

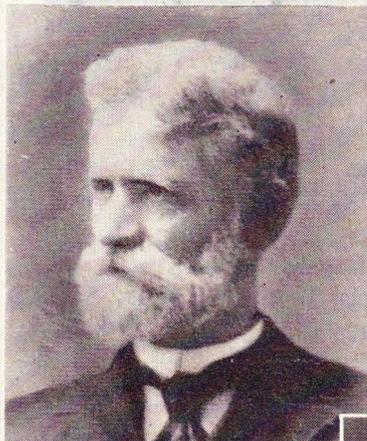
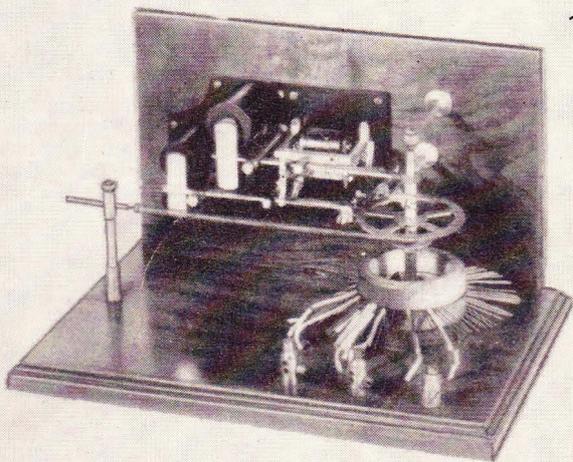
# STROWGER AUTOMATIC

## A Sixty Year Report

reprinted from  
employees edition of

*Telephone  
Topics*

published by  
Automatic Electric Company



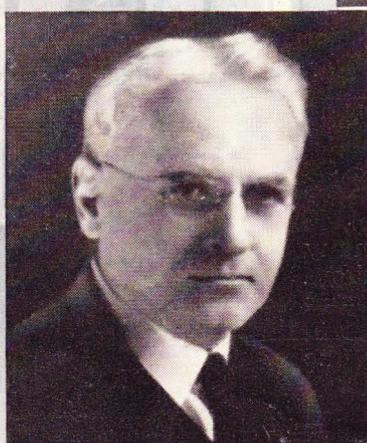
*Al B. Strowger*



*Joseph H. Martin*



*A. E. Keith*

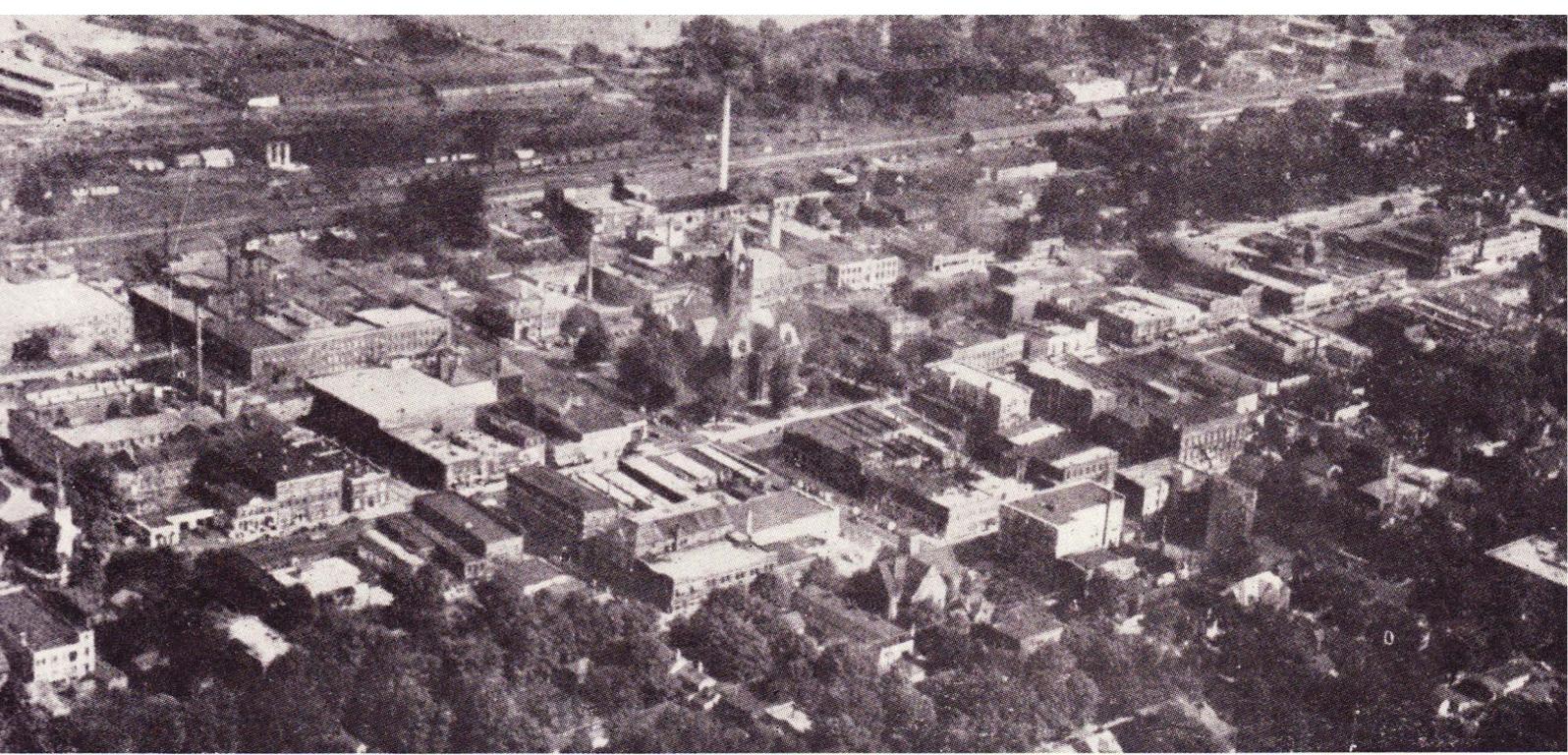


*J. G. Martin*

AUTOMATIC



ELECTRIC



La Porte, Indiana, the "Maple City," now a metropolis of over 20,000, located in the northern part of the state, was the locale of the first commercial use of the Strowger Automatic system in 1892. The exchange offered free service, for its only objective was recognition of automatic telephony as a practical idea. The first installation was followed by a larger and improved exchange in 1893, and a third in 1894. After a lengthy interlude of manual operation, La Porte returned to the Strowger Automatic fold early in 1942. With over 8,000 stations, it is now one of the exchanges of Indiana Associated Telephone Co. Located in a region of rich farmland and beautiful lakes, La Porte is also known for its manufacture of road building equipment, steel tube furniture and farm implements.

## SIXTY YEARS OF STROWGER AUTOMATIC

**T**hose of you who see the telephone trade journals may have noticed that recently in our advertising we have been featuring the sixty-year emblem which appears on the front cover of this issue of "Telephone Topics". The reason for this is that sixty years ago, come this November, the first Strowger step-by-step automatic telephone system was installed at La Porte, Indiana—the first automatic exchange ever to be placed in public service. It was a small system, having less than a hundred lines, and it had to have five wires leading from the central office to each telephone. But from the start it was successful; and that success proved two important things: first, that the principle of the system was sound; second, that the public was ready to accept any change in technique that would represent a major improvement in service.

The Strowger Automatic system has come a long way from this simple beginning. Today, three quarters of all the automatic telephones in the world—in sixty-odd different countries—are served by equipment which employs the basic principles first proved at La Porte.

