

TELEPHONE ACHIEVEMENTS

Telephone Service of Today the Creation of the Bell Co.

When the telephone was born, nothing analogous to telephone service as we now know it existed. There was no tradition to guide, no experience to follow.

The system, the apparatus, the methods—an entire new art—had to be created. The art of electrical engineering did not exist. Bell pioneers, recognizing that success depended upon the highest engineering and technical skill, at once organized an experimental and research department, which is now directed by a staff of over 550 engineers and scientists, including former professors, post-graduate students, scientific investigators—the graduates of over 70 universities.

From its foundation the company has continuously developed the art. New improvements in telephones, switchboards, lines, cables, have followed one another with remarkable rapidity.

Substantially all of the plant now in use, telephones, switchboards, cables, has been constructed, renewed or reconstructed in the past 10 years.

Particularly in switchboards have the changes been so radical that installations costing in the aggregate millions have frequently been discarded after only a few years of use.

Since 1877 there have been introduced 53 types and styles of receivers and 73 types and styles of transmitters. Of the 12,000,000 telephone receivers and transmitters owned by the Bell Company January 1, 1914, none were in use prior to 1902, while the average are less than five years old.

Within 10 years we have expended for construction and reconstruction an amount more than equal to the present book value of our entire plant.

Long-distance and underground transmission were the most formidable scientific problems confronting the telephone experts.

The solution was only found in the cumulative effect of improvements, great and small, in telephone, transmitter, line, switchboard, and every other piece of

apparatus or plant required in the transmission of speech.

While the limit of commercial overhead talking had increased from strictly local to over 1,000 miles as early as 1893, it was not until 1905 that conversation could be had over long-distance circuits of which as much as 20 miles was in underground cables. By 1906 underground talking distance had increased to 90 miles. By 1912 it was possible to talk underground from New York to Washington.

Underground conversation is now possible between Boston and Washington, four times the length of the longest European underground line.

Telephone communication is established between New York and Denver, is potentially possible between all points in the United States, and by 1915 will be an accomplished fact between New York and San Francisco.

These achievements represent vast expenditures of money and immense concentration of effort which have been justified by results of immeasurable benefit to the public. No local company unaided could bear the financial or scientific burden of this work. Such results are possible only through a centralized general staff, avoiding wasteful duplication of effort, working out problems common to all, for the benefit of all.

The pioneers of the Bell System recognized that telephone service as they saw it, was in the broadest sense a public utility; that upon them rested a public obligation to give the best possible service at the most reasonable rates consistent with risk, investment and the continued improvement and maintenance of the property.

What we have done in working out these great problems in the past should be accepted as a guarantee of what we will do in the future.

THEO. N. VAIL, President.

