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NOTES ON A TRIP EAST

BY

MR. W. F. COZAD

SUPERINTENDENT OF TRAFFIC

OF

THE COLORADO TELEPHONE COMPANY

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3/25/99

Dear Steve:

As discussed, I am
enclosing an interest-
ing "trowelog" which
is a record of different
telephone operating
practices in 1904. Now
almost 100 years ago.
I hope that you enjoy
it.

Regards,

Bill Twomey

TO PIONEER CHAPTERS:

"Notes On A Trip East", 1904, are duplicates of the original copy now in the Historical Museum of the A. T. and T. Co., 195 Broadway, New York City.

The writer is pleased to offer his fellow Telephone Pioneers and Chapters for their historical files and use, this copy, made possible through the courtesy of the Pioneers of Casper E. Yost Chapter No. 17, Omaha, Nebraska, March 1, 1950.

These notes offer a brief glimpse of some of the men and women and a few of the operating practices of nearly a half century ago. In no way complete, they are only a fragment of that earlier period in our Bell System companies. As thus preserved they will be of some interest to employees of that period; to a few of later years, and, perhaps, to some of the more advanced period of today.

With highest respect and regards,

Sincerely,

Walter F. Cozad

1029 S.W.Falcon St.
Portland, Oregon

March 5, 1950

Walter F. Cozad entered the telephone business at Trinidad, Colorado November 1899, in plant installation and repair for the Colorado Telephone Company. Was later at La Junta, Colorado as Agent; then in Denver as Operating Department Manager and General Traffic Superintendent for the Mountain States Telephone and Telegraph Company, until December 1920; then transferred to the Northwestern Bell Telephone Company at Omaha, Nebraska as General Traffic Manager. Became General Manager at Omaha 1928 - Retired January 1, 1939.

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E X P L A N A T O R Y

"Notes on a Trip East" were written in the fall of 1904 and were dictated to Miss Frances O'Brien, a Bill Clerk in the office of the writer, who, at that time, was located in Denver, Colorado, with the Colorado Telephone Company as Superintendent of Traffic of the area comprising the State of Colorado and the northern part of New Mexico.

At the time Miss O'Brien was learning shorthand and expecting to become a stenographer. She volunteered to take and transcribe these notes during evenings after office hours so that her regular day work would not be interfered with. A few errors, of course, crept into the transcript, and were unfortunately not corrected before the copy reached the hands of my good friend, Roderick Reid, then Assistant Auditor of the Company. Upon his own initiative he had them bound in this more permanent form by the Smith-Brooks Company, Printers in Denver. At that time, after being passed around and read by Mr. E. B. Field, President, Mr. E. M. Burgess, General Manager, and other department heads, they remained in the files until 1920, when the writer was transferred to the newly organized Northwestern Bell Telephone Company which succeeded the old Nebraska Telephone Company, the Iowa Telephone Company, The Northwestern Telephone Exchange Company, and the North Dakota Independent Telephone Company, with headquarters in Omaha, Nebraska, of which Mr. W. B. T. Belt was President and Mr. A. A. Lowman, Vice President and General Manager.

These notes remained in the files in Omaha until 1924 or 1925, when Miss Laura Smith, Personnel Assistant to Mr. E. K. Hall of the American Telephone and Telegraph Company, desired to have them sent to New York and reviewed for comparison of practices pertaining to young women employed in the telephone companies of the country.

Miss Smith's request was complied with and she retained the notes for several months and then asked to be permitted to loan them to certain people who she thought would like to review them. She also asked at that time for permission to make certain copies of the notes for record in the office of the Vice President of the American Telephone and Telegraph Company, and also wished some parts of them for files in the Historical Department.

This permission was granted and the book was reviewed by certain officials and department heads of the O. & E. Department, of which the writer has no record. They were returned, however, later on and remained in the files again until the retirement of the writer, January 1, 1940.

Some time during 1942 they were again loaned, this time, however, to Miss Cecelia Seymour of the New York Telephone Company, also a former employee of the Northwestern Bell Telephone Company, in charge of P.B.X. training work in New York City. She, too, like Miss Smith, wished to compare the school and toll training methods with those of 1904.

The little volume then made its second journey to New York, and was, during its stay, loaned by Miss Seymour, with the permission of the writer, to a number of New York telephone men who had learned of these notes and wished to review them. I was also informed at that time that the Telephone Pioneer Chapter of the New York Telephone Company was considering printing them for such distribution to old pioneers as might have an interest in possessing a copy.

The writer gave his permission to this proposed printing and also agreed to subscribe to part of the cost. The idea, however, was dropped because of the war and paper shortages, and in the spring of 1945 the notes were again returned to Omaha. More recently Mr. A. L. Turner, Chief Engineer of the Northwestern Bell Telephone Company, read the volume and loaned it to a few others.

The writer desires to apologize to those who have reviewed this bit of history because of its memorandum nature and the inadequate descriptions often given in light of our present more detailed methods. At the time they were not written, however, to completely cover the operating practices of the cities and companies visited but rather to serve as a memorandum for future reference and comparison with the practices and ideas representing our points of view at that particular period of the telephone industry.

* * * * *

Now, after 42 years, the writer feels that this supplementary preface should be inserted and the binding re-done so that if loaned from time to time again, the little volume may be in tidier dress and not present such a torn and haggard appearance to my more modern telephone friends of today.

Miss Anna Madsen, a Pioneer of the Northwestern Bell Telephone Company, has very kindly consented to supervise the rebinding and the writing and inserting of this explanatory preface. For this kindness we are, indeed, grateful.

----- Walter F. Cozad

Dated April 1, 1946 at
100th St. and Pacific Road,
Omaha, Nebraska

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NOTES ON A TRIP EAST

BY

Mr. W. F. COZAD

Chicago

The Chicago Telephone Company is operating about 85,000 stations, 14 exchanges. Mr. Foster, Superintendent of Traffic, has charge of the local operating only and reports to the General Manager. Mr. Swift has charge of the toll work of the Chicago office and reports to the General Manager, also.

Local

The local work is handled by a District Manager. Usually the Exchange Manager has charge of two or three offices and under him is a chief operator in each exchange, with an assistant, supervisors, day and relief.

Managers

The Manager is hardly ever in the operating room. His office is located at one of the exchanges. He has stationed there, clerks, to take care of the measured service records and other data, also a service testing man. Managers are paid from \$1500.00 to \$1700.00 per annum.

Information Operator

In Chicago they have tried to do away with the information operators. Their idea is to throw the work to the supervisor, or that part of it which can not be taken care of by the "A" operator; for instance, the time of day, well known telephone numbers, are taken care of by the operator. Disputes over connections, such as nickel troubles, are referred to the supervisors, who carry a head set in which can be inserted a plug of any pair of switchboard cords, the other cord of the pair being placed in the multiple number or the answering jack of the line to which she wishes to talk. With this method they have done away with information desks largely, have loaded their supervisors with detail work and decreased the efficiency of the "A" operators, consequently they are not giving systematic and prompt information service.

Supervisors' Time

According to the best authorities (Traffic Men), all over the country, the supervisor should not be given these details to take care of, but her time should be given exclusively to watching her operators' work, calling out numbers to aid in team work, disconnecting, etc.

Chicago.

Hospital Board

Certain information is thrown to the hospital board operator such as street addresses.

Supervisor

There is one supervisor to every five nickel service operators, while on flat and measured service one supervisor handles nine operators.

Question Nickel

They do not question a nickel the first time and do not refuse connection without authority from the General Manager.

Branch Ex. Calls

When answering a branch exchange call the officials of the Company say "Mr. Foster", "Mr. Hibbard", etc.

Automatic SignalsOn Trunks

The Chicago office have a scheme which they are at present trying, (in their minds quite successfully). The "B" operator does not test a number for "busy", unless it has auxiliary trunks. Provided she plugs in on a busy line, an automatic apparatus throws the busy flash on the supervisory of the "A" operator that has taken the trunk. This increases the efficiency of the "B" position.

"B" Position Load

Some "B" positions have handled 676 calls the busy hour. When this many calls are handled the exchange is not asked for or the number repeated over the order circuit.

"B" Operators TestFor Busy

This would be a very admirable scheme were it not for this objection: On all branch exchange trunks, having one or more lines, the operator is liable to plug in on a busy trunk, when there are two or three remaining trunks not busy. To meet this objection they have had to qualify this scheme by instructing the operator to observe the test on a call for two or more lines. As 46% of originating calls in the Chicago offices are for branch exchanges, it can readily be seen that this idea will not prove successful.

Chicago.

To Call Supervisor

Above the panel on the "A" board is placed a signal for that position. Provided an operator wants her supervisor, she pushes a key which lights this position lamp and also completes the battery circuit through a buzzer. The supervisor is therefore advised that she is wanted by the operator. The push buttons are mounted in front of the ringing keys in the center of the position.

Libraries

The Chicago exchanges have recently been supplied with libraries. These libraries are largely furnished by the company, to wit, the company purchases the cases and makes arrangements with the Public Library board to use the books of the Public Library. For each dollar donated by the operators for the purchase of permanent volumes, the company donates \$2.00. With this method there is already a staple supply of well known authors on the shelves of these libraries. Some of the money is raised in the following way: Prizes, amounting to as much as \$150.00 are given to the exchanges making the best showing, for any one month; records are taken from tests made by a service testing man. From 200 to 400 tests are made in each exchange and all from subscribers' stations.

Service Testing

Service testing is done by the Traffic Department, from subscribers' stations. Records gotten in this way are not used to determine the grade of service given.

Complaint Department

There is a complaint department, whose duty it is to make service tests monthly, in addition to those made by the traffic people. This complaint department handles all complaints of whatsoever nature, referring them properly to the wire chief and exchange managers.

Branch Exchanges

There are about 750 branch exchanges operating in Chicago. There is a clause in the contract to the effect that the operating must be satisfactory to the telephone company. They do not take the branch exchange operator's word, in a case where the branch exchange is exclusively controlled by the telephone company, of the number of measured service calls originating, daily at such exchange. Neither do they check with any exchange. The count made by the "A" operator at the board is final. Applicants for branch exchanges, file application in the office of the Superintendent of Traffic.

Chicago.

Residence Calls

All residence calls are questioned after 11 or 1 o'clock at night by the operator with, "Are you calling a residence?" The multiple numbers are marked in red figures. People often call the wrong exchange and a great many residence subscribers are saved being called during the night by this method. It is a special courtesy shown their subscribers and one which Mr. Sherwood of New York City, would not approve.

"No Toll"

"No Toll" telephones are marked by a certain lamp on the "A" board. Two and four party lines by a red dot at the side of the answering jack. All ten party lines have a line above the jack, in which case the operators ask, "What is your number, please?" Should it be the number of a subscriber who is on "No Toll", (she is provided with a list of such at her position) the same is refused the toll recording operator. This does away with the toll recording operators talking with the "No toll" subscriber.

The supervisor is authorized to talk to "No toll" subscribers and to refer to the toll chief operator for further information, if necessary. The subscriber gets no further than the "A" supervisor. To prevent the increase of this trouble, in ten party contracts is inserted a clause relative to toll conversations, to the effect "that all conversations over toll lines, originating at this station, must be paid for by the subscriber, or the telephone will be removed."

Free Calls To Doctors

Chicago dispensed with free calls to doctors about three years ago. It got to be such an expense and drag on the operating, that they could not handle it any longer. It created a little ill feeling at first but the doctors soon dropped the matter.

Reflectors

Reflectors on the switchboard get dirty and should be cleaned at short intervals.

"Out" Order

Abandoned telephones are reported by the operating department and an "Out" order made.

Training School

The training school has quarters in a separate building, nearby the present Main exchange. It consists of a lecture room, study room, operating room, locker room, sitting room and office. In the operating

Chicago.

room is a six position 4800 multiple board. Three positions of "B" board, three position monitor board. Sixty subscribers' lines on "A" board with 60 multiple lines connecting to the monitor's desk on ring down drops. There are two supervisors, six teachers and one instructor in charge, Miss Smith, and an assistant. They turn out about 95 graduates per month.

Physical Examination

Applicants are required to pass a physical examination, by a lady doctor. Mr. Foster states that 55% of the applicants are turned down from this examination; more in fact than by the board of examiners.

Why Examined

Applicants are examined by the doctor for three good reasons:

- 1st, to prevent taking girls that are nervous or have poor heart action.
- 2nd, those that have scrofula or any infectious disease.
- 3rd, those that have general debility and poor hearing, and are not considered physically strong and able to do good work.

Applicants Sent For

Applicants are taken care of by a special girl in the office of the school. Applicants are sent for as soon as possible, and examined. If they pass, they are put into the school as soon as they are needed; started at \$15.00 per month and work to \$40.00.

Charts

Charts are provided in the lecture room, also testing telephones, trunks, ringing apparatus, etc.

Jack Marking

Jack markings are shown on the multiples and answering jacks.

Service Classing

At the Douglas exchange the different classes of service are separated on the switchboard as many as six or eight positions apart, in some cases.

Chicago

"B B" Board

Ten party lines on the "B B" board end on a jack per station, the ringing number appearing on a designation strip, just above each individual jack. The "B B" operators handle only 85 to 100 calls per busy hour.

Discipline

The best discipline is shown in this office. Cords are handled properly, operators are quiet and do not turn around while at work. The Main office is entirely too noisy, no discipline and poor supervision. The operating irregularities run as high as 6%. The "plug in" and answer is good, averaging between 3 and 4 seconds.

