

This year is exceeding even that rate. According to the company's letter, "Today, we have on file approximately 9,000 orders for telephones which we are not at present able to install, due to the non-receipt of materials from manufacturers. In September we received 3,500 orders for new service, and October will be far ahead of the new subscribers booked on October 1 of last year.

"The growth is not only unprecedented but phenomenal. The demand for telephone service has been unprecedented not only in every city of the United States but throughout the world. There are today approximately 400,000 orders uncompleted in the United States, while London, England, has 200,000, and Sydney, Australia, 10,000. These figures show at a glance the world-wide shortage of telephone materials."

They also show conclusively that the telephone industry has a bright future, for as normal conditions are re-established, the war shortages are sure to be replaced.

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The business interests are waking up to the necessity of helping public utility companies finance themselves so they may meet the increasing demand for service. An effective step in the right direction has been taken by the board of governors of the Investment Bankers' Association of America, and no time should be lost in getting action.

The board declares that there should be co-operation among the bankers, the utili-

ties, and the rate-making commissions to lay all the facts before the public, emphasizing the importance of expansion of all kinds of utility service and the need of rates adequate to provide it.

This move will not only enable the commissions to grant needed rates, but it will encourage the investing public to provide the necessary funds by investment in sound public utility securities.

* * * *

Co-operation among the agencies named should be of material assistance in coping with the present situation. The bankers realize that prosperous and constantly-expanding utilities are essential to the welfare and growth of the communities they serve, and that unless their earnings are maintained so as to attract the funds of investors, all business will be injured and the prosperity and development of those communities will be stifled.

The necessity for action is well expressed in the following resolution unanimously adopted by the board of governors of the association:

Whereas, sound and constantly expanding public utilities are essential to the welfare and prosperity of the communities served;

Whereas, the conditions resulting from the war have increased the costs of utility operation and of new money required for expansion, and prevented the growth of utility service to meet the increasing requirements of the public and of industry;

Whereas, there is a recognized shortage of electrical power, and it is of vital importance to the industries of the country that means be found for providing additional power supply;

Whereas, the street railway systems are so tied into the business of the nation

that their rehabilitation, maintenance and growth must be permitted and provided by the public dependent on their efficient service;

Whereas, the telephone and telegraph have become so important in our daily business and social life that they must extend their service daily to meet the public demands;

Whereas, the diminishing coal resources and the increasing demands on the oil supplies throw additional burdens on the gas industries which can be met only by their expansion;

Therefore, Be It Resolved: That it is the sense of the board of governors of the Investment Bankers Association of America that there should be co-operation between the investment bankers, and the owners and operators of utilities, and the regulating officials, in laying before the public full information respecting the vital importance of prompt and continuing expansion of all kinds of utility service, and in encouraging such utility regulation as will provide sound credit as the basis for financing, to the end that the investing public may provide the necessary funds by investment in sound public utility securities;

Be It Further Resolved: That copies of this resolution be sent to the governors and the regulating authorities of the several states.

The mere adoption of a resolution does not do much good, but if definite action is taken to convince the public of the vital importance of financing the utilities and allowing them adequate rates, progress will be made.

The demand for telephone service, and for all kinds of utility service, is increasing every day and is testing the companies to the very limit. They can't make bricks without straw, and must have capital to provide the needed extensions. Every utility man should give this co-operative plan of the investment bankers his hearty support.

Toll Commissions in Minnesota

The Proposed Plan of Toll Commissions to Connecting Exchange Companies in Minnesota—Evolution of the Present "Five Cents In and Out" Contract—Standards in Operating Upon Which a Basic Commission May Be Established

By R. F. Wilder

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The plan of commission now in general use throughout Minnesota, under which the toll line companies compensate connecting exchange companies for their services in the handling of originating and terminating toll messages, came about largely through a process of evolution rather than as the result of an extensive and exhaustive study to determine a just and equitable amount of compensation and a fairly accurate method of computing this in the monthly toll settlements.

This plan is what is known as the "Five Cents In-and-Out Contract"—that is, the local exchange company receives a commission of five cents for each outward and inward message.

Looking backward 25 years in the history of the telephone business in Minnesota, we find at that time the beginning of an extensive development of toll or long distance lines. There were local telephone exchanges then, only in the Twin Cities and a few of the larger outside

towns. Nearly all of these local exchanges were owned and operated by the toll line company—that is, there were very few locally-owned and operated exchanges.

