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CHAPTER 15

TELEPHONES

§ 15a. Introduction

Census Bureau reports on the telephone industry in 1907, 1912, and 1917 appear to be fairly complete, covering most facts of importance for all enterprises of any considerable size, and collecting a few facts concerning practically all telephone plants in the United States. This study is based upon the Census reports for those years. The American Telephone and Telegraph Company controls about four-fifths of the telephone business of the country, hence most interpolations have been made upon the basis of the reports of its operations as given in Poor's or Moody's *Manuals of Public Utilities*.

§ 15b. Share of Entrepreneurs and Other Property Owners

In this, as in other similar fields, the value product is estimated by ascertaining those sums which have originated through the activities of this particular industry and which have been disbursed to individuals or secured by the corporations engaged in the telephone business. To ascertain the amounts actually originating in the telephone industry, it is necessary first to deduct from gross payments of bond interest and dividends items of the same nature received from other corporations, since such items are accounted for in the field in which they originated.

Following our standard plan of procedure, it is next necessary to estimate the share of the entrepreneurs and other property owners in the value product for the intercensal years. Since the Bell system practically dominates the field, interpolations have been made on the basis of the consolidated financial statistics of the Bell companies as presented in Poor's and Moody's *Manuals of Public Utilities*. The computations are shown in Table 15B.

Table 15B shows that disbursements and surplus as measured in money both increased from 1907 to 1916 but that, since that date, although disbursements have continued to grow, less has been saved. However, these figures need to be corrected for changes in the price level. Table 15C has been constructed to show the approximate equivalent in consumption goods which the property owners could buy with their share of the product for each of the various years.

TABLE 16A

THE ESTIMATED SHARE OF THE VALUE PRODUCT OF THE TELEPHONE INDUSTRY OF THE CONTINENTAL UNITED STATES IN THE CENSUS YEARS DISBURSED TO THE PROPERTY OWNERS OR SAVED BY THE OWNING CORPORATIONS

	1907	1912	1917
1. Interest on Funded Debt ^a plus Dividends paid by Larger ⁿ Companies. (In Thousands)	\$36,116 ^b	\$51,361 ^{cd}	\$66,561 ^e
2. Interest on Funded Debt plus Dividends Received by Larger Companies. (In Thousands)..	\$ 1,025 ^b	\$ 4,365 ^d	\$ 4,496 ^e
3. Payments by larger Companies of Dividends and Interest Originating in the Telephone Industry. ^r (In Thousands)	\$35,091	\$46,996	\$62,065
4. Net ^t Rent Paid by Larger Companies to Individuals. (In Thousands)	\$ 1,092 ^o	\$ 1,597 ^{dh}	\$ 1,413 ^{ic}
5. Dividends, Rent, and Interest on the Funded Debt Arising from the Operations of the Larger Companies. ^s (In Thousands)	\$36,183	\$48,593	\$63,478
6. Estimated Ratio of Dividend, Rent, and Interest Payments of All Companies to Those of Larger Companies only	1.009 ^j	1.0577 ^{lm}	1.050 ^k
7. Estimated Dividends, Rent, and Interest on the Funded Debt Originating in the Entire Telephone Industry. ^o (In Thousands)	\$36,500	\$51,500	\$66,580
8. Savings or Corporate Surplus of the Larger Companies. (In Thousands)	\$19,926 ^b	\$17,206 ^d	\$14,127 ^e
9. Estimated Savings of All Companies. ^p (In Thousands)	\$20,120	\$18,210	\$14,840
10. Estimated Total Savings plus Disbursements to the Property Owners. ^q (In Thousands)	\$56,620	\$69,710	\$81,420

T. = U. S. Census of Telephones.

^a Includes beside bond interest, small amount paid as interest on real estate mortgages.

^b T. 1907, p. 65.

^c In 1907, 76.7 per cent of all interest was interest on the funded debt and mortgages; in 1917 the percentage had increased to 94.4. The percentage in 1912 was assumed to be an average of these two, or 85.55 per cent. This percentage amounts to 17,240 thousands of dollars.

^d T. 1912, p. 45.

^e T. 1917, p. 42.

^f Telephone officials state that the item of "Interest from Other Sources" includes but very small amounts of interest on bonds. It is assumed therefore that only 5 per cent, or 160 thousands of dollars, has been accounted for in the reports of other industries.