Toll

The toll Manager has charge of connecting and disconnecting toll offices and installing additional toll switchboards; inspects completed toll lines and issues direct orders for changes in toll circuits; has a toll peg count, but does not show the circuit load or any other information, except the number of calls handled by each position.

Distributing Tickets

The distributing of tickets is done with a belt system, in a quiet way. One operator can do all the distributing work.

There are ten recording operators in the toll office.

Wire Chief

The toll Wire Chief's office is in the toll room. He tests all lines from there and issues instructions to trouble men and installers.

Tickets

Tickets are not made at all on inward business, from center checking points, but all tickets covering outward business from central or suburban stations are made by the center checking office, timed and charged against the small stations. In fact, the Chicago system is on a complete center checking basis. Tickets for each center checking point are issued for that place and are numbered consecutively. The tickets used must be summarized for each day's work and a report made to the Auditor of the consecutive numbers involved.

Toll Checking

This they believe serves as a check on that office's business, because if a toll ticket is made out it must be reported as completed or lost. Further than this they trust the paid employees to handle and report their business promptly and accurately.

Chicago.

Toll Monitors

Toll monitors are used to listen on operators the same as at the local board. Their desks are located in the operating room.

Supervision.

The supervision seems to be poor, system lacking, the room unnecessarily noisy and poor management can be seen, speaking in a general way.

Phantoms

Phantom circuits are used quite extensively over the system of this company. There are twenty at the present time, terminating at Chicago. To one place they have four copper circuits. On these are placed two phantoms; on the two phantoms is placed another phantom. I talked over the phantom of the phantom and the transmission was good. Mr. Swift states that these phantoms have saved an expenditure of \$100,000.00 this year and also that they give satisfactory commercial service. He claims that the efficiency of the regular circuit is very slightly depreciated and that the phantom is a permanent proposition to be operated for 75 miles or less, with the Chicago Company. These circuits are, however, in each case properly transposed.

One Half Minute Rate

The Chicago Company have a one half minute minimum toll rate. They are not acquainted with the "Rapid fire" circuit, but from my observations of their methods of handling business, I do not think this circuit would be of any particular value to them, if installed. A call coming from Joliet or South Chicago, the places where the business is the heaviest, is given direct to the toll operator, who, without making a ticket of any kind, passes it directly to the exchange number desired. A toll operator is in as good a position to trunk to any exchange direct, as any local operator. It would only save time on calls passed to the Main exchange.

Amount Of Toll Business

The toll business amounts to between 5000 and 5500 outward calls per day, at the Chicago office.

Stop Watch

Mr. Swift, Toll Manager, uses a stop watch for collecting overtime messages.

Chicago.

Machine Keys

On the local "B" board the machine keys will not ring a station until the originating office has taken the trunk. They had trouble with this scheme at first, but the trouble was in the apparatus.

Measured Service

The measured service calls on the local board are tallied on a position sheet, the numbers being placed thereon by a day clerk. The forms are similar to our Form #70. They have not checked the operators to ascertain the correctness of this count, but Mr. Foster states they believe their count "under" some, instead of any excess charge. (This seems bad. - Why not have it right?)

THE BELL TELEPHONE COMPANY

#14 W. SENECA ST.

BUFFALO, NEW YORK.

Mr. Watson

I met Mr. Watson, who was formerly Manager of the operating department, recently succeeded by Mr. Dyer, who was out of the city at the time of my visit. Mr. Watson is the son of the President of the Company and is Manager for the city of Buffalo. He takes care of the Construction, Maintenance and Operating Departments.

Information Operators

The Seneca Exchange is the Main exchange and has between 6000 and 7000 stations; five operators and a chief operator. The chief operator gets \$17.00 per week. At this exchange centers all information. Five operators do this work. They are equipped with all the necessary catalogues, etc. The time of day is here referred to the desk. They do not give information relative to trains. All the trouble, except "don't answer" is also referred to the desk and from there slips are sent to the division Maintenance Department.

Information Desks

Direct trunks connect all other offices from the "A" operator's positions to the information desks. No information desks or information operators are maintained in the other offices.

Hospital Operator

The hospital operator merely tests "don't answer" calls and acts as a "B" operator for the wire chief. The room is quiet and the operators are not busy, but seem to do good work.

Tallying Measured Service Calls

Team work is poor, as each class of service is separated by three or four positions. They averaged about 123 calls per position, the last peg count, busy hour, flat service. Measured service calls are recorded by the operator placing the number of the subscriber calling, on a slip which is provided. These slips are gathered up by the supervisor at the end of each hour and sent to a counting room, where six clerks are employed to summarize these calls and charge them to the proper number. Samples obtained of detail sheet, summary sheet and monthly report sheet. Subscribers are notified by a postal card monthly by the Operating Department of the number of calls used.

Buffalo.

Trunked Positions For Overflow Work

At the "B" board is a position equipped with 25 trunks from a certain exchange. From another exchange 25 trunks are bridged to these and from still two other exchanges 25 trunks are bridged on. Any of the four exchanges can use this position as an overflow position, at any time, but it is used chiefly for night service and Sunday work. It saves having an operator on each position. Sometimes during a quiet time of the day an operator can be taken from a certain "B" position and that exchange instructed to put all calls over the overflow position, thereby, the time of an operator is saved. In case of emergency, all trunks out to one of these exchanges, they can use this position to great advantage.

Operators do not need to give their exchange when requesting a number on the call wire, because any trunk of the position can be assigned to any exchange.

Retiring Rooms

The retiring rooms are furnished with modern conveniences. They give the girls coffee, tea or milk, free.

Company Lunch

They also provide dinner for them at a cost of 15 cents. Any one of the employees in the entire building, desiring this company lunch, can obtain it by paying the stipulated fee.

Inward Tickets

They run toll lines direct to the "A" board from Rochester, also from Buffalo to Rochester. No record whatever, is made of the inward business held over these lines, or from Niagara City, where the same method of handling toll calls direct is used. They handle about 2400 "in" and "out" messages per day with a carbon ticket which, they say, is no use to the operating but is a help to the Auditor's office. They trust their center checking points to report their business, also the business of all points intermediate thereto. Inward tickets are maintained as memoranda.

Distributing Tickets

There is no distributing system on the toll board. They have a ticket operator to do this work by going to and fro.

They have a scheme whereby all lines end on the recording section at night. This keeps the toll work together and they claim it can be more advantageously handled with this plan.

Buffalo.

Circuit Load

Their present toll circuit load averages 40 messages per day. Mr. Watson states that when any of their circuits show that they are handling a greater number of calls than this, another toll circuit is at once placed. There are five circuits at the present time working between Rochester and Buffalo, a distance of 70 miles. Their monthly toll revenue for the entire system amounts to about \$15,000.00.

Toll Operators Age, Salary

Toll operators receive a salary of about \$9.00 per week. They do not hire girls under 20 years of age. They think they get better work out of them. This applies to the local as well as the toll.

Toll Rate

The rate to Rochester from Buffalo is 40 cents for three minutes. They have recently inaugurated a special rate of 20 cents between these points, limited to strictly one minute business. The Auditor assured me that this scheme had increased their toll messages between these points 20%. Anything over one minute takes a three minute rate. No 'particular party' business can apply at this rate. They also use a special rate of this kind between Niagara Falls and Buffalo.

Service Tests

Service tests are made by the Operating Department. They are giving a three and one half second answer at the present time. There are 17,000 subscribers in Buffalo, with 33,000 in entire territory. 12,000 telephones in Buffalo are on a measured service basis, 5 cents per call. Nickel troubles are all referred (when necessary by the information operator) to a special service man in the Traffic Department.

Training School

They have a training school and instead of using drawings of the switchboard and apparatus as in Chicago and New York, they use enlarged photographs. They are fine and are more accurate than drawings.

Board Marking

Blue cellulose plugs are used for dead lines, white plugs for changes and red plugs for disconnected telephones. On their two and four party lines they have a poor system of marking the multiple, only showing the changed and disconnected stations.

Buffalo.

Directory Sheets

The Contract Department issue a printed directory sheet every day, with additional changes, disconnects, etc. A letter after the name indicates what has happened. It costs \$2.00 per day.

Tupper Exchange

I visited the Howard, North, Bryant and Tupper Exchanges. Nothing higher than a 4900 board. The feature that strikes me in Buffalo is that in all of the exchanges, subscribers are called when numbers are busy or don't answer, on any kind of service. Operators are not very busy except in the Tupper Exchange. This exchange has grown larger on account of the heavy building in this district at the time of the Buffalo Exposition. Their fire protection of the switchboard, etc., seems to be good. There is a heavy curtain lying on the top of the switchboard which can be let down on either side in case of fire.

They use colored cords on all "A" boards, as well as on "B" boards.

"B" Operators

The "B" operators repeat the number over the order wire before assigning the trunk. Traffic men all over the east are amused at Buffalo still maintaining this ancient practice.

Nickel Coin Box

The nickel coin box which they use requires that the nickel be placed in order to get the operator. They are not working very satisfactorily, as yet.

Rochester

Rochester has a population of 175,000 and is about the size of Denver, yet the Bell Company which operates there has only 6,500 subscribers. This is only a little over a 3% development.

Opposition Company

The Frontier Telephone Company, which is the opposition company in Buffalo, have only one exchange and at the present time are operating 7,000 telephones. Their rates are \$3.00 and \$4.00 per month. The Bell people there think that the opposition has not done them much harm; they state that the opposition subscribers are only in the business district and that in consequence the business men still have to retain the Bell instrument.

Buffalo.

Expense Of Operating

Buffalo proper gives about as good a grade of service as New York City, but the expense of operating is excessive. The 17,000 subscribers are distributed among seven exchanges. Each exchange employs a

Chief Operator
One Supervisor
Assistant Supervisor
One Information Clerk
Assistant Information Clerk

Information Operators

The Main Exchange, which is the Seneca Office, has more supervisors and information operators. However, since the information is being given out altogether at the Seneca Office, they have been able to throw out the information operators at all the branch offices. The desks remain vacant.

Franks

The Buffalo Telephone Company have no Frank business, all cash. This system seems to be in vogue chiefly in the east. If they have general office talks the party pays the bill with coupon checks instead of cash. This simplifies their operating reports.

Deadhead Talks

No deadhead talks are made either in Chicago or Buffalo. Should a company talk be held, the same is either paid by the employee, vouchered or rebated.

Giving Wrong Exchange

To detect parties giving in the wrong exchange on a party line, measured service, when a certain subscriber is suspected, they run a line from the station to a special lamp which operates by a 114-A relay on the information desk. When this station calls, in addition to the lamp lighting, it lights a lamp on the information desk. If the party gives the wrong exchange the information operator is in to catch him doing so. Mr. Rorty of Pittsburg also uses this scheme and thinks it is a good one.

THE NEW ENGLAND TELEPHONE COMPANY

BOSTON, MASS.

Service In Boston

The city of Boston with its suburban exchanges gives an inferior grade of service, compared with other cities in its class in the United States. This idea was not formed from personal observation alone but from records of service tests, etc., which I was permitted to see, bearing upon the operating work.

Oxford Exchange

At the Oxford Exchange, Mr. Shay, the manager, is kind of old fashioned but has things running in pretty good shape. Tests in this exchange showed that a 5 second answer was being maintained. The Buffalo scheme of tallying measured service calls is used in Boston, except that they are not summarized in the same way. I obtained samples of their measured service sheets.

Recalling For "Busy" and "Don't Answer"

By completing "Don't answers" and "Busy" calls, their records show that they lose only 2% of the originating business. 8% of the total originating calls are for toll line.

Marking Measured Service Jacks

The answering jacks on measured service positions are arranged in 20 per strip. This is on account of the low rate of calling and allows the connecting of a sufficient number of lines to a position to insure an operator's load. Mr. Rorty of Pittsburg, thinks in future installations it will be wise to figure on placing these "20 jacks per strip" in order to insure an operator's load.

Pilot Lamps

In this exchange the pilot lamps are placed at the top of the panel instead of at the bottom where they can be seen readily by the supervisor or chief operator, and I believe is an improvement over placing them in the lower end of the panel.

"Don't Answer Calls"

A ticket is made on a "don't answer" call and this is passed to the supervisor having charge of the position where that line comes in. They think that the operator who has charge of that line and answers it chiefly, will be better able to complete this "don't answer" call.

Boston.

Transmitter Ribbons

White tape ribbon is used for transmitter bands in the summer time. It was found that the black ribbon soiled the collars and white shirt waists of the operators. I understand that the white ribbon is cheaper and very much more satisfactory.

Nickel Service

There are 350 nickel service lines in this exchange and they answer about 65 calls per position, busy hour, on this kind of service.

Operators' Hours

Operators work eight and three quarter hours per day in Boston; have forty-five minutes for lunch and wear anything they please.

All Night

The all night force numbers four operators. One night two girls sleep from 12 midnight until 6 A.M., the other two attend to the work; the next night they alternate.

"Veeder" Counters For
Peg Counts

This board is being enlarged; has 4800 lines at present. On each position is mounted a "Veeder" counter, which is used in making peg counts. This is a new fashioned counter and is screwed onto the position; tallies by pushing down on a small lever. They use counters of this make in several cities in the east for peg count work, claiming that the former method of using a plug does not give accurate results.

