 22,078,589	\$ 6,889,540

*Decrease.

Bell System *outstanding in the hands of the public at the close of the year* were \$889,426,637, of which the outstanding securities of the American Telephone and Telegraph Company represent \$596,092,719, and outstanding securities of the associated companies in the hands of the public represent \$293,333,918.

If we consider the current accounts payable, \$38,280,436, against which there were liquid assets, cash and current accounts receivable, of \$146,722,409, or an excess of \$108,441,973 to the credit of the system, it leaves *as the net permanent capital obligations* of the whole system outstanding in the hands of the public \$780,984,664.

As stated in previous reports we are convinced that it would cost many, many millions of dollars more to duplicate the physical plants of the Bell System than the amounts at which they stand on the books. An appraisal made in 1912 by our engineers indicated that aside from all *intangible* assets, of tangible value, and without which neither this Company nor any company could continue as a going concern, the cost of reproduction of these plants would exceed their book cost by about \$61,000,000. This appraisal took the value of copper at only 17 cents per pound whereas it now costs about 35 cents per pound.

A number of appraisals of our properties in the various cities and states have been made by public authorities practically all of which have agreed in finding that the fair value of the properties for rate-making purposes is greater than, and in most cases very much greater than the amounts carried on our books.

The telephone plants stand on the books of the companies at \$946,293,248, as of December 31, 1916, a net increase during the year of \$66,224,728, after deducting all plant withdrawn from service, sold or abandoned. Stocks and bonds owned increased during the year \$9,162,830. Supplies, tools, etc., increased \$8,080,517.

BELL TELEPHONE SYSTEM IN UNITED STATES.

COMBINED BALANCE SHEETS, 1915 AND 1916.

(DUPLICATIONS EXCLUDED.)

ASSETS:	Dec. 31, 1915	Dec. 31, 1916	Increase
Telephone Plant.....	\$ 880,068,520	\$ 946,293,248	\$ 66,224,728
Supplies, Tools, etc.....	15,951,582	24,032,099	8,080,517
Receivables.....	43,518,625	66,029,580	22,510,955
Cash.....	45,716,330	80,692,829	34,976,499
Stocks and Bonds.....	72,652,646	81,815,476	9,162,830
Total.....	<u>\$1,057,907,703</u>	<u>\$1,198,863,232</u>	<u>\$140,955,529</u>
LIABILITIES:			
Capital Stock.....	\$ 440,711,200	\$ 463,101,569	\$ 22,390,369
Funded Debts.....	353,236,464	422,586,617	69,350,153
Bills Payable.....	2,404,920	3,738,451	1,333,531
Accounts Payable.....	29,039,127	38,280,436	9,241,309
Total Outstanding Obligations.....	\$ 825,391,711	\$ 927,707,073	\$102,315,362
Employees' Benefit Fund	9,114,329	9,151,000	36,671
Surplus and Reserves...	223,401,663	262,005,159	38,603,496
Total.....	<u>\$1,057,907,703</u>	<u>\$1,198,863,232</u>	<u>\$140,955,529</u>

due to the heavy construction program in progress. Receivables increased \$22,510,955, of which \$20,000,000 represented temporary investment of surplus cash on hand. Cash balances increased \$34,976,499 to \$80,692,829, which together with the temporary cash investments of \$20,000,000, makes over \$100,000,000 cash assets.

The increase in total assets of \$140,955,529 is represented by \$102,315,362 increase in outstanding obligations of the whole system and an increase in surplus and reserves of \$38,640,167.

In accordance with our previous practice in making up the combined figures for the Bell System, all inter-company items have been eliminated, and all intangible assets have been excluded, so that the combined surplus and reserves as shown above are considerably less than the sum of surplus and reserves shown on the books of the separate companies.

The surplus and reserve, aggregating \$262,000,000, is invested in tangible productive property, the revenue from which, being free from capital charges, is subject only to operating charges, and in this way reduces the cost of the service to the public. It is also a guaranty and protection to the future of the companies of the system, in that it is a provision against abnormal depreciation or obsolescence always possible in any going, progressive business involving so many and highly technical problems in mechanics and physics, for which, at some time, large capital would be necessary to replace the depreciated or obsolete plant.

Your attention is called to a comparative statement of the Bell System for the years 1907 and 1916 made up for comparative purposes in the form heretofore followed. During that period the annual gross earnings have increased \$141,800,000 of which \$107,400,000 has been absorbed by increase in expenses, leaving an increase of \$34,400,000 in net earnings. The increase in interest was \$7,900,000 and in dividends \$17,000,000. The surplus for 1916 was over \$22,000,000.

During this period the assets of the companies have increased nearly \$586,000,000, while the capital obligations and payables outstanding have increased \$375,900,000. The surplus and reserves have increased from \$61,300,000 to \$262,000,000 or over \$200,000,000 after setting aside \$9,151,000 for the Employees' Benefit Fund.

AVERAGE OPERATING UNITS OF ASSOCIATED OPERATING COMPANIES.

(See table on page 17.)

The table on page 17 shows average operating revenue and expenses per station, operating ratios, unit plant cost, etc., of the associated operating companies (not including the American Telephone and Telegraph Com-

BELL TELEPHONE SYSTEM IN UNITED STATES.

COMPARISON OF REVENUE AND EXPENSES, 1907 AND 1916.

(ALL DUPLICATIONS INCLUDING INTEREST, DIVIDENDS
AND OTHER PAYMENTS TO AMERICAN TELEPHONE AND
TELEGRAPH COMPANY BY ASSOCIATED COMPANIES
ARE EXCLUDED.)

	1907	1916	Increase
Gross Revenue.....	\$128,579,800	\$270,400,892	\$141,821,092
Expenses:			
Operation.....	45,894,900	94,744,768	48,849,868
Current Maintenance.....	36,626,700	34,923,549	48,279,805
Depreciation.....	4,873,400	15,131,980	10,258,580
Taxes.....	4,873,400	15,131,980	10,258,580
Total Expenses.....	<u>\$ 87,395,000</u>	<u>\$194,783,253</u>	<u>\$107,388,253</u>
Net Revenue.....	\$ 41,184,800	\$ 75,617,639	\$ 34,432,839
Deduct Interest.....	10,508,500	18,378,931	7,870,431
Balance Net Income.....	<u>\$ 30,676,300</u>	<u>\$ 57,238,708</u>	<u>\$ 26,562,408</u>
Deduct Dividends Paid.....	18,151,700	35,160,119	17,008,419
Balance for Surplus.....	<u>\$ 12,524,600</u>	<u>\$ 22,078,589</u>	<u>\$ 9,553,989</u>

COMBINED BALANCE SHEETS, 1907 AND 1916.

(DUPLICATIONS EXCLUDED.)

	Dec. 31, 1907	Dec. 31, 1916	Increase
ASSETS:			
Contracts and Licenses..	\$ 9,078,000	\$ 9,078,000*
Telephone Plant.....	502,987,900	\$ 946,293,248	443,305,348
Supplies, Tools, etc.	17,165,200	24,032,099	6,866,899
Receivables.....	29,584,500	66,029,580	36,445,080
Cash.....	24,869,600	80,692,829	55,823,229
Stocks and Bonds.....	29,448,300	81,815,476	52,367,176
Total.....	<u>\$613,133,500</u>	<u>\$1,198,863,232</u>	<u>\$585,729,732</u>
LIABILITIES:			
Capital Stock.....	\$291,095,400	\$ 463,101,569	\$172,006,169
Funded Debts.....	196,113,700	422,536,617	226,422,917
Bills Payable.....	45,175,700	3,738,451	41,437,249*
Accounts Payable.....	19,436,600	38,280,436	18,843,836
Total Outstanding Obligations.....	<u>\$551,821,400</u>	<u>\$ 927,707,073</u>	<u>\$375,885,673</u>
Employees' Benefit Fund.....	9,151,000	9,151,000
Surplus and Reserves....	61,312,100	262,005,159	200,693,059
Total.....	<u>\$613,133,500</u>	<u>\$1,198,863,232</u>	<u>\$585,729,732</u>

*Decrease.

pany's long-distance lines), for the years 1895, 1900, 1910, 1915 and 1916.

Although there are objections to the use of the subscriber's station as a unit or standard, especially in comparisons of one part of the country with another, yet it is the best unit available and for general comparisons of the whole system from one year to another it gives some idea of the trend of the business.

It will be observed that both average earnings and average expenses per station which now vary slightly from year to year are very much less than in earlier years. The average expenses per station have been kept down, in spite of improved wages and increased taxes, by improved methods and greater efficiency in every branch of the service.

The decrease—from \$69.75 in 1895 to \$30.57 in 1916—in the *average rate of earnings per station* made possible, as stated in last year's report, by the improvements in apparatus and methods, is largely the result of "measured service," which places the use of the system within the reach of the many who can afford to pay for actual use of the service by them, or its value to them, but would not, possibly could not pay, and in any case should not be called on to pay, for more than their own service, or to pay any rate based on average use. Average use is very greatly increased because of the very large use made by some. The best and most complete answer to the demands for flat rates is that 75 per cent. of the total subscribers of the Bell System pay less than the average rate for their telephone service. Any method of charging which does not call upon the large users for their proportion of the cost caused by their use is unjust to the great mass of subscribers and would prevent many from availing themselves of the service.

Particular attention is again directed to the percentage of net earnings and of dividend and interest disbursemen

**AVERAGE OPERATING UNITS OF ASSOCIATED OPERATING
COMPANIES, 1895 TO 1916.**

(THIS TABLE COVERS THE COMPANIES OWNING ALL THE
EXCHANGES AND TOLL LINES OF THE BELL TELEPHONE
SYSTEM EXCEPT THE LONG-DISTANCE LINES OF
AMERICAN TELEPHONE AND TELEGRAPH CO.)

