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AT&T

Annual Report

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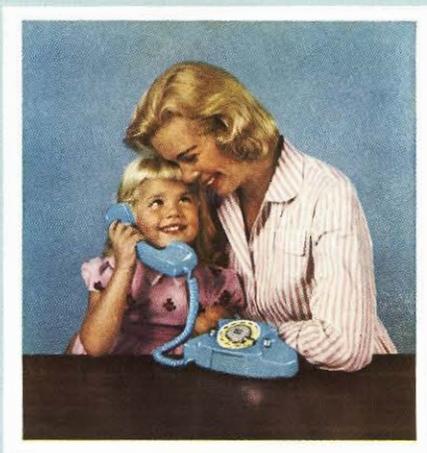
MAR 8 1960

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AMERICAN TELEPHONE AND TELEGRAPH COMPANY



IT'S LITTLE - IT'S LOVELY - IT LIGHTS

Our newest telephone, The Princess, was introduced in four states in 1959, with excellent customer response. This premium-priced telephone will be ready for general introduction throughout the country in the latter part of 1960.

This report reviews the work of the American Telephone and Telegraph Company and the companies associated with it in the Bell System. The System provides communications services in 48 states and the District of Columbia, and its lines connect with those of many other telephone systems in all 50 states in this country, and throughout the world. The System does not operate abroad; its international business is limited to participation in providing communication services between the United States and other countries. A list of the Bell System companies is given on page 29.

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1959 Annual Report

AMERICAN TELEPHONE & TELEGRAPH COMPANY

195 Broadway, New York 7, N. Y.

TELEPHONE: Area Code 212—EXeter 3-9800

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The Annual Meeting of the Share Owners will be held on April 20, 1960 at the Kingsbridge Armory, 29 West Kingsbridge Road, The Bronx, New York City

This report is available in Braille and on talking records for share owners who are blind. Requests should be directed to Mr. S. Whitney Landon, Secretary of the Company. Copies will be distributed with the assistance of the Telephone Pioneers of America, the organization of long-service telephone employees, which is active in work for the blind.

BELL SYSTEM FINANCIAL SUMMARY

	1959	1958
Operating Revenues and Other Income	\$7,540,194,000	\$6,908,090,000
Operating Expenses	\$4,479,495,000	\$4,231,868,000
Taxes	\$1,690,289,000	\$1,483,150,000
Interest Deductions	\$221,641,000	\$211,609,000
Net Income	\$1,148,769,000	\$981,463,000
Applicable to Minority Interests	\$35,617,000	\$29,158,000
Applicable to A. T. & T. Stock	\$1,113,152,000	\$952,305,000
Earnings per A. T. & T. Share	\$5.22	\$4.67
Average Shares Outstanding	213,403,000	203,947,000

HIGHLIGHTS OF PROGRESS IN 1959

LAST year was a good year for the Bell System. We improved earnings further, as shown above, and made broad advances in service. The gain in telephones was 3,298,000—more than in any other year. Long distance calls increased 10 per cent over 1958.

At the Annual Meeting in April, A. T. & T. share owners approved a three-for-one split of the Company's stock. This became effective April 24. Quarterly dividends have since been paid at the rate of \$.82½ a share (an annual rate of \$3.30). All information in this report regarding shares and earnings is in terms of the new shares after the split. Since last spring the number of share owners has increased from about 1,630,000 to 1,737,000. This indicates that the split has helped to broaden the market for the stock, as your Board of Directors had anticipated.

CONSTRUCTION AND FINANCING

Expenditures for construction totaled \$2¼ billion. To help finance the continuing construction program the System obtained about \$750 million of new capital. The larger part of this came from the sale of bonds, at rates of interest ranging from 4¾ to 5¾ per cent, with the higher rates in the latter part of the year. At year-end, debt represented 36 per cent of total Bell System capital.

RIISING COSTS

High interest rates are only one aspect of rising costs. Taxes, already heavy, climbed further in 1959. So did wages, which are the largest cost factor in the business. Such increases keep steady pressure on our capacity to earn. It is therefore vitally important that we maintain vigorous research, develop more efficient equipment and methods, price and

market services in ways that lift earnings, and press for increases in telephone rates in states where this is necessary to produce an adequate profit.

TAXES

Taxes on Bell System service in 1959 averaged \$3.39 per telephone per month. Federal, state, and local taxes on operations were \$1,690,289,000, equal to \$7.66 per share of A. T. & T. stock, or considerably more than



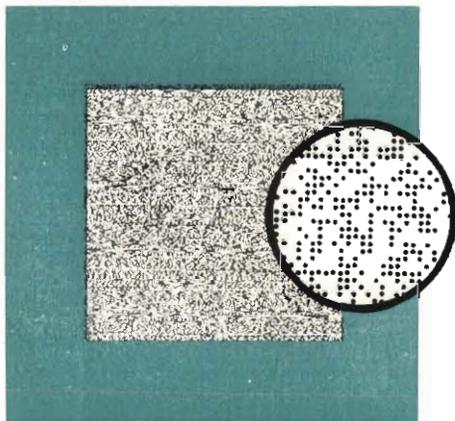
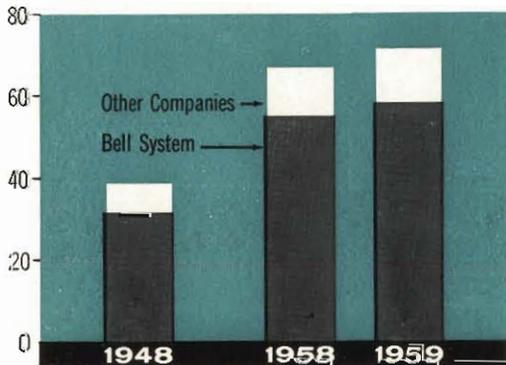
the earnings per share of \$5.22. In addition, telephone users paid directly some \$600,000,000 in Federal excise taxes. Last year Congress voted to terminate the excise tax on local telephone service on June 30, 1960. We have strongly opposed continuance of this tax, and have also urged repeal of the excise tax on long distance calls. Telephone excise taxes are unjust and discriminatory and should be eliminated completely.

SERVICE IMPROVEMENTS

The Bell System at the end of 1959 served nearly 58,000,000 telephones, of which 96 per cent were dial-operated. Some 15 million customers (nearly twice as many as a year ago) can now dial long distance calls to points all over the country. Ocean telephone cables are making possible a new order of convenience and reliability in world-wide service: calls are easy to make and it is easy to talk and hear. In fact, telephone service has never

Telephones in U.S.A.