Applicants

Mr. Shay has invented a new order circuit button to be used for separate "B" work.

Boston and its suburbs has 46 exchanges but no instruction school. Applicants desiring employment file application with the employment bureau. They are marked first, second and third class. An office desiring an apprentice is sent one on trial for one month. It is up to the exchange manager to teach her and make an operator out of her. This poor scheme of instruction accounts very much for the unsystematic and irregular service furnished the public.

Boston.

Load Of An Order Wire

Mr. Baldwin, Mr. Pettingill and several other of the traffic people have been making tests for the past two months to ascertain what is the load for an order wire; for two order wires; for three order wires, etc.; how much an average call is delayed by an over loading of an order wire with one, two, three or four operators, and other valuable data. It is their intention to advise the operating companies of the result of this extensive study when it has been completed.

Posting Service Tests

Mr. Ford is a staunch advocate of continuous service testing. He strongly recommends posting a list in the ladies retiring rooms, made from regular service records, showing the best work done by individual operators. He thinks possibly from fifty to one hundred names ought to be included in this list.

Low Rate Measured Service

He also states that in his opinion no mistake can be made by inaugurating a low rate per call on measured service. He would suggest two cents, possibly one cent. He thinks the companies are too liable to associate measured service with nickel service, consequently does not want to get away from a nickel a call.

The A. T. & T. Company On Opposition

The A. T. & T. people advise giving information service, especially where there is an opposition company, to the fullest possible extent. Such information in all cases to be given by special operators; they would not recommend that even the time of day be allowed to be given out by the line operators. They state that if this method can be used where there is an automatic opposition company, that it is a serious blow to the opposition company's services, and further it can be stated that if this method is effectual in a point over the service which can be given by an automatic exchange it will also prove effectual in preventing opposition sympathy.

The "M M" Method

The Boston people believe that the best method of recording measured service calls is that used by the Buffalo Company (and commented on in the Buffalo section), for the following reasons:

- 1st, from tests it has been found that this method (which I shall hereafter call the "M M" method), requires less time for the operator to tally one call and less attention is directed away from the board.

Boston.

2nd, that a more accurate record is kept at night and during the early hours, when there is not an operator at each position. The old method requires that the operator, if answering a call, pick out the sheet which belongs at the position and thereon places the call, while with the "M M" method each operator can have a pad of her own and tally thereon all calls answered at the time.

3rd, the important point is the fact that a record is made of the party called, and if the line is busy or don't answer the calls can, in a large per cent of cases, be completed at the option of the operator.

Mr. McBride says preference should be shown to measured service subscribers and with the "M M" method this can be accomplished. This, however, should not extend to flat service subscribers. The clerical work required on the "M M" method can usually be done by the night operators and the sheets sent to the Auditor the same as with the old system. The "M M" method provides that in doing team work the operator does not need to reach to either side and use the sheet of the girl next to her. Mr. McBride says a large per cent of the companies use the "M M" method and nearly all of them recall subscribers when lines are busy or don't answer, on this kind of service.

There has just been made a new intermediate distributing board plug with four spring contacts. This is to be used on putting up lines for service observations and is a big improvement over the former method of using clips.

Directory

The New England Telephone Company's directory comes out with a different colored back each issue.

Publish "Telephone Connections"

Eastern companies are trying to induce their patrons to publish "Telephone connections" in their advertisements, instead of the telephone number.

No Telephone

They also have operators keep a memorandum of people asked for who have no telephones. This is referred to the Contract Department.

Boston.

Fifteen Minute Peg Count

Busy peg counts are being made in fifteen minute periods and the A. T. & T. people are showing the minimum and maximum fifteen minute load for each kind of service and platting the fifteen minute loads showing the excessive fluctuations in one hour's time. Regular busy peg counts are taken by means of an order wire to the "B" operator.

The cost of operating is plotted on curves per "A" position, also per "B" position.

To Exchange Peg Counts

The A. T. & T. people desire that we exchange peg counts and service testing summary sheets with the following cities: San Francisco, Cleveland, Pittsburg, Buffalo, St. Louis, Baltimore, Minneapolis, Kansas City, Detroit, Cincinnati, Louisville, Milwaukee, Providence, Washington, New Orleans, Omaha and Indianapolis. These are picked out as cities in our class.

Managers' School

Mr. Valentine, consulting engineer of the New England Company, states that they maintain a managers' school with the object of teaching college graduates how to make good managers. He states that this is the best method they have ever followed to obtain good men.

Providence Testing

Mr. Carpenter of the Providence Company, to whom I talked service testing for awhile, states that the Providence Company have, up to the present, neglected to make any service tests whatever. He was pleased to get our ideas along this line.

Monthly Collections

Mr. McBride does not think much of our scheme of daily collection; states we would not, in all probability, lose any more were we to collect monthly. New York City, Philadelphia, Pittsburg and Atlantic City have as much transient business, or more, than Denver, and collect about as well as we do.

Order Call Circuit

Mr. Baldwin, who is one of the able operating men of the country, states that a scheme of using an order call circuit between toll points where an insufficient number of lines are provided, increases the efficiency of the lines and has been found in a great many cases to be better than a phantom.

Boston.

Toll Time Subdivided

A toll line's accumulative time worked to a high efficiency is subdivided about as follows: 35% talking time, 45% of paid time, 65% operator's time, 35% dead time.

Circuit Load

Mr. Doolittle and Mr. Baldwin say to figure in recommending increase of lines on 55 or 60 messages per circuit, as they have recently come to believe, since seeing our records and tests made by the Nebraska Company between Omaha and Lincoln, that their estimate is too low.

Code Scheme

Mr. Baldwin says that the idea of using a particular code scheme between offices is a good one and should be used wherever possible. He states that morse operators are a good thing for passing calls over long lines.

Additional Operator

They look at toll operating expense in this way: Provided we are handling 60 messages per day at \$1.60 each between Denver and Trinidad, if by placing an additional operator at either the Trinidad or Denver end, one more message could be completed, the cost of such operator would be more than paid for.

Toll Checking

Mr. Baldwin states that hardly any company, at the present time, is checking over toll lines or making any report of the amount (in dollars) of their inward business between center checking stations. Some of them use a number scheme and report the number of messages but not the amount. All center checking stations make an outward report of business coming from all toll stations in their territory, time it, etc. He states it is folly to check between two paid employees' toll centers, especially where the recording operator is separate from the line operator and where in order for a call to be passed a ticket has to be made. (He says the above idea was originally brought out by Mr. Carty of New York City.)

Inward Tickets

However, he believes where toll lines end at toll boards an inward ticket should be made as a memorandum but no rate placed upon it. He states were two offices to check every time a ticket is made, that their time would not agree and that it would result after all in the "outward" office making the charge.

Boston.

Checking Reports

Such being the case, why not accept the "outward" office's report, which it will make to the Auditor, the same as the one which it would make to the other station. In the result you have accepted their word for the amount anyway. In the one case directly from the outgoing station in a written report, in the other by an additional subsidiary report made in a round about way over a costly toll circuit through some other station.

Cost Of Checking

This system of checking adds an expense cost to operating, which is unwarranted; service is usually affected and the paid time of the toll lines materially decreased.

Phantoms

The Boston people are very much in favor of phantom circuits. Mr. Cotter says we should get the new coil and make proper transposition.

Copper Wire

It is the opinion of traffic men in the east that all toll circuits and trunk line circuits (later liable to come into toll use) should be built of copper wire. Iron wire is very much in disfavor where it is liable to play any part in toll conversations.

Agents Commission

They state that toll agent's commission is being paid largely on the gross receipts; that is, on inward business handled as well as outward business. Formerly where an agent was getting 15% on the outward business, they have given him 7% or 8% on both the inward and outward business.

Small Exchanges

The big objection to small stations handling business is that so many messages are reversed and consequently the agent is reluctant about the careful and prompt handling of such calls. A toll agent is also more careless about answering an inward call as usually there is nothing in it for him; but with this method of paying commission there is a tendency to overcome the troubles above mentioned.

Toll Revenue

Toll revenue should be compared at certain points with the toll revenue at other points, per caput, to ascertain what conditions may affect the toll business. In nearly all cases toll revenue is shown per caput instead of per station.

Boston.

Toll Rate Chart

Mr. Cotter has recently prepared a chart which can be printed in the back of the rate book, showing computed overtime charges. This chart will mean a saving to the operator and there is no question but that it is a great thing and should be used in all toll offices. He kindly favored me with an advance copy of one of these charts.

Toll Circuit Load

Mr. Cotter says that we are giving a good grade of toll service and handling the highest circuit and position loads of any company in the United States.

C S-Denver Lead

He further states that our pole line lead between Denver and Colorado Springs probably handles more messages than any other lead in the country.

BLOCK SYSTEM OF RATES

The Pittsburg reports by Mr. Cotter will be very interesting and will probably be sent out by Mr. Fish to the other companies.

Mr. Cotter spent about four months in making a study of the Pittsburg territory and outlying a "Block" system for them.

It was found that by taking one message for the entire territory the rate was greater than "Air line", "Pole line" or "Railway distance" to a great many points, averaging about nine tenths of a cent per mile. The A. T. & T. Company figure on a basis of six tenths of a cent per mile for three minutes, but in order to take care of any loss that might accrue from circuitous toll lines the Pittsburg Company has been figured on a basis of seven tenths of a cent per mile.

Block System Of Rates

Blocks, hexagonal in shape, have been laid out for the entire territory, there being 331 of these. It is noticed that the toll center is usually made the center of a block.

The rate from each block to all other blocks in the territory is figured. To meet the condition of two places near to each other in different blocks which normally would take the same rate, there has been figured a separate rate, same always showing properly in the tariff book. This special rate is obtained in the following way:

At each exchange center for a radius of twenty-five miles, a special direct air line rate is figured, to and from all places in such radius and under the alphabetical toll station list appears the rate to any place under the exchange center's heading.

Provided the rate is desired to be found from "A" to "C", ("C" being a station in an entirely different part of the territory), the operator finds "C" in the alphabetical list but no rate after it, consequently she notes that such point is in block #302; now by turning to the back of the book and going down to block #302 she finds the desired rate to point "C".

This seems the most accurate method and by far the cheapest as it requires that only 301 tariff books be made while previously over 3000 were made.

Nothing is suggested for the toll station as it can get all its information from its "Center". However, a card can be provided showing the rate to adjacent points.

Boston.

Mr. Doolittle thinks we ought to get on to this method as soon as we conveniently can. He says that the rates should be handled by the Traffic Department. He suggests a special man under the superintendent of traffic to devote his time to this.

Local Call Opposition

The result of the careful investigation by the A. T. & T. people reveals the fact that all over the United States, subscribers will invariably use the opposition instrument first in making a call, provided the two are together and the party desired can be reached over either telephone.

THE NEW YORK TELEPHONE COMPANY

NEW YORK CITY

The telephone building located at #15 Dey Street, is being enlarged some at the present time to accommodate the offices of the superintendent of traffic, who at the present is located at 18th and Irving Place in the Gramacy Exchange.

#15 Dey St.

In this building is located the general office of the company, also the Courtland Toll Office and the Courtland Street Exchange. The Courtland Street Exchange is probably the largest and said to be the best run office in the world.

Measured Service Register

In this exchange are 7200 lines and 14,153 stations. It averages about two stations per line. Practically all measured service which is on a semi-automatic register basis. There are left only 215 flat rate lines. Directly in front of each pair of cords is a small nickel plated button which it is the duty of the operator to press after the calling party has finished his talk and the supervisory lamp is lighted. This registers the call on a meter located on racks in the wire chief's office. The operator knows that the meter has registered from the fact of a pilot lamp lighting in front of her position at the time the meter steps up. The pilot lamp was placed some time after the installation of these service meters, to guard against operators carelessly pushing the button, or against loss of calls which might result from the meter not properly registering a call.

Position Load

In this exchange a load of 159 calls is handled the busy hour (last count), although I learned many positions were handling over 200 calls; 240 being the maximum handled by any one position.

I found the load was not evenly distributed and was informed that the reason for this was that operators were graded, the best ones always taking the heaviest positions.

Manager

Mr. Sholtz is manager of this exchange, also of the Broadstreet Exchange. His salary is \$3100.00 a year. He has chief operators and an assistant manager in each exchange.

New York.

P.P.S.

Public Pay Stations are on separate positions and a ticket is made for each conversation; also each conversation is timed and limited to five minutes.

Service Testing

Service testing does not seem to be worked out to as great an extent as has been done in Denver. They have depended almost exclusively upon the monitor's tests; however, recently they find that this is hardly sufficient and has not been giving as good results as can be derived from a regular service testing desk located outside of the operating room.

With this point in view they have recently placed a sixty line board at the Gramacy Exchange and have run ten lines each from six of the largest exchanges to this board. Arrangements are made with the wire chief to change these ten lines every hour and in this way they are getting a good many tests per day from each of these exchanges. Mr. Sherwood is pleased with the result and will possibly extend this system to include all of the other exchanges in a short time.

Courtland Board

There are 8,800 multiples in use on the Courtland Street board. It was originally built for 9,600 lines but the trunks have been raised, consequently no more multiples can be placed.

Courtland Trunking

Outgoing trunks are designated by small numbers on a narrow strip above the trunk lines and the numbers usually run on any set of trunks, from one to twenty. They have considerable trunk trouble; five cases of cut offs on trunks and one double trunk were reported while I was in this office. They claim that this comes mostly from new trick operators.

