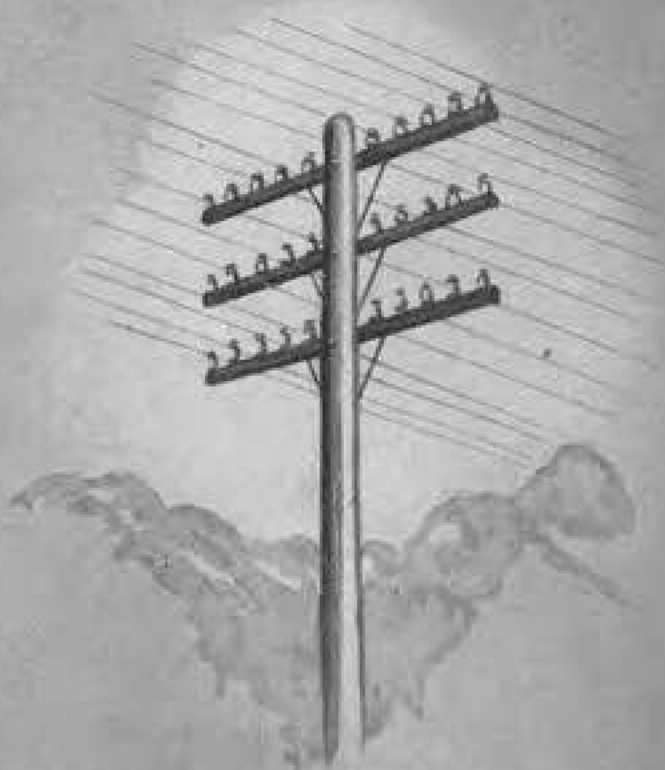




THE STORY OF

Western Electric



SERVICE OF SUPPLY
FOR THE
BELL SYSTEM

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americanradiohistory

THE STORY OF

Western Electric

Service of Supply for the BELL SYSTEM

• • •

WHEN you pick up your telephone, an unseen organization comes to your service: the men, women and the facilities of your telephone company, whose single purpose it is to put through your call. Back of that organization is another which furnishes its equipment. That organization is Western Electric Company, one of the family of Bell System companies and the System's "Service of Supply."

Half the telephones in the world are in the United States. To Americans, telephoning has become second nature. Every 24 hours they hold 85,000,000 conversations by wire. In matters large and small, in routine or emergency, they have come to take for granted that they will get the best possible service.

The quality of that service is based on the quality of the equipment, and this is the responsibility of Western Electric to the Bell System and through it to the nation.

Your telephone and the millions like it represent only about five per cent of the equipment utilized in giving service. Beyond it stretches a vast network capable of joining it to any one of all the others, a network of wire and cable interlaced through city and countryside, underground and overhead, traversing the nation from coast to coast and employing every resource known to science for transmitting the spoken word clearly and safeguarding it against interruption.

...TO BRING FORTH
ALL THIS APPARATUS
ALL THESE TOOLS
AND MATERIALS...



A vast network of wire and cable traversing the nation from coast to coast, overhead...



Telephones in use in the editorial rooms of a metropolitan newspaper.



... and underground.



Thousands of operators wearing head-set and handling plug and cord

Linemen with climbing spur and safety belt.



At work operating this equipment and watching over it are the trained forces of the telephone companies: thousands of operators wearing headset and handling plug and cord; linemen with climbing spur and safety belt, accompanied by truck-loads of supplies ranging from reels of wire to the splicer's wax-pot; engineers with slide-rule and meter; desk workers with typewriter, pen, ink and paper; and many others, each using the particular implements of his calling.

To bring forth all this apparatus, all these tools and materials whether from its own factories or from others, is one duty of the Service of Supply. To deliver them when they are needed, and in any quantity they are needed, and where they are needed, is another. To install and make ready for operation the intricate central office equipment is a third.

Western Electric's Responsibilities

That one organization should be charged with such an undertaking for a nation-wide industry is a striking circumstance. It has come about by a process of evolution in which other methods were tried and this one found the best.

The first telephones were made by Alexander Graham Bell and his assistant, Thomas A. Watson, in Boston, where in 1876 the inventor had transmitted the first words ever uttered intelligibly by wire. The "novel toy" which has since altered mankind's way of life the world over came into use slowly.

Fifteen months after Bell had been granted his original patent the whole country had only 234 telephones. They were connected one with another by direct wire, 10 or 15 miles long at most, and it was possible to talk only with the one at the other end of that wire.

Here and there more instruments were added until as many as 20 were on a single line. Then the first switchboards were built and a telephone could be connected with any one of its group as, on a world-wide scale, you can today be linked with any one of more than 36,000,000!

The demand outgrew the little shop where the original telephone had been born, and the first problem of supply arose. Bell and his associates cast about for a larger source and arranged with six shops to make their equipment. One of these had already been in business for about eight years. It had started in Cleveland in 1869 as a partnership between Elisha Gray, an inventor, and Enos M. Bar-

The First Problem— An Adequate Supply

... UNDERTOOK TO MAKE
EQUIPMENT FOR THE NEW
TELEPHONE BUSINESS



The Company's entire force that same year.



The plant of the
Western Electric
Manufacturing
Company, 1877.

Sample room,
Chicago, 1878,
showing every
piece of appa-
ratus then made.



A Western Electric switch-
board of the early '80's.

ton, a former telegraph operator. Each had invested \$2,500 and under the name of Gray and Barton had gone into the manufacture of electrical products.

This took a lot of courage. In those days electricity was still in the experimental stage. There were no electric lights, no electric motors. Six years were yet to pass before Bell would invent the telephone. Alone in its importance was the telegraph, in use then about 25 years. So Gray and Barton began, making chiefly telegraph instruments, electric bells, signal boxes, batteries and fire alarms.

They moved their business to Chicago, changing its name to Western Electric Manufacturing Company. And in 1877 it was one of the six firms which undertook to make equipment for the new telephone business.

Even at this early stage it was recognized by the Bell management that if any one telephone was to be connected with any other and people were to talk over them, *all* the telephones would have to be made so that they would work together successfully, and so would everything else that went into the connection. But from the six different shops were coming telephones that differed in design and in quality. Needed was a source of supply which could be controlled so that all the telephones it made would be uniform and uniformly good.

The Second Problem—Standardization

Telling of those days, Thomas Watson said, "When a piece of equipment built by Western Electric came into our shop, we boys always used to admire the superlative excellence of the workmanship." And because the young company enjoyed that reputation generally, it rose to leadership in its field. So the record of performance determined the course of events. The Bell Company bought an interest in Western Electric which thus became in 1882 the maker of telephones for the Bell Company, the user.

Today the organization devotes itself to this task to the virtual exclusion of all else. In arriving at that point, it has disposed of other profitable and far-flung operations, as the events of the past 50 years disclose.