IN MILLIONS



One of the photographic "memory" plates used in Bell Telephone Laboratories' experimental ELECTRONIC CENTRAL OFFICE contains nearly 33,000 "bits" of information. It is pictured in actual size; the section in circle, enlarged five times, reveals the varying pattern of dots that control the switches.

been so fast, convenient, and dependable as it is today.

CHALLENGES AHEAD

However, the Bell System cannot for a minute be complacent—and we are not. Science and technology have multiplied the means of communicating, and these discoveries (a great many of them made in our own Bell Laboratories) are now widely available. Your management is alert to the competitive challenges of the present and future, and determined to meet them. This we intend to do by creating and promoting services that give our customers unmatched convenience, dependability, and value, and selling them at prices that are competitive yet profitable to the business.

The good progress of 1959 was brought about by 729,000 men and women working together in all branches of the business—in research, in manufacture and supply, and in the operating telephone companies. They turned in a splendid performance. Looking ahead, we are confident that with human resources second to none—with constant improvement of physical facilities—with betterment in earnings—and with the prospect of sustained growth in the nation's need for service—the Bell System will maintain and advance its leadership in the new world of communications.



The telephone installer meeting with boys and girls in the school yard is talking—at the moment—about how he uses rubber gloves to help him work safely. Two comments on the picture seem appropriate. First, telephone people have made their industry the safest in the United States and they are constantly working to improve their record, off the job as well as on. Second, we try to meet often with young and old customers in the local community—not only to talk and answer questions about our work, but also to listen to what the people we serve have to say. Mutual understanding is essential to good service.



REPORT TO THE SHARE OWNERS

As the summary on page 2 shows, your business made excellent progress in 1959. This reflected the efforts of Bell System people on several fronts:

- to devise and market services that fully satisfy individual needs and preferences.
- to increase operating efficiency.
- to learn better the wishes of our business customers as well as of telephone users in their homes.
- to gain wider public understanding that good profits are as necessary to good performance in our business as they are in any other.

PROGRESS IN SERVICE had many aspects. With the continuing spread of Direct Distance Dialing, customers dialed one out of every four long distance calls straight through to the distant telephone (and operators dialed most of the remainder). Much was done also to improve "hearability" on long distance calls. Private line telephone, teletypewriter, and data transmission services for industry and government showed marked growth. We added 1,350,000 extension telephones in homes—20 per cent more than in 1958. Service met high standards of reliability, also; nowadays the average telephone goes several years without getting out of order.

A second transatlantic telephone cable system—a direct link to the European continent—opened for business in September, and a cable to Puerto Rico went into service in January 1960. We have made plans to build a cable to Bermuda. Plans are also being considered for cables to Caribbean points, and preliminary work has started on a cable system that will reach Japan and other points across the Pacific.



Ocean cables provide improved service and experience shows that this makes for more calling. Last year, conversations with all points overseas reached by telephone rose about 15 per cent.

We are continuing to introduce new services, new systems, and new instruments for both business and residence use. Some are illustrated on this and later pages. Others include the following:

We have arranged the private branch exchanges of several more large customers (including The Pentagon) so that people calling from "outside" can dial direct to individual extensions without going through a switchboard attendant.

For customers to whom we furnish private long distance telephone lines, a new system makes it possible for each telephone on the line to reach any other (up to about 80) with two pulls of the dial.

We are offering improved Speakerphone instruments for "hands free" conversation.

The Call Director telephones introduced a year ago have been a great success; we are installing them by thousands.

New consoles for switchboard attendants are going into production. These will improve office appearance, speed up the handling of calls, and give the attendant more time for other work.

Also moving out of the trial stage and into production in 1960 are the home and farm "Interphone" systems described in previous reports, and a new ringer that sounds a pleasant chime, a low bell, or a loud bell, as the customer prefers.

Use of microwave radio systems for long distance communications continued to grow; today in fact these systems provide about one-third of our 72,000,000 miles of long distance telephone circuits. In 1959 the Federal Communications Commission, in an order not yet final, retained with minor changes the existing allocation of microwave frequencies to communication companies to serve the general public. However, in its order the Commission proposed to depart from its long-standing policy of conserving these frequencies, and to permit their virtually unrestricted use for private operation. We believe such use of the public domain would waste frequencies, which are limited, and that this could ultimately impair the communication companies' ability to pro-



"Bellboy" personal signaling service will be provided in 14 major cities in 1960. A person away from his telephone hears a tone signal (sent out from the telephone exchange) in a pocket radio receiver. This alerts him to call his home or office to get a message.



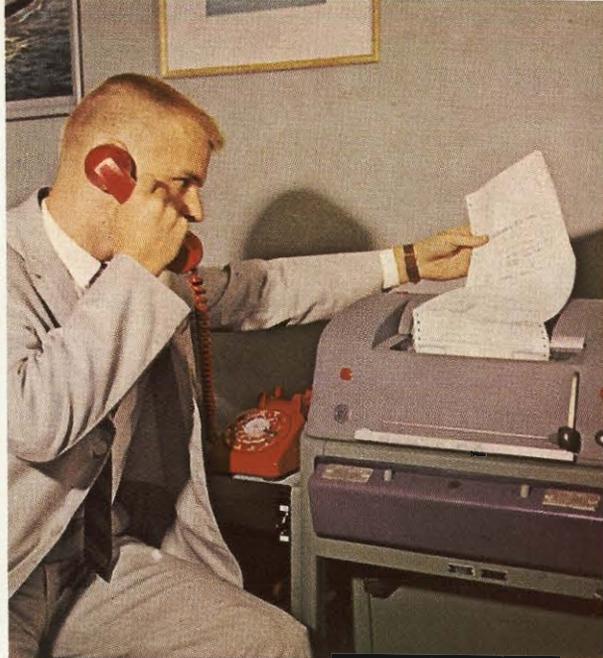
On calls that go over the telephone cables to Puerto Rico and Hawaii, operators "dial" straight through to the distant number. This they do by operating buttons on the switch-board, as illustrated here. In future years telephone users may dial their own calls direct to countries overseas.

vide services needed by the public and important to defense. Accordingly both Bell and non-Bell telephone companies, and also the national organization of state utility commissioners, are protesting the proposed change in policy.