Operating Force

As a class, the girls were very irregular in dress. Some very untidy, others very neat and handsome, some very short and some very tall; a goodly number of them are of foreign birth.

Hard To Keep Complete Force

Mr. Sholtz told me he had trouble in keeping his force up to date; that there were five operators leaving the Courtland Exchange the following week to be married.

New York

They supply all of the branch exchanges with operators also; this makes big inroads on their force.

Mr. Sherwood

Mr. Carty had me meet Mr. Sherwood on the following Monday morning. After a chat with him, treating upon Colorado, the extent of the telephone business in New York, etc., he introduced me to Miss Smith, who has absolute charge of hiring and training girls to be operators for the entire city.

The school is located upon the third floor of the telephone building of the Gramacy Exchange. Mrs. Ella Davenport is Miss Smith's assistant. Mrs. Davenport is formerly of Denver. I spent two hours in the school with Miss Smith and her assistants. I talked with the applicants who were waiting for a position - with the teachers - the line supervisors - the monitors and the chief operators.

They have an eighteen position board with six monitors' desks and two managers' desks. A six position "B" board.

The system of handling calls and teaching girls to be operators is the same as that being used in Chicago (for Chicago has copied the New York instruction scheme to a letter).

The New York method of teaching is to supply the school with the best supervisors and monitors on the force.

There are a certain number of answering jacks connected to ring down drops on the monitor's desk, in turn there are multiples connected to the several monitor's desks. It is the duty of the monitor to place herself in the position of a subscriber; to this end she plugs in on any of her lines, ending in answering jacks on the "A" board to call central. The line operator plugs in and answers the call with "Number, please?" (for fear that people of New York City may think that the operators are not courteous, the New York Company have not, as yet, left off the word "please".) Then the monitor operator asks for the desired number and waits the repeat and also answers the called number on her own board when she gets ready. If "they" do not answer promptly she insists on the line operator ringing again and further, becomes impatient and tells the line operator that "They would answer if she would ring them." "That the party must be home." And some other phrases such as an operator is liable to hear from any subscriber.

In case the operator becomes impatient and says anything out of the way to the subscriber (who is the monitor), the monitor will ask for the manager, telling the line operator that the service is poor and she is going to report. Probably she does go this far when the line operator hasn't given her good attention and gets the manager of the exchange to whom she reports her trouble.

New York.

The manager makes a memorandum of the trouble and refers it promptly to the supervisor, whose duty it is to take it up with the line operator. This example is given merely to show that the school is run on an entirely practical basis.

The School

A student is taught everything. It would take too long to enumerate all of these details, but it is intended that after she leaves the school she is able to handle any connection passed to her properly to toll - locations of the toll points and to what exchange to go to, to start the call on its proper routing - how to trunk - how to report troubles - how to recall for busy or don't answer calls - what to report to her supervisor - and in a general way has become quite an accurate and speedy operator.

They do not turn down an applicant because she is too short; they claim a short girl can do as good work on their boards as a tall one and is usually more alert. They will take girls with glasses. Experienced operators have to go through the school the same as a student - they require one reference on the application - have all the necessary charts - nice lecture rooms - maintain a check and tally system on measured service - and are kept busy finding enough desirable girls.

Political influence is never brought into the school. Girls are hired altogether upon the examination given by Miss Smith. They turn out about 90 operators per month. This, however, hardly keeps up the supply, for in the entire department 2700 operators are required. Managers make requisition for operators in their several exchanges when they need additional help. This requisition is O.K.'d by the superintendent of traffic before it is filled.

Private Branch Exchanges

Under the superintendent of traffic is a branch exchange department with a manager at its head.

There are 6000 branch exchanges taken care of by this department. There are 300 of these over which the telephone company have direct control. These are mostly Public Pay Stations in hotels.

The New York Company believes in allowing the branch exchange subscriber to have direct control of the operator. The branch exchange subscriber, they claim, is then directly responsible for the service. The telephone company can, however, keep a close check on these operators:

1st, by making special service tests.

2nd, by having a branch exchange supervisor visit, at occasional intervals, the operators at the private branch exchanges.

New York.

Practically all of the branch exchange operators are furnished by the telephone company, and they try to see to it that no incapable operator gets a branch exchange position.

In case the service is unsatisfactory to the telephone company it is the duty of the branch exchange manager to at once take the matter up with the proper parties.

Mr. Sherwood says it does not require much hammering of this kind until a branch exchange subscriber comes to see the matter in the same light as the telephone company.

There can be no question but what New York City, through its 6000 private branch exchanges, gives the best grade of branch exchange service in the United States.

The branch service, sooner than anything else, will seriously affect the general grade of service furnished by the telephone company. No matter how good the service is made at the exchange, the service furnished the public will be relatively poor if that furnished by the branch exchange is to any extent inferior. The Cleveland Telephone Company has worked this proposition out very admirably so that I shall leave any further comment on branch exchange service for my Cleveland notes.

Astor Hotel

After completing my stop at the school, Mr. Sherwood invited me to lunch with him at the Astor Hotel. We were fortunate in being seated nearby Mr. Andrew Carnegie and party who had recently arrived from Europe. After lunch we went to the branch switchboard in the hotel and there got into actual touch with the branch operators while they were doing their work.

Astor Hotel Branch Exchange

When a branch operator answered a house call she said, "Order please?" There were four girls on duty while we were there and they were busy, probably handling about one hundred calls an hour, which is considered a good load for a hotel operator.

This was a regular #9 board with the negative signals.

38th St. Exchange

In the afternoon we returned by the 38th Street Exchange. This exchange has 14,300 stations and 7,000 lines. The information in this exchange is given out by four operators. Their street address catalogue is in book form and written up by a special girl from the connected orders.

New York.

Supervisors

There is a supervisor to every nine operators. They receive a salary of \$14.00 per week.

"B" Positions

The "B" positions in this exchange were handling 350 calls each during the busy hour.

From the 38th Street Exchange we visited, later in the afternoon, the private branch exchange at the Waldorf Astoria. This branch exchange is about the finest one in the city.

(To be continued)

NOTES ON A TRIP EAST

BY

Mr. W. F. COZAD

PART 2

Waldorf Astoria Branch Exchange

The Waldorf-Astoria Branch exchange has a number one standard board; twelve positions with the stations multiplied in each two position section. There are 1400 stations in the exchange, 80 trunk lines running to the 38th Street Exchange; a cable room, battery room, wire chief's office, etc.; everything very similar to a number one switchboard and office except on a smaller scale. The exchange is controlled entirely by the telephone company, being directly under the branch exchange manager, Pay Station Department. With this arrangement the telephone company own and operate the switchboard, charging 10 cents for each connection. A slip is sent to the office upon each call, by a special boy, or, in other words, he is taking slips indicating from what room the call came from to the clerk's office continually so that they can be properly charged to such room before the room is vacated. A record is also kept and sent to the auditor who bills the hotel each month. The hotel people are charged 10 cents for each outgoing call; they bill their roomers at the same rate. Providing the receipts are over \$35,000.00 yearly, the hotel company receive a 15% commission on the excess. Local calls and all house calls are furnished free to the hotel company. There are two supervisors to take care of the twelve operators; one chief operator, who has a desk of her own to which complaints and requests for information are referred. The operators say, "Number please?" in answering a call, and "Waldorf" when answering a trunk.

The office space, wire chief's room and operating room space is furnished by the Hotel Company free of rental. The space in this hotel is very valuable. Mr. Sherwood told me that the Postal Telegraph-Cable Company paid \$5000.00 per year for a small space large enough for two desks.

Visit To Chelsea Office

This office is located in the vicinity of the proposed Pennsylvania Railway Depot and in a district that seems to be filled with the rougher element and small junk stores. They think that the placing by the Railroad Company, of this enormous station which will require an expenditure of \$50,000,000.00, will so improve the property in this district that to handle the future business they needed one of the largest and

New York.

best switchboards in New York City. To this end the Western Electric Company have just completed the installation of this new 10,500 line board. There are only sixteen "A" positions working up to the present time, but the growth in the district, they anticipate, will be very large and the board will readily be filled. There are 4,800 multiples installed at the present time. Colored cords are placed on all the "A" positions. Mr. Sherwood thinks that they will change immediately all of their switchboard cords, using the colored ones instead. He states that where a girl has ten or twelve pair of cords up, they aid in the work of disconnecting promptly on the "A" board as well as on the "B" board.

The rear of this switchboard is equipped with very nicely arranged asbestos curtains.

Chelsea Office Shop - Cord Repairing Department

In this building is located a shop. I was interested in seeing the amount of work of different kinds they turn out. They make all of their own branch exchange switchboards, turning out on an average, two a day; have a great many kinds of machinery. I was interested in seeing their screw cutting machine. They were turning out screws at a very rapid rate, from a quarter of an inch to two and a half inches long. One of the most interesting things in the shop was a department that repairs all the switchboard cords. They have long rows of tables and at these sit young girls working at the repairing of these cords. They pay them by the piece. A good working girl can turn out forty-five to seventy of these cords in a day. Each ones work is inspected constantly by a supervisor and no bad work is allowed to be turned out.

Westchester Toll Office

The next day we spent in visiting the Westchester Toll Office and the Botanical and Zoological Gardens, just beyond 198th Street, which is at present the terminal of the Elevated Railroad. This toll office is one of the three in New York City. It has only recently been opened; is supplied with the very newest and best equipment; has the best pneumatic system; the most elegantly equipped service testing desks; has the best management and unquestionably gives the best grade of toll service of any toll office.

Routing A Toll Call

We want to describe here how a toll call is passed, completed, billed, etc., from the time it starts at the subscriber's station until it has gone through the local operator, the toll operator and finally been completed.

Everything in New York City is on a number basis. No toll calls are accepted in the New York district for a particular party.

New York.

There are no recording operators for subscribers. The "A" operator on the local switchboard is the toll recording operator for the subscriber anywhere in New York City. She takes his call, presses an order circuit button and passes it to the recording operator instantly, as she passes a call to a "B" operator on a trunk position. The recording operators, of which there are five in this office, write the number of the telephone wanted, together with the number having given in the call. At the time the "A" operator passes this call to the recording operator, she places a "tone testing plug" in the multiple of the line which had originated the call; she leaves this plug in such line until she receives a signal on the supervisory lamp and knows the number has been called up by the toll operator and she is to disconnect.

Routing A Toll Ticket

Going back to the recording operator who has received this call; after writing the ticket she drops it into a gravity chute, going through this it falls onto the distributing table, where one of the two distributing operators sends the ticket through the different chutes to the line operators. (We should have said that when the call first originates the "A" operator has to give it its routing. We mean by this, whether such call should go to the Westchester Toll Office, Courtland Toll Office or another office.) You see a toll ticket can be completed by any line operator, consequently it does not need to be placed in any particular chute so that it might thereby reach any particular operator. The distributor is advised when any line operator is waiting for business, by a small pilot lamp being lighted in front of the distributing tube going to each position.

Toll Tickets, Routing, Timing, Etc.

It is the duty of the toll supervisor to see that the line operator is kept busy and if she is not busy she must push the button which lights this lamp and shows that she can handle more business. Now that a call can be passed to any operator upon the receipt of such call, the operator immediately calls up the line number which has asked for the toll connection. (When this number is up on the toll operator's cord is the time the signal lights on the tone testing cord at the originating "A" board.) With her other cord she rings the toll station asked for and gets the called party to the telephone; when he has answered she rings, promptly, on the other cord and gets the number that originated the call. The ticket is then placed in the calculagraph, which has only two stamps; one showing the five minute periods, the other the minutes and fractional parts of a minute. The other stamp, which we use to show the time of day, is not used on the calculagraphs of New York City. They do not keep a record of when any conversation was completed.

The completed ticket is then passed back through a distributing tube to the distributing operator, where they are placed in a basket. Every fifteen minutes all the tickets in this basket are gathered up by a clerk who stamps each one, indicating the fifteen minute period in which

New York.

it was completed. These tickets are placed in little pockets for the last fifteen minute period and the position of pockets holding the tickets for the previous fifteen minutes is shoved up a notch higher. Two hours of recently completed tickets are kept by this operator in the manner above stated. The object of so arranging the tickets and holding them for two hours is as follows: Say a subscriber had held a toll conversation, the talk was satisfactory but he desired to know the amount of overtime; (an inquiry of this kind received by the "A" operator is promptly passed to the clerk who handles these tickets;) he gives her the number and tells her about how long ago he talked; she looks through the tickets which are arranged in each little pocket in numerical order for each hundred, and in a moment finds the ticket in question; she then tells him the amount of overtime, the rate, total amount of the bill and anything else that is legitimate information that can be given to a subscriber.

One would think, with the amount of toll business handled in New York City, that there would be so many inquiries of this kind that this clerk would simply be swamped, but while I was at her desk, possibly for fifteen minutes, she did not receive a single call requesting this information out of the large volume of completed calls that were stacked up in front of her.

Billing Toll Tickets

These tickets are afterwards arranged for the day's work and sent to the Auditor, who bills the subscriber monthly for the total amount of business originating at his telephone. No check whatever is made at the inward office, nothing but the outward operator's report is on file and that goes.

