



Report of the Special Com-  
mittee of the Winnipeg  
Industrial Bureau of  
Inquiry as to Local  
Telephone Rates



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## INTRODUCTION

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Winnipeg, Man., March 26, 1912.

To the Executive of the Winnipeg Industrial Bureau.

Dear Sirs:—

On December 13, the Executive of the Industrial Bureau appointed Messrs. C. B. Piper, Alex. Simmers and C. F. Roland as a Committee to inquire into the matter of new rates just then proposed for Winnipeg by the Manitoba Telephone Commission. After the most casual examination, it was found that the problem was very comprehensive and would require careful study. The Committee reported accordingly, and was instructed to proceed to bring in the fullest possible report covering the entire question, and to make recommendations for consideration by the Bureau. Upon resignation of Mr. Roland, Mr. M. F. Christie was appointed.

In accordance with your instructions, your Committee have considered this technical matter to the best of their ability as laymen, and have brought down several recommendations.

Your Committee have been unable to agree as to the advisability of adopting measured or unlimited service. Perhaps this is fortunate, as the consequent full exposition of both services will place the public in that much better position to choose for themselves.

Your Committee regrets the continued and unavoidable absence of Mr. Simmers. His keen powers of analysis and sound judgment would have increased the quality and value of our report and recommendations.

In order to prevent duplication of work, much of the preparation was done in conjunction with a Committee appointed for a similar purpose by the Board of Trade. Therefore, many parts of your Committee's report may be properly incorporated in their report.

Herewith is presented a brief summary report, with recommendations, also a full detailed exposition of the facts and considerations studied.

Respectfully submitted,

C. B. PIPER.  
M. F. CHRISTIE.

## SUMMARY REPORT

We found the only way we could consider the question of rates was by a strict adherence to the business side of the matter and by eliminating all technicalities, simply because none of us knew anything about the details of the telephone business.

We were shown that the business of the Manitoba Government Telephones has been divided into Winnipeg Exchange and Provincial Exchanges, including toll lines, and that the accounts of the former have never been charged with any of the plant cost, operation or maintenance of the latter. Our problem was therefore simplified by the necessity of considering only the situation within Winnipeg.

We obtained unit costs of investment and operation of the Winnipeg Exchange from the Telephone Commission. The natural procedure was the comparison with the systems of other cities presenting conditions approaching ours as closely as possible. This was done, and, while accurate detailed comparisons were impossible owing to differences in conditions and in methods of accounting, we were enabled to make general observations which were highly illuminative upon the local situation.

Careful study was made of general underlying principles which affect the business everywhere. We found peculiarities in the local situation, for which due allowance has been made. The two outstanding features are advance construction or present reserve plant to meet future requirements, and the ratio of business to residence telephones. The former affects the investment and the latter the revenue.

We found a very large advance construction, and correspondingly high investment. To justify this we found an enormous growth in business. Our belief is that only reasonable advance construction has been provided to care for future expansion, and after making due allowance, therefore, our plant investment is very reasonable.

We found that of all our telephones 63 per cent. are residence and 37 per cent. business. In no other city studied did we find the business telephones less in number than the residence telephones. Usually the former exceed the latter, even reversing the Winnipeg ratio. Under flat rates, this disproportion among our users greatly lowers the average revenue.

We also found that our existing rates are disproportionate in the same direction, the residence rate being too low as compared with the business rate. This fact, together with the unbalanced ratio of business to residence users, results in abnormally low average revenue. To continue under flat rates requires either the balancing of the classes of users or the adjustment of rates for the classes to make the revenue normal without increasing generally the entire schedule.

Our operating costs seem very high. This item is affected by an excessive use of the system and a wage scale averaging fully 10 per cent. higher than in other cities generally comparable to Winnipeg. However, after making due allowance, we think operation is still too expensive, although we cannot attempt to say how much or why, simply because we know nothing of the details of the business and can only judge by comparisons. But we firmly believe that more efficient methods could be adopted, resulting in material economy.

Our existing rates are possibly too low to provide necessary revenue, even

after allowing for economy in operation. The low residence rate appears to have been the primary cause of present deficit, and we believe the reduction from \$30 to \$25 should never have been made.

We found that no depreciation has been set up until the year just closed since the Government has been operating our system. This was a mistaken policy, and we approve the decision to provide 6 per cent. depreciation, commencing last year. There is a surplus of revenue over operation expenses accumulated during the last four years, and we recommend that this be left with the Telephone Commission and used by them as a nucleus of the depreciation reserve. It is to provide sufficient additional annual surplus to cover depreciation that the Commission now find it necessary to change the rates.

Maintenance charges seem high, but this may be accounted for by the necessity of carrying in this account items properly chargeable to depreciation, had there been any such reserve established. With both accounts available, maintenance and depreciation expense should seek its proper level from now on.

We found the methods of accounting used by our Commission to be inferior to those used elsewhere. We recommend the adoption of the system laid down by the Wisconsin Railroad Commission for uniform accounting among telephone companies within their State.

We feel that there has been a mutual lack of understanding between the Telephone Commission and the public. The former should do everything possible to show the intricacies of the business and satisfy the intelligent and reasonable desires of the people, and the latter should remember that every taxpayer is a shareholder in the system, and each one should use every means to create and maintain a proper and efficient organization.

Other minor suggestions and recommendations are set forth in the detailed report.

We believe the rates as proposed by the Telephone Commission should not be enforced, as they are incorrect and inequitable. They would tax the business user to maintain residence service of the most expensive kind, namely, individual line, at a price only reasonable for party-line service.

C. B. PIPER.  
M. F. CHRISTIE.

## MEASURED SERVICE

(Submitted by C. B. Piper)

I recommend the adoption of measured service, squarely, on the simple principle that I believe every user should get what he pays for and should pay for what he gets. I cannot approve of any averaging of rates, thus compelling small users in any class to pay part of the expense of large users, as is the obvious result of any flat rate schedule. Under measured rates lower minimum charges are possible, carrying sufficient allowance of free calls to satisfy the requirements of most small users. Even with a few excess calls, the expense would not be as great as under flat rates. I make no apology for using every means to pare the minimum rates to the lowest possible figure. I want a telephone in every home. In no other way can the Government truly serve the people.

A proper schedule of rates for measured service, which I have computed in the section of the detailed report on "Suggested Schedules," and which I will recommend for adoption, is absolutely balanced as to any possible ratios of different classes of users. It makes no difference whether all the subscribers become users of individual lines, two-party lines, or four-party lines. The business is equally sound under any such condition, as the revenue will always equal the expense. The system is absolutely flexible, as each class stands firmly on its own foundation. The charges for business and residence use are equalized, so there is no discrimination.

Measured service will so reduce expenses, and consequently the tax on the consumers, that little or no additional revenue will be required to turn present deficit into the needed depreciation. It cannot be otherwise than sound economy to adopt such a method. It is true that reduced costs are obtained by checking the use of the telephones, but, if after paying for the desired consumption, the total rentals are less than those required to provide unlimited service, it is unreasonable to further tax the entire consuming public merely to remove all restriction, which under measured service is very reasonable indeed. The small user will not feel it because he will seldom exceed his allowance of free calls. The large user will feel it; but to charge him for his excessive use is only to put the tax squarely where it belongs.

I believe any objection that the public do not want measured service is not well founded. Perhaps the real public do not realize its value to them, but at any rate, we doubt if they have been heard from. The adverse opinions so far have come from the large consumers, who are naturally prejudiced. This question should be faced squarely on its merits, which means only ordinary equity to the small users, and through them a material saving to the community.

Immediately the Government took over our system, it was time to adopt measured service. The object of any Government-owned system is to serve the mass of the people. To the best of my knowledge, in every country in the world, without exception, where there are Government telephones, measured service is offered to consumers. Their experience has proved it to be the fairest and cheapest.

Even under private operation for a profit the equity of the principle is recognized, and measured service is being introduced to extend the development among small users, so as to secure increase of subscribers and thus greater value to large users. In the United States it is used to a greater or less extent in 102 cities, from the largest to the smallest, and in Canada it is being tried in two cities in a small way. Taking the average in all of these places, about 50 per cent. of the service is on a measured basis, and this proportion is being steadily

increased. The rulings of the best State Commissions declare strongly in favor of measured service. While the objects of the privately owned business are different from Government systems, nevertheless it is apparent that their trend is in the same direction.

It is true that there is as yet no perfect method of counting calls. There may always be a little uneasiness as to the correctness of accounts. The mere fact, however, that the system has been successful wherever used, controverts any serious objection on this point. A sincere spirit of willingness to adjust disputed accounts, on the part of the operating company, seems to effectually overcome the difficulty. A full explanation of the usual methods of handling accounts for calls is given in detailed report.

An important consideration is the improvement in service. After switchboards are adjusted to accommodate measured service, practically a three-second service should be maintained. This is the fastest possible. There will be less errors or wrong numbers. On request, the operators will ring back on busy calls when the lines are free. Such service is of inestimable value to the community, and here it is to be had at practically no additional cost.

Objection to measured rates may be made upon the fact that we found costs in Denver, under such service, higher than in some other cities under flat rates. I cannot attempt to analyze seeming high costs there. This would present the same problem as trying to analyze costs for Winnipeg. Of all the cities visited, Denver alone presented conditions really comparable with Winnipeg. It seems wise to compare these two cities and seize upon the experience of the one to benefit the other. Our problem is to obtain maximum service at minimum cost. If under local conditions we cannot attain the same minimum as in other cities, nevertheless we should use every means to reduce expense as much as possible. If by the adoption of proper measured rates we can turn our present deficit into good depreciation reserve, and with little or no general increase in rates, there can be no question as to the proper course. I believe measured service will accomplish all this.

Any flat rate schedule acceptable to telephone users would not give sufficient revenue under existing conditions to meet expenses and provide depreciation. The present unbalanced classification of business and residence users effectually prevents the adoption of proper flat rates—the charges would have to be \$65 and \$38 respectively for business and residence individual lines. These conditions may never change, even with re-adjustment of rates and the most energetic efforts on the part of the Commission. Therefore, there can be no justification for adopting a schedule, unsound as to existing conditions, in the hope that future developments might correct the misapplication. We must accept our conditions as they are and devise fair rates which will fit and remain fit with the least possible adjustment.

At the risk of unfavorable criticism for submitting maximum rates, I believe rates based on present expense should be adopted, simply because they are the only fair and practicable ones possible to figure correctly. Apart from the adoption of measured service, I believe our present seemingly high costs should be reduced by more efficient methods. When this is accomplished the rates can be accordingly reduced. But I believe it to be only sound business judgment to start with certain knowledge of our position, even though it may be on a somewhat extravagant basis, rather than take a leap in the dark by estimating rates on what we think present costs should be, and trusting to luck to pull us out. The rates I recommend are but very slightly higher in total than the present existing flat rates, so no one can complain that they may be theoretically high.



When everything is figured at cost and no margin allowed for fluctuations, the best devised schedule must be adjusted occasionally to meet changed conditions. The one item of advance construction will make material changes in our schedule. It appears now that when all our plant is working the rates will be cut nearly in half, both as to basic and service figures. It is unknown when this will occur, as the same proportion of advance construction may be properly continued for many years, until our abnormal growth ceases. Even with no material change in conditions, the new rates may be changed after experience gives accurate data. Therefore, the best we can do is to start right and then adjust as occasion warrants. I believe, however, that never will our rates exceed those I recommend and that reductions will come soon.

Our telephone system is virtually a co-operative scheme. The rates should therefore be figured periodically to keep them to the minimum. It might be well at the end of each fiscal year to figure rates, and, if any material changes occur, new rates should be established for the next calendar year, beginning, say, April 1st.

After providing measured service for the small users at a minimum cost, there can be no objection to giving higher flat rates to large users. This will provide maximum limits without disturbing the minimum for small users.

I believe such a combination schedule best adapted to our needs. Individual and two-party line measured service should be used for business and residence, and the rates should be the same. Four-party line measured service should be used only for residence. Pay-station service should be placed on the basis of daily instead of monthly guarantee, to eliminate adjustments on collection days.

I realize that a little knowledge may be dangerous, but I venture to recommend the adoption of the following schedule of rates:—

#### BUSINESS

Unlimited service, individual line .....	\$10.00 per month
Measured " " " " .....	2.50 " "
(50 calls allowed, excess 2c each)	
Measured service, two-party line .....	2.00 " "
(50 free calls allowed, excess 2c each)	
Extensions, unlimited service, each .....	1.00 " "
" measured " " .....	.50 " "

#### RESIDENCE

Unlimited service, individual line .....	\$ 4.00 per month
Measured " " " " .....	2.50 " "
(50 free calls allowed, excess 2c each)	
Measured service, two-party line .....	2.00 " "
(50 free calls allowed, excess 2c each)	
Measured service, four-party line .....	1.50 " "
(50 free calls allowed, excess 2c each)	
Extensions, either service, each .....	.50 " "

#### PRIVATE PAY-STATIONS

Business or residence, individual line, guarantee of 10c per day.  
(Calls 5c each to complete guarantee, excess 2c each net).

#### No. 1 P. B. X.

Unlimited service, trunk lines, each .....	\$10.00 per month
Extensions, each .....	1.00 " "
Switchboard (minimum) .....	5.00 " "
Measured service, trunk lines, each .....	2.50 " "
(50 free calls allowed, excess 2c each)	
Extensions, each .....	.50 " "
Switchboard (minimum) .....	5.00 " "

No. 2 P. B. X.

Business

Unlimited service, trunk lines, each .....	\$10.00 per month
Extensions (including apparatus), each .....	1.50 " "

Residence

Unlimited service, trunk lines, each .....	4.00 " "
Extensions (including apparatus), each .....	1.00 " "

Business or Residence

Measured service, trunk lines, each .....	2.50 " "
(50 free calls allowed, excess 2c each)	
Extensions (including apparatus), each (business) .....	1.50 " "
" " " " (residence) .....	1.00 " "

A table is set out at the back of this report showing comparison with present flat rate schedule and the Telephone Commission's proposed measured rate schedule.

