

LONGEST TELEPHONE CIRCUIT DESCRIBED

CHICAGO TO LOS ANGELES

Permanent Connection to Coast City Provides Direct Circuit Without Need of Switching

The longest through telephone circuit in the world, from Chicago to Los Angeles, is now serving the growing telephonic needs of the great Southwest.

It is the fact that this is the "through circuit" instead of a "built-up circuit" that makes this new development important from the service standpoint. A "through circuit," as its name implies, gives a permanent, through connection between the two cities at which it terminates. A "built-up circuit," on the other hand, has to be "built" for each call by switching or connecting together a number of shorter circuits between intermediate cities along the line.

Opened in 1915
When the New York-San Francisco Transcontinental Line was opened in 1915 it was operated for several months as a through circuit, 3,400 miles in length, but it was later cut in two, for operating reasons, the division being made at Chicago. Los Angeles and its surrounding territory have hitherto been reached by switching the circuit over this original Transcontinental Line to San Francisco and thence down the coast.

New facilities, recently put in service, provide a direct circuit, without the necessity of switching, from Chicago to Denver, and thence to El Paso, Tucson and Phoenix to Los Angeles. The circuit is 2,937 miles long—more than 500 miles longer than the Chicago-San Francisco circuit, more than 1,200 miles longer than the New York-Havana circuit and more than 1,500 miles longer than the New York-Orleans circuit, which have hitherto held the record for through circuit length among the "speech highways" of the world. The longest through circuits in any country of Europe are the Berlin-Essen circuit, 342 miles, and the London-Glasgow circuit, 418 miles.

The use of telephone repeaters along the line gives a normal transmission equivalent of twelve miles—that is, it is possible to talk from Chicago to Los Angeles, over this circuit, as efficiently as one could over a standard Number 19 gauge cable circuit, without loading or repeaters, twelve miles in length.

Thirteen through line repeaters are used. The use of these repeaters, an essential feature of which is a vacuum tube amplifier somewhat similar to that which is familiar to all radio enthusiasts, has aided materially in making long distance transmission possible. The farther a telephone current travels unaided, the weaker it becomes. The effect of a repeater is to catch this weakened current, amplify it many times and speed it on its way with renewed strength.

At night, when traffic is heaviest, an additional through circuit from Chicago to Los Angeles is obtained by connecting together a Chicago-Denver, a Denver-El Paso and an El Paso-Los Angeles circuit.

Although long distance lines had been built along the route of the new "Southern Transcontinental," the existing pole lines at some points were already carrying capacity loads or were otherwise unsuitable and it was necessary to construct additional pole lines to carry the new through circuits. This new construction includes a stretch of some seventy-five miles between Denver and Colorado Springs and another in New Mexico, between San Antonio and Rincon, where about ninety miles of new pole line was built.

The tourist bent on getting a comprehensive view of the varied geographic, topographic and climatic conditions in America might well follow the line of this longest through telephone circuit. He would find rough mountain country from Denver south, with the highest point of the line reached at Raton Pass, near the Colorado-New Mexico boundary, where the altitude is 7,600 feet. He would pass through long stretches of desert sand, lava beds, cactus country, arid lands reclaimed by irrigation, orange groves and cotton plantations. At Salton, just over the California border from Arizona, he would find that the line dips into a depression of 200 feet below sea level.

Thus, from the heights to the depths, from rugged mountain lands to a perennial summer Paradise, this continent-spanning circuit winds its way, playing its important part in uniting a nation in the bonds of speech.

The circuit was put in service on December 22, 1923.

And while many men can't tell whether the tax bill has passed or not, they know who is leading the major leagues.

Some of the motorists are assisting the highway marking movement by running into trees and making deep scars thereon.

BIG OIL REFINERY AT LAWRENCEVILLE

Many in State Probably Do Not Know of This Important Industry

Thousands of products, made in Illinois factories and industrial plants are finally sold to consumers in all parts of the world. There is the story of the soldier from Illinois who, finding himself in a field after one of the long marches in France, dropped down beside some piece of machinery to rest his weary legs. Soon he began to take notice of what he was resting against. When he looked up and finally examined it, he found a farm machine with the good old name of Rockford, Illinois, on it. It seemed like a friend from home.