No Inward Tickets

In case the toll operator should fail to make a ticket on a certain call, such call would never be charged to the calling party. They admit that unquestionably a certain per cent of their business is lost in this way, but whatever this amount is, they realize that the expense of making inward tickets at the receiving office to check their operators, would in no way pay them, because the very small loss would not offset the great expense which they would be put to if they wished to maintain the inward office records.

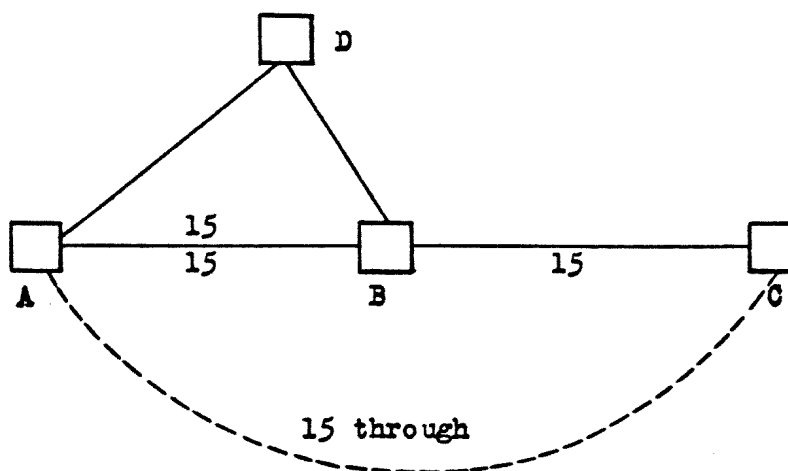
Operator's Load

A load for an operator is considered 80 calls per position, busy hour. They have ring down visual signal trunks which are their toll lines. This prevents the operator from having to test for a busy line. This office handles 7,000 calls per day; only 6% of these are lost.

New York.

Routing Toll Business

Mr. Sherwood has an idea that toll business should be routed on through lines to prevent any switching office handling the connection, if possible. He gave me an illustration of this as follows:



----- Through line strung to avoid switching 15 messages at "B".

The above drawing shows station "A", "B" and "C", with the trend of business toward "C". There are 15 messages from "A" to "C" and 15 messages from "A" to "B" and 15 messages from "B" to "C". To prevent switching and delay in service on the long call from "A" to "C", a new toll line is strung between "A" and "C" on the basis of the 15 messages; consequently, when we look at the big toll offices in New York City, we find that they have almost altogether direct toll lines from all exchanges.

Fire Drill

Fire drills are held monthly in all New York offices. It takes two minutes to get all the operators to the retiring rooms. A memorandum is made by the supervisor, of all lighted signals during the absence of the operators from the board. Provided any remarks are made by the subscriber, as to delay, the operator states that "We were holding a fire drill." Should this not be satisfactory he is given the manager who makes further explanation. As a matter of fact, the subscriber never makes further inquiry after being told by the operator.

Operators' Dress

The operators wear any kind of dress they wish; get coffee, tea or milk; have nice rooms; are furnished with magazines and daily papers at all offices.

New York.

Recalling Subscribers For
"Busy" And "Don't Answer"

Mr. Sherwood is emphatically in favor of recalling subscribers when lines are "busy" or "don't answer". He told me that he had made an extensive study of all the conditions when the subscribers are not called and connection completed, noting in every case the result as to the operators' loads, effect on the total revenue, etc.

Then another study: After they had instituted the scheme of having the line operators complete all possible "busy" and "don't answer" calls.

It is argued that if operators are allowed to recall subscribers in completing such calls that their work will be materially increased; that the operator is loaded with more responsibility; that more "B" positions have to be provided on account of the increased number of times the "A" operator goes in on the order circuit, trying to find out if the line desired is still busy or if they will answer; that the per cent of such completed calls is not sufficient to warrant the telephone company bothering with them; that it is not our place to bother with the completing of such calls; that if the subscriber wants them completed he can easily call again himself.

In refuting the above arguments Mr. Sherwood states he clearly proves that the recalling of subscribers for "busy" and "don't answer" would not affect materially the position load; that the operator could assume, without any friction, the slight responsibility on account of the present method of handling nickel and measured service calls; that if the party is not recalled, in 75% of the cases he will call the operator again in a few minutes, which will mean her having to answer him promptly, then if the line is still busy she is very likely called upon to answer him another time later on, all of these answers without bringing any result. Whereas, if she were allowed to complete the call of her own accord, at the time most suitable to her, she could answer as many regular calls; in consequence, handling as heavy a load, and it is likely she would be able to handle more calls; that the "B" operator's load is slightly increased and that it would require just a little more "B" board equipment to handle the calls. He further proves that the per cent of business completed in New York alone over and above all additional expense and equipment, is enough to increase the total revenue by \$65,000.00 per annum. Lastly, he says it is our place to complete such calls even though we were not getting any additional revenue but were trying to give good and courteous service to the public.

There is nothing grows so exasperating to a business man as to call twice or three times for a certain number and every time have the operator reply, "busy now", but there is a whole lot of satisfaction over this even though the line is reported "busy" at the first call, if the operator answers him in a kind way after reporting "busy" with

New York.

"Shall I call you?" Provided he is going to remain in the office and wants the party he will say, "Yess, central."; then in a few minutes his telephone rings and he has the party he asked for; thus the telephone company having completed his order.

Mr. Driver, Superintendent of Traffic of the Bell Telephone Company of Philadelphia, has very pronounced and excellent ideas upon this point and I shall comment upon his suggestions later.

Repeating Numbers

In New York City, the operator repeats the number to you distinctly. They emphasize this point there, and believe in putting all the stress of "time saving" in getting the plug in the line and saying, "Number, please?" as quickly as possible; after that the operator takes her time and repeats the number distinctly, always remaining on the line a second afterwards to see if you correct her. Two places in the United States they have left off repeating the number; namely, Cleveland and Detroit. I shall later give the argument in favor of this scheme; but here I want to add that Mr. Sherwood is emphatically opposed to the plan.

The primary point is, to him, that we should repeat the number to avoid giving a subscriber a wrong number. While the primary point advanced by Mr. Driver is that we should repeat the number as an acknowledgment that we have received the call. Mr. Sherwood putting definite stress on the one hand on having it repeated distinctly, for the one reason, and Mr. Driver putting particular stress on the other hand on having it repeated for another reason, or anything said in answer to the subscriber, as "Bill Jones", for that matter, but that we should say something to acknowledge that we have received his order.

No Special Service

The New York Company refuse to give any special service of any kind to anybody. There are no complaints arise then in operating. Calls are not put on a certain trunk for certain hours; not switched for Saturday afternoons or Sunday, for any exchange, and in consequence of all of this it is no wonder that the service in New York City is so absolutely good, so regularly the same and so uniform from any kind of service, any exchange, or at any time of the day or night.

"No Toll"

The "No toll" lamp is not in use, neither is there a list furnished the recording operator. A toll bill not being paid is considered the same as a non-payment of rental and the telephone is promptly disconnected. Mr. Sherwood believes that we are burdening the operator with too many details if we ask her to keep advised as to who or who not is eligible to toll service.

New York.

Managers

To get good managers Mr. Sherwood prefers college men. He puts them into a school and gives them a course in training both in his department and in its other branches.

Switchboard Without A Multiple

At the present time, in New York City, when an office handles over 80% trunking, a board leaving out the "A" multiple is secured. Upon this point it is conclusive that it does not pay to put in an expensive multiple when 80, 85 or 90% of the calls are already trunked. It is a small matter of expense or delay in the general traffic to local trunk the additional 10 or 15%. There are two or three boards already in New York City without a multiple.

"Jack Per Station" Service

Say a line has several parties upon it (up to four), a "jack per station" can be used. On the "B" board in Chicago ten jacks are used for one line on the ten party lines. In this way a subscriber on a party line has his own number and it need not be changed on account of moving unless he leaves the exchange. This is a good argument for the Contract people. Lines can be filled by the construction people and parties put on them wherever they desire; in turn the traffic people can assign any jack on the switchboard to carry the station. It is not necessary that station jacks on the same line be adjacent. This is arranged at the terminal racks.

From a traffic standpoint this is the best way to handle party lines. The number of rings can be designated by an exchange name or by painting the jacks.

The question of giving party line subscribers too good service arises here, or individual service, as it were. If we are continually using schemes to make party line service, from a traffic standpoint, as good as individual service, how are we to get our subscribers to change to a better grade of service? The only argument left is that of the line being busy for incoming or outgoing calls.

While in New York I met Mr. Salt, Assistant General Manager of the Western Electric Company. He sent his kindest regards to Mr. Field, Mr. Burgess and Mr. Ballard.

Pilot Lamps On "A" Board

There are four pilot lamps on each panel in the "A" board. Their uses are as follows:

One that lights when the toll tone testing cord is put into the multiple jack. It is intended that this will give the supervisor

New York.

a check that such and such a party is making a toll call. If she so desires she can make a check as to when the party calls and see that the toll operator calls the number up promptly and further keep a memorandum of such a call, referring it to the toll office later where the regular toll ticket can be checked against it.

One Universal Monitor Circuit; a desk monitor can plug in on a certain jack and light all of these pilot lamps. It is the operator's duty then to press an order circuit button that goes back to the monitor's head set, she then asks if they called such and such a party, the operator who called then gives details to the supervisor, who in turn tries to complete the connection.

One from measured service, lighting each time the nickel button is pushed in front of the cord indicating that the meter has registered one call. If the lamp should not light the operator would know that the meter had not registered and would report the fact to her supervisor.

One for the usual purpose, in connection with all subscribers' lamps in the panel.

THE BELL TELEPHONE COMPANY

PHILADELPHIA, PENN.

There are 49,500 stations in Philadelphia. The Keystone, which is the opposition company, operates 10,000 stations and is at present on the retrograde. The opposition only affects the Bell in the business district. The Keystone have a good many pay stations and charge five cents a call; while the Philadelphia Company charge ten cents.

Opposition Company

The opposition have recently sold their conduit right for want of funds and now rent from the owner, paying \$125,000.00 yearly for the privilege of using space. The Bell Company will meet the opposition pay station rate on November 1st, 1904, which will deal a severe blow to the opposition company's largest source of revenue. However, the Bell people will limit the pay station rate to certain zones in the city.

The opposition flat rate is \$80.00 per year. Measured service six and seven cents per call.

Business men support the opposition company in this way. They will contract for a measured service Bell instrument and use a Keystone for all possible calls in the city's business district, suburban, or places that cannot be reached by the Bell Company. A Keystone will save them \$20.00 a month in excess calls, when it only costs them less than \$7.00; thus making a gain of over \$13.00 per month.

The Bell people were free to tell me that opposition in Philadelphia came directly from exorbitant rates. When opposition was introduced there they had no cheap rates; everything on a \$160.00 per year basis. What could a man do who had a small business or what could be furnished a residence? It was clear afterwards that the unsound sense of the Bell people permitted this condition to exist without supplying a remedy, and it took an opposition move to bring them to their senses.

The opposition service is not very good at the present time from the trials that I made of it, and further, I think it is rapidly going to decay. There is no question in my mind but what the enterprising Bell people of Philadelphia will see to it that they are on top from now on.

Phil.

Mr. Wm. R. Driver says opposition has been a darn good thing for them. It will please the subscriber and do the things for him that we won't do and consequently they get a large amount of patronage.

Mr. Driver On Recalling For "Busy"
And "Don't Answer" Calls

In this city now the Bell people recall subscribers for all "busy" and "don't answer" calls on all kinds of service. Mr. Driver says, if a subscriber makes a call and we receive it and acknowledge it we are then his agent or servant to see that it is completed. The idea of his having to give us his order two or three times before we complete it for him is treating the public and the subscriber in a very discourteous and unkind way. He says, "What would you think of a man running a business, selling sugar; a regular customer comes in and asks for a dollar's worth of the article. The clerk would say, 'Yes' and take his order; he would wait awhile but nothing comes of it so he gives the order again, waits awhile and still nothing comes of it. Would the business man be treating his customer properly, and further, would his customer be pleased with the treatment he received in this store?" He says, "Apply this to the telephone company, who go so far as to allow their operators to take the order and practically do nothing more about it in case the line is busy or the party asked for does not answer."

He says to recall subscribers means an improvement in the general service and puts us on record as being able to show another mark of courtesy.

Measured Service In Small Cities

Mr. Driver thinks that measured service should not be used in small cities (possibly up to 100,000 population), for the reason that it kills the rate of calling, limits the use of the telephone and consequently hurts the business. It would be better for us to let it remain unlimited. The Philadelphia Company carry this out in certain districts that comprise the outlying parts of Philadelphia; such as, Germantown, Chestnut Hill, Overbrook, Frankfort and West Philadelphia, also in some other parts of their districts.

Measured Service Operator's Load

To limit the condition of the low rate of calling in the Poplar Office (where every other operator has been taken out, it being a residence district), he suggests that a system of estimated measured service calls be maintained and no tally record or check be kept. In this way he thinks heavier loads can be handled and we can give good service.

Filbert Exchange

I visited the Filbert and Walnut Offices. The Filbert has an old common battery board, 6000 lines. The company exchange is located on this switchboard and has six operators.

Phil.

"Change" Operator

In this office is a special "change" operator. She has a special call circuit connected to her head set and also incoming ring down trunks from the "B" board; she directly completes trunk calls on changed numbers if such change does not carry them into another exchange. She has a numerical change list on a card and can supply information to any operator promptly in return from a call over the order wire.

