

# Telephone

FOR THE TELEPHONE PROFESSION

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**Public - Some "Hows"**  
**Telephone Publicity**

**Million Calls a Year**  
**Sioux City**

**Experiment in**  
**munication**

**SOUTH ATLANTIC TELEPHONE & TELEGRAPH COMPANY**  
INCORPORATED  
**MIAMI, FLORIDA**

March 14, 1922.

**AUTOMATIC ELECTRIC COMPANY,**  
Chicago, Illinois.

Gentlemen:

The installation of our automatic equipment now being complete, I regard it as only fair that I should write you in appreciation of the efficient and courteous manner in which your representatives have handled this entire transaction.

We found your Mr. Barrington to be a very expert and agreeable gentleman; and the co-operation we received through your Messrs. Burfeind, Mahoney, Engh and others has been very satisfactory.

The equipment is measuring up to our fondest expectations. The public is satisfied and is expressing itself in no uncertain terms. We are very proud of the system, the equipment and the results.

Yours sincerely,

**FRANK B. SHUTT, Pres.**

# Telling the Public—Some "How's" and "Why's" of Telephone Publicity

*Comprehensive and Properly Organized Educational Methods Continually Applied, Are Cheaper in the Long Run Than Spasmodic Campaigns Induced by Particular Local Issues.*

By W. S. VIVIAN

Manager, Dept. of Public Relations  
Automatic Electric Company

**W**ITHIN recent years, public utilities have been giving publicity activities a great deal of consideration. By that, we do not mean to say that there has been no publicity work, but rather that the larger utility companies have only recently undertaken to formulate adequate, comprehensive publicity programs. Heretofore, it has been the custom to wait until some particular issue had manifested itself; when the company involved would contract for newspaper space and prepare advertising copy covering that particular issue, or possibly they would go a step further and prepare folders or dodgers which could be enclosed with bills.

It is now realized, however, that to wait until after such an issue has arisen before acquainting the public with the facts is not good policy; that the better and safer way, and in the long run the more economical way, is to educate the public concerning the business and its problems, and in so doing, create an intelligent, friendly sentiment that will establish confidence in that business. In conformity with this policy, every modern, up-to-date organization now recognizes the Public Relations Department as an essential unit in the promotion of satisfaction on the part of its clientele.

Publicity work for telephone companies is important not only when Automatic equipment is being placed into service, but at all times. But when Automatic equipment is being installed in any community, there is offered a splendid opportunity to inaugurate an active, educational program; one that can be made very effective and helpful. At such a time, the public is intrigued with the mysteries of operation of the new system; their curiosity is aroused, and they are in a very favorable and receptive mood to listen to the stories that the telephone company may see fit to tell.

## ERRONEOUS CONCEPTION

The average telephone user's conception of the telephone business is much too often represented by the telephone instrument in his home or place of business. His impression of the company is determined almost entirely by the service he receives, and by the appearance of and courteous spirit exhibited by the employees of the company.

A publicity program can be carried on in a number of different ways, but before we begin to describe them, perhaps we had better cite a few reasons as to why this work is so important.

The question of securing and maintaining rates that will produce sufficient revenue is always a live question with the average telephone company. If an adequate publicity program has been carried on, there will be little trouble or opposition in securing or maintaining proper rates. In the minds of many, a telephone company is a heartless, selfish, grasping entity that exists for the sole purpose of making big profits.

These people, in a general way, pay all bills under a sort of mental protest. Naturally, they do not want to pay a cent more than is necessary for their service, and if an increase in rates is announced, whether it be for a small or a large amount, they arise in indignation, hold mass meetings and condemn the company and its officials in a drastic manner; sometimes affecting an organization seriously—boycotting the company and causing big losses. Some have passed through that experience, and others have been so afraid they might have to pass through it, that they have not increased their rates, and are, therefore, showing a loss in the operation of their properties, much to the dissatisfaction of their stockholders.

## SELLING SECURITIES

If the company has sold itself to the community, has established confidence, has acquainted its users with the essential facts as to the necessity for an increase, has given them some conception of what a telephone plant is, and of the real value of its service, there will be no serious difficulty, as the average telephone user, in the last analysis, wants to be fair.

