

Telephone

ON FOR THE TELEPHONE PROFESSION

hed Monthly By

COMPANY, CHICAGO, U.S.A.

LY-AUGUST

No. 7-8



**nts on Automatic
e at Miami**

**Automatic Exchange
wood Falls**

Telephone Plant

Automatic Service



Current Events

C. A. X. Installed at Nixon, Pa.

THAT the citizens of Butler county, Pa., are alive to the importance of modern improvements is shown by the enthusiasm with which they accepted the invitation of the Peoples Telephone Company of Butler, Pa., to become the guests of the company on the evening of July 18th at the inspection and demonstration of the new automatic telephone equipment at Nixon, Pa. The new equipment, a Community Automatic Exchange, was manufactured by Automatic Electric Company and installed under the supervision of Mr. O. A. Black, the local company's operating manager.

At Nixon they have a plot of ground known as the Community Lot, on which has been built a hall, used for meetings of various kinds. At the back of this lot Mr. Black has erected a small building for housing the automatic equipment. Six automatic telephones were installed in the hall for the evening gathering.

Mr. T. M. Baker, Secretary of the Peoples Telephone Company, acted as chairman. In his introductory remarks, Mr. Baker briefly explained the organization of the Peoples Telephone Company twenty-five or more years ago, how they had struggled to build a telephone system that would furnish the best possible service to their subscribers and patrons, and how more recently they had taken over the Burton Telephone Company, making it a part of the Peoples Telephone system, and had installed this new automatic equipment in order that the people of Nixon would have the best telephone service.

Mr. W. S. Vivian, manager of the Department of Public Relations, Automatic Electric Company, Chicago, described the invention of the telephone in 1876 and its development up to the present time.

Following Mr. Vivian's talk, the automatic equipment was inspected and the automatic telephones, which had been set up in the community hall were operated. Refreshments were served by young ladies from the Butler office.

Long Beach Exchange Cut Over

BY the time this issue of "Automatic Telephone" is in the hands of our readers the telephone subscribers of the Associated Telephone Company at Long Beach, Cal., will be enjoying the benefits of automatic service.

The conversion from manual to automatic operation is scheduled for August 15th. For several months, Automatic Electric Company's installation crew have been at work installing the units and connecting cables and testing the switches. The equipment is divided between the Main office with an installed capacity of 3,800 lines and the East office with an installed capacity of 1,200 lines. The Main office switchboard has been installed in a new building.

Automatic equipment is by no means an innovation to subscribers on the Pacific coast. Indeed, all of the larger cities, including Los Angeles, San Francisco, San Diego, have been partly or wholly equipped for automatic service for many years; and now comes Long Beach to add to the growing list of Californian cities in which the telephone of the present and future fosters civic pride.

More Bell Exchanges Converted to Automatic

FOUR more exchanges in the Bell system have recently been equipped with Strowger automatic switchboards.

At Syracuse, N. Y., one of the telephone offices is now operating automatically, having been cut over on July 29th. As in the case of most of the partial conversions of Bell city networks, arrangements have been made for the completion of all calls from automatic stations without the necessity of the calling subscriber talking to an operator; this regardless of whether calls are to manual or automatic substations.

On June 10, one of the offices of the five-office network operated by the New England Telephone & Telegraph Co., at Hartford, Conn., was converted to automatic. The new exchange has installed capacity of 4,700 lines.

On May 28, a 3,000-line Strowger automatic switchboard was cut into service at St. Joseph, Mo., by the Southwestern Bell Telephone Co.

A few weeks previous, the exchange at Columbia, S. C., serving 3,500 lines, was also converted to automatic by the Southern Bell Telephone & Telegraph Co.