Proud as the people of Illinois are of their factories, industrial plants and farm produce, many do not know that they also have in their state one of the largest independent oil refineries in the country. For sixteen years the Indian Refining company has had its refinery in Lawrenceville, Lawrence county, Illinois. But the headquarters of this organization was in New York, and so everyone regarded it as a New York organization.

Last fall several hundred New Yorkers were suddenly startled when it was announced that the headquarters of the Indian Refining company would be moved to Lawrenceville. Now this has all been accomplished, and New York as well as every other section of the country looks to the Lawrenceville headquarters. Having line oil, the great product, of the Indian Refining company, with the stamp of Lawrenceville, Illinois, on each can and barrel finds its way to every quarter of the globe. Car owners in Switzerland, Chile, Australia and Africa are using this product which was made and begins its journey from Illinois.

QUESTIONS METHODS USED IN EDUCATION

Leading Bank Official Wonders If We're Off the Track, Delivers Address

Evans Wollen, of Indianapolis, vice-president of the American Bankers' association and favorably known in financial circles of the country, in the annual Phi Beta Kappa address at Northwestern university questioned seriously present-day methods of education.

"I wonder if we are off the track," said the financier. "In considering this subject we should look first to the public school program of education in America. Analysis demonstrates that our public school children are studying twice as many subjects as they did fifteen years ago, without any increase in the hours of school. It is a serious question with me whether our schools and colleges in the endeavor, as stated in the report of the Carnegie Foundation for the advancement of teaching last year, to teach 'something of every form of knowledge in which the modern world interests itself,' have not been getting away from education that 'makes for sincerity, for thor-

oughness, and for intellectual vigor.'" "After all, it's the latter kind of education," continued Mr. Wollen, "which business needs. Business needs today education in the fundamental more than training in doing this or that particular thing. It needs, especially, development of open-mindedness for the solution of the problems having to do with human relationship which, it seems to me, are the problems that are irri-

gating business most today. These topics, I feel, are far more important than those having to do merely with things."

The Indianapolis banker spoke of the education problem also from the standpoint of the human being in relation to property and cited the differences between capital and labor as an example.

ALUMINUM TOP IS COOLER FOR AUTOS

Cool summer auto rides and comfort under awnings and tents in spite of a blazing sun, is secured through a discovery of the United States Bureau of Standards as to the use of aluminum paint, it was announced today.

Fifty percent less heat from the sun will get through the top of an automobile if it is painted with aluminum preparation, the bureau declared. It was stated the black materials used for covers of automobiles and ice wagons absorb nearly ninety per cent of the sun's heat, reaching them, and about half of this is reradiated on the under side.

Claimed more diversification of crops is needed. Some of the farmers are diversifying by raising corn.

Special Sale Friday and Saturday, May 23 and 24, 1924

RAPP BROTHERS

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NOTICE—Ask to have our regular circular mailed to you. Leave name and address at office. We deliver your order free.

Very Best Rib Roast, the lb.	40c
Best Native Pot Roast, the lb.	22c
Leg Gen. Spring Lamb, the lb.	37½c
Breast Veal Roast with Pocket, lb.	15c
Loin Veal Roast, the lb.	32c
Front Leg Veal Roast, the lb.	25c
Shoulder Veal Roast, the lb.	19½c

Pork Loin Roast, the lb.	21½c
Fresh Pork Butts, the lb.	18½c
Fresh Spareribs, the lb.	12½c
Miller & Hart Bacon sliced, 3 lbs. for	\$1
Rump Corned Beef, the pound	28c
Best Elgin Creamery Butter, lb.	43c
Good Luck Oleomargarine, 2 lbs.	53c

Sour Pickles, bulk the dozen	35c
Dill Pickles, bulk the dozen	35c
Soft Summer Sausage, the lb.	35c
Soft Salami Sausage, the lb.	45c
Loin Lamb Roast, the lb.	37½c
Pure Strawberry Jam, the jar	25c
Jellies, the glass	15c
Gold Medal Mayonnaise, 12½ oz. jar	29c

Fresh White Fish, the lb.	38c
Fresh Lake Trout, the lb.	33c
Fresh Herring, the lb.	20c
Salmon Steak, the lb.	40c
Halibut Steak, the lb.	40c
Grape Cider, the bottle	25c
Fresh Perch, the lb.	30c
Gorton's Codfish, the box	38c