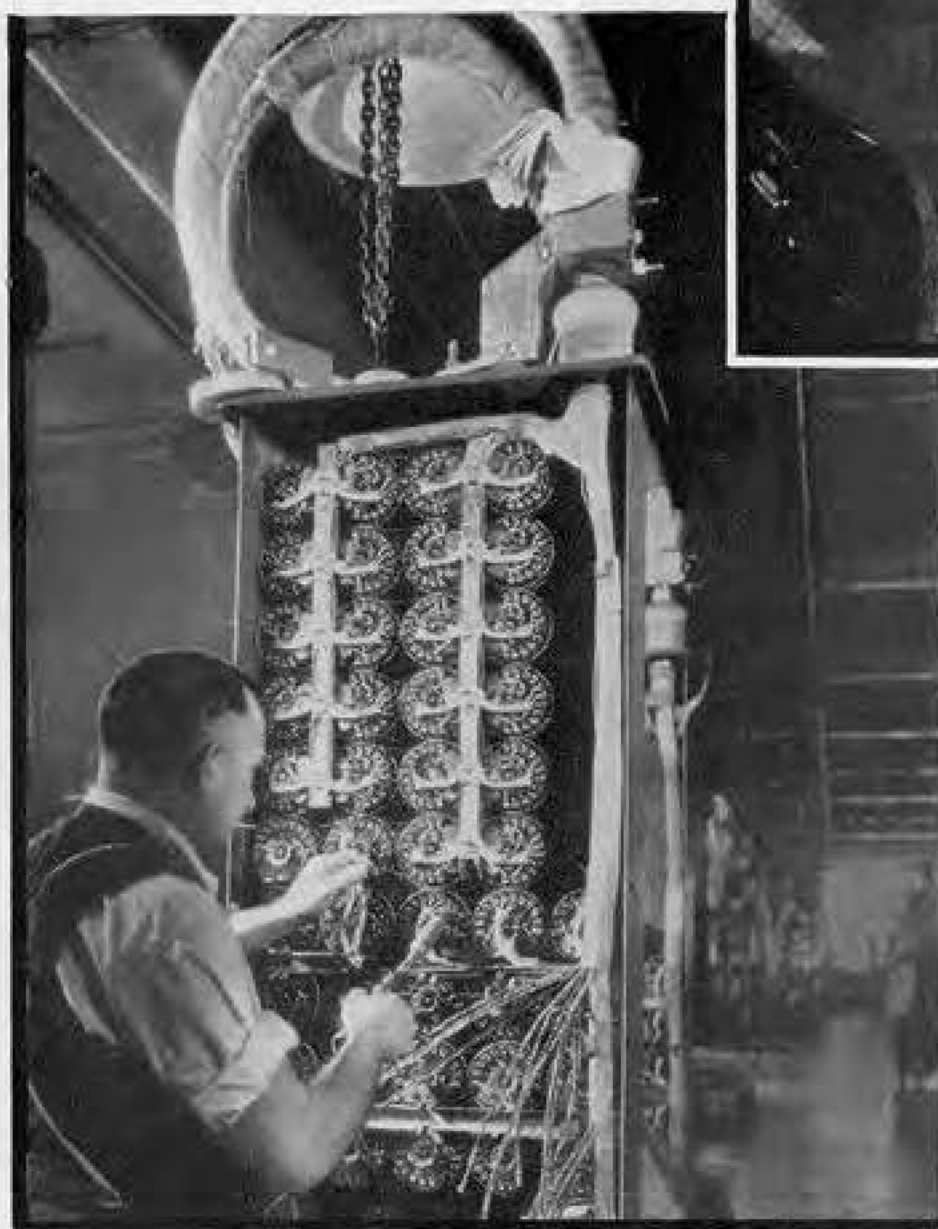
In the eighties the telephone was on the march from the United States, its birthplace, to foreign lands, and Western Electric was instrumental in carrying it there. In 1882 it built a factory in Belgium to supply the telephone companies then springing up in Europe. As one country after another

The Era of Expansion

**THE ASSURANCE OF
PRODUCTS THAT ARE
UNIFORMLY GOOD**



Experts assemble the loading coils that keep voice currents clear.



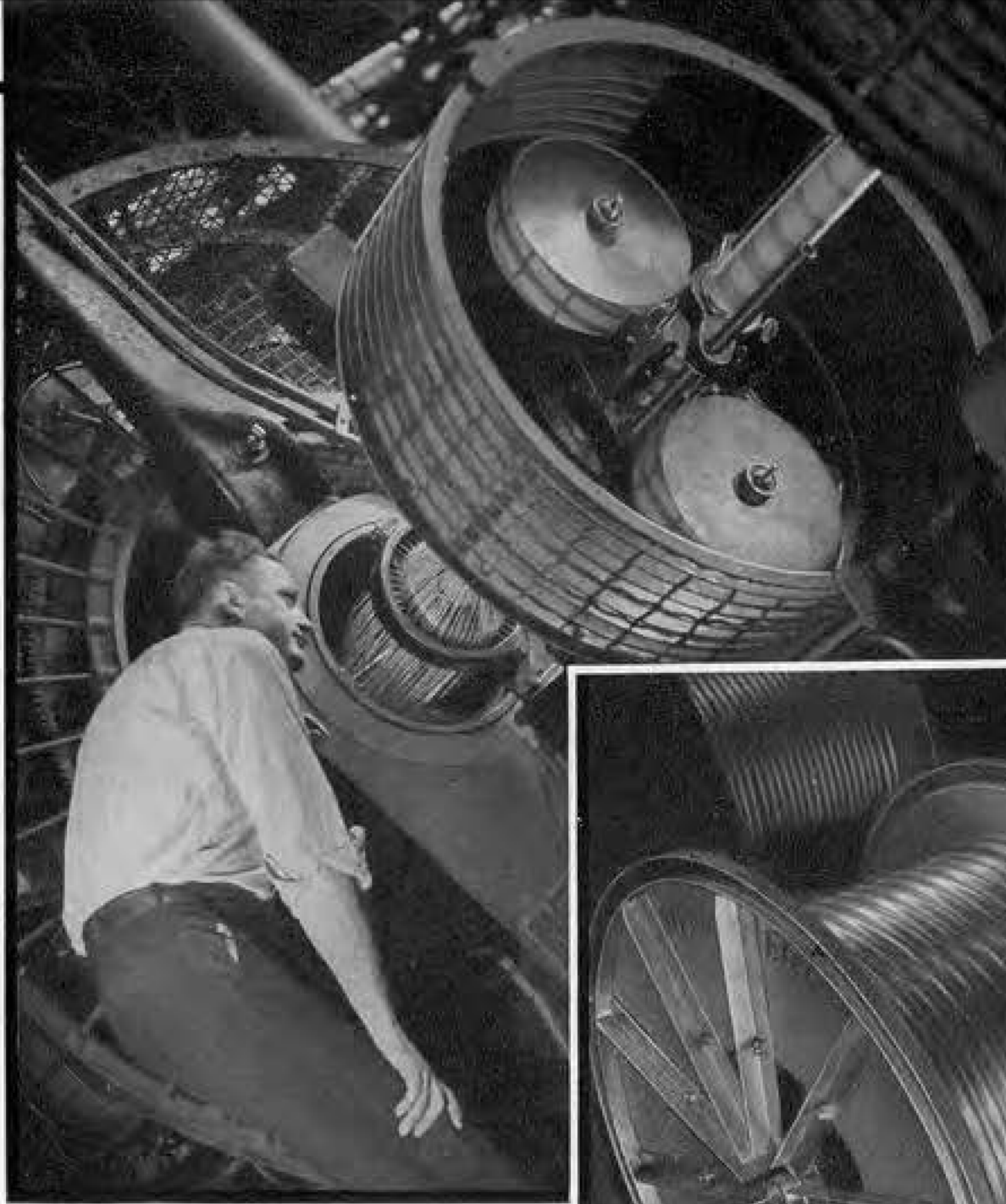
Skilled hands give telephone cords their finishing touches.



Makes paper insulation on 60 wires at once.