### The Beginning Was a Simple Thing

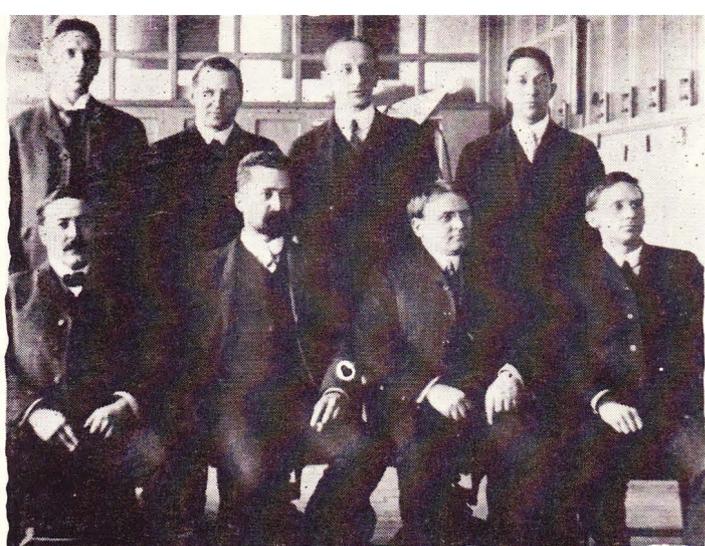
The story of how, in 1889, Almon B. Strowger, a Kansas City business man, not an engineer or scientist, devised a machine which would replace the switchboard operator, is well known to many telephone people. As with many other inventions, the principle of the step-by-step, up-and-around switching mechanism moved by pawls and electromagnets is so simple and straightforward that one wonders how it came to be overlooked for so long.

The Strowger Automatic Telephone Exchange was organized in 1891 and had its manufacturing facilities located at various places here in Chicago. For a time on Jefferson Street, they were later situated at Washington and Union Streets. Their first formal home, however, was the factory shown above, located at 166-174 South Clinton.

Although the Strowger idea conformed so well to the growing trend towards mechanization that it was bound to gain eventual recognition, it was fortunate that it first came to the attention of a salesman traveling out of Chicago looking for novel ideas for the World's Columbian Exposition, then planned for 1892. This salesman, Joseph Harris, having suffered from the treatment given telephone users by the manual operators of the period, recognized immediately that here was an idea that should have great possibilities for development. It was through his perseverance and his genius for organization that the Strowger Automatic system found its way to La Porte, and eventually the entire world.

Accounts vary as to how the original crude Strowger switch was developed. But Joseph Harris was convinced that the idea could be developed on a commercial scale, and he induced Almon B. Strowger to come to Chicago. Together they arranged to have several model switches made by a novelty company from Strowger's original drawings; and with the aid of three borrowed telephones an ex-

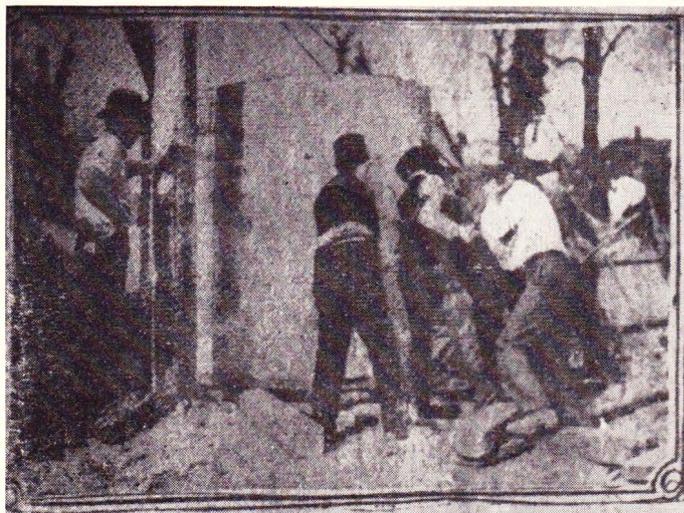




Well known in the history of Automatic were these men, pictured about 1906. Top row, left to right: T. E. MEYER, E. A. MELINGER, B. D. WILLIS, H. L. FISH; seated, left to right: GEORGE BURLINGAME, F. LUBBERGER, T. G. MARTIN, JOHN MEYER.



Automatic's first building, now Building 2, erected in 1901.



Unusual picture of an Automatic telephone sub-office, installed in Columbus, Ohio, about 1906. The board was sunk below ground in a vault. One of the earliest "unattended" exchanges.

perimental system was set up. In this very first model, push buttons were used on the telephones to send impulses of current, causing the central office switch to select the called line. To call number 89 for instance, the user pushed the first button eight times, and the second button nine times, with the crude mechanism moving over the line terminals at each push of the button. Finally the called line was reached, WITHOUT AN OPERATOR. Here was the germ of a great idea and a potentially great industry.

### Strowger Exchange Formed

With this much to go on, The Strowger Automatic Telephone Exchange was formed in 1891 with Mr. Harris as secretary and treasurer, and Almon B. Strowger as vice president. M. A. Meyer, a friend of Mr. Harris, was president. But experimen-

tation had proved costly, and to permit continued development of the step-by-step idea, more funds were needed.

As it turned out, this was a fortunate circumstance, for during this search for financial help, a Baltimore group became interested and sent a young engineer, A. E. Keith, then in the employ of the Brush Electric Co., to investigate the Strowger system. He at once recognized in it the basis for an automatic system of telephony having immense possibilities. Not only did he recommend that the Baltimore group back the company, but he himself remained with the Strowger group and contributed through many years to the development of the system.

### Early Development

Continued research under the direction of A. E. Keith, who later became vice president and chief engineer of Automatic Electric, eventually found the system ready for installation for public trial. The La Porte franchise was obtained and the installation made with this objective in mind. Service was free, but received the unanimous approval of those who were fortunate enough to share in its use.

In this early automatic system, in addition to the five wires to each calling station, a local battery was used at each station for talking current; while the central office switches were powered by "wet" cells, supplying current at 60 to 70 volts. The bells were rung by means of magnetos. A third push button was provided on each telephone, which the user had to push to restore the mechanism when a call was finished. In 1893, the first La

Port exchange was outgrown and replaced by a second one with a capacity of 200 lines.

In a few years, the Strowger system had met and passed its early tests and was being used by a few small Independent companies throughout the country, always backed by the guarantee of The Strowger Automatic Telephone Exchange that it would work satisfactorily. Such individual exchanges were installed in Michigan City, Indiana, and in Auburn and Rockaway, New York. Each succeeding installation showed improvement over the preceding ones, and by 1895, a 400-line exchange was installed in Albuquerque, New Mexico, the largest up to that time.

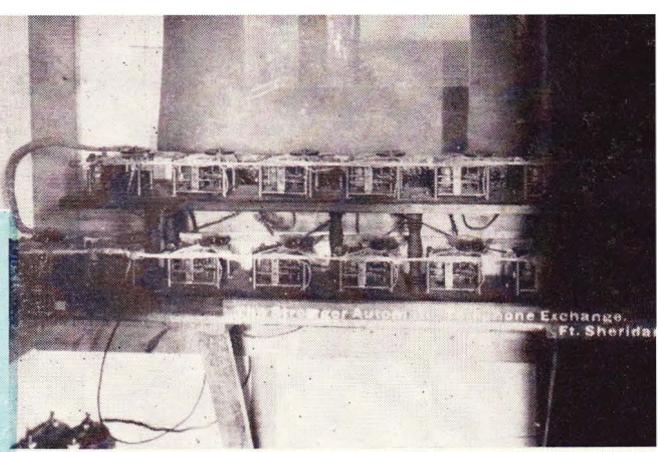
### New Names Join Engineering Staff

The name of Talbot G. Martin made its appearance in the history of the Strowger company in 1893. For four years prior to that he had been with



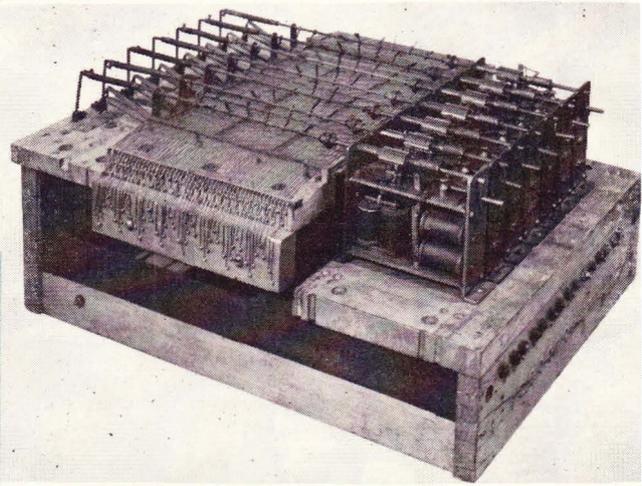
Automatic Electric Company pictures taken in 1903. The women are handling switch wiring.

This automatic installation at Fort Sheridan, Illinois, in 1893, used the same type of switch as the first La Porte installation. Both performed amazingly well.