P. P. S.

The Public Pay Stations ending in this exchange have no special keyboard. They use two pair of cords in completing the connection.

Walnut Exchange

The Walnut Exchange, which is on the floor below the Filbert office, is a new 96,000 line board. The Instruction Department is located in this exchange. The instruction operator uses dead positions and they have a good scheme of cross-connecting "fake" subscribers' lines to answering jacks and multiples for instruction.

Manager

Mr. Gill is Manager of these two exchanges and is a very talkative fellow. He maintains an envelope scheme, keeping all of the service tests made on the operator that applies to each one individually. There is no merit system. Nothing is posted in the retiring rooms.

Walnut Exchange

They have good trunking service. They do not allow operators to ask what is on a trunk circuit, neither do they ask the "B" operator to ring again, as is the custom in other exchanges, thereby loading down the order circuit; for it is the duty of the "B" operator, they claim to ring at proper intervals until the subscriber answers; but as nearly all of their trunks have machine keys it is easy for them to follow this plan.

Toll Board

A new toll board is very much like the one in the Courtland Street Exchange in New York City. The room is a very pretty one. The floor is laid with rubber tile at an expense of \$1.00 per square foot. It cost over \$2,500.00 to lay this floor.

Toll Calls

There are no direct recording operators. The "A" operator passes a call and the recorder sends it to the distributing operator and the distributing operator sorts it, passing all number business to

Phil.

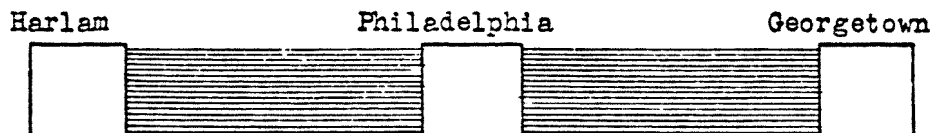
any of a certain set of operators; all particular party business she passes to the regular line operator, who is familiar with the station which the call is for, and they believe can complete it more intelligently than any other operator. They think the advantage of having a line operator who is familiar with the points she reaches, and possibly a great many of the subscribers at such places, and is able to talk directly to the subscriber who placed the call, is of material advantage.

Toll Routing

There is a first, second and third routing to all toll centers, day and night rate, with minutes overtime, shown on a card. The routing is done by a number scheme which is a very good one and which I think we will adopt at once on our Denver toll board.

Overtime Rates

There is a list of these on the same scale that refers the operator to the "checking center", also rates to important points for any number of minutes are shown in front of each line section. These are put in a neat little frame - good idea.



"Toll Tandem" Operator

This is a peculiar scheme well worked out on the Philadelphia toll board and practically taking the place of a "through" or "switching" operator. There are twenty lines from Harlam to Philadelphia; twenty lines from Philadelphia to Georgetown; the trend of business is largely between Harlam and Philadelphia and Georgetown and Philadelphia; but to take care of the business from Harlam to Georgetown and vice versa, as promptly almost as though there were direct toll lines, a "tandem operator" is placed in the Philadelphia office. What business there is between the two outside points for each other is handled by this operator and there is just enough to keep her busy. She is practically on a "3" position with all toll lines ending in cords and plugs or jacks. There is an order circuit from Harlam and from Georgetown. Either point desiring the other

Phil.

presses an order circuit button giving the exchange wanted; she assigns a trunk and rings the distant toll office over any trunk not busy outward, to the point desired. She knows what incoming trunks are busy for local business between Philadelphia and Georgetown, or between Philadelphia and Harlam, from the fact that busy signal lamps are placed on the cords.

The point about this scheme would seem to be that the twenty lines on either set of trunks from Philadelphia can be worked to a higher efficiency by this scheme, handling both local and toll business between these points to the best possible advantage and always leaving the operator the privilege of using any of the twenty circuits.

It can be readily seen from a traffic standpoint that were four of these lines to be connected through for through business, there would be more liability of the through lines being oftener busy for through business, or there would be the same liability of the local lines to each point being busy oftener also. This is an excellent scheme for handling through business and the only one of its kind I saw in the East.

District Managers

The Philadelphia Company have a District Manager in charge of the plant, another in charge of the traffic and a third who is a contract man. These three report to the heads of the departments in Philadelphia and together form a committee for consulting matters pertaining to any exchange over which they may be in charge. They claim they can not get good all around men is the reason they have adopted this scheme. An exchange manager may be a good plant man and possibly a good contract man but a poor traffic man, so he gives poor service. In other words, they found it very hard to get a man who would comprise all of these. They claim better results from the above plan.

Inward Tickets

No inward tickets are made in the entire territory except as a memorandum when needed, as for messenger calls, busy or don't answer calls particular person business, et cetera. In consequence of there being no inward tickets there is no checking whatsoever done over toll lines. The tickets are sent direct to the Auditor daily. Service tests are made continually and tickets timed by service testing operators.

Checking

All toll stations are on a "center checking" basis. Mr. Driver says checking is an absolute loss, both of the line and the operator's time and has only certain moral effects. The moral effect is still maintained by making service tests and records of what the business ought to be; made from curves by the Traffic Department.

Phil.

Telephone Directories

The telephone directory is issued quarterly by the Traffic Department. Mr. Driver has recently found out by experiment that the printers of the directories are able to deduct \$6,000.00 per annum from the previous charge of compiling and printing the directories, on account of his having made arrangements to have them make the corrections and changes daily, showing a daily appendix for the benefit of the Operating Department. After this scheme has been worked out Mr. Driver intends to show only the disconnected telephones in the exchange records and at the "B" board of which the telephone was a subscriber. A call from anywhere in Philadelphia for a disconnected telephone will, of course, go promptly to the "B" operator in such exchange, who, in turn, by the marking of the board, is able to say that such and such a number has been disconnected.

Operators' Uniform

The operators wear a black uniform throughout summer and winter, with small, short, white aprons. They are furnished with coffee, tea, milk, and magazines for reading in the retiring rooms.

THE CENTRAL DISTRICT PRINTING

AND

TELEGRAPH COMPANY,

PITTSBURG, PENNSYLVANIA

Here I met Mr. Wilson, President of the Company; Mr. Beehler, General Manager; Mr. Connell, Contract Agent; Mr. Grace, Engineer; Mr. Reynolds, Superintendent of Construction and Mr. Rorty, Superintendent of Traffic.

In spending three days in Pittsburg in the offices of the Company, I was impressed most of all with its magnificent organization. The Engineering Department, under Mr. Grace, is specially well organized. Under each assistant, in a separate room, is a corps of office help and specialists.

One cannot help but think what excellent and satisfactory results must continually be derived from the work of as competent and qualified a set of employees as form this department.

Morse Circuits

The C. D. P. & T. Company lease a great many telegraph lines to the brokers who have offices in different parts of the district. They receive an annual rental of \$20.00 per mile per year for such circuits. In addition to this they charge \$600.00 for each loop cut in on any line. There are duplicate instruments installed at the central office. There is a wire chief's office, and the maintenance of the morse circuits is directed and made by the Telephone Company through this office. I was advised that the C. D. P. & T. Company were receiving a gross revenue from leased morse circuits of \$65,000.00 per year. They seem to speak of this as being purely "velvet money" as the maintenance of these lines costs but very little.

New Repeater

At the Long Distance Office in Pittsburg, of the A. T. & T. Company, which is called the Brushton Office, at present is installed a "telephone repeater" which has been the result of incessant and studious work of several experts employed by and under the direction of

Pittsburg.

Mr. Hayes of the Engineering Department. Mr. Grace has personally tested this repeater and explained to me about as follows: (On a St. Louis talk, which Mr. Sherwood says is never a talk - operator repeats.)

"Hello Smith!!!! Hello, why I hear you well tonight." "Say that sounds close, doesn't it?" "Well, I never talked so clearly to you before." "Are you really in St. Louis?" - whereupon the repeater was cut out - "Hello, Smith!!!!" "Hello!!!" "Hello!!!" "I don't get that." "Where have you gone?" "Hello!!!!" "Hello!!!!" "Hello!!!!"

Service Meters

Mr. Grace says to use the New York meter on all one party measured lines; that it is O.K. He thinks a meter should not be located at the subscriber's station on account of the subscriber being continually advised of the number of calls he has made. This would have a tendency to enforce him to a still more restrictive use of the telephone. Telephone service is restricted enough by placing it on a measured service basis without sticking a meter up in front of a man's face to keep him advised of each additional call he is making.

Automatic Exchanges

Mr. Grace has had considerable experience with opposition exchanges, having installed the opposition plants in Detroit, Atlantic City, New Jersey, St. Louis and other places. He states that there is a feasible and practical scheme that will permit exchanges automatically trunking between each other, thus doing away with "B" operators who do not come in contact with subscribers anyway.

Also, he states an automatic exchange can be worked with an operated toll board. Mr. Rorty thinks an automatic exchange should be worked accordingly for service observations for district work.

There is no underground system in East Pittsburg. There is a special system of pole line distribution, however, in this part of the city.

Ring Method Of Wiring

Mr. Grace has a new "ring method" of wiring to subscribers' stations. I went with him to inspect some of the work recently done and he seemed to be very enthusiastic over the possibility of their ultimately using this scheme. At a certain place a pair of wires were run along the side of the house, through metal rings, about eight feet apart. The pair were tied to the inside of the ring with marline string. These rings follow around the house to the place where the wires enter into the building. The rings seem to be easily driven into brick or wood and after the work is completed make a very good appearance.

Pittsburg.

Engineering Department

Before I left I was shown through the entire Engineering Department, and was impressed most with the Laboratory, Chemical Room, Experimental Room, Printing, etc.

Telephone Rates

This Company is now practically on a center checking basis. I have heretofore alluded in my Boston notes, to a visit made by Mr. Cotter to Pittsburg, and his study of telephone rates.

Inward Tickets

For some time the Pittsburg people have not made inward tickets except in case of memoranda.

Mr. Rorty has recently worked out a scheme of toll service testing which is intended to take the place of the effect which the making of inward tickets has upon the exchange manager.

Toll Testing Desks

In a separate room are located these toll testing desks at which lines can be put up for observations. A regular toll ticket is used at these desks, besides other forms. The ticket is marked "special check" and all the data placed upon it; length of conversation, particularly, which is timed with a split second stop watch. These tickets are then sent to the Auditor who checks them against the tickets sent in by the exchange; if the exchange tickets are O.K. he so marks them and returns them to the service testing department. It has been shown that there were very erroneous records sent in covering the originating business, prior to the installation of this scheme. Now the errors are becoming very rare, and besides this, the operating irregularities have been greatly diminished. These lines are changed daily and a summary of each day's work made on forms, samples of which Mr. Rorty supplied me with. Mr. Rorty thinks we should make these kinds of service tests and by all means do away with checking over toll lines, particularly with the line load we are carrying in Colorado at the present time. In this connection our tickets are not sent in to the Auditor's office; however, a five day report is made covering the amount of outward business with each exchange or toll line station.

The same system of service testing could be maintained here and tickets made on all observations, the same as is done in Pittsburg, and a five day record, or less, of tickets could be called in at any time by the Auditor to check against the records furnished him by the Traffic Department.

Pittsburg.

Carbon Tickets

At the centers a carbon ticket is used. Mr. Rorty does not like a carbon ticket, but he has not found any better scheme yet to reach the present results. He thinks he may look into this further a little later.

Phantom Circuits

Phantom circuits are used quite extensively in their territory and Mr. Rorty says to good advantage. He believes we should restrict their use considerably under improper conditions. The A. T. & T. Company are now using phantoms over some of their long lines. The lead should always be transposed, proper coils used, etc.

Tallying Measured Service

Measured service is tallied in Pittsburg the same as in Denver. They do not recall for lines being busy or don't answer, and one can readily see the difference in the service furnished the general public after he strikes Pittsburg. While their service tests show an average five second answer, they seem to be a little lax in their methods of operating; they nowhere near present as polished a front as New York City and Philadelphia.

Measured Service

But I was going to say that Mr. Rorty has made investigation as to the per cent of accuracy in charging measured service calls. Mr. Valentine of the New England Company, states that they estimate between a 90 and a 95% accuracy, while Mr. Rorty's tests show a 94% accuracy. Buffalo claim a 98% accuracy and they use the recalling slips, while Chicago does not know whether they are accurate or not.

Tests taken in the Denver Exchange last Spring showed a 99% accuracy without including the all night work.

Training School

Mr. Rorty thinks the training school is a good thing. He is just getting theirs well under way and believes it has done more already to improve the grade of service than any other one thing. He is sort of modeling after the New York idea. Miss Cole is in charge of the school at the present time. I obtained application blanks, etc. Mr. Rorty, personally, does not believe in many rules. He thinks, however, a few well enforced are a good thing.

The C. D. P. & T. Company have as yet never published a set of operating rules.

Pittsburg.

Some Of Mr. Rorty's Ideas

The operators in Pittsburg dress anyway they please. Mr. Rorty is going to raise the salaries of the supervisors from \$40.00 to \$45.00 per month, he is also going to recommend furnishing the retiring rooms with magazines of a good grade. He thinks it keeps the girls off of the streets and is a measure of refinement.