This schedule follows the best ruling of one of the best State Commissions in the United States.

It equalizes the charges to all consumers. While there results a general increase in our residence rates over the schedule now in force, it only affects a necessary adjustment in relation to business rates, and only brings our residence rates into line with those of other cities. This will entail no hardship upon present users, as excellent service at cheap rates is provided by the introduction of new classifications. The minimum calls allowed are sufficient to fulfil the needs of most of the small users.

The moderate or fairly large users may object to the comparatively small number of free calls allowed, and feel that it would be a better plan to allow none at all. It must be remembered that a minimum service charge must be guaranteed, and therefore calls covered thereby should be allowed. If not, the service charge would have to be included in the basic rate, and that would throw out of line the whole schedule. It is obvious that to raise the allowance of free calls would be but to destroy the effect of the minimum rate and virtually put the entire schedule on a semi-flat basis. This would be absolutely unfair to the small users and would practically nullify the equity of measured service.

To successfully maintain the rates for two and four-party service, it would be necessary to keep such lines working to capacity. Applicants should be prepared to pay on higher classification or wait for service until the requisite subscribers can be obtained to complete the lines. If impossible to fill vacancies caused by cancellations, the remaining subscribers should be prepared to pay on higher classification. These conditions will probably not be noticeable, as undoubtedly the rapid growth in the business will take care of such contingencies. It must be borne in mind that it means nothing to the system what classification is used, as the rentals are all balanced, so there can be no incentive to influence applicants or subscribers in their selections. Any subscriber may change his classification as often as he likes within reasonable limits, say once a year. There will, of course, have to be proper rules and regulations supplementing the schedule.

Joint use should be prohibited under unlimited service, but joint users should be accommodated, under measured service, at an extra rental, by mere insertions of different names in the directory at usual rates.

C. B. PIPER.

# UNLIMITED SERVICE

## REPORT AND RECOMMENDATIONS AS TO RATES

(By M. F. Christie)

I would like, first, to pay a well deserved tribute to the Chairman of our Special Committee, Mr. C. B. Piper, and as an evidence that this is shared by others, I may be permitted to say that the Committee of the Board of Trade, with whom we have acted in this investigation, took occasion at our last joint meeting to pass a vote of thanks to Mr. Piper for his untiring and intelligent work, and it was felt and freely expressed that our respective organizations owed him no small measure of appreciation for the sacrifice entailed in giving so much of his time to the matter.

As mentioned in our Joint Summary Report, we both keenly felt the absence of the other member of your Committee, Mr. Alex. Simmers, and this is more to be regretted when the conclusions and findings of Mr. Piper and myself differ so materially as to the merits of measured and unlimited service to fit present conditions.

The recommendations following are substantially those endorsed and adopted by the above-mentioned Committee of the Board of Trade, and I feel that no apology is needed in this regard, when it is remembered that both Committees have worked together throughout in this investigation. It will be noticed that I have used certain tables, statistical figures and other matter that is also embodied in the detailed report, compiled and submitted by Mr. Piper. This I find necessary in order that they may appear in their proper relation to the arguments used to justify the rates I recommend.

To avoid any possible misunderstanding, I might say that the foregoing Joint Summary Report, taken in conjunction with what follows, properly represents my complete report to the Bureau Executive.

I do not consider that Winnipeg has reached that stage of development where a change to measured rates such as are proposed by the Telephone Commission is necessary. At best, measured service is unsatisfactory from the public view point, largely because the general use of the telephone is checked and partly because there is as yet no proper automatic method of counting calls. Without such method the subscribers accounts are subjected to human errors.

In very large cities such as New York, measured service is doubtless necessary to enable the Telephone Companies to handle the traffic in a satisfactory manner, but, as yet, no such service has been adopted in any Canadian city.

The argument is sometimes used against the unlimited service that under the measured system the average number of calls per telephone is reduced by one-half, but this very argument in the opinion of this member of your Committee is one of the strongest reasons why, under the conditions prevailing in Manitoba, the unlimited service should be retained as it must be evident if the number of telephone messages is reduced by one-half this cannot be done without seriously affecting the general value and usefulness of the service to the ordinary user, whether a business or residence subscriber. One of the chief features of the unlimited service is the promotion of the business and social relations and conveniences of our people and this should not be hampered or unreasonably curtailed in a public owned utility.

As a working basis for investigation your Committee obtained from Mr. Paterson (Chairman of the Manitoba Government Telephone Commission), data as to the plant and real estate investments as at November 30th, 1911, also a statement of the expenses and revenues as at December 30th, 1911, as follows:

**MANITOBA GOVERNMENT TELEPHONES**  
**Winnipeg Exchange**  
**Statement of Investment as at November 30th, 1911**

	Total	Unit Value per Telephone (basis 20,000)
Plant Investment—		
Equipment, general office .....	\$796,800.00	\$39.89
Equipment, sub-stations .....	639,854.40	31.99
Overhead plant—		
Pole lines .....	\$181,210.90	\$ 9.06
Aerial cable .....	339,216.54	16.96
Aerial wire .....	57,480.00—	2.87—
Underground plant—		28.90
Conduit .....	388,247.10	19.41
Cable .....	797,711.22—	39.88—
	\$3,200,610.16	\$160.07
Real estate .....	656,400.92	32.82
	\$3,857,011.08	\$192.89

**Statement of Expense and Revenue per Telephone**  
**Year Ending December 31st, 1911**  
 (Based on average of 18,000)

Operating Expense—		
General expense .....		\$ 1.25
Commercial expense—		
Revenue accounting .....	\$ .75	
Revenue collecting .....	1.00	
Directories and supplements .....	1.00	
Supervision, canvassing, etc. ....	1.00—	3.75
Traffic Expense—		
Operators' wages .....	10.35	
Rent, heat and light .....	.40	
Supervision, etc. ....	.60	
Sundries .....	.40—	11.75
Insurance .....		.45
Total .....		\$17.20
Maintenance and Depreciation—		
Current repairs—		
Aerial plant .....	\$ 2.00	
Equipment .....	2.10	
Other .....	.50	
Station removals .....	2.40—	7.00
Depreciation (6% on \$160) .....		9.00
Total .....		\$16.00
Fixed Charges—		
Interest on real estate .....	\$1.00	
Interest on plant .....	6.40	
Total .....		\$7.40
Total of all expenses .....		\$40.60

Revenue—

Rentals .....	\$31.04
20% of toll calls .....	1.03—\$32.07

Deficit ..... \$ 8.53

Note.—Operating expense includes city taxes \$0.06 per unit.

Advance construction—buildings and underground conduits for 150 per cent. increase; balance of plant for 50 per cent. increase.

Development—10 per cent.

Business and residence telephones, December, 1911, 37 per cent. and 63 per cent.

Average calling rate—11.

Increase in telephones during 1911—25 per cent.

Two members of the Joint Committee made a special visit to several United States cities in which the conditions respecting population and telephones in use are such that a fair comparison can be made with those existing in Winnipeg. The information thereby obtained, as per the following schedule, shows that the operating and maintenance expenses are lower than in Winnipeg, the revenue is higher per telephone and the amount invested in real estate in Winnipeg is considerably larger than in any of the cities visited.

**SCHEDULE**

(It is obvious that the identity of the cities quoted must be concealed when your Committee explain that these statistics were given in confidence.)

	Winnipeg	No. 1	No. 2	No. 3	No. 4	No. 5
Population .....	200,000	134,000	222,000	360,000	310,000	500,000
No. of phones .....	20,000	26,000	33,340	30,000	23,000	88,757
Phones per 100 of population .....	10	20	14½	10	8	9
Calling rate .....	11	8	5	10.2	11	7
No. of exchanges .....	5	5	5	5	6	*

Wages—Average 10 per cent. lower than Winnipeg.

	Winnipeg	No. 1	No. 2	No. 3	No. 4	No. 5
Investment—						
Plant and equipment..	\$160.07			\$147.97		
Real estate .....	32.82			5.32		
Total .....	\$192.89	\$150.74	\$113.91	\$153.29	\$151.26	*

	Winnipeg	No. 1	No. 2	No. 3	No. 4	No. 5
Operating Costs—						
General .....	\$ 1.25	\$ 2.50	\$ 1.08	*	\$ 1.10	\$ 5.19
Operators' wages .....	10.35	6.02	4.45	4.36	3.91	6.84
Commercial .....	3.75	6.01	4.60	3.20	4.81	
Other traffic expense.....	1.40	1.34	1.14	1.04	1.26	
Total .....	\$16.75	\$15.87	\$11.27	\$8.60	\$11.08	\$12.03

	Winnipeg	No. 1	No. 2	No. 3	No. 4	No. 5
Maintenance .....	\$ 7.00	\$ 5.24	\$ 5.26	\$ 3.80	\$ 5.97	\$ 6.00
Depreciation .....	9.00	10.62	6.17	4.59	7.43	3.44
Total .....	\$16.00	\$15.86	\$11.43	\$8.39	\$13.40	\$9.44
Total expense .....	\$40.60	\$37.07	\$25.57	\$26.07	\$27.40	\$31.11

	Winnipeg	No. 1	No. 2	No. 3	No. 4	No. 5
Revenue—						
Ordinary .....	\$31.04	\$39.92	\$23.65	\$32.55	\$24.58	*
Toll .....	1.03	6.63	8.52	1.60	10.03	*
Total .....	\$32.07	\$46.55	\$32.17	\$34.15	\$34.61	\$38.01

\* No item given.

It was also found that the rates are lower in Winnipeg than any of these cities, particularly the residence rates, the effect of which has been to develop that class of subscribers in Winnipeg so that they have increased abnormally as compared with business telephones during the last four years, thereby throwing the system out of balance and seriously affecting the revenue. For example, the ratio in 1907 of residence and business lines was 40 per cent. and 60 per cent., whereas at the present time it is 69 per cent. and 31 per cent. It will be apparent therefore that further reduction of residence rates, such as is proposed in the measured service by the Commission, would have the effect of increasing this abnormal condition. In order, therefore, to bring the system more into balance and secure the required increase in revenue, residence rates should be advanced and a vigorous policy inaugurated to increase the number of business telephones—careful and economic management should also effect a very large saving on maintenance and operating expenses.

Sufficient revenue to meet all proper charges can be assured through the medium of flat rates. By introducing party line service such as can be had in any of the large cities in the United States, rates low enough to be available to all classes of users can be offered. I am therefore of the opinion that flat rates or unlimited service should be adhered to, at least until altered conditions may justify a change. In view of these conclusions, I recommend the adoption of the following schedule of rates for unlimited service:

<b>Business—</b>	
Individual line .....	\$57 per year
Two party .....	39 "
Extensions .....	12 "
<b>Residence—</b>	
Individual line .....	36 "
Two party .....	24 "
Four party .....	20 "
Extensions .....	6 "
<b>P. B. X. Trunk Line—</b>	
including switchboard .....	128 "
Extensions .....	12 "

The prevalent objection that formerly existed to two or four party lines as regards privacy, we are informed, has been removed by the adoption of an equipment that only permits the bell of the subscriber called to ring, automatically locking out all other subscribers on the same line. The experience in Chicago of these classes of lines indicates that no more than 3 in 100 calls upon "central" fail to find a clear connection.

It is felt that economies can be effected in the operation of the Winnipeg plant which should materially reduce the working expense and this, together with an energetic and properly directed effort on the part of the Commission to increase the number of business subscribers, should make the above schedule of charges sufficient to provide the necessary revenue and depreciation.

Assuming, however, that this were not possible, that no reduction in expenses were effected and the present unbalanced ratio of business and residence subscribers still obtained, the following schedule represents the maximum scale of rates that could be charged for unlimited service based on figures supplied us by the Telephone Commission.

<b>Business—</b>	
Individual line .....	\$65 per year
Two party .....	42 "
Extensions .....	12 "

<b>Residence—</b>	
Individual .....	38 “
Two party .....	25.50 “
Four party .....	21.50 “
Extensions .....	6 “
<b>P. B. X. Trunk Line—</b>	
Including switchboard .....	135 “
Extensions .....	12 “

Attached will be found certain information for your consideration that has had a direct bearing on arriving at the above conclusions and recommendations.

Respectfully submitted,

M. F. CHRISTIE.

At the existing flat rates, the revenue, based on the data submitted by Mr. F. C. Paterson, as of December 31st, 1911, is as follows:

Residence lines .....	9,132 @ \$ 25.00	\$228,300
Residence extension telephones .....	1,056 @ 6.00	6,336
Business lines .....	5,039 @ 50.00	251,950
Business extension telephones .....	1,716 @ 12.00	20,592
P. B. X. S. lines telephones .....	166 @ 460.00	76,360
Public pay stations .....	541 @ 100.00	54,100
Rural stations .....	122 @ 40.00	4,880

Total revenue from rentals only .....	\$642,518
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Total number of lines, 15,510; of which 69 per cent. are residence and 31 per cent. business.

Average revenue per line, \$41.42.

The calling rates are given as follows:

Average calls per day from residence lines.....	8
“ “ “ “ business lines .....	23
“ “ “ “ P. B. X. lines .....	50
“ “ “ “ public pay stations .....	6

The above figures are average calls per day from lines, not telephones. The calling rate from telephone would be lower, because there are 4,500 more telephones than lines in the Winnipeg system.

The average number of calls per day per line from all subscribers' lines taken together is therefore 14.4 and per telephone about 11. The total average number of calls per day based on the above figures is 224,600.

It is stated that at the end of the year 1907 the ratio of residence to business lines as 40 per cent. to 60 per cent. is now 69 per cent. to 31 per cent. Since the residence rate is one-half the business rate, it is obvious that such unbalanced development will not produce anything like the revenue which there would be if one-half the lines were residence and one-half business, which is the usual proportion. If there had not been this unbalanced development resulting from a too low residence rate, if the usual proportion had been maintained, the revenue from rentals at the end of 1911 would have been \$690,000, or about \$50,000 more than it is now.