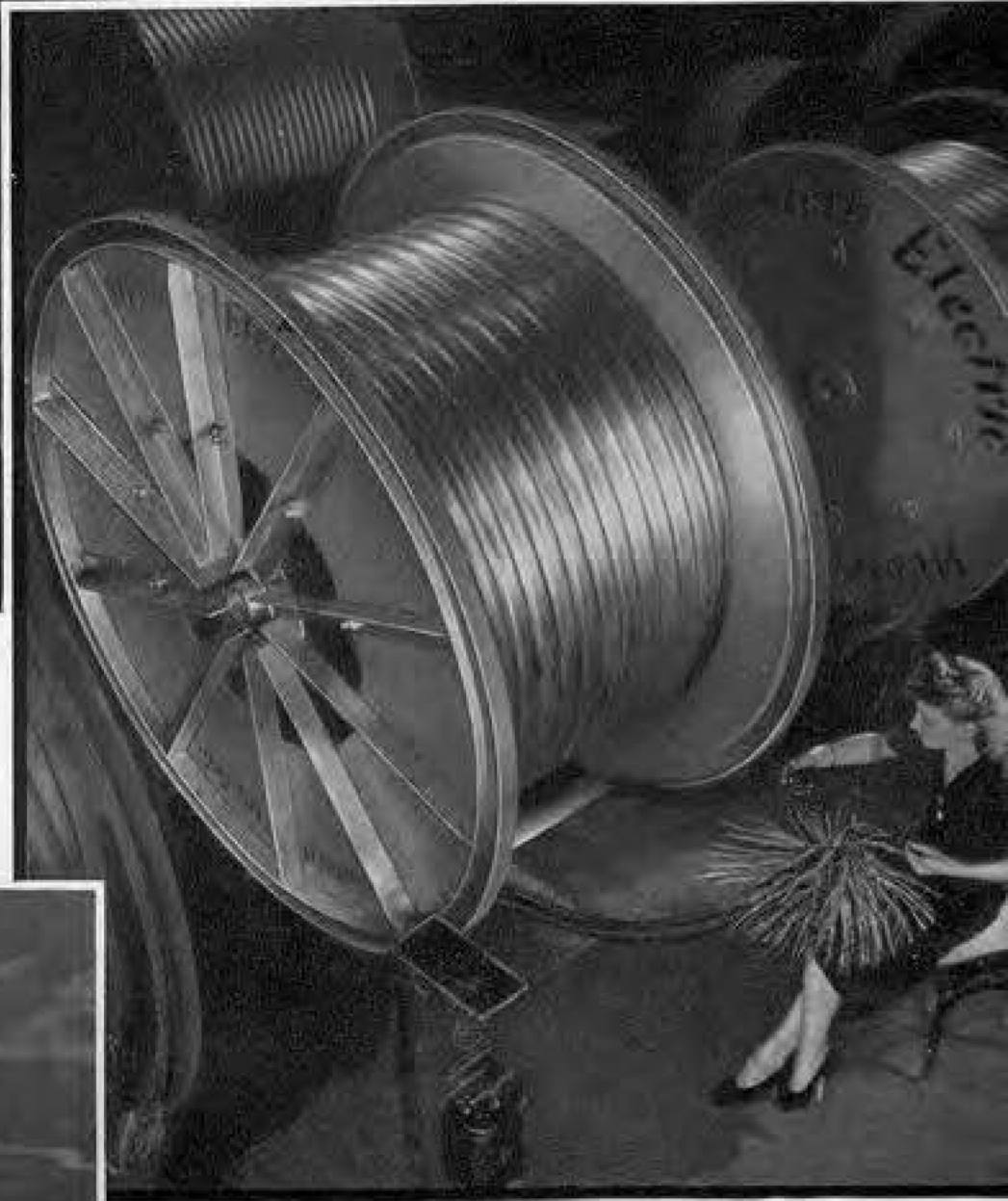


Vacuum tubes gently treated to prevent cracking.



Keeping careful watch while stranding telephone cable.

Each of 3,636 wires in single cable is individual tested.



Cleaning magnets of hearing aid receivers.



Quartz crystals cut accurately to within $1/25,000$ of an inch.

took up the telephone, patterning its equipment after American standards, other factories were established in England, Germany, France and Japan, with branches in many of the principal cities of the world; and thus there developed an extensive foreign business.

At home, the electric light and power industry, founded upon the inventions of Edison and others, had begun to grow. Western Electric built up a large business in this field, manufacturing arc lamps, electric fans, motors, and generators. At the same time it expanded its jobbing business, handling an extensive line of electrical supplies made by others, such as wire, conduit, wiring devices, pole line material and the like. In this field the Company became the country's largest jobber.

Supplies of this kind were being bought in increasing quantities by the Bell companies. A nation-wide telephone system was in the making and into it were going more and more poles, crossarms, insulators, pole line hardware and wire. These things were bought in part from Western Electric, in part from other suppliers, each telephone company doing its own buying.

**The Third
Problem—An
Economical
Supply**

And now occurred a third development, important in shaping the structure of the Service of Supply as it is today. It became apparent to the Bell companies that, although they were not competing with each other in providing telephone service, they *were* in effect competing in buying their supplies. For years Western Electric had been buying on a large scale. It had an organization trained in quantity purchasing. It had an organization also experienced in distribution on a large scale.

In 1901, one of the Bell companies decided to avail itself of these facilities. It arranged for Western Electric to act as its agent in securing whatever materials it might require in addition to those which the Company was already making for it. The agent was both to do purchasing and to maintain a convenient storehouse.

Operation under this arrangement definitely demonstrated that Western could supply these materials cheaper than the telephone companies could buy for themselves. Other Bell companies, after satisfying themselves of the advantages of the plan, adopted it and within a few years Western Electric was buying substantially everything for the Bell System under these so-called "Supply Contracts."

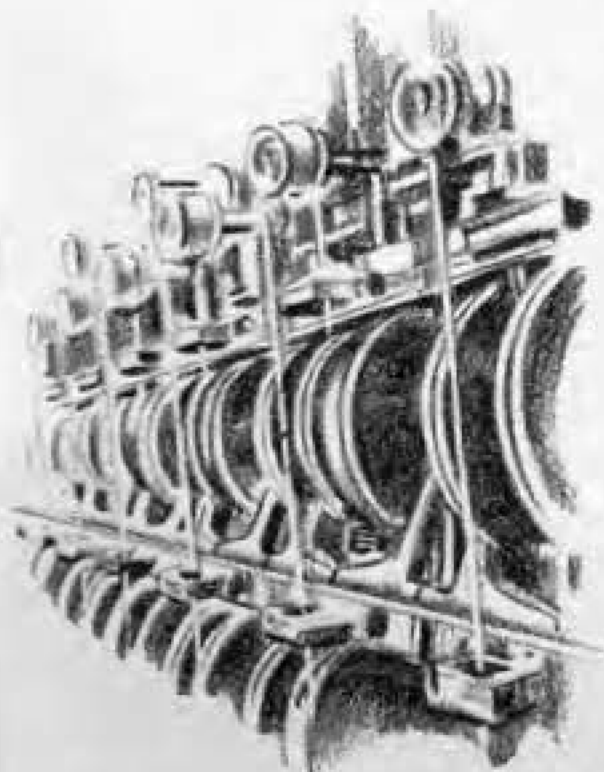
Thus, to the making of telephone equipment was added purchasing and storekeeping for the Bell System. The Service of

• THE KEARNY WORKS •
 A TELEPHONE WORKSHOP
 WITH THOUSANDS OF
 SKILLED WORKERS . . .



Trained fingers are deft in winding coils.

In addition to telephone apparatus, radio equipment, audiphones and public address systems are made here.



These humming spools wind up miles of paper insulated wire.



Great quantities of lead covered wire are ready to go where at any time.

Supply had been rounded out until it was complete, and the telephone industry had found a solution to its three major problems of materials—an adequate amount; uniform quality; and an economical and efficient means of delivery.

**Concentrating
on Service to
the System**

In the ensuing years the function of serving the Bell System became to Western Electric the dominant function and, to better focus upon it, the Company divested itself of its other activities. It disposed of its power apparatus business. It sold its foreign business, including five factories, to the International Telephone and Telegraph Company. It sold its jobbing business to the employees in it, who organized a new corporation called Graybar Electric Company in tribute to the founders, Gray and Barton.

Although in the course of this unique evolution the Company has shed one enterprise after another in order to achieve singleness of purpose, nevertheless its expansion has continued and it maintains its place as the world's largest, as well as the oldest manufacturer of equipment for the transmission of sound.

**Spurring
Progress by
Science**

Before there was a telephone there was, indeed, a laboratory—Bell's attic in Boston. The idea conceived here founded a whole new empire of science—telephony, and the electrical transmission of sound. That science has girdled the globe. It has been able to do so because in the footsteps of the founder there followed a host of painstaking investigators who, imbued with the same spirit of inquiry, pressed forward beyond the old frontiers.

Few industries look so much to the laboratory for progress as does the telephone industry. Two telephones, one in New York and one in San Francisco, would be useless to each other if research had not conquered the distance between them.

As with Bell's invention, so it has been with every advance in the service: first the idea and its embodiment in a workable model, then the multiplication of the model by manufacture, finally the employment of the product in service. For Bell's idea there existed no easy or established path. To create an organization through which the idea could travel in a direct line to utility has been the work of years. The sequence now is from laboratory to factory to telephone company.