Mr. Sherwood told me in New York City that operators' salaries had been raised from \$7.00 to \$8.00; \$8.00 to \$9.00, and finally from \$9.00 to \$10.00 per week. He thinks we should pay still more as then we will be able to get a better class of girls, which, in turn, will add just so much refinement to our service. The courtesy which is shown by the operating force will be limited to the plane upon which your operators stand; force courtesy will crop out and show itself; natural courtesy will please and place us in a higher estimation with the public.

Mr. Rorty thinks supervisory service will never be made good, or as good as the average answer, unless a pilot lamp be placed covering all supervisory. I remember last Spring, of bringing this to the attention of Mr. Rhodes, our Engineer, but at that time he thought it would hardly be practical. Mr. Rorty says such pilot lamps will probably be provided on new boards. The average supervisory answer in Pittsburg is eight seconds at the present time.

He thinks we should let other companies figure on automatic meters. He advises using the New York meter on two party lines, tally system or check scheme on all others. He thinks you should recall all subscribers when line is busy or don't answer; money is made by doing it and that it is our place to extend this courtesy.

The measured service load at the present time is 125 calls for the busy hour. Only 40% of the total telephones in Pittsburg are on a measured service basis. Branch exchanges, he thinks, should be controlled in every possible case by the Telephone Company. He believes in placing a branch exchange supervisor and keeping in touch with the general branch service; he thinks that unless this is done we leave too many loop holes where mighty poor and rotten service can creep in before we know it.

There is a number one relay switchboard placed for the Carnegie Steel Company; it has 1200 stations and 13 operators.

Opposition

The Pittsburg and Allegheny Telephone Company, which is the opposition plant, operate only 10,000 stations. I could not see that they were doing much damage to the Bell people.

Pittsburg.

Information

As Mr. Valentine of the New England Company happened to be in Pittsburg at the time I was there, I had the pleasure of being in some very instructive and entertaining conferences between him, Mr. Bradley, Mr. Rorty and Mr. Grace. Mr. Valentine's ideas of central office information is that certain information is local and will usually have to be given out by the exchange in which the sub-station is connected.

Toll Board

I meant to have stated, in speaking of their toll board, that they are now drawing up plans that will cover the installation of a new toll board in Pittsburg with a pneumatic tube system similar to ours. Their old toll board is in poor shape to give the best of service at the present time. There are 100 lines terminating on the present board.

Number Business

Mr. Rorty is going to push number business; may want to introduce some special rates similar to those existing between Rochester and Buffalo. He has ordered special equipment when the new board is placed for handling number business.

Mr. C. H. Bradley, whom I mentioned before, handles the rates in Traffic Department and is working up the new block system instituted by Mr. Cotter. He advises sticking to an air line mileage basis, regardless of whatever territory the toll lines cover, instead of making any special rates. To cover extreme conditions which are liable to change at any time, and which in one sense will require a special rate, such special rate should in all cases be based upon arbitrary mileage.

He has a method of figuring revenue for sub-licensee companies as follows:

- Number of messages?
- Total value of messages?
- Average message value?
- Number air line miles?
- Message value per air line mile?

One is mighty glad to be able to leave smoky Pittsburg. While Cleveland is not nearly as smoky, it is bad enough. Our next stop is in Cleveland where the change and relief is extremely welcome.

Leaving Pittsburg

Looking from the bluffs of East Pittsburg down across the Monongahela River at the city, one's first impression is that it all must be afire; the smoke, however, gradually ascends in a great cloud and leaves a faint outline of the tall sky scrapers, which only reminds one again of New York.

Pittsburg, with its thousands of industries, is surely destined some day to be a great telephone center, as it is today a great city.

(To be continued)

NOTES ON A TRIP EAST

BY

Mr. W. F. COZAD

PART 3

The Cleveland Telephone Company

Before I left Boston, Mr. McBride had so often insisted on my stopping off at Cleveland that I decided to do so; now I am very glad that I did because I was impressed there with three important things;

- 1st, The aggressiveness of the opposition movement.
- 2nd, The methods by which the Cleveland Telephone Company handle branch exchanges.
- 3rd, The interesting results that have come from the Company doing away with repeating of the number to the subscriber.

I shall give the results of my investigation into these three subjects in their order later on.

Central Union

The Cleveland Telephone Company is operating at the present time 19,000 stations. They have a very small territory, possibly extending only ten miles in any direction from Cleveland. The Central Union territory comes within a few miles of the city and all of the Central Union toll lines run into Cleveland and are operated in the toll room of the Long Distance Company so there is not much of a toll system in connection with the Cleveland Telephone Company.

Manager

In the morning I met Mr. Hearst, Manager of the A. T. & T. Company, for a certain division. This division includes Dayton, Cleveland, Toledo and Erie. There are 60 toll lines ending on the Cleveland toll board. This board was just completed last summer. They have a pneumatic tube system which costs \$75.00 a month to operate.

Cleveland.

"Rapid Fire" Circuits

They use "rapid fire" circuits between Dayton and Cleveland, Indianapolis and Cleveland and Toledo and Erie. Mr. Hearst thinks they are a good thing in some ways.

Anything is always best to the fellow that gets it up. A scheme of this kind will invariably be pushed by the originator and the small faults overlooked while another man will invariably pick it to pieces. Mr. Hearst believes the "rapid fire" circuit has been of some value to them in completing business from the above points, and also it has aided them some in taking toll business away from the opposition company.

Inward Tickets

They make inward tickets where necessary, as memoranda, but they are still checking over the toll lines. Nearly every office will call up in the morning and ask the other office how much business they are to charge them with. They will discontinue this practice as soon as they can claim that it is useless; but, they desire to get some service tests started before they do this. Up to the present time they have not made any particular service tests on toll lines. The outward office governs everything.

Toll Room

The toll room is a very fine one. There are distributing operators, recording operators, long distance operators and local operators, who handle the Central Union lines.

Mr. Edward D. Cramer is the Toll Chief Operator. They had trouble at first with their pneumatic system on account of using paper of a poor grade; when they got better paper the trouble ceased. To avoid the tickets being lost or delayed in the chutes, they have arranged the light on the distributing desk to show only when the ticket has arrived at its destination. They found it was useless to have these lamps show when the operators were busy as ours do. The load should be properly adjusted to take care of this.

Good Points Of Two Recorders

It will be recalled that I have already mentioned that in New York the lamps show when the operator is not busy, but this is necessary because tickets are not sent to special operators; any operator can complete any ticket.

Mr. Cramer has just arranged a scheme whereby all of the incoming toll lines end on line recording positions, so that at the present time he has three line operators who do nothing but record the calls from distant points, passing them through the pneumatic tubes to the distributing operator; she in turn passing them to the proper line operators,

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just the same as she passes the tickets that come from the subscriber, on the subscribers' recording board. In other words, there are two sets of recorders. Up to the present time this is only an experiment, but it is certainly a very interesting one and Mr. Hearst said he would let me know later how this scheme worked out.

The good points of it can be summarized as follows:

It prevents the line operator from doing any recording work, further, she does not have to answer calling stations.

It leaves all of her time to complete and report upon her inward business. In other words, in a broad way, it simply looks like a little more system.

Information

All "don't answer" and information is handled by a special line operator. This seems like another good idea because it relieves the operators and centers that kind of trouble.

Toll Peg Count

I found in the East that toll men were glad to know that a toll peg count had been devised and were all anxious to get one of ours. The A. T. & T. Company have no toll peg count that they make for the Cleveland office.

Opposition Toll Service

An interesting phase of opposition in Cleveland is that of toll service. A business man will put the same call in over both instruments. The Company that gets it for him first is the one that gets the talk. He simply notifies the other Company after he has talked, to cancel his call.

Number business is handled through "A" boards direct, where possible, in order to give the quickest service.

Mr. Ranney

Mr. E. E. Ranney is Traffic Manager for the Cleveland Company. Mr. Ranney is surely one of the original men in the Traffic Department. He has his own ideas and works them out in a way which he can always give you proof for as being the proper method.

There is no exchange I visited in the East where I saw so many good points, and on the other hand so many poor ones.

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Traffic Department

The operating is not extraordinarily good, but he thinks they give an average grade of service. His department takes care of the maintenance, printing the directories, as well as handling the traffic. He has no managers, they are called District Chief Operators (men), and lady Chief Operators in each exchange. The Managers also take care of the maintenance and are not often in the operating room.

Mr. Yensen

Mr. Ranney had me meet Mr. Yensen, their General Manager. I had a very nice visit with him and considerable conversation relative to opposition. He was interested in how we kept opposition out of Colorado Springs.

Mr. Yensen is the originator of the idea of the operator not repeating the number. It fell upon Mr. Ranney to work out Mr. Yensen's idea.

Repeating Number To Subscriber

Their arguments for this are as follows:

Before they decided to discontinue the repeat, an observation upon 500,000 calls was taken. They found that the subscriber corrected the operator in only 500 cases, or one out of every 1000. They found that there was a delay of 1.5 seconds on each call when the operator repeated the number. If you cut out the 1.5 seconds you bring the subscriber just that much sooner to the party he has called. Mr. Ranney says the original scheme was along this line. (Illustration of two parties in conversation.) One sits still and listens as long as he understands what the other party is saying, then he says "What was that?", whereupon the other party repeats the last sentence. There is no occasion for the party who is listening to repeat each sentence after you as you go along; just so with the operator. If she does not understand, she again says, "Number?".

After these tests and numerous observations of all kinds had been made, it was decided that on a certain morning in the Main exchange (where there are 6,000 stations), to have the operators stop the repeating of the number on a few days' trial. The result was very carefully judged. There were eight complaints the first day, four the next and two the next; after that no more were received.

The operating force was not decreased, as was reported in the newspapers at the time, because the decreasing of the operating force was not the point that entered into the plan in any way. Through some newspaper interview a reporter obtained the idea that the Bell Telephone Company of Cleveland had discontinued repeating numbers because it would save them the time of four and one half operators. This was very erroneous and gave the scheme a black eye on the start. The primary idea was to save time to the subscriber and give him quicker and better service.

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It worked along very nicely for two or three weeks. The subscriber got used to it and did not complain much longer. So at a conference of the officials it was decided, as far as they could see, that it was time to make the discontinuing of the repeat a permanent matter. Two weeks later than this it was tried in one of the residence exchanges. No complaints, whatever, arose. After it had been tried there for some time it was then adopted in all of the exchanges in Cleveland.

As far as I could find out, it was said by the patrons, as well as by the Telephone Company, that it was now a satisfactory scheme. They do not intend to go back to repeating.

The correspondence upon this subject, which I was permitted to read while I was in Boston, brought out the fact that the subscriber complained (in every case where complaint was made) that when the operator failed to repeat the number he oftener got the wrong number than when the repeat was made.

A classification of the complaints further reveals the fact that there were a great many more received at the office than I have heretofore alluded to, and that 30% of these complaints were made because the subscriber felt lost, after he had given the number and no one had said a word to him. This brings out the point of argument opposed to this plan given me by Mr. Driver, in which the repeat is intended to be an acknowledgement of the receipt of the order.

The Cleveland Company, however, claim that they obviate this trouble by giving extraordinarily prompt and courteous supervision upon all calls. In case a subscriber does not answer promptly, the operator is always in at once and tells the calling subscriber that she will ring them again; in every case following up the call in a courteous and attentive manner.

I believe there is nowhere nearly as much complaint brought out where the operator does not repeat the number, but gives courteous and prompt supervision to the call, as where the number is repeated distinctly and the operator is slow and almost inattentive to the supervisory signal.

This plan has lately received the approval of Mr. Fish, Mr. Ford, Mr. McBride, and some other traffic men in Boston. While it might not be successful at all in some cities, I believe that it has been a success in Cleveland.

What effect this will ultimately have upon the general operating of the country remains to be seen after it has been given some trials in other large cities, but at the present time I hardly think the plan will meet with popular and universal approval by traffic men, on account of the small amount of time saving it represents, and when it is all summed up, of the small per cent of benefits.

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Different Classes Of Service

In the Main exchange the positions are separated; each class of service in certain divisions like in Buffalo. The operators are only handling 180 calls per busy hour, flat rate load. There is practically no teamwork, no service tests being made, except occasional ones from sub-stations. The board is not marked for two, three and four party lines; they do not recall for measured or nickel service, and instead of tallying the actual measured calls by number on a sheet they tally on a small pad for a certain panel the answering jack number.

As far as I could find out, they had not made any special tests to ascertain the per cent of accuracy with which they were charging these measured service calls.

Information Bureau

One Central Office Bureau of Information is maintained. There are ring down trunks from the several exchanges to this information bureau in the Main exchange. Four operators are able to handle the information for the entire city. They do not maintain a street catalogue; consequently do not give street address information.

In the face of all of this opposition, Cleveland is sadly behind and is short in several things that I have just above mentioned.

Complaints

Complaints are handled by two chief operators, or monitors, who also listen in on the local operators. But it is universally conceded that this listening in by monitors is of little value.

Quiet Room

You can step into the operating room in this city and hear a pin drop anywhere in the room. It is the only quiet operating room, possibly, in the United States. This is due to the fact that no one is talking, you do not hear the low mumble of the operators' continual repeat.

Hospital Operator

There is no hospital operator; in fact, they did not know what a hospital operator was until I explained the whole proposition to them.

There were twelve lines out of order while I was there and no attention was being paid to them by the Operating Department. I judged from this that the general maintenance of lines and stations was very poor. This, together with the seeming neglect shown by the Operating Department to these lines, must mean a large per cent of service complaints in this exchange which might easily be obviated.

