1929.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.



# PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.



# REPORT

TOGETHER WITH

# MINUTES OF EVIDENCE

RELATING TO THE PROPOSED

# ESTABLISHMENT OF TELEPHONE COMMUNICATION

BETWEEN

# PERTH AND THE EASTERN STATES.

By Authority:
H. J. GREEN, GOVERNMENT PRINTER, CANBERRA.

F.1781.

## MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

*(Sixth Committee.)*

MALCOLM DUNCAN CAMERON, Esquire, M.P., Chairman.

| *Senate.* | *House of Representatives.* |
|---|---|
| Senator John Barnes, | Percy Edmund Coleman, Esquire, M.P. |
| Senator Herbert James Mockford Payne. | Josiah Francis, Esquire, M.P. |
| Senator Mathew Reid. | The Honorable Henry Gregory, M.P. |
| | David Sydney Jackson, Esquire, M.P. |
| | David Charles McGrath, Esquire, M.P. |

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EXTRACT FROM THE VOTES AND PROCEEDINGS OF THE HOUSE OF REPRESENTATIVES, No. 9.

*Dated 22nd February*, 1929.

3. PUBLIC WORKS COMMITTEE—REFERENCE OF WORK—TELEPHONE COMMUNICATION BETWEEN PERTH AND THE EASTERN STATES.—Mr. Gibson (Minister for Works and Railways) moved, pursuant to notice, That, in accordance with the provisions of the *Commonwealth Public Works Committee Act* 1913-1921, the following proposed work be referred to the Parliamentary Standing Committee on Public Works for investigation and report, viz.:—
Establishment of Telephone Communication between Perth and the Eastern States.

Question—put and passed.

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## LIST OF WITNESSES.

# ESTABLISHMENT OF TELEPHONE COMMUNICATION BETWEEN PERTH AND THE EASTERN STATES.

## REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, to which the House of Representatives referred for investigation and report the question of the Establishment of Telephone Communication between Perth and the Eastern States, has the honour to report as follows:—

### INTRODUCTORY.

1. When the transcontinental railway was being constructed the Commonwealth Railways Department proposed to erect for their own purposes telegraph poles along the route to the number of 20 to the mile between Kalgoorlie and Tarcoola, and 22 to the mile between Tarcoola and Port Augusta. On representations being made by the Postmaster-General's Department, however, they agreed to erect 25 telegraph poles to the mile between Kalgoorlie and Tarcoola, and 27 to the mile between Tarcoola and Port Augusta to permit of extra wires being carried for the postal department when required. This involved an additional expense of £24,844, which was paid by the Postmaster-General's Department to the Commonwealth Railways.

2. In 1926 the Parliamentary Standing Committee on Public Works favorably reported on a proposal submitted to improve telegraph communication between Perth and Adelaide by the transfer of the telegraph lines running via the coast—through Eucla and Fowler's Bay—to the transcontinental railway route, and the substitution of copper wires for the old galvanized iron telegraph wires.

3. Foreseeing then, that at some future date it would be necessary to provide telephone facilities between Perth and Adelaide, arrangements were made to provide sufficient room on the poles to permit of telephone wires being also carried when required, and to so locate the telegraph repeating stations, that they would coincide with those that would ultimately be required for the telephone system.

### PRESENT PROPOSAL.

4. With the increase of telegraph business it is represented that further facilities are required to cope with the business offering, and as the time is considered ripe for the provision of telephone communication between Perth and the Eastern States, a dual scheme is now submitted which aims at meeting both these requirements.

5. The proposal is to establish telephone communication between Perth and the Eastern States by utilizing the two existing 300 lb. copper telegraph lines for the provision of a voice frequency telephone circuit. The telegraph traffic would then be carried on high frequency carrier channels upon the present physical lines. This will provide the following facilities:—One voice frequency telephone channel; eight duplex telegraph channels; allowing of sixteen messages being sent simultaneously; and one reserve wire between Port Augusta and Kalgoorlie. As the telegraph traffic increases it will be possible to add two additional duplex telegraph channels to the installation without incurring further capital expenditure at any point intermediate between the two terminals Adelaide and Perth. As the telephone traffic increases two additional telephone channels can be made available without incurring any further capital expenditure in buildings, power plant, or transmission maintenance apparatus. All that would be necessary would be to run another wire on the existing poles.

