

NEW ENGLAND
**TELEPHONE
TOPICS**



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Volume IV

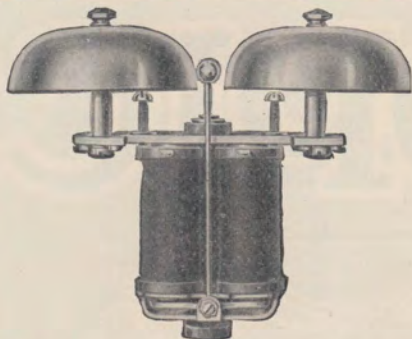
BOSTON, MASS., JANUARY, 1911

Number 9



MR. MANAGER

This is the efficient No. 38 Type Ringer which is furnished with every



Western-Electric

NO. 1317 TYPE MAGNETO TELEPHONE

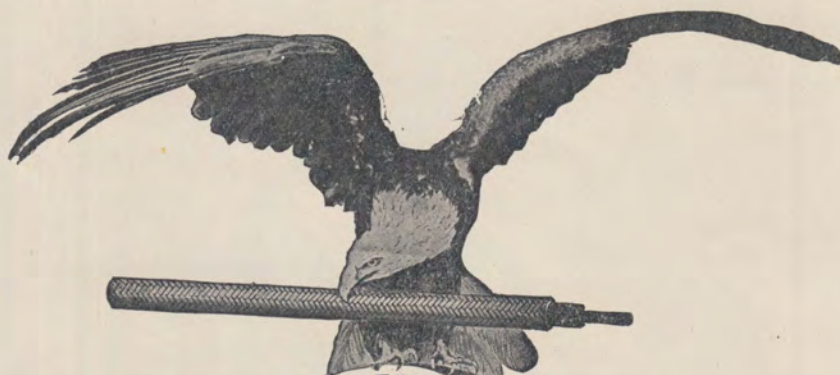
It is as near trouble proof as a ringer can be. There is no other ringer quite so simple or as good. The large 3-inch brass gongs give a loud, clear tone.

A screw driver is the **only** tool required to adjust either the gongs or the armature.

The No. 1317 Type Telephone is the Standard.

Write us of any one to whom you would like us to send a sample set for inspection and test.

Western-Electric COMPANY



**Rubber
Insulated
Wires**

of Every Description



**Telephone
Wire**

of All Kinds

Bay State Insulated Wire & Cable Co.

Main Office and Factory, Hyde Park, Mass.

New England Telephone Topics

ISSUED MONTHLY BY THE NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY,
AND DISTRIBUTED, WITHOUT CHARGE, TO ITS EMPLOYEES AND TO
EMPLOYEES OF SUB-LICENSE CONNECTING COMPANIES

Vol. IV, No. 9

EDITED BY EMPLOYEES, FOR EMPLOYEES

January, 1911

JUST BETWEEN OURSELVES.

Emergency Practice and Some Results.

A COOL head and a quick wit is always a winning combination in an emergency. No one can tell when the emergency will arise, therefore we should be prepared for it any time. One of the best methods of preparation is to study the emergency rules and conjure up imaginary conditions under which these rules might be applied. By so doing, when the condition presents itself, the proper course of action almost automatically suggests itself. The following stories illustrate how the proper application of emergency rules has resulted in great public service. The inevitable result of an incident of this kind is to win the public's appreciation not merely for the individual operators concerned in such a call but also for the company that employs them:

At about eleven o'clock on the morning of January 3, a local operator in the Fall River exchange received the following message: "Get me the toll operator, I must have help at once." The receiver was immediately hung up. The operator, realizing that it was an emergency call, notified a supervisor, who, thinking it might have come from the West Island Club pay station on that line, rang the number and received this response: "There is a man struggling in the water, and unless some one from Little Compton or Seaconnet Point can help us he will be drowned." The supervisor immediately rang Little Compton, R. I., and with the assistance of the operator at that point, reached several parties located near the waterfront and asked them to go out in a boat to the assistance of the drowning man. In a very few minutes he was reached and his rescue effected. He proved to be a keeper at the Seaconnet Point lighthouse, whose dory had capsized while he was on his way to the mainland. While this was going on, the supervisor in Fall River called a physician in that locality and notified him of the accident. The physician reached the club in a short time and was prepared to aid in reviving the exhausted man. There is little doubt but that the man would have perished had it not been for the timely assistance brought to him by the efficient efforts of the Fall River operating force.

A case of appreciation of good work by our night force occurred in the Waltham exchange Christmas morning. The night supervisor was working all night in the absence of the regular operator, and at about one o'clock she received a call for a doctor, followed by several calls of an emergency nature from the same subscriber, which she passed as quickly as possible. The next evening the subscriber called and said that he wanted to thank her for her quick work, as through her promptness the life of one of his family had probably been saved. To further show his appreciation the subscriber sent her a large bouquet of roses.

On December 25 a fire was discovered in the residence of a Wakefield subscriber who immediately resorted to the telephone. The operator upon answering the line signal was met with a sound something like "Fire." The party calling apparently had a very bad cold, as it was rather difficult to understand him. The operator immediately connected him with the Central Fire Station. After the fire was out and the excitement had subsided, this subscriber called the chief operator to thank her and those who assisted in so ably handling his call. Subscriber furthermore said that if it had not been for the telephone and the manner in which the call was handled his house would in all probability have been completely destroyed.

On the morning of January 2 an emergency call was passed by a Medford subscriber for Medford 138-2 (the fire station). The operator listened on the line to determine whether it was an emergency call and on hearing that there was a fire, rang the fire station nearest the point at which the emergency call originated. When the subscriber finished talking with 138-2 she connected him with the nearest station. The chief of the Fire Department called the Medford chief operator to thank her for the prompt action taken and the tact exercised in handling the call, stating that same had averted considerable trouble and loss to the owner whose building was on fire.

Good Work by Brookline Operator.

Calls received during the late hours of the night or the early hours of the morning are few in number, but it should be remembered that what they lack in volume they make up in importance. For that reason vigilance and quick thought in operators assigned to these hours are especially important. Emergency lists are kept available for instant use, so that on occasions similar to that outlined in the following letter all may be able to bring about equally satisfactory results. Doubtless the operator concerned reckoned it all a part of the "day's work," and hardly gave a thought to the incident after locating the nurse in question, but that certainly was not the estimate placed by the caller upon the service rendered, as witnessed the following letter from Mr. Prendergast:

"Manager, Brookline Office,
New England Telephone & Telegraph Co.,
Brookline, Mass.

Dear Sir: Between two and three o'clock yesterday morning the illness of a member of my family increased so that it became necessary to secure without delay the services of a trained nurse. I could not reach through Main the nurse whose telephone number I had, but knowing that another nurse, a Miss Baldwin, lived in Brookline I decided to try to reach her, but did not know the number or name under which her telephone was located. I stated the case to your chief operator who entered very earnestly into the situation and in

some way was able to reach Miss Baldwin, resulting in her getting to my house shortly after three o'clock. My object in writing this is to commend the courtesy, diligence, and success exercised by the chief operator whose name I would like to know.

Very truly yours,
D. L. PRENDERGAST."

Some Interesting Toll Calls.

A celebrated English painter was asked how he mixed his pigments to obtain such marvelous color effects.

"With brains, sir," he replied.

The same answer would describe how some toll operators handle their calls in order to get certain positive results. "Operating Practice" doesn't tell, because each call is peculiar to itself. The operator who trains herself to think quickly, however, and to excite her imagination in a logical way, can do much, even in a very short space of time, to produce results that leave a lasting impression in the minds of subscribers, as witness the following incidents:

The following history of a call recently originated in Gloucester, shows how easy it is to overtake a railroad train without even leaving your own house. At 11.04 a.m. a call was passed by a Gloucester subscriber for a Mrs. P——, who had left Gloucester on the 10.20 a.m. train for Boston, due to arrive at 11.15. Mrs. P—— was not expecting this call and would have to be intercepted as she left the train at the North Station. A detailed description of her clothing and general appearance, as well as of the person with whom she was travelling, was obtained by the operator and transmitted to the North Station, where a messenger was detailed to await the train. The train was several minutes late, but, thanks to the complete description of the person wanted, as obtained by the forethought of the Gloucester operator, the messenger was able to locate her amid the crowd of passengers, and at 11.40 she was talking to the Gloucester subscriber so anxiously trying to overtake her.

How a Pittsfield operator did a quick stroke of work in nine minutes, one morning recently, is told in the following narrative: At 10.20 a pay station call was received and the caller stated that she wanted to intercept at Albany a younger sister who was about to take the 10.30 train for Pittsfield. A call was passed for the information at the Albany station, and information was asked by the operator to try and locate Miss Blank, the sister referred to. At ten twenty-nine the operator called them a fourth time and found information was just about to call us to say the sister was there but couldn't wait. The operator thereupon directed the Station Information to tell the sister that she must not take the train as her people wanted to stop her, and would explain as soon as the connection could be established. She obeyed this command.

As soon as the party line on which she had made the original call was not "busy," the Pittsfield caller was connected with the sister in Albany, and both expressed their obligation to the diligent Pittsfield operator.

Sunday, December 18, a subscriber in Natick had called a meeting of electricians in Boston. A man from Portland was coming as his guest. On account of a death in his family, the Natick subscriber was unable to meet the Portland party, so attempted to reach him by telephone. He called his residence and office in Portland, but was told that he was on his way to Boston. The South Framingham operator called the depot in Portland and asked the ticket agent to see if he was there. The agent went out to see if he was on the platform and not finding him, he went through the

train which was about to leave for Boston. In thirteen minutes from filing time, the Portland and Natick parties were in communication. The Natick party thanked the South Framingham operator for the good service rendered.

A subscriber in the Greenfield exchange called the supervisor one day recently, very much disturbed because he had been called to the telephone, notified that some one in New York wanted him, and after several moments of patient waiting was told that the call was from a pay station and that the person had gone. The supervisor told the subscriber that she would get any possible information from New York, as to who called, etc., and let him know the result. New York gave the calling number as Spring 2623, which was a public pay station. She also gave the name of the person calling, which proved to be the same name as that of the Greenfield subscriber. Upon referring to the New York directory, a telephone was found listed under the name of the calling subscriber, the number being Franklin 2623. Thinking that there was a chance that the call came from this telephone, the number was called and the party was found awaiting the connection to Greenfield. The exchange name had been incorrectly recorded at New York.

Compliments of the Season.

We do not expect subscribers to issue special votes of thanks every time they get good service. There is no good reason why they should feel under special obligation to do so. They are entitled to just that by the terms of their contracts with the company. It may be assumed that their service is satisfactory so long as they do not feel called upon to voice their dissatisfaction. Nevertheless, a number of very good letters recently have been received, indicating that the effort to give better service is appreciated by subscribers. Here is one from a Hingham subscriber:

"I wish it were in my power to express my appreciation of the telephone service during the past year, in a more substantial manner than mere words, but it may please you and your assistant operators to know that your work is appreciated by me. I think for prompt and efficient service and unvarying courtesy and patience, sometimes under very trying conditions, all deserve the greatest credit and praise, and it is a pleasure to me to so testify. Wishing you each and all a Merry Christmas and Happy New Year, I am, most cordially yours.

A Concord subscriber, after commending the service in his exchange, adds:

"The telephone is no longer a luxury but a positive necessity in the modern home. As for myself, I should refuse a mansion in the skies unless assured that one had been previously installed there."

A quotation from a letter from Frank E. Davis, a manufacturing jeweler, of Northampton, reads as follows:

"The New England Telephone and Telegraph Company has reached the highest plane of perfection of any corporation I have ever had dealings with. In fact, I have often made the remark that no company ever existed, having a complete and undisputed monopoly, which takes so much pains to please its patrons as the New England Telephone and Telegraph Company. When an opportunity is presented to make its service better, no expense is spared to make that service perfect."

Here's one that has been sent to the Plant Department to show the construction forces how keenly a



OPERATING ROOM IN THE OXFORD CENTRAL OFFICE IN BOSTON

This picture gives a comprehensive view of the interior of a Central Office. Oxford is not by any means our largest office, but its construction permits a better photograph than any other.

quick installation is appreciated. It was written January 5, by George B. Glidden, of Brookline:

"I had a fire at my apartments, 20 Winchester Street, at 10.20 a.m., Monday. The wires were all burned out. I understand from my folks that the telephone was connected temporarily and was ready for use almost as soon as the firemen left. It was a great convenience and I wish to express my sincere thanks for your promptness."

More Good Work.

It feels good to be able to do things under our emergency rules, and it feels good to have people for whom some special effort has been made under these rules manifest appreciation as does Mr. Howard T. Campbell, of Malden, in this letter to Contract Agent Clapp:

I wish to thank you, as a representative of the New England Telephone and Telegraph Company, for your prompt installation of telephone in my home, which I assure you is greatly appreciated because of the sickness of my wife, who is left alone in the house during the day. Taking the matter up the day after I signed the contract in Boston, I explained the case to you and was assured that everything possible would be done to hurry the telephone. You told me the following day, that a new line would be required. Before I had a chance to call you up again, the telephone was put in. I consider this a great kindness on the part of the company, in getting my telephone in four or five days under the conditions stated above, and in one of your busiest times.

We all know the complications arising from a "Don't Answer" report where the person called is slow in answering and the connection is taken down. When the person does respond he does not realize that any operator in the exchange might have called him and he usually feels a grievance against his own operator, who probably doesn't even know that he has been called. It is refreshing to find a subscriber who is willing not merely to acknowledge his own error but to go to the length indicated in the following incident:

On December 25, a subscriber called the manager at Northampton, about 7 p.m., and wanted to know if he could tell him the operator who answered his call in the morning about 9.30 a.m. He was informed that this was impossible as there were seven operators at the board at that time, but if he had any complaint

to make about the service the manager would be very glad to look into the matter for him. The caller explained that in the morning he had been unable to get a party he was calling and that he had accused the operator of not ringing them. Since that time he had found out that the party was not at home and he wanted to apologize to the operator for saying what he did.

J. P. O'Brien, of Augusta, Me., writes the following letter to Manager Herbert, under date of January 6, 1911: "I thought perhaps you, as manager of the Telephone Company, might like to know of the value of the telephone to me yesterday morning. We were awakened about one o'clock by the smell of smoke, and found that a bad fire was in progress in our home, and working rapidly toward the roof. By the use of the 'phone we managed to reach a number of our neighbors, and thereby saved our buildings from total destruction. You may well realize now that I appreciate my telephone more than ever."

Brought Son to Dying Mother.

How important the telephone is, even to a non-subscriber, and what a valuable outpost the ordinary Pay Station, with its Blue Bell sign may be, is indicated by the following story from Pittsfield, Mass. In this case the message happened to be sent to a Pay Station. The importance of these Pay Stations might also be illustrated by showing that messages sent from them have very effective handling.

A rather interesting call was passed and completed from the Pittsfield, Mass., exchange recently. An old lady who was dying had a son in Worcester, Mass. His friends were very anxious to reach him but did not know where he lived in Worcester. The only information they had was that he worked for the Nelson, Morris Beef house. A call was passed at 7.45 p.m., and the operator was asked if she would try and locate the young man, as his mother was very low and not expected to live but a few hours. The toll operator took the call up with the Worcester operator, the man was located, called to a pay station, talked with his friends in Pittsfield and caught an express train and reached his mother's bedside before she died. It was learned from the young man that two telegrams were sent to him in Worcester, one at 5.45 and one at 6.30 p.m., and at time of leaving Worcester he had not received either.

REVENUE ACCOUNTING METHODS.

How Millions of Telephone Charges Each Month are Accurately Kept in the Boston Office.

By E. W. LONGLEY, AUDITOR AND COMPTROLLER.

AT the close of the month, during the short period of three days, 255,000 statements of account are mailed within the States of Massachusetts, Maine, New Hampshire and Vermont, to patrons of the New England Telephone and Telegraph Company. These statements, stacked up, before folding and placing in envelopes, would make a pile 85 feet high, and in one year a file 1020 feet high, or about five and one-half times the height of the Ames Building, Boston's highest building.

Study and experiment taught us that Uncle Sam could deliver these statements better and cheaper than we could. If it had seemed practicable to spread out deliveries through the month, the statements might quite likely be delivered more cheaply by collectors than by the Post Office carriers, but uniformity in the time of delivering bills has seemed to be desirable. The United States Government practically places at our disposal the services of 77 men for the three days to deliver this tremendous mail from the offices of the Telephone Company to the offices and residences of the telephone users. Of course, the bill for postage is high, but all things considered, there is no cheaper way of doing the work that pays so well in results.

When one of our patrons, in going through his mail, finds a statement, usually called a bill, from the Telephone Company, there is nothing about that bill that would seem to call for anything more than a little care in its making. As a rule, it is not an especially long bill and any pupil of a grammar or high school could write it out with ease from a proper record. Of course, that is all a bill is — a copy of a record existing somewhere, compiled by somebody, which shows how much should be paid by a particular patron as his share of the cost and profits incident to carrying on the business, but while making the bill is a fairly simple matter, the compiling of these records is complex and when the difficulties of making bills and compiling records are measured by the volume of work done, they become large.

Charges Number Millions a Month.