But that, too, meant an evolution. For a long time manufacturer and telephone company conducted their own research inde-

pendently. Then, as the service of supply drew closer to the telephone service, the making of better equipment was seen to be inseparably a part of the ultimate and greater endeavor—providing better telephone service.

In 1925 the engineering department of Western Electric was incorporated as Bell Telephone Laboratories—a single research organization, jointly owned by Western Electric and the American Telephone and Telegraph Company. It is the direct descendant of the attic workshop, and to the original invention has contributed 17,000 others for making the service better, cheaper, and more extensive. Among these are many which have helped to bring about such conquests as talking overseas, to ships at sea, and to airships in the skies.

Among these inventions, too, have been some that held great possibilities for use outside of the telephone industry. To adapt inventions of this kind to such purposes and to put them to use, Western Electric in 1926 created a subsidiary, Electrical Research Products Inc.

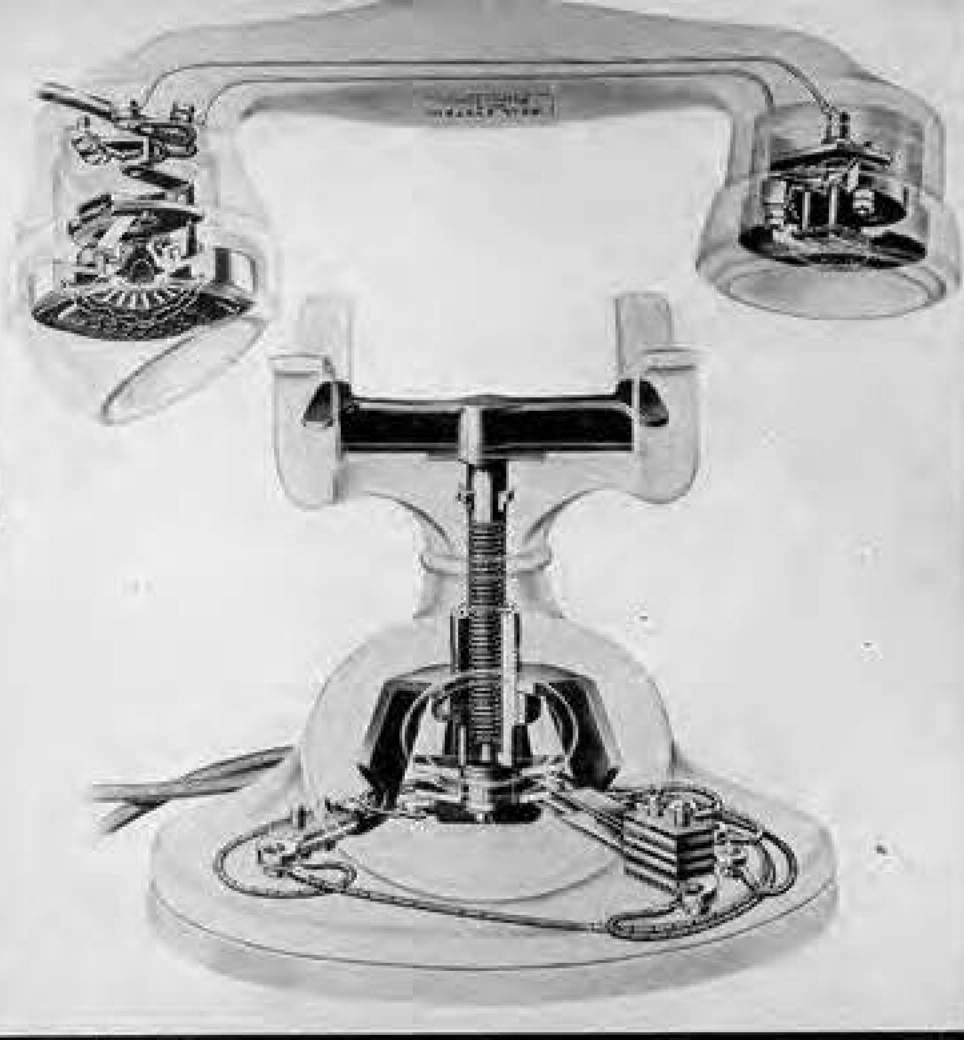
**Other Products
of Telephone
Research**

The most important invention laid on its doorstep was the successful application of sound to motion pictures, employing principles derived from those of telephony. The talking motion picture revolutionized that industry. Adopted by the principal producers and installed in their studios and in 10,000 theatres throughout the world, it has become familiar to millions under the name of its maker, Western Electric Sound System.

With the use of sound in the motion picture industry now well established, Western Electric continues to manufacture sound recording equipment, but other companies have been licensed to make reproducing equipment for use in theatres in the United States. Electrical Research Products carries on the further development of both recording and reproducing equipment in its laboratories at New York and Hollywood, and continues the distribution abroad of such apparatus.

Likewise Western Electric continues the manufacture of radio broadcasting equipment including that used in the police and aviation fields, public address and other forms of amplifying apparatus, and audiphones for those with impaired hearing. These means of transmitting the human voice are marketed chiefly through the Graybar Electric Company, which likewise sells to the general trade Western Electric cable and telephone equipment.

... MADE OF
248 PIECES...



If the telephone were made of glass.



Monster jaws mold shiny receiver caps.



One of many tests every telephone must pass.



The telephone is pieced together so
swiftly the eye can scarcely follow.



When you pick up your telephone, you hold in your hand bits of America, India, Sumatra, China, Japan, Madagascar, Africa, Brazil and other countries. As many as 34 different raw materials gathered from the corners of the globe have entered into its making: the precious metals platinum, gold and silver; some of the baser metals; some of the rarer ones; and rubber, mica, silk, cotton, asphalt, shellac, Kauri gum, Carnauba wax, paper, and more. These are but a few of the items brought to factories of Western Electric by its purchasing organization.

**Scientific
Purchasing**

As the Bell System's Service of Supply, Western Electric is one of the largest buyers in the United States. In a recent year its purchases exceeded \$90,000,000. They were made from 13,000 different sources located in 1,700 towns and cities of the nation's 48 states. They ranged from paper clips to automobiles, from pencils to telephone poles. Filling its contracts has kept thousands of workers busy in mine and factory, in forest and office and on the farm.

Its Purchasing Department is a student of world markets, prices, potential sources of new materials, and possible dwindling of the old. Cooperating with suppliers in meeting the System's high standards, it helps them to evolve better methods and better products.

In conducting its widespread operations, it recognizes a dual responsibility expressed in this policy: to buy at prices which are fair to the Bell System and hence to the telephone user; to buy at prices which are fair to the seller so that he can continue as a dependable source of supply. In quantity purchasing guided by such a policy there is economy for the Bell System and a desirable customer for American business.

Your telephone is made up of 248 pieces. They represent but a fraction of what the maker must turn out to supply the vast network that stretches beyond the instrument. Western Electric's factories manufacture 155,000 different piece parts which enter into 43,000 items of telephone apparatus.

**Telephone
Making—
A Fine Art**

There are six of these factories, the principal ones in Chicago, Kearny, N. J., and Baltimore; a smaller one in Chicago and two more in New York.