## ESTIMATED COST.

6. The estimated cost of the proposal as submitted to the Committee is set down at :—

| | £ |
|---|---|
| Buildings .. .. .. .. | 11,600 |
| Telephone and telegraph equipment .. .. | 54,200 |
| Line work, transpositions &c. .. .. | 4,000 |
| Total .. .. .. .. | 69,800 |

and the time fixed for completion about six months from date of commencement.

## COMMITTEE'S INVESTIGATIONS.

7. The Committee carefully studied the proposal and took evidence in Adelaide and Perth from officers of the Commonwealth Department of Works, and the Postmaster-General's Department, and from representatives of the commercial community. It was stated in evidence that the project is really a dual work involving an improved telegraph service as well as provision of a telephone trunk line which will ultimately enable any telephone subscriber in Western Australia to get into telephone communication with any other telephone subscriber in the Eastern States.

### Need for Improved Telegraphic Service.

8. The existing telegraph service provides the only means of rapid communication between Perth and the Eastern States, and it is represented that, with the growth of population in Western Australia, which has been proportionately greater than that of any other State in recent years, and the increasing volume of telegraphic business received by the Department the present channels cannot satisfactorily cope with the traffic. It was stated in evidence that the average time taken to transmit a telegram from Adelaide to Melbourne is six minutes, while between Adelaide and Perth it is 27 minutes. The maximum delay between Adelaide and Melbourne is 22 minutes, but between Adelaide and Perth it is 83 minutes. Even the average delay between Perth and Sydney is 42 minutes. There is no electrical or engineering reason why a message should take longer to pass from one station to another, and the delay is due in this instance to two main causes, namely, inadequate channels between Perth and Adelaide, and the fact that Adelaide has to intercept Sydney business to Perth and re-transmit it. As a telegram is not a telegram unless it is delivered immediately, it is claimed that necessity exists for improving the means of communication between Perth and the Eastern States.

9. It is stated that electrical interference due to the Aurora Australis is also responsible for delays which, on occasions have extended to as much as eight or ten hours. This interference would be eliminated by the provision of a metallic circuit, which is provided for in the proposal under consideration.

The departmental aim is to give a telegraphic service with an average maximum delay of fifteen minutes, but to improve the Adelaide to Perth service to the extent necessary to bring this about, it is estimated that, for the telegraph service alone, it would cost approximately £69,000, which is almost equal to the amount of £69,800 now suggested to give the dual service proposed.

### Need for Telephone Communication.

10. It is represented by the Department that there is a growing desire in Western Australia for telephone communication with the Eastern States, and that the proposed installation would be a payable proposition from the outset. During the course of its investigations an effort was made by the Committee to ascertain the probable users of the telephone if installed. Inquiries made in Adelaide indicated that there was not any great demand for it amongst the Adelaide commercial community, and that no large amount of business could be expected in that quarter. On the other hand, the information obtained in Perth pointed to the fact that the business people there would welcome the service, as many of the banks, insurance companies, and commercial houses have their headquarters in Melbourne and Sydney, and desire rapid personal contact with them at times. Furthermore, owing to Fremantle being the first port of call and last point of departure of overseas vessels, it is anticipated that the telephone would be largely availed of by overseas passengers arriving and departing.



11. Estimating on a conservative basis, the officials of the Postmaster-General's Department calculated that there would be eleven calls per day from Perth, while from Sydney, Melbourne and Adelaide to Perth it is estimated that the calls would reach thirty-nine per day—a total of fifty calls per day, returning a revenue of about £13,000 per annum from the date of opening of the line.

12. Experience with other trunk telephones has shown that once this means of communication is provided, the public readily avails itself of the facility, and the calling rate rapidly increases.

| | |
|---|---|
| Between Brisbane and Sydney the number of calls in 1924 was .. .. .. | 20,379 |
| in 1928 .. .. .. .. .. .. .. | 47,112 |
| between Melbourne and Adelaide the number of calls in 1924 was .. .. .. | 35,274 |
| in 1928 .. .. .. .. .. .. .. | 56,023 |
| and between Sydney and Melbourne the number of calls in 1924 was .. .. .. | 66,766 |
| and in 1928 .. .. .. .. .. .. .. | 165,151 |

and it is anticipated that once the service is well established, the calling rate between Perth and the Eastern States is likely to increase in something like the same proportion.