In all villages and towns reached by long distance lines and not served by a local exchange, the long distance company established in some place of business within the village, what is known as "a toll agency," the proprietor of this business acting as the toll agent for the tele-

phone company. A telephone instrument was installed on the premises connected with the long distance system, and the toll agent performed the necessary services in handling outward messages for the public and, in addition to the operating services which he performed in connection with inward calls, provided the necessary messenger service for bringing called parties to the public telephone.

Compensation of Toll Agent.

For his services the toll agent received from the long distance company a 20 per cent commission of the tolls collected for originating messages and, in addition thereto, a 10-cent messenger fee for each called party summoned to the telephone. The commission on the outward business was restricted to the extent that the commission on any one message should not exceed 10 cents.

This toll agency situation existed throughout the state wherever toll lines were operated. As time went along, local exchanges were established in various villages and towns so that within a decade practically all places of importance were supplied with local telephone service. As these local exchanges were developed, the practice of the long distance company was to release its toll agent in any town where a local exchange was placed in operation and to establish connections with the local exchange as an agent company on the same basis of compensation as had been paid to the toll agent.

The 10-cent terminal on inward messages, which continued for sometime, had no other justification than that the services of the local company, in reaching called parties, obviated the necessity of performing actual messenger service. It is pertinent to remark that, while this 10-cent terminal fee on inward calls was in effect, never was it the practice of the toll line company to charge this terminal fee for calls terminating at its own exchanges.

It is common knowledge among telephone men that the patrons of the long distance service protested the payment of the 10-cent terminal where no messenger service was performed and no one, to the writer's knowledge, ever attempted to justify the charge of 10 cents for the handling of an inward call by a connecting company.

Complain Against 10-cent Terminal.

This method of compensation was the cause of a great deal of complaint to both the toll companies and the local companies and caused no end of dissatisfaction, for it rendered charges for toll messages of like distance unequal, where in the one case the terminating exchange was operated by the toll company and in the other case by a connecting company, since the terminal charge, which was a successor to the messenger charge, was in all cases added to the toll rate.

Some years ago, in order to get away from this form of compensation which no one could defend as being just and equitable, the present basis of compensation was placed in effect by the toll companies—that is, the five cents' commission on each outward or inward paid message.

At the time of its adoption, this plan of commission did, without doubt, in the opinion of the writer, fully compensate the connecting companies as a whole for services rendered but did not treat with equality each individual company since it gave no consideration to whether or not the local company developed an average short-haul low-rated toll business or long-haul high-rated messages, nor did the local company, which timed its messages accurately and collected overtime charges, receive any more compensation than the connecting company which disregarded overtime. In general, the connecting company, which developed comparatively short-haul business and disregarded overtime charges, was overpaid and the company, which developed long-haul business and collected overtime charges, was underpaid.

At a limited number of exchanges throughout the state, a 25 per cent commission of the tolls paid for originating messages, with a maximum of 12½ cents' commission on any one message, was placed in effect to supersede the old toll agency form of contract.

This plan of commission has been in general use throughout other states but not to any considerable extent in Minnesota. It is inequitable in exactly the reverse of the plan of a fixed amount of commission per message, since a company whose average revenue per message was high, received a far greater proportionate commission than one whose average message revenue was low.

In and Out Tickets.

At the time that the five cents per in-and-out message plan was adopted as a standard of compensation in the Minnesota territory, the methods of handling toll messages were far different from those of today. At that time every connecting company was required to make "in" tickets as well as "out" tickets and to furnish a monthly report to the toll company, giving the same information with regard to inward business as was furnished on the report for the outward business.

The only real difference to the local company in the handling of inward or outward messages was that, except on reversed calls, there were no charges to be collected for inward messages. However, a great deal of information was asked of local companies in connection with the check-report of messages received from other stations where this report did not agree with the report of out business as furnished by the other station.

Today, the situation has changed and a large proportion of the toll business is handled on what is known as the "single-ticket method" in which case the operator at the called station is not required to make an in ticket and does not perform any other services than to put up the connection to the desired number and to see that someone at the telephone answers her ring. All further efforts in the completion of the toll message are performed by the operator at the calling exchange.

This has reduced the labor in handling inward calls to a minimum and, as a matter of fact, the majority of connecting companies throughout Minnesota today are making in tickets largely for the protection of the toll commission to be paid them. There are cases in the territory where, to facilitate the operation of the toll lines, the connecting company has abandoned the making of inward tickets for calls from certain stations and receives monthly a statement of sent business from the station originating the messages.

Check Error System.