A telephone patron must be charged with just his share of the telephone business and with no more. Anything else on the bill constitutes an error. As the charges in a month are measured by the millions, it is necessary to hire clerks who are naturally accurate, but to hire accurate clerks is not quite enough. Their work must be checked over and proved as far as possible, and even then troublesome errors slip into the work.

After all, the human brain is a kind of machine and it plays a good many of the tricks which a machine plays. With the best adding-machine that is on the market, there are times when it will persistently put down five or six as the addition of two and two. And when the records of a phonograph become worn, they grow faint and scratchy. Now the adding machine is made to add accurately and the phonograph is made to talk well and sing well, and they will do these things until they are tired or something happens to some of their parts, and then they have to be rested and doctored up. It is exactly so with the brain of a clerk. Sometimes

his brain produces six as the total of two and two, even though he is doing his best to fix his attention on the work that he is doing.

One of the commonest tricks of the brain in accounting is the reversal of figures in copying. For example, there are times when a clerk copying the number 2136 will unconsciously write down the copied amount as 2163, reversing as you see the last two figures. This is a perfectly unconscious process and cannot be altogether guarded against except by having work checked and verified.

As a bit of information, not relating directly to this subject, but nevertheless interesting, it may be said that errors made by reversal of two figures always result in an error in addition which will equal a nine when the units in the error are added together. Thus, if you were adding \$34.54 and \$21.36, the correct total would be \$55.90, but if you copied the amounts as \$34.54 and \$21.63, you would get a total of \$56.17, a difference from the correct total of 27, and the units 2 and 7 added together being equal to a 9 would indicate that transposing in copying figures had taken place.

Methods Adopted to Reduce Errors.

For years the Telephone Companies have been working to develop systems which would reduce errors to a reasonably small number at a reasonable cost and at the present time we believe that the best results are obtained by handling a sufficiently large number of accounts in a single office to warrant the employment of high-grade and experienced supervisors who will be constantly directing and watching the work of clerks and bookkeepers.

Ten revenue accounting offices have been established outside of Boston, all directly responsible to the Auditor. An average of 19,000 accounts is kept in each of these offices, but the Boston office keeps 93,000 accounts. The other revenue accounting offices are located at Bangor, Burlington, Greenfield, Lowell, Manchester, Portland, Salem, Springfield, Worcester and New Bedford. These are large cities which are natural points for centralization, considering population, facilities of transportation and mail service.

At some later date, it is the intention to write about these offices outside of Boston, but the present article is written mainly in regard to the Boston accounting office and the remainder of this article refers to the affairs of that office alone.

All accounts for the Central District (Boston), and for the 56 cities and towns grouped around Boston, including a few outside of the so-called Suburban Districts, are kept in this office.

Compiling the records and making bills includes, besides the 93,000 rental charges taken from the 93,000 ledger accounts, the examination each month of 1,515,000 toll tickets recording calls which are chargeable against subscribers and pay stations. Besides the records of toll calls are records of 4,000,000 local calls from subscribers having contracts under the measured service plan. All of these 5,515,000 units have to be examined and arranged until every unit that belongs to a particular bill is brought into its own fold, entered on that bill, the items on the bills correctly added, and totals carried to the ledgers.

Various clerks and bookkeepers may be concerned in the making of a single bill.

There are several streams, all leading to the bookkeepers' desk, where they unite, forming the finished product of the department (the subscribers' bills),

BOOKKEEPING
DEPARTMENTSTENOGRAPHIC
DEPARTMENT

METROPOLITAN DISTRICT BOOKKEEPERS AND STENOGRAPHERS IN THE AUDITOR'S DEPARTMENT

Top picture shows temporary quarters occupied by bookkeepers for Boston and Suburban Accounts. Their errors in November numbered only one for 1737 accounts. Only a part of the Auditing Department stenographers is shown in the lower picture. Many letters are dictated into a specially designed phonograph and transcribed on typewriters.

which then flow in a single stream to the Post Office Department, where the stream divides and feathers out to the 93,000 points where the telephone patrons have their places of business or residence.

Perhaps the first thing to do in a month's work is to place the name, call number and address of each telephone patron, usually called subscriber, on the bill-heads, and for this purpose a device called the addressograph is employed.

How Mechanical Devices are Employed.

This is one of the earliest and most successful mechanical devices applied to revenue accounting. It consists of a name and address in type for each subscriber and a machine which brings these addresses into position successively and prints them on the bills. The economies of this machine are large, for it will print 1500 addresses an hour with the aid of a boy, while the work of a clerk writing the same in longhand would give us only about 120 addresses in that time.

Of equal importance with the reduced cost is the fact that the addressograph never has a chance to make more than one error, while the clerks' chances sometimes seem to be unlimited. An error in the addresso-

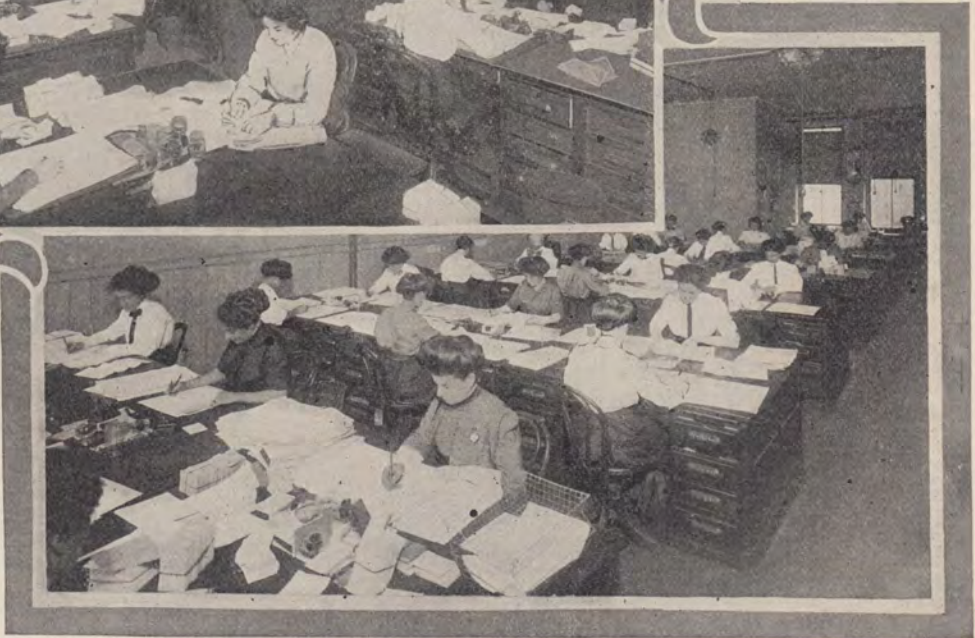
graph plate, once found and corrected, stays corrected for all time.

In the old days, a gentleman named Quinby repeatedly called attention to the fact that our clerks insisted that his name was Quimby, until we finally told him that the next time a clerk disagreed with him in that way we would ask that clerk to find another position in which to display his particular talents, to which Mr. Quinby said that he did not propose to be the cause of any clerk's losing his place and that thereafter they might spell his name any way they pleased and he never would speak of it.

Not long after that the addressograph came on the market and with the letter "n" in its proper place instead of "m," there was no chance of a mistake.

Beginning promptly on the second of the month, the stream of toll tickets flows from the operating rooms to the toll billing clerks in the revenue office. These toll tickets are small bits of paper made at the switchboards as records of charges to be made for use of the toll lines. The toll lines, generally speaking, are those lines running between municipalities for which a charge called a toll charge is made every time a call is made.

These toll tickets contain the subscriber's calling

TOLL CALL
RECORDERSMEASURED SERVICE
RECORDERS

TWO OF THE BUSIEST ROOMS IN THE AUDITOR'S DEPARTMENT

In the room shown in the upper picture the young women keep a record of every Toll Call made in the Boston Division and of calls made from nearly 4000 Pay Stations in this division, aggregating over 1,500,000 a month. The young women shown in the lower picture keep a record of Measured Service Calls in the Boston Division, which number many millions yearly.

number, usually the name of the individual talking, the name or number of the telephone called, the place where that telephone is located, the time occupied in conversation and the toll charge to be made.

18,180,000 Toll Tickets in a Year.

These tickets running down a chute would make a very considerable stream, numbering as they do 50,500 tickets daily. In a month there are 1,515,000, and in a year 18,180,000. Stacked up in a pile, one month's toll tickets would be two times as high as Bunker Hill Monument.

As each ticket represents a conversation of approximately three minutes, the total length of conversation which these 18,180,000 toll calls represent is 104 years.

The calls at five cents each are summarized and the total number charged for on the monthly bill. The remaining toll tickets are first arranged according to point of destination. It is necessary to classify this toll business each month in order to know how many calls are going between the different exchanges of the Company. After being summarized according to

places to which the messages are sent, the tickets are re-sorted into the order of the call numbers of subscribers. The subscriber's call number is the basis of all revenue accounting. The ledger accounts are kept in the order of the call numbers and contracts and tickets are filed in the same order.

The tickets, after being arranged in the order of call numbers, go to the typists, who make the charges on the Boston bills, these bills being arranged in the same order as the tickets and every one of these tickets is checked back on the bill by another force of clerks in order to correct errors.

The adding of these bills is not done by the typists but by another set of clerks who operate the adding machines, which generally are of the type called Comptometers. The clerks who use these machines are experts at their trade of adding, the same as the typists are experts at their trade of writing, and as every bill is twice added, errors in totals are extremely rare.

When the last toll tickets for the month have been charged on the bills, and those charges have been

checked and the totals added, the bills then go to the bookkeepers. The toll department not only keeps a record of the toll charges against subscribers' stations, but it keeps a record against pay stations equipped with automatic devices for collecting money. These automatic devices are scattered all over the territory and are tempting to any one who is inclined to take what does not belong to him.

Small amounts might be taken from the coin boxes of these machines and the thefts not detected were it not for the fact that every message sent from an automatic machine is charged against that machine and the amount of money brought in by the collector is promptly verified with the amount shown by the toll tickets. Discrepancies of any considerable sum are subject to investigation which usually leads to conviction, if thieves have been at work.

In addition to the rental and toll charges appearing on subscribers' bills, there is a record of local calls used during the month by every subscriber having a measured service telephone. Further than this, as soon as such a subscriber exceeds the number of calls to which he is entitled under his contract, a charge is made on the bill for the excess calls.

Record of Measured Service Calls.

The record of measured service calls is made by the Traffic Department, either by means of a simple ticket on which the subscriber's call number is put down every time a call is sent, or by means of meters located in the central offices. The number of such local calls recorded in the course of a year in the Boston Division is 48,000,000, which is a huge number of records to examine and classify. The work, however is done so rapidly and the cost is divided among so many accounts that the cost of clerical wages in a year for a single telephone set is only about twenty cents.

A watch ticks 31,536,000 times in the course of a year and if one call were counted for each tick of the watch in the whole twenty-four hours for a year, only two-thirds of the Metropolitan Division, measured service, calls would be counted at the end of the year.

When the measured service department has recorded the month's calls and the charge for excess messages, if any, on the bill-heads, the bills are sent to the bookkeepers. The bookkeepers being in possession of the bills properly addressed, and having the record of toll and measured service calls, proceed to complete the bills by adding to them whatever balances due, rentals and miscellaneous charges may be shown by the ledger accounts.

As soon as completed by the bookkeepers, the bills are sent to the mailing clerks, who fold the bills and place them in envelopes having open faces through which the name and address on the bill may be seen. They are then automatically sealed by a sealing-machine, which automatically feeds itself and seals 50 envelopes in a minute.

The bills are now ready for delivery to the Post Office, to which they are sent in a steady stream as fast as they come from the sealing-machine. Fifty-eight mail bags are required to deliver the month's bills to the Post Office. After a subscriber receives his bill, all that he has to do is to pay it, if correct, and when he pays it he may pay at the same office in Boston any other telephone bill rendered anywhere in Massachusetts, Maine, New Hampshire or Vermont, by the New England Telephone and Telegraph Company, for service at any one of its 422 exchanges. The Boston

office serves as a clearing-house and any payments made in this office are distributed to any outside offices where the bills paid may be due.

Just at the present time, the revenue accounting department in Boston is severely taxed by the great number of changes in rates and service, incident to the recent adoption of new rates for exchange service. Temporarily, it is necessary to carry two sets of ledgers, one set for the accounts of subscribers who retain the old service and one set for subscribers to the new service.

In some of the exchanges of the Boston Division, there are two toll rates in effect, one applying to subscribers under the old schedule of exchange rates and another to subscribers under the new schedule of exchange rates. The charge to Boston on one account on the ledger may be five cents and on the one immediately following it may be ten cents, which of course, adds to the troubles of the bookkeeper.

The metal addresses on the addressograph are continually shifted to take their new places incident to the changes in call numbers. The old measured service records are being closed and new ones opened. The work which comes with all these changes is going on successfully, if not always comfortably, but just at this time more than the usual number of errors must be expected, and we hope that the telephone-using public will extend to us as much of its charity as it fairly can.

The Adjustment Bureau.

If the bill as rendered to a Boston Division subscriber contains items that are disputed by him, he sends, or brings, the bill to the Adjustment Bureau, which is located on the first floor at 119 Milk Street.

A word here about the Adjustment Bureau is perhaps appropriate. Its function is to receive and relieve all complaints incident to the telephone business; to investigate all claims made, and prescribe remedies for the company and its patrons looking to the immediate removal of the misunderstanding, and the amelioration of the cause of complaint, or its eradication, as the case may require. The supreme object is to be in every way helpful and to offer such ministrations as the several functions of a large organization can supply.

To perform this service, to furnish information, and to give any general advice that may be sought, a corps of picked men familiar with the work of the various functions of the company, and familiar with the sources from which specific information may be obtained, is provided; also a similarly equipped force of field men to present to subscribers at their places of business or residence explanations which are not easily reducible to writing, or which may require discussion. These men will visit, on request, those who may require this service. In addition to this there are a number of female clerks, thoroughly versed in the operating practice of the company, to handle telephone inquiries, obtain information from the records, verify disputed calls and other detail work.

If the subscriber's question relates to a toll charge, it is taken care of by one of the information clerks, who obtains from the files in the department the original ticket from which the charge is made. The ticket is carefully inspected and checked to see that no possible error may have been made in the reading of the time and the making of the calculation. This detail is given to the subscriber. If he be not satisfied, and again notifies the department to that effect, the ticket is taken out of the file and a claim entered against it, a



ADJUSTMENT BUREAU AT 119 MILK STREET, BOSTON

The Adjustment Bureau has been called the "Family Doctor" of the Telephone Company. In any business serving thousands of people an Adjustment Bureau is necessary to settle the differences that may arise.

record being kept in the office for following it up, should there be delay. The ticket and claim are then forwarded to the exchange for thorough investigation. The sooner a complaint is made, after the receipt of the bill, the better the chances for getting at the facts. This is readily appreciated when it is considered that outside the written record of the company the information to be obtained is largely drawn from the memories of the parties involved. Delay makes it more difficult to ascertain the facts.

How Facts in the Case are Ascertained

If the subscriber's question be in regard to his measured service account, a clerical investigation is made in the Accounting Department and also in the exchange. If this develops no facts tending to substantiate the subscriber's claim, and he still feels that he is being overcharged, the exchange is requested to furnish the department, for a number of days, with a record of the outward business passing over the subscriber's line. This can only be at best a partial record of the calls made and is taken up with the subscriber to see if it furnishes any basis for his claim of being overcharged. If there be certain calls that he does not recognize, this is further investigated with a view of locating the caller.

If the subscriber's question is in regard to a moving charge the claim is forwarded to the Plant representative of the district, with a request to have the items checked and a detailed report made explaining the necessity for the expense. This is returned and the Adjustment Department makes further search into the subscriber's contract relations to see if there be any provision for reducing the charges in part or in whole.

In addition, numerous details of the business are taken care of; as, for example, a party depositing money at a pay station, for which he has not received value. This is known to the operator, or is brought to her attention by the patron. She immediately telephones the Adjustment Bureau giving the name and address of the party to whom the money should be refunded. This information is made out on a form and the department immediately draws up the necessary voucher, refund letter and together with the

money forwards them to the address given. The exchange operator supplements the telephone message with a notice in writing, which is received and checked to see that no error has been made in the address. Should the money not be received by the proper party but returned, every effort is made to locate the correct address.

As an example of one of thousands of incidents where the Adjustment Bureau helps to smooth out a difficulty and promote good relations for the company, the following will serve. Several years ago, the provision for an annual charge for an extension bell in connection with a special line telephone was rescinded, but through an oversight this charge was continued against a Dorchester subscriber. As soon as the Adjustment Bureau discovered it, a letter announcing a refund to the subscriber was despatched. It brought forth the following reply:

"I am in receipt of your courteous favor of December 12, enclosing a credit memorandum for \$7.62 for an overcharge of \$1.50 per year for five years for an extension bell on my telephone (Dor. 153). The adjustment is perfectly satisfactory to me and is in keeping with the spirit of fair dealing which has always characterized the actions of your company in whatever negotiations it has had with me. I thank you for your interest in the matter.

Yours truly,
N. THOMAS MERRITT, JR.