It is stated that the loss per line is \$11.00 from the rentals only. If an even development had been maintained this loss would have only been \$7 per line. This deficit of \$11 per telephone is not really a loss, because an amount arbitrarily fixed sum of \$12.38 per line has been deducted from the revenue to make up the depreciation fund of 6 per cent. on the investment in plant.

The estimated revenue from local service at the proposed measured rates will

be as shown below, using the above schedule of lines and telephones for comparison, and assuming that the average calling rate is as follows:

Residence lines .....	2.5 calls per day or 912 per year of 365 days
Business lines .....	6 calls per day or 1,800 per year of 300 days
P. B. X. lines .....	20 calls per day or 6,000 per year of 300 days

#### Average Calling Rate Per Day From All Lines, Four

Residence lines, flat rate 1,000 (estimated) @ \$48 .....	\$ 48,000
Residence (measured), 8,132 @ \$18 .....	146,376
Extra calls (480 allowed) 432 @ 2c. each from 8,132 lines.....	70,260
Residence extension telephones, 1,056 @ \$6 .....	6,336
Business lines, 5,039 @ \$48 .....	241,878
Extra calls (1,200 allowed) 600 @ 2c. each from 5,039 lines .....	60,468
Business extension telephones, 1,716 @ \$12 .....	20,592
P. B. X.'s, 166 @ \$300 .....	49,800
Extra calls (1,200 allowed) 4,800 @ 2c. from 628 lines.....	60,288
Public pay stations, 541 @ \$100 .....	54,100
Rural stations, 122 @ \$40 .....	4,880
	\$762,978

The above figures show that the gross revenue may be increased about \$120,460 when the proposed schedule of rates becomes operative.

The average revenue per line would be about \$49.00 and per telephone about \$38.00. The average cost per line, assuming that the reduction in operating expenses would affect the increased cost of handling measured service, would remain unchanged at about \$38.00.

What the revenue will actually be at the new rates cannot be determined in advance, nor can it be even approximated to a reasonably accurate degree, because there are many unknown quantities. The actual revenue will depend on the following:

1. Number of residence stations at the \$48 unlimited rate.
2. Number of residence stations at the \$18 measured rate.
3. Calling rate of stations of all classes.
4. Ratio of business to residence stations.
5. Reduction in operating expense brought about by decrease in calling rate.

The first four items cannot be foretold or even guessed at for the reason that no such combination of rates has ever before been presented to subscribers in any city anywhere, and consequently there is no data available to work from.

The reduction in operating expense can be safely assumed to be about 40 per cent. of the present cost with unlimited service.

The system now is unbalanced, as regards rentals, by reason of the low residence rate. A reduction in this rate will tend to increase the number of residence telephones, making this condition worse instead of improving it.

According to information obtained by your Committee, the theory of telephone rates, whether for unlimited or measured service, is briefly explained as follows:

Considering any telephone system, there are two general divisions of expense, viz., the cost of plant and the cost of service. The items of expense which come under these two headings are for the Winnipeg system as follows, and for convenience, the charge per line, based on a total of 15,510 lines is given for items 1, 2, 3, 4 and 5, and the percentage value on the investment of items 6, 7 and 8 is also given:



Item No.	Expense	Charge	Cost per Line
1.	General .....	\$ 22,500.00	\$ 1.45
2.	Commercial .....	67,500.00	4.35
3.	Traffic .....	211,500.00	13.63
4.	Insurance .....	8,100.00	.52
5.	Taxes .....	1,080.00	.07
6.	Maintenance .....	126,000.00	4 per cent.
7.	Depreciation .....	192,036.00	6 per cent.
8.	Interest .....	133,200.00	3½ p.c. avge.

The capital required for the construction of the Manitoba Telephone system has been derived from the sale of bonds and no sinking fund is carried, the bonds at maturity being retired by a new issue. This method of handling the capital investment is common to most telephone companies.

The Winnipeg plant consists of the following items of property and equipment, the amount of the investment in each item is shown, taken from the statement dated December 31st, 1911, and the investment per line based on 15,510 lines is given.

		Per Line
1.	Central office equipment, including switchboards, power plants, etc. ....	\$ 796,890 \$ 15.38
2.	Sub-station (equipment on subscribers' premises).....	639,854 41.25
3.	Overhead and underground plant .....	1,763,866 113.72
4.	Real estate .....	656,400 42.32
		<hr/>
		\$3,857,010 \$248.67

Considering the entire plant installed ready for service, a portion of the annual charges against the plant investment, which are insurance, taxes, maintenance, depreciation and interest—items 4, 5, 6, 7, and 8 in the schedule previously given, must be apportioned equally per line, and the remainder apportioned to the traffic, because a large user will require more switchboard space, consequently a larger use of the central office, equipment, building, etc., and also more inter-exchange trunk line facilities than a small user.

As regards items 1, 2, and 3 of the annual expense, there can be no doubt but that the general and traffic expense should be charged directly against the service, and it is customary to charge the commercial expense to service also, because the large user gets more value from the use of directories, it is to his advantage to increase the number of subscribers by canvassing, and his portion of the cost of accounting and collecting is greater than for the small one.

The item of taxes is a straight unit charge against each line, and is not affected by the volume of traffic.

The total annual charge against the plant, items 4, 5, 6, 7 and 8 is \$460,416, which amount is approximately 12 per cent. on the total investment. The exact proportion of this amount chargeable to service cannot be determined without making a very careful study and appraisal of the plant.

A fair division can be approximated as follows:

The average cost per mile of underground circuits is \$50, including conduits. There are about 2,950 miles of inter-change trunk circuits (including spare wires) connecting each exchange in the system with every other exchange. The cost of such circuits is therefore \$147,500. The value of the Central Office equipment is \$796,890, and of the real estate \$656,400. Total value of the three items, \$1,600,790, which amount is 41 per cent. of the total investment. Since each subscriber

makes use of this division of the plant in accordance with the volume of traffic which he originates, it is equitable to divide the 12 per cent. charge in the ratio of 41 to 59, making 5 per cent. chargeable to service and 7 per cent. chargeable to plant. The average investment per line, less private branch exchange switchboards is \$245. Seven per cent. of this amount is \$17. This amount then is the basic rate common to all line irrespective of the volume of service, and which should be guaranteed as an annual rental before any service is given at all.

The total average number of calls per day from all lines is 224,600, or 72,039,130 per year.

The items of annual expenses properly chargeable to service are:

General .....	\$ 22,500
Commercial .....	67,500
Traffic .....	211,500
Five per cent. on plant investment .....	192,850
<b>Total .....</b>	<b>\$494,350</b>

This amount is equal to about .07 per call.

The average number of calls in Winnipeg originating from residence lines is 8 per day, or 2,920 per year. Therefore, to cover the cost of service from residence lines, an amount of \$20.44 must be added to the basic rate of \$17. The final rate for residence lines should then be \$38 per year.

The average number of calls originating from business lines is 23 per day, or 6,900 per year. Therefore, to cover the cost of service from business lines, an amount of \$49.30 must be added to the basic rate of \$17. The final rate for business lines should then be \$65 per year.

The average number of calls originating from P. B. X. lines is 50 per day, or 15,000 per year. Therefore, to cover the cost of service from such lines an amount of \$105.00 must be added to the basic rate of \$17. To these amounts must be added \$13 to cover the yearly charge of 12 per cent. on the value of the P. B. X. switchboards taken at \$110 per line. The final rate for P. B. X. lines is therefore \$135.

A curious fact is brought to light in relation to these figures. If the rates above given were actually in force, the increase in revenue would be about \$200,000. It is said that there is a deficit of \$170,000 at the present rates. Therefore the calling averages given must be too high. If the calling records had been carefully kept for one week in each month of the year, your Committee think that the total number of calls for the year would be 10 per cent. to 15 per cent. less than given. The resulting revenue would then be about equal to the deficit.

The foregoing statements show plainly what a great risk there is from a business standpoint in making rates without having definite information as to the calling rate for each class of subscribers.

The rates just given are balanced. By this we mean that they are balanced for the particular combination of lines which exist. If there were the same number of business lines as residence, with the same calling averages, the rates would be lower.

Assuming our system to be normal with an equal number of business and residence lines, we submit a schedule of rates for Winnipeg local service, which would be safe to adopt until such time when the ultimate capacity of the existing plant is reached. This schedule is based on a balanced exchange of 16,000 lines

of which 8,000 are residence lines and 8,000 business lines. The number of telephones is taken to be 21,000 and the number of private branch exchanges 200 (800 lines).

The calling rates are assumed to be as follows:

Residence lines .....	8 per day,	2,920 per year
Business lines .....	20 " "	6,000 " "
P. B. X. lines .....	50 " "	15,000 " "

In estimating future revenue from unlimited service it is necessary to base the rates on as high a calling average as may be expected in order to be on the safe side. The averages just given will be safe, as they are high compared with other companies.

It would not be satisfactory to base any new schedule of rates on the existing combination of lines, because a change in rates will bring about a different ratio of business to residence lines, which change will of course affect the revenue.

The average cost of a sub-station equipment is about \$30 per telephone, not including P. B. X. switchboards. The average cost of new lines may be taken at \$75 per line. The average cost of P. B. X. switchboards is about \$110 per line.

Since the existing plant provides for a large increase, additional subscribers will require only sub-station equipment, and a certain proportion of circuits including drop wires. The increase in the number of subscribers will then call for an increase in construction expenses covered by investment, as follows:

500 lines @ \$75 .....	\$37,500
1,000 telephones @ \$30 .....	30,000
136 P. B. X. lines @ \$110 .....	14,960
<b>Total .....</b>	<b>\$82,460</b>

This amount must be added to the present investment, making a total of \$3,939,470.

The average investment per line will be \$242, not including P.B.X. switchboards, as against \$245 before given, which is based on the combination of lines which existed on December 31st, 1911.

The small increase in the plant investment will not make any appreciable change in the charge of 12 per cent. before explained, of which 5 per cent. is chargeable to service and 7 per cent. to plant.

The basic rate per line common to all users alike, irrespective of service, is therefore \$17.00.

The total number of calls per year, based on the averages last above given, will be 78,560,000.

The cost of general, commercial and traffic expenses for 15,000 lines, using the same costs per line as before given, will be about \$310,850.

The item of 5 per cent. on the investment chargeable to service is \$196,973. Total, \$507,823.

The cost of service per call is therefore 65 cents.

The average number of calls per year from residence lines is 2,920. Therefore, to cover the service charge, an amount of \$19 must be added to the basic rate. Total, \$36.

The average number of calls per year from business lines is 6,000. Therefore,

to cover the service charge, an amount of \$39 must be added to the basic rate. Total, \$56.

The average number of calls per year from P. B. X. lines is 15,000. Therefore, to cover the service charge, an amount of \$97.50 must be added to the basic rate of \$17; an additional amount of \$13 must also be added to include the plant charges of 12 per cent. on the value of the switchboards. Total, \$128.00.

The above are balanced rates for a balanced system, in which the number of business lines is not less than the number of residence lines.

If the residence and business rates are considered to be too high, there is no reason why party-line service cannot be introduced. Such service has been in successful continuous operation in Boston, New York, Chicago, Philadelphia and many other American cities for the past fifteen years. The party-lines to which your Committee refer are not the old style, with which all the bells ring at the same time and any party or subscriber can listen to the conversation of any other subscriber on the same line, but lines with two or four telephones connected up, with selective ringing, and so arranged that only one bell rings at a time, and when one subscriber is using the line the others are automatically locked out. Either two or four-party line service is satisfactory for residence use, but only two party-line service is usual for business use. The proper charge for such service can be determined as follows:—

Considering four-party residence lines, it has already been stated that the average cost of a subscriber's line with one station is \$242. To this amount must be added the cost of three extra stations @ \$30—equalling \$90. Total, \$332. Seven per cent. of this amount, equal to \$23, is the plant charge, making a basic rate of \$6 per telephone. The four stations would originate 8,760 calls per year at a cost of \$57. The total annual amount which the line must earn is therefore \$80, or \$20 per station. This is \$16 per year less than the rate for a separate line.

Considering a two-party residence line, to the amount of \$242 must be added the cost of one extra station, \$30. Total, \$272. Seven per cent. of this amount, or \$19, is the proportion chargeable to plant, making a basic rate of \$10 per telephone. The two stations would originate 4,380 calls per year, at a cost of \$28.47. The total amount which such a line must earn is therefore \$48, or \$24 per station, which is \$12 less than the rate for a single line.

Considering a two-party business line, the same amounts, namely, \$19, would apply, and as the total number of calls would be 9,000, a service charge of \$58.50 must be made. Total, \$78, or about \$39 per station.

## DETAILED REPORT

(Submitted by C. B. Piper)

Our first work was to decide upon a plan of procedure. It was found that no matter how the question was considered, it eventually resolved itself into one of expert technical knowledge of the telephone business. No member of the Committee had such qualifications, nor was it felt that the expense of hiring properly qualified authority was justified.

After careful consideration, we decided that we could quite properly inquire into conditions as reflected by the financial statement. By thus limiting the inquiry to strict business considerations, we felt that we could determine and submit tangible results.

Our problem was restricted to the telephone business within Winnipeg, excluding that of the toll lines and provincial exchanges. This action was based upon the assertion of Mr. F. C. Paterson, Chairman of the Telephone Commission, supported by his financial statement, that the business within Winnipeg is entirely separate from that without the city, and that each of the two departments of the entire Provincial System is operated at practically the same net showing. He assured us that Winnipeg is not and has not been charged with the up-keep or operation of any of the outside plant.

We obtained from the Telephone Commission their statement for the year ending December 31, 1911. Some delay was caused in waiting for these figures.