The so-called "check error" system, under which the toll company requested information of various connecting companies as to the amount of business checked against other stations, has been practically abandoned and the making of in tickets may almost entirely be eliminated, insofar as connecting companies are concerned, by the adoption of a plan of compensation and a method of computing it in the monthly settlements which will not require the in ticket as a record of toll commission.

It would seem, therefore, that the problem now before us is to develop a new plan of compensation and a method of determining the amount of commission which is fair and equitable both to the local and to the toll company and which may be computed in the monthly settlements without the necessity of keeping inward records of business handled and, in fact, with a minimum of accounting expense to either company.

In determining the amount of commission to be paid the local company by the toll line company for the handling of originating and terminating toll messages, it is fundamental that the commission paid should bear the proper relationship to the cost of the service performed by the local company for the toll company.

Basis of Establishing Charge.

It is the opinion of the writer that this amount should equal the cost of the service rendered and allow a reasonable margin of safety to protect the local company against extraordinary or emergency expense. This appears reasonable, since in establishing a schedule of rates for the local exchange service of any telephone company, the cost of the service must be fully covered—likewise a fair return upon the investment—and, in addi-

tion to this fair return to the investors, a reasonable surplus should be created to protect the safety of the investment.

Thus, for the toll system to bear its proper share of the load, the toll commission should include likewise a reasonable margin of safety, for the protection of the connecting company.

In the investigation of the cost of handling originating and terminating toll messages in Minnesota, certain standards were set as to methods of operation upon which a basic commission would be established. Since, what is known as center-operating, and in certain cases center-checking, is now considered as the standard in operation of toll lines, the costs of handling messages by this method were determined at certain representative exchanges.

Center Operating.

By "center-operating," we mean such an arrangement of toll circuits as to provide trunk circuits between the various toll centers with the exchanges in the intervening villages and towns connected by short-haul circuits into the centers. "Center-checking" implies center-operating and, in addition to this, the making of the report of the business by the company operating the toll center rather than by the company which is centered.

This circuit arrangement makes it impossible for patrons of the toll lines to be interrupted by any toll operator other than those who have under their supervision the circuit connections which are established for the toll message.

Under this arrangement, most local connecting companies are centered at an exchange operated by the toll line company. In cases where the local company acts as its own center, or as a center for other local companies, or performs certain switching of the toll lines of the toll company, it is understood that the expense incurred in furnishing this service shall be measured and the local company compensated therefor, in addition to the commission which it receives for handling the originating and terminating toll messages on the "pass-to-center" basis.

In the study made of the costs of handling originating and terminating toll messages at these representative exchanges, it was understood that the toll message and the expense incidental thereto would be considered as extending from switchboard to switchboard rather than from subscriber's station to subscriber's station.

This is a much-discussed question but, in the Minnesota investigation, the use of the connecting company's property beyond the switchboard need not be considered in the matter of compensation to be paid by the toll line company to local connecting companies, since in all cases where local companies have had their rates revised and schedules established by the Minnesota Railroad & Warehouse Commission, the total value of exchange

property has been taken into consideration and the amount paid by the toll company as commission included in the revenue. Where such rate schedules have been established, they have been established as compensatory for all property investment involved.

In such cases where schedules have been established, if the toll message revenue should be considered as covering expense from subscriber's station to subscriber's station, a re-valuation of the property would be required and an apportionment of its toll and exchange use, which would appear highly impracticable and would in nowise increase the amount of revenue to which the local company would be entitled.

In the Minnesota investigation, the costs of furnishing what has been called "toll terminal service"—that is, the expense of handling originating and terminating toll messages, has included all traffic, commercial, maintenance and gen-

of haul. Moreover, the amount of equipment used in the central office remains constant, while the amount of property outside the central office increases directly as the length of haul.

In the study of costs at these particular exchanges and from the results thereof, it is clearly apparent that the average expense per message is more nearly a constant factor than the percentage ratio which the toll terminal expense bears to the toll revenue. However, we should attempt to establish a schedule of toll commissions which will follow increased cost of handling messages in as near as possible the ratio that length of haul increases such costs.

In order to do this without making a special investigation and study at each connecting company's exchange, whenever the character of the toll business handled changes, we must establish a schedule based upon two factors—one the number of messages, and the other the revenue; bearing in mind that the costs will follow more closely the number of outward messages than they will the dollars of toll revenue.

Also, it should be borne in mind that, since report charges collected are not now considered as completed messages, though they cause expense to the local company, the schedule should take this expense into account and provide for the local company sharing in report charges collected.

