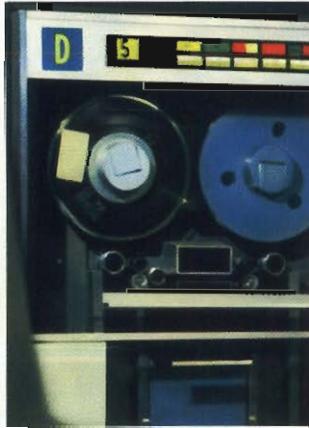
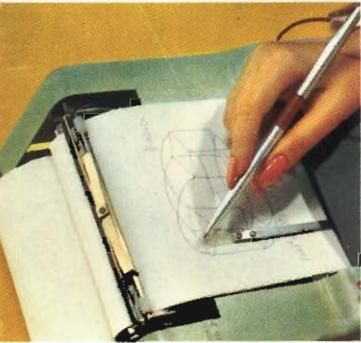
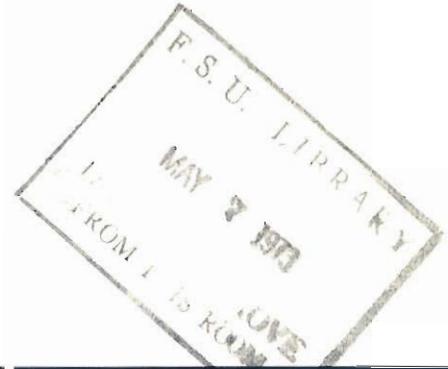
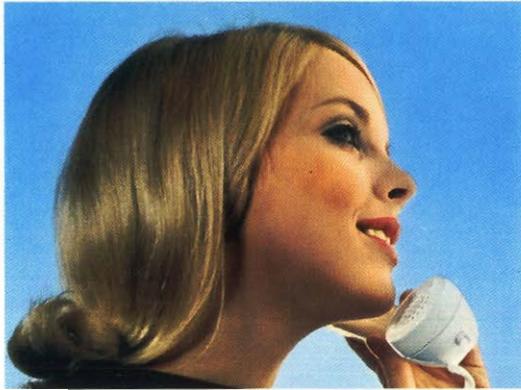


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1966 ANNUAL REPORT



THE COVER suggests the ability of the Bell System network to handle information in all forms—speech, music, pictures, writing, data. Bell Telephone Laboratories pioneered this advance and continues to do so. The research engineers below are at work on experimental equipment, employing “integrated” circuits,

which may in the future perform important functions in local telephone service. Here a circuit is being adjusted to its final precise value. Integrated circuits, which combine transistors and other elements in tiny, complete structures, offer striking advantages in cost, reliability, and, for some functions, extremely high-speed operation.

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Four major Bell Laboratories centers, from top, are at Murray Hill, N. J., Holmdel, N. J., Indian Hill at Naperville, Ill., and Whippany, N. J. The Holmdel building was completed in 1966, as was Indian Hill, where work centers on the continuing development of electronic switching systems. The Whippany laboratory is devoted to work for defense. Other locations include laboratories at nine Western Electric manufacturing plants, where design engineers and production process engineers work hand in hand.



AT&T

ANNUAL REPORT 1966

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ANNUAL MEETING

The eighty-second Annual Meeting of the share owners will be held at 2 p.m. on April 19, 1967 at the Baltimore Civic Center, Baltimore, Md.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

195 Broadway, New York, N. Y. 10007
Telephone: 212 393-9800

The company maintains stock transfer offices at the address above and also at

185 Franklin St., Boston, Mass. 02107
225 West Randolph St., Chicago, Ill. 60606
140 New Montgomery St., San Francisco, Cal. 94105

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Charles E. Wampler

A report for the Bell System

This report reviews the work of American Telephone and Telegraph Company and its associated companies in the Bell System. The companies provide service in all states except Alaska and Hawaii. Other telephone companies also operate in nearly all sections of the United States and Bell System lines connect with these companies and with the telephone systems of other countries throughout the world.

The principal telephone subsidiaries of American Telephone and Telegraph Company, and the percentage of the capital stock of each that is owned by A. T. & T. are as shown in the table at the right.

American Telephone and Telegraph Company also owns Western Electric Company, manufacturing and supply unit of the Bell System, and A. T. & T. and Western Electric share ownership of Bell Telephone Laboratories. In three other telephone companies associated with the Bell System, The Southern New England Telephone Company and The Cincinnati and Suburban Bell Telephone Company in the United States, and The Bell Telephone Company of Canada, A. T. & T. owns 18.1%, 28.0% and 2.4% of the stock respectively.

Annual reports of all the Bell telephone companies, and of Western Electric Company, are available on request. Share owners who are blind may obtain the A. T. & T. report in braille or on talking records. Kindly address all requests to the Secretary.

PRINCIPAL TELEPHONE SUBSIDIARIES	% OWNED BY A.T.&T.
New England Telephone and Telegraph Company	69.5
New York Telephone Company	100.0
New Jersey Bell Telephone Company	100.0
Bell Telephone Company of Pennsylvania	100.0
Diamond State Telephone Company	100.0
Chesapeake and Potomac Telephone Company	100.0
Chesapeake and Potomac Telephone Company of Maryland	100.0
Chesapeake and Potomac Telephone Company of Virginia	100.0
Chesapeake and Potomac Telephone Company of West Virginia	100.0
Southern Bell Telephone and Telegraph Company	100.0
Ohio Bell Telephone Company	100.0
Michigan Bell Telephone Company	100.0
Indiana Bell Telephone Company, Inc.	100.0
Wisconsin Telephone Company	100.0
Illinois Bell Telephone Company	99.3
Northwestern Bell Telephone Company	100.0
Southwestern Bell Telephone Company	100.0
Mountain States Telephone and Telegraph Company	86.8
Pacific Northwest Bell Telephone Company	89.1
Pacific Telephone and Telegraph Company	89.7
Bell Telephone Company of Nevada (a wholly owned subsidiary of Pacific)	

Bell System results at a glance

	1966	1965
Operating Revenues and Other Income	\$12,419,000,000	\$11,323,000,000
Operating Expenses	\$7,261,000,000	\$6,671,000,000
Taxes	\$2,718,000,000	\$2,440,000,000
Interest Deductions	\$403,000,000	\$362,000,000
Net Income applicable to A. T. & T. Shares	\$1,979,000,000	\$1,796,000,000
Earnings per A. T. & T. Share	\$3.69	\$3.41
Dividends paid per share	\$2.20	\$2.00
Average Number of Shares Outstanding	536,107,000	526,635,000
A. T. & T. Share Owners*	3,089,600	2,840,500
Construction Expenditures	\$4,193,000,000	\$3,918,000,000
Net Telephone Plant*	\$30,046,000,000	\$27,764,000,000
Telephones*	79,903,000	75,866,000
Equipped for Direct Distance Dialing	90%	87%
Average Daily Conversations		
Local	280,831,000	266,412,000
Long Distance	14,879,000	13,274,000
Overseas Conversations (Total for year)	10,200,000	8,108,000
Employees*		
Telephone Companies	650,800	611,900
Western Electric	168,400	168,800
Bell Telephone Laboratories	14,400	14,500

Report to the share owners

The Bell System in 1966 experienced exceptional growth, made important advances in service, and improved earnings.

The gain in telephones was 4,037,000, a record high number. Long distance conversations increased 12 per cent.

Operating revenues rose slightly less than ten per cent above revenues in 1965. Net income applicable to A. T. & T. stock also increased. A. T. & T. dividends were raised from \$.50 to \$.55 per share quarterly beginning with the January 1966 payment.

Construction expenditures were the largest in any year. Even so, demands for service caused heavy usage of all facilities and this intensive use of plant helped lift the rate of return on total capital to 7.9 per cent.