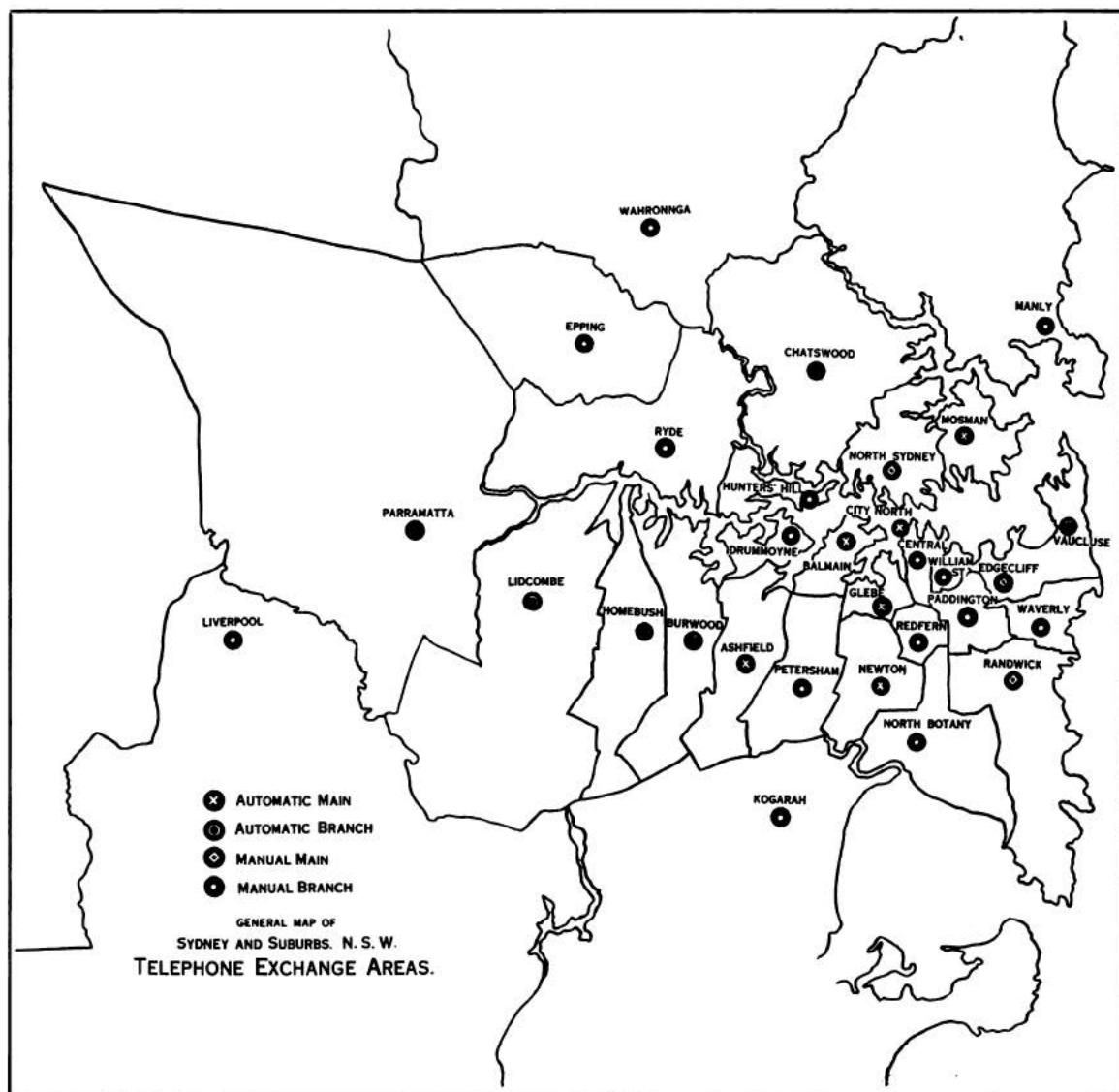
Other exchanges in the Bell system which are scheduled for conversion to automatic during the coming months include Little Rock, Ark.; Peoria, Ill.; Topeka Kan., and Scranton, Pa.

Reminiscences of New British 'Phone Director

MR. R. A. Dalzell, whose appointment as Director of Telephones and Telegraphs for the British Post Office was recently announced, related some interesting telephone experiences in an interview a short time back.