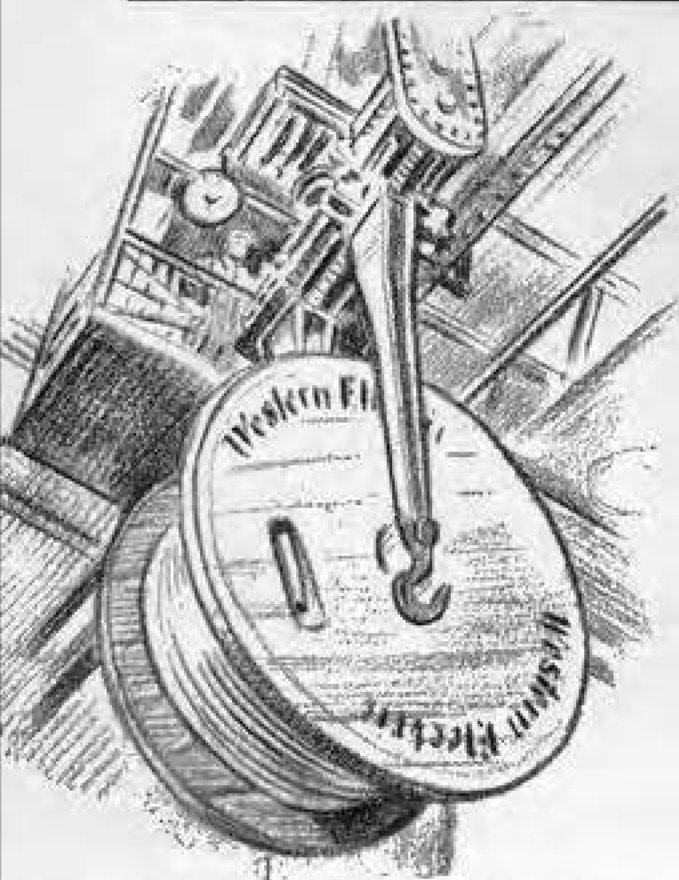
From these factories come not only the telephone but those devices which take your voice currents from your telephone and transmit, switch, reinforce, clarify, filter, safeguard, scramble, unscramble, invert and restore them, and bring them over any distance, even around the world, to a second telephone, and so deliver

**A WIZARDRY OF MAN AND
MACHINE THAT HOLDS
VISITORS SPELLBOUND**

Transforming a bewildering maze of wire into orderly exchange equipment.



Copper billets are drawn into wire.



Carries tons of lead covered cable as easily as one would lift a book.



Visitors marvel at electric furnaces.

The intricacies of forming dial central office cable.



The Hawthorne Works—
a city unto itself.



Every telephone must pass an electrical voice test.



Welding electrically
for permanency.

them to the listener as intelligible speech—all within the space of a fraction of a second.

The Hawthorne Works, largest of the factories, extends over 203 acres of ground and has 89 acres of floor space in its buildings. It is a city unto itself, having its own railroad, power and light plant, water supply, restaurants for employees, hospital, library, monthly newspaper, gymnasium, and athletic field.

When the three main factories recently held "Open House" and invited the public as well as employees' families and friends to visit them, 145,000 people came. They gazed upon a wizardry of man and machine and were held spellbound.

They saw monster jaws descend with a force of 350 tons upon dull black dust and, opening, disclose 36 shiny telephone receiver caps. They saw the telephone itself pieced together from its 248 parts so swiftly the eye could scarcely follow. They watched 230-pound copper billets being rolled and drawn into threads 2,400 miles long. They saw this wire emerging from a minute hole in a diamond at the rate of 120 miles per hour.

They saw a machine whose inventor has been said to have "stirred up a revolution in a bottle," this wise: copper wires that go into cable had long been insulated from each other by having a spiral wrapping of paper ribbon placed around them. One day the engineer mixed a solution of wood pulp in a bottle, stirred a wire in it, and found that the pulp stuck.

Out of that observation grew the machine—a Goliath in size. Inspecting it, the visitors literally walked through it, in and out of its archways, and watched while, sensitive to the play of 60 delicate wires strung through it in harp-like array, it manufactured the paper right on them, all of them at once—a revolution in design and method.

This is but one of a thousand revolutions which these engineers of manufacture have wrought in their persistent quest for making better products and making them in better ways. Unheralded, these developments have left their impress on modern life.

One such achievement was to put as many as 3,636 wires into a single cable about as big around as a man's wrist. The same number of wires on telephone poles would take 60 rows of poles, each one carrying 60 wires. Under one street corner in New York City today there are 282 cables containing about 560,000 wires! Would the modern city be possible at all without the cable?

GUARDS
MEAN SAFETY
DON'T
TAMPER WITH
THEM.



RIGHT WORKING CONDITIONS FOR EMPLOYEES....

Machines are equipped with every possible safety device.

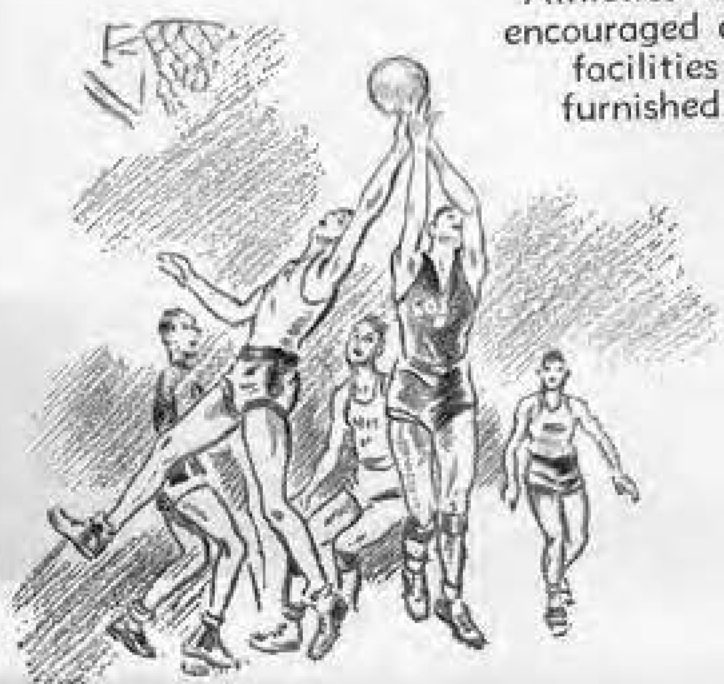
He is protected by leather palm gauntlet gloves, flameproof sleeves and cup type goggles.



To help individuals progress in the Company's service.

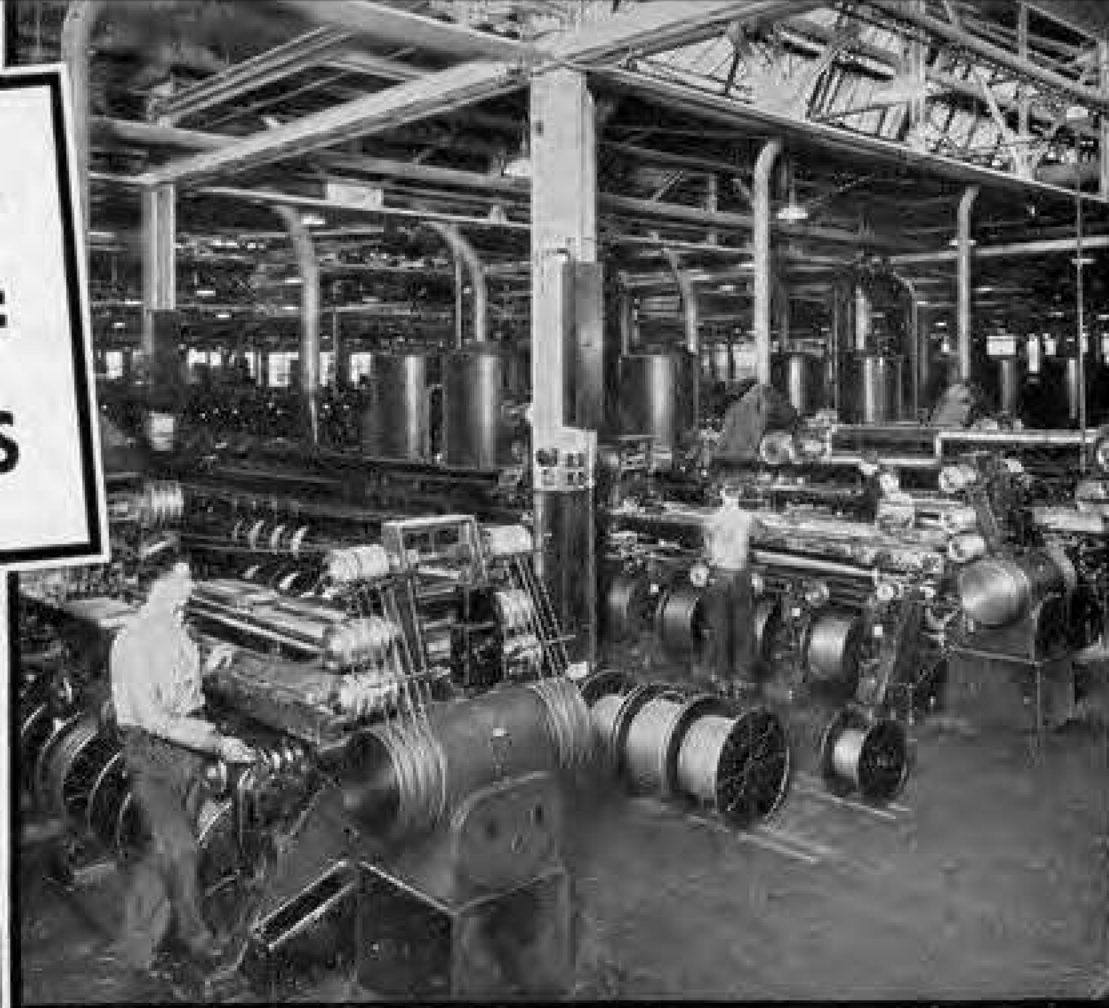


Athletics are encouraged and facilities furnished.