Average per Exchange Station.

EARNINGS:	1895	1900	1910	1915	1916
Exchange Service.....	\$ 69.75	\$ 44.68	\$ 31.28	\$ 29.80	\$ 30.57
Toll Service.....	11.35	12.60	9.47	8.65	9.05
Total.....	\$ 81.10	\$ 57.28	\$ 40.75	\$ 38.45	\$ 39.62
EXPENSES:					
Operation.....	\$ 29.15	\$ 21.63	\$ 15.14	\$ 15.61	\$ 15.97
Taxes.....	2.23	2.37	2.00	2.02	2.16
Total.....	\$ 31.38	\$ 24.00	\$ 17.14	\$ 17.63	\$ 18.13
Balance.....	\$ 49.72	\$ 33.28	\$ 23.61	\$ 20.82	\$ 21.49
Maintenance and Deprecia- tion.....	\$ 26.20	\$ 17.68	\$ 13.46	\$ 12.38	\$ 12.62
Net Earnings.....	\$ 23.52	\$ 15.60	\$ 10.15	\$ 8.44	\$ 8.87
Per Cent. Operation Expense to Telephone Earnings.....	35.9	37.8	37.2	40.6	40.3
Per Cent. Telephone Expense to Telephone Earnings.....	71.0	72.8	75.1	78.1	77.6
Per Cent. Maintenance and Depreciation to Average Plant, Supplies, etc.....	9.1	8.4	9.5	8.8	9.2
Per Cent. Increase Exchange Stations*.....	15.7	26.5	11.8	6.9	9.7
Per Cent. Increase Miles Ex- change Wire*.....	15.9	33.2	12.0	6.8	6.9
Per Cent. Increase Miles Toll Wire* (excluding Long-Dis- tance Lines).....	21.3	25.2	11.5	.9†	8.0
Average Plant Cost Per Ex- change Station (Exchange and Toll Construction, excluding Long-Distance Lines).....	\$260.00	\$199.00	\$142.00	\$138.00	\$135.00
Average Cost Per Mile of Toll Wire (including Poles and Conduits, excluding Long- Distance Lines).....	\$ 81.00	\$ 71.00	\$ 66.00	\$ 70.00	\$ 67.00
Per Cent. Gross Telephone Earnings to Average Plant..	29.7	28.4	28.8	27.7	29.4
Per Cent. Total Net Earnings to Average Capital Obligations.	9.76	8.85	7.52	7.20	7.88
Per Cent. Total Net Earnings to Plant and Other Assets...	9.36	7.96	6.65	5.84	6.17
Per Cent. Paid Out on Average Capital Obligations.....	5.13	6.10	6.01	5.88	5.85
Per Cent. Paid Out on Plant and Other Assets.....	5.09	5.57	5.31	4.76	4.58

*Increase during year shown, over previous year.

†Small increase mainly due to increase in radius covered by exchange rates.

of the associated operating companies to their total plant and other assets; also of taxes paid to the public:

Percentage of net earnings to plant and other assets.....	6.17
Percentage of charges paid on capital to plant and other assets.....	4.58
Percentage of taxes paid to public to plant and other assets.....	1.41

These percentages of earnings and charges compare with 5.84 per cent. and 4.76 per cent. in 1915. The increased percentage of net earnings for 1916 is not normal, being as it is due to the sudden increase in demands for service without a corresponding increase of plant, a condition under which service could not be satisfactorily given, and which could not be allowed to continue any longer than impossible to avoid. The decreased percentage of dividends and interest to investment reflects a lesser increase in average capital obligations than in plant due to the utilizing of surplus and unexpended reserves for additions to plant and other assets.

The amount distributed for interest and dividends on the outstanding obligations of the associated companies, out of their earnings, constitutes but a small per cent. on their plant and other assets, and if the taxes paid are considered the percentage is less than that of any well-secured bond.

WESTERN ELECTRIC.

The relations with the Western Electric Company have been attacked from various quarters, and always from the questionable standpoint of self-interest. This relation, which we have described in previous reports, particularly in the report for 1914, is substantially that of a "manufacturing department" of the business, indispensable to every enterprise which requires the manu-

ufacture for its own use of such a variety and magnitude of apparatus and equipment of "special," highly technical and continually changing character, which cannot be procured or provided for in the open market. That this manufacturing should be closely associated with the business as a part, or a division is particularly necessary, the development is continuous, the ideas and suggestions for improvements very largely originate in the operation, in the investigation of the operation, in the course of experimentation or in the course of manufacture.

While it is a positive fact that it is impossible to procure from others the same character of manufacture or goods at less cost than from the Western Electric Company, or many of them even at any price, yet first cost cannot be made the deciding factor in the purchase of equipment so delicate and perishable as the telephone equipment. Depreciation and high maintenance will soon offset a very considerable saving in original expenditure. High-class service and low-class equipment do not co-ordinate.

These relations are considered by impartial and well-qualified experts to be the most effective for their purpose, which is the production of apparatus of high efficiency, reasonable first cost, and low cost of maintenance. This can be accomplished only by the close co-operation between the operating companies, the technical departments, and the manufacturing company. Every requirement of the service, every possible improvement in apparatus from the operating point of view, is as a consequence of this co-operation, embodied in the output of the manufacturing company. The result is that the apparatus is just as near what is wanted as it can be made. It is obvious that this must be so, this production requires a complete knowledge of the present requirements of the service, an exhaustive study of the future requirements. No manufacturing company not holding this

relation could possibly afford this close co-operation with the operating company, nor could any operating company afford to allow any other manufacturing company such an intimate hold on the development of its equipment.

Our associated companies are not under any obligation or coercion to buy of the Western Electric Company, but they do buy practically all of their requirements from that company, because they know that its product is made under the above-described conditions. As other companies connect with our system or otherwise become acquainted with these conditions, they are inclined to the same course, but they are neither obliged nor coerced to. For the same reason that the Western Electric Company's product is what our companies want it is what others want.

It is contended that this creates a condition which is unfair, in that other manufacturers are unable to sell to the Bell Companies. What is there unfair about any enterprise requiring the expenditure of large amounts of money for highly specialized machinery and equipment vital to its operation maintaining its own manufacture. Why should not the ideas and suggestions originating within the system be worked out within the system itself

EMPLOYEES' BENEFIT FUNDS.

The Plan for Employees' Pensions, Disability Benefit and Death Benefits described in previous reports has been in complete and successful operation throughout the Bell System for four years. The working out of the Plan has met the necessities of the situation described in the report for 1912, and the beneficial effects then hoped for have been entirely realized. The trend of public opinion and the adoption of similar plans in other industries have since made it plain that the Bell System was one of the leaders in understanding and adequately providing for the needs of the workers in the exigencies of life for which

not all are able to provide. And the response of employees to the care of their interests by the Bell System, evidenced by this Benefit Plan and by other provisions for their welfare, has been all that was expected. Their loyal interest in the Bell service, their readiness to take responsibility and to co-operate with each other cheerfully and intelligently have been exemplified very many times during the strain of heavy traffic and extraordinary construction work of the past year.

In the four years 1913-1916 inclusive, the expenditures from the Benefit Funds of the Bell Companies have aggregated \$5,611,016. At December 31, 1916, the reserves for these Benefit Funds aggregated \$9,151,000. Some figures for the year 1916 will be of interest:

Pensions. At the end of the year 284 former employees were on the pension roll, a net increase of 27 during the year. The average pension paid was \$45 per month.

Sickness. 18,760 cases of sickness for which benefits were paid under the Plan occurred during the year. This was an increase of 3,435 cases over 1915, part of which would be naturally expected because of the much larger number of employees in service and part of which is explained by the epidemic of influenza throughout the country during the winter of 1915-16. The number of sickness cases at the end of 1916 was only 1,531, as compared with 2,011 at the beginning of the year. The average period of disability for completed cases was 37 days, and the aggregate sickness benefits paid were \$959,729.

Accident. There were 10,646 accident cases during the year, of which comparatively few were serious. In 35 per cent. of the cases the employee went back to work within a day. In 71 per cent. of the cases the period of disability was not over one week. The increase in number of accidental injuries over the previous year is due to the larger amount of construction work carried on and probably to the greater number of less ex-

perienced men employed. The total benefit payments on account of accidental injuries were \$557,979, including \$148,126 for medical attendance, hospital care and other expenses incurred in aid of those injured.

Death Benefits. \$157,077 was paid in death benefits during the year (excluding accident cases included above) to the dependent relatives of 182 employees who at their death had been in the service five years or more. Burial expenses for 32 who left no dependents were \$5,884, a total of \$162,961.

Summary. The total amount of benefits paid from these funds during the year was \$1,816,101, of which \$336,033 was provided by interest on the funds and the balance was appropriated by the companies. In addition the companies paid the expenses of administration of the Plan, including general medical supervision and assistance.

As heretofore, financial assistance has also been given in many cases of disability which did not come wholly within the limitations imposed on the Employees' Benefit Funds. The cost of this assistance was \$115,865.

EMPLOYEES' MILITARY SERVICE AT THE MEXICAN BORDER.

Employees of the Bell System who on June 18, 1916, were members of the National Guard or Naval Militia and were called into service by orders issued in accordance with the proclamation of the President of the United States of that date, and employees who enlisted subsequently, were allowed full pay during the first three months of their absence and thereafter full pay less the amounts they received from the Government. The total allowances made under this arrangement aggregated \$284,194 up to December 31, 1916. The periods of absence naturally varied as the Government's needs required. In June 695 employees were on leave of absence for military service, this number increasing to 834 in August and then gradually decreasing to 407 in December

REPORT OF THE AMERICAN TELEPHONE AND TELEGRAPH COMPANY.