Large amounts of securities have to be sold to the public every year by the telephone companies. For example, in 1921, there were over 750,000 new telephones installed in the United States. To make these necessary additions and extensions to plant possible, \$200,000,000.00 worth of securities had to be sold. The purchaser, in almost every case, was of necessity a telephone user.

In the selling of securities, there are two different methods. The larger company, that has to secure anywhere from half a million to fifty million dollars, can deal directly with some large financial house, which has branches in the larger cities of the country, with highly trained salesmen in each place. Then, after the plan is agreed upon, word goes forth to every office and the clientele of each office is solicited. The entire issue is thus probably sold within a few days, often-times being over-subscribed within a few hours.

In this instance, there are three facts that help place the securities. First, the reputation of the financial house. Second, the statement of the company as published and vouched for by the financial house, and third, the organization and clientele of the financial house. These things make the work comparatively easy.

The smaller companies, however, who may want anywhere from \$10,000.00 to \$100,000.00, cannot make any such arrangement through large banking houses, because the costs would be prohibitive. The smaller company must, of necessity, sell its securities locally, in the territory it serves. Thus, in the latter instance, if they have kept the telephone using public acquainted with the requirements of its business, its investments,

# A Novel Experiment in Communication

**A Talk on Radio Telephony Delivered by Mr. H. D. Critchfield, of Automatic Electric Company, Carried Over Five Hundred Miles of Toll Circuits from Chicago to Lincoln, and Broadcasted at the Terminating Point by Radio.**

(EDITOR'S NOTE:—Recently a request was received from the Lincoln Telephone and Telegraph Company by Automatic Electric Company at Chicago, asking that a talk be delivered by long distance telephone by one of Automatic Electric Company's officials, on the subject of Radio Telephony, so that it could be sent out from the broadcasting station at the terminating point at Lincoln.

Accordingly, a definite time was set, and at the appointed hour, Mr. H. D. Critchfield, Vice-President of Automatic Electric Company, secured a long distance connection to Lincoln, and briefly told the fascinating story of radio.

Feeling that this talk will be of more than passing interest to those working in the various branches of communication engineering, we are reproducing it in full.

In commenting on the experiment a few days later, Mr. R. S. Brewster, Traffic Superintendent of the Lincoln company, says: "Professor Jensen, who has charge of the radio broadcasting apparatus at Wesleyan University, and myself feel that the experiment worked out better than we had hoped. Mr. Critchfield's voice passed through telephone repeaters, over five hundred miles of wire, was picked up by an amplifying set through a loud speaker. It was then picked up by placing a transmitter in front of the loud speaker and broadcasted by wireless."

Mr. Critchfield's talk follows:

GOOD evening! How are you all tonight? This is H. D. Critchfield of Automatic Electric Co. talking from the main office of the company at Chicago. I have been asked to say something in three or four minutes about radio, particularly as applied to telephones.

Like many other important and useful things which have been developed for public convenience and welfare, the fundamental principle of wireless telephony was discovered by accident. This discovery was made about 40 years ago by Duddell and others while they were working on a string of electric arc lamps fed from the same source. It was noticed that the current from one of the arc lamps varied in accordance with words spoken near it, and that the current varied similarly in distant lamps. It was also noticed that one of the arc lamps emitted spoken words. This was phenomenal, of course, and attracted great interest.

It was found that under certain definite conditions, when everything was favorable, words spoken near one of these lamps were repeated substantially in the same tone in lamps remote from, but electrically connected with, the arc lamp near which the conversation occurred. This was not then considered as having any particular commercial value, and further investigation was abandoned for the time.

About 20 years later, during the experimental development of the wireless telegraph idea by Marconi and others, the so-called "singing arc" incident of 20 years before was recalled and efforts were made to make connection between one of these arc lamps acting as a transmitter and one of the highly developed telegraph receivers. This plan was made to work.

Incidentally it may be said that the wireless telegraph was developed and practically perfected before successful results were attained in the development of the wireless telephone, in fact, relatively little progress had been made with wireless telephony until after wireless telegraphy became a commercial success.

The vehicle used, namely ether, is the same in both wireless telephony and wireless telegraphy, but the method of its adaptation is radically different, and the development of wireless telephony necessitated the invention of new methods of transmission.