### Quality of Service.

13. Some doubt was expressed as to the quality of service that might be expected over this length of line, but the Committee was assured that, with the latest developments in telephone science, and the employment of amplifiers at seven repeating stations between the terminal points as proposed, it will be possible to get a service that will be perfectly satisfactory in all respects. This should have the effect of dissipating to some extent the feeling of isolation from the rest of Australia experienced at times by many of the inhabitants of Western Australia.

### Wireless.

14. During the course of its investigations the Committee made inquiries as to whether the rapid developments of wireless telephony would be likely to lead to a land line such as contemplated being superseded at an early date. It was explained, however, that the Postmaster-General's Department is keeping in close touch with all modern developments of wireless, and most of the experts consulted were of opinion that, owing to lack of secrecy and the possibility of atmospheric interference it is unlikely that this telephone line, if provided, will be supplanted by wireless communication at any rate for many years.

### Charges.

15. It was stated in evidence that although the rate for conversations between Perth and Adelaide had not yet been fixed, it was thought that on the proportionate rate charged on other trunk lines, it would work out at about 15s. for a three minutes conversation. It was represented that this rate compares favorably with the rates charges in other parts of the world. As a matter of comparison it may be mentioned that the rates for a three minutes telephone conversation in Australia, Great Britain, and the United States of America are :—

| | 100 miles. | 200 miles. | 400 miles. |
|---|---|---|---|
| | s. d. | s. d. | s. d. |
| Australia .. .. | 1 4 | 2 4 | 4 4 |
| Great Britain .. .. | 2 6 | 4 6 | 8 6 |
| United States .. .. | 2 11 | 5 6 | 10 8 |

so that the Committee considers that the rate of 15s. mentioned is not unduly high for the service rendered.

### Possible Savings.

16. In addition to improving the telegraph service it is represented that the proposal submitted will eliminate a lot of manual operating and is expected to lead to a direct saving in operating costs of from £7,000 to £10,000 per annum.

### Buildings.

17. Between the two terminal points of the proposed line there will be seven repeater stations, namely, at Gladstone, Port Augusta, Tarcoola, Cook, Rawlinna, Kalgoorlie, and Merredin. At Tarcoola and Rawlinna respectively it is proposed to erect a repeater station and two cottages for the staff. It is also proposed to erect a small building at Merredin. The repeating stations are to be of brick with concrete floors and galvanized iron roofs, and will comprise five rooms. For the accommodation of the staff it is proposed to erect timber cottages containing three bedrooms and living room, kitchen, and wash-house and bathroom combined. The total estimated cost of these buildings has been set down at £11,600.

18. The repeating stations have been designed in co-operation with the officials of the Postmaster-General's Department who consider them suitable for their purposes. Inquiries made by the Committee in regard to the class of cottages proposed indicated that they are of similar types to residences which have been in use for some time along the trans-continental railway line, and have been found satisfactory.

## FINANCIAL ASPECT.

19. The estimated cost of the project now submitted is £69,800. Added to the telegraph system now in operation the total cost is £225,100.

The annual charges of the existing telegraph system are £49,600.

| | £ |
|---|---|
| The estimated annual charges of the proposed dual system are set down at | 49,300 |
| of which it is proposed to charge against the telegraph service | 39,700 |
| and against the telephone service | 9,600 |
| The estimated annual revenue from the dual system is set down at | 55,000 |
| of which it is expected the telegraph services will contribute | 42,000 |
| and the telephone service | 13,000 |
| The assets thrown spare on the establishment of the proposed system are estimated to have a recoverable value of | 24,200 |

## COMMITTEE'S RECOMMENDATION.

20. Under the circumstances the Committee is unanimously of opinion that the proposal as submitted should be approved. As 1929 marks the centenary of the foundation of Western Australia it is considered that it would be a graceful gesture if an effort could be made to have the work completed during this year.

M. D. CAMERON,
Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Parliament House,
Canberra. 16th August, 1929.

# MINUTES OF EVIDENCE.

*(Taken at Melbourne.)*

FRIDAY, 31st MAY, 1929.

*Present:*

Mr. M. CAMERON, Chairman;

| | |
|---|---|
| Senator Barnes | Mr. Coleman |
| Senator Payne | Mr. J. Francis |
| Senator Reid | Mr. McGrath. |

John Murray Crawford, Chief Engineer, Postmaster-General's Department, sworn and examined.