Noon hour scene at the Hawthorne Works.

**• POINT BREEZE •
THE NEWEST OF
THE THREE PLANTS**



These machines saturate wire insulation with asphaltic materials for protection against the elements.



This lead press sheathes telephone cable with a lead antimony alloy.

One of its products is telephone cable — a familiar sight on street and highway.

The Point Breeze plant from the air.



Now comes a cable with only two circuits, "coaxial cable," capable of carrying simultaneously 480 telephone conversations or 5,760 telegraph messages, and capable of transmitting images in motion—the future wire pathway for television. 55 miles of this new cable has been made by Western Electric and is now undergoing a trial between New York and Princeton, N. J.

Visitors at the plants marveled, too, at the many tests which telephone products must pass. They saw handset handles dropped and banged about to try their strength and endurance; they heard a loudspeaker whistle high, whistle low, and utter endlessly this strange incantation, "Joe took father's shoe bench out." All the while a trained ear also was listening because the sentence, combining the most common speech sounds, was coming through different telephones each time and so determining their ability to give perfect transmission.

There were other tests, where the tremor of a needle on a dial or the flash of a light was giving signal from that realm of fractions-in-the-thousandths far beyond the power of the human senses to detect, that this or that piece of apparatus was or was not good enough for the telephone user.

For every telephone product must stand up to the ultimate test of coordinating so perfectly with every other that from any Bell telephone you can talk clearly with any one of the millions of others. What other product in the world faces such a test?

Pooling the needs of its telephone companies and centralizing the manufacture of their highly specialized equipment in these factories, the Bell System attains the economies of mass production and the assurance of a product that is uniform and uniformly good.

When you want a telephone, the telephone company cannot say, "Sorry, we're all out of telephones today." No, it looks to Western Electric to prevent that from ever happening. Actually, the record shows that of the 9,600,000 items requisitioned by the telephone companies in one year, more than 99 per cent were furnished on the day they were wanted. Approximately 10,000 different items are kept in stock.

**Distribution
Reduced to
a Science**

Western Electric maintains 29 distributing houses, located at strategic points throughout the country, one or more in the territory of each telephone company. They are the outlets through which the goods pass from the hands of the maker to those of the

... SUCH MIRACLES AS
TALKING OVERSEAS, TO
SHIPS AT SEA, AND TO
AIRSHIPS IN THE SKIES

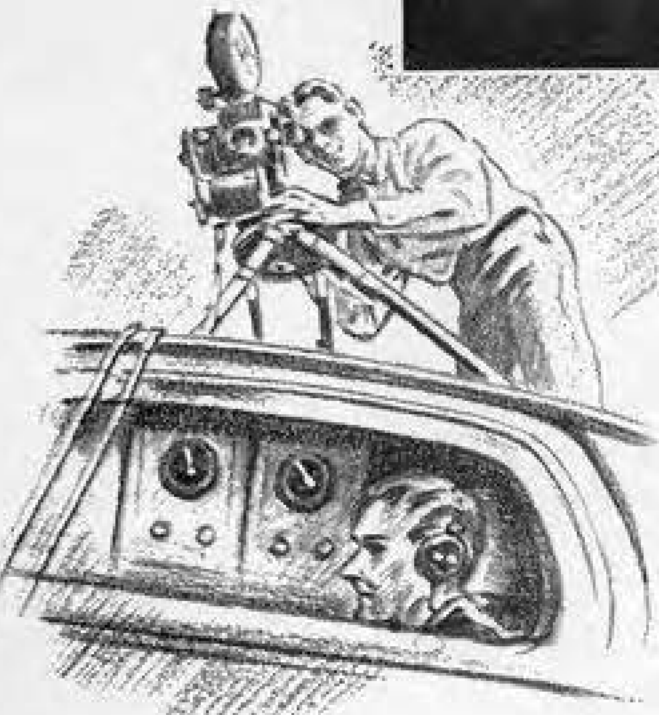
Western Electric telephone equipment and the Teletype for the dispatching of trains.



Marine radio tele-
phone for use be-
tween coastwise
craft and land.



45,000,000 persons in the
United States are pro-
tected every day by West-
ern Electric police radio.



Talking picture equipment that revolu-
tionized an industry.



Aviation tele-
phone keeps ships in
the skies in touch with
ground stations.



Faintest heart sounds are amplified
by the electrical stethoscope.



Western Electric broadcasting equipment
brings to you many of your favorite
programs.



Specialists test hearing with the Audiometer.



The Audiphone provides aid for
the hard-of-hearing.

... 29 DISTRIBUTING HOUSES AND A NATION-WIDE INSTALLATION FORCE ...



One of the 29 outlets through which supplies and equipment pass from manufacturer to Bell System.



The mobile Installation force handles jobs ranging from small private branch exchanges to great new offices.

Every Distributing House has a repair shop in which used apparatus is inspected and reconditioned.



Distributing Houses filled on the day wanted more than 99% of 9,600,000 requisitions.



Strategic locations.

Bell company which uses them. They are also outposts through which the needs of the entire System are anticipated and production scheduled to meet them.

In the same building with each warehouse is a repair shop. Here used apparatus is returned by the telephone companies, inspected and reconditioned or dismantled for the salvage of the material it contains.

Working as a nation-wide unit, this distributing chain assures to each company in the Bell family a dependable source of supply, for it can bring to bear at any point the resources of the whole far-flung organization.

When you lift your telephone, that act is registered on the instant in a distant central office. If you dial a number, each digit is stored in an "electric brain" which, as you dial, sets in motion apparatus which controls the upward movement of several rods equipped with brush contacts. Controlled by the "brain" the contacts of one of these rods come to rest on the terminating points of the thousands digit of the number dialed; another on the hundreds digit; and another on the tens and units digits. When the last selection has been made an automatic device rings the bell at the station selected.

**Installing
Central Office
Equipment**

A single central office of this kind may contain more than 4,000 miles of wire and 2,500,000 electrical connections.

To install these central offices for the telephone companies, Western Electric maintains a force of technicians at points throughout the country. Their job calls for special training and skill. Intricate as it is, the equipment must be joined line by line to the network beyond. Incoming and outgoing cables, fat with wires, must be "fanned out" and each wire led to its proper termination so that the whole maze becomes an orderly center for interconnecting the highways of speech.

In this force the Bell companies have available a reservoir of experience which can be applied with equal effectiveness anywhere to the distinctive problem of central office installation. Its members are kept trained to deal with every advance in switchboard circuit design constantly coming from the research laboratories. It is a mobile force that moves about wherever new projects call.

**...TO MEET THE
HAVOC OF FIRE,
TORNADO, FLOOD**

With the arrival of telephone supplies emergency crews go to work on repairs.