In another proceeding before the Commission, the Bell System has asked for additional frequencies to expand general public telephone service between vehicles and telephones in the nationwide network. Such service is wholly inadequate today and cannot be made adequate without additional frequencies.

DATA PROCESSING is becoming more and more important to the Bell System. One side of the story is our service to customers who wish to transmit data between machines. The other side is our own use of computers and other data processing equipment in managing our business.

Data-Phone service enables machines to talk to machines, using suitable parts of the same network over which people talk with people. Connections are put through just as telephone calls are, and equipment provided by the telephone



"Teleticketing" is one of the first Data-Phone services. The young lady above is in an airline ticket office. After placing a telephone call to the airline's customer, she connects her teletypewriter to the line and inserts a tape containing the ticket details; these are typed on a ticket form in a receiving machine in her customer's office (as shown at right). Airlines are already sending tickets in this way to a large number of their customers.

company converts the signals from the business machines into a form which can be sent over the telephone network. Even the largest high-speed computers can exchange information in this way.

Various forms of Data-Phone service are now available. One of the first, called "teleticketing," is illustrated above. We are working closely with the makers of business machines—and they with us—to develop many other uses.

A related arrangement that is creating much interest we call "line switching." This would serve the airlines, for instance, and other business customers who use large private-line networks provided by the Bell System. Using parts of our regular central office switching equipment, we would interconnect the various points in the customer's network either through the nationwide Direct Distance Dialing system or over special long distance lines. We expect to make this arrangement available before the end of next year. It will provide speedy and also more reliable operation because of the many alternative paths available. Moreover the system may be quickly altered or expanded in keeping with the customer's changing needs.

In addition to carrying data over the regular telephone network, we also use special "broadband" circuits to send great quantities of data at high speeds. One such circuit today, for example, directly connects computer centers in different plants of a missile manufacturer; it will transmit as much information in 45 seconds as will be found in a 50,000-word book. There are also many military needs for transmitting data very fast.

Within the Bell System we are using data processing for many purposes. An electronic computer maintains the accounts of our 1,737,000 share owners. In our Long Lines Department another computer calculates construction requirements, summarizes maintenance performance, and is also used in preparing financial reports. At Western Electric, computers control certain production processes and assist in preparing specifications for dial equipment to be manufactured. The first computer installation to process telephone bills and customer payments is scheduled for 1960. We are also getting ready to use computers in handling orders for service and preparing telephone directories. At Bell Laboratories, scientists have been able to arrange computers to simulate new communication systems not yet developed. Thus they can test new ideas without building models and with a great saving of time and expense.

FOR THE FOURTH CONSECUTIVE YEAR, construction expenditures were well over \$2 billion. New financing in 1959 included the sale of \$250 million of A. T. & T. bonds and \$230 million of bonds by six subsidiary companies; payments of \$228 million by employees purchasing A. T. & T. shares under the employees' stock plan; and payments of \$38 million by holders of A. T. & T. Convertible Debentures of 1973 who converted debentures into stock.

Bell System earnings improved in 1959 for several reasons. There were numerous increases in operating efficiency. Our marketing and selling effort is increasingly productive in relation to expense. Also, in 1959 we could finance a larger part of our construction expenditures from depreciation accruals and retained earnings than was possible a few years ago. Increases in telephone rates were a minor factor; in fact, the Federal Communications Commission insisted on a reduction in interstate long distance rates



This experimental telephone has the dial right in the handset instead of in the base. A number of our customers have been trying it in actual use.

of \$50 million. We did not and do not agree that a reduction was warranted; earnings on interstate long distance business are well below the earnings level of general industry.



"Drive-up" phones are but one of several new coin telephone arrangements the Bell companies are introducing. New kinds of indoor booths are coming into use too. In 1959 coin telephone revenues were \$21 million higher than in 1958.

EMPLOYEES OF THE SYSTEM, including Western Electric and Bell Telephone Laboratories, numbered 729,000 at the end of the year. Wages paid by the telephone companies came to \$3,061,000,000 and Western Electric and Bell Laboratories wages were \$854,000,000. Wages are the largest single cost factor in the business, and wage rates rose again in 1959. All the Bell companies negotiated new agreements with the unions, most of them for 15-month terms; these included wage increases in keeping with the general rise in wage levels in the communities where the companies operate. Improvements in pensions were also in keeping with trends in other industry.

In 1959 the Bell companies paid out \$416,000,000, or 10.6 per cent of their payrolls, for pensions; for sickness, accident, and death benefits; for group life insurance; and in Federal taxes for Social Security old age and disability insurance. The companies pay the entire cost of their pension and benefit programs except group life insurance. Both employee and company contributions finance the latter. At the end of the year 25,623 men and 27,716 women were receiving service pensions paid from trust funds. These funds are actuarially accrued and can be used only to pay service pensions. Last year the companies began to pay amounts into their pension funds over a definite period, generally ten years, to eliminate the unfunded actuarial reserve requirements, which previously had been held constant for many years.

Rising employment costs (both direct costs and those reflected in the cost of what we buy) keep continuing pressure on our ability to maintain attractive prices for our services and at the same time produce satisfactory earnings. We think our proper goal is to make our plant and methods ever more efficient, so that customers, share owners, and employees may all share the benefits. No part of this effort is more important than our research and technical development.