1. *To the Chairman.*—I am aware of the proposal to establish telephonic communication between Perth and the eastern States. It will be possible to speak from Perth, not only to Adelaide, but also to the other capital cities of the mainland. I have been concerned in the preparation of the details of the proposal. The demand for telephonic communication with Western Australia has been more or less articulate for some time. The department is now able to provide the desired accommodation with a minimum of expense. The proposal is to establish telephone communication between Perth and the eastern States by utilizing the two existing 300-lb. copper telegraph lines for the establishment of a voice frequency telephone circuit. The telegraph traffic would then be carried on high frequency carrier channels upon the present physical lines. The proposal includes provision for the following facilities:—One voice-frequency telephone channel; eight duplex telegraph channels; one reserve wire between Port Augusta and Kalgoorlie. The telegraph channels will carry all the departmental and Cable Company's traffic between Perth and the eastern States. The grade of telegraph service will be higher than that given at present. As the telegraph traffic increases, two additional duplex telegraph channels can be added to the installation without incurring capital expenditure at any point intermediate between the two terminals Adelaide and Perth. The telephone channel will provide first grade telephone service. As the telephone traffic increases, two additional telephone channels can be added to the installation without incurring any further capital expenditure in buildings, power plant, or transmission maintenance apparatus. All that would be necessary would be to run an additional wire on the existing poles. The estimated immediate cost of the work is:—

| | £ |
|---|---|
| Buildings | 11,600 |
| Telephone and telegraph equipment | 54,200 |
| Line work, transpositions, &c. | 4,000 |
| Total | £69,800 |

The revenue to be derived can only be estimated approximately, but it is anticipated that not less than £13,000 per annum will be obtained from the proposed telephone system. The annual charges for the proposed telephone system are estimated to be £9,600.

*Capital Costs.*

| Item | £ |
|---|---|
| 1. Estimated capital cost—new | 69,800 |
| 2. Estimated capital cost—new and *in situ* | 225,100 |

*Annual Charges and Revenue—Telephone System.*

| | £ |
|---|---|
| 3. Estimated proportionate annual charges of proposed telephone system | 9,600 |
| 4. Estimated annual revenue of proposed telephone system | 13,000 |

*Annual Charges and Revenue—Telegraph System.*

| | £ |
|---|---|
| 5. Annual charges of existing telegraph system | 49,600 |
| 6. Estimated proportionate annual charges of proposed telegraph system | 39,700 |
| 7. Estimated annual revenue of proposed telegraph system | 42,100 |

*Recoverable Assets.*

| | £ |
|---|---|
| 8. Assets recoverable and thrown spare on establishment of proposed system— | |
| (i) Book value | 30,850 |
| (ii) Recoverable value | 24,200 |
| (iii) Cost of recovery | 400 |

The difference between sub-items (i) and (ii) of item 8, namely, £6,650, will have to be written off in the departmental accounts as representing the proportion of the capital outlay on the original assets which is irrecoverable and includes, chiefly, depreciation due to wear and tear and labour in installation. Several years ago I put forward a proposal to transfer the telegraph lines from the coast to the transcontinental railway. The work of transfer cost about £143,000. Between Port Augusta and Kalgoorlie there are three 300-lb. copper lines—that is, 300 lb. of copper to the mile. Two of those lines have been used by the Telegraph Department and the third by the Eastern Extension Company. When the railway was constructed we foresaw the necessity for providing telegraph and telephone communication between Perth and Adelaide and arranged with the railway authorities to provide additional poles at our expense. That work was finished about four years ago. Since then a much more stable telegraph service between Perth and the eastern States has been provided. Provision was also made for a telephone service. On the line between Port Augusta and Kalgoorlie we provided for transpositions for a telephone service. From time to time representations have been made by various bodies for a telephone service between Perth and Adelaide. The shipping interests, the stock-brokers and others have combined to ask for such a service. The department now feels that it is justified in providing this service. It is proposed to provide a telephone service on the existing 300-lb. copper wires and to transfer the telegraph work from the physical lines to a carrier system. It is proposed to establish a voice frequency telephone service—that is, a frequency of from about 200 to 2,500 cycles per second. All ordinary trunk telephones are voice-frequency telephones. When a person speaks into the transmitter of a telephone the vibrations set up by the vocal cords of the larynx are conveyed to the diaphragm of the transmitter which vibrates accordingly. Those vibrations are transmitted through an induction coil along the line at the other end of which the voice is reproduced. A very deep bass voice would have a frequency of about 32 cycles per second, but