^g The item of "Rent of Offices and Real Estate," as given in T. 1912, p. 46, cannot be used here, for it includes a large estimate for the rent of real estate owned by the telephone companies; hence actual rent paid is assumed to equal $0.681 \times$ Rent in 1912, this being the ratio of the total operating expenses of 1907 to those of 1912.

^h "Rent of Offices and Other Real Estate."

ⁱ Estimated on the basis of information obtained from telephone officials as being 47 per cent of all rentals.

^j Assumed to vary in proportion to income; see T. 1907, p. 14.

^k Assumed to vary as total revenue; see T. 1917, p. 10.

TABLE 15A NOTES —Continued

¹ Ratio obtained by following process: Ratio of wire mileage of small companies to large was .0646 in 1912 and .0560 in 1917. Ratio of revenue of small to large companies was .050 in 1917. Then $X : .050 :: .0648 : .0560$. Therefore $X = .0577$. The ratio sought is $1 + X$, or 1.0577.

^m T. 1912, p. 12.

ⁿ Based on Census classification.

^o Product of items in the two preceding lines; equivalent to all net disbursements to the property classes.

^p Assumed that savings vary in the same proportion as do disbursements to property owners; hence the items in line 9 are the products of those in lines 6 and 8. In general this item may be too large because some small companies may have failed and their losses escaped the Census records or because some companies have not allowed enough for depreciation, or it may be too small because they charged new construction to operating expenses. Col. M. C. Rorty believes the recorded decline in savings is largely the result of erroneous accounting. Complete evidence being lacking, however, it seems best to accept the Census figures.

^q Equals receipts as dividends, interest, and rent plus their claims to an ultimate division of the corporate savings; in other words the sum of the items in lines 7 and 9.

^r Difference of items in two preceding lines.

^s Sum of items in two preceding lines.

^t The net rent is estimated as 70 per cent of the gross on the ground that 30 per cent is required to cover maintenance and depreciation.

TABLE 15B

THE CORPORATE SAVINGS AND THE AMOUNTS PAID TO ENTREPRENEURS AND OTHER PROPERTY OWNERS FROM THE VALUE PRODUCT OF THE TELEPHONE INDUSTRY OF THE CONTINENTAL UNITED STATES ESTIMATED FOR EACH YEAR

A	B	C	D	E	F	G	H	I
Year	Estimated total disbursements to property classes in Census years ^a (Thousands)	Bond interest and dividends paid by Bell Companies ^c (Thousands)	$B \div C$	Estimated total disbursements to property classes (Thousands) $C \times D$	Estimated savings of all companies in Census years ^q (Thousands)	Surplus of Bell Companies ^r (Thousands)	$F \div G$	Estimated savings of all companies (Thousands) $G \times H$
1907	\$36,500	\$28,317 ^b	1.289 ^d	\$36,500	\$20,120	\$12,524 ^b	1.607 ^d	\$20,120
1909		34,132	1.233 ^e	42,085		14,236	1.515 ^e	21,624
1910		36,718	1.211 ^e	44,465		14,277	1.470 ^e	20,987
1911		39,578	1.194 ^e	47,256		12,009	1.425 ^e	17,113
1912	51,500	43,665	1.179 ^d	51,500	18,210	13,221	1.377 ^d	18,210
1913		46,955	1.165 ^e	54,703		11,735	1.303 ^e	15,291
1914		49,245	1.155 ^e	56,878		10,002	1.243 ^e	12,432
1915		50,993	1.145 ^e	58,400		15,189	1.160 ^e	17,619
1916		53,539	1.139 ^e	60,981		22,079	1.090 ^e	24,066
1917	66,580	58,683	1.135 ^d	66,580	14,840	13,852	1.071 ^d	14,840
1918		62,846	1.128 ^e	70,890		12,213	1.070 ^f	13,068
1919		67,533	1.123 ^e	75,840		12,118	1.069 ^f	12,954

^a See Table 15A.

^b Poor's *Manual of Public Utilities*, 1914, pp. 1092, 1096.

^c See Moody's *Manual of Public Utilities*, 1920, p. 1363.

^d Computed by division.

^e Read from a smooth curve.

^f Computed by study of surpluses of non-Bell companies as recorded in Moody's *Manuals*.

^g See Table 15A; also note *p* attached to that table.