Called Neighbors by 'Phone, Saved House From Burning.

The following testimonial ought to be welcomed by contract men seeking farmer-line contracts. It is a voluntary contribution from W. W. Douglas, Litchfield, Maine, R. F. D. 17:

Early one cold morning in November our chimney caught fire. In a few minutes flames burst out in a chamber and the attic was all ablaze. The members of the family were only partly dressed, but one hastened to the telephone and called the neighbors, who responded promptly and calling others by telephone saved the property which a few moments' delay would have doomed. This happened in the country six miles from a railroad station in a very dry time, and goes a good way toward justifying the saying "No one should be without the telephone."



LOADED AUTO TRUCK

RUNNING
CABLE
UNDERGROUND

RUSHING CONSTRUCTION WORK NECESSARY FOR NEW RATE SCHEDULE

The top panel shows auto truck being loaded with material; the lower panel the unloading of cable from the big reels and the running of the cable into underground conduits to provide additional lines for subscribers.

WORK UNDER NEW SCHEDULE.

DURING the past few weeks the brunt of the work of making the changes involved in the adoption of the new rate schedule in the Metropolitan District has fallen on the Plant and Traffic Departments, the Commercial Department marking time, so to speak, until its lead in the securing of contracts for service shall be cut down.

Applications for service under this new rate schedule came in so fast that it was impossible to secure, at once, supplies of cable, wire, switchboard sections and other articles of equipment. Nor could the immense task of placing in operation all these additional parts be completed in a day or in a week.

In a recent issue was shown a picture of the cable yard with its thousands of miles of cable on reels. The accompanying pictures show one of the new five-ton auto trucks loaded with cable and also paying out cable into a manhole. The photographs were taken in Somerville, and when it is remembered that these represent only one phase of Plant activity in one exchange, they only hint at the enormity of the task in the 51 exchanges of the Metropolitan District.

The "pull together" spirit of the different functional departments is simplifying this enormous job to a gratifying degree, and it is interesting to note that more than one-half the total number of telephones in the entire Metropolitan District were working under the new rate schedule at the beginning of this year.

As there has been practically no canvassing except from the order boards, there is no doubt that as soon as the Commercial Department is told that Plant facilities are O. K., a decided impetus can be given

the volume of orders now being received. Quite a number of orders are now uncompleted, owing to lack of facilities. This condition is unavoidable, for reasons already set forth, but it nevertheless is annoying to subscribers. As soon as they have analyzed the new rates, nine out of ten want them to go into operation at once. To take a subscriber's order and then to compel him to wait a month or two, awaiting facilities or municipal permits, is to try his patience, and it was deemed advisable not to seek contracts except where we could give reasonable assurance of quicker installation.

This enormous construction proposition has attracted the attention of telephone engineers from other sections of the country; and experts are also watching the Traffic Department's excellent job of holding up to service standards during this period of change. By the time the winter issue of the 1911 directory is being distributed (in February), it is estimated that the Information Desks will be carrying upwards of 30,000 changes. That they have been able to do this without impairing the service standard is a remarkable achievement.

With the new directories containing a very large percentage of the listings, the burden on "Information" will be materially lightened.

From every point of view it looks as if each department was "over the hump" of the journey toward the goal; in other words, had conquered the greatest difficulties in the way. Of course, it is not "all over but the shouting," by any means, but the way is clearer and with the course laid by the same broad co-operation that has thus far marked the work, there need be no fear of the ultimate success of the campaign.

MAKING THE DIRECTORY.

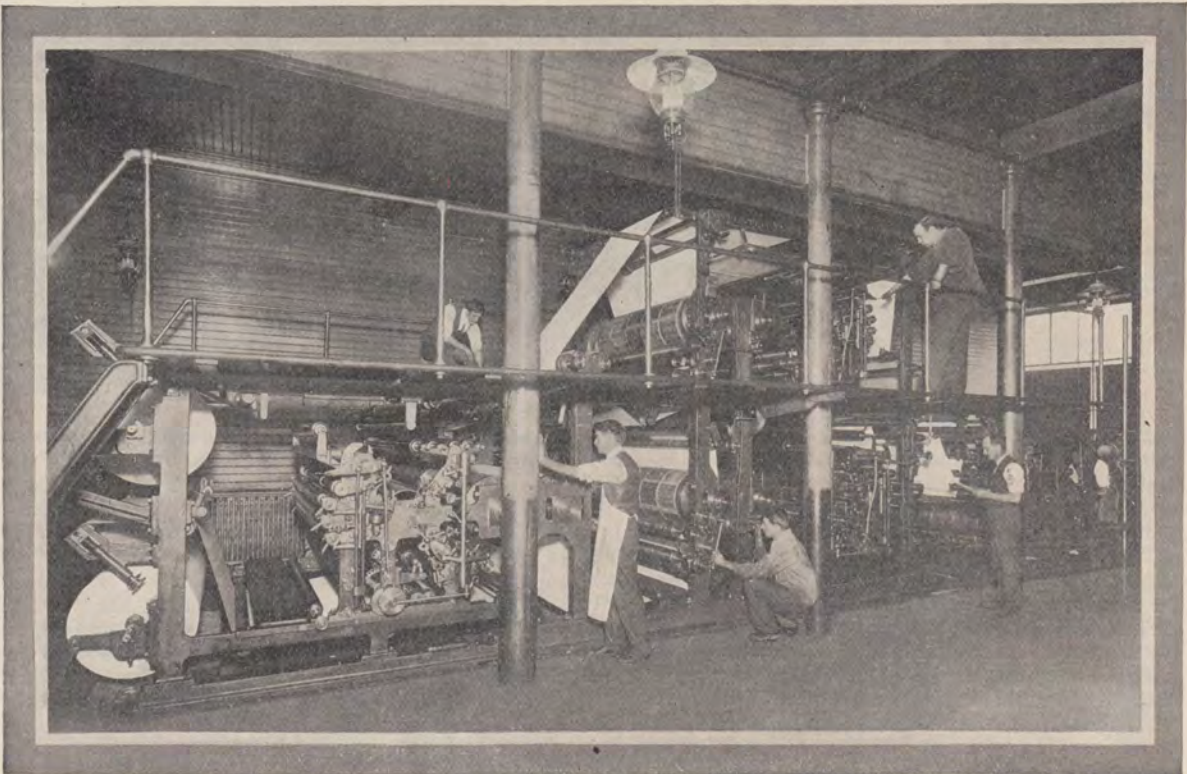
Over 700,000,000 Pages Printed Each Year and Great Care is Taken to Prevent Errors.

IT costs over \$150,000 a year to print directories for the New England Telephone and Telegraph Company. This is a tidy sum of money, but every cent of it is necessary. Without directories it would be impossible to do business. In the early days subscribers named the other subscribers that they wanted. Today that would be absolutely impossible. No memory

attracts no attention at all. That's what makes it a good job.

In the printing office at Lowell over 20,000,000 separate pieces of type weighing more than 15 tons are kept standing all the time in page forms. And yet if a subscriber's name happens to be Brown-Jones and the hyphen is left out in the telephone directory he kicks like a steer.

Of the 21 directories printed by the New England Telephone and Telegraph Company the Boston Division book is by far the largest. It has nearly 350 pages, contains nearly 100,000 names, and an edition consists of over 160,000 copies. Ordinarily the Boston



THE JUMBO PRESS USED ONLY FOR PRINTING THE BOSTON DIRECTORY

This press holds 108 pages and makes 105 revolutions a minute — a total of 11,340 pages a minute. Fifteen men are necessary to operate this press. About 165,000 copies of the Boston Book are printed three times a year.

could retain the location of the lines in switchboards having thousands of subscribers.

There are 21 separate directories issued every four months. They represent approximately 12,000,000 separate books and over 700,000,000 printed pages.

Not many employees and very few of the nearly 400,000 subscribers connected with the system of the New England Telephone and Telegraph Company have ever given this matter a thought. And yet it's a work that is going on all the time. There is never any rest. It often happens that eight directories are being printed at one time. Even before the great presses start printing one directory, copy is on the way for the next.

Like every phase of telephony the work must be up to the second all the time. There are innumerable difficulties to be overcome. Yet the work is carried out with such system, accuracy and regularity that it

book, so called, is issued three times a year — winter, summer and fall — but the extensive number changes resulting from the adoption of the new rate schedule in the Metropolitan District have made extra issues necessary.

The 20 other directories are printed every four months for as many sections of the company's territory in Maine, New Hampshire, Vermont and Massachusetts. There is one for the Bangor district, the Portland district, Manchester district, Brattleboro district, Worcester district, Springfield district, and so on. The edition of the Worcester book is 36,000 and for the Springfield book 31,000. The number of copies printed for each issue is constantly increasing.

What a remarkable telephone development there has been since 1878, three years after the telephone was invented in Boston by Alexander Graham Bell. The



TWO MECHANICAL OPERATIONS IN MAKING THE DIRECTORY

The upper picture shows a corner of the Composing Room, where each line in the Directory is set on a Linotype machine. In the lower picture one of the stereotyped forms of four pages is being "Routed Out"; that is, all edges and depressions are being cut deeper so they will not show on the printed pages.

first telephone directory in the world was issued in that year by the Telephone Despatch Company. It was a single sheet of paper and contained the names of 67 subscribers. There was no calling by number then. The name of the subscriber was given to the operator. It was some time later that calling by number was inaugurated.

As a striking contrast, it cost the New England Telephone and Telegraph Company over \$150,000 to merely print its directories in 1910. This does not include the cost of delivery and other incidental expenses. The additions, removals and changes in the directories in 1910 numbered 251,532. And only a comparatively short time ago there were but 67 subscribers in all Boston!

From 1878 up to 1883 there were many different directories of all sizes and shapes and of varying degrees of accuracy.

How the Directory Has Increased in Size.

The New England Telephone and Telegraph Company's name first appeared in 1883 on the Boston and Suburban directory. But then there were but a few

Suburban exchanges. Now there are 44. This directory contained 75 pages, single column of wide measure. The last issue of this directory, dated April, 1892, contained 222 pages, or about 8500 names.

The first combined book, giving all the subscribers in the entire territory, appeared in July, 1892. It contained 394 pages, about half the size of the present Boston book alone, and about 20,000 names. The first issue was 18,000. In July, 1900, the business had grown to such proportions that it was no longer practicable to print all the subscribers of the company in one

book. In that month one book was printed for Boston subscribers and six other books covered the rest of the territory. A year ago the Boston book was changed to its present form with a three-column page.

The making of a telephone directory really starts with the contract agents, and the importance of great care in getting with absolute correctness the subscriber's name and every other detail relating to his listing is illustrated by an outline of the process of making a directory.

Assume that John Jones decides to have a telephone. The contract agent makes out a prescribed form giving Jones' name, carefully and legibly spelled out, his correct address and the kind of service desired. If the contract agent makes a mistake in the name there is hardly any possibility of its being discovered before the book is printed.

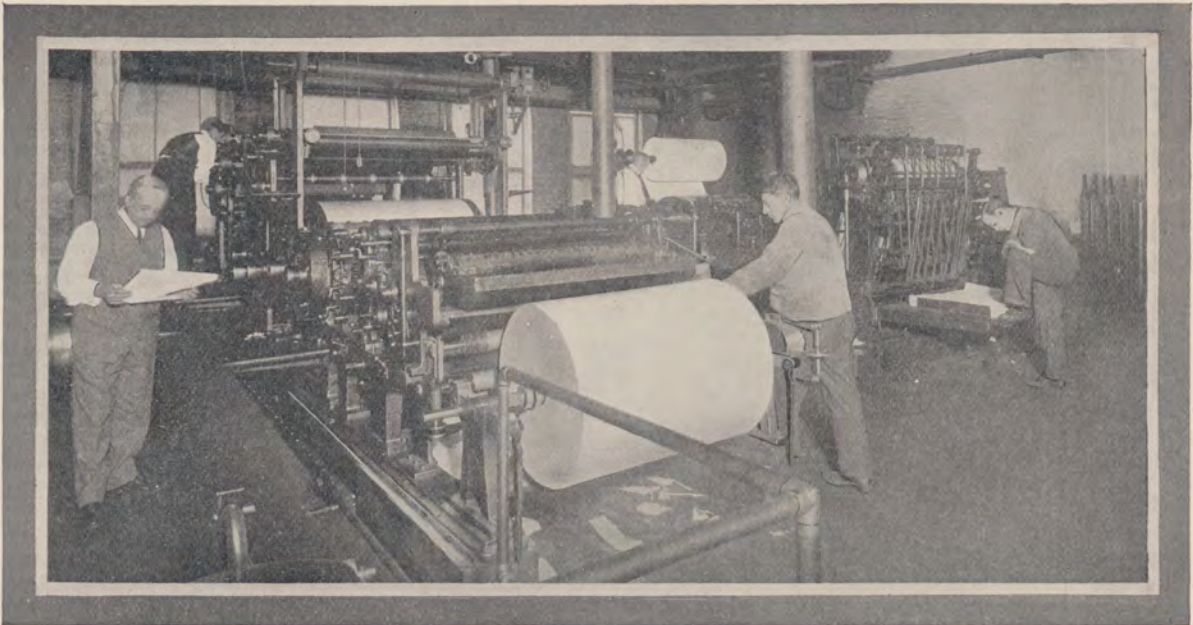
After this form has been made out it is sent to the district office. Another de-

partment assigns Jones a telephone number and the construction work is started. Simultaneously the line order, so called, is duplicated seven times and sent to various departments, each one of which has something to do with Jones' telephone.

One of these orders is sent to the directory department. It should contain all the necessary data for the directory listing of Jones' name, number and exchange.

It is a very strict rule that these orders must be typewritten on a prescribed form so that everything can be clearly understood at once. If there is the slightest doubt the order is sent back for correction. In the directory department the clerks are experts. They detect errors by intuition. Oftentimes they seem to know that something is wrong, although the order appears all right.

Some time before Jones signed his telephone contract the great presses were turning out a directory for his particular district. As soon as these pages came from the press some were cut into column strips, neatly pasted upon sheets of paper, and sent to the Directory Department. Every day these pages are being delivered, long before the book is finally bound.



TWO PRESSES USED IN PRINTING SOME OF THE SMALLER DIRECTORIES

In addition to the Greater Boston Book the Company publishes twenty more Directories for other parts of its territory. These are smaller in size and can be more conveniently handled on presses of this description.

When the order for Jones' telephone reaches one of the clerks in the Directory Department, she takes the alphabetical page sheet from the directory covering the section in which Jones lives and very carefully writes on the wide margin, in the proper place, the correct listing. Three times a week these corrected page sheets, which also contain removal and changes in address or number, are sent to the printer. The corrections are quickly made and the proof carefully read. The galley proofs are sent to the Directory Department and the listing once more is scrutinized for errors.

A few days after the return of these galley proofs to the printing office the Directory Department receives what is known as the addendum. This is the final arrangement of listings made up in page form exactly as they will appear in the book. These addenda are issued frequently. Their object is to detect all errors due to transcription from one report to another by employees or to mechanical difficulties in the printing office.

The addenda bear on their first pages the name of the section to which they belong and the date of issue. They are sent directly to the district offices, where the listings originate with the contract agents, and the names and numbers are compared with the originals. Any errors, omissions and changes are marked on the margins and returned to the printer. The next addendum includes these corrections. These addenda are cumulative and the last, issued just a few days before the printing of the book is started, gives every change that has been made in the directory since its last publication.

These addenda have proved so successful in detecting errors that 99 per cent of the very few mistakes that are made are discovered and the corrections made before the book is printed. Time and again the company has issued directories without a single error. Isn't that a record of which to be proud?

As the day for closing copy on the directories approaches, advertisements are placed in all the papers notifying the public that after a certain date it will be impossible to get a name in the directory for three months.

By keeping up to date all the time it requires only a little work after the actual closing of copy before the presses are started. In the meantime, however, all the pages are stereotyped and carefully looked over for mechanical errors and imperfections.

One of the great presses, especially designed for the purpose, prints 108 pages at each of 105 revolutions a minute—a total of 11,340 pages a minute. Two days are required before this marvellous piece of machinery is ready for the run and 15 men are necessary to operate it.

The directories are bound rapidly—an average of 20,000 a day—and sent from the printing office immediately to destinations.

A telephone directory demands standard rules, without which no systematic arrangement of any publication can be obtained. The company, in its endeavor to present a correct and methodical directory, must establish and abide by certain standards. The first and most important of all rules is the alphabetical arrangement. The true alphabetical arrangement is not as easy a matter as it might at casual glance appear to be.

In old times permission was given occasionally to some one or other to permit his name to appear out of the alphabetical arrangement. This has gone by, and no such permission is now given.

One request received some time ago was in regard to the words commencing with St., like St. Agnes. The rule for abbreviations is that they shall take the same alphabetical arrangement as though they were spelled in full, therefore, the abbreviation St., being the ab-

bravation of Saint, appears where it would appear if it were spelled in full.

Another request was made by a subscriber who, belonging to a firm, wished his name to appear after the firm name. For instance, Albert Edwards wishes his name to appear after the firm name of Albert

betical arrangement is retained and the subscriber satisfied.