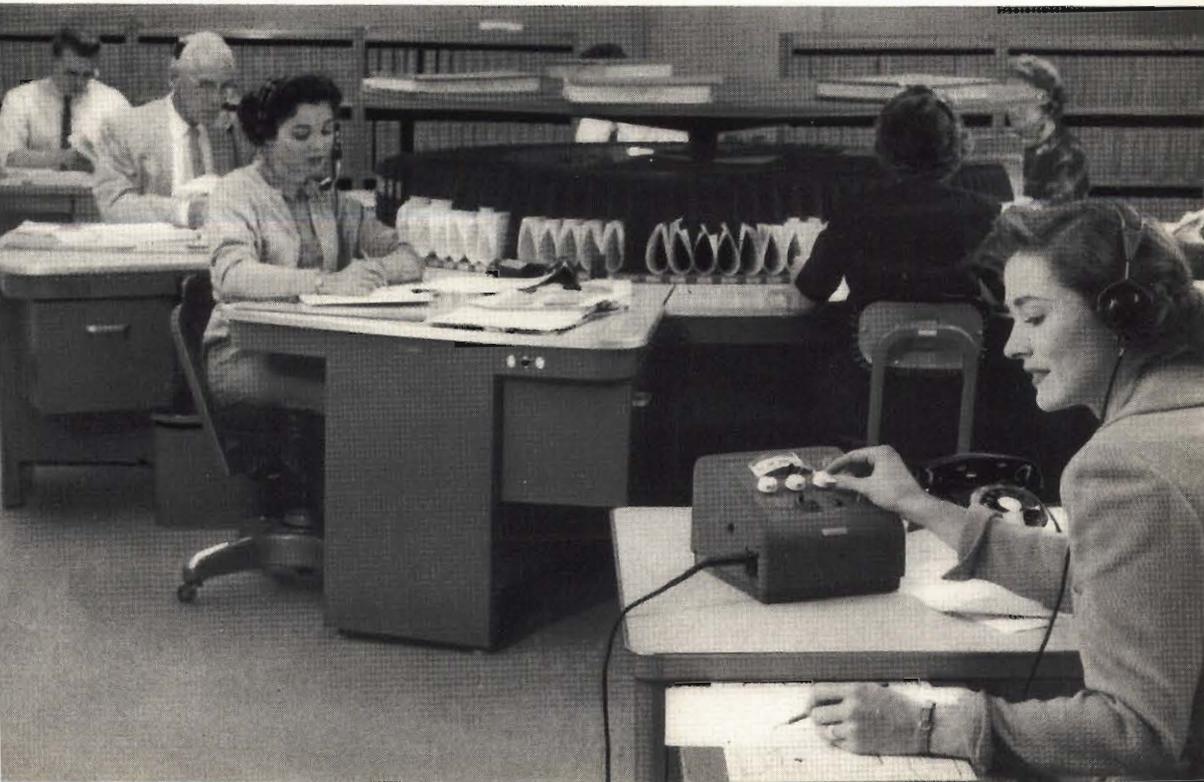
ONE ASPECT OF BELL LABORATORIES WORK may be singled out for emphasis. This is the program to make *existing* Bell

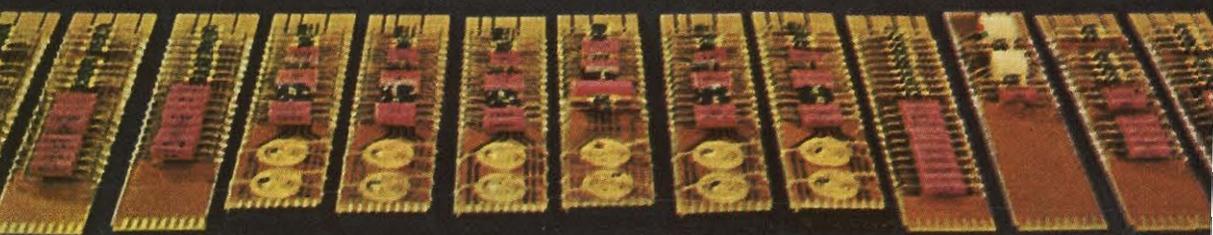
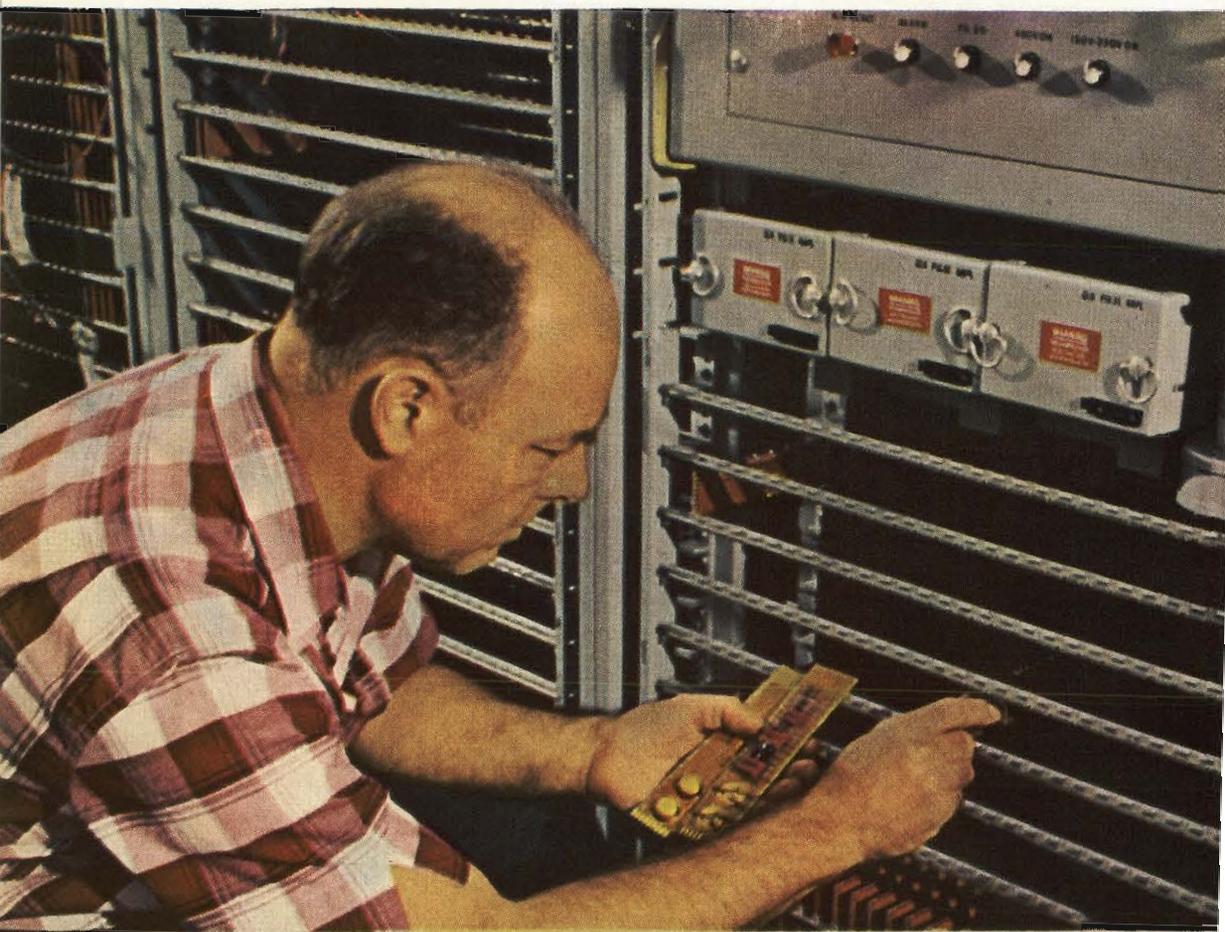
System plant more productive by introducing new elements that increase the efficiency and usefulness of the old. For example:

On long distance routes, "carrier terminals" are essential parts of electronic systems that create millions of miles of voiceways. These permit sending many conversations simultaneously over the same pathway. Bell Laboratories engineers are now designing new terminals that will occupy a third as much space per unit, consume less power, and give more reliable performance with less maintenance cost.