We then studied telephone systems elsewhere. Considerable time was spent by two of our members delegated for the purpose in visiting different Western cities, carefully selected to find conditions nearest approaching those of Winnipeg. Two days were spent with the Wisconsin Railroad Commission at Madison, Wisconsin, to learn the latest methods of telephone accounting and the best methods of comparison. Independent and Bell companies were then visited. Our representatives were everywhere accorded the most courteous treatment and their questions were answered with the greatest care and patience.

We find that there are many differing opinions on almost every point involved. No two cities present the same problems, and it becomes the duty of telephone engineers to apply the general principles of the business with the greatest of consideration to each individual problem.

We must digress to pay tribute to the Wisconsin Railroad Commission. They are a public body, appointed by the State of Wisconsin, to regulate all public utilities within the State. They have been in successful operation for several years. We have never seen such absolute thoroughness and impartiality. Their work is recognized to be invaluable to the utilities and to the public. They have removed abuses and inequalities, and have promoted mutual understanding and good feeling. The commission is a monument to their people.

The following is a detailed report setting forth in full the facts and considerations leading to our conclusions and recommendations.

### RATES IN GENERAL

Nothing can be more misleading than the bare comparison of telephone rates. There are so many factors behind rate schedules that it requires careful study to determine their fairness. In general, there is a sharp line between the East and the West. This is due somewhat to comparative cheapness of both material

and labor in the East. In the large Eastern cities, the local conditions affecting plant and operation are favorable to lower rentals.

There must also be considered the soundness of the business, including physical condition of the plant, allowances for depreciation, earning of profits and the general credit of the companies. Rentals may be too low either through competition or mistaken management, which if continued, will result in disaster. Dividends may be paid, but only at the expense of the plant and service.

As a rule competition has reduced rates and improved service. Success has followed under good management through greater efficiency and reduced expenses. The best independent companies have undoubtedly materially benefited the public. Some of them were started as promoters' schemes on rates usually fixed by franchise, which showed good profits on small systems but which eventually brought disaster. In sound companies, with the best of management, many low rate schedules have steadily become less adequate as business grew, and now many large systems are face to face with the problem of increasing their revenue. Therefore, the mere fact that rates may have been directly lowered by competition does not make them reasonable.

Given a monopoly, the rate question becomes simply one of fairness and reason, local conditions and quality of service being carefully considered. When government owned and operated, and every taxpayer is a shareholder, such as in Winnipeg, it resolves itself merely into efficiency of management, covering policy, economy of construction and careful administration of operation.

We believe there can be no question that the telephone business in Manitoba should be put and kept on a sound business basis, and that, as such, it should support itself. We do not want profits—only maximum service at a minimum cost. Margin of revenue over expenses, which in other cities must be used in payment of taxes and dividends, should here be returned to subscribers through reduced rates.

#### WHY RATES INCREASE WITH NUMBER OF TELEPHONES

The telephone business is unique in that the larger the system, the higher becomes the charges to subscribers. This is due to three things: (1) duplication of plant; (2) increased operating costs; (3) greater value to each subscriber; all of which must be borne in mind in the consideration of rates.

Under modern service requirements, duplication and even multiplication of equipment within and between exchange buildings is necessary as the system grows. To avoid this would be to retard service so as to completely destroy its usefulness. This duplication requires greater investment per telephone, hence increased charges for maintenance and depreciation.

The increase of telephones means an increase of calls per instrument. To illustrate: Assume that an exchange has been started with only ten subscribers. The total number of possible calls is  $10 \times 10$ , or 100. When the system grows to 100 subscribers, the total number of possible calls will be  $100 \times 100$ , or 10,000. Thus, while the instruments have increased only tenfold, the possible connections have increased one-hundredfold. This is theoretical and extreme, but it illustrates the fact that in the practical operation of a telephone system this increase is actually present, and the net operating costs per instrument become materially greater under unlimited service.

To refer to the illustration just given, the system of 100 subscribers is obviously more valuable to each user than the system of only ten subscribers. This feature places the higher rental upon a basis of value to the subscriber, and

not upon the cost to the operating company. This, however, is not a factor in the Winnipeg situation.

### WHY CHANGE IN PRESENT RATES IS NECESSARY

It is unfortunate that wrong impressions have been created in the minds of the public, since the Provincial Government took over and has been operating our telephone system, by the publication of incomplete and erroneous statements. At the time of purchase there was only one exchange in Winnipeg. The rates were \$50 and \$30 per year for business and residence service respectively. The business had grown so that immediately after the purchase, it was necessary to open one branch exchange in Fort Rouge.

Our Government, however, after seeking expert advice, believed that satisfactory service could be provided at lower rates. They announced themselves accordingly. After completing the purchase and, contrary to the advice of their newly appointed Telephone Commission, they reduced rates in Winnipeg on residence service to \$25 per year. Our inquiry shows that the old rates should have been maintained, and the original schedule made the basis of gradual increase or re-classification as the system grew and more exchanges were added, as we found that present average rates are lower than those of any other city providing similar service.

Even with this reduced revenue and with the subsequent growth of the system, income showed a surplus over expenses including maintenance and interest on the investment. This surplus now amounts to about \$357,000. This was the statement given the public, and an impression of stability and success resulted.

Unfortunately, however, no allowance had been made for that important item, depreciation, and the business was virtually unsound. Had depreciation been provided for, the apparent surplus would have been turned into deficit.

We are advised that the Government has now seen the necessity for such provision, and it is to secure the necessary surplus that the rates are to be changed. The Telephone Commission decided that to merely increase proportionately the present rentals would be but to continue the present inequity of flat rate charges, so present necessity is utilized to institute a reclassification.

The real loss on the first three years' operation is gone, and we are advised that no attempt is being made to provide depreciation to cover. Only depreciation for the fiscal year ending December 31, 1911, was set up, the surplus of revenue over expenses for the previous three years being drawn upon to provide the initial fund. This accounts for the seeming deficit just announced, as last year's figures only are covered thereby, although the sum appropriated has really been earned by the telephone business, and has not been taken from the general fund.

It is now necessary to make a fresh start by putting the business on a sound basis and adjusting rates to so maintain it.

### CONDITIONS AFFECTING THE BUSINESS

The statement of any telephone business shows the usual capital and revenue accounts, together with other statistical information covering in some part underlying conditions affecting the business.

The capital account represents the investment. The revenue account shows operation, maintenance and depreciation, which are under the immediate control of the management as regards actual expenditures, and largely as regards policy. The remaining features, concerning the underlying conditions, are many in

number, and are only indirectly reflected by the figures of the financial statement, but their influence is of vital importance. Some of the most important are as follows:

1. Advance construction.
2. Density.
3. Development.
4. Ratio of number of business to residence telephones.
5. Traffic.
6. Promptness of service.

The first two items affect principally the capital account; the third item affects both capital and operating accounts, and the last three items affect principally the operating account, although all are reflected somewhat in all of the accounts.

### ADVANCE CONSTRUCTION

This may be expressed as the ratio of working portion to ultimate capacity of present plant, and raises the question of present investment to provide for future needs. It involves not only the locking up of unproductive capital, but also the provision for maintenance and depreciation charges thereon. It is apparent that in a rapidly growing business, expenditure of capital sufficient to put up permanent plant greater than immediate necessity will save increased cost of alterations and additions in the future. It is, therefore, wise to reasonably anticipate future demand. The limit of such advance construction can only be determined by a careful study of local conditions.

The first consideration is the growth of the business, depending primarily upon increase in population.

We are adding about 25% every year to our inhabitants. This figure is directly reflected in the growth of our telephone system. The number of instruments has doubled in four years.

The next question is the direction of the growth. The limit of lines or circuits to any one exchange is 10,000. When the total number of circuits approaches this figure, it becomes necessary to add branch exchanges. The problem is where to place them. This requires the very closest of study, based on long experience in estimating growth. It is more or less speculation, as expected growth may not materialize.

We find that our most costly investment, namely, real estate, buildings and underground conduits, now has capacity for 150% increase. The question is, has there been an extravagant reserve provided, and should present users be compelled to pay interest and depreciation on non-productive investment, when the costs are high per instrument, with only a small portion of the investment working.

In the older communities, conservative telephone authorities say that 10% growth is considered normal. Based upon such conditions, it is deemed wise to provide for only 25% to 30% increase. They thus consider it good business to provide only for the immediate future even with a certain knowledge that plant costs in the more distant future will be considerably higher because of the necessity of altering or adding to present plant at an increased cost.

We find in the newer communities in the West that totally different conditions apply, due to much more rapid growth. The standard practice of both independent and Bell systems is to build all underground work for ultimate requirements, and to put it down even before conditions actually necessitate. Their buildings have been laid out in unit construction, so that additions can



be economically added. They advise, however, that the latter is unsatisfactory and they have now decided upon present erection of complete buildings suitable to care for ultimate requirements. Branch exchanges are located and built long before they are actually necessary, because experience has shown that it is cheaper to carry the additional advance construction than it is to make the transfer of a considerable number of lines. Rapid growth reduces speculation in locating branch exchanges. In short, they have demonstrated that a large advance construction is the only satisfactory method of handling their increase.

We believe that the present reserve for future requirements in Winnipeg is none too great, and, in fact, from an observation of some cities, it seems doubtful if even sufficient provision has been made, as our business is growing faster than any other that we studied.

The present cost of carrying unproductive investment through such period of advance construction is largely offset by the enormous future cost of "cutting over" lines into branch exchanges and other increased cost of making alterations to provide for future business when advance construction has been held to a minimum. This means that it is about as cheap for us to pay the increased cost in Winnipeg to-day of carrying the unused portion of our plant, as to reduce such present expenditures only to postpone the inevitable higher costs.

If the Manitoba Telephone Commission have exercised prudence and careful consideration in planning our system to meet the future requirements of the city, as we presume they have, we think they have not made unreasonable allowances, and we can attach no unfavorable criticism to their handling of the problem. They must continue such liberal advance construction as long as abnormal growth continues. This, of necessity, means higher rentals for present users, but we cannot find that this expense is out of line with the best practice in other cities.

#### DENSITY

By density is meant the compactness of the territory served by the telephone system from the standpoint of the business, and not population. If the telephone users are within a small area, there is high density. If the subscribers are scattered, there is low density, and it is reasonable to expect that the intervening spaces will ultimately be filled with telephone users, who may or may not be residents of such districts at present.

The business in Winnipeg is not dense. Our population is scattered. In order to provide properly for future growth, it has been necessary to construct branch exchanges in different parts of the city, in order to reduce as much as possible the cost of erecting and maintaining exceedingly long lines of wire. It is reasonable to suppose that these exchanges have been well located to efficiently utilize the full limit of their switchboard capacity. Incoming householders will complete settlement within these districts and even if only the present proportion become subscribers, it will be a question of a very few years before the density of our system is materially increased and the most costly portion of our present investment working to its limit.

#### DEVELOPMENT

The ratio of telephones to population is called development. It is a highly important factor in the business, more especially under flat rates. A sparsely populated area may have a high development, as practically everybody may have a telephone; on the other hand, a closely populated area may show low development. The greater the development, the better becomes the business.

With comparatively small development, it is wise to build a plant with large reserve capacity under the reasonable expectation of increasing development in the future. As to operating costs, it is a well defined law that the higher the development the less will be the cost per instrument. This seems to be upon the theory that, with low development, the plant is used by many non-subscribers, which unduly increases the traffic and thus raises costs.

Present development in Winnipeg is 10%, which seems to be low. We find some cities below this figure; most others are considerably higher. It is considered good telephone business when the development reaches 20%. This brings down the calling rate, which in turn reduces the cost of operation to the minimum, as the plant is then working most efficiently. Beyond this figure, nothing is gained. We believe that with normal progress our development will increase. This could undoubtedly be hastened by energetic work on the part of our Telephone Commission in soliciting new subscribers.

#### RATIO OF BUSINESS TO RESIDENCE TELEPHONES

Under flat rates, it seems to be a prevailing principle that it is justifiable to charge rates for business service which show a profit after paying all expenses, and to charge rates for residence service which do not show a profit. This appears to be upon the theory that a telephone is of greater necessity in business than in a residence, and the former service is, therefore, charged somewhat all that the traffic will bear in order to make up the general revenue of the system. The rates to householders are made low to secure greater development. This argument seems weak, because the greater the development the more valuable becomes the service, particularly to the business users. It seems an injustice to charge that class of users with additional expense in order to provide a valuable consideration for subscribing to the service. The principle, however, seems to be accepted as equitable and fair, as it has been considered and approved in every investigation of flat rates throughout the United States.

Under such rates, the balance of business against residence telephones is vital. If the ratio of residence to business telephones becomes high, then profits are reduced, as the difference in rates is greater than the difference in the cost of service. The greater the number of business telephones as compared to residence telephones, the better becomes the business. Under flat rates, the loss of net revenue occasioned by small proportion of business users could be remedied by re-adjustment of rates. But if residence telephones were to be assessed their proper rental under such conditions, their rates would seem very high, and there would be a very small development. The best way to overcome the difficulty is to secure more subscribers among business users. All companies have well organized departments to maintain a proper balance of users. They keep in close touch with civic organizations, who advise them of newcomers and of business changes generally. They also make service tests with present users, in order to show them that it would be to their advantage to increase their number of telephones.

Winnipeg has now 37% business and 63% residence telephones. Under present rates the system is not on a sufficiently good basis, as the average revenue is not equivalent to the average costs. This is partially accounted for by the fact that the difference between our present rates for the two kinds of service is too great. Under flat rates, even though the residence rentals were to be adjusted so as to remove this inequality, some means would have to be devised of increasing the number of business telephones until they at least equal the number of residence telephones.

## TRAFFIC

This means the amount of telephone usage and is measured by the average number of calls per telephone per day. It has a direct bearing upon operating expenses not only through operators' wages, but also by wear and tear to the switchboards and other portions of the plant. Under flat rate rentals, traffic cannot be controlled by the management, as the instruments are at the free disposal of the subscribers, and there are bound to be many frivolous and unnecessary calls. The only method of reducing traffic is by means of measured service.