the average frequency of the normal voice ranges between 200 and 2,500 cycles per second. The carrier system will start at about 3,000 cycles per second with a range to about 10,000. The carrier service will enable ten separate channels of communication to be provided. At present eight messages can be sent on the one wire at the same time. It is proposed to have direct communication between Perth and Sydney. We already have a telegraph carrier system in operation between Melbourne and Sydney, and also between Melbourne and Adelaide. The business between Perth and Sydney will not be handled at any intermediate point. A Murray multiplex system will be installed, which will carry three channels either way. Ultimately there will be ten channels providing a high-frequency service. A Murray multiplex three-channel system will also be utilized between Perth and Melbourne and between Perth and Adelaide. That is to say, there will be three Murray multiplex three-channel systems working on three separate channels. One of the 300-lb. copper wires has been used exclusively by the Eastern Extension Cable Company at a rental which recouped the department for all expenses incurred. It is intended to give the company one of the eight carrier channels. Provision will also be made for forked circuits. That is to say, it will be possible to send messages between Adelaide and Sydney either through Melbourne or through a physical line passing through Wentworth and Deniliquin. In the case of any interruption of the main line between Adelaide and Sydney the alternative channel could be used. The remaining channels are known as spare channels. The change will accomplish two things. First, it will provide a necessary telephone service to Western Australia, and, secondly, it will reduce the cost of the present telegraph service. It is difficult to estimate the revenue from the new system. We can only base our estimates on the experience of other cities. We anticipate a minimum of 50 calls per day between Adelaide and Perth. Between those two terminal points there will be seven repeater stations at Gladstone, Port Augusta, Tarcoola, Cook, Rawlinna, Kalgoorlie, and Merredin. At two of those stations cottages for the staff costing about £1,200 each will be required. The capital cost includes the provision of necessary transpositions, which will be provided between Kalgoorlie and Perth and between Port Augusta and Adelaide. It is difficult to divide the annual charges between the telegraph and telephone systems. The present proposal is to charge 15s. for a conversation lasting three minutes between Perth and Adelaide, a distance of 1,686 miles. The present charges for a three-minutes' conversation between Melbourne and Sydney, a distance of 590 miles, is 5s; between Melbourne and Brisbane, a distance of 1,254 miles, the charge is 10s.; between Melbourne and Adelaide, 497 miles, 4s. 8d.; between Sydney and Brisbane, 664 miles, 5s. 8d.; between Sydney and Adelaide, 1,067 miles, 9s. 8d. The estimated daily loads are conservative, and I have no doubt that the estimate will be exceeded. A message unit comprises five words each containing 5.5 characters. Experience has shown that a message unit occupies about twelve seconds manual operations. Telegraph operators work at different speeds, but the message unit mentioned is the average based on actual performances. Between Perth and Adelaide the average daily load is 3,312 message units, and between Adelaide and Perth 3,156 message units. Between Perth and Melbourne 6,696 message units are transmitted daily, and between Melbourne and Perth 5,726 message units. It will, therefore, be seen that between Adelaide and Perth 6,468 message units are transmitted daily, between Perth and Melbourne 12,422 message units, and between Perth and Sydney 12,162 message units. As the whole of those messages are transmitted over the line between Perth and Adelaide the total transmission represents 31,052 message units daily. It will be seen that the traffic from west to east is greater than that from east to west showing that the number of originating messages at Perth is greater than the number of messages received there. After parliamentary approval has been obtained, about seven or eight months should suffice to complete the work. The £54,200 estimated for telephone and telegraph equipment is made up as follows:—Carrier apparatus, including amplifiers, filters, and balance net works, £29,410; repeaters, £1,560; power plant, £5,300; the balance being necessary to provide buildings, labour, &c. The £4,000 set down for line work, transpositions, &c., is for work between Port Augusta and Adelaide, and between Kalgoorlie and Perth. The transpositions on the Trans-continental line have already been done. I am convinced that the financial outlook in this connexion is satisfactory. The business people in the various capitals have asked for the service. A greater volume of traffic takes place between Perth and Sydney than between Perth and Melbourne, and a great deal more than between Perth and Adelaide. The greater the traffic between Perth and Sydney the more remunerative the service will be. We can take a heavier volume of traffic between Melbourne and Adelaide and between Melbourne and Sydney than the lines now carry, so that every additional message unit transmitted over those lines will be practically all clear profit. We have not debited that traffic to this proposal, but have debited to it one-sixth of the telegraphic traffic between Perth and Melbourne and one-eighth of the traffic between Perth and Sydney. The distance between Perth and Sydney is 2,733 miles, but that is not the limit of the service we can give. Indeed, there is practically no limit to the distance over which conversation by telephone can be conducted. With this system in operation it should be possible to speak between, say, Albany in Western Australia and Cairns in North Queensland. In the item "Estimated capital cost, new and *in situ*, £225,100," is included the cost of the copper lines between Adelaide and Perth. The line between Adelaide and Port Augusta is old, but the whole line will nevertheless be good. I regard the proposal as urgent, because at present Western Australia is entirely cut off from the rest of the Commonwealth except by telegraph. The telegraph system of the Commonwealth shows a loss each year, but the telephone system just about pays its way. The loss incurred by the telegraph section is partly due to the low rate charged for press messages. The establishment of this new system will not mean a heavier burden of taxation on the taxpayers of Australia. On the contrary, it will reduce our present telegraph charges by about £7,000 per annum.