In any consideration of a statement of the earnings of the American Telephone and Telegraph Company, it is necessary to a proper understanding to know that it does not represent the actual operations of the telephone service of the Bell System. The statement of the expenses of the American Telephone and Telegraph Company represents only the cost of the maintenance of the central administration of the whole system, as explained elsewhere. The disbursements of dividend and interest represent the charges on the securities issued by the Company to finance the associated companies and the long-distance lines.

The statement of earnings of the American Telephone and Telegraph Company represents, in addition to the net receipts of the long-distance lines, only that part of the earnings of the Bell System which is received by the American Telephone and Telegraph Company, out of the divisible surplus of the associated companies from operation, as interest or dividends on money advanced by the Company to finance the associated companies, or as payments by the associated companies to maintain the central administration.

EARNINGS.

The net earnings of the American Telephone and Telegraph Company for the year were \$44,743,376.45, which is \$3,625,889.17 more than for the previous year. The interest charges were \$6,730,098.86 and the dividends at the regular rate of 8 per cent. per annum were \$31,122,187.46. Of the resulting balance there was carried to Reserves \$2,500,000 and to Surplus \$4,391,090.13.

BALANCE SHEET.

The balance sheet of the American Telephone and Telegraph Company is given as usual at the end of this report. By comparison with the previous year's balance sheet it will be noticed that the investment in stocks, bonds and notes of associated companies increased \$21,845,830.60 and in permanent plant, \$5,041,396.54, a total of \$26,887,227.14.

The account "Trustees-Employees' Stock Purchase Plan," \$9,153,950.43, represents the balance on advances made to the Trustees to acquire stock which they sold to employees on the plan of easy payments explained in previous reports, less the payments on that account received from employees. The increase is due to the additional stock sold employees in March, 1916.

An increase in current assets of \$37,185,134.56 and in cash of \$35,367,105.52 reflects the new financing in December, 1916.

On the other side, under liabilities, the increase in capital stock outstanding of \$15,126,500 represents chiefly stock issued in exchange for convertible bonds. Capital Stock Installments of \$32,019 represent advance payments for shares to be issued in 1917 under the offer of new stock referred to elsewhere. The total indebtedness increased \$77,821,332.90, the noteworthy item under this head being the \$80,000,000 bonds issued December 1, 1916, hereinafter described.

For the total increase in assets of \$99,797,450.06 there was a net increase in capitalization and indebtedness of \$92,979,851.90, showing a net improvement in the Company's financial position of \$6,817,598.16 which is represented by the increase of that amount in surplus and reserves.

CAPITAL STOCK AND BONDS.

During the year, \$14,173,600 of the 4½% convertible bonds were converted into stock at the ratio of \$120 in bonds, or \$100 in bonds and \$20 in cash, for one share of stock. Nearly all the conversions were on the latter basis. Of the \$67,000,000 bonds issued in 1913 there were left outstanding at the end of the year only 13,890,100.

Of the 4% convertible bonds \$1,002,000 were converted during the year, leaving outstanding \$3,127,000. Of the \$15,126,500 capital stock issued during the year, 14,728,700 was issued in exchange for convertible bonds and \$397,800 was treasury stock sold for cash.

As of February 1, 1916, the Company sold \$40,000,000 of its two-year 4½% coupon notes and \$10,000,000 of similar notes of associated companies bearing the endorsement of this Company. It was arranged that up to April 1, 1916, there might be substituted for any part of the American Telephone and Telegraph Company's notes an equal amount of associated companies' notes endorsed by this Company, and substitutions to the amount of \$18,390,000 were duly made, so that there were actually outstanding, \$21,610,000 of this Company's notes and \$28,390,000 of associated companies' notes endorsed by this Company. The Company has since reacquired and cancelled \$6,155,000 of its own notes of this issue, so that at December 31, 1916, there were outstanding as shown by its balance sheet \$15,455,000 of its own notes. The Company has also acquired and carries \$5,941,000 of these associated companies' notes due February 1, 1918, leaving outstanding \$22,449,000 of the issue which bear endorsement. There are also outstanding endorsed by this Company \$1,610,000 associated companies' notes due February 1, 1918, and \$10,650,000 notes of the 195 Roadway Corporation due July 1, 1920, which corpora-

tion owns the real estate in New York City where the Company's offices are now located.

To meet the financing by this Company of the associated operating companies and for other purposes, the Company sold, as of December 1, 1916, \$80,000,000 of 30-Year 5% Collateral Trust Gold Bonds. Capital stock of the following companies of the par values shown has been deposited with the Old Colony Trust Company Trustee, as collateral security for this issue of bonds:

New England Tel. & Tel. Co., par value...	\$10,900,00
New York Telephone Co., par value.....	34,462,00
Southern Bell Tel. & Tel. Co., par value..	12,208,70
Southwestern Tel. & Tel. Co., par value..	23,377,00
Pacific Tel. & Tel. Co. (preferred shares), par value	13,600,00

The estimated value of these shares exceeds \$107,000,000. Provisions are made for the redemption of all or any part of the bonds at 105 per cent. of their par value at the Company's option on sixty days' notice, and for sinking fund of one per cent. per annum.

The total outstanding capital stock and bonds of the American Telephone and Telegraph Company at December 31, 1916, were as follows:

Capital Stock.....	\$395,603,600
4% Collateral Trust Bonds, 1929..	78,000,000
4% Convertible Bonds, 1936.....	3,127,000
4½% Convertible Bonds, 1933....	13,890,100
5% Western Tel. and Tel. Bonds, 1932.....	9,985,000
5% Collateral Trust Bonds, 1946.	80,000,000
Total.....	<u>\$580,605,700</u>

For the \$395,603,600 capital stock \$430,377,852 has been paid into the treasury of the Company; 1

During the year, notwithstanding the delays and difficulties which have been experienced in all industries in conducting engineering and construction work, important progress has been made in applying improvements

ENGINEERING.

During the year the building which was commenced some years since by this Company and The Western Union Telegraph Company was completed and is now occupied by the Company. The purpose of the building was to supply headquarters for the wire service, not only of sufficient capacity, but which would correspond to the importance of that service, and reflect in a way its importance in the economic world. The building, as completed, certainly can always be regarded with satisfaction. Although it is in contemplation that the American Telephone and Telegraph Company shall become sole owner of the building, it is still owned jointly with the Western Union. Arrangements, however, are being made for the Western Union to continue their general office in the building, retaining for that purpose several floors.

195 BROADWAY.

In addition to the issue of \$80,000,000 30-Year 5% Collateral Trust Bonds in December, 1916, it seemed wise to your Directors to offer to shareholders the right to subscribe to shares of new stock in the proportion of one share for every ten shares outstanding as of December 11, 1916. The rights to subscribe expired on January 22, 1917, and practically all the stock offered, \$39,550,600, was subscribed for. The particulars and conditions of this stock subscription were set forth fully in the circulars which were sent to all shareholders.

FINANCING FOR 1917.

\$34,774,252.74 in excess of par value representing premiums on stock which are included as part of the Company's surplus.

All discounts on bond and note issues are deducted in determining the net surplus as shown in the balance sheet.

The number of shareholders, not including employees purchasing stock under the plan of easy payments, was 70,555 on December 31, 1916, and shows an increase of 5,043 during the year. That the distribution continues to be more general appears from the following:

- 62,090 held less than 100 shares each;
- 8,064 held from 100 to 1,000 shares each;
- 367 held from 1,000 to 5,000 shares each;
- 20 held 5,000 shares or more each (omitting brokers, holders in investment trusts, etc.).

Of the holders of less than 100 shares each,

- 15,003 held 5 shares or less each;
- 46,845 held 25 shares or less each.

The average number of shares held was 56, or deducting the stock held by Trustees under the Employees' Stock Purchase Plan the average was 54 shares.

A majority of the Company's shareholders are women. Less than 5 per cent. of the stock was at December 31st in the names of brokers and less than 2 per cent. of all the stock is held in Europe.

To the 70,555 stockholders of record shown above there should be added some 43,000 employees of the Bell System in all parts of the country who are paying for stock out of their wages at the rate of \$2 per share per month. Counting these and also those persons whose stock is held for them in investment trusts and the like, there are probably at least 120,000 actual owners of stock in this Company.

in construction and equipment to the telephone plant of the Bell System. These improvements have made intra-continental and transcontinental telephonic transmission of speech a commercial actuality, and have also shown that inter-continental speech transmission is a probability within the limitations of the natural physical conditions. These improvements in lines and equipment have increased the range of telephonic speech transmission many fold, and already the cities in the United States of over 50,000 inhabitants, with most of their adjacent and connected towns and territory, have been placed in speaking communication with each other, and brought into the range of extra long-distance service.

These improvements which have been in trunk-line construction and in the intermediate and auxiliary apparatus were so adapted to that existing, that there have been necessary only slight material changes in the line, switchboard or substation equipment of the Bell System with its millions of subscribers and hundreds of millions of plant.

The economic value of this in saving and in results to the public and to the Bell System is impossible to compute, but is enormous.

The value of these improvements not only to the commercial interests of the country, but in the problem of national defense, was demonstrated during a mobilization of communication forces conducted by the staff of the Company at the request of the Secretary of the Navy and in co-operation with naval officers under the command of Admiral W. S. Benson, Chief of Naval Operations. For three days, during which war conditions were simulated as far as possible, the Navy abandoned all other forms of communication between the Navy Department at Washington and the navy-yards and naval stations in the continental United States, and utilized the Bell System for telephone and telegraph communications by wire with all of the naval forces in that territory.