We have continued intensive effort to increase the convenience and value of local exchange service as well as long distance. In 1966 more customers had individual lines and the proportion of all customers who are on party lines was further reduced. We placed more cables underground, introduced pushbutton Touch-Tone® service in 1,500 more places, and continued to expand toll-free calling areas in many communities. New electronic switching systems now serve ten thousand telephones used by 124 business customers and a growing number of electronic central offices are in operation, including 13 that serve vital military networks.

We have conducted an extensive program of public education to discourage abusive telephone calls. Also, cooperative work with law enforcement agencies has resulted in numerous arrests of malicious callers. We believe these efforts are increasingly effective and they will be continued.

Long distance conversations in 1966 totaled nearly five billion. Overseas conversations continued to increase rapidly and we are using both cables and satellite circuits (the latter leased from Comsat) to provide ever-expanding service of excellent quality. For long-haul domestic communications, we have proposed to the Federal Communications Commission a "space-earth" system that would integrate satellite facilities of advanced design with the nationwide terrestrial network. This multipurpose system could handle voice, data, and TV transmission, including educational TV. We are confident that it would allow the most economical use of satellite communications technology and assure the most dependable service.

Financing, taxes, and employment

To help finance construction we obtained more than \$1.4 billion of new capital in 1966. The larger part came from the sale of debt issues by A. T. & T. and ten other Bell companies and most of the balance from employee purchases of A. T. & T. shares under the employees' stock plan. Interest costs on the debt issues ranged from 4.85 to 6.03 per cent. At the end of the year the proportion of debt in total Bell System capital was 33.3 per cent and the average interest cost on all debt was 4.04 per cent.

The 1966 tax bill of \$2,718,000,000 was 11 per cent above that of 1965. This amount was equal to \$34.92 per telephone and \$4.90 per share of A. T. & T. stock. In addition customers paid \$753,000,000 in Federal excise taxes on communications service. This discriminatory tax had been scheduled to end but was reimposed at the 10 per cent rate last April. The law provides that

the schedule to end it will be resumed in April of 1968.

Bell System employment costs, including those of Western Electric and Bell Laboratories as well as the telephone companies, were \$6,725,000,000 compared with \$6,188,000,000 in 1965. New collective bargaining agreements reached during the year with most of the unions provide for increases in wages and benefits that are in line with changes in industry generally. The agreements are mostly for 36 months with one reopening at 18 months on wage items.

The interstate rate proceeding

Hearings so far in the F.C.C.'s inquiry into interstate telephone rates and earnings have been mainly concerned with return on investment.

The company's position is clear-cut. We believe that to provide excellent and continuously improving service at low cost, we must produce earnings on the share owners' investment that will stand the test of comparison with the earnings of other companies that offer competing investment opportunities. On this basis, and with a capital structure appropriate to the risks of our business, we think the earnings on total Bell System capital should be at least in the range of 8 per cent.

Interstate earnings have been in the order of 7½ to 8 per cent for some years, during which we have greatly improved and expanded service and several times reduced the rates. We certainly hope and expect to maintain this process. However, several leading economists have testified, and we ourselves feel, that in the present expanding economy earnings may well need to be higher than in recent years to assure fair treatment of share owners and encourage investment on the scale

required to provide all the service, and the quality of service, that the nation will need.

As in any rate hearing different views are presented. Witnesses in opposition have testified in favor of a lower overall rate of return. The means proposed include, notably, a large increase in the proportion of debt in total capital. However, witnesses for the company have urged in reply that in the determination of capital structure, great weight should be placed on management judgment and that regulation should not insist on risks that experienced and responsible management deems imprudent. Mr. Robert A. Lovett, banker and formerly Secretary of Defense, who appeared as a witness for the company, gave his opinion that the sound health of the Bell System and the excellence and dependability of its service are so important to the country that it would be "most unwise," in his words, to impose on the company "a specific and higher debt ratio or to restrict unduly its rate of return."

Other developments

Continuing cost reduction programs in 1966 helped Western Electric Company to hold down equipment prices. The company's sales were \$3,624,000,000 compared with \$3,363,000,000 in 1965 and earnings were 4.8 per cent of sales compared with 5 per cent in 1965. Sales to the Bell telephone companies in 1966 were \$2,954,000,000. Most of the balance was in sales to the Government representing in large part research and development work handled by Bell Laboratories. Western Electric, which for many years has been 99.8 per cent owned by A. T. & T., became a wholly owned subsidiary in 1966. Minority share owners were offered six

A. T. & T. shares for each Western Electric share held.

We have continued discussions with Western Union regarding their possibly acquiring our teletypewriter exchange service (TWX) but no agreement has been reached. This service accounts for about one-half of one per cent of Bell System revenues. We are not seeking to sell it but the F.C.C. has proposed that combining it with Western Union's message telegram business may serve the public interest. In all negotiations we shall have firmly in mind the interests of our share owners and of all customers and employees involved.

A policy to live by

It seems appropriate at this time to set forth again the basic policy of the Bell System.

Our job as we see it is to provide the best possible communications service and make it continuously better and more abundant.

This means service that our customers will find more and more satisfying to use, more dependable, more versatile, more economical, more valuable.

To accomplish this we must all the time seek to develop new knowledge and resources that will meet changing social, industrial, and national needs.

We must strive to hold down costs so that charges to customers will be as low as possible consistent with the kinds of service they desire.

We must maintain complete financial integrity and earn profits that will justify the continuing confidence of all who invest in our enterprise.

We must bring into the business people who have the will and can learn the skills for quality performance, and offer them opportunity regardless of color

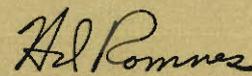
or creed. Good wages, first-rate training, challenge on the job, and for each employee the chance to get ahead according to ability — these are essential.

This is how in broad outline we see our responsibility. It calls for innovation, integrity, good corporate citizenship, and a feeling for quality of the highest order. We shall apply our continuing utmost efforts to the job and if it be asked, "Is this a pledge?" the answer is that it is indeed.

Widening markets, improving technical systems, and the knowledge and enterprise and strong spirit of service of able people—these promise great strides for the Bell System in the years ahead. But everything depends on continuing freedom, under regulation, to *manage* the business to best advantage.

Under the outstanding leadership of Frederick R. Kappel, head of the Bell System since 1956, we have made significant progress in service, technology, citizenship, and earnings. Last month, in accordance with the company's 65-year rule, Mr. Kappel retired as an officer although he continues, we are glad to say, as a director and as chairman of the executive committee. The goals we have pursued under his leadership will continue to direct and inspire our efforts in the future. We say this not only in tribute to Mr. Kappel but to assure you again of our wholehearted concern to safeguard and advance the interests of all the share owners all the time.

For the Board of Directors,



Chairman of the Board

February 15, 1967

Advances in service

Superb service to customers is the foundation of everything we can do in the share owners' interest. This is why we again emphasize the everlasting effort to make the service more convenient, reliable, and enjoyable to use.

In 1966 the Bell companies reorganized many more of their repair service bureaus so that skilled people are more widely available after business hours to help customers who report trouble. This night and weekend coverage means we can solve more service problems at once and speed up action on others.

We have also been working to make it easier for customers to get what they want from the telephone company without having to deal with a lot of different people. Thus, businesses that need service at many locations can deal with a trained person who will coordinate the job with other telephone companies. And whenever a customer calls our business office, we want him to be able to reach without difficulty a capable person who will "take it from there."

Two-thirds of the new housing units for which we provided service last year were reached by buried

cable and wire—in fact the great majority of all new cables were placed in the ground. These stormproof facilities help make attractive neighborhoods. And the new methods and materials we have worked energetically to develop are making this kind of construction feasible in more and more places.

Two other instances of what might be called "unseen" progress have to do with transmission or *hearability*.