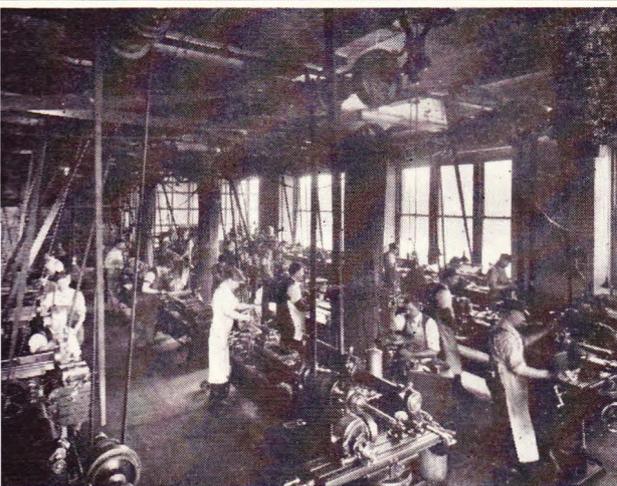
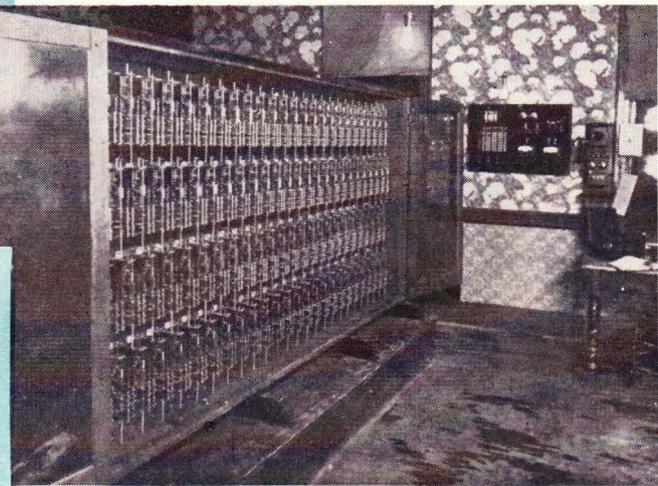
The Testing Laboratory. Date uncertain, but note sideburns, striped pants, bowler and full dress while working. That's JOHN ERICKSON with cap, and CHARLES ERICKSON at drill press.

The "zither" switch was unique in that it was the only type that carried out what we now call vertical stepping, in a horizontal plane. Its "zither" style was the first try at bare wire banks. First installed in the third La Porte installation, in 1894, and later at Michigan City, Ind.



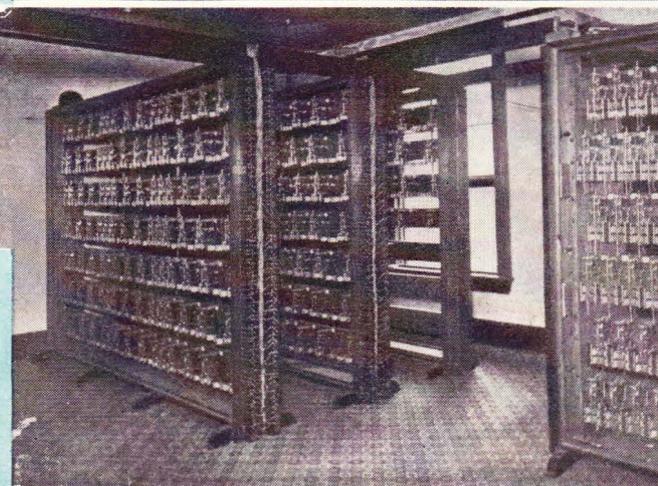
Scene at factory office. Men kept hats on for hasty departure, no doubt. Fellow second from window with back turned is R. A. AUGUSTINE, recently retired.

Installation made at Trinidad, Colorado, in 1896, served 200 subscribers, was glass encased to keep switches clean. Similar installations were made at Rochester, Minnesota, and Michigan City, Indiana, in 1895.



Although called the Tool Room, this is actually the Tool Making department and quite large, revealing the extent of the Company's manufacturing operations even in the early days.

A new automatic exchange installed in Augusta, Georgia, in 1897, has a capacity for 1000 subscribers; seven shelves per frame, 15 selectors per shelf. Note "terminal block" shelf pillar.



the Chicago Telephone Company. One of his first jobs with the Strowger organization was the installation of Strowger equipment at the Chicago World's Fair in 1893, and later in the White House, in Wash-

ington, D. C. Other names prominent in the development of the Strowger system then began to appear. The Erickson brothers, John and Charles, who had already been experimenting with switches of their

own, also joined the Strowger company in 1893. In 1896, another city, Augusta, Georgia, was added to the list of those who were willing to try the Strowger system. Augusta was not only the largest exchange to be equipped up to that time, but was important for two other reasons.

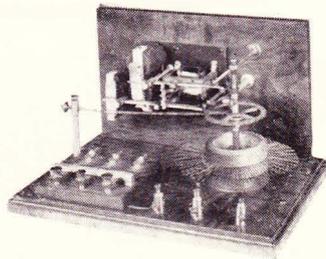
### Other Great Men In Strowger History

Prior to 1928 two organizations made up of Automatic employees were the Automatic Industrial Club and the Society of Automatic Telephone Engineers. In that year, however, the Strowger Automatic Club was organized, combining the membership of both clubs and opening membership to any male employee of the Company.

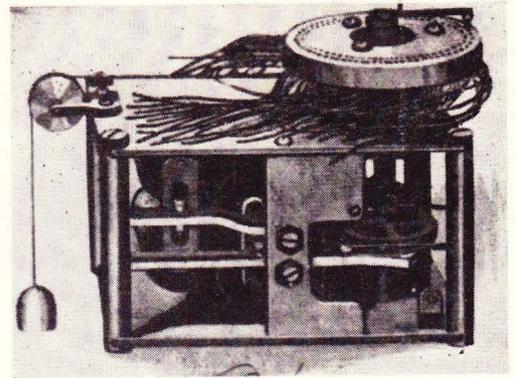
The Strowger Automatic Club was dedicated to the memory of **Wilson Lee Campbell**, general superintendent of the Company for many years prior to his untimely death in 1921 at the age of 47. An engineer and administrator of outstanding ability, Mr. Campbell was best known as a leader of men, beloved and respected by all who knew him. His many contributions to early technical literature on automatic telephony record his keen foresight in the field to which he contributed so much. The Club was chartered and incorporated through the efforts of many old timers still with the Company, among these being **John Calef, J. E. Gonseth, and R. D. Campbell.**

In 1934, shortly before his retirement, an award which has since borne his name, was given to **Talbot G. Martin**, a pioneer in Strowger Automatic telephony, who contributed much to the development of the Strowger switch and associated equipment. This Award, made annually, perpetuates the names of those who in this "modern" age of Strowger Automatic telephony, have followed closely in the paths of the earliest staff of engineers. Among those so honored over the years have been: **B. D. Willis, John and Charles Erickson, Earl B. Neir, Harry P. Mahoney, John Wicks, O. C. Hovland, R. H. Burfeind, Dr. Arthur Bessey Smith, T. E. Meyer, A. F. Adams, Clarence Lomax, J. E. Ostline, K. W. Graybill, C. M. Candy, W. H. Perkins, and Nick Salvesen.**

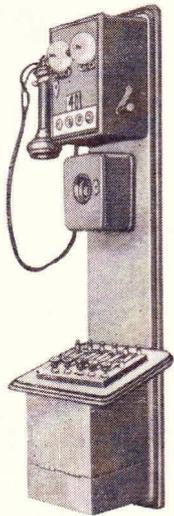
Augusta was the first public exchange to use dials instead of push buttons, and the dial itself, though large and cumbersome in contrast with our present dials, was in itself a remarkable improvement. The second feature of importance in the Augusta exchange was its use of selectors.



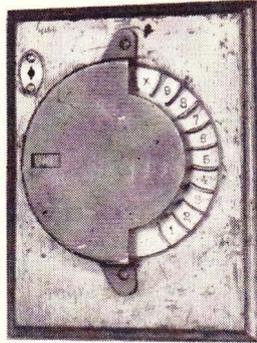
Left. Original switch model made by **ALMON B. STROWGER** in 1890, in which **JOSEPH HARRIS** could see a future industry.



Right. The first commercial Strowger switch design, used in the first La Porte installation and at Fort Sheridan.