The service of the Bell System is continuous, that is, it covers the full 24 hours. During the period of mobilization, naval officers and the telephone officials assigned to the work were on duty day and night, and at all times could obtain instantaneous telegraph or telephone communication with any point involved in the mobilization. The Secretary of the Navy himself conversed with a number of the principal naval stations, and the Admiral in command personally talked to the commanding officer at all of the naval stations on the Pacific Coast from Bremerton, Washington, to San Diego, California, and to the navy-yards and naval stations on the Gulf and Atlantic coasts and on the Great Lakes.

While the mobilization was intended primarily to test the efficiency of the wire system in time of war, an interesting test of wireless telephony was made. The transmission was by wire to the wireless stations, where it was automatically transferred to wireless, or vice versa.

The Secretary of the Navy, seated at his desk in the Department at Washington, talked with Captain Chandler on board the battle-ship *New Hampshire* at Hampton Roads.

Under orders given to him by the Secretary of the Navy and Admiral Benson, the Captain of the *New Hampshire* proceeded out to sea as far as the Southern Drill Grounds and returned, reporting his position by telephone every hour to the Department at Washington.

The atmospheric electrical conditions being very favorable, the talking to and from the ship was so loud and distinct that Captain Bennett, in command at the Mare Island Navy Yard on the Pacific, conversed with Captain Chandler on the *New Hampshire*, which was at that time in a storm on the Atlantic. This conversation was transmitted over the transcontinental telephone wire circuit from Mare Island, California, to the radio station at Arlington, Virginia, and there transferred automatically

to the wireless from Arlington to the ship at sea, the return conversation taking the opposite course.

The results of this mobilization were most satisfactory to the Secretary of the Navy, the naval officers, and the telephone officials, as it demonstrated on the part of the plant and organization of the Bell System complete readiness to respond to the requirements of the national defense should an emergency arise.

During the year important work has been done in co-operation with the officers of the Signal Corps of the Army, in planning for the best way of making use of the plant and organization of the Bell System in case of military necessity.

Enough has already been done to make certain that the co-operation and assistance which can be given by the Bell System to the Army whenever necessary will be even more varied and more extensive than that required by the Navy.

A plant so elaborate and extensive as is the telephone plant composing the Bell System requires the greatest care and most effective methods to maintain it constantly at its highest efficiency. This is emphasized in all classes of toll-line connections where there may be hundreds of separate pieces of apparatus in a circuit, a defect in any one of which may destroy a connection; and in the extra long circuits, like the transcontinental line, the highest degree of maintenance is necessary in order to give commercial service at all.

A break in the tracks of a transcontinental railroad immediately affects only the running of trains in a short section near by and may have no effect whatever upon the schedule of trains a thousand miles away. In the case of the transcontinental telephone circuit, however, a break, whether at New York or at San Francisco or at any intermediate point, would disable the entire line from end to end for all through business.

Greatly improved methods for maintaining and connecting such lines had to be worked out, improved devices for promptly detecting and locating faults, improving transmission and overcoming obstacles had to be perfected and introduced, all of which have been of the greatest benefit, not only when used in connection with extra long-distance service but also in the local service and on lines of short length, and have proved to be of very great advantage in the service of the Bell System.

In the handling of traffic over these extra long lines, as well as in their maintenance, new operating methods have been required, that the operators might be able to connect or join together correctly and promptly the numerous sections of line required to make up the long and complicated speaking circuits. Our traffic engineers are successfully meeting these new conditions. During the year, in co-operation with the associated companies, they have studied the traffic conditions in all of the cities of the United States. They have reviewed the operating conditions and have introduced many improvements which have been of the greatest benefit to the service, both long distance and local.

The making of development studies and fundamental plans, being the foundation work upon which all construction engineering plans are based, formed as usual an important part of the year's work. Such plans have been completed for Boston, Baltimore, Chattanooga, Detroit, Duluth, Grand Rapids, New Orleans, Pittsburgh, and Springfield, Mass. In the case of plans for a number of other places important progress has been made.

The further adoption of electric traction by railroads and the continued extension of electric power lines have been the occasion of great activity on the part of our engineers in studying the difficult problems of telephone operation in the neighborhood of these circuits. Our co-operation with the California Railroad Commission

in its exhaustive investigation into the subject of these interferences has been continued during the year, and we have done co-operative work with the United States Bureau of Standards and with state commissions in Illinois, Iowa, Nebraska, and Wisconsin, in connection with rules governing the operation of such wires. Important field investigations were conducted in connection with power lines in Iowa, the electrification of the Pennsylvania Railroad, that of the Chicago, Milwaukee & St. Paul Railway, and others.

We have co-operated with the American Institute of Electrical Engineers in work looking to the development of apparatus to be used by the power companies in lessening the disturbance which they produce, and important bulletins and circular letters embodying valuable information relating to the whole subject of disturbances have been sent to the associated companies.

In co-operation with the Insurance Department of the Company attention has been given to the matter of improving the fire protection for our central offices, and to methods whereby the most favorable insurance rates may be obtained. Acting in co-operation with our engineers the Insurance Department has made during the year 400 important inspections of telephone central offices, which resulted in many suggestions helpful to the associated companies.

In new central office building construction, the year has been unusually active, general building and equipment plans for 24 new buildings have been worked out by the Department in co-operation with the associated companies. When completed and filled with the equipment contemplated, the expenditures, based upon these plans, would be something over \$22,000,000.

Hundreds of new inventions and patents have been studied and tested, and attention has been given to almost every one of the parts making up our complex plant, to

see how they might be improved, with the result that an unusually large number of improvements have been introduced in cable, switchboard, substation and other apparatus, resulting in substantial advances or economies in the operating, maintenance or construction of the plants of the associated companies.

LEGAL.

The year 1916 has marked substantial progress in the important work of the Legal Department arising out of commission regulation. Telephone companies are subject to regulation by the Interstate Commerce Commission; all but four of the states have created local commissions which exercise jurisdiction more or less complete over them. The subjects to which the jurisdictions of the commissions extend embrace rates, service, accounting, financing and capitalization. While commission regulation has not yet progressed beyond the development stage and this will probably be true of it for a number of years, it has gone far enough to warrant the statement that substantial progress has been made toward sound results. The persistent policy of the Company has been to co-operate with the various commissions, and so far as practicable to aid them in solving the problems that are presented, along the sound and just economic lines which must form the basis of any permanent success in the regulation of public utilities. To this end, it has been the constant purpose of the Legal Department to ascertain and establish the fundamental legal and economic propositions which must underlie sound regulation, and to present these principles clearly and forcibly to the various commissions.

It is worth noting that the development of the work of the commissions manifests an increasing appreciation by them of their responsibilities and a growing earnest-

ness in their efforts to reach the right solutions of the questions presented to them.

In valuations, the present disposition of the commissions is to allow, without serious controversy, the items which are susceptible of direct and certain proof. The so-called intangibles represent elements of value which must be recognized as of large importance. The proof to establish them in the very nature of things lacks the certainty which may be attained as to so-called physical factors. It necessarily must rest largely upon the judgment of individuals. This tends to uncertainty and has surrounded the measurement of these items with difficulties. The disposition has been to recognize them as elements of value and to allow them, in one form or another, so far as they have been clearly established.

A question of growing importance arises out of the distinction between regulation and management. The power of the state to regulate is beyond question. It is just as well settled that this power is not broad enough to include the power to manage. This is something that inheres in the ownership of the property and belongs to the utility itself. Where it has been brought to their attention, the tendency of the commissions has been frankly to recognize this distinction. The fact that cases may arise where it will be difficult to draw the line between management and regulation does not mean that there is no such distinction. The distinction between negligence and due care is universally recognized, although many cases arise which it is difficult to assign to one side or the other of the line. During the year that has just closed an especial effort has been made to draw attention to this distinction between regulation and management because it is felt that a failure to recognize it would result in serious embarrassment not only to the utilities but to the public as well. Not good, but harm, would result

from an attempt on the part of regulation to absorb what properly belongs to management.

As to the many questions of service which have arisen, co-operation with the commissions has in the majority of cases removed all differences and resulted in conclusions which have been accepted by the companies without impairment of their service.

Each of the associated companies maintains its own legal department and performs for itself the services which are ordinarily assigned to such a department. This work the Legal Department of the American Company does not attempt to do. Its function as a part of the central organization is, in a sense, to act as counsel for the various counsel for the associated companies, and to render to them such assistance as they may require in the transaction of their affairs.

This assistance may be general, as in the publication of periodical bulletins intended to advise counsel for the associated companies as to current decisions of special interest by the courts and by commissions, or it may be special, in relation to unusual or important transactions which may arise in connection with the affairs of the associated company.

It is the purpose of the Legal Department of the American Company to keep sufficiently in touch with the legal affairs of the entire system to be assured that the experience of the entire system shall be available for the benefit of each part of it and that all questions of a general nature, as well as all questions of policy, in which the system as a whole is concerned, shall be disposed of along sound and consistent lines.

A striking indication of the continuous development of the telephonic art lies in the fact that it has been necessary to supplement the patent division of the Legal Department which has always been located in Boston, by an additional force at the office in New York. The

patent division in conjunction with the Engineering Department has done much efficient and important work during the year that has just ended.

The situation as to pending litigation is practically unchanged. The amount of the current litigation is wholly unimportant. It is true now, as it has been at the times of the making of the last two reports to the stockholders, that no suit is pending against this Company or any of its associated companies charging any violation of any state or federal anti-trust law. No such suit has been brought since the making of the last report.