There are certain standard abbreviations which are used always, like "Res." for residence or "R" when the space does not permit the other. Pay Sta. for Pay Station, or P. S. when the space is limited. The elimination of listing like M.D., etc., and the statement of the actual business, physician, or whatever it may be, in place thereof. The elimination of a double repetition of business, for instance, Atlantic Woolen Mills, woolens, the latter being unnecessary. It is not necessary to go further into these standard rules as they are generally well known.

When a subscriber has two telephones the indentation of his residence or extra telephone under his business telephone is for the purpose of establishing the fact that he is the same person. The multiplicity of names in the directory and the frequent duplication thereof has made it necessary that all the subscriber's telephones should be identified as belonging to one person, so that it has now become an established rule that when two similar names are in the directory they represent different people because one is not indented under the other. This has been found of assistance not only in the work of the directory but to the subscribers.

The word "store" is never allowed alone. The words "general store" are used where such is the fact, but where the subscriber has a certain specified business the business itself must always be listed instead of the word "store." For instance, "barber shop" should never be allowed. Shop is unnecessary and means nothing. Barber is sufficient to designate the business.

It took 900 tons of paper to print the last year's directory. If this had been put on a train it would have taken 60 full-length cars to carry it. In the inside of the directory there are 2400 rolls about 29 x 38. If these sheets were laid end to end 29 inches wide they would cover a distance of 12,500 miles, or half the circumference of the earth. The number of pages printed were 700,000,000. If one press printing 16 pages at a time, making 10,000 impressions a day, were used, it would take 14 years to print the present directory.

And all this work is done so that a subscriber can call John Smith, living anywhere, without delay or confusion. And it's worth all the cost and care if John Smith and those who seek will only consult the directory before making a call. By so doing, the "wrong number" calls are reduced to a negligible minimum.

Quick Thought and Quick Action.

An Athol test man's promptness brought help to the town of North Dana recently, at a moment when it was most heartily welcome. North Dana is connected by a single line running to the Petersham office, and when the Petersham operator tried to get a North Dana subscriber and failed, owing to some trouble on the line the nature of which she could not determine, she called the test man at Athol to determine the fact and correct the difficulty.

The test man began operations at once and could barely distinguish a faint voice announcing that the whole town was burning up and help was wanted. The test man had presence of mind to call the Athol fire station, and in twenty minutes a train was carrying an Athol engine and a score of firemen to the scene. The fire started in the Swift River Box Factory. A change in the direction of the wind saved the town, but that did not detract from the value of the service rendered by a quick-witted telephone man.

Every Bank, Office, Business House and Profession in this City are expected to connect with this Central Office System.

THE FOLLOWING FIRMS HAVE ALREADY SUBSCRIBED.

Agricultural. AMES PLOW CO.	Furniture. J. S. PALME & CO. T. M. WHIDDEN & CO. H. F. CUNNINGHAM & CO.	Patent Solicitors. HENRY W. WILLIAMS.
Banks.	Glass. LAMBERT BROS. MILLS, TAYLOR & CO. R. SHEPHERDSON.	Pickles, Preserves, &c. E. T. COWLEY & CO.
Bankers.	Grocers. S. S. PERCIE & CO. MCGOWELL & ADAMS. COBB, BATES & YERGEN. C. D. COBB & BROS.	Printers. RAND, AVERT & CO. HUNT, BLISS & CO. OEO. M. ELLER.
Boots and Shoes.	Hardware.	Publishers.
Brass Goods. W. W. BENT & BAYLES.	Carpets. JOSEPH B. PRAY, BROWN & CO. J. & J. DOBSON. BAY STATE CARPET CO.	Battery Supplies. BRO. DENHAM & CO.
Carriages. W. F. ALBERT & CO., Tremont St. W. F. ALBERT & CO., Salisbury St.	Hats and Caps. PECK, SMITH & FINE. DYER, TAYLOR & CO. DAVID WILSON & CO.	Reefishers. C. H. GRAY & BROS.
Clothing. BARK DENNO & CO. MEEK, BEAL & HACKETT. LELAND, BICE & CO.	Iron and Steel.	Salt Casters. STAR SALT CASTER CO., Franklin St. STAR SALT CASTER CO., Beverly St.
Craftsmen. CHAS. COSTELLO & CO. F. E. WEBER.	Lawyers.	Small Wares. LEWIS COLEMAN & CO.
China, Glass & Earthenware. ASHES PETER & CO. JONES, McCOFFEE & STRATTON. CLARK, ADAMS & CLARKE. NORWOOD, HELLER & CO.	Leather.	Spool Cotton. POITZER BROS.
Coffee, Spices, &c. DWINNELL, HAYWARD & CO. DAVE, SACKEN & FICKLER.	Lectures Bureau. R. W. WILLIAMS.	Stationers. L. F. LAWRENCE & CO.
Drugs. CAPPER, BARBER & HAWLEY. TYLER BROS. GEO. E. GORRIS & CO. SMITH, BOGUE & SMITH. R. V. & H. C. WILSON, Orange St. R. D. & H. C. WILSON, Beverly St. JOSEPH T. BROWN & CO. J. D. JUDON.	Liquors, Wines, &c. T. J. DUNDAR & CO.	Steam Gauges, &c. ASHCROFT MANUFACTURING CO.
Dry Goods. UTHER, TUCKER & CO. PARLEY, HARVEY & CO. R. H. WHITE & CO.	Mercantile Agencies. BROAD STREET EDWARD DOWELL & CO.	Steamship Lines. CORBARD STEAMSHIP CO.
Fish. SHATTUCK & BOSTER.	Military Goods.	Tailors' Trimmings. MILLER, BICE & CO.
	Paints. J. J. & W. BIRD & CO.	Woolens. E. ALLEN & CO.
	Paper Warehouses. BICE, KENDALL & CO. EDWARD BAUER CO. CARTER, BICE & CO.	

FIRST TELEPHONE DIRECTORY

Published in 1878 in Boston by the Telephone Despatch Company on a single sheet of paper.

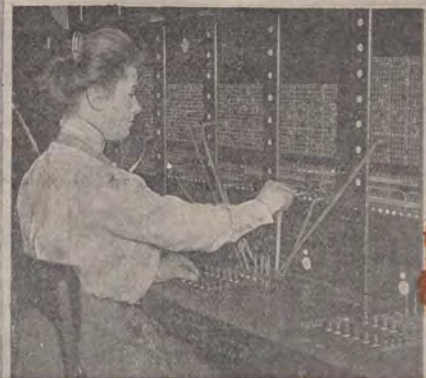
Edwards & Co. This cannot be done and retain the alphabetical listing. This matter has been arranged, in cases where it has been desired, by indenting the name of Albert Edwards under the firm name of Albert Edwards & Co. (that is, moving the name two spaces to the right of the regular page rule). Thus the alpha-



The subscriber, after looking up in the directory the desired number, takes the telephone off the hook, which causes a tiny electric light to glow in front of the operator assigned to answer his calls. (In some exchanges equipped with a magneto system, a drop is released by the turning of a crank.)



The operator is sitting, at attention, when a light glows in the panel in front of her. She can connect a caller with any subscriber in that exchange, but she is assigned to respond to the calls of only a limited number of subscribers whose signals are these lights showing at her particular position. The arrow indicates the light.



She takes up a brass-tipped cord, inserts the tip, or "plug," into the hole, or "jack," just above the light, at the same time throwing a key with the other hand in order to switch her transmitter line into direct communication with the caller, and says: "Number?"

THIS PANEL ILLUSTRATES THE MAKING OF A LOCAL CALL THAT

MAKING A TELEPHONE CALL.

IF subscribers could see with what promptness and care the operators endeavor to complete the calls, we would never have a complaint," said a traffic man recently.

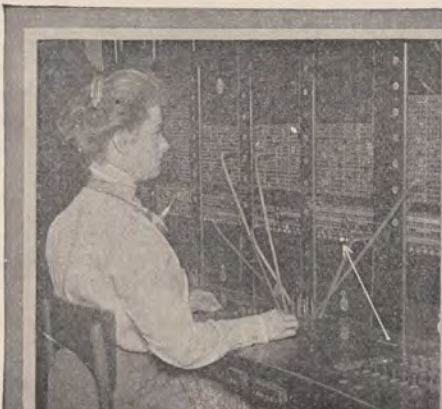
"One of the best things we ever did was to invite the general public to visit our operating rooms, any week-day afternoon, and see just how calls are handled. I have never had a caller go away without confessing an added respect for the company and its employees."

The reason for this mental attitude is perfectly obvious. In making a telephone call, the caller and the operator are separated, as it were, by a high board fence. Neither can see the other. Only the inflections of the voice give any clue to the character of the other.

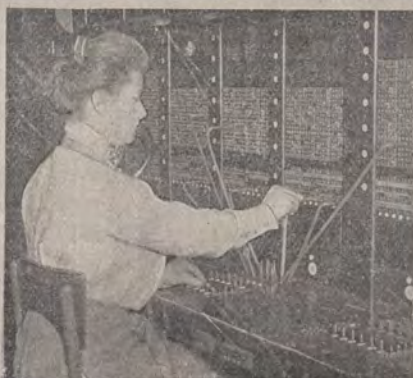
All subscribers cannot visit the Central office, and it was suggested that some of our thousands of employees would be glad to help explain some of these simple difficulties such as "line busy" or "don't answer" calls if they only had something to show what a switchboard looked like.

Following out this suggestion, the photographs illustrating this article were snapped at the School for Operators in Boston. They illustrate two processes — the making of a call that is completed on the "A" board and the making of a call that comes in on the "A" board in one exchange and is completed on the "B" board of another exchange.

A little study will show how easy it is to make the operator's work absolutely ineffective. There are always three parties to a telephone call — the person calling, the person called, and the operator who brings



When the call is to be trunked to another exchange, as for example, from a Main subscriber for "Dorchester 1942," the first steps are similar to those of a local call. When the subscriber removes the receiver of his telephone, a light glows on the switchboard.

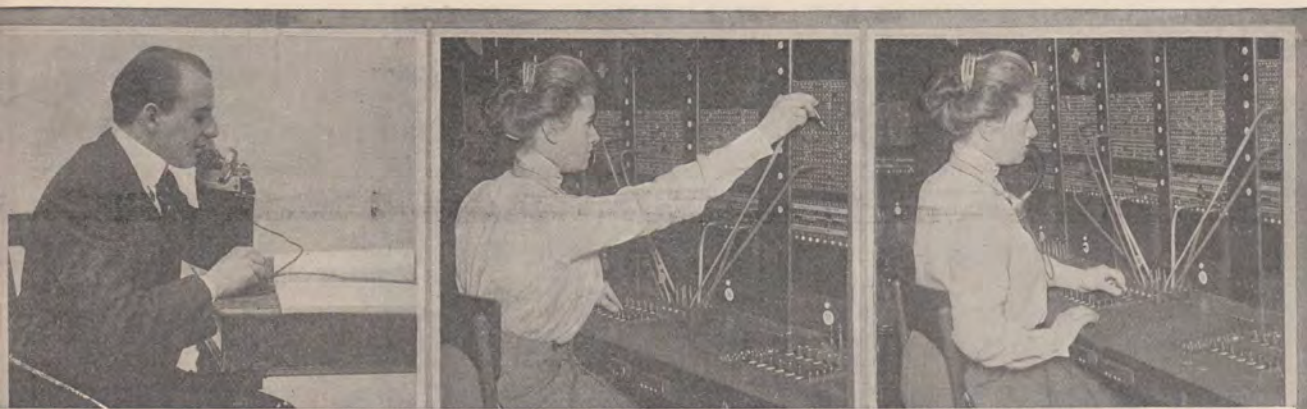


The Main operator connects with the calling subscriber as in a local call. In response to her inquiry, "Number?" he gives the other exchange and number wanted. She repeats, "Dorchester One-nine-four-two," pronouncing each digit distinctly. She then —



Communicates with the Dorchester operator by a "call circuit" which the Main operator connects with her transmitter line by pressing a button with her left hand. She then repeats the number desired, "One-nine-four-two," meanwhile holding the plug opposite the jacks connecting the Dorchester trunk lines.

THIS PANEL ILLUSTRATES THE MAKING OF A TRUNKED CALL; THAT IS, ON



The caller replies by giving the name of the exchange and the number he wants, as for example: "Main 1268." The operator repeats the number, "One-two-six-eight" pronouncing each digit, with clear articulation, to insure its correctness, and, if it be from a subscriber in the Main Exchange, she —

Takes up the cord which is the team mate, or "pair," of the one with which she answered the caller, locates the jack numbered 1268, and "tests" the line by tapping the tip of the plug for a moment on the sleeve of the "jack" to ascertain if the line is "busy." If no click sounds in her ear she —

Pushes in the plug and with her other hand operates a key on the desk. The first action connects the line of the subscriber called; the second starts a current that rings his telephone bell. As soon as he answers, the connection is established and conversation may proceed.

WHAT ORIGINATES AND TERMINATES IN THE SAME EXCHANGE.

them together. If the person calling fails to give the right number, the operator will connect him with the number called.

She is not at fault. She is not a mind reader, and couldn't have known that the caller really wanted 375 when he asked for three-five-seven.

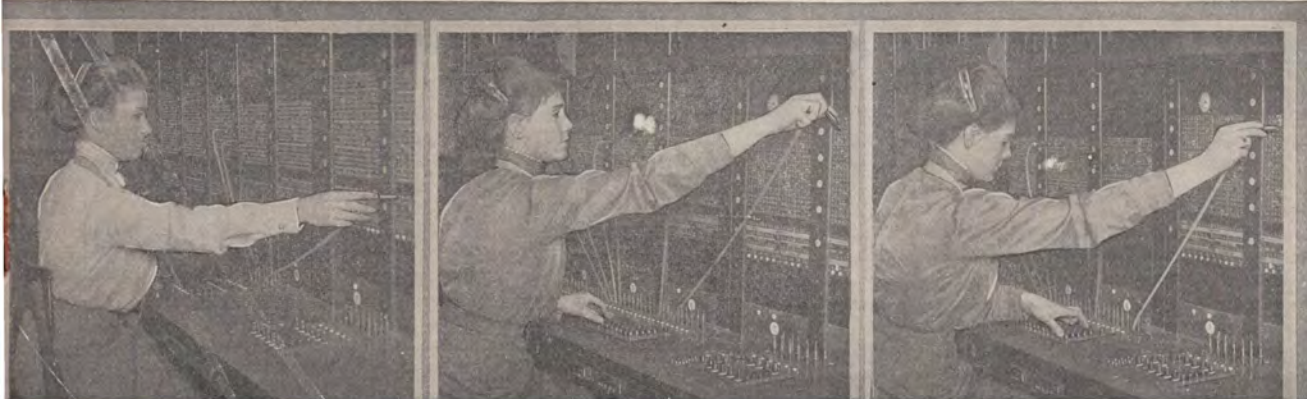
Nor can she take by the ear a procrastinator who is slow to answer his bell, march him down to the receiver and compel him to answer. She can only ring, and, if he doesn't answer, make that report to the caller.

Perhaps the most interesting picture of the lot is the one where the operator is testing the line. When one calls a number to the operator and immediately is informed "the line is busy," it is natural that one, not knowing what has transpired, should doubt the accuracy of this statement. How the operator knows is

shown by the photograph. Before inserting the plug in the jack, she for a moment rests the tip of it on the sleeve of the jack. If the line is in use, a "click" sounds in her ear. If it is not in use, she simply pushes the plug in the jack and rings.

Another interesting feature, as shown in the lower panel, is the simultaneous action of two operators in two different exchanges in the making of a trunked call. One operator receives the call; another operator completes it. It is clear that they must work quickly and accurately, and it is also clear that both the calling subscriber and the subscriber called must cooperate, the one by calling the correct number and the other by answering promptly, else the operating effectiveness is completely nullified and misunderstandings result.

These matters are all clear to us, and perhaps these pictures will help make them clear to others.



The Dorchester operator instantly assigns to the Main operator a disengaged trunk line by calling its number, as for example "Five," whereupon the Main operator at once completes her part of the operation by inserting the plug in Trunk 5, as indicated in this picture.

The Dorchester "B" operator, at the same time she assigns Trunk 5, picks up the plug of the cord connecting with that trunk and tests as before described, to ascertain whether the line is busy. If the "busy click" does not sound in her ear, she then —

Inserts the plug in the jack of Dorchester 1942 and rings the Dorchester subscriber by depressing a key with her thumb. It should be remembered that the actions represented by the last four pictures on this panel are occurring practically simultaneously in two different central offices.

ONE THAT ORIGINATES IN ONE EXCHANGE AND TERMINATES IN ANOTHER.



THREE ORDER BOARDS USED BY PROGRESSIVE RETAIL MERCHANTS

Upper picture, Order Board in store of the J. B. Blood Company, Lynn Market; lower left, Order Board in Jordan Marsh store, Boston; lower right, Order Board in S. S. Pierce store, Boston.

FACTS REGARDING ORDER BOARDS.

AN article in a recent issue of the *Telephone Engineer* describes an "order board" installation for John Wanamaker, in Philadelphia, and suggests by implication that the installation is entirely novel.