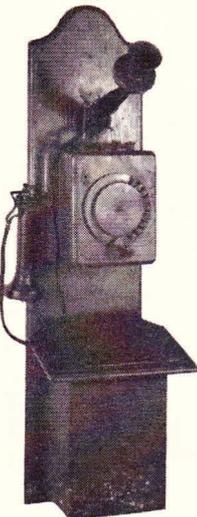
The earliest type wall telephone, with telegraph type keys to buzz hundreds, tens, and units numbers and for release of switch after hanging up.



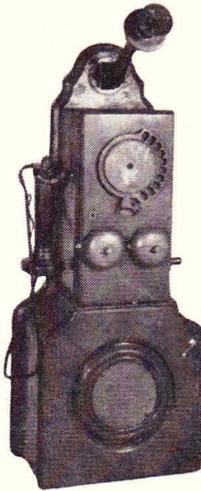
The first dial, created in 1895, must have amazed the telephone world, and was an important step in early development.



The mechanics of the first dial was reminiscent of the old-fashioned alarm clock.

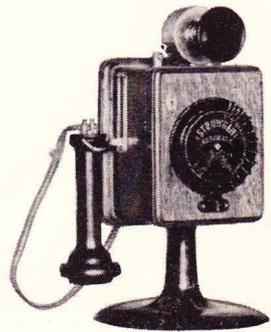


Above. Wall telephone of 1896 showing dial improvement over 1895 model.



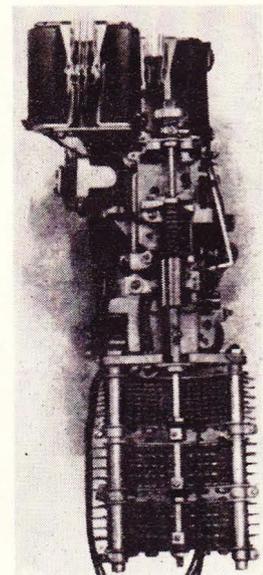
One of the most attractive of the wooden box wall telephones was this model of 1902 with its improved dial and receiver.

This desk telephone was one of a long line of early improvements, created about 1897.

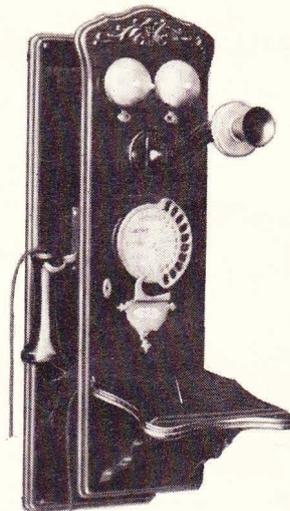


The 1900 wall telephone showing that by this time the dial had oval finger holes instead of flanges.

The Strowger switch in 1905 began to assume its more modern form, except for its vertical relays and overly large banks. The bank itself was an ingenious achievement.



The pedestal telephone of 1898 for business offices presented an interesting and professional appearance.



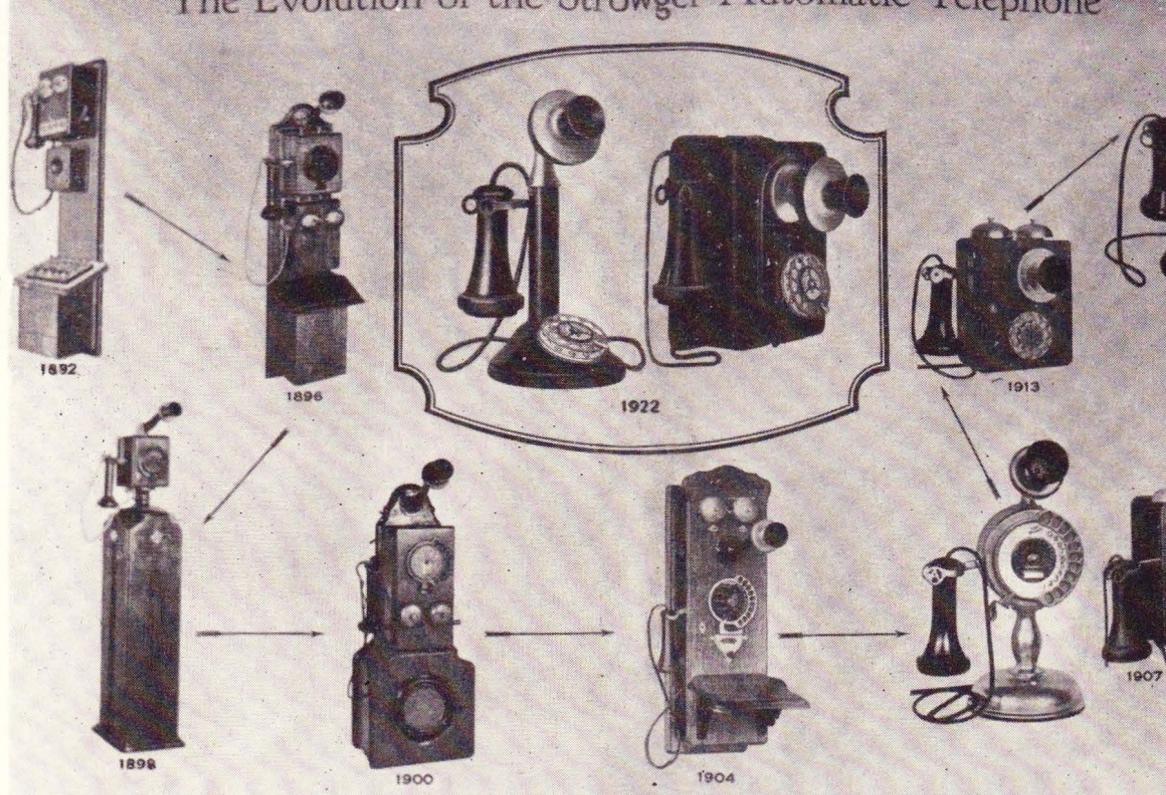
The common battery desk telephone of 1907 incorporated many improvements in design. Made of nickel plate, very elegant and imposing.



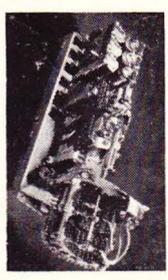
The 1907 model desk telephone adapted to paystation use with the coin box attachment for nickels, dimes and quarters.



# Strowger Automatic Moves Ahead Rapidly After Turn of Century



Further steps in evolution of the automatic telephone: the wooden box, then the nickel plate finish, followed by the metal with black enamel finish, and later by the first molded plastic handset.



UP TO THE TIME of the Augusta installation the aim of Strowger development had been to design a switch which would be capable of reaching all lines in the exchange, following the principle used in all manual switchboards of the period. It soon became evident that such switches would be too complex and costly, even if they could be made practical. The development workers eventually hit

upon the idea of using group-choosing switches, known as selectors, which made possible a system made up of ranks of switches of uniform size. Augusta, Georgia, was the first exchange to make use of this principle.

Experimental work was carried on unceasingly, just as today, and improvements in the Strowger equipment came rapidly. The basic structure of the Strowger switch, with its up-and-around action, was steadily being perfected, and the multiple bank structure was beginning to take shape. Soon automatic busy tests and push button ringing were standard features. Service to users was steadily being improved.

The home of the Strowger factory was moved from place to place but eventually settled on Jefferson Street where the equipment was manufactured for the New Bedford and Fall River, Massachusetts,

exchanges, completed in 1900 and 1901. The former installation was handled by T. G. Martin.

Many obstacles confronted the small group of men who foresaw a magnificent future for this automatic telephone system. However, the genius of this group of engineers and business men was not to be denied. The automatic telephone was proving valuable in every way; dependable, economical, secret, playing no favorites, and giving faster service with each new development.

In these early achievements, the work of such men as A. E. Keith, T. G. Martin, the Erickson brothers, and many others, carried the system through the perplexities and trials of the pioneer stage, paving the way for proved and perfected equipment. Though the system still bears Strowger's name, he had little to do with these developments, but he must have watched their progress with great interest. In the late nineties, failing health caused his retirement to Florida, where he lived quietly until his death in St. Petersburg in 1902.