The suit of William A. Read & Company was commenced four years ago, and has been referred to in the last three preceding reports. On January 20, 1917, the trial court filed a very elaborate opinion of more than two hundred typewritten pages. The questions involved are so numerous and so intricate that they cannot be discussed in detail in this report. The opinion finds the ownership of the stock of the Central Union Telephone Company, in the absence of an approval of such ownership by the State Public Utilities Commission of Illinois, to be against the local policy of that state and illegal. It acquits the officers of the American Company of all of the charges of fraud and bad faith urged against them. It upholds the four and one-half per cent. payment under the license contracts, and the contract establishing the relationship with the Western Electric Company. It orders an accounting as to a number of relatively minor matters. Some time will elapse before the form of the decree to be entered pursuant to this opinion can be settled, and until this is done it will not be possible to state with entire accuracy the exact result of the decision.

The arrangement with the Attorney-General of the United States, which is set out in detail in the correspondence printed in the report for the year ending

December 31, 1913, is still in effect. A careful adherence to it, coupled with entire frankness as to all of the matters in which the Company has been concerned, has resulted in a continued avoidance of misunderstandings and disagreements with the federal authorities.

GENERAL.

BELL SYSTEM.

It is not inappropriate to restate clearly the attitude of the Bell System towards the public. Repetition of facts prevents misunderstanding, as misunderstanding is based on either misleading, mistaken or meager information.

There is no utility or public service upon which the public is more dependent; no utility whose quality of service is of more importance. It has become one of the dependencies of modern life and may be correctly termed, as it has often been, the nervous system of social and economic organization. The character of these relations, their intimacy, are apt to give rise to criticism and cause agitation for national, state or municipal operation or for competition.

This relation involves many delicate conditions and obligations, some incumbent upon the public, some upon the operating associated companies comprising the system, as an organization, some upon the employees as part of the organization, and as individuals so far as they can be considered independently of the organization.

The prerequisite of a telephone service is that it should be a continuous, immediate service; free as possible from any interruptions, and it must be possible for any one in any one place to get into personal conversational communication with any one in any other place; any other service would be a limited service.

The first essential to an understanding is to realize the peculiarities of the telephone service. There is no other utility or public service in any way analogous. Electric light, gas, water, are from a common supply; your service is obtained by turning a key. Personal transportation is conveyance in a vehicle in common with others running

on a schedule between definite points. Transportation of commodities or transmission of messages is the forwarding or transmission of the package or message from point to point by the employees of the utility. Each package or message can be forwarded singly or in quantity, and at the convenience of the utility.

The telephone service consists in placing a telephone circuit at the use for personal conversation of parties personally present at distantly separated terminals. To get this service the parties must each be connected with the same system, either through a toll or subscriber's line. It is further unique in that it has no alternate, nothing can take its place. Each circuit is put to the exclusive use of the parties talking and cannot be used for any other telephonic purpose, and the time at which it is used is determined by the convenience of the parties.

The speaking circuit must be a continuous one. The telephone current is a delicate one, a disturbance at any one point putting the whole circuit out of commission, and as only a small part of the connections is between those connected with the same central office and there are relatively few places between which there is sufficient business to maintain special circuits, these circuits must be made up by connecting circuits and parts of circuits passing through the various exchange districts, which necessitates uniformity in the operating methods and the equipment, principal and auxiliary. All employees engaged at terminal or junction points in making up the circuit must work in perfect harmony and co-operation and take their directions from one source; in fact there must be that absolute co-ordination of plant, apparatus, employees and methods that can come only from common interest and common direction.

The telephone system to give perfect service must be one in which all parts recognize a common interest and a common subordination to the interests of all, in fact

it must be "One System," "universal," "intradependent," "intracommunicative," and operated in a common interest.

Such is the Bell System.

The original telephone exchange service and the unit of the "Bell System" is the "Exchange District" by which and over which the local service is given without toll charge to every one desiring service within the area comprised in that district. The "Exchange District" is made up of sub-units of central office districts and through the switchboard every subscriber within a given district is connected by subscriber lines. All the central offices in an "Exchange District" are connected with each other by trunk lines. To connect all subscribers in any "Exchange District" with one central office would be a physical impossibility in any considerable district, for the reason that no central office building large enough could be constructed and equipped; the cost of the extra length of wire to carry all to one central office would be prohibitive and the congestion of wires would make it impossible, whereas the number of trunk lines to take care of inter-central office calls is relatively small as compared to the number of subscribers' lines.

For the same reasons "Exchange Districts" or central office districts do not overlap each other, nor do the subscribers' lines of one district extend into the territory of another district. Any party desiring service can be connected with any subscriber, in a distant or even adjoining district, more economically and efficiently through the central office of his own district and thence by trunk lines through the central office of the desired subscriber.

The district exchange systems are connected with each other by, and form the terminals of, the toll or long-distance lines which are directly connected with their central offices.

Without terminals the toll or long-distance lines would

be of little use. To build special terminals would be substantial duplication of the exchange lines as nearly every subscriber sooner or later, with more or less frequency, desires to connect beyond the exchange district. Connection and close operating relations between the toll and long-distance lines give service between all points on all exchanges, constitute a system, and are the only solution for universal service.

There need be no two exchange systems in any district. Telephonic connection can be had only between parties connected with the same general system. Two systems each serving the same subscribers would be a practical impossibility and an economic absurdity. Two opposition exchanges each with a different list of subscribers would give an entirely different service. To obtain the service of both exchanges, connection with each is necessary, which is duplication. If two exchanges are connected they then in fact belong to one system, for each would have the use of the other's facilities for its subscribers, under some arrangement which necessitated co-operation and subordination. It would still be duplication for neither could or would give the service of the other exchange without compensation.

The inevitable conclusion is one system; one system means no duplication; no duplication means one local exchange system for each separate locality or territory each connected with the other, all operating as one; this would be co-operation, and co-operation can never be competition.

Could this have been obtained by segregated independent competing local exchange systems each reaching over into the territory of the other, to get at the cream parts, with all the interconnecting, independent toll or long distance lines, each struggling for its particular advantage?

This is not a case for argument or opinion now. The "One System" has been created; it is in operation; the

public are educated to its advantages; where there are two systems, the public are demanding and public authorities commanding "One System."

The telephone service is the creation of the Bell interests, working in harmonious co-operation to give the public a new utility, a new convenience. It was given to the public in advance of any demand. The demand was created by the service given.

It was not until after the advantage and the necessity of such service became apparent that there were any opposition exchanges, and it was not until the idea of a comprehensive system became recognized as a public necessity that the opposition companies demanded connection with the Bell System of interconnecting wires. In other words, the opposition companies wanted to better their position and supply their deficiencies by the use of the facilities constructed for, and needed by, the subscribers to the Bell System. To meet that demand would necessitate additional construction by the Bell System for the benefit of opposing interests.

The Bell was pioneer in the exchange system, pioneer in the toll line system, pioneer in the long-distance system, and at all times met the incredulity of the public—first as to the possibility of any telephone service, then as to the possibility of anything but a local service, and then as to the possibility of even a short-distance service, and finally as to the possibility of a long-distance service. While the promoters of the Bell System devoted their efforts to the upbuilding of a system looking to the future, others rushed in to reap the harvest, backed by local interest, local capital, local everything.

The story might have been a different one had the promoters of the opposition companies followed the example of the Bell interests, and organized a system, a system for the future; had they taken advantage in the beginning of the common experience, of all mistakes as

to service, cost of plant, its depreciation and obsolescence, that have been made by all promoters and are being made by all public ownership advocates; and in addition had they recognized that the telephone service had become something besides a local exchange system; that a comprehensive system was becoming a recognized necessity and finally that to hold their position with the public they must give as comprehensive service as the Bell System did.

Why did the public retain their connections with the Bell System, when local operating companies identified and capitalized and organized and operated by local people known to every possible subscriber and every probable subscriber a possible shareholder, were urging and pushing their own organization and service against what was alleged to be a foreign, greedy, selfish monopoly, built up on watered stock and exacting enormous revenues for inadequate, ineffective service? What could stand up against such a canvass except a service which had some superior qualities, some advantage which no other could give?

The qualities which created the Bell System were self-interest subordinated to public spirit, initiative, vision, imagination, courage and energy in creating a new, serviceable utility; developing all its potentialities, and making all possible improvements.

The only advantage the Bell interest ever had was through creative work in developing the potentialities of the telephone service by incorporating with advance construction advanced ideas; placing those facilities for service before the public in advance of all others.

The Bell System was something good, and always something better than any other. It was never resting and always developing something better for the Bell System.

Was the building of a long-distance line from Boston to New York when every dollar in the Company's treasury

had a hundred uses, and when no one had confidence in its practicability, entirely selfish or to be condemned? Was building lines to Philadelphia and Washington and from New York to Chicago before any certainty of their ultimate advantage to the public a grievous sin?

The long-distance construction was years ahead of everything like use or demand. It took years for the public to become educated to its possible advantages. For the first three years the long-distance lines were operated at a loss, and the gross receipts from long-distance service for its first 16 years were less than for the single year 1916.

The Bell idea did not contemplate a monopoly; it contemplated a system and went about the building of it in the only possible way. Telephone service and the telephone system are an evolution; the beginning was the local exchange, following was the connecting of adjacent exchanges, the building of toll lines, the long-distance lines; all interconnecting. What difference could there be whether the separate district exchanges were built directly by the Bell or indirectly through affiliated district companies, organized for local reasons, working in co-operation, harmony, all subordinated to a common interest? Why should it not manufacture for these affiliated associated companies, either directly or through an associated affiliated manufacturing company, its own highly special and technical plant, and in this way have absolute control over quality and character?

The idea was a great public utility for the public advantage and benefit; the advantage to the originators to come through the doing of this public service.