This is hardly correct. Nine months before the Wanamaker installation, the J. B. Blood Company of Lynn (Lynn Market) had a four-position order board at work, and has since increased it to six positions.

Blood's is probably entitled to be considered the pioneer installation of its kind, although others followed in rapid succession.

There is nothing new in principle in the order board. The novelty lay in the application of the principle. Mr. Blood, the Lynn marketman, set the representatives of our Branch Exchange and Engineering Departments a-thinking, when he outlined the lack of mobility of the old individual lines while taking orders by telephone.

If a particular salesman was wanted, his line was apt to be "busy" or it was a difficult matter to connect him, even though the connections were made through a private branch exchange or by means of cam lever switches.

After giving the matter considerable thought, the branch exchange and engineering men got together and evolved the order board. Each line on the board is multiplied, so that when a call is switched on to the board by the P. B. X. operator, a light burns at every position thereon, whether there are four or eighteen. Consequently, the P. B. X. operator may connect in-

coming calls to any available trunk line running to the order board. When the call is thrown on to the order board a light burns at every position. By depressing a key, any of the order board men can cut in and answer the call, and if any particular salesman at the board is wanted, he can pick up the trunk line by depressing a key in front of his position.

The mobility of its operation gives the order board such a decided advantage over the old system that little argument is required to secure its admission into progressive business houses doing a heavy retail trade. This board is valuable, not only for the receiving of telephone orders but for making calls to customers in an endeavor to "drum up trade." The trunk lines can be plugged right through the P. B. X. switchboard, or the store operator can be used to locate and ring up customers, leaving to the salesman the task of "doing the talking." There is no question that it is going to become one of the popular devices of a popular modern way of transacting business.

Some of the firms in our territory making use of the order board are the following:

- J. B. Blood Company, Lynn, 6-position board.
- Jordan Marsh Company, Boston, 4-position board.
- S. S. Pierce Company, Boston, 9-position board.
- Western Union Telegraph Company, Boston, 18-position board.
- Boston Terminal Company, 4-position board.
- Cobb, Bates & Yerxa Company, 4-position boards at Salem, Taunton and Fall River.
- Denholm & McKay, Worcester, 4-position board.
- Forbes & Wallace, Springfield, 2-position board.

PRIVATE BRANCH EXCHANGES.

THE Private Branch Exchange may be a business booster or a business buster. The person to determine the issue is the attendant in charge. Perhaps she does not appreciate the full responsibilities of her position; hence a few words from one qualified to offer suggestions on this subject:

The private branch exchange attendant should be alert, quick-witted, even-tempered and tactful. She represents, to those who enter by the telephone door, the business house by whom she is employed. Their opinion of the house will be largely influenced by the treatment they receive at her hands. An indifferent or impertinent attendant can do more to hurt the reputation of the house than any other employee, for the reason that she comes in contact with all of their telephone customers.

An attendant should never be assigned duties which in any way might interfere with the efficiency of the service. No business house would for an instant think of keeping a prospective customer cooling his heels outside its door, and justify itself by stating that the doorkeeper was shoveling coal. That is what happens, metaphorically, when a branch exchange attendant is slow to answer, or when there are not enough trunk lines connected between the private branch exchange and the central office to handle the traffic, and the customer has to be told "the line is busy."

Co-operation, in its broadest sense, must exist between the private branch exchange attendant and the central office operator. The company endeavors to give accurate, courteous and prompt service. Should it not in justice receive the same service from the private branch exchange attendant? The central office operator and the private branch exchange attendant are so closely related that inferior service given by the latter reacts directly on the central office, and vice versa.

For example, if on a call originating at a private branch exchange the attendant were slow to disconnect after conversation was finished, the whole circuit would be held, from the originating station at the private branch exchange to the called station in the terminating exchange, until the attendant disconnected, or until such time as the central office operator supervised and finding no one on the line, took down the connection. During this period of time, the private branch exchange trunk line to the central office, the Telephone Company's trunk line between the originating and the terminating exchanges and the called subscriber's line would all be unavailable for any other connection.

On inward calls, after the private branch exchange attendant has answered and ascertained the desire of the calling party, if the person called does not answer promptly, the attendant should supervise frequently in order that the calling party may know he is receiving attention. Nothing is more aggravating to the person calling than to have passed his order and then have to wait on the line without further information.

The branch exchange attendant should rate high in the organization of a business house. There is probably no one person who meets, "ear to ear," so many of its customers and who can, by good or indifferent treatment, make friends or enemies. The attendant also is necessarily acquainted with many confidential matters, and should be particularly discreet.

The term "business house" has been used in this

article as the majority of private branch exchanges are located in business establishments, but the above applies to all attendants, no matter where they may be located.



Private Branch Exchange for Business Houses and Hotels having much Telephone Service.

More and more, every day, people judge a business house by the quality of its telephone service. Whether this judgment shall consist of commendation or condemnation, is for the operator to decide.

WHAT THE TELEPHONE GIRL HAS DONE.

THE truth about the American telephone girl is that she has become so highly efficient that we now expect her to be a paragon of perfection. To give the young lady her due, we must acknowledge that she has done more than any other person to introduce courtesy into the business world.

She has done most to abolish the old-time roughness and vulgarity.

She has made big business to run more smoothly than little business did half a century ago.

She has shown us how to take the friction out of conversations and taught us refinements of politeness which were rare even among the Beau Brummels of pre-telephonic days.

Who, for instance, until the arrival of the telephone girl, appreciated the difference between "Who are you?" and "Who is this?"

Or who else has so impressed upon us the value of the rising inflection, as a gentler habit of speech. This propaganda of politeness has gone so far that today the man who is profane or abusive at the telephone is cut off from use of it. He is cast out as unfit for a telephone-using community.—H. N. Casson in *The History of the Telephone*.

TELEPHONE HUMOR.

Housemaid Answered Call for Wife.

AS most everyone knows there are some words that sound alike over the telephone, and some peculiar mistakes are often made. A confusion in names caused a laughable instance in which three Athol people figured.

The husband gave central the number of his residence and said: "Hello, Carrie, want to go to the theatre this evening?" "Yes," came the reply. "Then meet me at the drug store at 8 o'clock."

The man arrived at the drug store at just 8, also a woman with whom he was acquainted came in at about the same time. The woman kept waiting, and so did the man. Finally they spoke of the theatre, and the man said his wife was to meet him at 8 o'clock to attend, but as it was then 8.15 he believed he would try and find her. The woman said that her gentleman friend was to meet her also at 8 o'clock to take her to the theatre.

The man telephoned to his wife, who claimed she had no telephone call from him. To cut a long story short, it seems that a domestic in a family, expecting a call from her beau, had answered the phone to the call the man had given for his wife, which was given on the wrong line. She mistook the name Carrie for her own name, Mary, and supposed of course it was her sweetheart she was talking to as no one else would ask her to attend the theatre. Matters were explained all round, and husband, wife and domestic attended the theatre together.—*Athol Chronicle*.

Oh, Rats!

A subscriber's telephone at Bennington, Vt., was out of order recently. When the trouble man arrived at the house the trouble would clear. For several days about the same time the trouble recurred on the line.

Finally the trouble hunter found that a woman in combing her hair laid her wire rat across the binding posts and short circuited the line.

Had the Double-Ring Service.

A Methodist minister having two-party service called at the Fitchburg, Mass., exchange to inquire if he could be changed to another line, as he did not wish to be on the line with one of his parishioners.

The clerk asked, "What class of service have you?" He replied, "The double-ring service."

Thought "New. No." Meant New Number.

A Ware subscriber, wishing to communicate with a party in Newtonville, called in the usual manner, saying, "I don't know the number, but the book says 'New. No.' before the number, I suppose that means new number." The operator then explained that it meant Newton North.

He Wasn't a Mormon.

Rushing to the telephone and taking down the receiver, the young wife cried, "Is this the office of the telephone company? Give me Mr. Brown. He is in the collection department. This is his wife."

Central—"Number?"

Wife—"Number? You horrid thing; I am his first and only wife."

Mixed Information with Intermission.

Operator—"Number?"

Man's voice—"Give me the depot, please."

The operator connected the subscriber with information and the subscriber promptly hung up his receiver. A few minutes later the same man again asked for the depot and seemed to be surprised when he heard "information." The matter was explained to him and he said:

"Oh, I see. I thought you said intermission and, as this is a small town, I thought probably you had a little intermission for lunch."

Wanted Mr. Brown with Whiskers.

The other day a Portland subscriber passed a call for a Mr. Brown in Boston. The operator received the report that there were three Mr. Browns at the number called. In giving this report to the calling subscriber he replied, "Why, I want the one with the whiskers."

Could Get Initials in "The News."

Subscriber to Information Operator—"What is Mrs. Smith's telephone number?"

Information Operator—"Do you know Mrs. Smith's initials?"

Subscriber—"I am not sure of them, but her daughter was married recently and there was quite an article in the society columns of all the Sunday papers. I believe you can find the initials if you can refer to *The News*."

Called for "263 Limited."

A subscriber asked the operator for "263 limited." The call was referred to the monitor who told her there was no such number. The subscriber replied, "Well, the book says 263 L, and doesn't 'L' mean limited?"

Telephonic Hospitality.

Mr. Brown had just had a telephonic connection between his office and house and was very much pleased with it.

"I tell you, Smith," he was saying, "this telephone business is a wonderful thing. I want you to dine with me this evening, and I will notify Mrs. Brown to expect you."

Brown (speaking through the telephone)—"My friend Smith will dine with us this evening."

"Now listen and hear how plain her reply comes back."

Mrs. Brown's reply came back with startling distinctness:

"Ask your friend Smith if he thinks we keep a hotel!"

A New Use for the Telephone.

Cecil was accustomed to hearing his mother telephone for nearly everything she needed. One day as he entered the pantry a little mouse scampered across the floor. Very much frightened, he jumped up and down, screaming: "Oh, mother, 'phone for the cat! Please 'phone for the cat!"—*Success Magazine*.

Desired Family with Most Children.

An amusing inquiry was recently asked of the Chicopee information operator by a man who wanted a family named Schwartz on Chicopee street. Upon being informed by the information operator that there were two Schwartz families on Chicopee street, he said: "Well, I want the family which has the most children."

PEOPLE'S TELEPHONE COMPANY SOLD.

THE Vermont People's Telephone Company of Orleans, Vt., one of the largest and most successful of the independent telephone organizations in New England, was taken on by purchase January 1, 1911, by the Passumpsic Telephone Company, one of the New England Telephone and Telegraph Company's sub-licensees.

The Passumpsic Company operates in the territory of Eastern Vermont included in Caledonia and Orleans counties, from Barnet, on the Connecticut River, northward through the Valley of the Passumpsic River and the country south of and around Lake Memphremagog, to the Canada line. Its principal towns are Barnet, St. Johnsbury, Danville, Lyndonville, West Burke, Barton, Orleans, Newport, North Troy, South Troy and Lowell.

The plant of the People's Company is mostly in Orleans County, with the town of Orleans, formerly called Barton Landing, as its center. The acquisition of this plant and business will bring to the Passumpsic Company 1000 to 1200 new subscribers heretofore served by the People's Company. Connections with the Passumpsic Company's service will give them communication with about double the number of telephone users which they have heretofore been able to reach, and connection with long distance toll lines. They will also have from the Passumpsic Company, continuous night and day service, week days and Sundays and all-metallic circuit in place of grounded lines, which constitute a large proportion of the People's Company's outside plant.

The People's Company's business was established by Mr. Daniel Buchanan of Orleans, in 1898. Its exchanges are in the towns of Orleans, Newport, Derby Center, North Troy, South Troy, Barton, Island Pond, West Charleston and Morgan. The outside plant includes about 340 miles of pole line, 1200 miles of wire, and 3000 feet of underground conduit in the town of Newport.

In places where duplicates exist, the exchanges will be consolidated, and it is intended to metallic circuit the grounded lines as rapidly as practicable in order to make the standard of service equal to that of other subscribers of the Passumpsic Company. The headquarters of the latter will be at Newport where a thoroughly up-to-date operating room and public office will be arranged.

Over 150 of these smaller telephone companies in the northern part of the territory, in Maine, New Hampshire and Vermont, although independent organizations, are, in effect, parts of the system of the New England Telephone and Telegraph Company inasmuch as they have a working agreement with the New England Company for an interchange of toll business.

Telephone on Theatre Stage

A telephone has been installed on the stage of the Bijou Theatre, Fitchburg. It is connected to a special line and arranged in such a manner that Andrew Whitney, the owner, who is confined to his residence, can call from his special line telephone and listen to the entertainment.

The transmission is very satisfactory indeed, and Mr. Whitney is very much pleased with the service. He is ill in bed some of the time, but with the crown receiver which is attached he can listen at all times under the most favorable conditions.

SAVED LIFE OF DROWNING BOY.

MANY a courageous bit of work is done in the ordinary course of the outside plant man's duties, but to the inside man the chance to show his mettle seldom comes. One of the infrequent exceptions has come to light in Bangor.



Stanley Clark

The test room in the Bangor exchange building fronts on Kenduskeag stream. Stanley Clark, local test man, heard an outcry from the wharf which runs out into the stream at this point, and glancing through the window saw a small boy struggling in the water and a gathering crowd running to and fro on the bank. The boy had fallen from the wharf and, being unable to swim, was fast becoming exhausted. Clark, taking

in the situation at a glance, dashed down stairs, around the building, across the wharf and, without an instant's hesitation, dove and soon had the youngster safely on shore.

An Antidote for Lonesomeness.

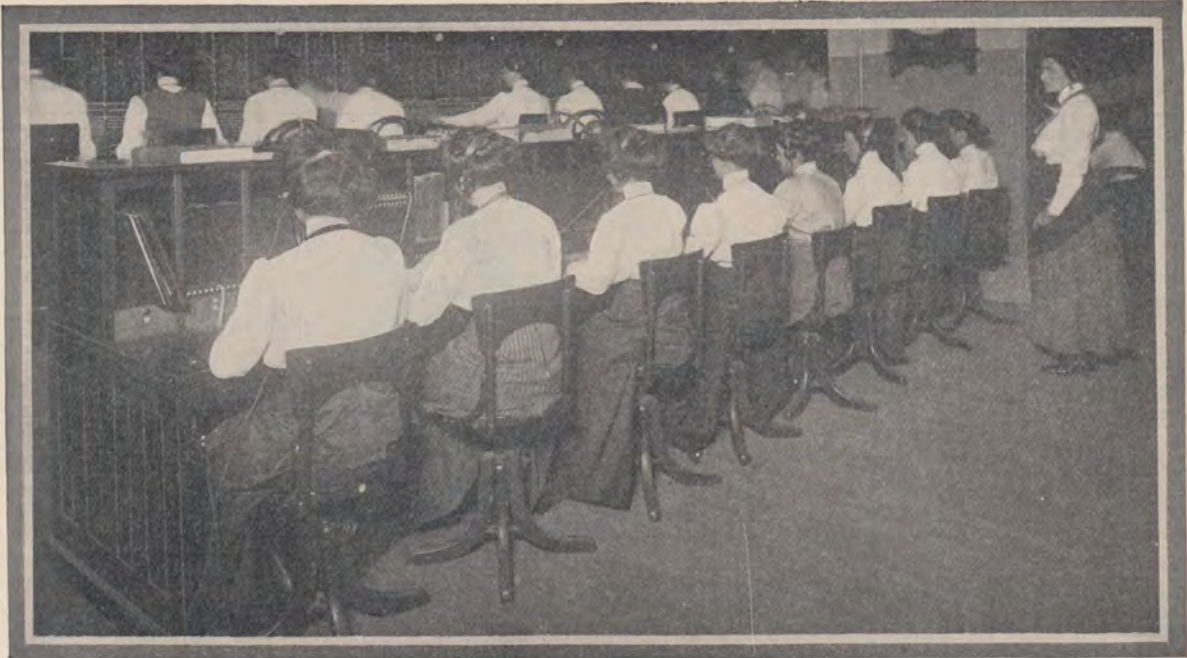
"Operating Practice" lays down certain strict rules, one of which forbids conversations with subscribers except for connections. Certain exceptions are permitted, however, in the matter of emergency calls, so that it is permissible to repeat the following sweet story of childhood and its recourse to the telephone as an antidote for lonesomeness:

An operator at R—— Exchange recently received a call upon answering which she heard a child's voice asking for "Central." The operator's first impulse, "willingness to serve," asserted itself and thinking of fire or accident, she questioned the child only to learn that the folks were out, the maid busy, and Charles just "lonesome." Later Dr. F——, a prominent physician, called and said that he was quite amused at his boy's story of his talk on the telephone and thanked the operator for her attention. He said that while he knew the telephone was indispensable to him he did not realize before that even the youngest member of the family could appreciate it.

He Talked Through the Receiver.

Here's an anecdote to match that one recently sent in from Athol where the caller was told to "hold the line," and thought he was doing so when he pinched the green cord connecting his telephone. It would seem as if every one ought to know enough to place the receiver to the ear and talk through the transmitter, but the following incident shows there is still need for elementary education:

A pay station signal was burning steadily and the operator answered several times without result. She could hear some one at the telephone, but she could get no reply to her request for "Number?" As there was another telephone in the store the supervisor called the proprietor and asked him if any one was in the pay station booth trying to get Central. The proprietor went to the booth and found a man holding the receiver to his mouth and his ear close to the transmitter. The proprietor explained the proper way to use a telephone and the party then talked.