The price index used in reducing corporate savings to a basis of purchasing power is one intended approximately to represent construction costs. It is a composite of indices representing hourly wages of labor and prices of the commodities used in the construction of telephone plants, weighted in proportion to the amount of each commodity used. The index was worked out by the statistical department of the American Telephone and Telegraph Company.

TABLE 15C

THE PURCHASING POWER OF THE CORPORATE SAVINGS AND THE DISBURSEMENTS MADE TO ENTREPRENEURS AND OTHER PROPERTY OWNERS FROM THE NET VALUE PRODUCT OF THE TELEPHONE INDUSTRY

A	Disbursements to entrepreneurs and other property owners			Corporate savings		
	B	C	D	E	F	G
Year	Rent, dividends, and bond interest ^a (Thousands)	Index of prices of consumption goods purchased by wealthy classes ^b Base, 1913	Value at prices of 1913 (Thousands) B ÷ C	Corporate savings ^a (Thousands)	Index of construction costs ^c	Value at prices of 1913 (Thousands) E ÷ F
1907...	\$36,500			\$20,120	1.023	\$19,668
1909...	42,085	.973	\$43,253	21,624	.881	24,545
1910...	44,465	.988	45,005	20,987	.903	23,241
1911...	47,256	.995	47,493	17,113	.903	18,951
1912...	51,500	1.000	51,500	18,210	.982	18,544
1913...	54,703	1.000	54,703	15,291	1.000	15,291
1914...	56,878	1.010	56,315	12,432	.968	12,843
1915...	58,400	.996	58,635	17,619	1.039	16,637
1916...	60,981	1.074	56,779	24,066	1.336	18,013
1917...	66,580	1.198	55,576	14,840	1.495	9,926
1918...	70,890	1.364	51,972	13,068	1.525	8,569
1919...	75,840	1.628	46,585	12,954	1.607	8,061

^a See Table 15B.

^b See Table 2E; applies to families spending on the average \$25,000 annually for consumption goods.

^c Calculated by the statistical department of the American Telephone and Telegraph Co., and furnished to the Bureau through the kindness of Col. M. C. Rorty.

A study of Table 15C shows that corporate savings have declined to half their former money value and to only a little over one-third of the purchasing power which they had at the beginning of the decade. This decline in savings has been going on at the same time that dividends have

been increasing somewhat. The purchasing power of the disbursements to the investors and property owners tended to increase until 1916, but, since that date, has fallen off sharply.

§ 15c. The Net Value Product and Its Distribution

The estimated net value product of the telephone industry is made up of four parts: namely, the corporate savings, the disbursements to entre-

TABLE 15D

AN ESTIMATE OF THE VALUE PRODUCT OF THE TELEPHONE INDUSTRY IN THE CONTINENTAL UNITED STATES AND THE SHARE OF THE EMPLOYEES THEREIN

Year	Total salaries and wages paid to employees as estimated from Census reports (Thousands)	Total payments to employees as estimated from reports of telephone companies ^f (Thousands)	Total share of entrepreneurs and other owners of property used in the industry ^e (Thousands)	Uncollectible revenues ^g (Thousands)	Total net value product ^h (Thousands)	Per cent of total value product going to employees
1907 . . .	\$68,279 ^a	\$71,737	\$56,620	\$ 784	\$129,141	55.5
1909 . . .		81,160	63,709	942	145,811	55.7
1910 . . .		91,677	65,452	1,020	158,149	58.0
1911 . . .		103,140	64,369	1,104	168,613	61.2
1912 . . .	101,400 ^{cb}	112,653	69,710	1,188	183,551	61.4
1913 . . .		126,027	69,994	1,285	197,306	63.9
1914 . . .		129,255	69,310	1,380	199,945	64.6
1915 . . .		127,598	76,019	1,480	205,097	62.2
1916 . . .		153,526	85,047	1,590	240,163	63.9
1917 . . .	175,670 ^d	172,740	81,420	1,731	255,891	67.5
1918 . . .		194,169	83,958	1,900	280,027	69.3
1919 . . .		245,420	88,794	2,080	336,294	73.0

^a U. S. Census of Telephones, 1907, p. 16.

^b 101,400 = 96,041 (the number employed by large systems), \times 1.0577. The ratio 1.0577 is used because it is the best comparison at hand. Its computation is described in Note 1, Table 15A.

^c U. S. Census of Telephones, 1912, p. 48.