In other cities with unlimited service we found the calling rate ranging from 7.5 to 9. The latter figure is considered very high.

Our traffic is enormous. The calling rate averages 11, which is excessively high. It is, therefore, reasonable to expect high cost of operation.

## PROMPTNESS OF SERVICE

This is somewhat under the direct control of the management. It is necessary to instal the best of equipment and provide an ample force of properly trained operators. The entire plant must be maintained to a high degree. But after all this is done, the management becomes helpless where the traffic is excessively heavy, as under such conditions the operators simply have not time to keep up with their work.

Promptness of service is the most noticeable feature to the public of the operation of a telephone system. It is measured by the time elapsing between taking down the receiver and the operator's answer to the signal, both on the first call and also on an immediate recall. It is easier to get prompt service on the former than the latter. It must be understood that each individual call requires an actual connection with the number called on the switchboard in the central exchange. When conversation ceases, this connection has to be withdrawn by the operator so that the lines will be free. When the recall comes immediately, it frequently happens that the operator has not had time to disconnect.

We do not know that the promptness of our service has ever been tested. On tests by the Wisconsin Commission, 30 per cent. of the calls were answered in 3 seconds; 60 per cent. in 4 seconds; 90 per cent. within 5 seconds. This is considered good service.

By casual observation our service seems to compare favorably with that of other cities. One can readily understand that, with the excessive calling rate as shown, it would be reasonable to expect comparatively slow service. With a lower calling rate our service will improve.

## COMPARATIVE COSTS

We obtained, by personal visit, the actual investment and operating figures for their last fiscal year from many different systems. Similar accounts in different statements do not cover the same items owing to differences in the businesses themselves and in the distribution of accounts. After careful consideration of all local conditions, we were able to draw general conclusions. We are giving figures extracted from some of these statements, representing conditions nearest approaching Winnipeg, after adjusting as closely as possible to include corresponding items. Special accounts are excluded. While the figures given do not give accurate comparisons, they are sufficient to show the

points discussed. It is obvious that the identity of the statements must be concealed when it is understood they were given to us in confidence.

	Winnipeg	No. 1	No. 2	No. 3	No. 4	No. 5
<b>Investment—</b>						
Plant and equipment .....	160.07			147.97		
Real estate .....	32.82			5.32		
<b>Total .....</b>	<b>\$192.89</b>	<b>\$150.74</b>	<b>\$113.91</b>	<b>\$153.29</b>	<b>\$151.26</b>	<b>*</b>
<b>Operating costs—</b>						
General .....	1.25	2.50	1.08	*	1.10	5.19
Commercial .....	3.75	6.01	4.60	3.20	3.91	
Operators' wages .....	10.35	6.02	4.45	4.36	4.81	6.84
Other traffic expense .....	1.40	1.34	1.14	1.04	1.26	
<b>Total .....</b>	<b>\$16.75</b>	<b>\$15.87</b>	<b>\$11.27</b>	<b>\$8.60</b>	<b>\$11.08</b>	<b>\$12.03</b>
Maintenance .....	7.00	5.24	5.26	3.80	5.97	6.00
Depreciation .....	9.00	10.62	6.17	4.59	7.43	3.44
<b>Total .....</b>	<b>\$16.00</b>	<b>\$15.86</b>	<b>\$11.43</b>	<b>\$8.39</b>	<b>\$13.40</b>	<b>\$9.44</b>
<b>Total expense .....</b>	<b>\$40.60</b>	<b>\$37.07</b>	<b>\$25.57</b>	<b>\$26.07</b>	<b>\$27.40</b>	<b>\$31.11</b>
<b>Revenue—</b>						
Ordinary .....	31.04	39.92	23.65	32.55	24.58	*
Toll .....	1.03	6.63	8.52	1.60	10.03	
<b>Total .....</b>	<b>\$32.07</b>	<b>\$46.55</b>	<b>\$32.17</b>	<b>\$34.15</b>	<b>\$34.61</b>	<b>\$38.01</b>

\* No item given.

All accounts are made up on averages for the entire year, and not as at the close of the fiscal year.

A complete detailed statement of the Winnipeg exchange is given at the end of this report.

#### INVESTMENT COSTS

Our plant investment shows considerably higher than any other. However, it must be remembered that our comparison covers only cities in the United States, and that cost of material in Winnipeg is at least 27½ per cent. greater because of the tariff. Allowance must also be made for increased cost of labor—we find it averages about 10 per cent. higher than in other cities visited.

We find our Commission using practically no equipment except the Bell standard used by all the Bell companies and manufactured by their own company, the Western Electric Company of Chicago or its Canadian subsidiary, the Northern Electric and Manufacturing Company of Montreal. Our Commission gives the reason that this equipment is the best and their prices are no higher than competitors.

As to quality, there is no question but what Bell equipment is excellent. We find one large independent company, operating in non-competitive Canadian territory, who use principally Bell equipment because they prefer it, there

being practically no difference in prices on competitive goods. They, however, buy considerable equipment from independent manufacturers both because they consider it slightly superior or more recent in certain details and also to inject a little competition into prices, quality and service. We are informed that the provinces of Saskatchewan and Alberta buy freely of independent manufacturers.

The Wisconsin Commission exhaustively tested all kinds of equipment of both manufacture and determined that the Bell is generally not superior to the best of independent manufacture, and further decided that some of the latter is better than the former. The officials of the Bell system are apparently recognizing the ability of independent investigators and manufacturers as they have recently arranged to use several patents obtained and owned by independents.

In itself, there can be no objection to using only Bell equipment. We feel, however, that the purchasing could be better done by introducing competition. Perhaps no better prices could be secured, but certainly quality and service would be stimulated. Along certain lines, the independent equipment seems distinctly superior—for instance, pay station and multi-party instruments.

There is no objection to breaking away from absolute uniformity of standard. We found very fine plants operated and maintained at the very highest standard and at very low expense where different equipment, including large switchboards, of several manufacturers, both Bell and independent, was used.

Excluding real estate, our capital account covers advance construction of 150 per cent. in underground conduits, the most costly portion of our plant, and 50 per cent. in the remainder of the plant. After allowing an ultimate reasonable advance construction, we believe that within a few years, when our development becomes greater, plant investment will become normal. Probably a 50 per cent. increase in total investment will be ample to provide 100 per cent. increase in telephones. This will reduce the unit investment to \$120. This must be considered very reasonable indeed.

We are advised that all land and buildings are carried on the books at cost and that no increment has been added. This is obviously the only correct method of handling this account.

On its face the figure for real estate and buildings seems enormous. We find, however, that there are two lots, one adjoining each the Main and Garry exchanges, which were purchased at a total cost of \$100,000 to provide for future growth and which now are unproductive. This amount, or about \$5 per telephone, can therefore be properly deducted to obtain present costs. The Telephone Commission did not build the present Garry exchange building. This was a legacy from the original government system which had been started before the Bell plant was purchased. At present this exchange could be dispensed with. It represents a book value of \$158,546, or about \$8 per telephone, which can be properly deducted from total real estate cost.

Deducting these two allowances of \$5 and \$8 from the total figure of \$32, leaves a balance of \$19, which may be fairly said to represent present real estate and building investment cost. This figure still includes allowance for over 100 per cent. increase of business, as the ratio of present use to ultimate capacity is substantially the same in each of the exchanges. Then, too, there is the high cost of building in Winnipeg, and the excellent character of the buildings themselves. Those erected by the Commission or the Government are fireproof and

finished with pressed brick or cut stone exteriors. This makes them comparatively costly, which is unnecessary from a commercial standpoint, but which may be desirable considering them as public buildings.

We are advised that even in the largest Eastern cities, the investment in real estate and buildings seldom exceeds \$20 per telephone. Unfortunately we could obtain corresponding figures for only one exchange visited. This shows \$5.32, representing less property in a city where land values are about the same and building costs considerably lower than in Winnipeg. The company in question uses some rented premises which of course reduces its real estate account. Our Commission rent practically nothing.

It is impossible to get any comparative idea of a reasonable cost for real estate and buildings. But we know that without increasing this account at all, about 45,000 lines can be served whereas only 15,000 were in use when these figures were compiled. Allowing a reasonable ultimate reserve, as future business is created the account will be reduced 60 per cent. to 70 per cent. and will undoubtedly not exceed \$10 to \$12 per telephone. While even this amount seems high, it is impossible to criticize it unfavorably after making due allowance for local conditions.

#### OPERATION COSTS

We have made a careful study of comparative operating costs. We find that almost invariably the best independent companies operate considerably cheaper than the Bell companies. They make legitimate savings, and do not obtain their good results by starving the plant or the service.

The analytical departments of the Bell system are wonderful. They know every detail and what it costs. Such necessary expense, however, is only justifiable when it is effective in securing greater saving in operation. This apparently is not accomplished and the usefulness of their results is nullified. For some reason, perhaps through exaggerated departmental division of duties, the administration does not seem to be economical as possible.

The independents have not the enormous overhead expense. They are largely locally owned and managed. Principal subordinates are frequently financially interested. This all tends to lower salaries and greater efficiency. Their statistics are comparatively meagre, but are manifestly sufficient to secure the most economical management. We admire the beautiful Bell organization, but are forced to believe that equally good or better net results are obtainable with a less elaborate structure.

It is curious that many members of the successful independent companies received their training within the Bell school. This indicates that Bell ideas must be good, but that Bell practice seems to hinder their best application.

Our operating costs seem too high in almost every respect. We cannot analyze the situation as we have no knowledge of actual telephone operation. Comparison of accounts is unsatisfactory because of different methods of distribution. The one item of prominence in all reports is that of operators' wages. In this we show greatly increased cost over the other systems, which may be accounted for by our excessively high calling rate and high wage scale, the latter being fully 10 per cent. higher here than in other cities visited except one, where the wages were identical. We are informed that it is exceeded in only one or two places on the entire continent, and then by only a small amount.

The operation of our system seems to show Bell methods. This is but natural as our Telephone Commission is composed of men trained in the Bell

school, and who sincerely believe Bell methods to be the best. They are in constant communication with other Bell companies to secure latest information and improvements. This is commendable, but we believe it is not enough. Greater efficiency and better results should follow the adoption of some of the best independent practices. Let there be a liberal overhead expenditure to ascertain costs and other detailed information, but let this expense be utilized so as to provide greater economies in operation.

### MAINTENANCE AND DEPRECIATION

These must be considered together as the one is largely dependent upon the other. Maintenance covers the upkeep of the plant. It must be sufficient to always insure high efficiency. Depreciation covers the intangible deterioration occurring after the plant has been properly maintained. It also covers obsolescence which is a heavy factor in the telephone business due to rapid improvement in the art.

Our Telephone Commission has maintained our plant to a high standard and in addition has started to set up depreciation reserve at the rate of 6 per cent. per year on plant investment, excluding real estate and buildings.

It is practically impossible for us to judge as to the reasonableness of the total maintenance and depreciation, although it seems too high. We must remember that the Commission have not been able to provide depreciation, and in their efforts to properly maintain the plant, perhaps considerable expense has been included in maintenance which would have been properly chargeable to depreciation. If such is the case the allowance for depreciation should be reduced. On the other hand, with the adoption of more efficient methods and proper treatment of depreciation, maintenance expense should become lower.

Depreciation is the most vexing problem in the telephone business. There are nearly as many different opinions as authorities. We find the general custom is to set aside a specific sum of money annually over a term of years. The amount is determined by the experience of the operating company.

The Wisconsin Commission have established no rule in the matter as each problem has to be treated according to its peculiar conditions. They say, however, that after reasonable maintenance has been provided, 6 per cent. depreciation is fair. This seems to be the general opinion, so we can see no reason to question the action of our Commission in this respect. The matter must be studied always, and the rate of depreciation increased or diminished as conditions change. We think with the business on a sound and better basis, and with more minute accounts, it will be found the total allowance can be considerably reduced.

We recommend that the depreciation reserve set up for last year be merged with that which should have been set up in previous years, and that the total amount of accumulated funds in the general treasury earned by the telephone business be utilized as depreciation reserve to date. As most of our plant is new we think the total will not be far wrong as a correct reserve. This will give a fair foundation for future additions.

This depreciation reserve should be kept intact from all other telephone accounts. There can be no objection to its use by the province, but it should be allowed and credited annually with interest at current rates. This increment will help to lighten the load.

## INSURANCE

We recall no other system which insures all of its subscribers' equipment as is done in Winnipeg. If other well-managed companies consider this unnecessary, we believe it could be dispensed with here and our insurance reduced accordingly.

## REVENUE

Some portion of toll revenue is always credited to the exchange where payment for the call is made. The percentage is usually 20 per cent. among Bell companies and 25 per cent. among independent companies. This always shows as separate revenue upon the financial statement. The amount per telephone may vary from \$1.03 to \$10.03, as shown in the comparative statement in this report.

Winnipeg exchange is credited with 20 per cent., and has the smallest toll revenue of any city we studied. In fact, the toll business here shows no profit whatever as the expense of handling the calls exhausts the revenue. We are in the peculiar situation of a large isolated city. There are no nearby communities of any sufficient size to support any considerable toll business.

It is obvious that where there is considerable revenue from toll, local rates may be reduced materially. This factor must not be overlooked in considering the fairness of rentals. We are advised that the portion of toll business credited to the city exchanges at Montreal and Toronto amounts to \$9 to \$10 per telephone in each city. This augments the revenue derived from the present low rentals so that the total revenue per telephone is higher than the total expense of operation in Winnipeg. This one factor might account largely for the fact that the Bell system in those two cities can operate at a profit at very slightly higher rates than have been charged in Winnipeg and which do not meet expenses. Then, too, an even balance of business and residence telephones is maintained, which raises the revenue.