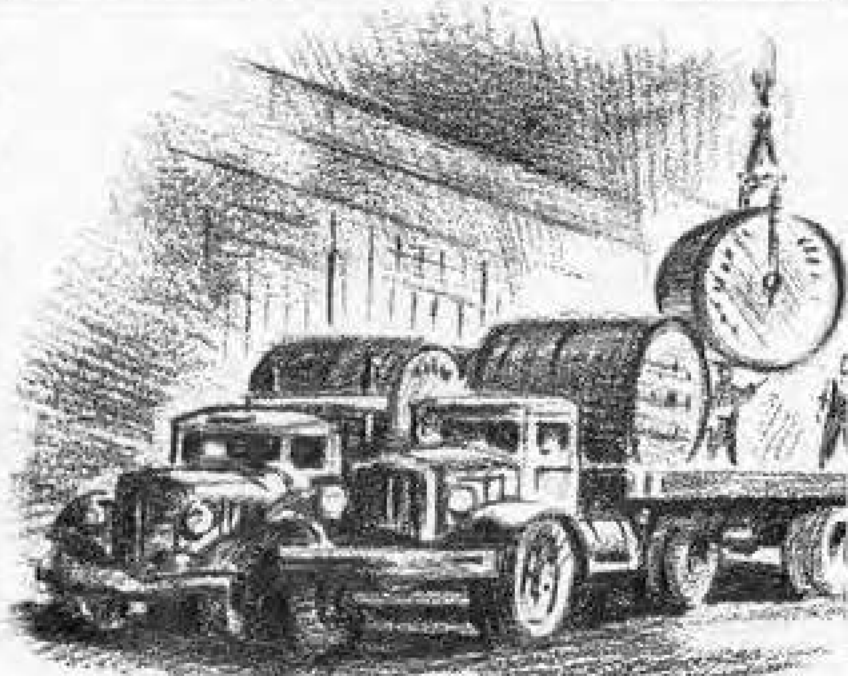


What the 1938 hurricane left in its wake.

Sleet storms make useless mile after mile of telephone wire and cable.



Loading trucks to be sent to devastated areas.



Night after night, Kearny crews started trucks rolling into New England.

This mobility has particular value in time of emergency when the repair or reconstruction of a central office may become the focal point in restoring service to an entire community. Picturing such a time, it is possible, too, to obtain a bird's-eye view of the entire organization in high gear. Such occasions were the spring floods of recent years, paralyzing large cities as well as devastating the countryside, rendering thousands homeless, disrupting transport and communication, and hindering the work of relief as well.

At such times telephone service assumes supreme importance and telephone people swing into action with two objectives uppermost—to defend the service against the elements so as to keep it intact where humanly possible, and at points where service is interrupted to restore it as swiftly as that can be done.

To those ends the Bell System summons every resource at its command, bringing to bear its man power, its technical skill and its reservoir of supplies.

Called to the scene from quiet sectors perhaps far distant, the men and women of the telephone system serve with like efficiency anywhere because the standards are uniform everywhere. Similarly, the apparatus with which they work, rushed perhaps hundreds of miles to the spot, performs its proper function no matter where in the Bell System, because it is all designed and manufactured to a uniform standard.

In such a peace-time battle, wire, cable, telephones, switchboards are the typical weapons. To support the devoted and often heroic efforts at the front lines, these weapons must be supplied when and where needed and in any quantities required. That is the part which must be performed swiftly and unfailingly by the Service of Supply.

It is prepared for emergencies before they occur, and as the critical season of storm and flood approaches, special stocks are accumulated both in Western Electric warehouses and in those of its suppliers. At the first warning, the machinery for meeting disaster is set in motion and materials move at once to the affected areas.

Early in a recent year, for example, sleet storms in the territory of one telephone company alone brought down 25,000 poles over an area of 175,000 square miles, put 2,500 circuits out of service, isolated 60 towns and necessitated replacing 710,000 spans of wire. Subsequent sleet storms, although less widespread, did additional damage. This was but a

In Recent
Years

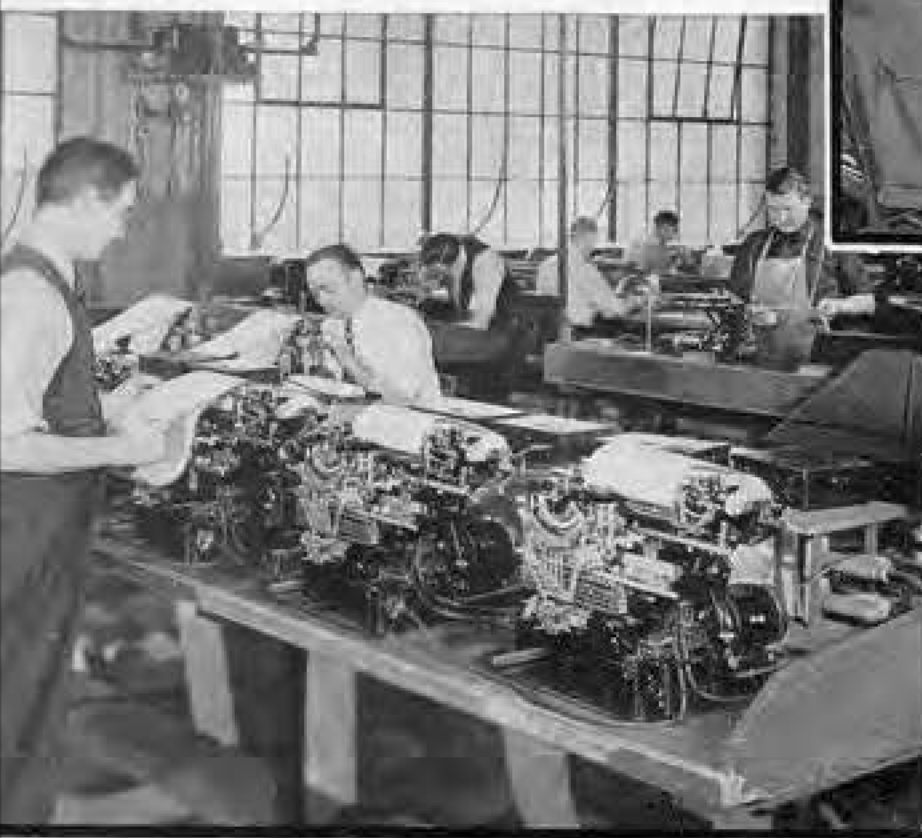
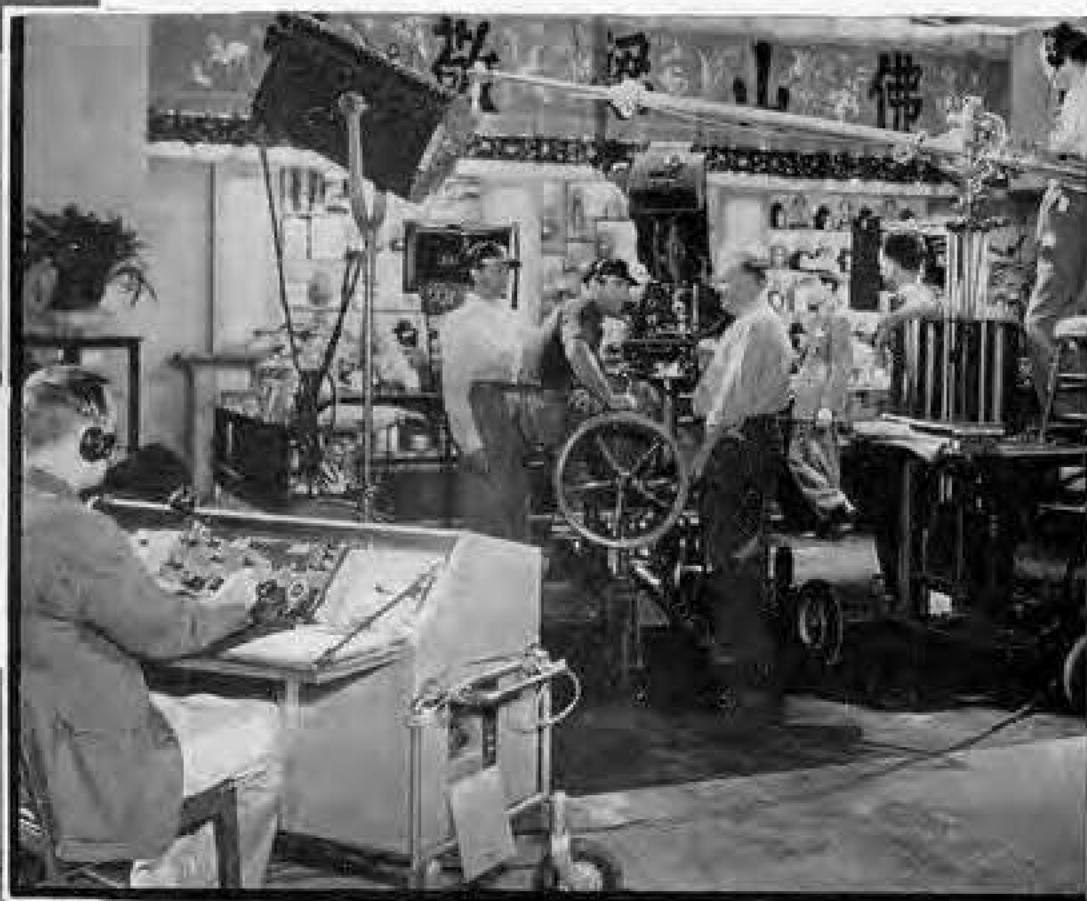
...OF OUTLYING FACTORIES AND SUBSIDIARIES...