"I have seen the development of the so-called 'scientific toy' from the original single circuit wire with Blake or Hunning's transmitters," Mr. Dalzell is reported as saying, "and without multiple switchboards, through the period of metallic circuits and multiple switchboards, to the central battery, which in its turn is giving place to the automatic system.

"This is being rapidly developed, and I think the future lies largely in that direction. I hope to see the automatic telephone in London begun in my time, but it will be many years before the scheme can be completed."



Chatswood is equipped with trunks to all main offices, and the first and second selectors which would ordinarily be placed in North Sydney are temporarily placed in the Chatswood office. The branch office in this case is thus operating as a main office without branches, and all manual calls originating in the other offices in the area are completed through the City office. Calls originating in Chatswood for North Sydney are trunked to North Sydney from the banks of second selectors.

In the Balmain area, the main office (Balmain) is automatic, while the branches, Hunter Hill, Drummoine, Ryde and Epping, are manual. Calls to the main from each branch are trunked from second selector levels, while calls from the manual offices must all pass through City exchange.

It can be seen, then, that we have three types of areas in the Sydney network: first, Ashfield, having an automatic main with automatic branches; second, North Sydney, having a manual main with an automatic branch; and third, Balmain, having an automatic main and manual branches.

We have seen that all calls from one automatic office to another are handled entirely automatically; that all automatic to manual calls are completed by dialing predetermined digits which switch the calls to a manual "B" board in the desired exchange if it be a main, in the main exchange if the desired office is a branch and the main is manual, or in the branch office from the banks of second selectors if the main office of the area is automatic; and that all calls originating in a manual office to be terminated in an automatic office, pass through City office where a "B" operator completes the call with a push button calling device.

Special service calls, such as wire chief, information, complaint, fire, reverting calls, etc., are directed through the levels of second selectors to the proper desks. Information and complaint calls are trunked direct to City office, while wire chief, fire, reverting calls and similar numbers are directed through special third selectors, using three digit call numbers.

It will be recalled that in the first part of this paper, it was said that the first or "A" level of first selectors

(Continued on page 91)

Automatic Telephone

*A Journal of Information for the
Telephone Profession*

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H. E. CLAPHAM :: Editor

*This publication will be sent without charge to all
interested persons upon request*

Some Experiences of an Automatic Operating Company

THE buying of central office equipment has always been a matter calling for the most serious consideration of telephone managers, more so in recent years than at any previous time.

It is becoming more and more difficult a matter to decide which type, out of the many that are available, will be the best for the particular exchange under consideration, from the standpoints of service, economy, length of life and obsolescence. The manager who precedes his decision with a very careful investigation of the records in actual operating experience of these many types, exercises the utmost wisdom.

It is a significant fact that it is only by means of the above process that new customers for Strowger Automatic equipment are made. A telephone manager who has been accustomed to the use of manual equipment may replace his worn out or outgrown switchboard with any one of several types of manual equipment, without anything more than a superficial study of its features.

But for a company to change from manual to automatic operation with no more than a casual study of the theoretical accomplishments of automatic switchboards, is a thing that we neither expect nor wish. We want every purchaser of automatic equipment to know exactly what he is getting, and we want him to know that there is no Automatic switchboard in service today, of the records of which we are not proud.

Speaking of investigations of automatic exchanges, a letter recently received at the offices of Automatic Electric Company, tells of some interesting facts that resulted from just such an investigation. The company concerned has been operating automatic equipment since about 1910.

"In 1909," says the manager of this company, "it became necessary for us to enlarge our central office facilities, and as we were then equipped with a magneto board it was decided that the change must be to another type of equipment. A great deal of investigation was made, and a number of visits paid by committees representing the directors, to other cities of about the same population as this, to inspect the different types of equipment in use at those exchanges.

"Among the places visited were two automatic exchanges, and the service rendered by these exchanges appealed to some of the committee, but the cost of automatic installation being greater than manual almost decided in favor of the manual equipment; and, but for the insistence of one man on the committee who had become somewhat out of patience with operators,

manual equipment would have been installed. But this one man saved the day; we are now fully automatic, and there is not a director or stockholder of the company that has a single regret that the decision was made as it was."