It is likewise true that the local company, under a proper schedule of commissions, should receive an equitable share of over-time charges collected since over-time charges build up the amount of revenue which must be collected by the local company for the toll company and an over-time message, as compared with one for the initial period only, is longer under the supervision of the toll operator—that is, requirements all point towards a schedule which shall vary to some extent with the revenue and as before stated follow reasonably close the number of messages.

Proposed Toll Commissions.

By comparison of costs, number of messages and revenues, we have set up a proposed schedule which, in our opinion, appears to be fair and equitable between the local company and the toll company, establishing an amount of commission per each outward message at a figure slightly higher than the cost of handling toll messages, as shown by the figures obtained at each exchange studied.

It was the writer's conclusion from the study made, that the commission paid, based on each outward message, should, to properly cover the cost to the connecting company and provide the margin of safety as before mentioned, increase approximately one-fourth cent for each increase of 2½ cents in the average revenue per toll message. Accordingly a schedule

Average Revenue Per Message.	Amount of Commission Based on Each Outward Message Will Be:
Less than 12½c	8 c
12½c to 15 c	8½c
15 c to 17½c	8¾c
17½c to 20 c	8½c
20 c to 22½c	9 c
22½c to 25 c	9¼c
25 c to 27½c	9½c
27½c to 30 c	9¾c
30 c to 32½c	10 c
32½c to 35 c	10¼c
35 c to 37½c	10½c
37½c to 40 c	10¾c
40 c to 42½c	11 c
42½c to 45 c	11¼c
45 c to 47½c	11½c
47½c to 50 c	11¾c
50 c to 52½c	12 c
52½c to 55 c	12¼c
55 c to 57½c	12½c
57½c to 60 c	12¾c
For each additional 2½c, or in the amount of fraction thereof, in the average revenue per message.	An additional ¼c in the amount of commission per outward message.

Proposed Schedule of Toll Commissions.

eral expense properly assignable to the handling of toll messages on the "pass-to-center" basis and carrying charges, including interest and depreciation on central office equipment furnished by the local company for toll use.

In the evidence submitted to the Minnesota Railroad & Warehouse Commission in the matter of the investigation of the toll rates of the Tri-State Telephone & Telegraph Co. in Minnesota, it was shown that the time of the operator in handling toll messages increased slightly with the length of haul of the message. In the study of the cost of handling toll business at the representative exchanges, the total cost of each exchange was reduced to the average cost per outward message and was also shown as a certain percentage of the toll revenue.

The operating expense is but a part of the total expense incidental to the toll message and will not build up as fast as the message rate for increasing lengths

was drawn up covering not only the range of average revenue per message as found in the exchanges studied, but also projected for connecting companies whose average revenue per message is less and for those whose average revenue per message is greater.

In our opinion the foregoing schedule herein referred to will fully compensate the connecting exchange, is fair to the toll company, and will minimize existing discrimination and will permit the connecting company to share in any future change in toll rates:

San Francisco's Large Main Distributing Frame.

What is said to be the largest terminal rack in the world is now in operation in San Francisco by the Pacific Telephone & Telegraph Co., installed in the lower floor of its Buch-Street building.

The rack, or main distributing frame, through which three exchanges, with 53,000 subscribers, operate, has about 250,000 connections. It is 52 ft. 8 ins. long, 18 ft. high, and 5 ft. deep, and sets in a

agent, for the company, declares, has one telephone to every five inhabitants—a much larger percentage than New York or any other large Eastern city.

There are seven more bays on the rack yet to be filled up, as shown at *B. B.* in one of the accompanying photographs. A rack has been provided for a portable reel, shown at *A.* which provides a handy method of distributing the jumper wire, consisting of double flame-proof No. 22 gauge wire.

An interesting feature in connection with this department is the "trouble map," which has been designed for this particular district. There are 30 troublemen working in this district, and by means of this trouble map, the wire chief can tell by a glance at the map exactly where each man is at all times and what he is doing. In order to keep the troublemen from working in groups, a skeleton of the streets included in the downtown district as covered by the Bush, Franklin and Market street exchanges is arranged.