It will be observed that Winnipeg has the lowest revenue and the highest expense of any of the cities considered. To equalize revenue and expense, it is obviously necessary to increase the former or reduce the latter to the same level. While economies may be introduced in present operation it might be impossible with unlimited service to effect sufficient saving to meet the present annual deficit under existing rates. Therefore rates would have to be increased all around to provide greater revenue. However, under measured service, traffic and resultant expenses would be so reduced as to probably lower the total expense to come within present revenue and thus no general increase in rates would be necessary.

## RATES PROPOSED BY THE TELEPHONE COMMISSION

The proposed schedule is based upon that in force in Denver. We are advised this was the second city on this continent to adopt measured service; New York being the first.

We found the situation in Denver as regards operation practically the same as in Winnipeg, wages being practically identical and other conditions very similar, but with this difference, that they have over 50 per cent. more telephones, and about a correspondingly higher development. These factors are not as essential, however, under measured as under flat rates. Their experience should, therefore, be instructive.



Their measured service was inaugurated ten years ago when they had only about 5,000 telephones. It has been in successful operation ever since.

Their principal message rate is 2c. This was originally determined from the postage rate for city letters prevalent throughout the United States, namely, 2c. per letter. While its origin was crude, it has since proven so fair that it has remained unchanged for the principal classes of service. Minimum charges have been readjusted and the message rate increased for classes of very infrequent service.

We inquired from the Denver Chamber of Commerce how the public receives the measured rate charges. We found they have a committee on telephones who have been considering relations with the public. Its chairman advised us that the plan of measured service was generally accepted as being correct and equitable. There was some complaint as to counting of calls, but they realized the business was one of detail, involving large risk of error. The operating company frankly admitted this difficulty with subscribers, and showed us how they made provision for liberal refunds on disputed accounts. Their records showed, that as a whole, the errors were against them and favorable to the subscribers, because their operators omit the counting of from 2½ per cent. to 3 per cent. of the measured calls. After careful observation of their methods, we believe the chances for error have been reduced to a minimum and their treatment of accounts should satisfy reasonable complaints.

We also found some objection to the rates on the part of the large users. We attributed this somewhat to the natural desire to drive as sharp a bargain as possible with the telephone company, and partly to the unavoidable and unjust discrimination resulting from the continued enjoyment of unlimited service at old flat rates by a few users, due to the fact that service under the old rates has never been refused to old subscribers and has always been denied to new ones.

We felt that their objections to rates were not well founded. The average cost per month to their business users of measured service, individual lines, was \$6.26, this being the company's figures accepted by the Chamber of Commerce as correct. As compiled by their committee, the average flat rate per month for business users in thirteen non-competitive cities was \$7.65, and for twenty-five competitive cities \$6.15. Assuming that the few remaining flat rate business users were all on measured rate basis, this figure of \$6.26 for Denver would not be materially changed. It will be seen that their unit revenue or rental is practically as low as the bare average of the lowest rates elsewhere without considering differences in conditions or service.

There was also some question of legality of present franchise mingled with all of these criticisms.

We, perhaps, should have pursued our inquiries along those lines, but our time was limited, and we felt the complaints were not serious as evidenced by the fact that the Chamber of Commerce had been considering the matter for over a year but had taken no active steps to secure a change.

The effect upon the service is noticeable. The calling rate for the new flat rate users is 10, for all measured service is 4.0, being approximately 5.0 for business and 3.0 for residence telephones. The operators have time to give each call personal attention. Upon request they keep record of busy calls and ring back when the lines are free. They advise what the trouble is, if there is no answer. And best of all, they maintain a 3-second service.

Denver has four different classes of business and six different classes of residence service, excluding private branch exchanges, thus making it difficult to obtain any accurate comparison of their average rentals with what might be reasonably expected in Winnipeg under the Commission's proposed schedule. Excluding extensions and public pay stations, their average revenue for standard business classes and private branch exchanges is substantially the same as our present ordinary business flat rate. Their figure may be increased very slightly after abandonment of remaining flat rate service. Excluding extensions and public pay stations their average revenue for all residence classes is a little more than our present residence rental under flat rates. Their grand average for all classes, including extensions and public pay stations, is slightly greater than that of our own system. These figures are all exclusive of toll revenue.

We examined some of the monthly accounts of the largest users of standard measured service, including private branch exchanges and individual line business and residence users.

Excluding three large petal stores which make a feature of soliciting business by calling daily large numbers of customers, we found a representative account for a large private branch exchange, with forty-three extensions, to be \$176.95, covering tariff charges for equipment, 6,680 calls at 2c. and \$2.85 toll, amounting to practically \$4.00 per instrument excluding toll. Another account, covering twenty-four extensions, 3,456 calls at 2c. and \$69.70 toll, amounted to \$169.82, or \$4.12 per instrument excluding toll charges. Still another covering fifteen extensions, 5,063 calls at 2c. and \$2.10 toll, amounted to \$129.01, or \$8.20 per instrument.

A representative account of a large business user on individual line showed \$4.60 minimum charge, 213 calls at 2c., total \$8.26. Another account showed \$4.00 charge for one instrument full month, \$2.85 charge second instrument part of month, and 770 calls at 2c., total \$22.60.

A representative account of a large residence user showed minimum charge of \$2.50 and 32 calls at 2c., total \$3.14. Another account showed charge \$2.50 and 142 calls at 2c., total \$5.34.

We were informed that many residence users under measured service habitually incur charges exceeding the flat rate, but curiously enough refuse to change their service.

We give herewith a table, on monthly basis, of present rates in Denver and proposed rates in Winnipeg, all standard classes, showing minimum charges, allowances of free calls, and charges for excess calls:

Business—	DENVER			WINNIPEG		
	Minimum	Calls Allowed	Excess each	Minimum	Calls Allowed	Excess each
Individual line .....	\$4.00	50	2c	\$4.00	100	2c
Two-party line .....	3.50	50	3c	—	—	—
Individual line (prepayment service) .....	15c per day	90	3c net	3.00	60	3c
Ten-party line (prepayment service) .....	10c	50	5c	—	—	—
Extensions .....	1.00			1.00		
<b>Residence—</b>						
Individual line (unlimited).....	4.00 flat			4.00 flat		
" " (measured).....	2.50	50	2c	1.50	40	2c
Two-party " .....	2.00	34	2c			

Businesses—	DENVER			WINNIPEG		
	Minimum	Calls Allowed	Excess each	Minimum	Calls Allowed	Excess each
Individual line (prepayment service) .....	10c per day	60	3c	3.00	60	3c
Two-party line (prepayment service) .....	7c	"	42	—	—	—
Ten-party line (prepayment service) .....	5c	"	30	—	—	—
Extensions .....	1.00 (flat service)			.50		
	.50 (measured)					
	1.00 (desk, coin service)					
	.55 (wall, " " )					
<b>No. 1 P. B. X.—</b>						
Trunk lines .....	Free	None	2c	2.00	100	
				(first 3,000)	2c	
				(next 2,000)	1½c	
				(over 5,000)	1c	
Switchboard (minimum) .....	3.00			5.00		
Hand generator .....	3.00			—		
Power .....	3.00			—		
Extensions .....	1.00 each (to 20)			1.00 each		
" .....	.50	"	(over 20)			
<b>All Service—</b>						
Installation charge .....	2.50			2.50		

An examination of these items will show many differences in favor of the Winnipeg users.

Assuming that our experience would be similar to that of Denver, we would receive but little more revenue per telephone under the proposed plan than under the present rates and no more than we would have obtained under the old Bell schedule. The final benefit will have to be found in reduced expenses. The cost of accounting will necessarily become higher, but the resulting low calling rate will reduce traffic expense by increasing the number of lines per operator and will also reduce maintenance, depreciation and investment, by cutting down switchboard requirements. We find that a comparison of these items in the Denver and Winnipeg accounts, excluding overhead expense interest and depreciation, shows a net difference of nearly 30% favoring Denver.

On the other hand, we find total expense of operation in Denver to be higher than some other cities operating under flat rates for unlimited service. This might indicate that measured service in itself places too great a burden on the community and that it is questionable if there is any final saving in changing from unlimited to limited service in the same exchange.

The adoption of the principle of measured service is fully discussed in our preceding summary report.

As to the rates themselves as proposed by the Telephone Commission, we believe them incorrect and inequitable. They do not equalize rentals for residence and business classes and thus do not compensate for present disparity in the revenue from these subscribers. They are unsound in that they attempt to give the most expensive kind of service, namely individual line, to residences at a price only reasonable for party-line service. There is no reason why the business user should be unfairly burdened to help maintain residence service.

nor is there any objection to introducing party lines giving excellent service at very low rates. The proposed rates should not be enforced.

### SUGGESTED SCHEDULES

We shall now consider the question from an operating standpoint, analyzing existing flat rate and proposed measured rate schedules and showing suggested schedules for unlimited service, for measured and for a combination of both.

Under Government operation, where no profit is desired, rates become merely costs of operation for the different classes of service. Therefore, in computing local rates, only actual costs, as determined by present conditions, can be used. To depart from this principle will be to completely destroy the truth of the resulting figures, and to introduce elements of speculation and uncertainty which are utterly inconsistent with the principle of government operation at cost and at equitable rates. Of course, for new classifications of service, estimates must be used, for the simple reason that no costs thereof are in existence.

We believe that costs of operation are too high in Winnipeg, but we cannot tell how much or why. We cannot estimate what the saving should be. In order to show truthful rates we must base our computations upon items of present expense, which we believe may be reduced. This, of course, nullifies our rates immediately operating costs become lower. But we cannot depart from the facts and must accept the situation as we find it and base our computations and estimates accordingly.

In the following discussion only information as supplied by the Manitoba Telephone Commission is used. We have computed our own averages and deductions as at Dec. 31, 1911, from unit figures for the entire year. This will affect our totals a little and our averages very slightly, but we believe our resulting computations are substantially correct and our schedules sound.

At the existing flat rates, the revenue is as follows:

Residence lines .....	9132 @ \$25.00—	\$228,300
"    extensions .....	1056 @ 6.00—	6,336
Business lines .....	5039 @ 50.00—	251,950
"    extensions .....	1716 @ 12.00—	20,592
P. B. X. lines and extensions .....	166 @ 450.00—	76,360
Public pay-stations .....	541 @ 100.00—	54,100
Rural stations .....	122 @ 40.00—	4,880

Total revenue from rentals only ..... \$642,518

Total number of lines is 15,510, of which 69% are residence and 31% business.

Average revenue per line is \$41.42.

The calling rates are given as follows:

Average calls per day for residence lines .....	8
"    "    from business lines .....	23
"    "    from P. B. X. ....	50
"    "    public pay-stations .....	6

The above figures are average calls per day from lines, not telephones. The calling rate from telephones would be lower, because there are 4,500 more telephones than lines in the Winnipeg system.

The average number of calls per day per line from all subscribers' lines taken together is 14.4 and per telephone about 11. The total average number of calls per day, based on the above figures, is 224,600.

It is stated that at the end of the year 1907 the ratio of residence to business

lines was 40 per cent. to 60 per cent., it is now 69 per cent. to 31 per cent. Since the residence rate is one half the business rate it is obvious that such unbalanced development will not produce anything like the revenue which there would be if one-half the lines were residence and one-half business, which is the usual proportion. If there had not been this unbalanced development resulting from a too low residence rate, if the usual proportion had been maintained, the revenue from rentals at the end of 1911 would have been \$690,000, or about \$50,000 more than it is now.

It is stated that the loss per line is \$11 from rentals only. If an even development had been maintained this loss would have been only \$7 per line.

This deficit of \$11 per line is not really a loss because an amount arbitrarily fixed of \$12.38 per line has been deducted from the revenue to make up the depreciation fund of 6 per cent. on the investment in plant.

The estimated revenue from local service at the proposed measured rates would be as shown below, using the above schedule of lines and telephones for comparison, and assuming that the average calling rate would be as follows:

Residence lines .....	2.5 calls per day or 912 per year of 365 days
Business line .....	6 calls per day or 1,800 per year of 300 days
P. B. X. lines .....	20 calls per day or 6,000 per year of 300 days

**Average calling rate per day from all lines—4—**

Residence lines, flat rate, 1,600 (estimate) at \$48 .....	\$48,000
Residence (measured) 8,132 at \$18 .....	146,376
Extra calls (480 allowed), 432 at 2c. each from 8,132 lines .....	70,260
Residence extension telephones, 1,056 at \$6 .....	6,336
Business lines, 5,039, at \$48 .....	241,878
Extra calls (1,200 allowed), 600, at 2c. each from 5,039 lines .....	60,468
Business extension telephones, 1,716 at \$12 .....	20,592
P. B. X.'s, 166, at \$300 .....	49,800
Extra calls (1,200 allowed), 4,800, at 2c. from 628 lines .....	60,288
Public pay stations, 541, at \$100 .....	54,100
Rural stations, 122, at \$40 .....	4,880
	\$762,978

The above figures show that the gross revenue might be increased about \$120,460 under the proposed schedule of rates. The average revenue per line would be about \$49.00, and per telephone about \$38.00. The average cost per telephone, assuming that the reduction in operating expense would offset the increased cost of handling measured service, would remain unchanged at about \$38.00.

What the revenue would actually be at the proposed rates cannot be determined in advance, nor can it be even approximated to a reasonable accurate degree because there are so many unknown quantities. It would depend on the following:

1. Number of residence stations at the \$48.00 unlimited rate.
2. Number of residence stations at the \$18.00 measured rate.
3. Calling rate of stations of all classes.
4. Ratio of business to residence stations.
5. Reduction in operating expense brought about by decrease in calling rate.

The first four items cannot be foretold or even guessed for the reason that

no such combination of rates has ever before been presented to subscribers in any city, and consequently there is no data available to work from.

The reduction in operating expense can be safely assumed to be about 30 per cent. to 40 per cent. of the present cost with unlimited service.