^d U. S. Census of Telephones, 1917, p. 10.

^e See Table 15B, Column E, plus Column I.

^f For derivation, see text.

^g Based on U. S. Census, interpolations for intercensal years made by aid of a smooth curve.

^h Sum of items in three columns immediately preceding.

preneurs and other property owners already discussed, the share of the employees, and the uncollectible revenues, the last mentioned item representing valuable services received by consumers for which the recipients

have failed to make recompense. These four shares have been added and the sum appears in Table 15D.

The largest share in the value product of the telephone industry consists of the payments made to employees. These payments consist mainly of wages and salaries, but the employees also receive a considerable sum in the form of benefits and pensions. The totals as presented in Table 15D have been derived from reports of the important telephone companies. The closeness of these results to the Census figures makes it highly probable that both sets are approximately accurate. The reason for using these data rather than the Census figures themselves, is that the figures presented here are largely secured from a compilation of actual payments for each year, while the Census data are based upon estimates only.

The last column of Table 15D shows that the employees have been getting a steadily increasing share of the value product until, in 1919, their share absorbed nearly three-fourths of the net income arising from the industry.

But to know the share of the total product received does not tell whether each employee is better or worse off than before. This depends upon the number of employees as well as upon the total amount paid to employees.

§ 15d. The Number of Employees

Table 15E represents an estimate of the average number of employees attached to the telephone industry in each year. The estimate of the fraction of workers actually employed is based upon assumptions none too well established.¹ However, the internal evidence of the data apparently tends to substantiate the approximate correctness of the fraction presented. It is believed, therefore, that the figures shown in Table 15E are not very far from the truth.

¹ See § 2d.

TABLE 15E

THE ESTIMATED NUMBER OF EMPLOYEES ATTACHED TO THE TELEPHONE INDUSTRY OF THE CONTINENTAL UNITED STATES

A	B	C	D	E	F	G
Year	Number of employees of all telephone systems actually at work	Estimated number of employees of Bell Telephone Companies ^d	$B \div C$	Estimated number of employees actually at work in all systems $C \times D$	Estimated fraction of number attached to industry who are actually employed	Estimated number of employees attached to industry $E \div F$
1907. . . .	144,169 ^a	102,100	1.412 ^e	144,169	.982	146,800
1909. . . .		101,300	1.412 ^f	143,000	.957	149,500
1910. . . .		112,500	1.413 ^f	159,000	.974	163,200
1911. . . .		127,200	1.414 ^f	179,800	.970	185,300
1912. . . .	194,000 ^b	137,100	1.415 ^e	194,000	.949	204,500
1913. . . .		151,200	1.414 ^f	213,800	.983	217,500
1914. . . .		152,000	1.413 ^f	214,800	.952	225,600
1915. . . .		147,200	1.412 ^f	207,900	.904	230,000
1916. . . .		168,100	1.411 ^f	237,200	.980	242,000
1917. . . .	262,629 ^c	186,100	1.411 ^e	262,629	.982	267,400
1918. . . .		197,000	1.411 ^f	278,000	.975	285,200
1919. . . .		204,100	1.411 ^f	288,000	.982 ^g	293,000 ^g

^a U. S. Census of Telephones, 1907, p. 16.

^b U. S. Census of Telephones, 1912, p. 48, shows larger companies to have 96,041 employees. This number has been multiplied by 1.0577, the ratio obtained in Table I, note 1.

^c U. S. Census of Telephones, 1917, p. 10.

^d Read from smooth curve based on recorded number of employees on December 31st, of each year, as shown in Poor's and Moody's *Manuals*.

^e Computed.

^f Interpolated along a smooth curve.

^g Tentative estimate only.

§ 15e. Average Annual Earnings of Employees

With estimates available of the total amount paid to employees by telephone companies and of the total number of employees attached to the industry, it is only necessary to divide the first item by the second in order to arrive at the average amount paid to each employee. This average, however, means little until it is divided by an index of the prices of such consumption goods as are purchased by employees. The results of computations along these lines are shown in Table 15F.