Prior to the perfection of wireless telegraphy, this research work had been done almost entirely by individuals, but the results attained thereby challenged the attention of the United States Government and caused an intensive effort to be made to develop wireless telephony.

The art remained in this undeveloped state until about 1908. The chief obstacle to be overcome was the inability to provide a suitable telephone transmitter. Many were made which would operate over a short distance and for a short period of time, but none had been so perfected as to be able to meet general commercial requirements. This difficulty, as well as that of the instability of the arc, which fluctuated (as you may notice in the ordinary arc lamp on the street) prevented proper operation.

## EDISON EFFECT

In 1898 Edison discovered that the ordinary electric lamp was actually throwing off a very large amount of energy in the form of electrons. A few years later DeForest found a means of controlling the emission of these electrons by the application of a grid surrounding the filament from which the electrons were emitted. This grid was made on the order of an old fashioned slat window shutter, which could be opened and closed electrically in such a manner as to control the flow of electrons to a nearby plate. All these were enclosed in a bulb or tube. This device was developed primarily for radio telegraph work, and as developed by DeForest, was known as a detector or vacuum tube. It was found also to be an extremely sensitive relay. Its use is not limited to wireless telegraphy or telephony, but it has amplifying powers and is used in long telephone lines as a repeater, thus overcoming the loss in transmission, so that by the insertion of these tubes, the line over which the conversation takes place may be extended to almost any length.

Up to this time no transmitter has been found which would carry the amount of energy required for radio transmission over a considerable distance. The vacuum tube, however, used both as detector and amplifier, overcame this difficulty.

Shortly after this it was found that the vacuum tube could also be used as a generator, producing a current similar to that produced by the arc, which, along with its instability, was thus eliminated.

From this it will be seen that the development of wireless telephony and telegraphy from the initial discovery about 40 years ago to the present time, has been accomplished by a series of steps. The present state of development has been attained by discoveries, both accidental and otherwise, and by the concentrated efforts of a great many men, including some of the best known electrical scientists the world has known.

# Automatic Telephone

*A Journal of Information for the  
Telephone Profession*

Issued Monthly by  
**AUTOMATIC ELECTRIC COMPANY**  
CHICAGO, U. S. A.

H. E. CLAPHAM :: Editor

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

## "No Obligation"

THE dissemination of information concerning Automatic telephone equipment among those engaged in the telephone business is of value and importance not only to Automatic Electric Company as manufacturers of the equipment but to every telephone operating man, whether he is contemplating the installation of automatic equipment in the near future or at any other time.

By this we mean that the status of automatic telephony is such that he is doing himself and his company an injustice if he neglects to take advantage of every opportunity to secure the facts concerning automatic equipment.

If, by installing automatic equipment he can save his company money or in any other way further its interests, he should know it at once. If, on the other hand, the time is not yet ripe for the installation of automatic in his exchange, or there exists some other valid reason for continuing the use of existing equipment, a complete knowledge of what automatic has accomplished and can accomplish, will do no harm, and may serve to help him at some future date.

The point we wish to emphasize is this; that information concerning automatic is always "on tap"; that no telephone company need fear incurring any obligation by requesting such information; that there is nothing to be lost in securing such information. There is instead, an almost certain opportunity for financial gain.

## Automatic and Maintenance Costs

**"BUT** isn't automatic equipment very complicated?"

A manual telephone operating man had been drawn into a conversation regarding the merits and demerits of various types of telephone equipment. After expressing his enthusiasm over the high standard of service rendered by automatic, and the economic advantages offered by its use, he summed up his only possible objection to adopting it in the above question.

It is to be assumed that, in referring to automatic equipment as complicated, he meant that it might be so complicated that the expense necessary to maintain it in first class operating condition cannot be justified. Otherwise the objection has no meaning.

Of course automatic equipment is complicated. It would be impossible to construct telephone equipment capable of meeting all the complex service needs that exist today that would not be complicated. Rendering

telephone service that is reliable, accurate and uniformly prompt under many and different conditions of operation, is a complex function, and requires the use of complex apparatus.

Some manual telephone equipment is not quite so complicated as automatic, because it is not possible to render with it, the same high grade of service, day in and day out, as is possible with automatic. So many things essential to first class service are, with manual operation, left undone. On the other hand, it would be easily possible to construct automatic equipment that would be less complex than modern manual equipment, but the service would suffer accordingly.