INFORMATION DESK AT MAIN EXCHANGE, ONE OF THE BUSIEST IN BOSTON

Since the Revised Rates were put into effect a few months ago there has been a great increase in calls for the information operator in all Exchanges, and several desks have been enlarged to provide more accommodations.

THE INFORMATION DESK: ITS USE AND ABUSE.

IF any one of us were asked to state how many operators are involved in the handling of a patron's call, we should answer immediately, "One, if the call is to a number in the same exchange district; two, when it is to another office over a direct circuit, and three, if it is switched through an intermediate office."

If our questioner should say, "Why is it, then, that on calls even to other numbers in my own exchange I frequently am asked by a second operator what number I am calling, and told that the number is changed or disconnected; if one operator only is involved, how does this second one get connected to my line?"

We should naturally reply, "Oh! that is the Information operator; all irregular traffic, such as calls for numbers that have been changed or disconnected, are referred to the Information desk and a second operator is involved in handling these."

Do we often stop to consider that these, the irregular calls, in the Metropolitan District amount to about 35,000 daily, considerably more than twice the number of calls switched through intermediate offices which we were so careful to mention to the patron when he first questioned us?

Perhaps the first question we ask ourselves when we do consider it is, "Is all this necessary? Isn't much of the irregular traffic caused by the failure of our patrons to use their directories?"

There is no doubt, of course, that if patrons consulted their directories before making their calls, the burden of our information work would be considerably lightened; also, incidentally, the patron would get his connection more promptly, for, while the delay caused by referring his call to the Information desk ought

never to exceed one minute, yet any patron, reasonably familiar with our directory, can find a number within 30 seconds.

There is no doubt either that having received such a call, the obligation rests on us to complete it if possible. If we had only the calling patron to consider there might be some justice in saying to him, "We request you to consult your directory; if you do not, you cannot blame us for poor service." But we have also the called patron to consider, whose inward, as well as outward, service we are bound to protect, which means that we must take every reasonable measure to insure his receipt of all calls intended for him.

But even if patrons always consulted their directories the major portion of the 35,000 irregular calls a day would still be left, owing to the fact, that because changes in service, changes in residences, and all the many things causing changes in number, cannot be postponed until the issue of a directory. And no matter how rapidly the printing of the directory was done, a month's time would be consumed in this operation and all the telephones installed during that period would have to be called for through "Information." If for no other reason than that of furnishing calling patrons with these numbers, we should have to maintain our Information desks.

Information operators, therefore, play a vitally important part in furnishing service to subscribers, and are expected to exercise all their skill and ingenuity when the request for assistance concerns some legitimately telephone matter. They have special directories and card indexes, corrected up to the minute, which list subscribers alphabetically and also by streets. Thus it is a simple matter for them to ascertain whether a certain person has a telephone. What complicates the duties of Information is the question that bears no relation to telephone business.

"What time does the next train go to New York?"

"How far is San Francisco from Honolulu?"

"Are there any live bears in Hyde Park — my little boy wants to see one?"

It may be flattering to have subscribers feel that Information is omniscient, but it is quite apparent that the average range of such questions would go beyond the off-hand knowledge of most information clerks, and that the telephone company could hardly furnish a complete list of reference books, even if it were willing to have these clerks spend the time necessary to consult them.

Such questions as these are entirely relevant, however:

"I want to speak to the drug store at Washington and Hanover Streets. I don't remember the name."

Or—

"There's a plumber in the Smith building. Can you give me his telephone number?"

Or—

"I want to speak to Frank Jones. He is employed in an insurance office at 85 Water Street, whose name I don't remember, but I could recall if I heard it."

These are pertinent inquiries. They relate to telephone matters. The other kind are irrelevant and should be discouraged. To do this without offending the caller requires tactful courtesy. The inquiry, however absurd, should be treated with all seriousness and the distinction between relevant and irrelevant telephone questions politely explained. In ninety-nine cases out of one hundred the question will be withdrawn at once, and in the hundredth case no offense will be taken.

LEADING THE WAY IN COURTESY.

EVERY Telephone Company employee should lead the way in telephone courtesy. This applies to all, from the office boy to the official.

Set the example in your offices and at your residences.

Commence at once by cultivating and exercising the faculty of being courteous.

It is in the best interests of the company that all its representatives that come in contact with the public through the use of the telephone appreciate and fully realize their privileges and opportunities to educate others by their own example in the proper method of calling and receiving a telephone message.

All telephone users are quick to recognize the value of time and the majority of them are also rapidly recognizing the value of telephone courtesy as one of the fundamentals in obtaining good service. In order that all representatives of the Telephone Company may do their part in assisting all telephone users in this direc-

tion, they should themselves be acquainted with and practice the main essentials in telephone courtesy, and in order that they may be in a position to set the example and be potent in leading, we present below an article that all should read, which lately appeared in the company's directory:

Courtesy Between Telephone Users.

Would you rush into an office or up to the door of a residence and blurt out "Hello! Hello! Who am I talking to?" and then, when you received a reply, follow up your wild, discourteous salutation with "I don't want you; get out of my way. I want to talk with Mr. Jones."

Would you? That is merely a sample of the impolite and impatient conversations that the telephone transmits many times a day.

There is a most agreeable mode of beginning a telephone conversation which many people are now adopting, because it saves useless words and is, at the same time, courteous and direct. It runs thus:

The telephone bell rings, and the person answering it says: "Morton & Company, Mr. Baker speaking." The person calling then says: "Mr. Wood, of Curtis & Sons, wishes to talk with Mr. White."

When Mr. White picks up the receiver, he knows Mr. Wood is on the other end of the line, and without any unnecessary and undignified "Helloes," he at once greets him with the refreshingly courteous salutation: "Good morning, Mr. Wood." That savors of the genial handshake that Mr. Wood would have received had he called in person upon Mr. White.

Undoubtedly there would be a far higher degree of telephone courtesy, particularly in the way of reasonable consideration for the operators, if the "face-to-face" idea were more generally held in mind. The fact that a line of wire and two shining instruments separate you from the person with whom you are talking, takes none of the sting out of unkind words.

Telephone courtesy means answering the telephone as quickly as possible when the bell rings—not keeping the "caller" waiting until one gets good and ready to answer. Telephone courtesy, on party lines, means being polite when someone else unintentionally breaks in — not snapping, "Get off the line; I'm using it."

In a word, it is obviously true that that which is the correct thing to do in a face-to-face conversation, is also correct in a telephone conversation, and any one has but to apply the rules of courtesy, prescribed long years before the telephone was first thought of, to know the proper manners for telephone usage.

Be forbearing, considerate and courteous. Do over the telephone as you would do face to face.—Frank J. Wisse in the *Telephone Engineer*.

AUDITOR'S DEPARTMENT. RECORD OF BOOKKEEPERS.

	Supervisor Healy	Supervisor Wilson	Supervisor White	Supervisor Whittier	Supervisor Dinsmore	Supervisor Mosses	Supervisor Williams	Supervisor Barnes
Number of Bookkeepers.....	6	5	8	8	7	8	8	8
Number of Errors.....	0	5	3	7	6	8	13	12
Average Errors per Bookkeeper...	0	1	3/8	7/8	6/7	1	1 1/8	1 1/2
Bookkeepers making no Errors...	6	5	4	3	4	4	1	3
Number of Subscribers' Accounts...	7348	13757	12331	12115	10331	10842	12099	11174
Errors per 1000 Subscribers.....	0/100	1 1/2/100	2 1/4/100	5 1/2/100	5 1/2/100	7 1/2/100	1 1/8/100	1 1/4/100

TELEPHONE SOCIETY'S MEETING.

Addresses on "Efficiency" by J. N. Gunn of New York and Auditor Edmund W. Longley.

THE January meeting of the Telephone Society of New England was devoted to a discussion of "Efficiency." The principal speaker was Mr. J. N. Gunn, head of the firm of Gunn, Richards & Company, production engineers, with offices in New York, Chicago and Boston, and also a lecturer at the Harvard Graduate School of Business Administration.

Mr. Gunn's address was highly interesting, even though it was general in its character rather than specifically relating to the telephone business. He frankly admitted his inability to be specific because of lack of knowledge of our work.

Mr. Longley, as auditor and comptroller, described some of the things we are doing in the line of developing efficiency, and incidentally touched upon one very important point, namely, that our efforts were not being wholly directed toward mere cost reductions. Another result even more important was the satisfying of the public, the giving of the best service possible at a fair price, rather than the cheapest service at the lowest price.

On account of lack of space we are unable to print the discussion in full, and therefore must indicate its scope by excerpts. Mr. Gunn said, in part:

In the last number of the *Outlook*, I think, there was an article by Mr. Abbott. It is well worth reading. On the outside of the magazine appears this caption: "The science of management means more money for the capitalist, higher wages for the workman, and lower prices for the consumer." I hope that is so. Those are all things that we desire. But I do not believe that that really expresses the science of management; I don't think it really expresses what we should expect from efficiency, the highest efficiency in operation. Economy is not the only end that should be sought in operation, but rather permanency for the industry, permanence of employment for the individual, stability for the industry, so that the consumer may receive a stable and a constant service.

Let us, in considering this question of efficiency, realize that the service I have in mind is not the service of the bookkeeper out of a job, who comes into your offices with various promises of great savings, and executes or delivers little. It is not the man who has a panacea for all of your ills, which he will deliver in a typewritten report at the end of ten days' examination of your business. But this study of efficiency has for its end the organization of all the effort of any corporation so that each individual, each department and each function, shall be thoroughly developed.

Functions of an Organization Important.

This determining of the functions of an organization is rather an important thing. It might be likened to the human body,—your corporation or any other. You must have the brain, you must have the nervous system, the bones and the muscles. You must have arms and feet. It is most important that the brain should never undertake work that the feet should do and that the muscles should never assume the burden that the bones should bear. The creation of the nervous system of a large corporation is your problem; the making of that nervous system effective as an

organization is the field of efficiency. That cannot be brought about by idle criticism. I believe very firmly that within the last ten or fifteen years—of course, any proper minded person would say it was Mr. Roosevelt's fault—we have had the disease of criticising. The office boy has criticised the office manager; the office manager has criticised the next higher officer above him. The man has criticised the foreman, the foreman the superintendent. There is nothing constructive in that. But criticism that is coupled with a definite suggestion based on sound economic law and good commercial sense is criticism that is worthy of our consideration.

Theory of Efficiency Very Difficult to State.

The theory of efficiency is very difficult to state. I doubt if any two men who are interested in the subject would think alike. But let me offer this, which to me seems a simple statement, that the study of efficiency resolves itself into a study of the organization of men, the organization of materials, the organization of machines, the organization of methods and the organization of management. I have purposely given the alliteration.

A workman is working on a lathe, turning a small fly wheel. There are many minor operations. A man with a stop watch, who gives careful observation to the matter, can analyze the turning of that fly wheel perhaps into fifteen or twenty natural divisions. Any one of those divisions he may have repeated a number of times, so that he will get a fair average for each operation. There will be certain unaccountable losses that cannot be accurately observed. There is time necessarily lost for rest—that is, between the subdivisions.

Mr. Taylor has given a great deal of study to this subject and has evolved a theory that 58 per cent of the time can be made efficient, the remaining 42 per cent being required for rest. But he points out the fact that the actual efficiency is in many instances much below 58 per cent, is frequently as low as 15 or 20 per cent; so that the real, productive efficiency in the operation I have cited, or in another, may be increased two, three, or even four-fold.

Another theory or principle that has been stated in connection with the organization of men and their efforts is that men work more cheerfully and with less real fatigue under intense but well-directed effort than they do with lagging, undirected and unintelligent effort. I believe that that principle is fairly well established.

Further, this principle in the organization of shops has been developed,—that instead of employing a superintendent and then a number of foremen, and then a number of men, with successive responsibilities of direction of the individual, finally leaving the man to his own devices in directing his own work in detail—it is better that the specific performances of the man should be determined in a central department organized under trained and experienced men, so that the man is given written specific instructions for the performance of every operation or bit of work that he does. That principle has in practice been found true, so that in most or many lines of effort it may be said that it is practical to direct the individual workman from a central planning department.

An example of bad organization in the employing department came to my attention within the last four or five weeks. A concern near Chicago employs about 5000 men. An investigation showed that 2000 of those



REST ROOM FOR THE COMFORT OF BOSTON TOLL OPERATORS

In every Telephone Exchange a well-furnished Rest Room is provided for the Operators. Each morning and afternoon they are allowed a resting period of fifteen minutes, in addition to the usual lunch time.

people had been continuously on the pay roll during the entire year, with perhaps a day or so absent here and there, or for the vacation period. But to maintain 3000 other people on the roll, 10,000 people were employed. That is, practically three men were employed to maintain one. That is inefficiency in the organization of men, and that is a fair measure of inefficiency in the employing relation of men. That standard of measurement, I think, will stand in any concern.

Method of Successfully Handling Employees.

I do not believe it is fair to attribute the success in handling men under modern methods of management, modern scientific management, to methods of wage payment. Please do not understand that I am belittling the value in many cases, and very many cases, of the premium plan or the bonus plan; but the careful supervision of men, fair dealings, the standardizing of their rates, the balancing of the rates against the work performed, will result in an increase in the efficiency of the individual under the ordinary wage plan, by a very appreciable percentage. So I think it is wrong to ascribe the result to the bonus plan, the premium plan, piece work, or any other wage plan. It is simply intelligent management, intelligent direction of the individual, to see that the man understands his work as clearly as you intend him to understand it.

The problem of the organization of materials, I believe, is just as important as the problem of the organization of men. An instance of this came to my attention recently where, in 2,000,000 square feet devoted to factory purposes, about 1,200,000 square feet were found actually devoted to production, the other 800,000 square feet being devoted to the storage of materials throughout the plant.

A comparatively few minor changes were suggested by the works' manager and superintendents

that resulted in releasing for factory purposes about 200,000 square feet of the plant that had been used for the storage of material; much of the material on the remaining 600,000 feet was made available for distribution, and the space to be occupied in the future by material is to be greatly reduced. It is too early yet to say that it has been reduced, but it will be.

In another concern having a great many branches throughout the country, where the responsibility for keeping the stock on hand was divided between the managers of each of the various departments or stores, when that responsibility was taken away from them and centralized it resulted in the release of over \$400,000 worth of material that had previously been kept on hand. Each man in charge of the branch was just as efficient as he could be, but he did not know the whole story.

I don't know whether you have materials stored at many points or not. I assume that you do. I don't know how you handle it, but I do know this, that under centralized control or supervision your investment in materials will be very much less than where that responsibility is divided.

An illustration of what has been done in one instance in connection with materials came to my attention some years ago. In a large plant in central Pennsylvania a great many spare parts for machines and equipment were stored near the individual departments over quite a large area, an area perhaps six or eight miles long and a mile broad. They were stored, as it was explained, near the departments and machines, to be convenient. Many of these parts were quite heavy and it was found that it would be better to centralize storage of those parts. That was evident after a little investigation.

But in so doing an investigation as to the parts necessary to keep on hand was made, and obsolete parts

were found, which had been accumulating, in quantities sufficient to represent the output of two blast furnaces for a period of six weeks. There was no large accumulation at any one point, but the accumulation was very great in the aggregate. I don't think that that could occur in that concern again, because the centralization of authority, supervision of plant, plant maintenance and equipment, insures against that sort of thing. You have that sort of organization, as I understand it.

The standardization of methods of manufacture can be adapted to the standardization of the methods of office work. In that particular concern it has been done. Mr. Gifford Pinchot, then Forester, standardized the office work of the Forestry Department to such an extent that it stands to my mind as the most efficient office organization that has ever come under my attention. He treated all of the office work as though it were machine work. All of the operations were analyzed; and, while my statement may be against the popular tradition that government work is ordinarily inefficient, I believe the forest service in its office work is the most efficient of all the government departments, and one of the best examples of efficiency in the country.

I believe that any corporation could learn a great deal from the methods employed in the forest service. An example of what I mean was developed in the tabulation that was made by a person independent of the service, in which a comparison with a large manufacturing concern, in the item of stenographic service, showed that in the forest service they were getting two and one-half times as much work from their stenographic department as they were in the assumedly well organized manufacturing corporation.

Standard for Measuring Results.

I think it is a characteristic of modern efficiency methods that men are not discharged as a cure for faults, but they are educated and instructed. The measuring of results and the finding of a standard is just as possible in every department of your business as it is in any other producing concern. There is a standard to be found by which the results of a university may be measured. There is a standard to be found for the measuring of results in any manufacturing concern, any insurance company, or, I was going to say, any missionary society. It is simply a question of intelligent discrimination and of finding the basic unit. I believe that you have given a great deal of study to that subject already.

One of the most important factors in good organization and in insuring efficiency is to get accurate and reliable information. It has been the habit in most industrial concerns to get the results of operation after the foreman, the superintendent and the customer had all died; but a characteristic of modern methods is that the results must be forthcoming before the event has passed from the minds of the individual men. One concern that I think of, having 50,000 men distributed over a territory of many miles, has its profit and loss account, all of its operating statistics, in the hands of every man concerned with those statistics never later than the fifth day of each month. That has been in operation for a period of twelve years. I assume that the organization of your statistics is quite as efficient; but that is a characteristic of modern organization.