The original automatic switchboard installed by this company consisted of eight individual line units and two party line units of 100 lines each. Since that time there has been added two more individual line units and a rural unit. At the present time they are operating more than 3000 automatic telephones and no manual stations whatever.

The original units have been in service for nearly twelve years, and are apparently in as good condition now as when first installed. Credit for this is given largely to the fact that the routines recommended by Automatic Electric Company have been closely followed all the time.

As to the opinion of the company and subscribers concerning automatic operation, we can do no better than quote from the letter previously mentioned.

"There is no one," it reads, "connected with the company either as stockholder or employee, who would consider any other kind of equipment. I think our subscribers are as well pleased with the service they receive as the company is; in fact, I have never yet heard one of our subscribers express a desire for a different type of service, and I can recall many expressions of great satisfaction. The most emphatic are from persons who, accustomed to automatic service, change to a location where some other kind is rendered, and then return to be our subscribers."

"I am not at liberty," says this manager, "to make public the details of the company's financial experience. But I might say that when the original automatic installation was made, the matter of financing the job was very difficult due to the prior record of the profits returned to investors in telephone stocks; but at the present time that condition does not exist, and the financial standing of this company is of the very best.

"I feel that this is largely due to the economy possible in operating an automatic plant; our plant has not been starved, for it is in better than average condition for a plant eleven years old. Our scale of wages compares favorably with other companies under similar working conditions, and our rates are not high. In fact, ours is one of the few companies that did not find it necessary to increase their rates during the war.

"The directors have so much confidence in automatic service that, two years ago, they authorized the installation of a rural automatic board, and we changed our rural subscribers from manual to automatic. Prior to this change we had service complaints all the time, and rebates were the rule, not the exception. Since automatic has been installed, we have no rebates and service complaints have been reduced to a minimum."

* * *

There is nothing that we, as manufacturers of Strowger Automatic equipment, can add to the above letter. We could fill several pages in elaborating upon theoretic reasons for the service and profit value of this equipment, but it would not be worth nearly as much to the prospective user of automatic as the simple statements made above. The gentleman who wrote the letter knows automatic equipment by having lived with it and worked with it year after year, not through hearsay or through information received from us. Can there be any better proof of the economy and service that comes with the operation of automatic?

Sydney's Automatic Network

(Continued from page 87)

was assigned to Randwick office, and the "O" or "Y" level was assigned to Mosman. It is now the general practice to reserve the "O" level for the "zero" operator or toll recording operator, and to leave the first level unoccupied.

In the introductory paragraph, the statement was made that in the early stages of the development of the Sydney network, all lines were operated on a flat rate basis. With the introduction of automatic equipment, call meters were provided for every line, such that all completed calls were registered. To effect this, each line in the office was equipped with a registering device, which was operated to register one call, each time a call was completed, under the control of a pair of relays placed in each trunk between the primary and secondary line switches.

The exact number of lines with which each automatic exchange is equipped is not known, since our representatives in Australia have placed orders for equipment without specifying in which offices it was to be installed. The following list, however, is approximately correct, and will give a good idea of the extent of the present system:

Office	Type	Lines		P. B. X.
		Single	Party	
Ashfield	Main ..	2100	100	100
Parramatta	Branch..	800	100	100
City North.....	Main ..	4600	2000	100
Homebush	Branch..	900	100	100
Mosman	Main ..	2300	100	100
Glebe	Main ..	1600	100	200
Newton	Main ..	1800	100	100
Lidcombe	Branch..	400	0	100
Chatswood	Branch..	300	100	100
Burwood	Branch..	1400	100	100
Balmain	Main ..	1900	100	100
Vaucluse	Branch..	300	100	400
		18400	3000	1600

C. A. X. Installed at Tyndal, S. D.

THE Dakota Central Telephone Company, in several of whose exchanges, automatic equipment has been used with the greatest success for several years,



C. A. X. Equipment at Tyndal, S. D.

All Indiana Telephone Men should see the Strowger Automatic Exhibit

at the Convention of the

INDIANA TELEPHONE ASSOCIATION

CLAYPOOL HOTEL, INDIANAPOLIS

SEPT. 21-22, 1922

has recently converted another of its exchanges. Tyndal, S. D., is the latest addition to its list of automatic exchanges.