But, after all, the real question is not whether automatic is complicated, but whether it is unduly expensive to maintain in first class condition over a long period of years. No arguments or theoretic reasons that we can set up, are half as convincing as the maintenance records of those companies that have been using automatic for years.

We could take up considerable time and space explaining the simplicity of adjustment routines in automatic exchanges, and in enlarging upon other theoretic reasons for the low maintenance cost of automatic equipment; but we would rather leave it to all prospective users of automatic equipment to get the information from those who know automatic, not from hearsay, but from continual use under actual operating conditions.

If they will do this they will find, that in spite of the alleged "complexity" of automatic, it is no more expensive to maintain, and requires the services of men no more "expert," than for other types of equipment that render lower grades of service.

## For Full Metallic Construction

**I**N TALKING with the managers and owners of small telephone companies at various state telephone conventions, it has been found that many of them still operate their exchanges on grounded lines.

This is an unfortunate and dangerous condition which a live company cannot ignore. Even where other conditions are most favorable, service on grounded lines can never be first class. In communities where high tension lines are being installed the interference becomes too severe to be tolerated.

Even if no high tension lines have yet been installed in the community served, there is no telling just how long it will be before they reach that community. The amount of notice available is frequently too short for the proper steps to be taken early enough.

One other point: For many of the small companies now operating grounded magneto systems, the time will eventually come when they must convert to common battery operation, which, whether automatic or manual, will necessitate full metallic construction. They will save considerable time and money for themselves and improve service for their subscribers by rehabilitating outside construction now.

In applying automatic equipment to telephone exchanges, we have made just one reservation as to construction requirements: Lines must be full metallic. This is not so much because automatic operation makes it necessary. We could easily design automatic switches to operate on grounded lines, but the poor transmission would detract too much from the established service value of automatic equipment. Whatever the conditions, or whatever the type of equipment used, good service demands metallic construction.

is light and is fitted with a small weight at the contact end as indicated in the diagram. When this relay is energized, the armature in striking against the spring assembly causes the weighted spring to vibrate, thus rapidly making and breaking the circuit of the meter. The armature which operates the ratchet mechanism of the meter has a long stroke and is, therefore, not influenced by these short impulses of current.

Reference to the figure will show that as soon as the starting relay of the master switch is energized, a circuit is closed through the winding of the vibrating relay. The springs of this relay will not, however, come to rest and close a circuit to the meter until the master switch has been moving for an appreciable interval. By changing its armature stroke and spring tension, the vibrating relay may be adjusted to close the meter circuit as slowly as may be considered desirable. In this way each movement of the master switch which is of sufficient duration to permit the possible loss of calls is recorded on the meter.

The data made available by this meter is not of so much value as at first appears. What is more important than knowing the number of times a trunk group becomes busy, is knowing how many calls are being lost because of this busy condition. It is not economically possible to prevent all calls from being lost, but the standards set by the operation of Strowger plants indicate that the service may be considered good if an average of not more than one call in one hundred is lost.

These data are furnished by an additional meter controlled by a vibrating relay similar to the one just described. As indicated in the diagram the operating coils of all line switches normally receive battery current through the break springs of the master switch "open main" relay. When the master switch is at rest, the winding of the vibrating relay is shortcircuited by these springs. As soon as the master switch begins to operate, the opening of the "open main" relay springs compels the operating coil to draw current through the winding of the vibrating relay if any call is attempted.

The resulting current is not sufficiently powerful to operate the line switch, but if the master switch remains in operation for an interval of three or four cycles, the vibrating relay comes to rest in an operated position, and causes the meter to record the call.

By taking readings at periodic dates and tabulating the results, a very definite check may be kept on the efficiency of the line switch trunks, and the line jumpers at the distributing frame rearranged accordingly.

## Erie Company Holds Banquet

THE annual banquet given by the Mutual Telephone Company of Erie, Pa., to its employees, was held on Thursday, April 27th, at the Kahkwa Park Inn, Erie. About 140 guests were present.

The banquet this year celebrates the twenty-fifth anniversary of the company. The toastmaster was Mr. John Z. Miller, general manager, who has been actively associated with the company from the beginning.