The system now is unbalanced, as regards rentals, by reason of the low residence rate. Any reduction in this rate would tend to increase the number of residence telephones, making this condition worse instead of improving it.

It cannot possibly be foretold what the revenue would be until the new rates were tried out for a year or two. The proposed schedule is not sound from a business standpoint and should not be enforced.

The theory of telephone rates, whether for unlimited or measured service, is briefly explained as follows:

Considering any telephone system, there are two general divisions of expense, viz., the cost of plant and the cost of service. The items of expense which come under these two headings are as follows, and for convenience, the charge per line, based on a total of 15,510 lines is given for items 1, 2, 3, 4 and 5, and the percentage value on the investment of items 6, 7, and 8 is also given.

Ref. No.	Item.	Amount.	
1	General .....	\$ 22,500.00	\$ 1.45 per line.
2	Commercial .....	67,500.00	4.35 " "
3	Traffic .....	211,500.00	13.63 " "
4	Insurance .....	8,100.00	.52 " "
5	Taxes .....	1,080.00	.07 " "
6	Maintenance .....	126,000.00	4% on investment less real estate
7	Depreciation .....	192,036.00	6% " " "
8	Interest .....	133,200.00	3½% (average) total investment
		\$761,916.00	

The plant consists of the following items of property and equipment, the amount of the investment in each item is shown, taken from the statement dated November 30, 1911, and the investment per line, based on 15,510 lines is given.

1.	Central office equipment, including switchboards power plants, etc. ....	\$796,890	\$51.38 per line
2.	Sub-stations (equipment on subscribers premi- ses) .....	639,854	41.25 per line
3.	Overhead and underground plant .....	1,763,866	113.72 per line
		\$3,200,610	\$206.35 per line
4.	Real estate .....	656,400	42.32 per line
		\$3,857,010	\$248.67 per line

Considering the entire plant installed for service, a portion of the annual charges against the plant investment, which are insurance, maintenance, depreciation and interest (items 4, 6, 7, 8, in the schedule previously given) must be apportioned equally per line, and the remainder apportioned to the traffic, because a large user will require more switchboard space, consequently becoming a larger user of the central office, equipment, building, etc., and also more

inter-change trunk line facilities than a small user. As regards items 1, 2 and 3, the general and traffic expense must be charged directly against the service and it is customary to charge the commercial expense to service also, because the large user gets more value from the use of directories—it is to his advantage to increase the number of subscribers by canvassing—and his portion of the cost of accounting and collecting is greater than for the small user.

The item of taxes is a straight unit charge against each line, and is not affected by the volume of the traffic. It is so small, however, that it can be included with the other items affected by investment and service.

The total annual charge against the plant—items 4, 5, 6, 7, and 8—is \$460,416.00, which amount is approximately 12 per cent. on the total investment. The exact portion of this amount chargeable to service cannot be determined without making a careful study and appraisal of the plant.

A fair division can be approximated as follows:

The average cost per mile of underground circuits is \$50.00, including conduits. There are about 2,950 miles of inter-change trunk circuits (including spare wires) connecting each exchange in the system with every other exchange. The cost of such circuits is therefore \$147,500.00. The value of the central office equipment is \$796,890.00, and of the real estate \$656,400.00. Total amount of the three items is \$1,600,790.00, or 41 per cent. of the total investment. Since each subscriber makes use of this division of the plant in accordance with the volume of traffic which he originates, it is equitable to divide the 12 per cent. charge in the ratio of 41 to 59, making 5 per cent. chargeable to service and 7 per cent. chargeable to plant. The average investment per line, less P. B. X. switchboards, is \$245.00. Seven per cent. of this amount is \$17.00. This amount then is the basic rate, common to all lines irrespective of the volume of service, and which should be guaranteed as an annual rental before any service is given at all.

The total average number of calls per day from all lines is 224,600, or 72,639,130 per year.

The items of annual expense properly chargeable to service are:

General .....	\$22,500.00
Commercial .....	67,500.00
Traffic .....	211,500.00
Five per cent. on investment .....	192,850.00
<b>Total .....</b>	<b>\$494,350.00</b>

This amount is equal to about .07 cents per call.

The average number of calls originating from residence lines is 8 per day, or 2,920 per year. Therefore, to cover the cost of service from residence lines, an amount of \$24.44 must be added to the basic rate of \$17.00. The final rate for residence lines should then be \$38.00 per year.

The average number of calls originating from business lines is 23 per day or 6,900 per year. Therefore, to cover the cost of service from business lines, an amount of \$49.30 must be added to the basic rate of \$17.00. The final rate for business lines should then be \$65.00 per year.

The average number of calls originating from P. B. X. lines is 50 per day, or 15,000 per year. Therefore, to cover the cost of service from such lines an amount of \$105 must be added to the basic rate of \$17.00. To these amounts must be added \$13.00 to cover the yearly charge of 12% on the value of the

P. B. X switchboards, taken at \$110.00 per line. The final rate for P. B. X. lines is, therefore, \$135.00.

The foregoing statements show plainly how necessary it is, in making rates, to have absolute information as to the calling rate for each class of subscribers.

The rates just given are balanced. By this we mean that they are correct for the particular combination of lines which exists. It would not be satisfactory to base any new schedule of rates on the existing combination of lines, because a change in rates will bring about a different ratio of business to residence lines, which change would, of course, affect the revenue. If there were the same number of business lines as residence, with the same calling averages, the rates would be lower. Assuming our system to be normal with an equal number of business and residence lines and this balance maintained we submit a completed schedule of rates which would, under the assumed conditions, stand for about three years, or until such time as the ultimate capacity of the existing plant is reached. It is based on a balanced exchange of 16,000 lines, of which 8,000 are residence lines and 8,000 business lines. The number of telephones is taken to be 21,000 and the number of P. B. X.'s, 200 (800) lines.

The calling rates are assumed to be as follows:

Residence lines .....	8—2,920 per year.
Business lines .....	20—6,000 "
P. B. X. lines .....	50—15,000 "

In estimating future revenue from unlimited service, it is necessary to base the rates on as high a calling average as may be expected, in order to be on the safe side. The averages just given will be safe, as they are high compared with other systems.

The average cost, including installation of sub-station, equipment, should be about \$30 per telephone, not including P. B. X. switchboards. The average cost of new lines may be taken at \$75 per line. The average cost of P. B. X. switchboards is about \$110 per line.

Since the existing plant provides for a large increase of additional subscribers who will require only sub-station equipment and a certain proportion of circuits including drop wires, the increase in the number of subscribers will then call for an increase in construction expense covered by investment, as follows:

500 lines .....	@ \$ 75.00—\$37,500
1,000 telephones .....	@ 30.00— 30,000
136 P. B. X. lines .....	@ 110.00— 14,960
Total .....	\$82,460

This amount must be added to the present investment, making a total of \$3,939,470.00.

The average investment per line will be \$242.00, not including P. B. X. switchboards, as against \$245.60 before given, which is based on the combination of lines which existed on November 30, 1911.

The small increase in the plant investment will not make any appreciable change in the charge of 12% before explained, of which 5% is chargeable to service and 7% to plant.

The basic rate per line common to all users alike, irrespective of service, is therefore \$17.00.

The total number of calls per year, based on the averages last above given will be 78,560,000.



The cost of general, commercial and traffic expenses for 15,000 lines, using the same costs per line as before given will be about \$310,850.00.

The item of 5% on the investment chargeable to service is \$196,973.00. Total \$507,823.00.

The cost of service per call is, therefore, 65 cents.

The average number of calls per year from residence lines is 2,920. Therefore, to cover the service charge, an amount of \$19.00 must be added to the basic rate—total \$36.00

The average number of calls per year from business lines is 6,000. Therefore, to cover the service charge, an amount of \$39 must be added to the basic rate—total \$56.

The average number of calls per year from P. B. X. lines is 15,000. Therefore, to cover the service charge, an amount of \$97.50 must be added to the basic rate of \$17.00, an additional amount of \$13.00 must also be added to include the plant charge of 12% on the value of the switchboards. Total \$128.00.

There is no reason why party-line service cannot be introduced. Such service has been in successful, continuous operation in almost every American city for the past fifteen years. The party-lines to which we refer are not the old style, with which all the bells ring at the same time and any subscriber can listen to the conversation of any other on the same line, but lines with two or four telephones connected, with selective ringing, so arranged that only one bell rings at a time, and when one subscriber is using the line the others are automatically locked out. Either two- or four-party line service is usual for residence use, but only two-party line service is satisfactory for business use. The proper charge for such service can be determined as follows:

Considering 4-party residence lines, it has already been shown that the average cost of a subscriber's line with one station is \$242. To this amount must be added the cost of three extra stations at \$30.00, equalling \$90.00. Total \$332.00. Seven per cent. of this amount, equal to \$23, is the plant charge, making a basic rate of \$6 per telephone. The four stations would originate 8,760 calls per year, at a cost of \$57. The total annual amount which the line must earn is therefore \$80, or \$20 per station. This is \$16 per year less than the rate for a separate line.

Considering a two-party residence line, to the amount of \$242 must be added the cost of one extra station—\$30. Total \$272. Seven per cent. of this amount or \$19 is the proportion chargeable to plant, making a basic rate of \$10 per telephone. The two stations would originate 4,380 calls per year, at a cost of \$28.47. The total annual amount which such a line must earn is therefore \$48, or \$24 per station, which is \$12 less than the rate for a single line.

Considering a two-party business line the same amount, namely \$19, would apply, and as the total number of calls would be 9,000, a service charge of \$58.50 must be made. Total \$78, or about \$39 per station.

Following is a summary of the above rates which are correct for a balanced system, giving unlimited service:

Residence, individual line .....	\$36.00 per year
Residence, two-party line .....	24.00 per year
Residence, four-party line .....	20.00 per year
Business, individual lines .....	57.00 per year
Business, two-party line .....	39.00 per year
P. B. X. trunk line .....	128.00 per year

Extension telephones not included.

These are balanced rates for a balanced system in which the number of business lines is not less than the number of residence lines.

The making of rates for unlimited service is guesswork because it is not known in advance how many lines there will be in each of the different classes. It is therefore necessary to guess high enough, so as to be on the safe side.

The assumption that a business rate should be higher than a residence rate, when the service is measured, is obsolete. What the user purchases from the telephone system is service, not plant. He should be charged for service in accordance with the amount furnished, and the fixed charges on the plant, common to all, should be guaranteed to the company through the medium of a minimum rental. It might be shown, by making a careful appraisal of the plant, that the average cost of a residence line is higher or lower than a business line. With the system of the size which we now have in Winnipeg it will be fair to all to assume that the average cost of lines is the same for all classes of subscribers. The cost of service depends directly on the volume of traffic. Therefore, why should there be any difference between classes? The quality of the service is supposed to be the same for all. The operator does not know whether a call comes in over a residence or a business line. There are a great many residence subscribers in Winnipeg to-day whose calling rate is much higher than many business concerns, yet they are getting service for half the rate. It can be argued, of course, that a residence telephone is a medium of social intercourse, and also that an increase in the number of residence telephones will result in increased business for the business concerns which also have telephones, and for these reasons the residence rate should be made so low that everybody can afford to pay for the service. Undoubtedly this is why many telephone companies offer a very low residence rate, but when this is done, the business rate must be raised accordingly.

In making rates for unlimited service it is necessary to fix the calling averages at the highest known figures. In making rates for measured service the reverse is the case. The assumption that the volume of traffic originating from unlimited service lines will be reduced about one half or more if measured service is introduced, is demonstrated by the statistics of other companies. We assume for the purpose of determining rates that the calling averages under measured service in Winnipeg will be as follows:

Residence lines, 700 per year, of 365 days equals about .....	2 per day
Business lines, 1,800 per year of 300 days, equals about .....	6 per day
P. B. X. lines, 6,000 per year of 300 days, equals about .....	20 per day

With the same schedule of lines as last before given the total number of calls per year will be as follows:

Residence lines, 8,000 x 700 equals .....	5,600,000
Business lines, 7,200 x 1,800 equals .....	12,960,000
P. B. X. lines, 800 x 6,000 equals .....	4,800,000
Total .....	23,360,000

Under the present conditions there are about 395 local operators earning \$186,300 per year, each operator handling about 500 calls per day. Assuming

that each operator will handle 300 measured service calls per day, there need be only 214 operators to handle the entire traffic. The operating staff expense would therefore be reduced to about \$110,000. As we are now basing computations on 16,000 lines the three items of expense—general, commercial and traffic will be increased to \$310,850. Deducting the amount \$76,300, representing decrease in operating staff expense, the total is \$234,550.

Measured service on a monthly basis will increase the accounting and collecting charge at least \$6,000.00 per year, based on 14,000 accounts. The extra postage will be about \$3,000.00 per year. The installation of 16,000 service meters at \$3.50 each will increase the plant investment by \$56,000. The amounts of all of these items of accounting, postage and meter equipment are a direct charge per line, and do not depend on the volume of traffic. The items of accounting and postage are equal to a charge of about 56 cents per line. The cost of meters is added to the plant investment, making the new total \$3,930,000 (less P. B. X. switchboards). The same amount of 12 per cent. as before will apply, of which 7 per cent. is chargeable to plant and 5 per cent. to service. The value of the plant per line is \$245.00. The amount which each line must earn annually, irrespective of the service given is therefore \$17, plus 56 cents, equalling, say, \$18, which is the basic rate.

The amount chargeable to service (5 per cent. on the investment) is \$196,500. The cost per call will be 1.9 cents, or, say, 2 cents.

It has been shown that the amount of revenue which must be earned is 12 per cent. on the total investment, of which 7 per cent. is guaranteed to the operating company through the medium of annual rental. As the remaining 5 per cent. must also be guaranteed the minimum number of calls allowed is fixed at the figure which will make this guarantee possible. The value of the plant per line is \$245.00. Five per cent. of this amount is \$12.25. Calls cost 2c. each. Therefore each subscriber must agree to use not less than 600 calls per year, or 50 per month.