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TELEPHONE RATES

FROM SAN FRANCISCO

TO THE FOLLOWING CITIES AND TOWNS	Two Minutes Initial Rate	Each Additional Min. or Fraction	TO THE FOLLOWING CITIES AND TOWNS	Two Minutes Initial Rate	Each Additional Min. or Fraction
*Alameda—"Two Number".....Cal.	\$.10	\$.03	Oroville.....Cal.	\$.65	\$.30
Altamont....."	.20	.10	Oxnard....."	1.55	.75
Alvarado....."	.15	.05	Pacific Grove....."	.45	.20
Antioch....."	.30	.10	*Palo Alto—"Two Number"....."	.15	.05
Aptos....."	.30	.15	Palo Alto—"Particular Person"....."	.20	.10
*Atherton—"Two Number"....."	.15	.05	Paraiso Hot Springs....."	.60	.30
Atherton—"Particular Person"....."	.10	.05	Pasadena....."	1.80	.90
Bakersfield....."	.20	.10	Paso Robles....."	.90	.45
Belmont....."	1.25	.60	Pescadero....."	.20	.10
Belvedere....."	.15	.05	Petaluma....."	.20	.10
Benicia....."	.15	.05	*Piedmont—"Two Number"....."	.10	\$.03
Ben Lomond....."	.25	.10	Placerville....."	.15	.05
*Berkeley—"Two Number"....."	.10	\$.03	Placerville....."	.25	.10
Boulder Creek....."	.25	.10	Pleasanton....."	.20	.10
Brentwood....."	.20	.10	Point Arena....."	.80	.25
Byron....."	.20	.10	*Point Richmond—"Two Number"....."	.10	.05
*Burlingame—"Two Number"....."	.15	.05	Point Richmond—"Particular Person"....."	.15	.05
Calistoga....."	.30	.15	Port Costa....."	.15	.05
Capitola....."	.30	.15	Quincy....."	.80	.40
Chico....."	.70	.35	Red Bluff....."	.80	.40
Cloverdale....."	.40	.20	Redding....."	1.00	.50
Coalinga....."	.80	.40	Redlands....."	2.00	1.00
Colma....."	.10	.05	*Redwood City—"Two Number"....."	.15	.05
Concord....."	.15	.05	Redwood City—"Particular Person"....."	.20	.10
Cordelia....."	.20	.10	*Richmond—"Two Number"....."	.10	.05
Corte Madera....."	.10	.05	Richmond—"Particular Person"....."	.15	.05
Crockett....."	.15	.05	Riverside, Riverside Co....."	1.90	.95
Danville....."	.15	.05	Rodeo....."	.15	.05
Decoto....."	.15	.05	Roseville....."	.15	.05
Del Monte....."	.45	.20	*Ross—"Two Number"....."	.15	.05
Dixon....."	.30	.15	Rutherford....."	.20	.10
Duncan's Mills....."	.30	.15	*Sacramento—"Two Number"....."	.40	.20
*Elmhurst—"Two Number"....."	.30	.15	Sacramento—"Particular Person"....."	.45	.20
*Emeryville—"Two Number"....."	.10	\$.03	St. Helena....."	.25	.10
Eureka....."	1.15	.55	Salinas....."	.45	.20
*Fairfax—"Two Number"....."	.15	.05	San Andreas—"Two Number"....."	.80	.25
Felton....."	.30	.15	San Ardo....."	.75	.25
Forestville....."	.25	.10	San Bernardino....."	2.00	1.00
*Fort Baker—"Two Number"....."	.10	.05	*San Bruno—"Two Number"....."	.10	.05
Fort Bragg....."	.70	.35	*San Carlos—"Two Number"....."	.15	.05
Fresno....."	.80	.40	San Carlos—"Particular Person"....."	.20	.10
*Fruitvale—"Two Number"....."	.10	\$.03	San Diego....."	2.55	1.15
Fulton....."	.25	.10	San Germino....."	.15	.05
Geyserville....."	.35	.15	San Gregorio....."	.20	.10
Gilroy....."	.40	.20	San Jose—"Two Number"....."	.25	.10
Guerneville....."	.30	.15	San Jose—"Particular Person"....."	.30	.15
Half Moon Bay....."	.15	.05	*San Leandro—"Two Number"....."	.15	.05
Hanford....."	.95	.45	San Leandro—"Particular Person"....."	.20	.10
*Hayward—"Two Number"....."	.20	.10	San Lucas....."	.70	.25
Hayward—"Particular Person"....."	.20	.10	San Luis Obispo....."	1.00	.50
Healdsburg....."	.35	.15	San Martin....."	.15	.05
Hollister....."	.45	.20	*San Mateo—"Two Number"....."	.15	.05
Ignacio....."	.15	.05	San Quentin....."	.10	.05
Inverness....."	.30	.10	*San Rafael—"Two Number"....."	.15	.05
Irvington....."	.20	.10	San Ramon....."	.15	.05
Kenwood....."	.20	.10	Santa Ana....."	1.95	.95
Knightsen....."	.20	.10	Santa Barbara....."	1.40	.70
Larkspur....."	.10	.05	*Santa Clara—"Two Number"....."	.25	.10
Livermore....."	.20	.10	Santa Clara—"Particular Person"....."	.30	.15
Lodi....."	.30	.15	Santa Cruz....."	.30	.15
Los Altos....."	.90	.40	Santa Rosa....."	.25	.10
Los Angeles....."	1.80	.90	Saratoga....."	.20	.10
Los Gatos....."	.15	.05	*Sausalito—"Two Number"....."	.10	.05
Mare Island....."	.15	.05	Sebastopol....."	.25	.10
Martinez....."	.80	.40	Soledad....."	.60	.30
Marysville....."	.15	.05	Sobranate....."	.15	.05
*Mayfield—"Two Number"....."	.20	.10	Sonoma....."	.85	.45
Mayfield—"Particular Person"....."	.20	.10	*South San Francisco—"Two Number"....."	.10	.05
*Melrose—"Two Number"....."	.10	\$.03	Stockton....."	.30	.15
*Menlo Park—"Two Number"....."	.15	.05	*Stockton—"Particular Person"....."	.35	.15
Menlo Park—"Particular Person"....."	.20	.10	*Sunnyvale—"Two Number"....."	.25	.10
Merced....."	.55	.25	Sunnyvale—"Particular Person"....."	.30	.15
Millbrae....."	.10	.05	Suisun....."	.20	.10
Mill Valley—"Two Number"....."	.10	.05	Sunol....."	.20	.10
Misson San Jose....."	.20	.10	Tiburon....."	.20	.10
Modesto....."	.40	.20	Truckee....."	.80	.40
Monte Rey....."	.45	.20	Ukiah....."	.55	.25
Mountain View....."	.20	.10	Vacaville....."	.20	.10
Napa....."	.20	.10	Vallejo....."	.15	.05
Napa Soda Springs....."	.20	.10	Ventura....."	1.50	.75
Nevada City....."	.20	.10	Visalia....."	1.00	.50
Newark....."	.15	.05	Warm Springs....."	.20	.10
Newman....."	.45	.20	Watsonville....."	.35	.15
Niles....."	.15	.05	Willows....."	.60	.30
Novato....."	.15	.05	Windsor....."	.30	.15
*Oakland—"Two Number"....."	.10	\$.03	Woodland....."	.35	.15
Oakley....."	.20	.10	Yosemite....."	.75	.35
Oakville....."	.20	.10	Yountville....."	.20	.10
Olema....."	.15	.05			
Orland....."	.55	.30			

*Initial Rate—Three Minutes.

from Public Property. Equipped with boxes is 1 cent for each two minutes.