We are now introducing equipment that will automatically measure transmission quality on local lines that interconnect telephone exchanges within a city, as well as on long distance lines. This will help us detect and remedy low hearability before customers encounter it.

We are also installing more and more transistorized amplifiers, or speech boosters, on local lines between exchanges. More than a million are already in service. Similar equipment developed at Bell Laboratories is also employed on many lines that connect customers with central offices.

Extension telephones in homes increased by 1½ million during 1966. Some 37 per cent of all residence customers now have two or more

phones. Nine out of ten customers can now dial directly to distant places and in the great majority of cases the calling number is automatically identified without an operator having to ask for it. From about seven million telephones, including 170,000 coin phones, users can now dial person-to-person calls directly, as well as credit-card calls and calls made collect.

We continuously study and measure service quality. One procedure introduced more than 60 years ago is to observe the performance of telephone equipment and employees. This is simply and solely a quality control activity and is invaluable to management efforts to improve performance. Observations are made on random samplings of contacts between customers and company. Conversations between customers are not monitored and all procedures are designed to protect personal privacy.

Another indispensable aid to good service is what customers tell us. Their judgments, not ours, are the final test. For years therefore we have systematically asked people to tell us what they think. In 1966 we started a new program (again on a random sampling basis) to ask tele-



Prompt, competent repair service is tremendously important to telephone users. Experienced "troubleshooters" are now on the job at most repair service centers on a 24-hour basis.

And we are introducing new test consoles, as pictured, that will make for faster testing for trouble on customers' lines.



Under the Bell System's new "Easy Move Plan" this family asked the telephone business office in the city they were leaving to arrange for installation of service in their new home. Result—their phones arrived as soon as the furniture.

phone users how they feel about their experience with us, not only in their daily use of the service, but when they order phones installed or are in contact with the company for some other reason. This new plan provides practical information to help us act in specific situations where improvement is needed.

Services to Government

We continued in 1966 to strengthen and enlarge services to the Department of Defense and other branches of the Federal Government.

The Federal Telecommunications System now interconnects 678,000 telephones in 71 Federal agencies in 425 cities. The system operates through a network of more than 13,000 lines and 49 switching centers.

Work on the Department of Defense's *Autovon* network has proceeded at a rapid pace. This remarkable system provides voice, graphic, and data communications for command and control, operations, administration, logistics, and intelligence. Both Bell and Independent telephone companies are at work on this big job. The SAGE system of air defense was integrated with *Autovon* in 1966.

Other important services to the Government included continuing research and development work by Bell Laboratories and Western Electric on the Nike-X missile defense system; improvement of telecommunications for missile testing and launch ranges; completion of a network connecting military bases in the Pacific; and engineering study of military communications needs in Southeast Asia. Western Electric also provided engineering services to the Defense Communications Agency in connection with the overseas portion of the *Autovon* network and at the State Department's request continued to advise the communications agencies of several foreign nations. Western Electric's subsidiary, Sandia Corporation, maintained its work for the Atomic Energy Commission and our Bellcomm subsidiary continued to perform systems engineering for the manned space flight programs of the National Aeronautics and Space Administration. In December Western Electric Company and Bell Telephone Laboratories received Navy Certificates of Merit for their contribution to a Navy mission described as being "of critical importance" to national defense.

The telephone companies are making every effort to protect customers from invasion of their privacy and peace of mind by malicious callers. Here a central office supervisor explains to police what measures may be taken to trace the source of a series of abusive calls if proper authorization is given.

Inside Cheyenne Mountain, in Colorado, the officer in charge at the new combat operations center of the North American Air Defense Command has complete communications services at his instant disposal. Facilities provided by the Bell System include a new electronic central office located deep in the mountain and several buried cables as well as microwave radio systems that radiate out to connect with all major communications routes.



New and promising

Numerous recent developments can be so described. Three are illustrated. Others include the following:

A new, more reliable coin telephone is already in wide use. This will steadily replace older instruments. We are well aware that nothing is more irritating than to find a public telephone vandalized or otherwise out of order. This rugged new instrument substantially increases dependability. Also, in a few places we are experimenting with "dial tone first" operation—the dial tone comes on when the receiver is lifted. This enables the customer to know at once that the line is working. Also, he can reach an operator if necessary without depositing a coin.

Coin service is a very important part of our business. More than 1,160,000 coin phones are in use and annual revenues total more than \$750 million.

Wide Area Telephone Service (WATS) is now offered for inward calling both interstate and within 23 states. This service is a counterpart of the outward WATS that enables users to make long distance calls at a fixed charge per month. More than 29,000 outward WATS lines are now in use and revenues exceed \$276 million a

year. Inward service customers are largely businesses that wish their own field employees and customers to "call collect." They can specify an inward WATS number to call and pay a monthly charge for use of this line.

New communications services are increasingly employed in education. In a growing number of schools students work with computers over telephone lines. Closed circuit television channels aid teachers in graduate schools, medical centers and several public school systems. Telelecture service enables teachers to talk to students over telephone lines and discuss their questions.

A new automatic alarm-reporting telephone warns of dangerous conditions such as failing power or abnormal gas pressures. An improved telephone system for hospitals meets the special needs of patients and staff alike. Another new instrument, the Call-a-matic® telephone, combines Touch-Tone calling with an automatic directory that can store hundreds of numbers. Calls may be made by simply selecting the number desired, then pushing a button.

Bell Telephone Laboratories is developing advanced electronic systems to aid operators in handling

calls. One new system already in service watches the varying load of long distance traffic at switching centers and automatically organizes the distribution of incoming calls to help prevent congestion and delays. Work continues on new methods for burying wire and cable and for dealing with frozen soil. Engineers have learned how to send data pulses over the telephone network much faster and, at the same time, more accurately. Promising exploratory developments include new high-speed memory devices, the use of laser beams in optical memory systems, a form of quartz crystal that can perform a function that previously required eight components, and a family of solid-state devices that might some day replace many vacuum tubes in microwave systems.

We believe that large potential markets exist for Picturephone® service and for Custom Calling services. The latter include, for example, arrangements for reaching frequently called numbers by dialing only three digits, and for signaling to a person who is talking on the phone that an incoming call is waiting. Improved Picturephone systems are being developed at Bell Laboratories.

The new decorator-styled Trimline® telephone now offered in many states (although not yet all) is having great success. Where Touch-Tone service is available, Trimline phones may be obtained with illuminated pushbuttons as shown. These telephones are offered at moderate premium price.

This service station manager (like others in the same company) uses a Touch-Tone telephone to order supplies. First he calls a number associated with a computerized order system. Then he inserts a card for each item needed and specifies the quantity of each by pressing Touch-Tone buttons. Then he simply hangs up. Orders are completed in minutes, delivery in one day!

An electrocardiogram is here being "telephoned," as it is taken, to a distant specialist for immediate diagnosis. The doctor has dialed the specialist's number, then positioned the telephone transmitter in Data-Phone equipment that transmits the electrocardiographic signals. The Data-Phone equipment is readily portable and can be used wherever there is a telephone, in doctor's office or patient's home.





Study of computer techniques to help provide Information service includes careful tests of the types of consoles at which operators might work—for any such system must be well adapted to the operators' convenience in using it. This equipment simulates how a computer might display telephone numbers before an Information operator when she presses console keys.

How computer technology helps telephone people serve

Our business is to carry information wherever people want to send it. Today they send much of it in and out of computers and the handling of information involves, more and more, the linking of computers and communications.

These modern information-handling systems offer great potential advantages to thousands of our customers. They also offer many opportunities to improve our own operations.

Very importantly, they will enable us to keep our records of customers' service continuously and instantly up to date. They will help provide

quick-as-a-wink answers to the millions of questions that must be answered every day to run the business and meet our customers' needs. To help realize these advantages with good speed in the next several years, a new organization is now being set up. This organization will have responsibility for coordinating development of "real-time," while-you-hold-the-line electronic information systems throughout the Bell System.