## Automatic Electric Company Organized

In 1901, Automatic Electric Company was organized, with C. D. Simpson, president; Joseph Harris, vice president; and A. G. Wheeler, secretary-treasurer. A. E. Keith, T. G. Martin, John and Charles

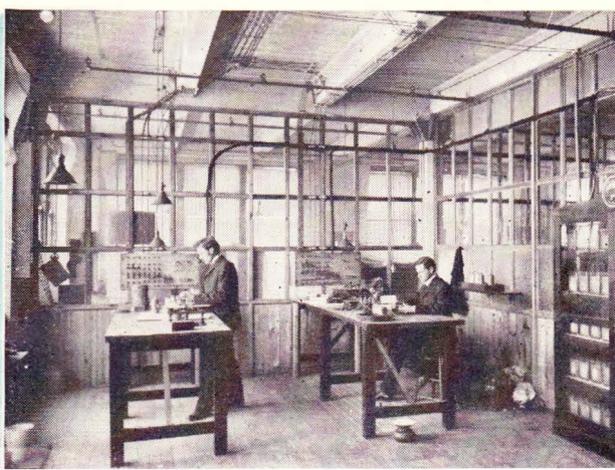


More pictures of the 1903 factory. Here is a scene from the switch testing department. Young fellow in background with leg on box is the late JAMES ENGH of Sales.

←

→

Our 1903 Chemical Laboratory.



Erickson, and E. C. Dickenson formed the nucleus of the engineering staff. The plant which had settled on Jefferson Street and then moved to 166-174 Clinton, with business offices in the Rookery Building, was finally brought to a permanent location with the construction of the first of Automatic Electric's buildings located at the corner of Morgan and Van Buren Streets, now known as Building 2. This was completed in 1901.

The 6000-line Strowger equipped exchange installed in 1903 for the Home Telephone Company at Dayton, Ohio, proved more than ever the practicability of automatic telephony. This exchange was guaranteed by Automatic Electric to give satisfactory service with the understanding that all replacement expenses occurring within ten years would be footed by Automatic. At the end of the ten-year period, not enough expenses had been incurred to justify the keeping of records.

### Grand Rapids Proves Automatic "In"

The next exchange of note was the 5000-line Grand Rapids exchange installation where the contract specified that Automatic Electric would take care of the cost of all replacement parts needed in seven years of operation, and that the exchange would always be in such condition to render satisfactory service to at least 90 percent of the subscribers—a requirement which in those days was considered amazing. The seven year period ended with a charge of about \$900 in expense to Automatic and considerably more than 90 percent of the patrons were shown to be satisfied.

The automatic telephone was over the hump. More and more installations were being made. Countries overseas found the automatic telephone desirable and dependable; Australia was one of the first of these countries to obtain the advantages of the automatic "girl-less" telephone, as the newspapers were beginning to call it. By 1914 the slogan that "the sun never sets on the automatic telephone" was indeed true as Strowger equipment found its way to South America, Canada, Europe, Africa, India and China. In a few years, a second building was added (now our Building 1) adjacent to the original structure. Automatic was growing.

Automatic was growing in stature also, with greater recognition in Europe. More sales and installations were being made abroad. While the Strowger system was first used by the German government in 1899, a 200-line exchange had been exhibited in London in 1898. By 1902 Germany had negotiated for European rights; by 1911 a factory was set up in England to manufacture Strowger equipment for use there. Australia was introduced to the Strowger system in 1911 and lost no time in adopting it as standard. New Zealand soon followed; and other pioneer users were Cuba, Hawaii, Alaska, the Philippines, and Argentina.

### Chicago Gets Automatic Telephones

An interesting domestic sidelight in the moving history of automatic telephony is its contribution to the development and growth of Chicago itself. While Automatic was supplying more and more Independent telephone companies throughout this country and abroad with Strowger equipment, they were also engaged in making automatic telephones

The 400-line Berlin, Germany, installation opened for public service in 1899, was one of the earliest examples of acceptance abroad.

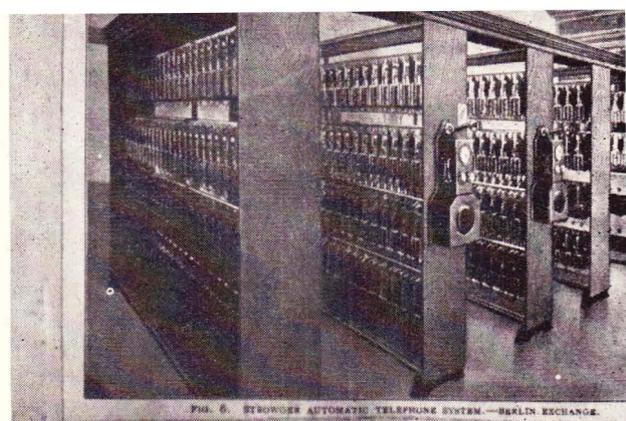
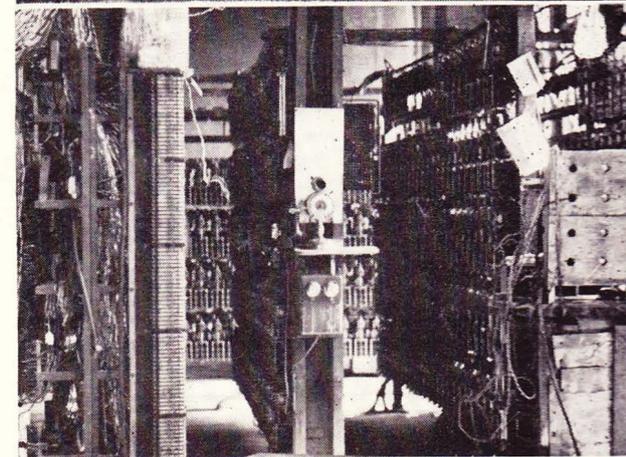


FIG. 6. STROWGER AUTOMATIC TELEPHONE SYSTEM.—BERLIN EXCHANGE.

The New Bedford installation of 1900 was the start of a new era, and a long list of new exchanges, as telephone men gained confidence in the Strowger System.



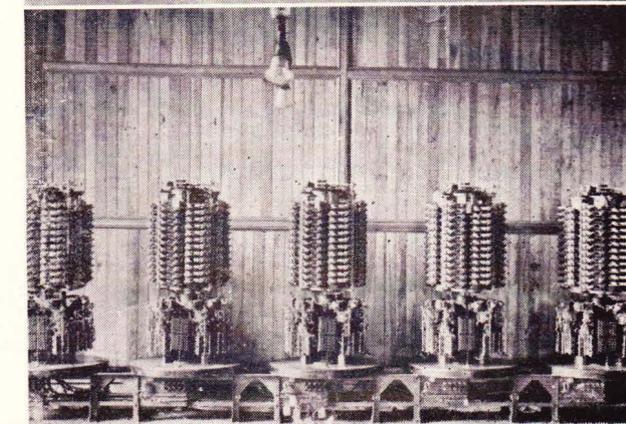
An interesting picture of a 400-line exchange made in 1902 at the University of Illinois.



The biggest exchanges installed by Automatic up to 1903 were those at Dayton, Ohio, 1903, and Grand Rapids, Michigan, the following year. Here is a view of the 5000-line Grand Rapids exchange.



This Wilmington, Delaware, installation made in 1906 shows "round type" line switchboards, the first use of the new Keith line-switch in place of individual selectors.



for the Illinois Telephone and Telegraph Company, one of the telephone companies serving Chicago. Planning to serve greater Chicago with 20,000 automatic telephones during a five year period, 1904 to 1909, The Illinois Telephone and Telegraph Company entered into a contract whereby Automatic would make the telephone equipment and complete installations. To handle the large number of lines necessary it was planned to run the cables underground through a network of tunnels. No charge was to be made for this early automatic telephone service until 10,000 telephones or at least half of the stations had been completed.

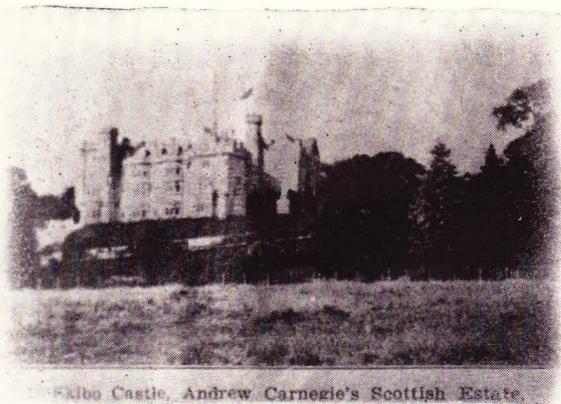
The tunnel network was constructed somewhat oversize and the Illinois Telephone and Telegraph Company found it more profitable to develop the tunnel for under-the-city delivery services. The tun-

nel was eventually used to carry telephone cable, but was laid out with tracks and an overhead power system, and used primarily to deliver mail, produce and other materials to many downtown buildings, thus saving time and congestion on the city streets. The Illinois Telephone and Telegraph Company soon became the Illinois Tunnel Company, later the Chicago Tunnel Company, and while the cables were being used for more automatic telephones, the tunnel was being used to carry on an even greater hauling business.