Charges for all classes will be as shown in the following tables:

#### INDIVIDUAL LINE

##### Trunk Line, P. B. X.

No. calls used annually.	Cost of calls.	Basic rate.	Total annual rate.	Cost per month.
600	\$12	\$18	\$30	\$2.50
800	16	18	34	3.00
1000	20	18	38	3.25
1200	24	18	42	3.50
1500	30	18	48	4.00
1800	36	18	54	4.50
2100	42	18	60	5.00
2400	48	18	66	5.50
2700	54	18	72	6.00
3000	60	18	78	6.50
4000	80	18	98	8.25
5000	100	18	118	10.00

The estimating of additional expense for measured service cannot be accurate. Our figures should be substantially correct for individual lines as such

classes are already established and data obtainable. The conditions of party-service are entirely unknown, and it would be well to provide slightly additional revenue for contingencies until thoroughly tried out. The basic rates for two and four-party lines are \$10 and \$6 respectively. Adding minimum service charge makes \$22 and \$18 respectively as minimum yearly charges. It will be conservative and not unreasonable to load the former figure \$2, making the annual charge an even \$24. The rate of \$18 should remain unchanged.

#### Two-Party Line

No. calls used annually.	Cost of calls.	Basic rate.	Total annual rate.	Cost per month.
600	\$12	\$12	\$24	\$2.00
800	16	12	28	2.25
1000	20	12	32	2.75
1200	24	12	36	3.00
1500	30	12	42	3.50
1800	36	12	48	4.00
2100	42	12	54	4.50
2400	48	12	60	5.00
2700	54	12	66	5.50
3000	60	12	72	* 6.00

#### Four-Party Line

600	12	6	18	1.50
800	16	6	22	1.75
1000	20	6	26	2.25
1200	24	6	30	2.50
1500	30	6	36	3.00
1800	36	6	42	3.50
2100	42	6	48	4.00
2400	48	6	54	4.50
2700	54	6	60	5.00
3000	60	6	66	5.50

These rates are reasonable, and it is apparent from the process of computation that the telephone system cannot lose. Each class stands firmly by itself and it makes no difference whatever how large or disproportionate become the different classes of subscribers. The rates are computed on a low calling average. Actual operation may show the average calls will be higher, and some profit may result thereon. If this proves material, the message rate could be reduced accordingly.

It is perfectly correct to go one step further and, by introducing flat rates, make a combination schedule. This is done by many telephone companies. Since unlimited service rates, if offered in connection with measured rates, will be taken advantage of only by large users, it is necessary to make them high enough to cover the greatest number of calls which each class may originate. It would not be satisfactory to offer the same rates as before shown for a straight unlimited service schedule in conjunction with measured rates as they are not high enough. A fair rate for unlimited residence service lines would be \$48, and for business lines and P. B. X. trunks, \$120 per year.

A comparison of the above schedule of measured rates with those proposed by the Telephone Commission clearly shows that the residence rate of \$18 is very

much too low, and the business rate of \$48 is too high for separate line service, but, considering that the ratio of residence to business lines is unusually high, the business rate of \$48 is much too low, if the rate of \$18 is to be maintained. It would not be safe to put in force the Commission's proposed rates as they will place an unfair burden on the business user, and, as the ratio of residence to business telephones increases, this load will become greater.

### ACCOUNTING

We find there has been a revolution in telephone accounting during the last five years. This has been primarily occasioned by the Wisconsin Railroad Commission, who have successfully introduced uniform classification of accounts throughout their State, for the purpose of comparing like utilities in different cities. They have practically shown all utilities what it costs them to do business for their different classes of service, and are insisting that they keep their running accounts so that this information is always available. Their method is nothing more nor less than modern cost accounting. Previously, these figures could only be determined by special studies in each particular instance. They have given the matter such a thorough and systematic overhauling that their results have been hailed with delight, particularly by the Telephone companies. The Bell system had very good methods, but they have made many changes in conformance with the Wisconsin system.

As there is no measured service in their state, the Wisconsin system is particularly arranged for flat rates, but is readily adaptable to measured service.

It is noticeable to us, the difference in the figures as set forth by the companies operating in Wisconsin and those provided us by our Telephone Commission. It would seem as if the methods used here are not nearly as complete and comprehensive as those required by Wisconsin. We recommend that the Wisconsin system be adopted, with perhaps a few minor changes to suit local conditions.

This system is not expensive, as demonstrated by its willing use by the companies in Wisconsin.

We further recommend that our real estate investment be segregated, to be charged with its proper expenses and credited with rent properly distributed among the different departments.

### PUBLICITY

One of the objects of this inquiry is to find and remove the causes of misunderstanding by the public and to present the problem in a simple manner. This difficulty would have been largely overcome automatically had our Commission been in the habit of publishing minute detailed accounts from time to time, so that the taxpayer could compare his telephone system with any other he chooses. Publicity of Public Utilities is to-day one of the great questions before the public, and the people of Manitoba can well afford to start with their own telephone system. The separate States in the United States have established, or are considering the establishment of Public Utilities Commissions to accomplish this; also regulation. It seems entirely unnecessary to adopt such a method in Manitoba as far as our telephone business is concerned. We believe our Telephone Commission now enjoys all requisite authority and privilege, and it only remains to publish the proper information and follow the intelligent and reasonable desires of the people.

We believe that our Commission should use every means of getting close to the people. They should publish detailed monthly reports showing comparison

with corresponding months in other years. They should open a central office for city business, where they should display conspicuously striking figures concerning the business.

They should use every possible means of attracting the public to their exchanges to explain and demonstrate the intricate and interesting nature of telephone communication. This can be done largely by featuring it among the schools, both to the teachers and the older pupils. Many people could be attracted evenings, particularly through the different fraternal organizations.

We recommend that this proposed central office for city business be located on a busy street in a large room on the ground floor. In it, and in a conspicuous position, perhaps even in the front windows, let a small complete telephone exchange be set up and operated as an integral part of the general system. Have all apparatus exposed and let well trained guides be present to fully explain all details. We realize that this may seem an extravagance. We feel, however, that its educational feature will be invaluable and the extra expense occasioned by its isolation and small capacity will be returned many fold through resulting better understanding of the intricacy of the business.

We suggest the same scheme for the annual Exhibition, connecting all offices and exhibitors on the grounds. Even with permanent overhead installation and nominal or no charge for service, the expense will not be great, and the benefits will be large.

An energetic soliciting department would not only bring business to the Commission but would keep in close touch with the public. A tactful complaint department at the central office would encourage mutual good will. Courteous reception and removal of grievances, either real or fancied, cannot help but promote pleasant relations with consumers.

But the Telephone Commission cannot do everything in getting close to the public. Every taxpayer must remember he is a shareholder and should do everything possible to secure economy and efficiency. When he sees evidence of waste he should report it directly to the Chairman of the Commission, giving him a chance for instant correction.

#### REVENUE FROM BY-PRODUCTS

We found that some companies are handling all of the police and fire alarm work for their cities. There are the usual police patrol stations and fire alarms in exposed boxes, directly connected with a special switchboard in a main telephone exchange. In addition to this every telephone on the system is a fire and police alarm. The same telephone number in all exchanges connects directly with the fire and police switchboard, and this number is conspicuously displayed on each subscriber's instrument. We believe this service to be a valuable asset to the telephone business and a great protection to the public. Apart from this, the telephone companies are doing the work cheaper and better than the cities could do it for themselves. If local conditions admit, we believe that an arrangement between the city of Winnipeg and the Telephone Commission for similar service would be highly advantageous to both of them and the public. We recommend that this be carefully considered.

Perhaps watchman's service and automatic fire alarm service for factories and large building could be successfully handled.

Another by-product is the calling of subscribers in the morning. Those who wish the central operator to wake them at any specified hour may leave their calls at night. The numbers are classified on large sheets according to the desired time. It becomes the duty of some one operator to call each subscriber

in the morning. This utilizes the plant during an idle time and at, say 2c., will bring in a little revenue. This system is used in many cities to the entire satisfaction of the public.

These are only suggestions. Every possible means of increasing revenue and incidentally reducing expenses should be ferreted out and solicited at a reasonable charge.

#### PAY-STATION SERVICE

Coin boxes for local service only should be "Prepayment" and not "Post-payment." In the former it is necessary to deposit the coin to call central. In the latter the coin is not deposited until after connection is completed with the number called, which is very objectionable, as it delays the service materially. With the prepayment equipment, should the number called be busy, the coin is automatically returned to the user by dropping into a tray on the front of the instrument. This action itself is the notice that connection cannot be obtained.

A serious objection by the public in the past to this kind of equipment is its very advantage from a telephonic standpoint, namely, the inability to call central without first depositing the coin. In cases of emergency this has led to serious results. A new instrument, just marketed by one of the independent manufacturers, completely overcomes this fault. It contains an emergency button which, when pressed connects the instrument with the chief operator who takes any message. She is automatically advised that it is an emergency call and in case no one speaks she notifies the police to go to the premises. No connection with another telephone can be secured in this manner.

We recommend the adoption of this kind of equipment with provision, if possible, for use of both the Canadian five-cent pieces and the American nickels.

#### COUNTING AND CHARGING CALLS UNDER MEASURED SERVICE

The ideal method for measuring service would be to use some mechanical means in the exchange, with connection to device on subscriber's equipment, which would register every time a call is counted at the telephone office. As yet no such contrivance has been finally perfected, and even when the mechanical difficulties are overcome, it may prove to be so expensive that it cannot be generally used.

There are two methods in common use. Either provides a daily record of calls for reference in case of dispute. One is a purely mechanical counter connected with the telephone circuit. It is controlled by a push button on the switchboard in front of the operator. It is so constructed that it cannot register except when its own telephone circuit is in actual use, nor can it register more than once during a single conversation. The expense of installation is about \$3.50 per line, which is quite reasonable. Daily accounts are obtained by daily readings.

The other method is for the operator to mark on a printed form, which is kept before her on the switchboard, the number of the telephone charged with each call. This form is a long narrow strip of paper, with large spaces for the numbers, which are written large and distinctly. These forms or slips are collected frequently, and taken to clerks who sort them and enter upon tally sheets the number of calls for each number. This is done on large sheets with small squares printed on them; in the centre of each square being a telephone number. In this way the entire list is fully covered. As each call comes in

from the switchboard, a simple mark is made in the square with the corresponding number. At the end of the day the tallies are counted, and the number of calls entered in the books of record.

When mechanical counters are used, these printed forms are used by the operators for credits.

All daily figures are footed on the 25th of each month, and the total charged against the subscribers' accounts on the ledgers. This gives a few days' time for computation so that the subscribers' accounts will be received by them on the first of the month. The month's telephone rental is payable in advance, but, of necessity, the charge of calls must be for the preceding month.

Under any system only completed outgoing calls are counted and charged. Every completed call is charged, even if the person wanted is out, as the telephone company has done all it can and is entitled to payment. No charge is made when the line is busy until the calling party has eventually been connected with number wanted. No charge is reversed, under the general rule that all incoming calls are free. No charge is made for calls to any of the telephone offices.

#### AUTOMATIC TELEPHONES

We cannot consider the question of automatic telephone equipment. Our instructions were specific, namely, to inquire into the schedule of rates proposed by the Manitoba Telephone Commission. As these were based on existing conditions, including present plant of manual service, we must confine ourselves accordingly, and therefore cannot consider a hypothetical system embracing totally different conditions and equipment.

#### MANITOBA GOVERNMENT TELEPHONES

##### Winnipeg Exchange

Statement of Investment as at November 30, 1911

	Total	Unit Value per Telephone (basis 20,000)
Plant Investment—		
Equipment, general office .....	\$796,890.00	\$ 39.89
Equipment, sub-stations .....	639,854.40	31.99
Overhead plant—		
Pole lines .....	\$181,210.90	\$ 9.06
Aerial cable .....	339,216.54	16.96
Aerial wire .....	57,480.00— 577,907.44	2.87— 28.90
Underground plant—		
Conduit .....	388,247.10	19.41
Cable .....	797,711.22— 1,185,958.32	39.88— 59.29
	\$3,200,610.16	\$160.07
Real estate .....	656,400.92	32.82
	\$3,857,011.08	\$192.89



**Statement of Expense and Revenue per Telephone  
Year Ending December 31st, 1911**

(Based on average of 18,000)

Operating Expense—	
General expense .....	\$ 1.25
Commercial expense—	
Revenue accounting .....	\$ .75
Revenue collecting .....	1.00
Directories and supplements .....	1.00
Supervision, canvassing, etc. ....	1.00— 3.75
Traffic Expense—	
Operators' wages .....	10.35
Rent, heat and light .....	.40
Supervision, etc. ....	.60
Sundries .....	.40— 11.75
Insurance .....	.45
Total .....	\$17.20
Maintenance and Depreciation—	
Current repairs—	
Aerial plant .....	\$ 2.00
Equipment .....	2.10
Other .....	.50
Station removals .....	2.40— 7.00
Depreciation (6% on \$160) .....	9.00
Total .....	\$16.00
Fixed Charges—	
Interest on real estate .....	\$1.00
Interest on plant .....	6.40
Total .....	\$7.40
Total of all expenses .....	\$4.60
Revenue—	
Rentals .....	\$31.04
20% of toll calls .....	1.03—\$32.07
Deficit .....	\$ 8.53

Note.—Operation expense includes city taxes, \$0.06 per unit.

Advance construction.—

Buildings and underground conduit for 150 per cent. increase

Balance of plant .....

50 per cent. increase  
Number of lines—15,500. Number of telephones—20,000.

Development—10 per cent.

Business and residence telephones, December, 1911—37 per cent. and 63 per cent. respectively.

Average calling rate—11.

Increase in telephones during 1911—25 per cent.

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.75

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.53

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