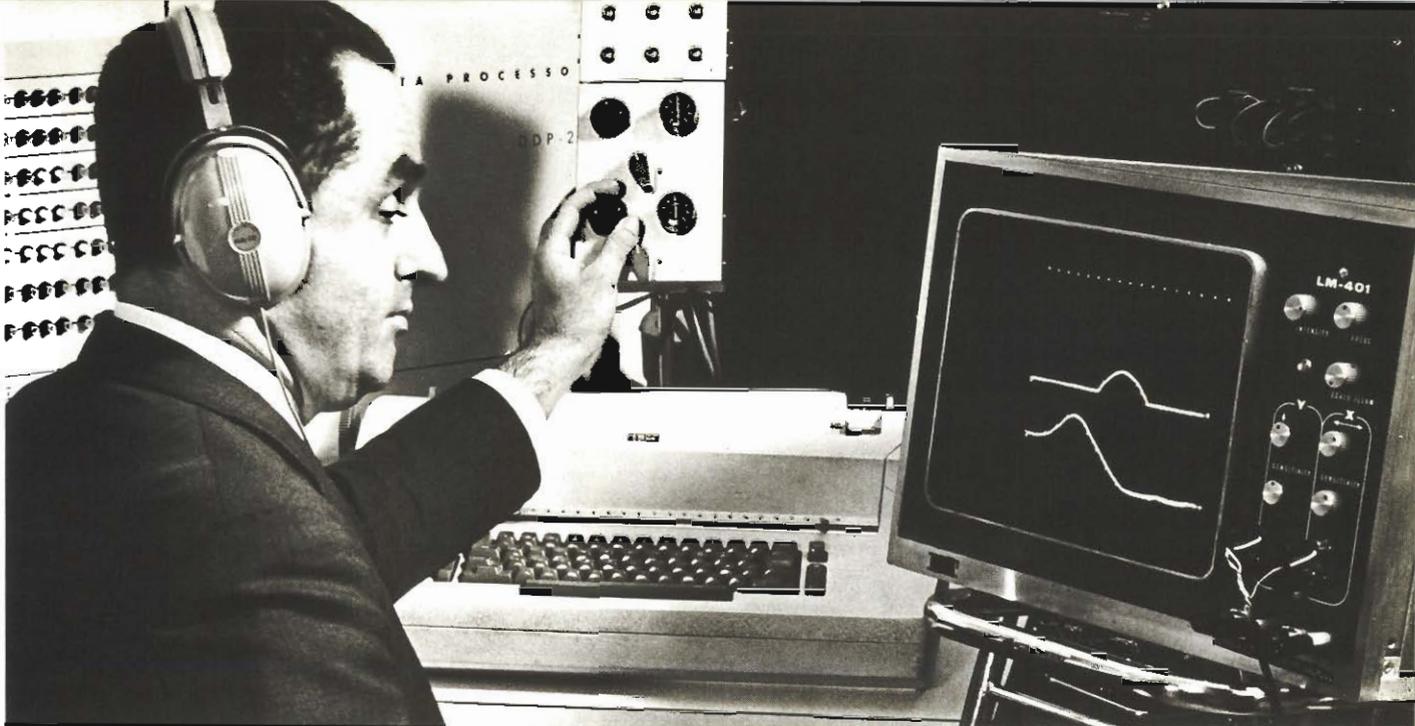
Designing, analyzing, planning

Computer technology today helps us design cable networks, analyze maintenance problems, and draw up

fundamental plans for enlarging our physical plant. Computers analyze alternative rate plans and aid in developing optional communications services. They instantly tell operators at Traffic Service Positions what the charges will be on long distance calls from coin telephones. In Western Electric manufacturing plants they help maintain running records of work operations and in the distribution of equipment they facilitate order-handling and inventory control.

In all sorts of ways we are using the new computer-communications technology to improve service and hold down costs. Electronic switch-

Speech research is one of many Bell Laboratories investigations that use computers to great advantage. Here, as the scientist introduces changes in his experiment, he at once sees the effects in computerized data displayed on the screen, and hears them in his earphones. Such research is important for several reasons. Better understanding of the speech process will help us to transmit conversations more efficiently and should also aid the design of future systems in which people and machines communicate with each other.



ing systems (which are themselves computers of a special kind) are a massive example of this effort but there are many others as well. One Bell company has successfully combined computer and photographic techniques to produce telephone directories. Bell Laboratories is developing a computerized system to give more prompt, complete assistance to customers who dial telephone numbers that have been changed or discontinued. Another computer-oriented system under consideration may enable Information operators to find wanted numbers more quickly. Bell Laboratories engineers today also

use computers in designing integrated circuits, electrical systems, and a wide range of physical structures. Computers produce actual drawings and specifications for manufacture of communications equipment.

New insights obtained

Furthermore, imaginative use of computer technology stimulates the very process of scientific investigation. Computers are helping us to synthesize speech (so that computers themselves can more readily give audible answers to questions). Computer-generated movies of how the inner ear works aid basic under-

standing of hearing. Computer simulation of the behavior of atomic particles affords new insights into the structure of matter.

Three overall points may be emphasized. First, we believe Bell System people are second to none in their advancing comprehension and creative use of this new technology. Second, this understanding will lead to more versatile Bell System services as well as more efficient operation of the business. Third, the systems we employ must and will be fitted to the people who will work with them to render human and personal service to our customers.

Satellites, cables and microwave systems

Long distance service, both domestic and international, increased rapidly last year. We made large additions to the nationwide communications network and increased the number of overseas channels in the Caribbean and Pacific areas. Rapid growth seems certain to continue. Fortunately, technological advances continue to increase the capacity of cables and microwave systems and

for some international services we also have satellite channels available. The latter are leased from Comsat, in which we own a 29 per cent interest.

Overseas calls rose 25 per cent in 1966 to more than 10 million. We expect this number will increase several times over by 1980 and that thousands of circuits will be needed to handle the traffic. Both cable and satellite systems will be used, de-