Whatever has developed of a "monopolistic" aspect about "one system" is inherent in the telephone service and is created by the public demand educated to the advantages of universal service.

The field is open and practically has been for twenty-

five years. Since the expiration of the fundamental patent, Bell interests have never relied upon their patents—upon which they have expended millions, about \$6,000,000 in the last ten years paid to outside parties—except as protection in the pursuit of their business. These patents are broad and comprehensive enough to cover any kind of apparatus used in any telephone service in the world.

If there is a public demand for competition in the telephone service or for opposition exchange, there is nothing to prevent the building, but if opposition companies are built in the particularly "fat" districts of the Bell System, is there any reason why the deficiencies of the limited service of such opposition should be supported by the Bell System from the facilities it constructed for and needs for its own service, or is there any reason why the Bell System should raise capital to build additional facilities not needed for its own service, often unprofitable, to supply such deficiencies?

The Bell System was created by the public, and by the peculiarities of the service. It exists because the public patronized it, and the public patronized it because they received a service such as they wanted at a price which was reasonable considering the service; at a price which made it advantageous and profitable to the public.

The Bell System has no monopoly. One system, universal service, do not mean monopoly of ownership—organized co-operation does not mean monopolistic control.

There are about 11,300,000 telephone stations in the United States, 6,500,000 Bell owned and 4,800,000 owned by independent companies or associations.

There are nearly 10,000,000 stations connected with the Bell System, 6,500,000 Bell owned, and over 3,300,000 owned by independent companies.

About two-thirds of the independently owned stations are connected with and form an important part of the Bell System.

The Bell System does not make undue profit. Allowing for taxes paid by the system and by the holders of its outstanding securities, the net annual cost to the public for the use of the property of the Bell System is about the same percentage on a fair valuation of that property as the interest return on high-grade railroad or industrial bonds, and is far less than the legal rate of interest in any state. At the same time investors in the Bell System realize a fair return because the outstanding capital obligations are many millions of dollars less than the value of the property.

The Bell System's charge for service is not exorbitant. The average revenue per station to the Bell System has been reduced 55 per cent. in the last 20 years, and is less than the average charge of any other exchange system that gives continuous and immediate service anywhere in the world and less than that of most of those that give any service. Seventy-five per cent. of the subscribers to the Bell System get their service for less than the average charge. The service of the Bell System is within reach of the small user; the large user pays for his service according to his use.

The Bell System cost of construction is not extravagant. The average cost per station is less than that of other systems of a similar nature in this country or elsewhere. The cost per station, including toll lines but not long-distance lines, is \$135. The average annual gross revenue per exchange station including toll service is \$39.62; the operating expenses, including taxes and depreciation, are \$30.75; leaving the net revenue \$8.87 on an investment of \$135. Out of each dollar of revenue 48.3 cents are paid to labor; 20.3 cents for expenses and supplies; 5.6 cents for taxes; 19.8 cents for dividend and interest; leaving for surplus against the future 6.0 cents.

Two notable epochs mark the progress of the telephone service.

At the Exposition of 1876, Bell of few friends and little encouragement, alone, waiting in the hall of the Centennial. The body of examiners, all notable men, tired at the end of a busy summer day, picked up the crude instrument in a perfunctory way, and the exclamation, "My God! It talks!" electrified the commission and announced the coming of an instrument which revolutionized social and commercial intercommunication. At that time, with those instruments, it was with difficulty that conversation could be carried on between two adjacent rooms.

The other epoch when the spoken voice was transmitted through the very same instruments from shore to shore and back again across the great continent, soon to be followed by the transmission of the spoken voice from the wireless towers of the United States, through space, to Hawaii on one side and Paris on the other.

From epoch to epoch, note the improvement. What made it possible for the same instruments to do at one time, the impossible at the other? It was the creation of instrumentalities and auxiliaries, the removal of obstacles, the building up of a system for transmission over and by which that delicate current, so delicate that it would have to be multiplied 5,000,000 times to light an incandescent lamp, could be either transmitted or when it became attenuated could be picked up and given new life for another distance until its destination was reached.

There are few inventions or discoveries that are fundamental—only one in a generation or so. The innumerable inventions and discoveries which have so changed our arts and industries are built up around those fundamental ones, and generally are the result of defects shown in practice and suggestions through close and intimate association with, and study of, the working of the system.

In the evolution of telephony, the telephone is a small

part. It is not due to the force generated by the telephone that transcontinental or any distant speech is possible, it is the eliminating of obstacles and the assistance of auxiliary apparatus, it is the making of an easy path. You cannot increase the force at the telephone except to a limited extent, the current of minute volume but great intensity has a disposition to dissipate itself, which destroys its own and confuses all adjacent transmission. It is not the telephone apparatus, central office equipment or wires that independently afford or can afford any service. It is the machine as a whole; all the telephones, all the equipment, all the central offices are vital and necessary parts of that machine. That machine is the Bell System.

Those who recall the rattling and crackling noises of the early telephone service, when reliable commercial conversation was difficult between adjacent offices and impossible between adjacent cities, when transcontinental or intra-continental conversation was but a dream and wireless conversation an hallucination, can realize what these improvements have been, but those who knew not of those days cannot be criticised for lack of appreciation because of lack of information. It is to those that this statement is presented.

GOVERNMENT OWNERSHIP.

There are, in various quarters, movements to nationalize or municipalize the telephone service. In favor of these movements, the advocates are using the same arguments and promises, the same statements of possible cheaper service, lower cost of construction, cheaper capital because of low interest on good securities, the same cry of monopoly and extortion, that have been used in the past in favor of public ownership, all of which have over and over again been proved to be fallacious and impossible.

There is no reason why any individual or public offi-

cial—national, state or city—should be misled by any statement in respect to the telephone business. There is hardly a district in the United States in which there has not been an opposition company promoted on substantially these same promises and statements. Yet, even where the plant has been of the cheapest and most flimsy construction and of the most primitive character, and the service far from being dependable, not one of these opposition companies has made good, on the basis of the promises made. There is hardly one of these now in operation whose average book cost is not higher than that of the Bell System, whose rates are not higher than originally promised, and which has not frankly conceded that business cannot be maintained on the terms and conditions of its prospectuses.

To ascertain the real facts, and expose the utter fallacy of the statements and promises, there would be necessary only a very little examination, a very little reflection and a very little common sense, unbiased and unprejudiced.

With a cheaply constructed, cheaply operated rural plant, a fairly satisfactory rural local service can be given at a low cost. There are tens of thousands of such plants now in operation, independent of the Bell System, or connected with it and giving local or limited service.

With urban systems, or systems intended to be used in connection with urban and toll line systems, the construction must be of the highest order, the wires mostly underground, the service must be maintained at the highest standard, such as will afford good conversation, not only locally but to the extreme limits of the system with which it is connected. For long-distance service or for connection over the whole of the Bell System, a cheap, poorly constructed plant would be impossible.

It does seem very singular that the experience of the Northwestern Canadian provinces in government ownership and operation is so entirely ignored by all those who

advocate it. The facts are well known; they are not disputed; it is easy to get them. Influenced by the same arguments and the same promises that have been made by all advocates of public ownership and by all the promoters of so-called competing home or local companies, the provincial governments in Western Canada purchased the local plants. Farmers' lines were to be constructed all over the country, rates were to be cut, etc., etc. No one single promise has been kept or carried out; there has been less extension than with the private company; rates have been raised and rural service neglected, if not ignored. This is history, public and open to all who desire information.

It is believed that the carrying charges on government obligations that would be required to pay for the Bell System property at a fair valuation would in the long run cost the public more than the present carrying charges of the Bell System, allowing for the enormous and increasing taxes paid under private ownership that would be lost to the public under government ownership

REDUCED RATES.

Special reduced rates are always fixed on the theory of making a more uniform load for plant, or rather for the purpose of creating a new class of business for the plant during the otherwise idle periods.

The current charges—overhead costs of maintenance, depreciation, obsolescence, taxes, in addition to the interest and dividend charges on invested capital on a fixed amount of plant—do not vary much with the amount of business. The normal business must bear the charges.

In all kinds of public service, the demand fluctuates according to the hours of the day and the peculiarities of the service. The crowded facilities at certain hours must

pay for the operation during slack hours, in other words, the average load must bear the costs of operation.

If in any utility some plan can be devised which will create, for the sparse hours, a *new traffic* and thus increase the average by utilizing facilities otherwise idle, for such service large reductions could be made; but such traffic must not occupy the plant during the busy hours, only during the otherwise idle hours. It must be a new character of traffic, not requiring any addition to either facilities or operating force.

Compare the telegraph and the telephone service. The telegraph business is a very fluctuating one; the equipment and plant must be sufficient to take care of the maximum load.

Telegrams are written communications handed in for transmission by the employees of the company over its lines, and ordinarily require immediate transmission, but with that transmission the sender has no part. For anything not requiring immediate transmission, or which will not bear the expense, the mails and other facilities are open, unless special inducements are offered. Although the operating force is adjusted as far as possible to the fluctuating load, the facilities cannot be and there are therefore many hours of idle facilities and some of idle force. There are in correspondence all sorts of communication, the imperatively urgent, the urgent, and that in which a few hours make little difference. Deferred and night messages, day and night letters, at special rates create a new business, which can be deferred and dispatched at the convenience of the company at a time when immediate business does not demand the facilities.

A telephone connection is for a personal communication between two people personally present at the terminals of the talking circuits. The service, as given by the Bell System, is as nearly immediate as is physically

possible. It is a service which must meet the convenience of those wanting the service, not the convenience of the Company. The calls for service are made during the active hours of the day and come in the most varying, fluctuating frequency during those hours.