Independent telephone companies were not the only ones to find the new automatic telephone interesting and worthy of consideration. The general public was amazed and happy with this new "thing-amagig". The merits and the features of the system were discussed in story after story in newspapers



← At the Calgary, Alberta, installation in 1910. Seated left to right were H. B. McELYEA; R. W. WAGNER, now in charge of Physical Rearrangements and Improvements; PAUL DAVENPORT; standing, man at left unidentified; the others are OMER KIRBY and SELMER OFTEDAHL.



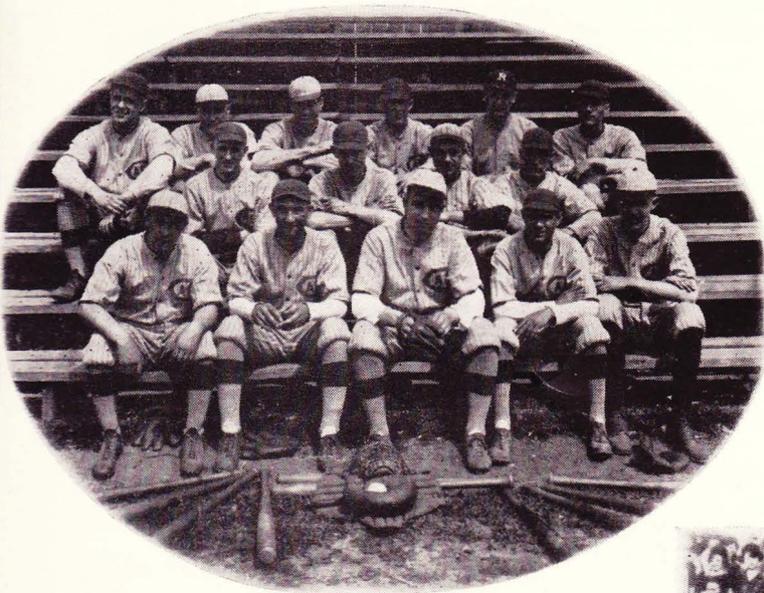
Skibo Castle, Andrew Carnegie's Scottish Estate.

A novelty of the times was the installation of 20-line P-A-X in Skibo Castle, Andrew Carnegie's retreat in Scotland; switchboard was placed in garage.

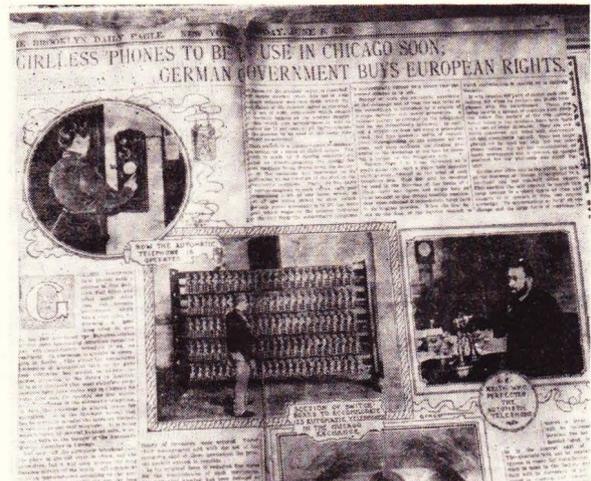


Automatic Electric girls seated in horse drawn carriage in front of Building 2, ready to go on a holiday outing; about 1903.

One of numerous newspaper articles on the "novel" automatic telephone.



Above. Automatic Electric baseball entry in city commercial league in early 1920's. Recognizable is E. W. PLAGGE, now district manager for International Sales (top row, left) LES GADDIS, now Staff Engineer in Sales (second row, left end), LINDAHL EVERSON, Engineering (top row, right), RAY SEVERS, Banks and Cables (second from right bottom row), and L. W. CARMICHAEL, Sales (third from left, back row).



An interesting picture of almost everyone at Automatic attending a victory banquet at Morrison Hotel at which time suggestion prizes were also awarded. Time, 1919.



and magazines. "Goodbye to the Hello Girl" was a prominent expression. Because of the characteristics of the dial, the phrase, "pull down to call up" was popular. "Surer than human hands" was another phrase ascribed to the system. Every published description of the system made much of the quickness and dependability of the new method. Hence, in a little more than ten years, the Automatic telephone had made an impact on the whole world, and its possibilities were recognizably unlimited.

Joseph Harris, first to recognize the value of the "girl less" system, and foremost in directing the commercial development of the Strowger system, carried on. He saw to it that the work was financed. He surrounded himself with the most competent research engineers and sought every opportunity to bring the Strowger system to the attention and use of telephone companies and administrations both in this country and abroad.

It is generally agreed that without the Automatic system, the Independent telephone field which began to emerge after the original Bell telephone patents had expired, would have had a much tougher time. But when the Independent operating company was able to get telephone equipment of such dependability and ingenuity of design that its service surpassed that given by manual competitors, the Independent field mushroomed into a large and virile industry.

### Bell Adopts Strowger for Norfolk, Va.

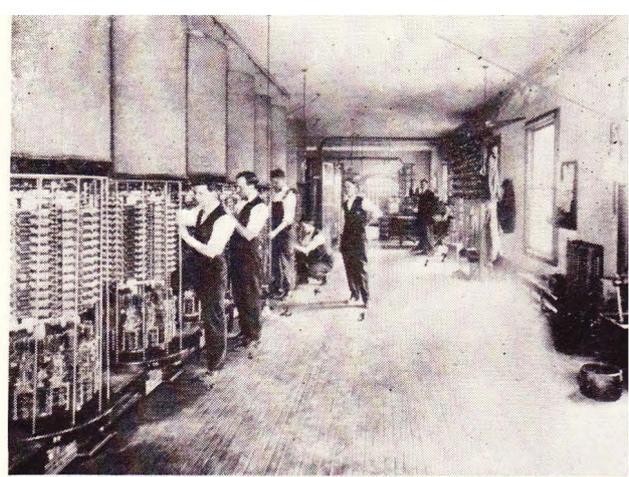
Growth continued; new cities were being added to the Strowger Automatic roster year after year, including not only small exchanges, but metropolitan areas as well. Dallas, St. Paul, Minneapolis, Los Angeles, Lincoln, Columbus, Akron, Youngstown, were typical of the names that were added to the growing list of Strowger users.

Then, as the 1920's approached, a number of other important developments occurred.

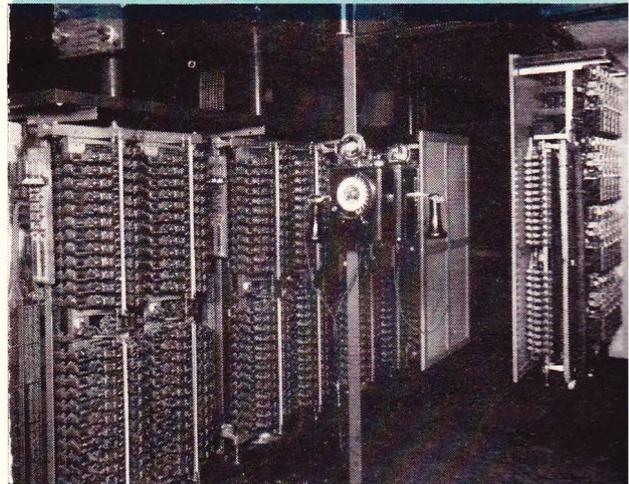
The Bell System, which had been watching the development of Strowger equipment with growing interest, placed an order with Automatic Electric in 1918, for an 11,000-line exchange for an installation at Norfolk, Virginia. In June of 1919, before the Norfolk exchange was cut over, the Bell System publicly announced its intention of progressively adopting automatic switching for its exchanges. At

about the same time, the Theodore Gary and Company group, which had for many years been active in the operation of Independent telephone properties in the middle west, acquired control of Automatic Electric, and shortly afterward announced a long term contract under which Automatic Electric would supply large quantities of Strowger Automatic equipment for use in Bell exchanges. These events, taken together, represented another important step in the recognition of Strowger Automatic. Faith sorely tried, hope long deferred, had won, finally and completely. Strowger Automatic had come of age.