Column D of this table makes it evident that the average employee is at present receiving many more dollars per annum than was formerly the case. However, each of these dollars has bought so much less in recent

TABLE 15F

THE PURCHASING POWER OF THE COMPENSATION OF THE AVERAGE EMPLOYEE ATTACHED TO THE TELEPHONE INDUSTRY IN THE CONTINENTAL UNITED STATES

A	B	C	D	E	F
Year	Estimated total of payments to employees ^a (Thousands)	Estimated number of employees attached to industry ^b	Estimated amount paid to average employee attached to industry ^c B ÷ C	Index of prices of consumption goods bought by manual and clerical workers ^c	Estimated purchasing power of compensation paid to average employee ^c D ÷ E
1907.....	\$71,737	146,800	\$489		
1909.....	81,160	149,500	543	.955	\$569
1910.....	91,677	163,200	562	.978	575
1911.....	103,140	185,300	557	.984	566
1912.....	112,653	204,500	551	.994	551
1913.....	126,027	217,500	579	1 000	579
1914.....	129,255	225,600	573	1 01	567
1915.....	127,598	230,000	555	1 03	539
1916.....	153,526	242,000	634	1 10	576
1917.....	172,740	267,400	646	1 29	501
1918.....	194,169	285,200	681	1 58	431
1919.....	245,420	293,000 ^d	838 ^d	1 773	473 ^d

^a See Table 15D; includes wages, salaries, pensions, compensation for injuries, etc.

^b See Table 15E.

^c Bureau of Labor index extended back through special study by this Bureau. See Table 2C.

^d Tentative estimate only.

^e The decline in the average wage and its purchasing power is accounted for largely if not entirely by the large increase in the number of female as compared to male employees, the former constituting only 54 per cent of the total in 1907, but 70 per cent in 1920.

years that the actual purchasing power of the average employee's income from the telephone business was materially less in 1919 than it was in 1913. This decline in the average is, however, at least partly due to the fact that, during this decade, women have constituted a rapidly increasing fraction of the total number of telephone employees.

§ 15f. The Efficiency of the Employees

The increase or diminution in the efficiency of the telephone worker as a producer cannot be measured exactly because we have no record of the changes in the amount of effort required to transmit a message and also because an increase or decrease in efficiency is as likely to be a result of

better or worse equipment as of greater personal effort or effectiveness. For example, long telephone lines evidently take more effort to build and keep in repair than do short ones. It is more work to facilitate the passage of messages when several connections are necessary, than when only one is required. Nevertheless it seems worth while roughly to picture the results obtained under conditions as they exist.

In the absence of any more accurate criterion, it seems that the message mile might be used as a reasonable unit for measuring work accomplished by the telephone force. However, the number of message miles is not given and must be computed. The fact that millions of messages do not pass through an exchange vitiates to a degree the accuracy of the estimates presented. Nevertheless, it is not probable that this unknown item affects materially the relative comparison for different years, even though it undoubtedly prevents the possibility of obtaining an accurate measurement of the absolute number of message miles for any single year. The necessary assumptions in computing the number of message miles are based upon the fact that if every telephone were connected through an independent line directly with the central station, the average distance traveled by each message would approximately equal twice the number of miles of wire divided by the number of telephones. This quotient is used as a relative indicator of the distance that each message travels and is probably serviceable for that purpose even though its absolute value is of little significance. When the number of messages sent is multiplied by this index, the product gives some idea of the total distance through which telephone messages are transmitted; in other words, it is a crude approximation to the physical product of the industry. The facts are presented in Table 15G.

TABLE 16G

A COMPARISON FOR DIFFERENT YEARS OF THE PHYSICAL OUTPUT PER EMPLOYEE IN THE TELEPHONE INDUSTRY

Year	Total messages sent; as estimated from Census data (Millions)	Daily exchange connections by Bell Companies (Thousands)	B ÷ C	Estimated millions of messages sent C × D	Thousands of employees actually at work ^f	Messages per employee (Thousands) E ÷ F	Twice the number of miles of wire per telephone ^j	Approximate number of message miles	
								Total in billions E × H	Thousand per employee I ÷ F
1907	12,500 ^a	18,130	690 ^d	12,500 ^a	144	86.7	4.25 ^g	53.1	368
1909		19,925	670 ^e	13,350	143	93.4	4.40	58.7	411
1910		21,681	662 ^e	14,553	159	90.3	4.49	64.4	405
1911		23,484	657 ^e	15,429	180	85.8	4.57	70.5	392
1912	16,753 ^b	25,572	655 ^d	16,753 ^b	194	86.4	4.64 ^h	77.7	401
1913		26,431	659 ^e	17,418	214	81.5	4.71	82.0	384
1914		27,049	669 ^e	18,096	215	84.2	4.77	86.3	402
1915		25,184	681 ^e	17,150	208	82.5	4.83	82.8	398
1916		28,530	695 ^e	19,828	237	83.6	4.88	96.8	408
1917	21,846 ^c	30,845	709 ^d	21,846 ^c	263	83.2	4.92 ⁱ	107.5	409
1918		31,264	723 ^e	22,604	278	81.3	4.97	112.3	404
1919		29,561	738 ^e	21,816	288	75.7	5.01	109.3	380