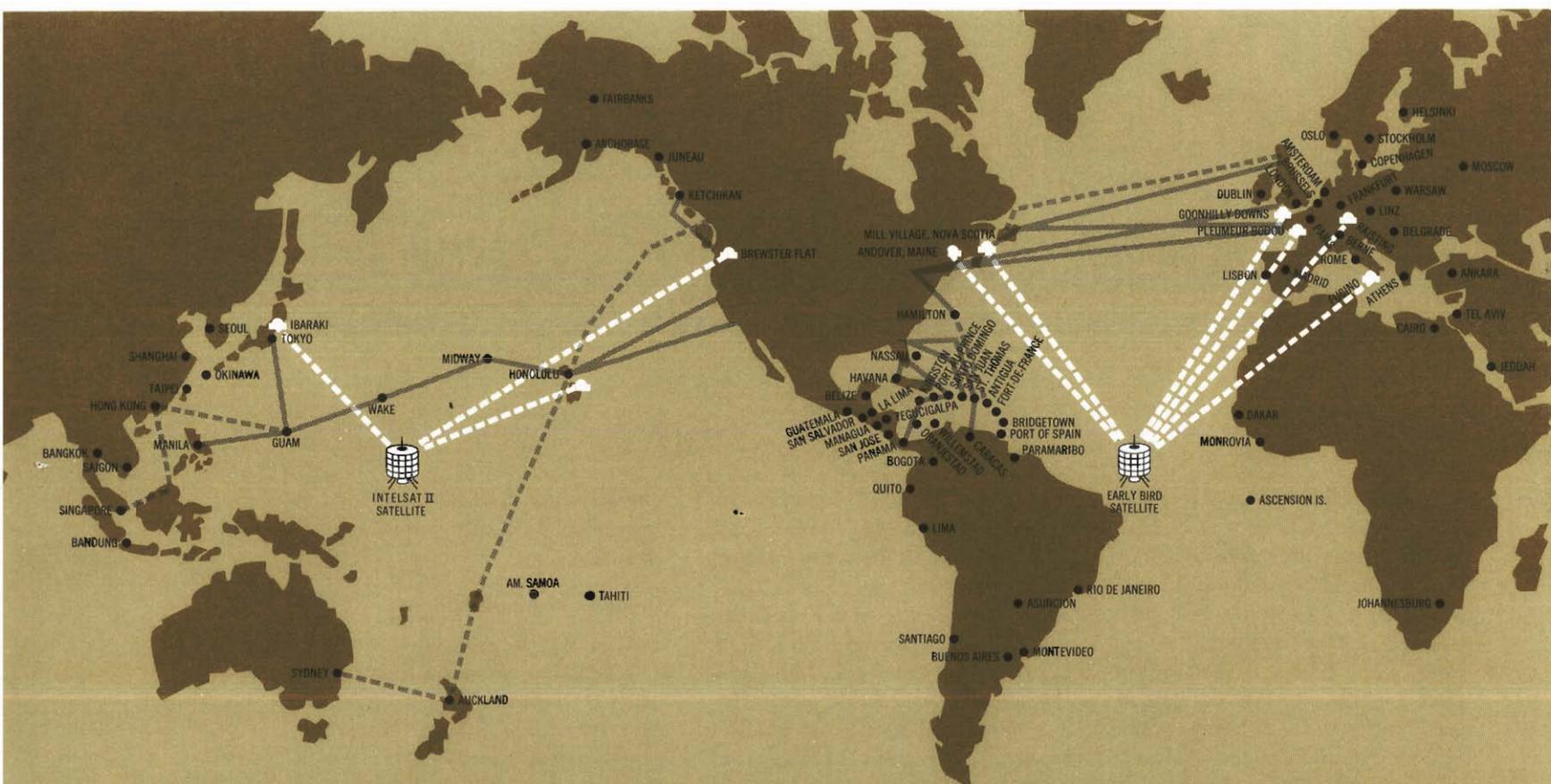
pending on route, distance, costs, and all other relevant factors in each situation. It should be noted also that having both cables and satellites in operation strengthens the prospect for dependable, uninterrupted service at all times.

A new transistorized ocean cable developed at Bell Laboratories will carry 720 conversations, or 20 times as many as the first transatlantic cable system placed in service in 1956, hardly more than ten years ago. The first of these new large-capacity cables is scheduled to be placed in service between Florida and the Virgin Islands in 1968.

A telephone cable to Venezuela, placed in operation last August, is the first between the United States and South America. Its opening was

Service over a new ocean telephone cable to Venezuela opened last August 3 when President Johnson, in the White House, talked with Venezuelan President Leoni in Caracas. With the President are Vice President Humphrey and Dr. Enrique Tejera-Paris, Venezuelan Ambassador to the United States.



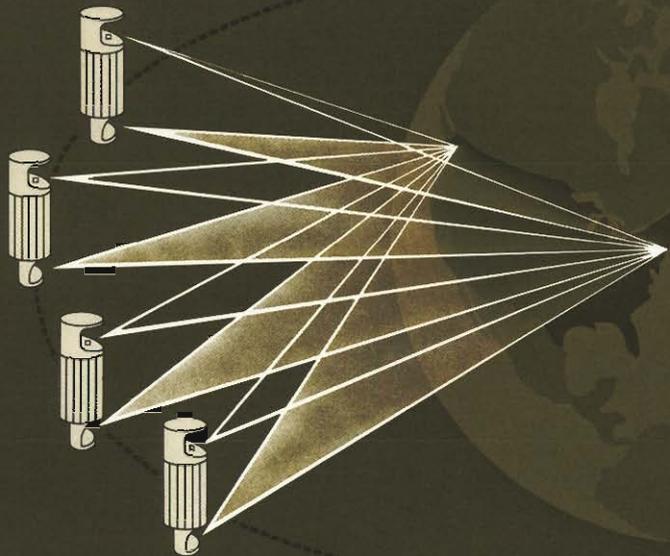


Worldwide service from the United States is provided by cable, radio and satellite

- Reached by direct circuit
- ☐ Satellite ground stations

Cables

- Bell System and partners
- British Commonwealth



The Bell System's proposal for a space-earth domestic communications system would employ in its final phase (1976-1980) four high-capacity satellites of advanced design. Our pioneering Telstar satellites demonstrated the feasibility of using satellites for communications and the present proposal is based on studies at Bell Laboratories over more than a decade.

accompanied by introduction of station-to-station calling, at rates considerably lower than person-to-person rates. Rates between Alaska and other parts of this country have also been reduced, as have the rates between many points in the United States and Canada. We are glad to report also that discussions with the communications agencies of a number of countries overseas have resulted in the introduction of station-to-station rates (again, significantly lower than person-to-person rates) on calls to Austria, Belgium, Denmark, France, Ireland, Italy, Luxembourg, Liechtenstein, the Netherlands, Nor-

way, Sweden, Switzerland, the United Kingdom, and West Germany. These new rates became effective February 1, 1967.

Customer dialing of calls between the United States and the Virgin Islands began last September. Looking ahead to worldwide direct dialing, which will mean much faster service, representatives of countries around the globe have already agreed on a world numbering plan. Much work remains to be done but the first calls demonstrating how transatlantic customer dialing will work were actually made last summer. In 1967 we plan a temporary trial of

direct dialing to London and Paris from telephones in one exchange in New York City.

Domestic communications

Construction is well along on the new deep-buried coaxial cable system from Boston to Miami. A similar cable from Massachusetts to Chicago went into service in 1966. This will be extended to Denver by 1969. In the newest underground systems, 20-tube coaxial cables associated with new transistorized equipment will be able to handle some 32,400 telephone conversations simultaneously.

Technological advances are also greatly increasing the capabilities of microwave radio. Improvements on one type of system long in use on "backbone" routes will largely increase the number of available voice channels and another system, a new one, will provide twice as many channels.

Bell System engineers believe that satellites can also be used economically in domestic long distance communications. With this in mind we have proposed to the F.C.C. a multipurpose "space-earth" system that will make available to the public generally the benefits derived from technological advance.

This system could integrate satellites with terrestrial cable and microwave facilities starting in 1969. It would meet anticipated needs of the public and government (both civil and military) to 1980 and beyond and from its inception could handle program transmission for a nationwide educational television network as well as for commercial networks.

The system would grow in step with growing needs and would use satellite and terrestrial facilities in the most economical mix. Satellites of advanced design, to be orbited in

the 1970s, would operate at very high frequencies previously thought to be unusable. This new technique, pioneered at Bell Laboratories, would conserve the frequency spectrum and minimize interference with other microwave communications. We have proposed that Comsat own the satellites and that the related earth stations be owned and operated by the common carrier companies whose traffic would be handled.

Savings that all can share

Two points are basic. One is that such a system can be built and operated at less cost than if terrestrial facilities were to be used exclusively, or if all intercity links were provided by way of satellites. The other point is that its benefits would be available to the entire public, including telephone users and the viewers of all kinds of TV programs. This is, after all, a main reason why common carriers exist—so that everyone can share in the savings that accrue from technological progress and from economies of scale. The common carrier concept has been vital to the development of high-quality, low-cost service. It has stimulated technologi-

cal advance and the great benefits obtained in long distance communications have been reflected in better services for all at lower rates for all.

Certain other proposals made in 1966 for the use of satellites in domestic communications would not, in our judgment, well serve the public interest. These proposals envision separate systems for television transmission and this we think would constitute a wasteful use of an important natural resource.