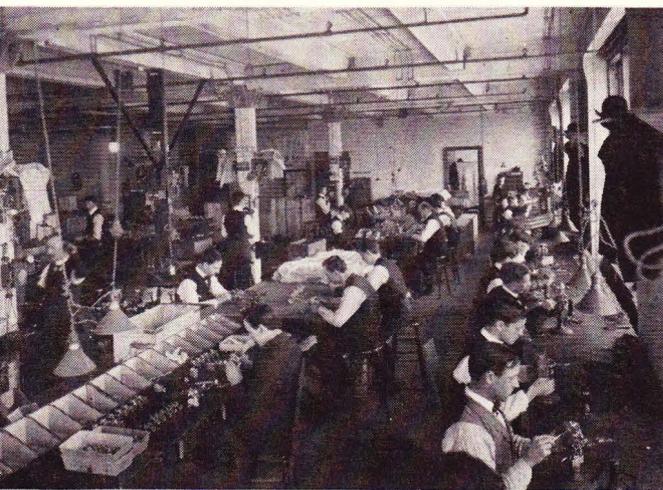
This recognition of the quality and economy of Strowger equipment was naturally followed by a larger manufactur-



Installers working on a far western exchange, at Oakland, California, in 1909. Man in rear in dark coat is JOHN WICKS, retired.

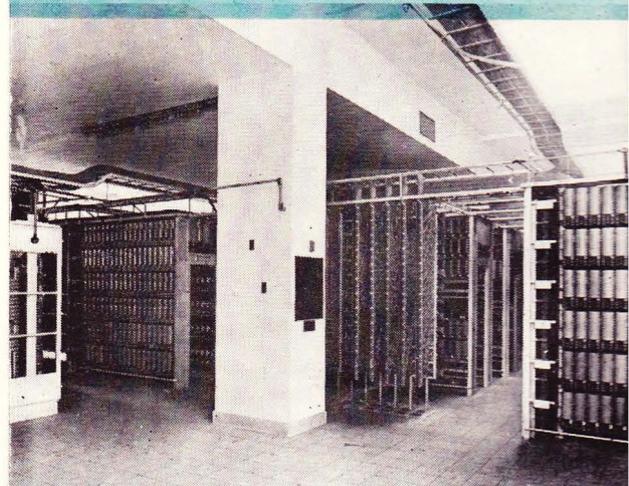


An undated picture of an installation of the Automatic Home Telephone Company, of Pontiac, Illinois; probably around 1909. Pontiac is now an Independent exchange of the Illinois Telephone Company.



Several other pictures of Automatic plant in 1903. Here is the group of men working in the Keyboard Assembling department.

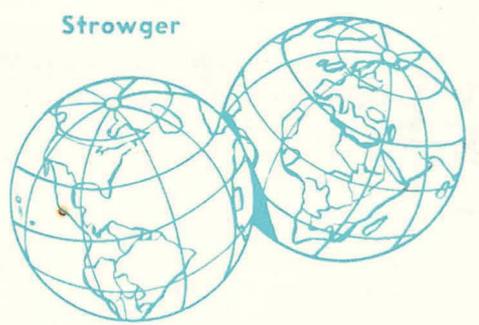
Criss-crossed by a multitude of overhead belts is this scene from the early Milling Machine department.



This picture shows Strowger Automatic equipment installed in Norfolk, Virginia, in 1919, the first installation of Strowger Automatic equipment, made by Automatic specifically for the Bell System.

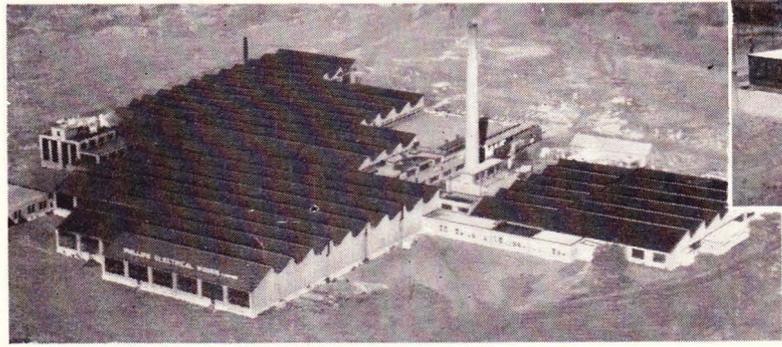


The Automatic Electric Company original group of buildings shows the addition of the annex and Building 1 (right, center) added in 1907; Building 3 (left) added in 1920; and Building 4 (right) leased in 1924. Today we are spread out in 11 buildings.



Strowger

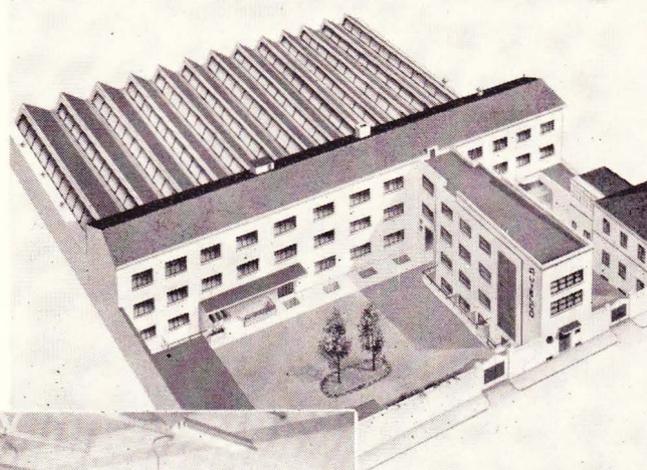
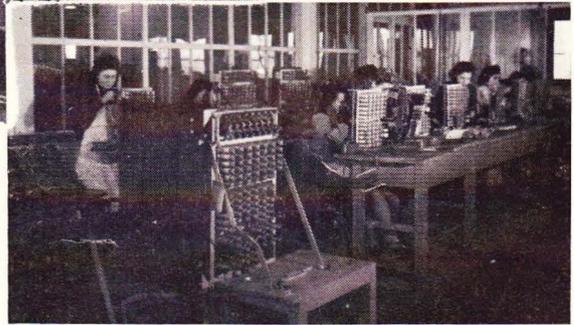
Around the World



Three manufacturing affiliates make quality Strowger equipment for the wide world. Here are the two plants of Phillips Electrical Works Limited, of Canada, one located in Brockville, Ontario, and the other in Montreal, Quebec (above).



In Antwerp, Belgium, Automatique Electrique, S.A., exterior of plant and a scene from P-A-B-X wiring.

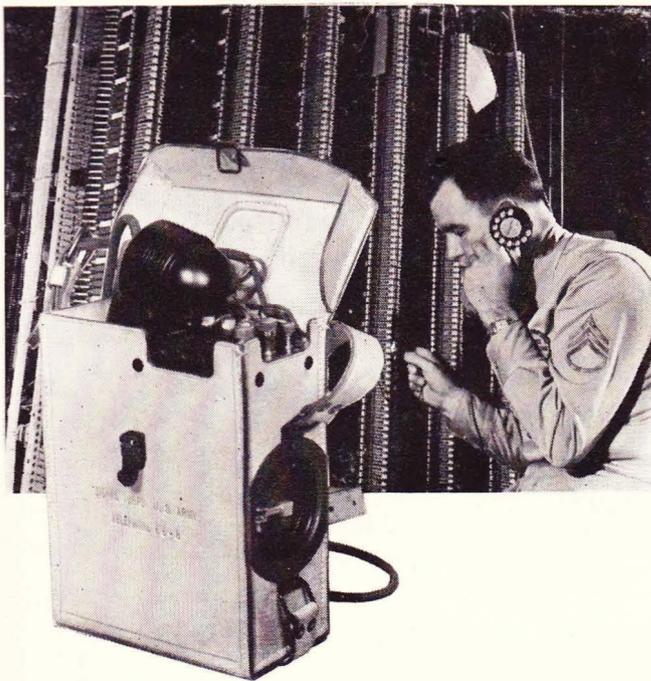


In Milan, Italy, Autelco Mediterranea, S.A.T.A.P., exterior of plant, and a scene from switch wiring.