HIND ¼ GEN. 1924 SPRING LAMB, the lb.	55c
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FOR FRIDAY ONLY Fancy White Potatoes, the peck	28c
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FOR FRIDAY ONLY Strictly Fresh Eggs, doz.	27½c
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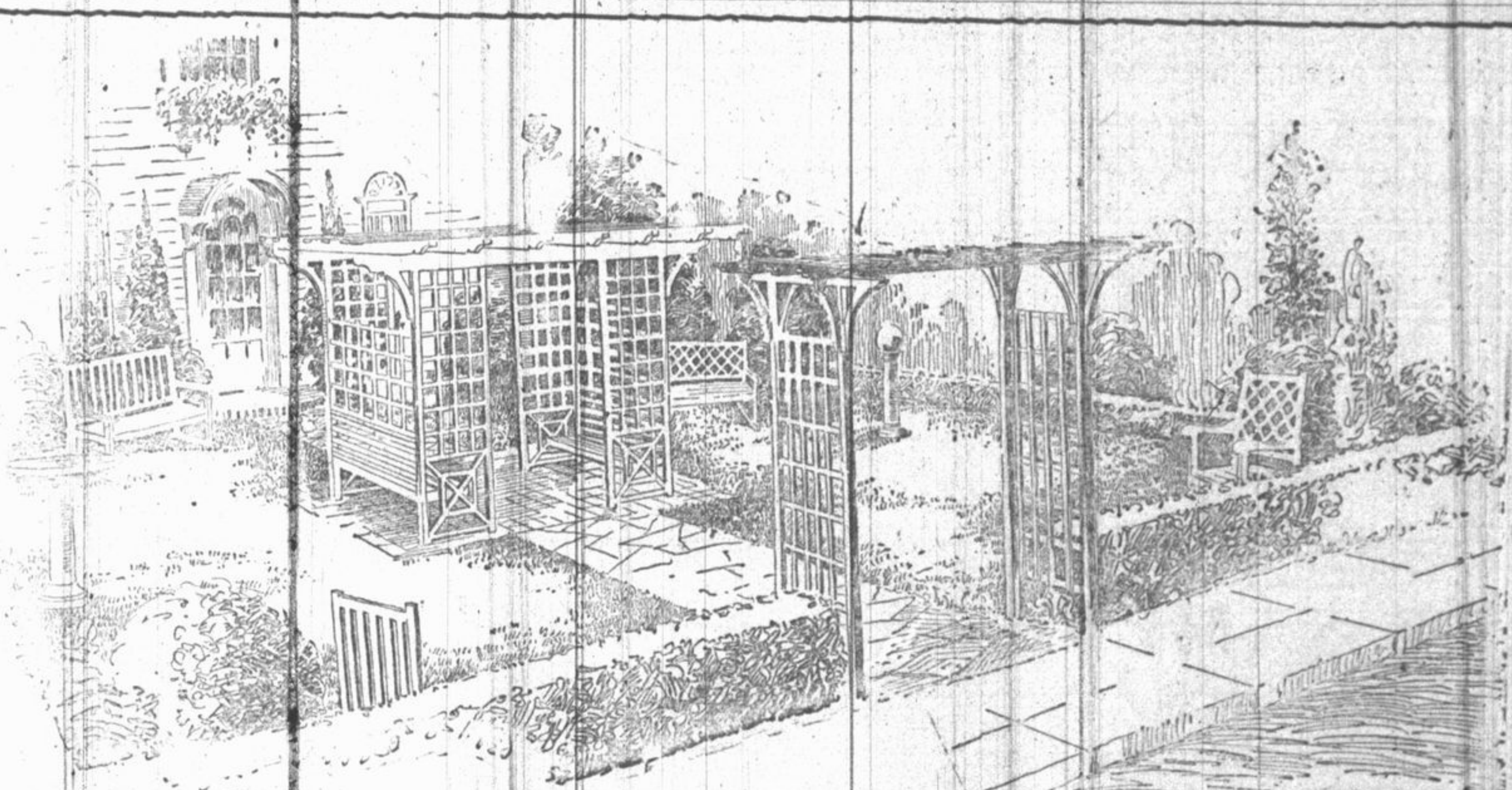
NEW POTATOES 4 lbs. for	25c
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Sweet Oranges, the doz.	29c
Bananas, the lb.	12½c
Grape Fruit, 2 and 3 for	25c
Dry Apricots, the lb.	38c
Large Prunes, 2 lbs. for	25c
Fancy Cooking Apples, 3 lbs. for	25c
Thomas Webb Coffee, 3 lb. can for	\$1.35
Early June Peas, 2 cans for	25c
Fancy Wis. Corn, 2 cans for	25c
Solid Pack Tomatoes, 2 cans for	25c
Bon Bon Figs, 5 lb. box	\$1.25