Again, in local telephone exchanges, separate pairs of wires run all the way from the central office to customers' homes and offices. In an average community with 10,000 telephones, there will be perhaps 40,000 miles of wire in telephone cables. To use this more efficiently, we are experimenting with new equipment that is placed in local neighborhoods, a considerable distance *away* from the central office. The lines of, say, 50 or 100 nearby customers are connected to this neighborhood switching equipment, and from it a smaller number of lines (but more than enough to handle all the conversations these particular customers

The new Automatic Call Distributor routes incoming calls, in the order received, to attendants in department stores, reservation bureaus, freight offices (as in this picture), and other organizations that receive many calls. Calls do not have to go through a switchboard. Work loads are evenly distributed and the supervisor (foreground) can see at a glance how the work is going.





In the latter part of 1959, work went ahead on installation of the experimental, transistorized ELECTRONIC CENTRAL OFFICE—first in the world—at Morris, Illinois. Bell Laboratories engineers are now testing the equipment and the first connection with the lines of telephone users will be made in June 1960. The trial at Morris will provide experience and knowledge required for development and production of a system for wide-spread use. The latter will make possible a wide variety of optional service features.

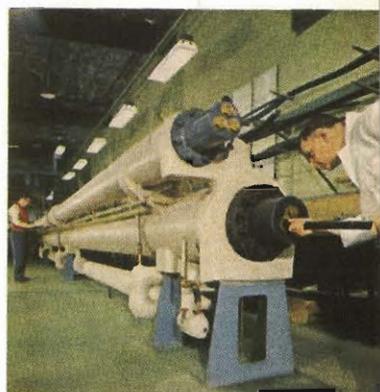
will be carrying on at the same time) go back to the central office. This way we can serve the maximum number of customers with the minimum amount of wire.

Making what we already have more useful goes right along with the development of brand-new facilities. Thus, we have developed a new microwave radio system of greater capacity—and at the same time, we have nearly doubled the capacity of the most widely used existing microwave system. We are designing a new ocean cable system that will handle 100 conversations or more—and we have also developed the TASI* system, which will about double the conversation capacity of submarine cables. The first of these will go into service this year on the cables to England and Europe.

A further point is this: Not only the new systems, but effective modifications of older ones, depend on basic research. Many products of Bell Laboratories research, including new electron tubes as well as transistors and an ever-growing family of related “new art” devices, make possible the improvements mentioned above, and a wide range of others as well. These new devices are also key building-blocks in entirely new systems such as electronic switching, and in the great missile systems for defense. And to describe their impact more fully, they have been responsible for a large part of the expansion of the entire electronics industry.

We are confident that Bell System research will continue to produce new knowledge, new materials, new devices, and new concepts that will have fruitful application not only out in space but close at hand and close to home. To give further impetus to our research and development work, we are building at Holmdel, New Jersey, a large addition to Bell Laboratories facilities.

WESTERN ELECTRIC COMPANY, the manufacturing and supply unit of the System, made outstanding contributions to our service and financial progress in 1959. New products of research call for new skills and tools of manufacture. Tremendous amounts of top-quality equipment must be delivered on time in thousands of cities and towns. In meeting these



Ocean telephone cables must withstand tremendous pressures; on part of the route to Puerto Rico, for instance, the sea is nearly five miles deep. These pressure chambers at Bell Laboratories test the ability of cable structures to stand up under conditions even more severe than they will encounter on the ocean floor.

* Short for “Time Assignment Speech Interpolation.” TASI automatically assigns voice channels to talkers in the intervals when other users of the cable are listening or pausing. Yet complete privacy and ease of conversation are maintained.



Western Electric is experimentally using another form of Data-Phone service to speed its handling of orders from the telephone companies. In a telephone company office, a "shopping list" for the day is made up by selecting punched cards from a file; the cards are then inserted in a machine associated with a telephone. At the other end of the telephone line—typically, in a warehouse—the list is reproduced in a few minutes.

assignments, Western also achieved fine results in combatting increased labor and material costs. Projects to reduce manufacturing costs accomplished savings of more than \$10 million a year. Reconditioning of \$260 million of used telephone equipment helped the Bell companies get more mileage out of their plant. More efficient methods of engineering and installing dial central offices saved both time and money. Still further savings resulted from careful, large-scale purchasing and improvements in handling and delivering goods.

Western Electric earnings in 1959 were \$102,188,000 compared with \$85,936,000 in 1958. Total sales were \$2,315,370,000—up 7 per cent from 1958. Of the total, \$1,573,190,000 was in sales to the Bell companies compared with \$1,527,912,000 in 1958. Most of the balance was in sales to the Government, mainly for equipment and services for national defense.*

As an example of Western Electric's technical progress, in 1959 the company began to make a group of miniature devices on a production line that automatically performs eleven operations, including inspection. The devices so produced will operate without failure ten times as long as the best ever made before—in fact automatic production was necessary in order to meet this and other requirements at reasonable cost.

From the standpoint of our share owners as well as our customers, there is no question that Western's being a part of the Bell System, and the teamwork between research, manufacture, and operations that this allows, are vital to the continuing success of the business. Without this, our costs would be many millions of dollars higher, our service would lose in quality and in public favor, and we could not bring along revenue-producing service improvements with anything like the same speed.

NATIONAL DEFENSE PROJECTS called for a great deal of work last year. Western Electric continued to coordinate work on the SAGE air defense system; by year-end nine sectors were in operation, linking radars, computers, and weapon systems over telephone company lines that carry high-speed data as

* Western Electric's 1959 Annual Report is available to A. T. & T. share owners on request.