If by some way not yet devised, there could be a telephone business developed which would be a waiting business to utilize these otherwise idle intervals, a much higher efficiency could be got from force and facilities and a lower price for that business might be made, but people do not want to attend at hours unseasonable to their personal convenience or comfort, nor could the parties wanted be found, for the unseasonable hours are the hours of recreation, rest, and sleep, and unfortunately the unseasonable hours for the public are the idle hours of the telephone system. If a deferred service could be spread over these idle hours a lower price would be possible. Such a business would have to be waiting business and, although the conversation might stand the waiting, the parties necessary to the conversation would not.

BUSINESS AND BONUS.

General business which from 1909 had followed normal lines rather closely, began to decline in 1913 and fell very rapidly causing great uneasiness and much disturbance and suffering among those dependent upon their work from day to day. The latter part of 1914 improvement set in in certain lines, prices of our export commodities commenced to rise, business soon rose well above normal lines and still continues so. The telephone business which fluctuates less sharply and more deliberately than general business followed in a degree the course of general business.

In the construction policy of the Bell System it is the aim to have surplus facilities to meet emergencies; in

addition to this surplus there are in the layout of construction some parts which have to be determined and begun many years ahead, and for some parts it is economy to anticipate the growth of the future to avoid frequent and costly reconstruction. There is therefore at all times a large amount of advance facilities wholly or partially completed. In this way the Bell System is provided for all ordinary emergencies caused by rush of business, and can, at short notice, provide for abnormal increase within limits.

Following the course of business for the past few years, the additions to plant were \$26,600,000 in 1908, \$28,700,000 in 1909, \$53,600,000 in 1910, \$55,700,000 in 1911, \$75,600,000 in 1912, \$54,900,000 in 1913, \$50,000,000 in 1914, \$32,900,000 in 1915, and \$66,200,000 in 1916. The figures show generally the trend of business and the policy respecting the surplus plant.

About the end of 1915, responding to general business, from about normal, the telephone business began to increase very rapidly, and soon the surplus facilities were drawn into service. Every effort was made to increase facilities by the rapid completion of construction under course and by new construction, yet before the middle of the year there was in many places more or less congestion and it was often impossible to give the usual immediate service; the sporadic character and fluctuation of these demands increased the difficulties. Although all demands were met with an average delay which would seem inconsiderable in any other system in the world, it was not immediate service. During the late summer and early fall the congestion was still more aggravated and complicated by the "epidemic" which caused so much domestic uneasiness and anxiety. Had it not been for the surplus and advance construction of the companies the results would have been disastrous; as it was they were almost if not quite negligible. Had it been

possible to obtain deliveries of material ordered, even that ordered some time before the congestion set in, there would have been in all probability no appreciable delay in our service, if any.

This is not an excuse, because everything was done that human foresight and past experience indicated should be done. It is a statement of the reasons; reasons which should be understood and appreciated because of the costly effect of the disastrous failures in every line of business, particularly that of transportation, to meet the current demands or even positive undertakings. The failures on the part of the industrials were caused by a lack of plant and equipment, and on the part of the transportation lines resulted from their not having a sufficiency of equipment, terminals, and other facilities, even that sufficient for their normal growth. These failures have been costly and disturbing, and unless soon corrected, will be disastrous; their cost to business generally has more than equalled what it would have cost to provide against them.

In ordinary industrials and in transportation, there is great elasticity; increased output or capacity can be obtained by overtime, 24 hour days, or by crowding the facilities. As is well known, there is no elasticity to a telephone circuit. The demands for service come at certain hours which are fixed by the social and business habits of the public; by the times when the individual can be personally present and can reasonably expect to locate the distant party desired. Each circuit is, while being used, exclusive to the user, and can be used for no other telephone service. If there are parties waiting to take the circuit immediately following its release, the maximum service of the line can be obtained. If there are no parties waiting, then the interval between the demands is lost. The demand fluctuates hourly from a high peak of load during a few of the busy hours of the

day to the very small demand during the recreation hours, and hardly any demand during the sleeping hours. This makes the service load of any telephone system a very low average. This average load will always be greatly increased when there is enough congestion to make the service a slightly deferred service; deferred sufficiently to fill partially some of the non-busy intervals, but not enough to discourage traffic. This is what did happen during the abnormal season.

The additional plant in use including these large surplus facilities, provided without corresponding capital charges, and there being no increased distribution of earnings to the security holders, the net earnings show a large relative increase, notwithstanding very considerable increases in compensations and other expenses.

It should be remembered that a normally non-earning surplus plant is a necessity, that in 1916 this plant was by force of circumstances created an earning factor and to that extent the surplus earnings of the system were abnormal.

In addition to the strain on our facilities, there was a corresponding strain on all the personnel of the system—on the supervising, construction, operating staff. To educate competent operating force, as well as to construct facilities, takes time. The congestion therefore was taken care of by the efficiency, attention, interest and additional effort of the ordinary staff, increased as much as it was possible. The manner in which the entire staff met these demands and aided in maintaining the "Bell System" service, sustained and emphasized its superior character.

Having due appreciation of this extra exertion, faithfulness, loyalty and prompt response to the demands of the service, on the part of our employees, as well as the extra demands upon their earnings in these abnormal times, it was deemed not only proper but advisable to share with them this surplus. Accordingly a distribution

throughout the system of a very considerable part of it was made as a bonus, a recognition and an appreciation. It was hoped that it would help them to a little merrier Christmas, and a little happier New Year, from the thought that while some trains were late, no embargo was declared and no deliveries were refused.

There are three principal factors in giving a satisfactory telephone service; a willing, efficient, contented and attentive staff in operating and construction; ample plant and equipment of the latest type and highest perfection, maintained as such by the continued evolution and progress of the service and facilities for giving the service; an expert staff of observers, investigators and experimenters, all brought into operation, harmonious co-operation and that co-ordination that can be had only by an efficient, attentive and appreciative administration.

No division, department, branch or group can be either ignored or favored at the expense of the others without unbalancing the whole and creating immediate confusion and ultimate depreciation of service.

For the support of this, the revenue for the service from the public must be sufficient. The public, to pay this willingly, must be satisfied and receive at least what they deem to be an equivalent. The attitude of the public is determined by the quality of the service and by the attitude of those giving the service and coming in direct contact with the public; upon them depends in a great measure the ability of the Company to recognize services. When this is fully understood there should be no trouble.

While we have never doubted what the response of our employees will be, for we know what they have been, yet we want to express to every employee our great

appreciation. We are all of us proud to feel that the traditions of the Bell System have been maintained and our promises to the public fulfilled.

For the Directors,

THEODORE N. VAIL,

President.

	Dec. 31, 1895.	Dec. 31, 1900.	Dec. 31, 1905.	Dec. 31, 1910.	Dec. 31, 1915.	Dec. 31, 1916.	Increase.
Total Miles of Pole Lines	78,203	131,538	213,233	282,877	330,602	337,289	6,687
Miles of Underground Conduit (length of single duct)				30,165	44,510	47,120	2,610
Miles of Underground Wire	184,615	705,269	2,345,742	5,992,303	10,536,837	11,468,525	931,688
Miles of Submarine Wire	2,028	4,203	9,373	24,636	36,314	41,172	4,858
Miles of Aerial Wire	488,872	1,252,329	3,424,803	5,625,273	7,932,394	8,340,618	408,224
Total Miles of Wire	675,415	1,961,801	5,779,918	11,642,212	18,505,545	19,850,315	1,344,770
Comprising Toll Wire	215,687	607,599	1,265,236	1,963,994	2,453,483	2,682,910	229,427
Comprising Exchange Wire	459,728	1,354,202	4,514,682	9,678,218	16,052,062	17,167,405	1,115,343
Total	675,415	1,961,801	5,779,918	11,642,212	18,505,545	19,850,315	1,344,770
Miles of Phantom Circuit				115,506	196,841	221,994	25,153
Total Exchange Circuits	237,837	508,262	1,135,449	2,082,960	3,174,271	3,459,069	284,798
Number of Central Offices	1,613	2,775	4,532	4,933	5,300	5,397	97
Number of Bell Stations (Owned) *	309,502	835,911	2,282,378	3,933,056	5,968,110	6,545,490	577,380
Number of Bell Connected Stations		20,000	246,337	1,949,663	3,183,111	3,301,702	118,591
Total Stations	309,502	855,911	2,528,715	5,882,719	9,151,221	9,847,192	695,971
Number of Employees	14,517	37,067	89,661	120,311	156,294	179,032	22,738
Number of Connecting Companies, Lines and Systems				17,845	28,306	30,358	2,052
Exchange Connections Daily	2,351,420	5,668,986	13,543,468	21,681,471	25,183,799	28,530,073	3,346,274
Toll Connections Daily	51,123	148,528	368,083	602,539	819,030	889,860	70,830

*Includes Private Line Stations.