Sliced Pineapple, No. 2 can, 3 cans	75c
Fancy Spinach, the peck	45c
Rhubarb, 5 lbs. for	25c
New Carrots, the bunch	10c
New Beets, the bunch	10c
Royal Ann Cherries, No. 3 can, each	35c
Farmhouse Sweet Pickles, the qt.	55c
Farmhouse Sweet Relish, pts, each	38c
Farmhouse Mustard, Pickles, qts.	45c
Peaches, No. 3 can, 3 cans for	75c
Apricots, No. 3 can, 3 cans for	75c

Bartlett Pears, 3 cans for	75c
Strawberries, 2 cans for	58c
Blackberries, 2 cans for	58c
Red Raspberries, 3 cans for	\$1
Black Raspberries, 3 cans for	\$1
Red Pitted Cherries, 3 cans for	75c
Regal Gingerale and Rootbeer, 12 large bottles, net	\$1.45
Regal Gingerale and Rootbeer, 12 small bottles, net	85c
Lomax Gingerale, 12 bottles, net	\$1.57
Lomax Rootbeer, 12 bottles, net	\$1.57

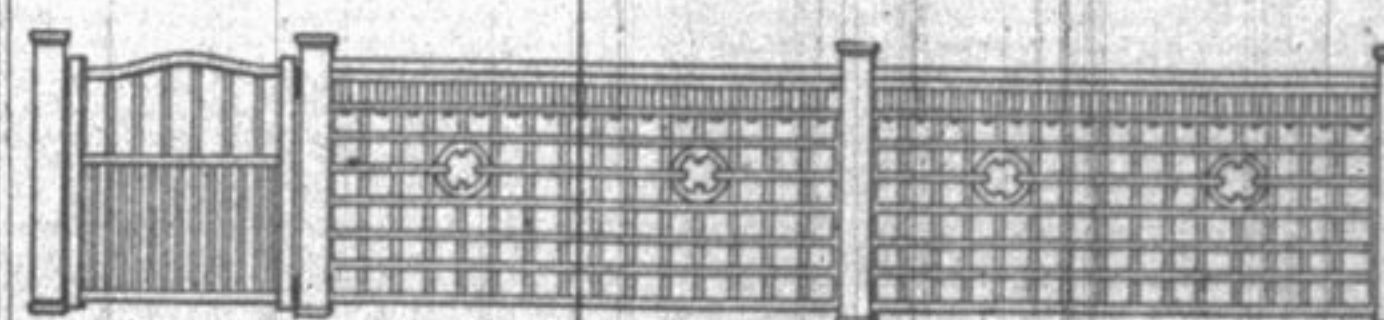
Morand Sparkling Rootbeer, 12 large bottles, net	\$1.45
Morand Sparkling Gingerale, 12 large bottles, net	\$1.45
Morand Rootbeer and Gingerale, 12 small bottles, net	85c
Cliquot Club Gingerale, 12 bottles, net	\$2.05
Beechnut Dry Gingerale, 12 bottles	\$2.05
Budweiser Near Beer, 12 bots., net	\$1.55
Green River, 12 bottles net	\$2.00
Cantrell & Cochrane's Irish Gingerale, each	25c
Canadian Club Extra Dry Gingerale, each	30c
Loganberry Juice, quart	69c
Grape Juice, quart	55c



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Scores have inspected our product. Expressions of surprise and delight attest the public's approval. Located at our factory at Crystal Lake and open daily, including Sunday. CATALOGUE ON REQUEST TO HOME OWNERS

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