...casting a bronze billet from salvaged material
Nassau Smelting and Refining Company.

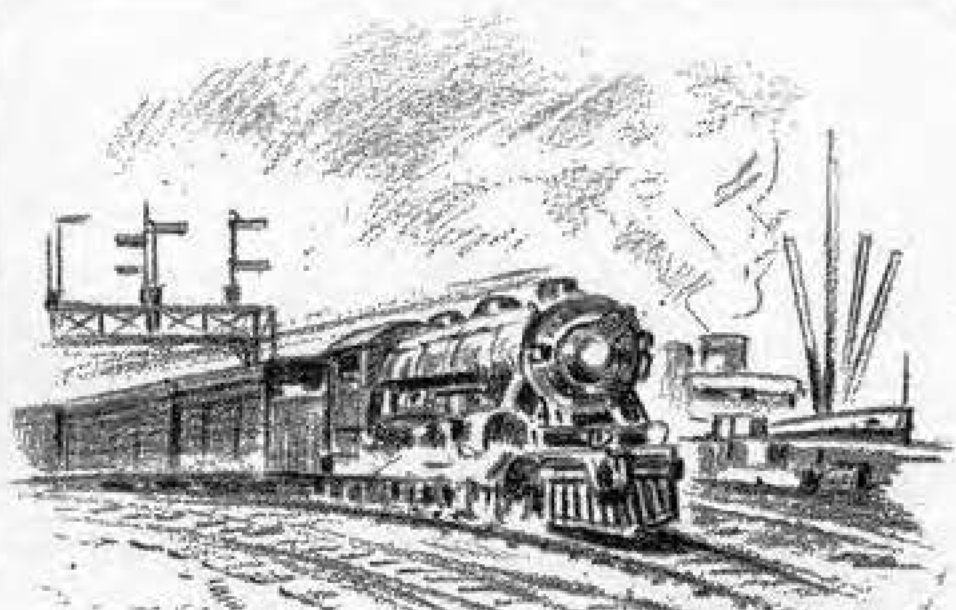


Booths speedily built on the assembly line
at the Queensboro Works.

Western Electric sound recording equipment
in one of Hollywood's studios.



A corner of the testing department at the
Teletype Corporation.



By railroad, ship and air, telephone supplies
flow in a never ending stream.

preliminary to a major flood on the Ohio River. Switchboards were inundated, long stretches of lines washed out, telephones in thousands of homes submerged in muddy waters.

When the tropical hurricane lashed the northeastern states in September, 1938, it left in its wake an area of desolation from New Jersey to Canada and property destruction which for the Bell System represented a loss of 25,000 poles and a vast amount of wire and cable, while more than 450,000 telephones were out of service and 241 exchanges isolated.

Before that devastating wind had subsided and even as the waters rose, the telephone companies' call for supplies once again put to the test Western Electric's emergency facilities. Into the stricken areas out of its distributing houses at New York, New Haven, and Boston, and from others as far as Washington and Pittsburgh, came by train, by truck, by boat, and by airplane a steady stream of supplies and equipment; while the Company's cable and wire-making plants, working day and night, produced these essentials of communication in unprecedented quantities. Within a week 35,000,000 feet of drop wire was sent into the stricken area, and in record time the Bell System again demonstrated resources able to cope successfully with the most staggering emergency.

These stories of material needs do not take account of telephone linemen who forded raging torrents, operators who stuck to their posts, switchboard men who rowed to their jobs and waded breast-high around their equipment, Western Electric men who shipped materials in rowboats from the upper windows of their marooned warehouse to back up these workers; or of tireless labor by lantern light without heat and with food and drinking water rationed.

These are the human elements which in time of emergency are clearly seen to translate themselves most effectively into public service, because back of them is a unified organization utilizing standardized methods and standardized materials.

Here, then, in the story of its evolution and in the panorama of its present-day operations appears an organization dedicated essentially to a single purpose. Devotion to this purpose has through the years inspired a deep-seated tradition among its employees—the spirit of service.

**Measuring Up
to a Great
Responsibility**

In the management of the business, too, part and parcel of the tradition is a policy of fair dealing with employees. Many years ago

that policy was set forth in a Declaration of Principles of Employee Relations. They were ten in number and read as follows:

- To pay employees adequately for services rendered;
- To maintain reasonable hours of work and safe working conditions;
- To provide continuous employment consistent with business conditions;
- To place employees in the kind of work best suited to their abilities;
- To help each individual to progress in the Company's service;
- To aid employees in times of need;
- To encourage thrift;
- To cooperate in social, athletic and recreational activities;
- To accord each employee the right to discuss freely with executives matters concerning his or her welfare or the Company's interest;
- To carry on the daily work in a spirit of friendliness.

The spirit exemplified in these guiding principles of past years is the same spirit in which today employees and management work together in mutual confidence and whole-hearted cooperation.

The single purpose has engendered in the management likewise a business philosophy of voluntarily limiting profits. For Western Electric prices to the telephone companies are set at the lowest figure consistent with fair wages to its employees, a fair return on the money invested in the business, and the maintenance of the Company's financial stability.

The results of this policy are evidenced by the Company's record, which in recent years shows a rate of return upon its investment only about half as large as that of a representative group of comparable manufacturers. Thus the benefits resulting from mass production, mass purchasing, and standardized methods of distribution have been passed along to the telephone companies.

And so through a period of more than five decades Western Electric has been contributing its share towards making Bell telephone service the best and the most economical in the world.

Western Electric Company

INCORPORATED

GENERAL OFFICES

195 Broadway, New York, N. Y.

FACTORIES and LABORATORIES

Hawthorne Works.....Chicago, Ill.
Kearny Works.....Kearny, N. J.
Point Breeze Works.....Baltimore, Md.
Queensboro Works.....Maspeth Station, N. Y.
Clearing Works.....Clearing Station, Chicago, Ill.
Bell Telephone Laboratories, Inc.....New York, N. Y.

DISTRIBUTING HOUSES

Atlanta	Denver	Louisville	Omaha
Boston	Detroit	Milwaukee	Philadelphia
Brooklyn	Houston	Minneapolis	Pittsburgh
Chicago	Indianapolis	Newark	Portland
Cincinnati	Jacksonville	New Haven	San Francisco
Cleveland	Kansas City	New Orleans	St. Louis
Dallas	Los Angeles	New York	Seattle
	Washington		

PRINCIPAL SUBSIDIARIES

Electrical Research Products Inc. (Sound Picture Equipment)
Nassau Smelting & Refining Co. (Reclamation of Metals—Plant on Staten Island, N. Y.)
Teletype Corporation (Printing Telegraph Equipment—Factory in Chicago)

DISTRIBUTORS OF WESTERN ELECTRIC PRODUCTS OUTSIDE THE BELL SYSTEM

In the United States—Graybar Electric Company
In Canada and Newfoundland—Northern Electric Company
In foreign countries—International Standard Electric Corporation



THE STORY OF
Western Electric