The constructive report of the Carnegie Commission on noncommercial television rightly suggests that progress in that field should not be tied to the question of how to make the best use of communications satellites. As to the latter, we are confident that adherence to the common carrier principle will bring the broadest benefits to the public and will do the most to encourage further technological advance. We note also that the F.C.C. in 1966 said it favored making Comsat's satellite facilities broadly available to the general public through the common carrier companies and that it would authorize their direct use only in unique circumstances. We applaud this position.



To help learn their jobs in telephone repair service centers, employees take a "programmed" training course that combines sound tapes, texts arranged to help the student teach herself, and guided practice. Training programs of proven quality can speed the learning process, strengthen qualities of judgment, and assure that wherever instruction is given it will not fall below the desired standard.



Opportunity to learn and achieve

Good service depends on continuous effort to find, train, and inspire men and women who have the will to serve well and can learn and apply the requisite skills. The need for such people is so great that it would be foolish as well as unjust to withhold opportunity because of color or religion.

The Bell companies recruit intensively in schools and colleges. In work-study programs developed in cooperation with the schools we offer many students summer and Saturday training in telephone work, with pay. Those who show promise are offered regular jobs when they

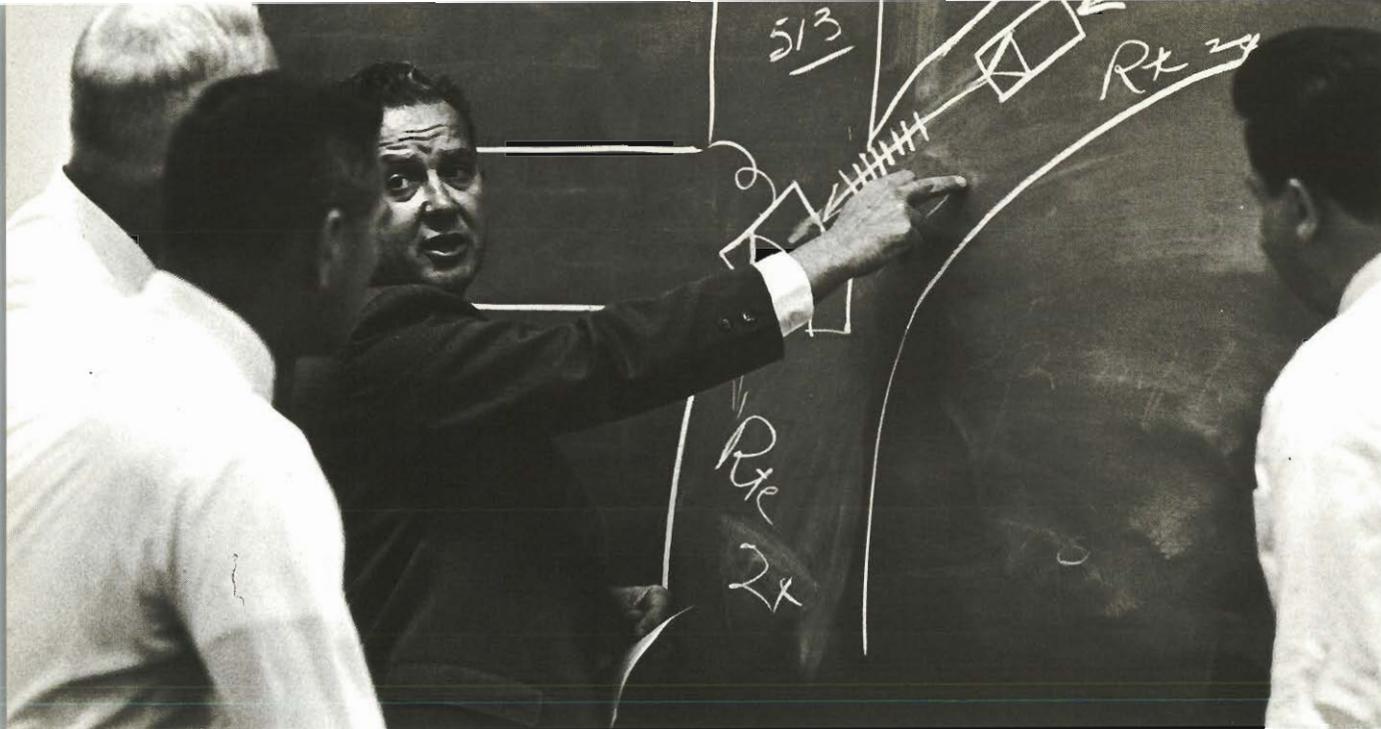
graduate. We are also adapting tests and training to encourage candidates' interest and effort. For example, one company has conducted tests and training in Spanish for Spanish-speaking applicants and those employed receive instruction in English.

We have a fundamental responsibility to see that work is done well. This cannot and will not be compromised. Consistent with the responsibility, however, we are fully committed to extend opportunity regardless of race, religion, or ethnic origin. In the last four years, while total Bell System employment has

increased about 15 per cent, non-white employment has doubled, from 25 to 50 thousand. This is not a final measure of accomplishment but it does emphasize that progress is being made.

Training and developmental activities in a progressive business can reflect as well as stimulate an innovating spirit. New "self-teaching" methods now help thousands of telephone operators and other new employees to learn their work better and approach their jobs with increased confidence. Changes in job content, to make the work intrinsically more interesting, show promise

These young men, enrolled in the summer employment program of one of the Bell companies, are working on wire connections in a telephone central office. The companies conduct numerous work-study programs organized in cooperation with the schools and designed to extend maximum opportunity.



Safety training has many aspects. A course in defensive driving uses talks, demonstrations, and discussion to emphasize the need to be alert to other drivers at all times. All drivers of telephone cars and trucks must also periodically demonstrate on-the-road ability to qualified instructors.

of producing better performance. Potential managers in training are challenged early in their careers to meet the tests of real responsibility. Candidates for promotion are thoroughly and objectively evaluated by experienced people at numerous "assessment centers." This procedure has materially aided our ability to identify management skills.

In the fast-changing environment of our business, we have conducted many seminars to help managers grasp at first hand the significance of modern computer-communications systems. Also, in such an environment it is more important than ever

to shed outworn ideas and habits. Self-examination and self-renewal are essential. We are therefore taking action to encourage teams of managers to analyze their own performance and criticize their own methods.

Furnishing good communications is in itself an important service to society but telephone people reflect their sense of responsibility in other ways as well. Last year 63 men and women received Vail medals for acts of noteworthy public service. The Telephone Pioneers, our industry's organization of people who have been long in the business, further extended their community service ac-

tivities. Telephone employees as citizens, and their companies as corporate citizens, went to work in many ways to help meet the social problems of our time. They taught courses, tutored dropouts, worked on committees, sponsored Scout Troops, cooperated with Government agencies and self-help organizations, located new buildings in urban renewal areas, collected clothing, gave laboratory equipment, gave money, helped children with reading problems. . . . The list could be much longer, but its force would be the same, namely, that this too is part of our opportunity to achieve.



The economics of regulated industry are a subject of vital importance. Several Bell companies have therefore been conducting economic seminars to stimulate academic interest and provide opportunity for a direct exchange of views among professors and members of telephone management. The meeting pictured was held at Cornell University in September 1966.

The process of progress

More than three million share owners, most of them individuals, held A.T.&T. stock directly at the end of 1966. Many more had stock held for them by brokers and trustees. Including this group, and considering also the large number of share owner accounts in the names of two or more persons, we estimate that more than 4,250,000 people have savings invested in A. T. & T.

The first essential for telephone progress is their—your—confidence and favor. Communications service needs a vast amount of capital. The Bell System can grow in service to the nation only if its stock is attrac-

tive to investors in comparison with other investments that present similar risks and offer broadly comparable opportunities for their savings to grow. This is the essence of our position before the F.C.C. and we are confident of its merit.