The Mutual Telephone Company converted their entire plant to automatic operation about four years ago. It is significant that this is the fourth annual banquet, and that only seven employees were absent because of duties involved in the operation of the telephone plant.

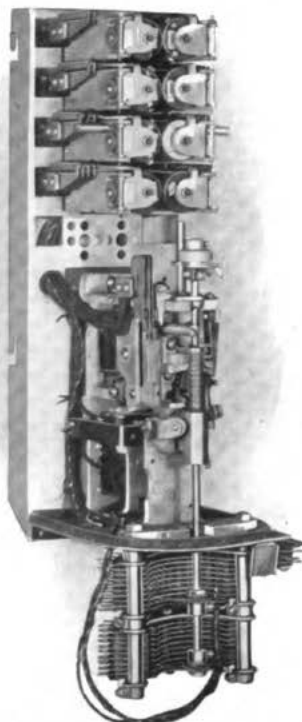
Mr. A. A. Culbertson, president of the company, spoke briefly and called attention to the satisfactory and prosperous year that the company had had and mentioned that several departments of the organization were 100 per cent stockholders.

The program was interspersed by songs led by Mr. M. V. Wright, plant superintendent. Dancing concluded the evening's entertainment.

## Cuban Telephone Company Uses Novel Publicity Copy

BELOW appears a somewhat free translation of an unusual piece of advertising used by the Cuban Telephone Company recently in one of the Havana papers. The idea is passed along to other automatic operating companies as possibly being of some value to them, too.

### DO YOU KNOW ME?



I am one of your best friends, ready to serve you faithfully, promptly, and accurately, twenty-four hours a day, and every day in the year.

I never tire.

I never sleep.

I am seldom indisposed.

I do exactly as you direct, but only as you direct.

I am unable to guess your will, but I am eager to obey it as you express it.

Deal fairly with me, and I will not disappoint you.

Now you know who I am—the connector—the mechanical operator—of the automatic telephone.

I ask of you but two things—that you will not move the receiver hook, and that you will be careful to dial only the number that you really desire.

# "We Just Lock the Doors and let the machinery take care of the service"

**T**HE General Manager of a company operating seventeen small exchanges writes: "The three Automatic exchanges we have in operation in our territory are giving very satisfactory service and are proving economical. Three more Automatic exchanges will be installed this summer, making a total of six out of our seventeen exchanges full Automatic.

"These six points are located contiguous to large manually operated toll centers, enabling us to give continuous service. We just lock the doors to the Automatic offices and let the machinery take care of the service."

Fair profits and first-class service in small exchange operation can no longer be assured through manual methods. Operator costs are too high; part time operation is inadequate; service cannot be brought up to the desired uniform high standards.

The C. A. X. equipped exchange employs the up-to-date method; service is uniformly rapid and accurate, is continuous, and no operators are needed. "Just lock the doors," and the equipment can be relied upon to do the rest. All toll or other service requiring the aid of an operator can be handled at a common center.

The Community Automatic Exchange is the logical solution to the small exchange operating problem. Many companies whose small exchanges were sources of annoyance rather than profit, can now testify to the value of C. A. X. operation in increasing profits and bettering service. Let us study with you the way in which Automatic can be fitted into your exchanges; we will be glad to make such studies or furnish estimates without cost or obligation.



## Automatic Electric Company

*Factory and General Offices:*  
**CHICAGO, ILLINOIS**

### BRANCH OFFICES:

New York City 21 East 40th St.	Detroit 525 Ford Bldg.
Cleveland 415 Cuyahoga Bldg.	Washington 905 Munson Bldg.
Philadelphia The Bourse Bldg.	Cincinnati Union Central Bldg.
Columbus 516 Ferris Bldg.	Los Angeles 238 San Fernando Bldg.
Boston 445 Tremont Bldg.	Pittsburgh 608 Fulton Bldg.
Rochester Mercantile Bldg.	Kansas City 1001 New York Life Bldg.

### ASSOCIATED COMPANIES

**International Telephone Sales and Engineering Corporation, New York**

International Automatic Telephone Co., Ltd., London  
Compagnie Francaise pour l'Exploitation des Procédés  
Thomson-Houston, Paris

Automatic Telephone Mfg., Co., Ltd., Liverpool

Automatic Telephones, Australasia, Ltd., Sydney

## The Home of the Automatic



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