2. *To Mr. J. Francis.*—I have visited Perth, where the installation of a telephone system with the eastern States is a burning question. I am convinced that there is a demand for a telephone service. The plant proposed to be used will be new, and will provide an up-to-date service. As far as possible, articles of Australian manufacture will be utilized.

3. *To Senator Reid.*—The telegraph charges will be reduced because of the reduced costs of operating. Much of the manual operating will be done away with. Our present operating costs are £20,907 per annum. Under the proposed system they will be £13,870, showing a saving of £7,037. A lot of manual operating at Adelaide and Melbourne will not be necessary with the new system in operation, but there will be additional repeating stations. With the new system in operation, instead of 30.5 telegraphists only 23 will be required at Perth; at Kalgoorlie we will save one telegraphist; at Cook, 1; at Port Augusta, 1; at Adelaide, 4; at Melbourne, 4.5; and at Sydney, 4.5. There will be less manual transmission at the intermediate points, although the work to be done will be more skilled. It will not be necessary to dismiss any telegraphists, as retirements, deaths, and natural wastage will make that unnecessary. The total staff will be reduced eventually, but it will not be necessary to discharge any men. There is practically no limit to the distance over which telephone conversations can be conducted. It is already possible to speak from San Francisco to London, and on through Paris to Constantinople. If difficulty has been experienced in connexion with conversations between Canberra and Brisbane, there must have been something wrong with the line. There should be no difficulty in speaking between those two places. The greater the distance the greater the number of repeaters necessary. The high frequency carrier system travels along the ordinary wires. The two lines will actually carry about sixteen frequencies. In our financial considerations we have not overlooked Kalgoorlie. We do not expect a loss even in the first year of operation, and every subsequent year we expect the system to pay better. Before the telegraph service along the Trans-continental line was installed there was a line along the coast, but it was not nearly so reliable as the present system. The old lines have not been removed, but are now used for telephone purposes, and, I believe, are a paying proposition.



4. *To Mr. McGrath.*—The £225,100 shown as the estimated capital cost represents plant already in existence. New plant is estimated to cost £69,800. I am not certain whether the press is granted concession rates for the telephone as well as the telegraph. The department has considered the development of wireless and its possible effect on telephone business. We feel, however, that a wire service will always be necessary. Some of the material required is not manufactured in Australia.

5. *To Senator Payne.*—In arriving at our estimate of revenue we based our calculations on the existing telegraphic business. Any telephone revenue will be entirely new. I entered the department just after the telephone service between Melbourne and Sydney was installed. I was in the department when the Melbourne to Adelaide system was established. Our estimate in the latter case was on the conservative side. I have no doubt that the revenue anticipated will be received. When the Melbourne-Sydney service was inaugurated there was only one circuit. Later it was increased to two. Then we superposed a carrier service giving three more circuits, and later still an additional three circuits, making eight in all. The service between Adelaide and Brisbane should be satisfactory. I have heard no complaints about it.

6. *To the Chairman.*—There should be no difficulty in speaking from Adelaide to Ipswich.

7. *To Mr. Coleman.*—It is not possible to speak between Adelaide and Perth. There is no telephone service between Port Augusta and Kalgoorlie.

*The witness withdrew.*

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Ernest Harold Bourne, Chief Inspector of Telegraphs, Postmaster-General's Department, sworn and examined.