This exchange is of the simplified C. A. X. type, having a capacity of 300 lines, including individual lines and harmonic party lines.

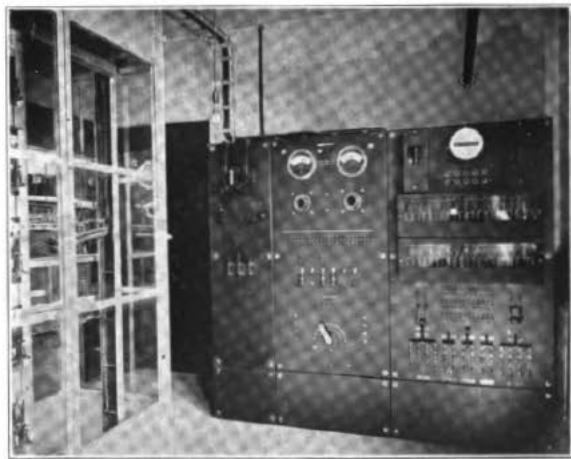
The line switch equipment is of the rotary type, mounted on swinging shelves as in larger exchanges, but the installation as a whole is designed to be unattended, except for periodic visits for purposes of inspection and routine adjustment.

This latest addition to the Dakota Central group of Automatic exchanges is more than usually gratifying in that it speaks well for the success of previous installations. This company began the use of Automatic equipment in 1912 when the exchanges at Aberdeen and Mitchell were converted. In 1914, the 1,000 line exchange at Watertown was converted. Preparations for the conversion of the fifth exchange, at Pierre, (500 lines) are well in hand, and will be completed soon.

R. R. Stevens of Tri-State Company Resigns

MR. ROLLO R. STEVENS, for many years Commercial Superintendent of the Tri-State Telephone and Telegraph Company of St. Paul, has resigned, effective August 1st. Mr. Stevens has been concerned with the selling of telephone service for a great part of his life, and during the past seven years has been connected with the commercial departments of various telephone operating organizations, first in Ohio, and then with the Tri-State company.

Mr. Stevens will be succeeded by Mr. R. F. Wilder, formerly Commercial Engineer. Mr. Wilder has been with the Tri-State company for twelve years, for three of which he was assistant to the commercial superintendent, and was therefore Mr. Stevens' logical successor.