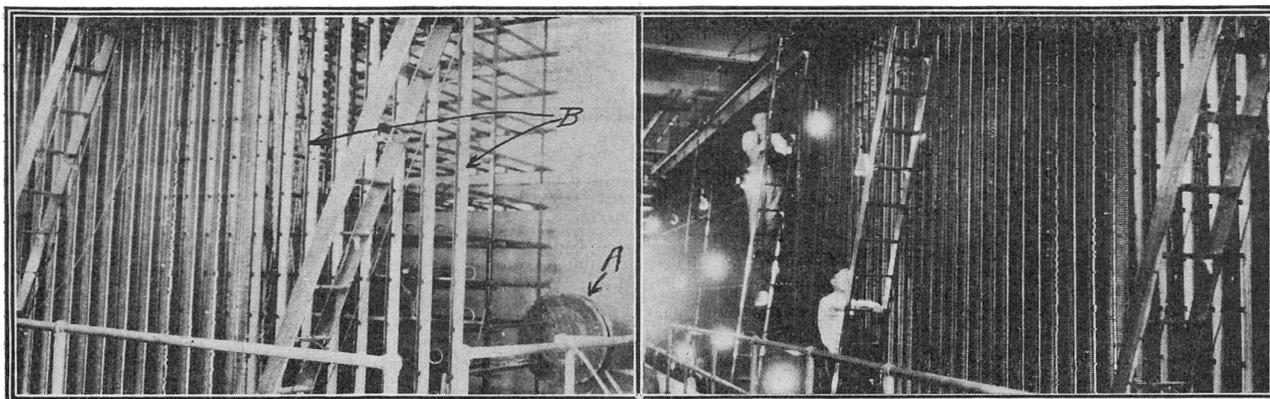
A pneumatic carrier system connects the complaint department on the 7th floor

Professor C. A. Wright, of the Ohio State University on Testing Methods; an illustrated talk by E. L. Gaines, traffic superintendent of the Home Telephone & Telegraph Co., on Traffic Records; an address on Service by M. D. Atwater, director of service of the Indiana Public Service Commission; and a general discussion of toll line facilities, led by Frank V. Newman, manager of the LaPorte Telephone Co., at LaPorte.

Alberta Government Extends Long Distance and Rural Lines.

Of the \$3,500,000 telephone construction program planned for this year in Alberta, nearly \$3,000,000 has already been expended in building 6,650 miles of long distance and rural lines and providing for branch exchanges and stations.

According to charts in the office of the telephone department of the provincial government, to date this year there have been constructed 4,200 miles of long distance toll lines and 2,450 miles of rural telephone lines. A large amount of con-



The San Francisco Main Distributing Frame Has Room for Connecting With Many Additional Subscribers.

crete pit. Along its side are arranged a half dozen sliding ladders so that the rackmen can reach every one of the connections on the frames.

Upstairs, in the Sutter, Kearney and Douglas exchanges, a thousand girls are employed in making connections for the business section of San Francisco. Into this distributing frame come all the wires from the exchange board, 6,000 trunk lines from the 13 other San Francisco exchanges, and 500 trunks from the transbay cities and San Mateo county. Each line necessitates four wire connections—two on the terminal rack, a third picked up on the next floor and used to operate relays and a fourth at the exchange switchboard.

To the uninitiated, looking at the mammoth rack with its jungle of tiny insulated wires, the entire plant seems a mystery. But to the men who walk back and forth along it, connecting a wire here and disconnecting another there, its operation is simple.

San Francisco, A. B. Cooper, special

of the building with the wire chief's department on the first floor. All complaints are transmitted by this tube system. When complaints are received by the carrier, a clerk takes out of the subscriber line card file the corresponding number. The complaint ticket is then attached to the card and given to the test boardmen, who determine the nature of the trouble. There are six positions on the testboard.

When the trouble has been determined, it is placed on the trouble map corresponding with the street address. The troublemen call in at stated intervals and whoever is nearest that point, is given the repair job.

Quarterly Meeting of Northeastern Indiana Assn. at Fort Wayne.

The third quarterly meeting of the Northeastern Indiana Telephone Association will be held Tuesday, November 16, at Fort Wayne.

A very interesting program has been prepared which includes an address by

construction work is still under way or planned to be completed this year, including a number of areas east and south-east of Calgary.

The contract for the new telephone exchange on the north side in Calgary has been let and construction work on it will be pushed rapidly. Another branch exchange for the west side in Calgary will be built next year. This plan of proceeding with the branch exchange, instead of constructing a new addition to the central exchange, was finally decided on to save time, as figures obtained by the engineers showed it would require two years before an addition to the central exchange could be completed and the lines divided and transferred.

In addition to the branch exchange in Calgary, a new exchange is being constructed in Red Deer, where the government recently acquired the telephone system, and another branch in the city of Lethbridge. The Red Deer exchange is estimated to cost some \$50,000 and the Lethbridge one about \$25,000.