8. *To the Chairman.*—I am aware of the proposal to establish a telephone service between Perth and the eastern States. I was concerned in the preparation of the details of the proposal, which was formulated in harmony with the department's policy of improving and extending telephone and telegraph facilities. Between Perth and Adelaide there are three copper telegraph conductors. It is proposed to utilize two of those conductors to form a voice frequency telephone channel. That will enable the trunking system of the eastern States to be extended to Perth, so that subscribers in Western Australia will be able to communicate by telephone with subscribers in the eastern States with as much ease and satisfaction as subscribers connected in a metropolitan network can now converse. In order to secure that service audio frequency telephone repeaters will be employed. They build up the voice frequency currents at pre-selected points. The release of the two copper wires for telephone purposes will enable us to superpose over those wires a high frequency telegraph carrier service, ultimately giving ten independent carrier channels capable of taking care of our telegraph requirements. The same wires will be used for both telephone and telegraph purposes.

9. *To Mr. McGrath.*—There will be no interference with the telegraph work. The arrangement can be seen from the blue print before the committee. Between Perth and Adelaide there are two copper wires—shown by straight white lines. It will be possible to speak by telephone from Perth to Adelaide or to Melbourne, Sydney or Brisbane or any intermediate point, and at the same time to employ the same pair of wires for telegraph messages. A subscriber connected with an automatic exchange at Perth requiring a Sydney subscriber would have to get in touch with "Trunk Lines", and ask for Sydney. The eight carrier channels are shown by numbers at both ends of the diagram. The object of providing telegraph channels is to enable the department to provide direct telegraphic communication between Perth and Adelaide, Perth and Melbourne, and Perth and Sydney. At present telegrams between Perth and Sydney are intercepted at Adelaide and sent on automatically as an independent transmission. That involves additional cost and labour at Adelaide as well as delay. Hobart is provided with cable and land line communication with Melbourne. Telegraph business originating on the mainland is prepared for transmission by the Wheatstone system. Tenders have recently been invited for a radio telephone service to Tasmania. The submarine cable is unsuited for telephone work.

10. *To the Chairman.*—From the commencement of operations the work of installation would take about six months. The department could not commence the work immediately because a number of transpositions will be involved. The Telegraph Department will benefit to the extent of about £10,000 per annum in reduced operating charges when the new service is installed. Between Perth and Adelaide there are now three Wheatstone-Creed channels. One of those channels is used for business between Perth, Adelaide and Sydney, the second for business between Perth and Melbourne, and the third for business between Perth and Adelaide. The last mentioned is used by the Eastern Extension Company. The Wheatstone-Creed system involves heavier operating labour charges than would be necessary with the machines contemplated. Immediately the change is made it is intended to release the third wire and have it available in case of trouble on the other two wires. The Eastern Extension Company's business will be carried on one of the duplex carriers. The carrier wave system is one which employs suitable bands of frequency. Electrical filters are employed with a view to the segregation of those bands in such a manner as will enable independent transmission to take place over each of the bands without interference with one another. With the new system in operation there will be a more rapid telegraph service than now exists. Under normal conditions there should be no difficulty in maintaining a fifteen-minute telegraph service between Perth and each of the eastern capitals. The new service should be a distinct improvement on the existing service. If is expected that the new system will show a profit of about £2,400 per annum on the telegraph side and about

£3,400 per annum on the telephone side. I am not aware what applications have been received from business people in the eastern States for a telephone service with Western Australia; I know that there have been representations.

11. *To Mr. McGrath.*—The capital cost of the proposal is estimated to be £69,800 and the annual charges for the proposed telegraph service £39,700. The revenue we expect to derive from the new service is estimated at £42,100 per annum. We cannot make any saving now because the Wheatstone-Creed system is costly to operate, and also because we have to pay for repeater-attendants at Adelaide for the Perth-Sydney load. With the new system that will not be necessary. Altogether about 25 less operators will be required. The telegraph revenue will not be affected by these proposals, as we expect no diminution of telegraph business. On a shorter service it has been found that telephone competition affects telegraph revenue, but in this case the comparatively high charges will mean very little interference with the telegraph revenue.

12. *To Senator Payne.*—The telephone service between Melbourne and Sydney has retarded telegraph expansion sufficiently to warrant the introduction of a publicity campaign designed to create new telegraph business.