Production of modern "crossbar" dial equipment is under way at Western Electric's new plant in Columbus, Ohio. At another new plant in Oklahoma City, manufacture will start in the spring of 1960. Construction will begin soon on a third plant, in Kansas City, Missouri, to make electronic equipment. Numerous other construction projects were completed, started, or announced in 1959—all of which means that Western Electric is constantly improving its ability to produce and deliver the goods.

well as voice. Western also completed the Aleutian segment of the DEW Line, and went ahead with a westward extension of an Air Force communication system in the Aleutians, and an eastward extension of the DEW Line across Greenland. Bell Telephone Laboratories takes part with Western Electric in all these projects, and likewise in establishing communications for the Air Force's Ballistic Missile Early Warning System (BMEWS). An important part of this, a submarine telephone cable between Greenland and Canada—the first in Arctic waters—was completed in 1959.

The "Command Guidance" system for large ballistic missiles, designed by Bell Laboratories and made by Western, has performed notably. Nose cones of missiles directed by the system have landed on target at full range. Nike Hercules anti-aircraft guided missile systems continued in full production in 1959, and we made good progress in the development of Nike Zeus, the "anti-missile missile." We expect next year to be installing experimental Nike Zeus equipment on Kwajalein Island in the South Pacific, where it will be

tested for ability to intercept missiles launched from thousands of miles away.

In addition to specific projects for the military, we built additional long distance telephone routes that by-pass critical defense areas, and began the engineering of others. This will further strengthen our ability to maintain essential communications in emergencies.

The Sandia Corporation, Western Electric's subsidiary, continued in 1959 to manage the Atomic Energy Commission's Sandia Laboratory, which works on military applications of atomic energy.

The Bell System is cooperating with the National Aeronautics and Space Administration on two important projects. A visualization and brief description of *Project Echo*, an experiment in communicating via satellites, will be found at the end of this report. *Project Mercury* is the nation's undertaking to put a man into orbit in space. Western Electric, as leader of an industrial team, Bell Laboratories, and three other firms, have major responsibilities to establish a worldwide network for communicating with the space capsule. This network will automatically register conditions in the capsule and will also permit talking with the astronaut. The tracking stations and communication system will be completed in 1961.



Surveying the site for a tracking station for Project Mercury on Grand Canary Island.

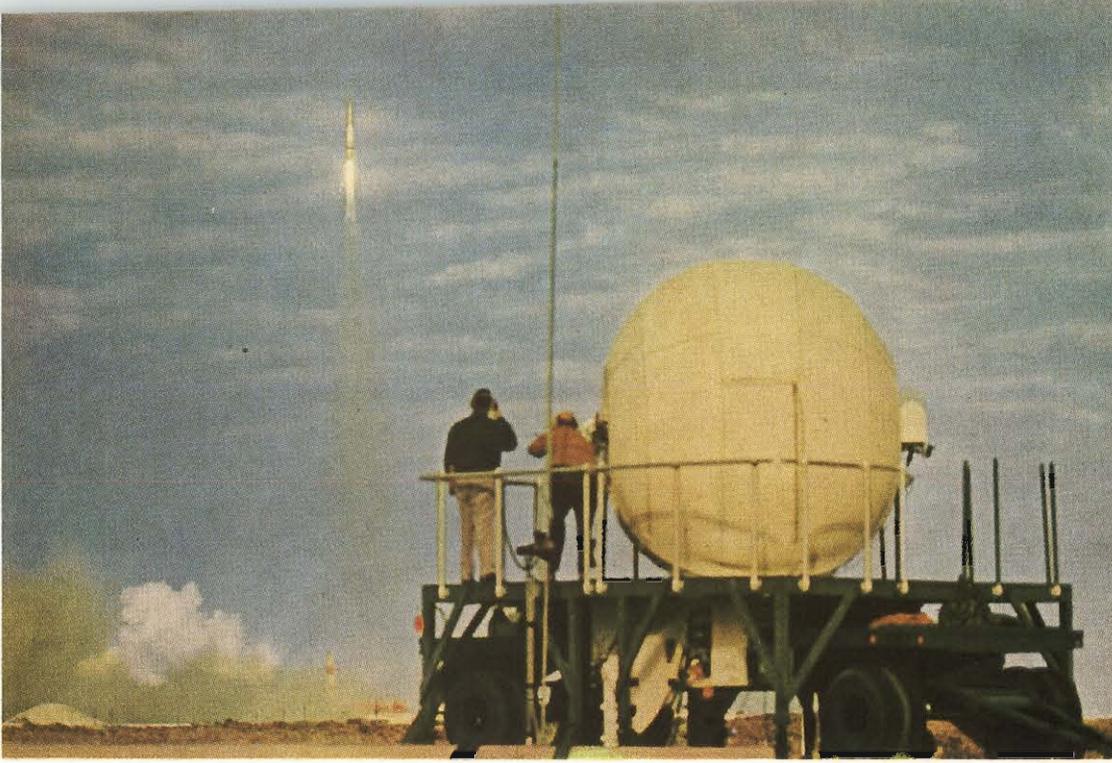
TWO WORDS—GROWTH AND CHANGE—fairly describe major trends in the telephone business. They are of first importance to the share owners, for growth and change affect everything we do—how we serve, how we earn, how we manage.

In service, several developments already touched on make clear that *new concepts* are being brought to reality.

Direct Distance Dialing is leading to a new order of convenience in nationwide service. This will be further enhanced as in more and more places we install equipment for automatically identifying calling numbers.

Data-Phone service over the regular Bell System network, including the concept of line switching, has tremendous potential. We are sure it will win wide acceptance in competition with other forms of service. Moreover it will mean fuller and fuller use of the network and will thereby help to keep overall costs of service to the public at reasonable levels.

Ocean cables make world-wide telephone communication more abundant and reliable, with greater ease and clarity of



A missile soars into space from Cape Canaveral under control of Bell Laboratories' "Command Guidance" system for ballistic missiles and space vehicles. In foreground is the antenna of the radar that precisely tracks the missile and transmits commands.

conversation. And in the future, world-wide service via satellites may contribute to these same results.

All such developments, by the way, bring out the need for careful joint planning by Bell and non-Bell companies. In order that new facilities and services will be as useful as possible to everyone, we work closely with several thousand other telephone companies in the United States, and with the communication administrations or companies serving other countries. Within the United States, the wide use by industry and government of communication systems that are partly in Bell territory, and partly in the territory of other companies, further emphasizes the need for teamwork. Also, it is important that the entire telephone industry give coordinated attention to legislative and regulatory measures that concern all the companies and their customers.