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Cleveland needs some New York ideas. or we should say Denver ideas, if it were not for people taking us to be proud of ourselves.

"Call Register"

At the present time they are experimenting with a new "sub-station meter" which is intended to be used on measured service party lines. Mr. Ranney is going to have this meter known as a "Call Register". It is intended that it will register automatically when the operator answers. It is also arranged that the meter device is in series with the hook in such a way, however, that it will not register with the working of the hook unless the operator plugs in and out at the same time.

Exchange Managers

The Exchange Managers, or District Chief Operators, seem to know more about maintenance than operating and really have a poor idea of either one.

Supervisors

Supervisors in this exchange have no desks, and what is worse than this, they have no head sets, so they are not of as much value to the operators as they ought to be.

Operators

Girls wear any dress. They have a nice class of girls, especially in the Long Distance Office. I am sure they get this class from employing High School graduates in most cases.

Method Of Handling Private Branch Exchanges And Private Branch Exchange Supervision

The Cleveland Company, unlike the Detroit Company (who want the supervision to be done by the "A" operator), insist upon the supervision being handled by the branch operator. In order then to give good service continually, records are made on branch exchange service only, to ascertain the grade of service given by this exchange. The operators are almost exclusively employed by the subscriber. If the service is not satisfactory to the Telephone Company, they at once take the matter up with the employer and illustrate with facts and experience where it is poor and what effect it has upon the service as furnished the branch exchange and as furnished through the branch exchange to the general public.

The Cleveland Company have made a particular specialty of their branch exchange service, and like the New York Company it is of high grade.

In no case have they failed, so far, in getting rid of the faulty branch exchange operator, or have not succeeded in correcting her mistakes, as it were, through her employer. Mr. Ranney says he thinks we are in a better position to understand how telephone work ought to be handled than any private branch exchange firm.

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Private Branch Exchanges

He says that if he were to buy a hoisting crane and start to use it and there were parts of it that did not work satisfactorily, not being a crane expert, instead of fussing with it he would go direct to the people who had sold him the crane and who understood the crane business, and consequently they would know all about them and how to get the best results from them.

Just so with a branch exchange. If it does not work properly, the Telephone Company are the people to see what is the matter with it. Their corrections of its workings should be accepted without further question. The Cleveland Company believe further, that if the supervision is not done by the branch operator, that she has lost her value to the exchange and the branch is not much better than a branch at all.

Providing the supervision is controlled, as in Detroit, by the "A" operator, and a local station calls an exchange number and then immediately desires connection with a branch number, why should the working of his hook be beneficial to him if it brings in the "A" operator? She is not in a position to give him the branch station; further, it has only delayed the "A" operator, as well as delaying the service that the branch subscriber is trying to obtain.

A branch exchange supervisor is continually visiting all branch exchanges, correcting their methods, pointing out to the operators along what lines they can improve, and creating a sort of mutual good feeling between the branch operator and the exchange.

A good many cities that claim to be giving good service through their hundreds of private branch exchanges, are not doing it.

We have much to learn and so have they, from the methods employed along this line by the Cleveland and New York Telephone Companies.

I regretted having had only one day to spend in Cleveland. I believe they had some more good things and possibly I would have found out some more poor ones by staying longer.

Operation of Exchanges

I began to realize by the time I was leaving Cleveland, that there are practically no two large companies that operate on exactly the same basis; that there is a distinct organization and a sort of individual personality about each exchange. One would almost imagine our large cities to be on practically the same basis, but just as persons differ in their tastes and methods of conducting their own business, so it must be that large corporations will differ in the same way.

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I have mentioned this because one can not get all the good points about telephone business from visiting any one exchange, but if you have made the rounds of eight or ten of them you can sum up all their good points with the bad ones and get, generally speaking, some very good facts that will apply in the operation of any exchange.

Western Men Go East

Western men usually go East in the summer to get these ideas, while eastern men almost invariably take a trip to Europe. Whether an eastern man could learn anything or not from going to Europe I am unable to say, but regardless of this it has that broadening effect upon one which is essential to an energetic and enterprising telephone man.

Leaving Cleveland

Leaving Cleveland would seem that we are really leaving the East. What more we wish to say of Chicago and of our stop in Omaha will deal with western ideas.

THE CHICAGO TELEPHONE COMPANY

CHICAGO, ILLINOIS

Return Trip To Chicago

I wanted to make some further investigations at Chicago into the working of the Western Electric #7 "coin collector."

In an interview with Mr. Wray, Engineer of the Company, he gave me about the following facts:

That there were three principal objections to the present #7 set:

- 1st, that the money cell was too small and its overflow put the slot apparatus out of order.
- 2nd, operating objections; no signal on some nickels, signals without nickels (as a ground on the ringing side of the line will give), the signal not acting promptly from the required close adjustment of the relay on four party lines which requires the operator to hold the switch for a longer period than it was intended she should (in her doing this, just the purpose that the machine was made for is defeated because she cannot handle any more connections than than she could on a #2 pay station basis). In other words, you might as well, or had better, use the regular #2 pay station instrument as to use a prepayment instrument that requires the operator holding up each connection for five seconds while she is collecting the nickel; that is, that it would be of no benefit to the prepayment nickel plan from an operating standpoint.
- 3rd, the poor construction of the slot, causing nickels to stick when they should not have done so.

In the improved machine (which Mr. Wray says is about out), a larger money cell is provided with a better arrangement. The nickel has to be deposited to signal the operator (on a nickel first plan), and the slot duct is made in a much better way so that the sticking of the nickel is hardly possible. They have fully tested samples of the improved machine and both from an operating and an engineering standpoint feel satisfied that it is the machine to take the place of the present instrument.

They are at present operating 40,000 of these sets in Chicago, and intend changing to the new box just as soon as they are put on the market.

Chicago.

This new machine is also made for toll public pay stations. A nickel slot is provided by which the operator is reached in the usual way. A request for toll means that the nickel, which has been placed to signal the operator, will be returned to the subscriber at the time the party is placed on a toll trunk. Other slots are provided for dimes and quarters, and these equipped with bell signals so that the toll operator can collect the proper amount of money.

Mr. Carty, Chief Engineer of the New York Company, was positive in announcing to me that no nickel or dime box should be accepted or used by any telephone company unless it was provided that the coin would have to be placed in order to obtain the Central office. He stated that such a machine would very likely be introduced in New York as soon as the Western Electric people were able to deliver them to them. Mr. Carty said further, that the samples submitted recently had as far as they knew at last proved satisfactory to them.

Chicago was made fun of in the East at their pretenses of giving good service:

Mr. McBride says, "It has average speed, but a high per cent of irregularities - consequently poor".

Mr. Rorty says, "Too much grandstand play about it - it needs dressing down."

Mr. Sherwood says, "There is always some new, radical idea being introduced that keeps the service continually changing - not permanently good."

Leaving Chicago

So I left Chicago, as my experiences there confirm all of these ideas.

THE NEBRASKA TELEPHONE COMPANY

OMAHA, NEBRASKA

Officials

Mr. Ford of Boston prevailed upon me to stop in Omaha on my return, and kindly gave me a letter to Mr. Lane in the way of introduction. After my arrival there I met Mr. Lane, who is the General Manager, Mr. Rogers, Engineer, Mr. Kelly, who is the Assistant Engineer, and Mr. Belt, who was the Manager for the Omaha district at that time but who has since been appointed Superintendent of the Company.

Omaha Exchanges

There is only one exchange in Omaha and it has a 9,600 line board with 4,800 installed multiples; 800 more have been ordered; 6,000 stations. One exchange in South Omaha with 1,000 stations, and one in Council Bluffs with 1,200 stations.

Hospital Operator

There is no hospital operator in Omaha. They seem to need one badly so I explained to them how we took care of our troubles and have since sent Mr. Belt complete data relative to our method of handling this work. He has since adopted the hospital idea in Omaha.

Information

Information in the Main Exchange is handled by two operators. The time of day, however, is given out by the line operator.

Ten Party Service

They have only 149 ten party stations left and they are trying to get rid of these as quickly as possible. They have almost exclusively a one, two and four party service.

Private Branch Exchanges

They have 22 private branch exchanges, with a supervisory operator to visit them regularly. The supervision is controlled by the branch operator in large exchanges, and by the "A" operator in the smaller ones.

Five And Ten Cent Rates

There is a five cent rate between Omaha and South Omaha and a ten cent rate between Omaha and Council Bluffs. The "A" operator at the

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switchboard makes a ticket on calls for these two points. The ticket is similar to the one formerly used by us for tallying individual measured service calls. The conversations are not timed or limited to any number of minutes.

Routing Toll Business

Mr. Rogers has found it desirable to separate the territory into 27 sections. He has a routing sheet separate from the rate book, which shows the routing to all points. I do not think his plan nearly as good as the one used in Philadelphia.

Toll Rates

All rates are based on "air line" and are figured from all points to all other points. The books are made by the Engineering Department and a scheme used about like the present Auditing Department used in Denver. This necessitates inserting in every book for every toll station, any new station added. The work will become too enormous as the business grows, and they will eventually have to go onto a block system or maintain an increasing and expensive system of preparing tariff books.

The offices are handled by lady Chief Operators, under the management of the Omaha District Managers.

Operators

The operators hold a cord in their hand when not busy, ready to answer any call. Teamwork is good, operators say "Number?", seem to repeat properly, etc. There is no trunking; positions handle only average loads. They do not handle weather reports; operators have no uniforms. The Company furnish them with tea, coffee and milk.

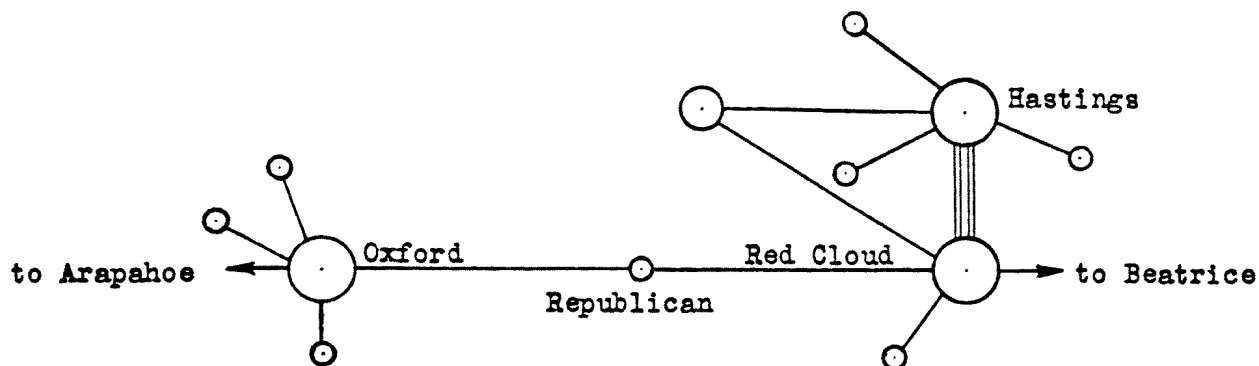
There is a fifteen position toll board with three recording operators on the center positions.

Toll Board

Omaha has, until recently, timed all inward tickets. They have now stopped doing this at Grand Island, Beatrice, Lincoln and Omaha. A check is made after the conversation only. Records are compared daily with other offices. They are able to select the larger toll centers (now that they are almost on an entirely center checking basis), and not time or rate inward tickets between such points. They will, however, continue to make such inward tickets as are necessary as memoranda. All inward tickets will continue to be made and checked, however, from all non-centers.

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They have some points in their territory that it seems with the present number of messages can not be center checked at the present time. An example as follows:



Points Not Center Checked

Republican can not be handled by center checking at Red Cloud or Oxford, as there is not enough business originating at that point to warrant an additional line being strung into either one of these points and the present line load is low; consequently they will leave Republican on the present circuit as a toll station, allowing it to make its own reports on a commission basis until such time as an increase in their business will warrant the center checking change.

They claim in Omaha the number one private branch exchange is not satisfactory; that they have trouble with the transmission.

All Night Calls

They have recently had a ten day count made on "all night" calls, to ascertain the per cent of such calls that originate from regular users. Such users have then been cut to four positions in such a way that it would not effect the day load. At night, since this was accomplished, it has been found that operators give quicker answers and that there is better service; which previously was absolutely poor. The night force, however, has not been decreased any on account of this intermediate change.

Information

Omaha believes in giving all possible information to their subscribers. They go so far as to engage seats for the theatre, give sporting news, train service, and any information relative to any public question upon which they are able to obtain facts.

Omaha.

Mr. Belt and Mr. Rogers are both coming out to see us as soon as they can get away. They are interested in seeing Mr. Rhodes' new P. B. X. Tramway board.

Omaha is just now enjoying an era of prosperity; contracts are coming in rapidly and everybody is busy with the increased amount of work.

Lincoln, Nebraska

At Lincoln they are overcoming the effect that the new opposition plant had upon them and are increasing rapidly the number of stations. Mr. Ford told me that they had the most enterprising and efficient telephone opposition plant he knew of anywhere in the country.

During all of this trip we have been mostly in the large and great cities of the country, but now we are out on the plains among ranch lines and broad expanses of prairie for miles and miles.

Denver seems a long way from here, but tomorrow we start for home, and I assure you a glimpse of the mountains is going to be extremely welcome again after a six weeks' absence.

November 6, 1904

W. F. Cozad