The Tyndal Power Switchboard

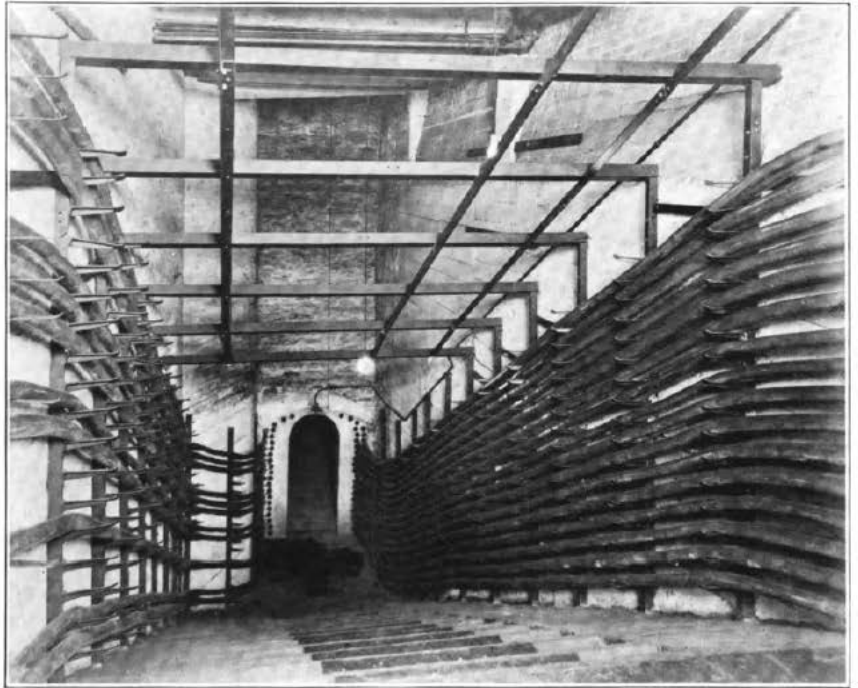
St. Paul's Cable Tunnel

The Tri-State Telephone and Telegraph Company's Tunnel, Carved Under the Downtown Section of St. Paul, is a Unique and Interesting Piece of Telephone Construction

IT is safe to say that, of the many things that go to make up a complete telephone exchange in any city, the cable plant is the one that the average telephone subscriber knows the least about. He knows something about the telephone instrument in his home or place of business, because he uses it every day. He knows less about the central office equipment, because he seldom sees it; but he does know in a general way what is accomplished there, and therefore appreciates its existence. But of the hundreds or perhaps thousands of connecting links between the telephone instruments and the central offices, and those between the various central offices, he knows little or nothing.

Perhaps, if he is reminded, he is able to recall in a very hazy way, a time when the space above the streets was thickly criss-crossed with wires, and when telephone poles were

more plentiful than street lamps. When they disappeared he cannot say. If he is asked where the wires are now he will be quick to reply that they are "some-



The Approach to the St. Paul Cable Tunnel

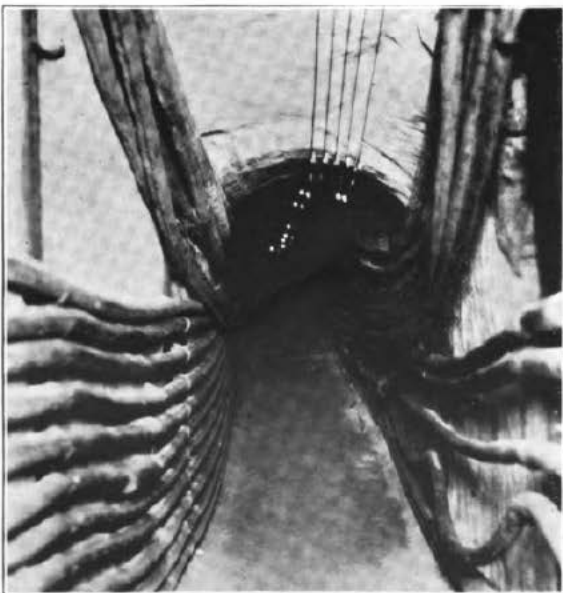
where underground," but just how they were placed there, and of what problems confront the telephone company in so placing them that they may be used to the greatest efficiency, he is entirely ignorant. Yet this work is just as important a part of the development of any city as the construction of boulevards or the development of transportation.

One of the most interesting pieces of telephone history relating to the above subject is represented by the tunnel owned by the Tri-State Telephone and Telegraph Company of St. Paul, two photographs of which appear on this page.

POLES BANNED

Back in 1890, when the plans for this tunnel were first drawn up, underground cable construction was in a very hazy state of development. There were no standard methods, and one that could properly be called the best. At St. Paul about this time, the city officials decided to exclude all telephone poles from the downtown section. Accordingly, telephone engineers began experimenting to find out what would be the best way to lay the telephone cables under the streets of St. Paul.

Here arose a rather complicated question. The downtown section of the city rested on a hard sandstone shell, so that to begin surface excavation would



A View Within the Tunnel

have been difficult and expensive. However, it was found to be comparatively easy to dig a tunnel some distance below the surface, since the rock formation was much softer there. After much investigation, it was found that this offered the most permanent and convenient method of providing a channel for the cables.

PROVED DURABLE

That the results of the investigation were entirely justified is shown by the fact that, in spite of the apparent softness of the sandstone, there has never been a cave-in or other mishap, and the condition of the tunnel is just as good as ever and bids fair to be entirely permanent.