BELL TELEPHONE SYSTEM IN THE UNITED STATES

ALL DUPLICATIONS BETWEEN COMPANIES EXCLUDED

COMBINED BALANCE SHEETS AT FIVE YEAR INTERVALS, 1885-1916

	Dec. 31, 1885.	Dec. 31, 1890.	Dec. 31, 1895.	Dec. 31, 1900.	Dec. 31, 1905.	Dec. 31, 1910.	Dec. 31, 1916.	Dec. 31, 1916.
ASSETS:								
Contracts and Licenses	\$16,732,100	\$18,925,700	\$ 20,005,300	\$ 14,794,300	\$ 13,313,400	\$ 2,943,381	\$ 880,068,520	\$ 946,293,248
Telephone Plant	38,618,600	58,512,400	87,858,500	180,699,800	398,065,300	610,999,964	15,951,582	24,032,089
Supplies, Tools, etc.	348,500	1,021,800	1,810,000	6,464,400	11,069,500	20,987,551	43,518,625	66,029,580
Receivables	1,450,900	1,761,600	3,746,600	13,644,000	26,220,800	26,077,802	45,716,330	80,692,829
Cash	1,792,600	1,183,300	2,484,100	3,223,000	11,005,900	27,548,933	72,652,646	81,815,476
Stocks and Bonds	1,138,800	2,697,400	4,480,500	11,400,400	23,041,200	64,766,089	\$1,057,907,703	\$1,198,863,232
Total	\$60,081,500	\$84,102,200	\$120,385,000	\$230,225,900	\$452,716,100	\$753,323,720	\$1,057,907,703	\$1,198,863,232
LIABILITIES:								
Capital Stock	\$38,229,200	\$43,792,800	\$ 57,462,700	\$130,006,900	\$238,531,100	\$344,645,430	\$ 440,711,200	\$ 463,101,569
Funded Debts	367,400	6,473,100	10,074,100	44,137,900	93,079,500	224,791,696	353,236,464	422,586,617
Bills Payable	2,618,900	1,823,000	2,000,000	7,000,000	35,000,000	42,566,943	2,404,920	3,738,451
Accounts Payable	}	3,301,100	6,138,000	13,583,300	23,407,500	21,721,125	29,039,127	38,280,436
Total Outstanding	\$41,215,500	\$54,890,000	\$ 75,674,800	\$194,728,100	\$389,018,100	\$633,725,194	\$ 825,391,711	\$ 927,707,073
Employees' Benefit Fund	18,866,000	29,212,200	44,710,200	35,497,800	63,698,000	119,598,526	9,114,329	9,151,000
Surplus and Reserves	}	\$84,102,200	\$120,385,000	\$230,225,900	\$452,716,100	\$753,323,720	\$1,057,907,703	\$1,198,863,232
Total	\$60,081,500	\$84,102,200	\$120,385,000	\$230,225,900	\$452,716,100	\$753,323,720	\$1,057,907,703	\$1,198,863,232

BELL TELEPHONE SYSTEM IN THE UNITED STATES

ALL DUPLICATIONS BETWEEN COMPANIES EXCLUDED

COMPARATIVE REVENUE AT FIVE YEAR INTERVALS, 1885-1916

	Year 1885.	Year 1890.	Year 1895.	Year 1900.	Year 1905.	Year 1910.	Year 1915.	Year 1916.
Gross Revenue.....	\$10,033,600	\$16,212,100	\$24,197,200	\$46,385,600	\$97,500,100	\$165,612,881	\$239,909,649	\$270,400,892
Expenses.....	5,124,300	9,067,600	15,488,400	30,632,400	66,189,400	114,618,473	173,727,892	194,783,263
Net Revenue.....	\$ 4,909,300	\$ 7,144,500	\$ 8,708,800	\$15,753,200	\$31,310,700	\$50,994,408	\$ 66,181,757	\$ 75,617,639
Interest.....	27,700	278,700	655,500	2,389,600	5,836,300	11,556,864	18,095,643	18,378,931
Net Income.....	\$ 4,881,600	\$ 6,865,800	\$ 8,053,300	\$13,363,600	\$25,474,400	\$39,437,544	\$ 48,086,114	\$ 57,238,708
Dividends.....	3,107,200	4,101,300	5,066,900	7,893,500	15,817,500	25,160,786	32,897,065	35,160,119
Balance for Surplus....	\$ 1,774,400	\$ 2,764,500	\$ 2,986,400	\$ 5,470,100	\$ 9,656,900	\$14,276,758	\$ 15,189,049	\$ 22,078,589

American Telephone and Telegraph Company

Balance Sheet, December 31, 1916

ASSETS

Stocks of Associated Companies.....	\$452,390,925.92	
Bonds and Notes of Associated Companies.....	68,088,355.35	\$520,479,281.27
Telephones.....	\$16,779,577.51	
Real Estate.....	508,400.42	
Office Furniture and Fixtures.....	215,902.25	
Long Distance Telephone Plant.....	53,457,978.24	70,961,858.42
Trustees—Employees' Stock-Purchase Plan.....		9,153,950.43
Special Demand Notes.....	\$21,520,000.00	
Current Accounts Receivable.....	15,408,692.94	36,928,692.94
Temporary Cash Investments.....	\$20,000,000.00	
Cash and Deposits.....	65,237,660.70	85,237,660.70
		\$722,761,443.76

LIABILITIES

Capital Stock.....	\$395,603,600.00	
Capital Stock Installments.....	32,019.00	\$395,635,619.00
4% Collateral Trust Bonds, 1929.....	\$78,000,000.00	
5% Collateral Trust Bonds, 1946.....	80,000,000.00	
5% Western Tel. & Tel. Co. Bonds, 1932	9,985,000.00	
4% Convertible Bonds, 1936.....	3,127,000.00	
4½% Convertible Bonds, 1933.....	13,890,100.00	
4½% Coupon Notes, 1918.....	15,455,000.00	
Notes to Associated Companies.....	1,700,000.00	202,157,100.00
Dividend Payable January 15, 1917...	\$7,912,072.00	
Interest and Taxes Accrued, but not due	2,783,840.53	
Current Accounts Payable.....	2,177,966.23	12,873,878.76
Employees' Benefit Fund.....		2,000,000.00
Reserves for Depreciation and Contingencies.....		31,092,679.88
Surplus (including Capital Stock Premiums and excluding Debt Discount and Expense).....		79,002,166.12
		\$722,761,443.76

NOTE: \$34,709,000.00 Coupon Notes of Associated Companies, endorsed but not owned by this Company, are not included above in either Assets or Liabilities.

CHARLES G. DuBOIS, *Comptroller.*

American Telephone and Telegraph Company

Comparative Statement of Earnings and Expenses

For the years 1915 and 1916

	1915	1916
EARNINGS:		
Dividends.....	\$25,662,616.00	\$26,710,690.58
Interest and other Revenue from Associated Companies.....	13,407,976.73	14,529,978.74
Telephone Traffic (net).....	6,544,462.41	8,136,314.23
Other Sources.....	1,194,299.33	1,555,067.89
Total.....	\$46,809,354.47	\$50,932,051.44
EXPENSES.....	\$5,691,867.19	\$6,188,674.99
NET EARNINGS.....	\$41,117,487.28	\$44,743,376.45
Product Interest.....	6,498,849.72	6,730,098.86
Balance.....	\$34,618,637.56	\$38,013,277.59
Product Dividends.....	29,100,591.03	31,122,187.46
Balance.....	\$5,518,046.53	\$6,891,090.13
Carried to Reserves.....	\$2,500,000.00	\$2,500,000.00
Carried to Surplus.....	3,018,046.53	4,391,090.13
Total.....	\$5,518,046.53	\$6,891,090.13

CHARLES G. DuBOIS, *Comptroller.*

Annual Earnings and Dividends

Year	Net Revenue	Dividends Paid	Added to Reserves	Added to Surplus
1900.....	\$5,486,058	\$4,078,601	\$937,258	\$470,199
01.....	7,398,286	5,050,024	1,377,651	970,611
02.....	7,835,272	6,584,404	522,247	728,621
03.....	10,564,665	8,619,151	728,140	1,217,374
04.....	11,275,702	9,799,118	586,149	890,435
05.....	13,034,038	9,866,355	1,743,295	1,424,388
06.....	12,970,937	10,195,233	1,773,737	1,001,967
07.....	16,269,388	10,943,644	3,500,000	1,825,744
08.....	18,121,707	12,459,156	3,000,000	2,662,551
09.....	23,095,389	17,036,276	3,000,000	3,059,113
10.....	26,855,893	20,776,822	3,000,000	3,079,071
11.....	27,733,265	22,169,450	2,800,000	2,763,815
12.....	32,062,945	26,015,588	2,800,000	3,247,357
13.....	32,920,090	27,454,037	2,500,000	2,966,053
14.....	32,334,814	27,572,675	2,500,000	2,262,139
15.....	34,618,638	29,100,591	2,500,000	3,018,047
16.....	38,013,277	31,122,187	2,500,000	4,391,090

CHARLES G. DuBOIS, *Comptroller.*

ARTHUR W. TEELE, C.P.A.
 JOHN WHITMORE
 HAMILTON S. CORWIN, C.P.A.
 HAROLD F. LEEMING, C.A.

F. R. C. STEELE, C.A.
 BOSTON

CABLE ADDRESS
 "DIGNUS"

Patterson, Teele and Dennis
Accountants and Auditors
New York and Boston

120 Broadway, New York, February 20, 1917

MR. WILLIAM J. LADD,
 MR. GEORGE B. HARRIS,
 MR. LOUIS CURTIS,

STOCKHOLDERS' COMMITTEE,
 AMERICAN TELEPHONE & TELEGRAPH COMPANY.

SIRS:

We have audited the accounts of the American Telephone Telegraph Company, and of the thirty-two Subsidiary Street Companies owning Long Distance Toll Lines of the Bell System for the year 1916. These accounts are consolidated in Balance Sheet herein referred to and published herewith.

We have not audited the books of the Associated Companies whose capital stock is carried in the accompanying Balance Sheet at \$452,390,925.92. We have, however, examined reports of these Associated Companies for the year and have carefully considered the value at which the securities carried on the books of the American Telephone & Telegraph Company.

We certify that the accompanying Balance Sheet and Statement of Earnings and Expenses are in accordance with the books and fairly set forth the financial condition at December 31, 1916, and the net income for the year of the American Telephone & Telegraph Company.

PATTERSON, TEELE & DENNIS,
 Accountants and Auditor