The second essential in the process of progress is technological advance. Bell System scientists and engineers have pioneered many if not most of the great advances in communications and Bell Telephone Laboratories maintains leadership today in the development of communications arts.

This research and development

effort has several functions, of which the discovery of new means for doing new things is only one. It is vitally important also to find new ways to reduce or eliminate old costs; to organize more efficient components in more efficient systems; to design and build equipment of utmost quality and reliability that will assure dependable service at reasonable price.

Our technical effort has been enormously productive in all these aspects and we intend to keep it so. In the last quarter-century the cost of intrastate telephone service has risen on the average less than half as



Bell Laboratories engineers at the new Indian Hill laboratory near Chicago test a "program" for an electronic switching system. Bays in the rear contain characteristic electronic switching equipment. These systems are somewhat like large computers but they must also meet many special requirements and there can be no "down time."

much as the cost of living and interstate long distance rates have gone markedly down. This cost performance in itself has greatly increased our markets. At the same time improvements in telephone instruments, in switching systems, and in transmission have made the service more convenient and more versatile. Today transistor technology, which has grown out of discovery at Bell Laboratories, opens up new opportunities. Electronic switching, communications satellites, ocean cables of increasing capability, visual communications, high speed Data-Phone* services, transmission systems that

convert all forms of communications into coded streams of pulses—these and other developments all reflect the productive strength of Bell System technical effort.

A third essential for good progress is to have a completely dependable source of supply of the best possible equipment. We accomplish this by owning Western Electric, which is just as interested in achieving Bell System goals as any other member of the System.

For example, our ocean telephone cables of the last ten years use vacuum tubes in equipment that is connected into the cables every few

miles at the bottom of the sea. These tubes *must* be reliable. Western Electric made them and none of them has ever failed.

In another aspect, such reliability might also be said to be a form of cost reduction or avoidance. But we are interested in all possible, practical ways to cut costs—and so is Western Electric. For example, last year the company purchased some \$1.6 billion of goods and services from more than 45,000 suppliers. In doing this Western Electric accomplished savings estimated at more

*Service mark of A. T. & T. Co.



At Western Electric's Merrimack Valley Works, manufacture proceeds on new equipment that can send many conversations simultaneously—in the form of coded pulses—along pairs of wires under city streets. With Bell Laboratories groups located in Western Electric factories, engineers often “overlap” development and manufacture to move work forward.

than \$30 million through centralized, competitive and knowledgeable purchasing and through freight consolidations and effective use of alternate services. (It may be noted too that many suppliers have found this cost reduction effort of great benefit to them, for the assistance given their own efforts to improve their methods and products has increased their ability to compete and has broadened their markets.)

In manufacture likewise, Western Electric's continuing cost reduction program accomplished savings in 1966 that have an annual value of millions of dollars. This program now

involves some 6,000 projects a year.

The wire and cable used in making local connections on our customers' premises and in telephone central offices presents an unglamorous but practical example of cost reduction. In office and apartment buildings this wire is pulled through conduits. Western Electric and Bell Laboratories engineers have now developed a new wire of smaller diameter and with a new slick jacket. More wire can be pulled through the conduits and cables having a similar slick jacket can also be placed more expeditiously. Savings in installation time alone may total \$20 million a year.

This also illustrates the great value of close teamwork among telephone company, Bell Laboratories, and Western Electric people—for that is how the job was done. In this and countless other instances, good results are achieved more quickly and effectively because designers, makers, and users share a common goal.

Incidentally, the new integrated circuit technology now developing will make this intimate association among designers and producers more important than ever. Why? Because these circuits represent a new interdependence of circuit design and production process. That is to



More than 2,000 Traffic Service Positions like these in Philadelphia are now in use. They make possible faster service on person-to-person and credit-card calls, and when charges are reversed. An improved, electronic Traffic Service Position System now being designed will permit broad expansion of this kind of service.

say, the very forms and functions of integrated circuits will depend heavily on the opportunities and choices indicated among alternative methods of production.

The unification of research, development, design, manufacture and operations has also done much to further the overall *compatibility* of billions of parts in a unified telephone system. This is surely a major reason why the United States has the best telephone service in the world and it will be just as important to top-notch service in the future.

Bell System teamwork involves a process of dynamic change in which

people must continuously develop their abilities to make good use of emerging technical resources. This requires large programs of education, as already indicated, and expenditures of millions of dollars for both on-the-job and classroom training and development. We believe education is the key to the future in this business as elsewhere and we are acting accordingly.

All indications are that advancing technology, well directed and well managed, will lead to communications services of greatly increased variety and scope. In particular, we believe the handling of information

by systems of computers and communications will play a large part in everyday life. But it is necessary to emphasize again the essentiality of good earnings that will attract to the business the capital needed to put new technologies to work. Research and development can be useful only as their results can be implemented. We see great opportunities and benefits ahead, for customers, share owners, and employees alike—but these will depend as always on freedom, under regulation, to manage, to earn, to take the risks and make the commitments that will maintain communications leadership.

Financial statements

THE BELL SYSTEM CONSOLIDATED FINANCIAL STATEMENTS on the following pages consolidate the accounts of American Telephone and Telegraph Company and its principal telephone subsidiaries (listed on page 3). These companies maintain their accounts in accordance with the Uniform System of Accounts prescribed for telephone companies by the Federal Communications Commission.

For the companies consolidated, all significant intercompany items are excluded from these statements. Investment in subsidiaries not consolidated as stated in the Balance Sheets includes the proportionate interest in the net assets of such subsidiaries, and the proportionate interest in their earnings is included in the Income Statements.

Most of the telephone equipment, apparatus and materials used by the companies consolidated has been manufactured or procured for them by Western Electric Company, Incorporated, the principal subsidiary not consolidated. Contracts with the telephone companies provide that Western's prices to them shall be as low as to its most favored customers for like materials and services under comparable conditions. Items purchased from Western by the telephone companies are entered in their accounts at cost to them, which includes the return realized by Western on its investment devoted to this business.

A. L. STOTT
Vice President and Comptroller

Report of independent certified public accountants

TO THE SHARE OWNERS OF AMERICAN TELEPHONE AND TELEGRAPH COMPANY:

We have examined the consolidated balance sheet of American Telephone and Telegraph Company and its principal telephone subsidiaries as of December 31, 1966 and the related income statement and statement of retained earnings for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and included such tests of the accounting records of each of the companies consolidated and such other auditing procedures as we considered necessary in the circumstances. We previously examined and reported upon the consolidated statements of the Company and its principal telephone subsidiaries for the year 1965. We did not examine the consolidated financial statements of the Company's principal nonconsolidated subsidiary, Western Electric Company, Incorporated and Subsidiaries, which statements were examined by other independent accountants whose report thereon has been furnished to us. Our opinion expressed herein is based upon our examinations and upon the aforementioned report of other accountants.

In our opinion, the consolidated financial statements (pages 27 to 32) present fairly the consolidated position at December 31, 1966 and 1965 and the consolidated results of operations for the years then ended of American Telephone and Telegraph Company and its principal telephone subsidiaries, in conformity with generally accepted accounting principles applied on a consistent basis.