The work of excavation was commenced almost immediately by John Lind of St. Paul, and was continued over a period of about ten years, the tunnel being completed as it is at the present time in 1900.

The total length of the tunnel is a little more than four miles; the average height is six feet, and the average width three feet. The total cost of excavating was \$76,027.46, and the total cost of completion, including the brick work, laying racks for cables, etc., was \$94,035.43.

The tunnel at present houses about 120,000 feet of cable, the sizes of which range from 50 to 1,200 pairs. Its ultimate capacity is practically unlimited. It is electrically lighted for about two miles. The tunnel turns west under Fifth Street near the telephone building, and follows this route as far as Smith Avenue. It runs from the Mississippi River on Wabasha Street to College Avenue; there is another running west on Fourth Street as far as Seven Corners, and from here it runs along Seventh Street to Banfil Street. Another branch runs from Sixth and Wabasha Street to Ninth Street and Main Avenue. At one point an entrance makes connection with the State Capitol.

MANHOLE CONNECTIONS

The cables are connected to other cables above the ground through manholes at certain locations, and in this way the wires are distributed to different buildings and telephone stations. From the tunnel, the cables run into the Cedar exchange into the terminal room, where they are distributed to the switchboards.

Visitors to the plant of the Tri-State Telephone and Telegraph Company at St. Paul find the cable tunnel a source of never-ending interest, and it is regarded as an important historical feature in St. Paul's telephone development.

A Model Telephone Plant

Some Interesting Paragraphs Describing the Up-to-Date Telephone Plant of the Marion County Telephone Company at Marion, Ohio. Reprinted from the Recent Centennial Edition of Marion Daily Star

TELEPHONE service in Marion and surrounding territory centers about the model plant of the Marion County Telephone Company, No. 197 South Main Street. The company, which is a strictly locally owned corporation in which there are interested more than 100 Marion stockholders, today is operating one of the most modern telephone properties in the country.

AUTOMATIC SERVICE

Automatic telephone service was established in Marion and the surrounding farm territory in 1917, when Automatic Electric Company of Chicago installed the model plant. Since its completion the plant has been visited by telephone engineers from all over the United States, as well as by government engineers from many European and South American countries.

In the Marion plant alone there are nearly 20,000,000 calls made every year over the automatic telephones. There are in service nearly 7,300 telephones, which will average nine calls a day for every day in the year. The company has in operation in its system more than 13,000 miles of wire, 6,400 of which are in aerial cable and 6,000 miles in underground cable.

During the past year the company installed 1,049 telephones, moved over 1,000 to make a net gain of 229 subscribers. The monthly payroll is more than \$9,000 and the average number of employees is fifty-one, sixteen of whom are toll operators.

RECONSTRUCTION

The company is replacing its overhead wires with underground construction just as fast as its finances will permit. Every year an extension is made to the underground system in some section where overhead

construction is the heaviest. The future aim and desire of the company is that within a short period of years all aerial construction on the principal streets will be replaced with underground construction, which not only will add to the appearance of the thoroughfare, but add materially to the quality of service.



Marion's Automatic Switchroom

Officers of the company are F. E. Guthery, president; S. E. Barlow, vice-president, and A. J. Berry, secretary-treasurer and general manager. With these officers, W. G. Harding, H. B. Hane, D. R. Crissinger, John A. Schroeter, Frank Huber, J. F. Prendergast, A. E. Cheney and J. G. Leffler constitute the board of directors.



Make Your Small Exchanges Self-Operating

PAYING operators to take care of your outlying exchanges is an unnecessary waste. The C. A. X. eliminates all regular attendants at such exchanges and their salaries become a net saving.

But installing the C. A. X. in a small town or rural community means much more than this. Here are some of the other things accomplished by its use:

Continuous Service—Rapid, accurate and reliable service twenty-four hours per day.

No dry Battery Expense—The C. A. X. operates from a common battery power plant, automatically charged at the proper intervals.