I have known concern after concern to say, "Well, of course, we couldn't get our results in that way. Our

business is very peculiar. I can understand how in the brass business, where they do nothing but just make brass rods and brass wire, for instance, they could do that; but our business, you see, was founded by father some years ago (laughter), and we have a great deal of detail in the business. It is simply beyond anything that you can imagine. Consequently, we couldn't get our results until about thirty or forty days after the end of the period" — forgetting all the time that the accounting force and the operating force are eating up too much time with the amount of current work necessary to get these results properly.

Results Obtained by Being Up-to-Date.

If they were once caught up to date, and on their job, the information could be secured promptly from them, the same as in any other concern. Promptness in obtaining results is a characteristic of modern methods, and if you are not getting your results promptly you should seek the reason why. I suppose, of course, you would complain to the head of the department (laughter).

In dealing with all the organization difficulties, all the problems in connection with carrying out efficiency methods, efficiency practice, there are of course a great many discouragements and a great many delays. I believe that modern management will be better ten years from now than it is today, but I do not look for the wonderful revolution that some fondly hope for. But the big problem in every organization is the problem of organizing and directing men. A man will not be any clearer in his understanding of what you want than you are yourself, or than you make clear to him. I am strongly tempted to draw a picture in illustration of this.

A gentleman, who is a very fine sportsman, returning from a hunt, sat down and wrote to his friend describing the delightful hunt which he had had. He illustrated his letter with a number of very interesting and attractive sketches. His friend was delighted with them. It was a long letter and there were a number of sketches. He understood all of them with the exception of the last, and he had to write back to his friend for an explanation of that. His friend wrote to him and said, "Why, that is perfectly simple. That was a picture of my return from the hunt."

The friend wrote back again and said it was not quite clear, and the reply was, "Why, that is perfectly clear. It is a picture of me as I went through the door, with my gun over my shoulder and the dog's tail sticking out." (Laughter.)

Now, when some one refers to modern scientific methods of directing men and says that written instructions must be given, don't say that you are doing that in your concern unless you know that you are. Perhaps your instructions are just a little vague. They must be just as clear in the mind of the man as in your mind.

As illustrating the importance of this organizing and study of the man, I will state an incident.

Some years ago one of my daughters was struggling with a dissected map of the United States. After a time I noticed that she had not finished it, but that she threw it all aside and commenced to turn the pieces over. On the opposite side was a picture of an American Indian. I asked her what she was doing. She said, "Father, when I get awfully tired of working on all the rivers, states and things, I just turn over to the other side and work on the man." I believe, after you

have worked on all of your problems of organization and efficiency, if you will just turn to the other side and work on the man, the chances are that you will be fairly successful. (Applause.)

Mr. Longley said in part:

Mr. Longley Tells of Relations with Subscribers.

How much efficiency means to a company like ours is shown when you consider how small, petty expenses run into large sums of money. Today we are dealing with subscribers at 375,000 stations, perhaps a few more. A saving of one cent a year on those stations amounts to \$3750, and ten cents a station amounts to \$37,500. Our company has certainly been doing a great deal of work in the line of efficiency.

I think Mr. Gunn's statement to the effect that an outside man can often show ways in which efficiency can be attained better than a man connected with the business, is true; and I think it is very likely that if he would spend time in our company he could show us a great many ways wherein the pennies could be picked up in connection with those 375,000 stations.

But it is only fair to ourselves to say that we have been picking up a great many of them in the last few years. There has been an immense improvement. I have said that I would not pat the Commercial Department on the back again, because I thought they were doing well enough and I didn't want to encourage them to do any better. But there is this to be considered: Perhaps two years ago the losses of the telephone company were running along at the rate of one to one and one-half per cent of the gross revenue. For a series of years that percentage did not go above one per cent. We did not think that was very bad. But within the last two years those losses have been reduced, so that this year, and probably next year, the losses will not be over one-fourth of one per cent.

Doing a business of about \$12,000,000 — twelve and one-half million dollars it will run this year — a loss of one and one-half per cent amounts to \$180,000, a really huge sum of money, and a reduction to one-quarter of one per cent means a reduction to the sum of but \$30,000. That is, there has been a saving of \$150,000 in a year.

Public Feeling Toward the Company.

And that I do not consider by any manner of means to be the measure of efficiency. I believe that the real measure of efficiency in connection with that saving has been in giving a better spirit on the side of the public towards the telephone company. I am satisfied, and I believe the commercial men are satisfied, that when bills are collected well the public feeling toward the company is much better than when the bills are allowed to accumulate and the subscribers to get into a place where to pay a bill due is somewhat of a hardship.

The measure of efficiency in the telephone business is one of the great problems. The measure of efficiency is not always the reduction in cost. I can conceive of cases where a higher cost will mean a higher efficiency than a low cost will. Cost is measured by what you get for it, and if a reasonably high cost would get the favor and goodwill of the public it should be that cost that we ought to work towards, rather than a small cost which might save the immediate dollars but which would cost in the end a great many dollars through the illwill of the public. I could talk on this line a long time, because cost is my hobby and specialty.

But now it is said that this model corporation that has been referred to — and I am not intending any sarcasm — is doing wonderfully well when it gets its report in the first of the month. I don't think that company is doing very well. I think we do a great deal better than that, and it is just because we have reversed that process. The figures of cost begin in the field. The figures of cost accumulate. There is not a function of the company that does not know from day to day, through its work papers, what has been the cost of the day before. The man nearest the job knows the costs. He gets those costs from his work papers, and he can regulate the men reporting to him from day to day.

Then from our system — which we have called the X-A system, because that is a short and easy name for it — those figures are built up by the week, and at the end of the week the first supervising employee can see the expenses for the week. Those are accumulated by the month; and then the district man, and later the division man, can see those figures by the month, immediately after the close of the month.

We at headquarters do not see those expenses until everybody else, everybody who has a real working responsibility, has seen the figures and has had a chance to work them out and see what the matter is with his own department, why it is not on to the job. Then, when we at headquarters criticise later on, the man near the work has had time to look over the figures and know what the trouble is. The man in the field is all primed and can tell us what is the matter. He cannot say, "I don't know what you are talking about," because he is on to his job, has had a chance to figure the thing up, and comes back slap at us and tells us what the trouble is. He has had a chance to look into his problem when the problem is all fresh; and that, in my opinion, is the great value of our present system. It is the exact reverse of our old system, and it results in putting the knowledge of costs in front of the man who is able to regulate them, first, rather than bringing them down to him last.

Other remarks were made by Mr. Philip Harvey and Mr. N. W. Lillie.

Central Called Fireman and Saved Family.

Lyman Kent, of Marshfield, and his family consisting of a wife and young child, are alive and their cottage stands intact, due to the efforts of A. B. Seeley, a neighbor, who discovered the Kent home on fire at night, and Miss Ruby Holmes of Duxbury, who was in charge of the Marshfield exchange and notified members of the volunteer fire brigade.

Mr. Seeley says that when he saw the dull glow of the fire from a window in his house, the Kent family was asleep. He ran to the burning cottage and aroused the inmates, aiding Kent in getting Mrs. Kent and child safely out of the house.

Then Mr. Seeley called "Central" and Miss Holmes took the call. Miss Holmes at once proceeded to call up members of the fire department. The blaze, which is believed to have started in a kitchen from an overheated range, was put out with the aid of buckets of water before serious damage resulted.

Subscriber.—"Please give me Dr. F——'s telephone number."

Information Operator.—"We have no record of any telephone in that name."

Subscriber.—"Well, then, he must be married. Look under the name of Smith."

NOTES FROM THE FIELD.

BOSTON AND SOUTHERN MASSACHUSETTS DIVISION.

The following passed examination for first-class rating before the Boston division examining board: James H. Borden, Jr., central office repairman, New Bedford district; Arthur E. Driscoll, head installer, Quincy district; William R. Senior, lineman, Central district; William J. Reid, head installer, equipment foreman, John J. McKim, sub-station installer, Central district; Percy L. Elswick, head installer, equipment foreman, George F. Choate, Jr., sub-station repairman, Central district; Raymond Ahearn, head lineman, Quincy district, J. Edward Nicholl, head installer, equipment foreman, Finlay McPhee, lineman, Quincy district; Ernest B. Connors, lineman, division foreman, William B. McNulty, sub-station installer, equipment foreman, George T. Coakley, sub-station installer, Malden district; Willis Mills, sub-station repairman, Central district.

Traffic department changes: Daniel Sargent, assistant traffic chief at New Bedford, transferred to the force of the traffic engineer, Boston; Charles B. Davey, assistant traffic chief at Brockton, transferred to force of the toll traffic chief, Boston; Miss Lena T. Sherman, toll supervisor at Hyannis, appointed instructor in the New Bedford district and will devote much of her time to the interests of the class F offices on "the Cape"; Miss Nellie Robinson, formerly senior operator at Beverly, to local supervisor, Salem; Miss Mary Dwyer, local operator at Beverly Farms, to chief operator in place of Miss Barbara Daniels, resigned; Miss Olive Phippen, information operator at Beverly, to senior operator in place of Miss Robinson, transferred to Salem.

On December 24, the operators of the Lynn exchange enjoyed their annual "spread" to observe Christmas. The lunch consisted of several kinds of dainty sandwiches, salads, coffee, ice cream and cake, fruit, nuts, etc. The dining table and rest room were decorated with beautiful yellow chrysanthemums which were given by one of their subscribers, F. J. Dolansky. Another subscriber, the J. B. Blood Co., sent several cases of ribbon candy, allowing each employee to have a two pound box. In the afternoon gifts were exchanged by the operators, and there was a drawing of mystery packages for which each operator had previously given the money to the matron, who purchased the articles, wrapped them in paper and arranged the drawing.

The following is a list of the installation men in the Metropolitan district plant department whose work in October was without defect: Harry E. Cahoon, Gerald B. Kirwan, Daniel F. Kelleher, George W. Lovejoy, Herbert A. Merrill, Harry C. Noyes, Henry C. Turner, Francis L. Welch, Joseph F. Walsh. Those found correct with the exception of one defect to each: Albert R. Butler, Thomas J. Flynn, Michael F. McDermott, John F. O'Brien, Joseph F. Purcell, William R. Senior, Leslie Whiting.

Commencing January 1, the maintenance force in the Newton West district was re-arranged, Brighton, Newton North, and Newton South exchanges reporting to the wire Chief located at Newton North; the Needham, Wellesley, Newton West, Waltham, and Wayland exchanges remaining under the direction of the district wire chief; Concord, Maynard, Lincoln, and West Acton exchanges under the Concord wire chief.

Just before the President's offices were closed in Beverly, the members of his office force called at the Beverly exchange and were shown the equipment and methods of handling the President's calls. They presented the pen-holder used by Secretary Norton during the summer to the chief operator, and it is now treasured as a valuable possession of the Beverly office.

A meeting was held at the Newton West district office on the evening of December 8 of the sub-station installer's helpers. The subject was "Reporting by the Men in the Field." Men were instructed not only as to the proper method of reporting, but given the reason why. Many other points of interest were brought up, examples made and comparisons drawn.

The Malden Suburban District Plant Club met and elected these officers: S. W. Ingalls, president; F. G. Hanson, secretary; J. E. Lund, treasurer. The next meeting will be January 26, when No. 4 P. B. X. service will be discussed. J. E. Lund will handle the central office end of the discussion and I. P. Estes will talk on the substation end.

The Newton West district is completing more than 100 per cent of the new orders issued by the Commercial department; in fact, it is almost a daily occurrence to complete orders on the next day following the date of issue.

Plans are out for an addition to the Brookline exchange building, which, when completed, will more than double the present floor space. A large addition to the switchboard is contemplated.

Miss Margaret M. Murphy, a supervisor in the Cambridge exchange, has not been absent or tardy for nine years. This is certainly a record deserving of praise and one difficult to excel.

On January 1, Miss Catherine A. Cullen assumed the duties of chief operator of the Fort Hill exchange, being transferred from assistant chief operator at the Main exchange.

On the evening of December 22, a meeting of sub-station installers was held in the Somerville district office, and the method of installing was explained to the men.

The Western Electric Company is completing an additional installation of 1100 subscribers' lines and 940 answering jacks in the Somerville exchange.

Miss Philipina Kopp and Miss Katherine Finn of the Main exchange have been promoted from local supervisors to assistant chief operators.

The operators in the Malden exchange have formed a book club and have elected Miss Mary E. Aylward, local supervisor, as secretary.

Miss Anna M. Shurtleiff, senior operator at Milford, has been transferred to the Franklin exchange as chief operator.

EASTERN DIVISION.

The operating employees of the Portland exchange met January 6, and formed the "Portland Operators' Association." Its purpose is the promotion of social and literary intercourse and co-operation among its members. The following officers were elected: Miss Edith P. Mitchell, assistant chief operator, president; Miss Josie M. McFarland, assistant chief operator, vice-president; Miss Helen Maguire, local operator, secretary; Miss Mary E. Glynn, clerk, treasurer; Mrs. Mary J. Wallace, matron, librarian; Miss Alice Ladrikan, assistant chief operator, assistant librarian. One of the chief functions of this association will be the library,

which is expected to supply all the members with desirable fiction. A new book-case has been ordered and the books will be purchased immediately upon its arrival. The association has about 70 members and this membership is expected to increase to 100 very shortly.

An agreement was made on January 1 with the West Oxford Telephone Company of Lovell, Me., whereby it takes over all pole lines, together with circuits and sub-stations, north of Fryeburg Village, which formerly comprised the Lovell, Me., exchange of the Ossipee Valley Telephone Company. This Company has installed a one position village board in its offices at Lovell and connects at Fryeburg for outside toll connections. The West Oxford Company starts with about 85 telephones with prospects of a very rapid growth, as they open up a territory that has hitherto had no toll connections.

Two plan No. 1 farmer lines have been completed out of the Ellsworth exchange, one for the West Ellsworth road giving service to seven subscribers. F. W. Rollins, editor of the *Ellsworth American*, rendered valuable assistance in securing enough subscribers to make construction of the line necessary. The second line on the Lamoine and Marlboro road started with eight subscribers, but before it was completed seven additional families had signed, making a total of 15 subscribers, and this line has the distinction of furnishing service to seven families by the name of Hodgkins.

The Maine State Legislature is now in session at Augusta and as soon as all the representatives arrive, a large increase in the toll business is anticipated. In order to furnish the best possible service to the public, a pay station attendants' desk has been installed at the Augusta House, which is the headquarters of a large majority of the legislators. Three booths of the latest disappearing door type and two pay station attendants' desks have been installed in the State House in a room which is set aside entirely for telephone use.

The *esprit de corps* of the Portland operators was strongly in evidence on New Year's eve. After an especially busy day a considerable number came to the office at 11 p.m., in order to properly care for subscribers who were calling to extend the season's greetings to their friends. The rush lasted until nearly 1 a.m. Unfortunately the public does not realize the difficulty in giving satisfactory service at these unusual times, but faithful employees should understand that their services are appreciated at such times.

Promotions in the Eastern division: Miss Adeline V. Costain, from senior operator to supervisor, Bath; Miss Nellie G. Cummings, from senior operator to supervisor, Biddeford; Miss Eleanor T. Foote, from toll operator to senior operator, Bath; Miss Grace C. Riley, from clerk to senior operator, Biddeford; Miss May M. McCullum, from toll operator to instructor, Portland; Miss Hazel M. Griffin, formerly a senior operator in Lewiston exchange, has been appointed to supervisor in Augusta.

The operating force in the Bangor exchange is greatly elated over the showing the office has made in local service during December. In spite of the irregular and heavy load which precedes the holidays, this office reached the enviable 100 mark in the local service weight. We believe this is the first instance an exchange of this size has gained this standing, and the chief operator as well as the entire operating force is to be congratulated.

The Oakland exchange, which has been in charge of

an agent for a number of years, has grown to such an extent that it was deemed advisable to change its classification and have it operated by our own operators. The change was made on January 1, and without doubt will prove very satisfactory to the subscribers.

P. A. Seabury, formerly chief clerk in the Bangor district Plant office, has been transferred to the Portland district to act in the same capacity, vice E. H. Besse. The Bangor vacancy has been filled by the appointment of Thomas P. Cronan, formerly store-keeper.

CENTRAL DIVISION.

Contract Agent Frank Feather, formerly traveling contract agent for the Manchester, N. H., district, has severed his connection with the company, and has left for Dallas, Texas, and San Francisco, Cal., with a view to accepting a Commercial department position with either of these Bell Telephone Companies.

The Commercial department at Marlboro has moved to a new office in the Corey Building. A part of the room formerly occupied by this department is to be used as a retiring room for the operators and the remainder is to be made a part of the operating room.

A private branch exchange will be placed at the navy yard at Kittery, Me., in connection with Portsmouth, N. H. exchange. The initial installation will be 130 stations, with ultimate installation of 300 stations.