Bell System income statements

AMERICAN TELEPHONE AND TELEGRAPH COMPANY AND

	(THOUSANDS OF DOLLARS)	
	Year 1966	Year 1965
OPERATING REVENUES		
Local service	\$ 6,354,655	\$ 5,961,279
Toll service	5,274,390	4,613,708
Miscellaneous	572,574	537,923
<i>Principally from directory advertising.</i>		
Less: Provision for uncollectibles	63,354	51,127
Total Operating Revenues	<u>12,138,265</u>	<u>11,061,783</u>
OPERATING EXPENSES		
Maintenance	2,147,072	1,956,943
Depreciation	1,775,121	1,624,485
<i>Portion of the cost of depreciable plant charged against current operations, approximately 5.1%.</i>		
Traffic	1,091,509	1,007,556
<i>Costs, principally operators' wages, incurred in the handling of messages.</i>		
Commercial	394,249	361,409
<i>Primarily costs of local business office operations.</i>		
Marketing	552,367	527,628
Accounting	391,023	370,822
Research and fundamental development (a)	82,602	72,535
Provision for pensions and other employee benefits (b)	525,810	490,727
Other operating expenses	458,417	404,417
Less: Expenses charged construction	157,309	145,975
Total Operating Expenses	<u>7,260,861</u>	<u>6,670,547</u>
Net Operating Revenues	<u>4,877,404</u>	<u>4,391,236</u>
OPERATING TAXES		
Federal income	1,601,478	1,435,761
State, local and social security	1,117,015	1,004,272
Total Operating Taxes	<u>2,718,493</u>	<u>2,440,033</u>
Operating Income (carried forward)	\$ 2,158,911	\$ 1,951,203

ITS PRINCIPAL TELEPHONE SUBSIDIARIES CONSOLIDATED

	(THOUSANDS OF DOLLARS)	
	Year 1966	Year 1965
Operating Income <i>(brought forward)</i>	\$2,158,911	\$1,951,203
OTHER INCOME (c)	281,165	261,217
Total Income	<u>2,440,076</u>	<u>2,212,420</u>
INTEREST DEDUCTIONS	402,818	362,235
<i>Principally on long-term debt.</i>		
Net Income	<u>2,037,258</u>	<u>1,850,185</u>
NET INCOME OF SUBSIDIARIES CONSOLIDATED APPLICABLE TO SHARES NOT OWNED BY A. T. & T. Co.	58,315	54,091
Net Income Applicable to A. T. & T. Co. Shares	<u>\$1,978,943</u>	<u>\$1,796,094</u>
EARNINGS PER SHARE	\$3.69	\$3.41
<i>Based on average A. T. & T. Co. shares outstanding, 536,107,000 in 1966 and 526,635,000 in 1965.</i>		

STATEMENTS OF CONSOLIDATED RETAINED EARNINGS APPLICABLE TO
AMERICAN TELEPHONE AND TELEGRAPH COMPANY SHARES

	(THOUSANDS OF DOLLARS)	
	Year 1966	Year 1965
BALANCE AT BEGINNING OF YEAR	\$5,811,235	\$5,107,881
ADDITION:		
Net income applicable to A. T. & T. Co. shares	1,978,943	1,796,094
DEDUCTIONS:		
Dividends on A. T. & T. Co. shares	1,179,435	1,079,758
Miscellaneous-net	8,004	12,982
BALANCE AT END OF YEAR	<u>\$6,602,739</u>	<u>\$5,811,235</u>

ASSETS	(THOUSANDS OF DOLLARS)	
	December 31, 1966	December 31, 1965
TELEPHONE PLANT AND OTHER INVESTMENTS		
Telephone Plant—at cost		
Land, buildings and equipment		
In service	\$37,209,053	\$34,313,951
Under construction	1,108,630	990,196
Held for future use	36,499	29,924
	38,354,182	35,334,071
Less: Portion charged to date to operations as depreciation expense	8,307,902	7,569,959
	30,046,280	27,764,112
Other Investments		
Investment in subsidiaries not consolidated (d)	1,713,048	1,620,016
Other (e)	177,860	184,184
	31,937,188	29,568,312
 CURRENT ASSETS		
Cash and temporary cash investments	1,293,366	1,495,716
Receivables—less provision for uncollectibles	1,485,803	1,334,489
Material and supplies	156,378	136,405
	2,935,547	2,966,610
 PREPAID EXPENSES AND DEFERRED CHARGES	345,545	283,767
	345,545	283,767
 Total Assets	<u>\$35,218,280</u>	<u>\$32,818,689</u>

PRINCIPAL TELEPHONE SUBSIDIARIES CONSOLIDATED

LIABILITIES	(THOUSANDS OF DOLLARS)	
	December 31, 1966	December 31, 1965
EQUITY		
American Telephone and Telegraph Company		
Shares (common)—par value (\$16 $\frac{2}{3}$ per share)	\$ 8,990,322	\$ 8,830,737
<i>Authorized 600,000,000 shares; outstanding at December 31, 1966, 539,419,299 shares.</i>		
Share installments (f)	156,654	363,000
Premium on shares	5,026,737	4,733,031
Retained earnings—see page 29	6,602,739	5,811,235
	<u>20,776,452</u>	<u>19,738,003</u>
Subsidiaries Consolidated—Applicable to Shares Not Owned by A. T. & T. Co.	<u>720,085</u>	<u>646,925</u>
	<u>21,496,537</u>	<u>20,384,928</u>
LONG-TERM DEBT (g)	<u>10,352,000</u>	<u>9,082,000</u>
CURRENT LIABILITIES		
Notes payable	168,000	293,000
Accounts payable	1,022,499	940,111
Advance billing and customers' deposits	299,627	280,678
Dividends payable	302,126	293,463
Taxes accrued	1,070,508	1,120,780
Interest accrued	123,146	104,807
	<u>2,985,906</u>	<u>3,032,839</u>
DEFERRED CREDITS		
Unamortized investment credit	329,858	260,173
Other	53,979	58,749
	<u>383,837</u>	<u>318,922</u>
Total Liabilities	<u>\$35,218,280</u>	<u>\$32,818,689</u>

Notes to Bell System financial statements

- (a) Principally cost of work carried on for American Telephone and Telegraph Company by Bell Telephone Laboratories. In addition, Western Electric Company incurs costs for development work.
- (b) The Company and its subsidiaries have non-contributory plans covering all employees that provide for service pensions and death benefits. These Companies have accrual programs under which regular payments, determined on an actuarial basis and charged against costs, are made to trust funds that are irrevocably devoted to service pension and death benefit purposes. The total provision for these service pensions and death benefits was \$376,895,000 in 1966 and \$371,714,000 in 1965.
- (c) Includes interest in earnings of Western Electric Company and its subsidiaries which amounted to \$172,963,000 in 1966 and \$168,032,000 in 1965. Also includes \$50,269,000 in 1966 and \$41,102,000 in 1965 for interest charged construction.
- (d) Interest in the net assets of subsidiaries not consolidated. The total investment in Western Electric Company, the principal subsidiary not consolidated, was \$1,584,910,000 at December 31, 1966 and \$1,491,218,000 at December 31, 1965.
- (e) At December 31, 1966 includes investments at cost in three other associated telephone companies (see page 3), \$97,187,000 and in Communications Satellite Corporation, \$57,915,000.
- (f) Installment payments and interest applicable to shares under elections to purchase by employees of the Company and its subsidiaries under the Employees' Stock Plan approved by shareholders in 1958. The Plan provides that an employee may cancel his election to purchase in whole or in part at any time and receive a refund which may be taken in cash or applied to the purchase of shares. A total of 72,000,000 shares may be issued under the Plan. At December 31, 1966, 61,445,000 shares had been purchased and the remaining shares were under elections to purchase.
- (g) At December 31, 1966 comprises \$143,000,000 maturing from 1968 to 1970, \$1,335,000,000 from 1971 to 1980 and \$8,874,000,000 thereafter. The Company and three subsidiaries have sold in January 1967 or have announced the intention to sell an aggregate of \$450,000,000 of debentures all maturing after 1980.



The Bell System has been closely engaged with the Institute of Rehabilitation Medicine at New York University Medical Center on a research project to improve communications for physically handicapped people. Here, A. T. & T. engineer and Institute therapist observe as patient uses a special elastic cuff with dialing pencil. It is hoped that these studies will lead to a better accommodation of equipment and people that will strongly encourage thousands of disabled individuals and have worldwide importance for rehabilitation programs.



American Telephone & Telegraph Company

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