Positive Supervision—The operator or maintainer at the nearest attended exchange can keep a positive check at all times on the operation of the C. A. X. By occasionally dialing a special code and listening for the alarm signal, unstandard conditions may usually be detected and corrected before the subscriber is aware of any trouble.

Easy Maintenance—A visit by your regular maintenance man every week or two weeks is sufficient to keep the apparatus continuously in first-class condition.

Our engineers will be glad to explain the application of the C. A. X. in any one or more of your exchanges upon request. No obligation.



Automatic Electric Company

Factory and General Offices:
CHICAGO, ILLINOIS

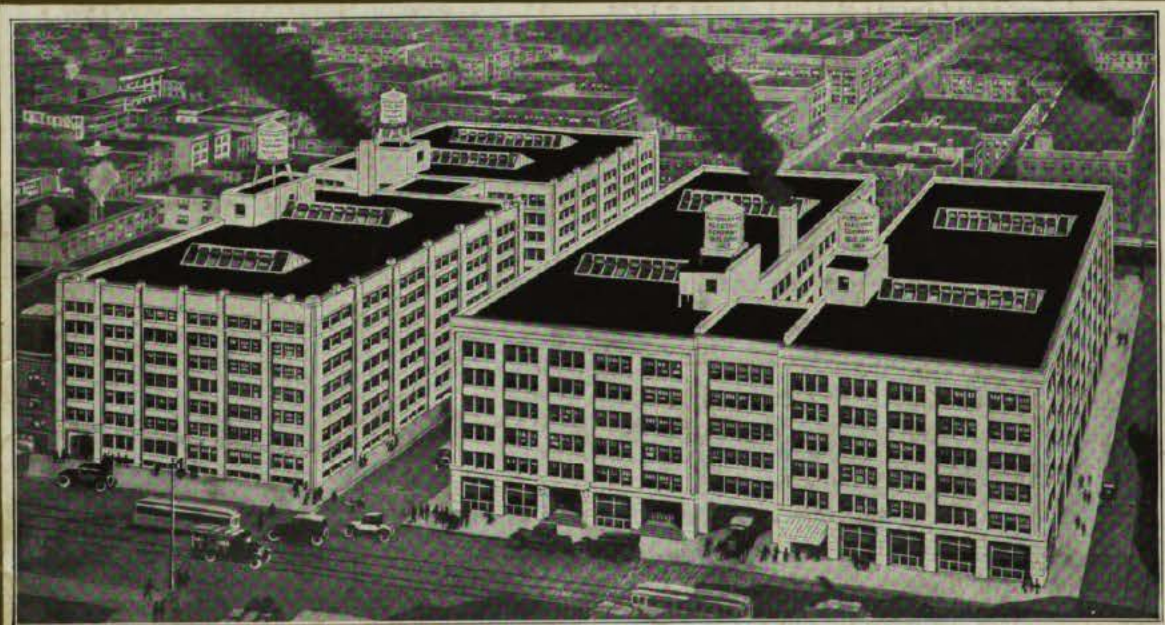
BRANCH OFFICES:

New York City 21 East 40th St.	Detroit 525 Ford Bldg.
Cleveland 415 Cuyahoga Bldg.	Washington 905 Munson Bldg.
Philadelphia The Bourse Bldg.	Cincinnati Union Central Bldg.
Columbus 516 Ferris Bldg.	Los Angeles 238 San Fernando Bldg.
Boston 415 Tremont Bldg.	Pittsburgh 608 Fulton Bldg.
Rochester Mercantile Bldg.	Kansas City 1001 New York Life Bldg.

ASSOCIATED COMPANIES

International Telephone Sales and Engineering Corporation, New York
International Automatic Telephone Co., Ltd., London
Compagnie Française pour l'Exploitation des Procédés Thomson-Houston, Paris
Automatic Telephone Mfg., Co., Ltd., Liverpool
Automatic Telephones, Australasia, Ltd., Sydney

The Home of the Automatic



Automatic Electric Company's Factory, at the Corner of Morgan and Van Buren Streets, Chicago. It has a Floor Space of 10 Acres and is Devoted Exclusively to making Automatic Telephones and Telephone Supplies.