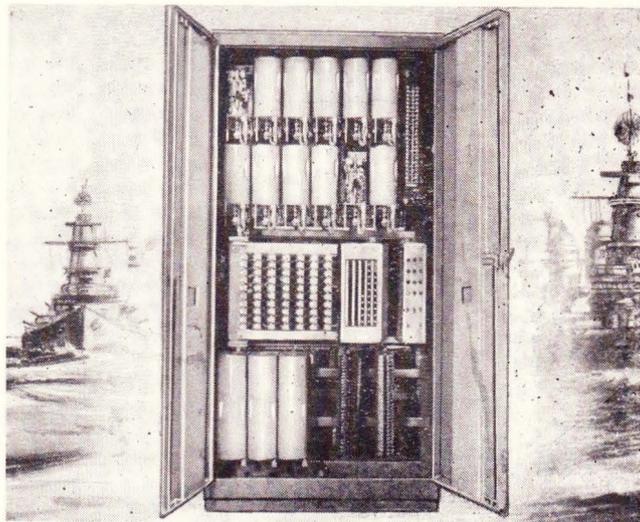


ing plant and an increased number of employees. Building 3 was added to the Company cluster in 1920, while Building 4 was added in 1924. These four buildings formed the nucleus of the factory which in more recent years has been expanded by seven more buildings: Building 5, which houses miscellaneous offices such as Purchasing, Patents, Advertising, Blue Prints; Building 6, where Bakelite

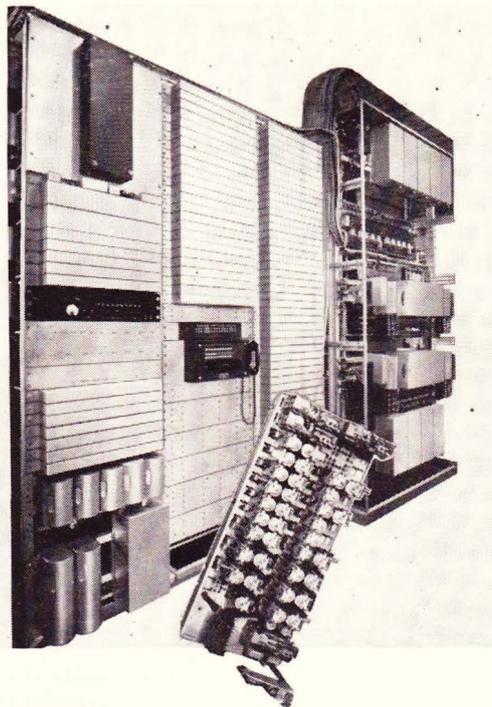
parts are made; Building 7, for paystation equipment, telephone and industrial specialties, and electronic apparatus; Building 8, warehouse and headquarters for our Supply Sales Division; Building 9, Strowger Switchboard Assembly, and Cable Forming; Building 10, a warehouse; and Building 11, Methods, Production Control, and Cost Accounting.



Automatic Electric today remains a leader in the development and manufacture of communications equipment for an expanding industry and a swiftly changing world. Ship's service automatic telephones provide intercommunication on naval vessels.



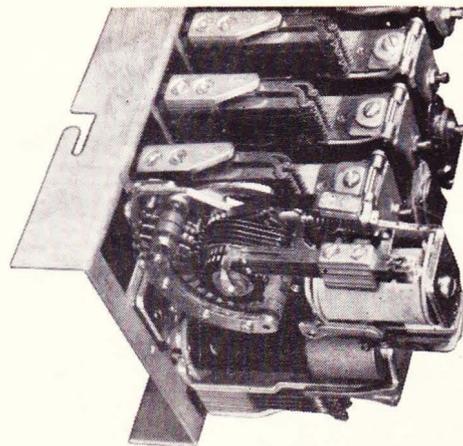
Automatic supplies telephone equipment to scores of army bases, in addition to supplying Signal Corps equipment which includes all manner of communication and control devices.



The Director (inset), developed in 1923 to meet the needs of the London, England, network, gave Strowger Automatic equipment greater ability to serve metropolitan areas, and when adapted to other Strowger components made possible Strowger Automatic Toll Ticketing providing full automatic subscriber dialing on toll calls.



Today's version of the dial has brought it far from the earlier models in its style and performance, and has made it accurate and dependable for millions of revolutions. Is it any wonder that Automatic is a proud institution, serving the telephone industry for 60 years with the very best in communications equipment?



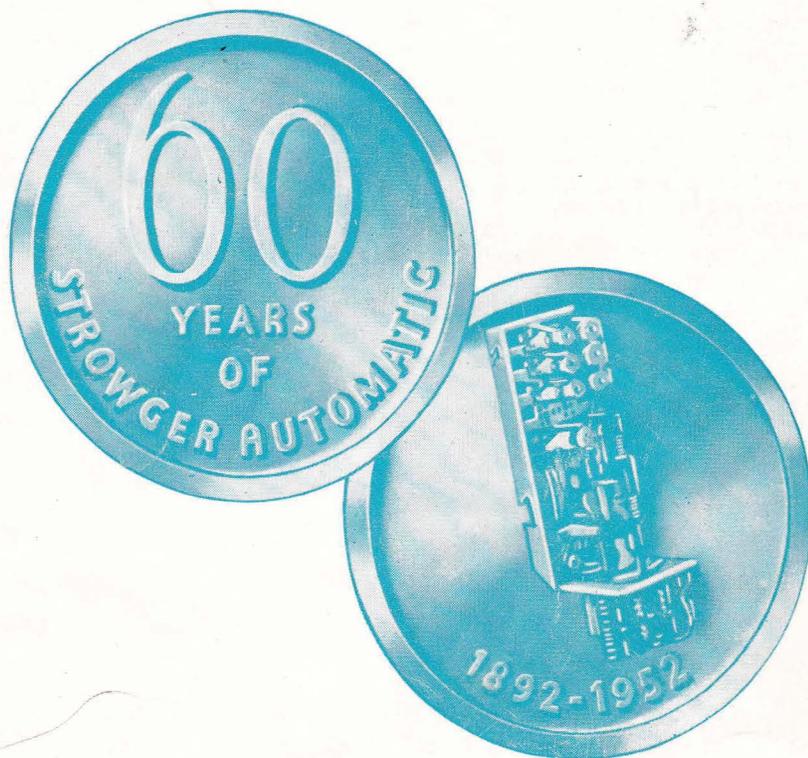
A variety of rotary switches, developed by Automatic, meet telephone switching needs in small communities and for auxiliary switching purposes. They are also used in various industrial and military control applications.

During these years of continuous growth, the Automatic Electric technical staff has never ceased its work of improving the performance of Strowger equipment and adapting it to the new requirements that are constantly arising in the field. Such developments as the Director (1924) which made the Strowger system economical for metropolitan areas such as Greater London; toll dialing, which dates back to 1910; and Strowger Automatic Toll Ticketing which began in 1937, are typical of the outstanding improvements which have been put in effect and which have proved the flexibility of Strowger Automatic in meeting new and unusual requirements. Paralleling these developments have been improvements in subscriber station equipment, as exemplified by the Monophone and the Type 51 dial, which have also aided in keeping Automatic Electric in the van of progress.

How well the Strowger system has met the challenge of modern times is shown by the position it

holds in the world today. Three quarters of the world's automatic telephones are based on Strowger principles. And in our Van Buren Street plant alone, over 4800 loyal employees are at work—designing, building, engineering, and carrying on the scores of occupations which are necessary to this most complex business of ours. Thousands more are making similar equipment in affiliated factories in Canada, Belgium and Italy, their products being distributed by a world-wide sales organization with offices in practically every country of the free world.

And, while we take just pride in this growth and these accomplishments, it is fitting that this year we pause to pay tribute to the small group of pioneers who, in the early nineties, saw beyond the formidable obstacles they faced, and by their great ingenuity and resourcefulness, gave substance to their dream of better telephone service through automatic switching.



# STROWGER AUTOMATIC

*World Famous for Dependability*

FOR INFORMATION, REPLACEMENTS AND ADDITIONS, ADDRESS:

**INTERNATIONAL AUTOMATIC  
ELECTRIC CORPORATION**

21 EAST 40th STREET

NEW YORK 16, N. Y.