^a Assumed that ratio of messages to telephones was same for non-reporting as for reporting companies. Under this assumption, messages on non-reporting lines amounted to 1,127 millions. See U. S. Census of Telephones, 1907, p. 14.

^b Assumptions same as for 1907, making the estimated number of messages on non-reporting lines 3,018 millions. See U. S. Census of Telephones, 1912, p. 13.

^c U. S. Census of Telephones, 1917, p. 10.

^d Computed.

^e Read from smooth curve.

^f See Table 15E.

^g U. S. Census of Telephones, 1907, p. 14.

^h U. S. Census of Telephones, 1912, p. 13.

ⁱ U. S. Census of Telephones, 1917, p. 10.

^j If message travels to central office and to another station the number here recorded should represent the approximate distance traveled by the message.

Although the number of messages per employee has declined materially, the trend of the number of message miles per employee has remained nearly constant. It does not appear, therefore, that there is any reason to believe that the efficiency of telephone employees shows any downward tendency. This statement is not controverted by the exceptionally low record in 1919 since this probably represents a temporary phenomenon rather than a permanent decline in output.

§ 15g. Telephone Revenue Compared for Residence and Business Telephones

It is an interesting fact that, during the earlier part of the decade, there was little change in the proportion of revenue arising from residence and from business telephones respectively. Since 1915, however, business telephones have slowly but steadily grown in relative importance as revenue producers. This change is indicated by the data in Table 15H.

TABLE 15H

PER CENT OF THE OPERATING REVENUE OF TELEPHONE COMPANIES DERIVED RESPECTIVELY FROM BUSINESS AND RESIDENCE STATIONS^a

Year	Per cent derived from		
	Residence telephones	Business telephones	All telephones
1910.....	44.18	55.82	100.00
1911.....	44.35	55.65	100.00
1912.....	44.18	55.82	100.00
1913.....	44.13	55.87	100.00
1914.....	44.27	55.73	100.00
1915.....	44.11	55.89	100.00
1916.....	43.65	56.35	100.00
1917.....	43.16	56.84	100.00
1918.....	42.80	57.20	100.00
1919.....	41.96	58.04	100.00

^a Computed from reports furnished by telephone companies. The percentages are not exact, but are presumably approximately correct.

§ 15h. Relative Growth of Telephone Service and Population

It is also of interest to know whether telephone service is or is not keeping pace with the growth of our population. Table 15I shows the probable facts in this connection.

TABLE 15I

THE ESTIMATED RELATIVE AMOUNT OF SERVICE PER PERSON IN THE CONTINENTAL UNITED STATES RENDERED BY THE TELEPHONE INDUSTRY

Year	Billions of messages sent ^a	Billions of message miles ^a	Thousands of persons in the Continental United States ^c	Messages per inhabitant	Message miles per inhabitant
1907.....	12.5	53.1	87,321 ^b	143	608
1909.....	13.4	58.7	90,370	148	650
1910.....	14.4	64.4	92,229	156	699
1911.....	15.4	70.5	93,811	164	752
1912.....	16.8	77.7	95,338	176	815
1913.....	17.4	82.0	97,278	179	843
1914.....	18.1	86.3	99,194	182	870
1915.....	17.1	82.8	100,428	171	825
1916.....	19.8	96.8	101,722	195	951
1917.....	21.8	107.5	103,059	212	1,043
1918.....	22.6	112.3	104,182	217	1,078
1919.....	21.8	109.3	104,847	208	1,042

^a See Table 15G.

^b *Statistical Abstract of U. S.* for 1918, p. 776.

^c See Table 2A.

Table 15I makes it clear that telephone service, whether measured by messages or message-miles, is increasing very much faster than population—in other words, we are, as a nation, coming to depend more and more upon the telephone as a means of communication.