Martin E. Tilley, former collector and contract agent at Burlington, Vt., has been appointed contract agent for the Manchester, N. H., district.

A new two position magneto switchboard has been installed in the Tarbell building, East Pepperell.

WESTERN DIVISION.

On Christmas eve the operators of the Northampton exchange were invited to Boyden's, where a Christmas dinner was served, in appreciation of the good service rendered during the past year. After the dinner the operators were ushered to the reception hall, where an orchestra furnished music and the remainder of the evening was spent in dancing.

A house to house canvass is being made in Fitchburg by the flying squadron with H. C. Boardman, Frank F. Fox, P. H. O'Neil, and C. L. Nye. Ninety-five contracts were taken up to January 1.

The Pittsfield district held its Commercial conference in Pittsfield, December 12. Line order routine was the chief topic of discussion.

EXCELLENT TOLL SERVICE.

Here is a letter which shows the splendid Long Distance service given in connection with the American Telephone and Telegraph Company.

New England Telephone & Telegraph Company,
Worcester, Mass.

Gentlemen: We wish to compliment you upon the excellent service you are giving us on our long-distance calls.

We were forcibly reminded of this yesterday in talking with Philadelphia, as we could talk as distinctly with our Philadelphia party as if they were in Worcester, and many of our long-distance calls in New York, New Jersey and Philadelphia we have been able to secure connection in a very few moments.

Yours very truly,

W. W. WINDLE & CO.,
By W. W. Windle.

Millbury, December 23, 1910.

NEW CHAPTER AT GREENFIELD.

ABOUT seventy-five enthusiastic telephone men met at Greenfield on December 30 and formed the Greenfield chapter of the Telephone Employees' Association of New England. Thirty-four members were transferred from the Pittsfield-Greenfield chapter and the new chapter was started with a total membership of fifty-five. Officers elected:



GREENFIELD CHAPTER OFFICERS

Left to right — P. C. Lockwood, Secretary; D. E. Gingras, treasurer; G. F. Parker, Vice-President; W. T. Durfee, President.

President, W. T. Durfee, district plant chief, Greenfield; vice-president, George F. Parker, district foreman, Greenfield; treasurer, D. E. Gingras, commercial department, Greenfield; secretary, P. C. Lockwood, manager, Keene, N. H.; corresponding secretary, H. A. Noyes, plant department, Greenfield; entertainment committee, Frederick P. Langmaid, Jere N. Haskell, Donat Gingras, Charles A. Reynolds, Charles Lawrence, V. K. Redman, Eugene Henderson, Edward E. Mellen, Herbert E. Shaw, J. Walter Shelley, Anthony Affhauser; committee on by-laws, Philip D. Lockwood, Ralph J. Eldridge, Lester W. Martin; nominating committee, Samuel F. Parker, George H. Wright, Harold Buzzell.

There were a number of visitors present from various parts of the territory, many of whom extended congratulations and wished the Greenfield chapter the best possible success. The speaking was interspersed with singing and piano playing.

The meeting was called to order by Samuel F. Parker, district traffic chief, Greenfield, who introduced Duncan E. MacLennan, district plant chief, Worcester, president of the association.

Remarks were made by the newly elected officers, E. W. Pierce, chief clerk to the General Commercial Superintendent, Boston; Clifford L. Vaughan, district plant chief, Pittsfield; C. L. Stone, district plant chief, Fitchburg; August MacAulay, district plant chief, Springfield; C. F. Dufresne, district manager, Fitchburg; Harry V. Bicknell, advertising department, Boston; H. W. Emerson, P. B. X. department; F. G. Daboll, division commercial superintendent, Springfield; H. E. Hughes, district manager, Pittsfield; L. B. Stowe, district manager, Springfield; John K. Curtis, special agent, Western division; Frank X. Colleton,

special agent, Plant department, Boston; Charles H. Lamont, toll wire chief, Springfield; David Martin, engineer, Portland district; W. A. Parker, division cable foreman, Western division.

Letters were read from Harold S. Allen, district plant chief, Newton West district; R. P. Jones, chief clerk revenue and accounting, Boston; R. C. Marden, district plant chief, Manchester, N. H.; E. W. Longley, auditor, Boston; C. T. Keller, General Commercial Superintendent, Boston.

There were songs by Frank X. Colleton, J. Walter Shelley, right of way man, Greenfield district; Charles A. Reynolds, contract agent, Greenfield; D. E. Gingras, chief clerk to district manager, Greenfield.

An interesting initiation of one candidate followed the speaking.

TELEPHONE EMPLOYEES' ASSOCIATION.

Standing of the Telephone Employees' Association of New England January 1, 1911:

Members, 1907.	
Reserve funds,	\$45,000.00
Other funds,	3,408.16
	<hr/>
	\$48,408.16

Benefits paid during December to Jerry A. Maloon, Taunton, Mass., \$51.44; Burt P. Carr, Rutland, Vt., \$12.84; E. H. Averill, Springfield, Mass., \$12.86; Daniel McEachern, Somerville, Mass., \$21.42; Joseph Marrion, East Boston, Mass., \$40.00; J. N. Watts, Riverside, California, \$40.00; Ella W. Strange, beneficiary of Thomas F. Strange, Taunton, \$200.00; J. H. Leith, St. Johnsbury, Vt., \$5.72; R. J. Beatey, Dorchester, Mass., \$57.17; Charles Newton, Springfield, Mass., \$28.58; George L. Wilmart, Taunton, Mass., \$20.00; George Gillis, Lawrence, Mass., \$40.00; Thomas F. Conway, Lowell, Mass., \$50.00; Cartney Compton, Malden, Mass., \$30.00; Francis E. Perkins, Dorchester, Mass., \$10.00; Arthur W. Horton, West Roxbury, Mass., \$17.15; H. A. McCann, Worcester, Mass., \$18.58; Walter E. Ely, Springfield, Mass., \$8.58; I. C. Cross, Rockland, Me., \$60.00; George Deduc, Burlington, Vt., \$20.00; James McKeon, Haverhill, Mass., \$12.87; Maurice B. Webb, Bangor, Me., \$20.00; John J. Gillis, Charlestown, Mass., \$20.00; Henry J. Barry, East Boston, \$14.29; J. G. Germon, Rutland, Vt., \$8.58; J. Z. Chavelier, Claremont, N. H., \$10.00; John L. Barry, Everett, Mass., \$5.72.

The thanks of the association is due to the New England Telephone and Telegraph Company for its generous donation of \$1800. This, together with interest we receive, will make it possible to pay more than 465 weeks' disability benefits or 23 death claims this year without cost to the members.

J. A. McCOY, *Secretary.*

Gilmore Gives a Gavel.

H. B. Gilmore, the manager of the Western Electric Company, is a pretty good example to our Commercial representatives of the fine art of doing a nice thing in a nice way, as witness his presentation to the Telephone Society of New England of a beautiful mahogany gavel. It was duly acknowledged at the last meeting of the society. Of course, all this is done in the name of the Western Electric Company, but when we try to visualize the company we somehow get a picture of a smooth-faced, smiling, bald-headed chap whose initials are H. B. G.

COLLECTION RATINGS.

Collection ratings this month, 13.5; last month, 14.7. The Manchester district has first place with an average of 6.5, and the Pittsfield district has second place, with an average of 6.6.

Manchester Dist. (Cent. Div.), H. W. Worthley, Dist. Mgr.

White River Junction, F. A. Carr, Manager.....	3.6
Manchester, R. M. Mandell, Manager.....	4.9
Nashua, F. L. Towey, Manager.....	6.8
Concord, C. A. Weston, Manager.....	7.1
Portsmouth, E. H. Drew, Manager.....	7.1
Dover, W. J. Webb, Manager.....	7.7
Claremont, C. G. Adams, Manager.....	9.4
Average for the District.....	6.5

Pittsfield Dist. (West. Div.), H. E. Hughes, Dist. Mgr.

Great Barrington, F. P. Tucker, Manager.....	0.2
Bennington, W. E. Bissell, Manager.....	1.3
North Adams, W. H. Stedman, Manager.....	3.6
Pittsfield, W. I. Mellen, Manager.....	11.6
Average for the District.....	6.6

Fitchburg Dist. (Cent. Div.), C. W. Dufresne, Dist. Mgr.

Clinton, J. J. Barry, Manager.....	3.1
Winchendon, E. F. Sidley, Manager.....	7.6
Ayer, J. J. Barry, Manager.....	7.6
Gardner, George A. Towey, Manager.....	7.9
Fitchburg, F. E. Bowker, Manager.....	9.0
Marlboro, George Butterfield, Manager.....	9.5
Average for the District.....	8.0

Greenfield Dist. (West. Div.), F. P. Langmaid, Dist. Mgr.

Bellows Falls, H. W. Buzzell, Manager.....	1.8
Athol, E. E. Mellen, Manager.....	4.8
Keene, P. C. Lockwood, Manager.....	6.9
Brattleboro, R. J. Eldredge, Manager.....	8.0
Greenfield, F. P. Langmaid, Manager.....	16.0
Average for the District.....	8.6

Lowell Dist. (Cent. Div.), C. F. Grover, Dist. Mgr.

Lawrence, F. G. Cheney, Manager.....	4.7
Newburyport, D. B. Collins, Manager.....	6.2
Haverhill, R. B. Rood, Manager.....	8.1
Lowell, C. J. Leathers, Manager.....	14.7
Average for the District.....	9.4

Brockton Dist. (So. Mass.), George Knox, Dist. Mgr.

Taunton, G. H. Gates, Manager.....	7.9
Plymouth, W. H. Parsons, Manager.....	9.9
Brockton, C. C. Starbard, Manager.....	12.4
Rockland, R. B. Starbard, Manager.....	14.1
Average for the District.....	11.0

Portland Dist. (East. Div.), C. F. Story, Dist. Mgr.

Augusta, E. I. Herbert, Manager.....	6.5
Biddeford, F. S. Goodwin, Manager.....	7.5
Bath, S. E. Austin, Manager.....	10.6
Lewiston, W. I. Noyes, Manager.....	12.0
Portland, A. T. Stewart, Manager.....	12.7
Average for the District.....	11.2

Burlington Dist. (West. Div.), W. H. Fox, Dist. Mgr.

Burlington, W. H. Fox, Manager.....	10.0
Rutland, R. D. Beals, Manager.....	13.6
Average for the District.....	11.5

Salem Dist. (Cent. Div.), R. Robins, Jr., Dist. Mgr.

Gloucester, John Gadd, Manager.....	8.6
Salem, R. P. Butterick, Manager.....	11.4
Lynn, F. A. Phillips, Manager.....	13.0
Average for the District.....	11.8

Worcester Dist. (West. Div.), C. J. Abbott, Dist. Mgr.

Southbridge, A. K. Burrows, Manager.....	5.1
Milford, S. H. Walley, Manager.....	9.2
South Framingham, E. P. Wilbur, Manager.....	10.9
Worcester, C. E. Wilkins, Manager.....	12.8
Average for the District.....	12.0

Springfield Dist. (West. Div.), L. B. Stowe, Dist. Mgr.

Palmer, C. W. Chamberlin, Manager.....	4.1
Westfield, George B. Church, Manager.....	9.2
Northampton, A. Proctor, Manager.....	11.4
Springfield, H. L. Sanborn, Manager.....	12.7
Holyoke, H. R. Leathers, Manager.....	15.4
Average for the District.....	12.2

Bangor Dist. (East. Div.), E. T. Emerson, Dist. Mgr.

Calais, J. H. Broadbent, Manager.....	4.2
Dover, F. W. Mason, Manager.....	12.3
Waterville, S. Wing, Manager.....	13.0
Bangor, E. T. Emerson, Manager.....	13.7
Bar Harbor, J. C. McFaul, Manager.....	14.6
Machias, J. C. McFaul, Manager.....	15.1
Average for the District.....	12.7

New Bedford Dist. (So. Mass.), J. F. Hall, Dist. Mgr.

Falmouth, C. C. Craig, Manager.....	3.0
Hyannis, A. T. Stuart, Manager.....	10.4
Fall River, F. H. Grover, Manager.....	12.6
New Bedford, W. C. Foote, Manager.....	14.6
Nantucket, D. Y. Potter, Manager.....	243.6
Average for the District.....	12.7

Boston Division, D. W. Moffit, Collection Manager

Roxbury : C. G. Symonds, Collector.....	12.2
Maynard, West Acton, Concord, Arlington, Lexington, Lincoln, Waltham, Wayland : C. E. Hersom, Collector.....	12.2
Chelsea, Everett, Revere : R. G. Lombard, Collector.....	12.6
Cohasset, Hingham, Hull, Weymouth, Braintree : Geo. W. Despeaux, Collector.....	13.7
Reading, Stoneham, Wakefield, Winchester, Woburn, North Reading, North Wilmington : W. Leiber, Collector.....	14.2
Canton, Needham, Quincy, Randolph, Sharon, Stoughton : F. Tobin, Collector.....	14.6
East Boston, South Boston, Winthrop : A. S. Nickerson, Collector.....	14.8
Brookline : J. W. Gibson, Collector.....	15.1
Somerville, Charlestown : C. L. Damon, Collector.....	15.1
Newton South, Newton North, Brighton, Newton West, Wellesley : W. J. Barkley, Collector.....	15.6
Cambridge, Belmont : C. E. Delehanty, Collector.....	15.7
Boston : O. A. Atwood, J. A. Montgomery, J. G. Baxter, C. G. Symonds, J. E. Gardiner, E. S. Mogan, Collectors.....	16.3
Dorchester : A. H. Holland, Collector.....	17.2
Jamaica Plain, Milton : G. W. Murray, Collector.....	19.2
Malden, Medford, Melrose : G. L. Higgins, Collector.....	20.9
Dedham, Hyde Park, Foxboro, Medfield, Norwood, Walpole, Wrentham : A. B. Drake, Collector.....	23.6

Division Ratings

Central Division, T. E. Parker, Supt.....	9.0
Western Division, F. G. Daboll, Supt.....	11.0
Eastern Division.....	11.8
Southern Mass. Telephone Co., J. H. Barry, Supt.....	11.9
Boston Division, J. H. Barry, Supt.....	16.2
Average for N. E. T. and T. Co.....	13.5

SERVICE COMPLAINTS.

NO human mind can so co-ordinate its faculties as to absolutely evade error, and very naturally the telephone operator who is performing daily thousands of operations at high speed partakes of that human frailty. It happens, therefore, on occasions that the smoothness of these operations is rudely interrupted, and the telephone call instead of being helpful becomes an annoyance. Realizing that errors in the service cannot be entirely eliminated, it has been necessary to perfect a system so that a patron who meets with errors or delays can find relief promptly. The duties of a regular operator are so definitely prescribed, and the time at her disposal is so ordered for routine work that she is not in a position to render assistance readily. Any attempt on her part to take care of irregular calls would occupy valuable time which should be devoted to the work directly allotted to her, and would seriously disarrange the systematic operation of the service.

Every exchange is under the supervision and direction of a Chief Operator to whom all irregular calls or requests for assistance should be referred.

Regular users of telephone service have been quick to see the advantage of bringing service difficulties to the attention of the Chief Operator without delay.

The speed with which operators work and the number of calls handled preclude the possibility of their remembering details for any extended time. It is therefore of vital importance that patrons who meet with service errors should communicate *at once* with the Chief Operator. Not only is she in a position to correct the trouble at once, but the opportunity to investigate and determine the cause of an error without delay, is of great value.

Service criticisms are carefully recorded and systematically analyzed. Every criticism, where it is possible to definitely locate the cause of the trouble, yields valuable information and is an important factor in the improvement and development of telephone service.

The successful Chief Operator, with a keen eye to the welfare of her subscribers, must keep in the closest relation with patrons who have reported instances of unsatisfactory service. It is her duty to investigate thoroughly every case that is brought to her notice, to see that an adequate report is given, and to call the subscriber from time to time to make certain that the service is satisfactory.

In addition to the errors which creep into the service from time to time, misunderstandings frequently arise and telephone users who wish to make the most of service realize that it is a distinct advantage to have a general knowledge of the systematic methods devised to take care of their calls.

The number of patrons who visit exchanges is constantly increasing and the results are mutually beneficial.

The Chief Operator is fortunate indeed who has an opportunity to show patrons the order and discipline of her exchange, and to point out by concrete illustrations the manner in which calls are taken care of. Every user of the service who takes a few minutes to visit an exchange will leave with a better understanding of the problem of giving telephone service and with knowledge which will be of material assistance in the future. It is a decided advantage in all social and commercial life to know how to use the telephone so that it will yield the maximum return.

SUBSCRIBERS CONNECTED DURING THE MONTH OF DECEMBER, 1910

THE NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY AND THE SOUTHERN MASSACHUSETTS TELEPHONE COMPANY	Connected	Disconnected	Transfers from One Class to Another	Net Gain	Total Dec. 31, 1910
Exchange Stations	6642	3963	-16	2663	247209
P. B. X. Stations	773	314	+29	488	40092
Extension Sets	1034	532	-13	489	31364
Total Owned	8449	4809	0	3640	318665
Service Stations	14	3		11	637
Private Line Stations				-19	5504
Sub-Licensee Stations				179	54983
Grand Total				3811	379789

WARREN H. COLSON



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