One other key development in service should not be overlooked: new instruments and systems are giving our customers *many service options* at varying prices. These optional features compete for the customer's dollar with all kinds of household and office conveniences. More and more, we in the telephone business are *competitive marketers*. We must vigorously and intelligently sell our wares. We must



This is a telephone sales meeting. We are going all out to make our sales work top-notch in every respect—more helpful to our customers and more profitable to our share owners. As one part of this, we are determined to make our sales representation and service to large industry—which has very complex communication needs—of the highest calibre.

price them to sell, but price them also to produce profits consistent with the business risk.

BUT ADEQUATE PROFIT SERVES A LARGER PURPOSE than compensating business risk, important as this is. It encourages all creative effort in the business. It attracts good people and spurs their striving for excellent performance. It promotes unstinted research and technological progress. It enables the business to build economically for the long run, instead of having to build piecemeal at higher cost. It nourishes the sense of responsibility for the social usefulness of the business as an employer, as a public servant, as a corporate citizen, and as a trustee for the savings of people.

What is adequate profit? It is large enough to do all these things and sustain them over a long period of time. When the public, through its regulating agencies, weighs how much our business should be permitted to earn, *these* are the things to think about because *these* are what profit buys. And for such reasons, we believe telephone earnings broadly comparable with the earnings of progressive, well-managed companies in non-regulated industry will generate maximum telephone progress and in the long run produce better service

at lower cost to the public than would otherwise be possible.

Profit, performance, and progress are inseparable. We have been studying this subject intensively and the evidence is overwhelming that companies with excellent profit records do the best job for their customers and employees as well as their share owners, and contribute the most to community and country. We are trying in every way we know to demonstrate to the public and the regulatory commissions that this is just as true in our business as in any other.

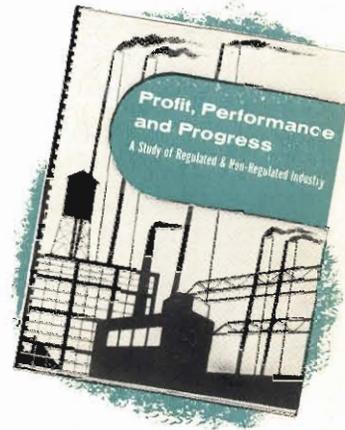
How do growth and change affect our ability to produce adequate profit? In more ways than one. The optional services we have mentioned, for instance, improve earnings but also increase risk. This being so, regulation should not then push overall earnings down again. This would only lessen the stability of the business by making higher-risk services contribute a larger part of total income. It would also pour ice water on the human effort to devise service features that the public is entitled to have.

But the most important change affecting earnings has been the shrinking value of the dollar. Non-regulated companies generally have been able to increase their earnings in keeping with the fact that their investment is greater in terms of today's dollars. The telephone companies' physical plant and facilities, too, are worth more in current dollars than they cost in dollars of the past. Yet many commissions today give small recognition to this in fixing telephone rates, and generally limit earnings to a stated return on the original cost of the properties, less depreciation. A reason often given for this procedure is that it is simple; the books show the figure. However its simplicity does not make it equitable. Nor is it equitable to limit the recovery of investment through depreciation charges to the number of dollars originally committed.

Sound means exist to correct these inequities. We are therefore urging the commissions, in their consideration of telephone earnings, to give much more weight to the shrinking value of the dollar.

FINALLY, THE PEOPLE OF THE BELL SYSTEM are deeply affected by growth and change.

One manifest change from time past is the ever-increasing influence of government over business. This is not the only reason why telephone people, like other citizens, should



This booklet summarizes information obtained in the study mentioned in the text at left. Share owners who would like a copy are invited to write the Secretary, A. T. & T. Company, 195 Broadway, New York 7, N. Y.

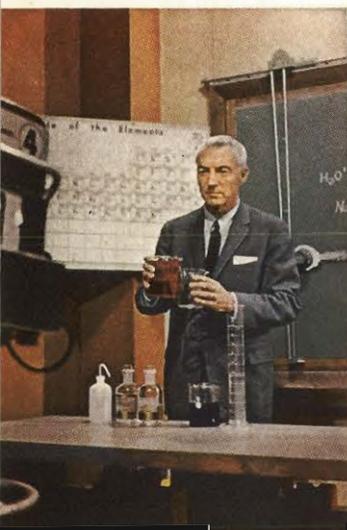
take thoughtful part in political affairs—but it surely emphasizes further that they **ought not to stay** on the sidelines. The Bell companies do not **engage in** partisan politics, nor will they. They must and do take positions on issues that affect the **business**. They must and do **keep** members of government **informed** about their plans and problems. Beyond these things, we think it **important**, first, to call to the attention of Bell System people issues that closely concern them as employees and citizens, so that they will be alert to them, think about them, and equip themselves to judge them; and second, to warmly encourage their taking part in political and community affairs as individual citizens.

Of great importance also on the human side of the job is the ever-changing character of telephone work. New tools and machines, new services and systems, the new needs of customers—all have ceaseless impact. They call for careful planning so that transitions in work operations, which are vital to progress, will not cause human hardship. They call for constant training and retraining. Growing competition demands our competitive response all the way from the development laboratory to the employees who visit our customers in person and by telephone 200 million times a year.

Growth in itself presents a form of change. The Bell System now serves 58 million telephones. Some day we shall serve 100 million, and later even more. Our human responsibilities in each community, large as they are today, will be even larger tomorrow. And in the next 10 years we expect 85,000 men and women of the System will take new posts in management. For telephone people, opportunity and responsibility are surely bound together.

So our greatest challenge is to conduct the business in such a way that thousands of people will find it a first-rate place for them to grow in; to select and bring into the business individuals who have real potential for personal growth; and to stir their imagination and energies so that they will reach out for and achieve *new standards of excellence in management*. This challenge we are bending every effort to meet—through better induction procedures, educational programs, research studies, and most important, job assignments and methods of supervision that bring out and bring up the individual's whole capacity.

The splendid job done by Bell System people in 1959 strengthens our confidence in the future. For outstanding



With other organizations, since 1958 we have shared in sponsoring the "Continental Classroom" network TV courses in science, as part of our contribution to education. In the field of closed-circuit educational TV, several Bell companies are furnishing video channels to school systems.



Bell Laboratories is developing an electronic artificial larynx. On a non-profit basis, Western Electric will make it and the Bell telephone companies will sell it. The device will be available next summer. With it, people who have lost their vocal cords can learn not only to speak but to inflect their speech. Details will be announced to the medical profession. At the left, the engineers who have been developing the larynx are making a test; the device in the foreground is a meter. The artificial larynx itself (an experimental model is pictured) is held against the throat as shown.

performance in emergencies, 53 Vail Medals were awarded. These are one significant reflection of the spirit of service in telephone men and women. Another is the association of nearly 200,000 long-service employees, both active and retired, in the Telephone Pioneers of America. In addition to maintaining their business fellowship, as citizens they engage in many community service and welfare activities.

We have tried to stress in this report basic concepts of service, of earnings, and of human responsibility. We believe the realization of these concepts is vital to the welfare of the share owners, and we are wholly committed to their realization. For the support you have extended in 1959, and for the thoughts and suggestions you give us by letter and in your conversations with Bell System managers, we express our sincere thanks. As we enter the Nineteen-Sixties, we pledge our utmost efforts to justify your faith and trust.

For the Board of Directors,

February 10, 1960

PRESIDENT

PROJECT ECHO

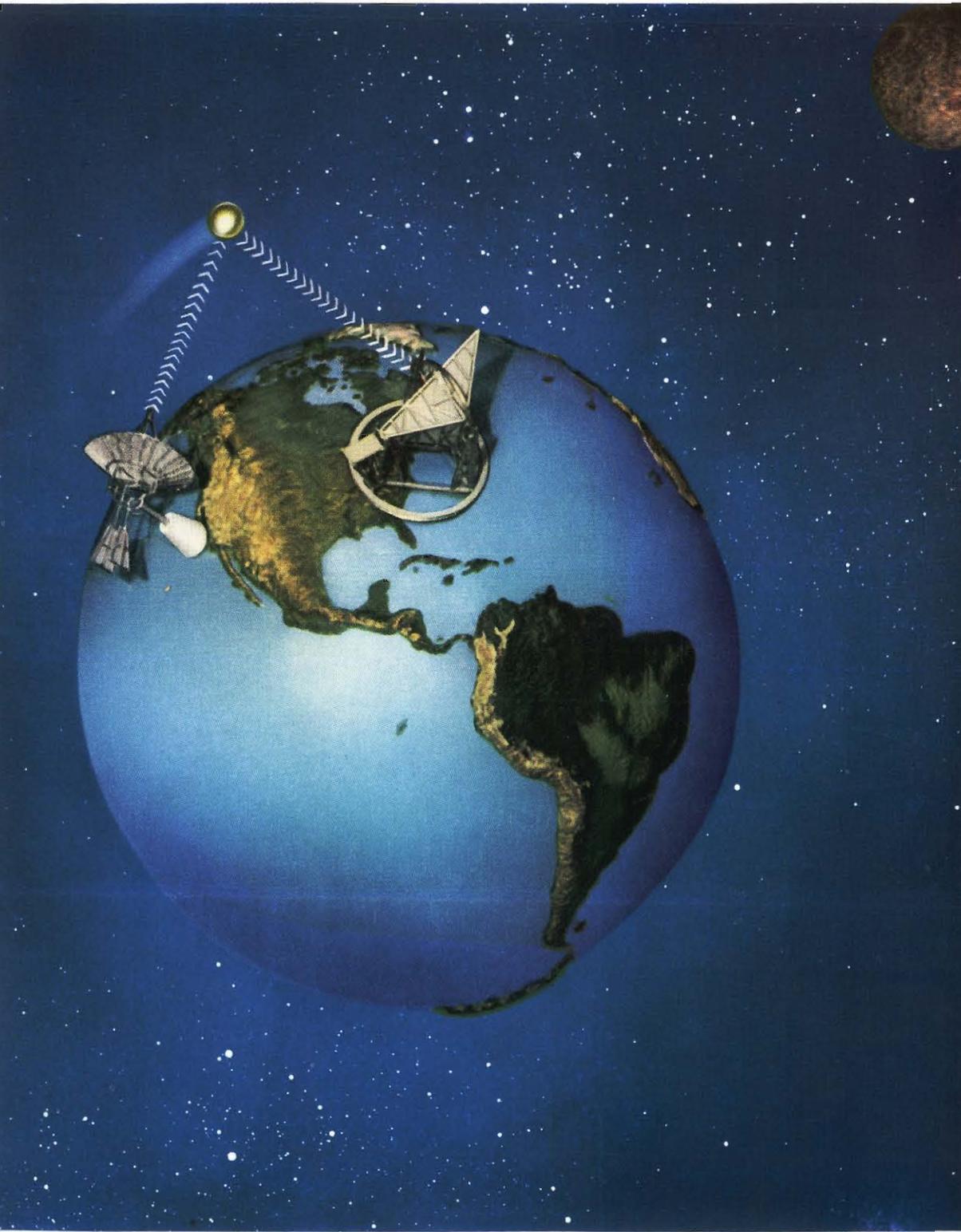
As a first step in research in space communications, Bell Laboratories is working with the National Aeronautics and Space Administration and its Jet Propulsion Laboratory, operated by the California Institute of Technology, to study the possibilities of communicating by means of radio microwaves reflected from a satellite.

The experiment illustrated here will be undertaken in 1960. The aluminum reflecting sphere, 100 feet in diameter, is designed to inflate when the space vehicle containing it reaches the planned orbiting altitude of about 1,000 miles. Bell Laboratories' "Command Guidance" system will guide the vehicle into orbit.

The transmitting and receiving antennas are located at Holmdel, New Jersey, and Goldstone Lake, California. During the experiments, various new kinds of amplifiers and other apparatus will be tried out, and several methods for tracking the satellite will be studied.

This work might lead to the use of satellites to provide transoceanic or even world-wide communication channels for voice, television, and other forms of intelligence. However, the practicability of providing regular service to the public by such means will depend on many factors. Technical accomplishment, difficult as that may be, is only one of these. The elements of cost and reliability, compared with other kinds of communication systems, are equally important. Let us notice also that the single satellite of *Project Echo* is useful for experiment only; for a working system, a number of satellites would be needed. The essential point for now is that the Bell System intends to do a thorough job of getting the knowledge that is necessary to a sound appraisal of future possibilities.





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