3. *To the Chairman.*—I regard this proposal as urgent because of the delays which now occur in the transmission of telegrams from Perth. Those delays are greater than the standard we have set ourselves to achieve. The completion of this work will give to Western Australia a modern telegraph service similar to that already enjoyed by the eastern States. The telegraph system of the Commonwealth incorporates very modern development in telegraphy. New methods do not involve the department in heavy expense. The system is costly, but the expense is off-set by the ... to capon existing physical channels. There will be no added burden on the taxpayers of Australia. By giving an improved service we hope to recover business now lost through telephone competition and to open up new fields of telegraph business. The primary cause of the deficit in the Telegraph Department is the low tariff charge. It is probably the lowest tariff in the world. The rates for press messages in Australia are much lower than they are in other countries. I am not aware whether special rates are granted the press for telephone messages.

4. *To Senator Payne.*—Many years will elapse before we need fear any serious competition from wireless services designed to compete with the telegraph. We are, however, feeling the effects of popular broadcasting. Prior to the development of wireless broadcasting, the Telegraph Department derived a considerable revenue from race meetings, but since the descriptions of the races and the starting prices and results have been broadcast, the telegraph service has not been utilized. The department is taking steps to popularize the telegraph service, and has received considerable encouragement from the results already obtained. The department has two objects in view, namely to make the service pay, and so to improve the service as to make it attractive.

15. *To Mr. Francis.*—Every modern appliance known to us will be utilized in the proposed service and, as far as possible, Australian material will be used. No material discarded from elsewhere will be used; only new material will be utilized.

*(Taken at Melbourne.)*

SATURDAY, 1st JUNE, 1929.

*Present:*

Mr. M. CAMERON, Chairman.

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|---|---|
| Senator Barnes | Mr. J. Francis |
| Senator Payne | Mr. Jackson |
| Senator Reid | Mr. McGrath. |
| Mr. Coleman | |

Lawrence Bede Fanning, Chief Inspector of Telephones, Central Administration, Postmaster-General's Department, sworn and examined.

16. *To the Chairman.*—I am aware of the proposal to establish a telephone service between Perth and the eastern States. The proposal before the committee is a dual one, namely, improved telegraph service, and the provision of a telephone channel between Perth and the eastern States. The scheme contemplates the utilization of the most modern and scientific means available for providing telephone and telegraph communication. A high-frequency telegraph carrier service will be installed and a voice-frequency telephone channel obtained by using two of the existing 300-lb. copper telegraph wires. The complete system will provide the following facilities:—One voice-frequency telephone channel; eight carrier telegraph channels; one reserve wire between Port Augusta and Kalgoorlie. The proposed system has been chosen after an exhaustive examination of the position from all points of view as the best and most economical method of providing satisfactory telephone and telegraph communication between Perth and the eastern States. The financial aspect of the proposal is as follows:—

CAPITAL COSTS.

| Item. | £ |
|---|---|
| 1. Estimated capital cost—new .. | 69,800 |
| 2. Estimated capital cost—new and *in situ* | 225,100 |
| *Annual Charges and Revenue—Telephone System.* | |
| | £ |
| 3. Estimated proportionate annual charges of proposed telephone system .. | 9,000 |
| 4. Estimated annual revenue of proposed telephone system .. .. | 13,000 |
| *Annual Charges and Revenue—Telegraph System.* | |
| | £ |
| 5. Annual charges of existing telegraph system .. .. .. .. | 49,600 |
| 6. Estimated proportionate annual charges of proposed telegraph system .. | 39,700 |
| 7. Estimated annual revenue of proposed telegraph system .. .. .. | 42,100 |

The existing telegraph service provides the only means of rapid communication between Western Australia and the eastern States. For some considerable time there has been a growing demand for the establishment of a telephone link between Perth and Adelaide. After careful consideration of all the facts, it is considered that, apart from the national importance of the service proposed, telephone facilities are necessary from a commercial stand-point. From inquiries made it would appear that at the outset approximately 50 calls daily will be forthcoming between Perth and Adelaide, Melbourne, and Sydney. The revenue, which it has been estimated will be derived from this business is dependent upon the tariff to be charged. This point has not yet been definitely settled, but assuming that a charge of 15s. was made for each three minutes' conversation between Adelaide and Perth, and allowing for the reduced rates at night time, the revenue in the first



year would amount to approximately £13,000. As an indication of the increasing popularity of the telephone trunk line service in the Commonwealth it is mentioned that the total number of originated trunk line calls has increased from 18,000,000 in 1924 to 32,000,000 in 1928, an increase of nearly 78 per cent. The detailed figures respecting calls and revenue during the period referred to are as shown hereunder:—

| Year. | Commonwealth. Calls. | Revenue. £ |
|---|---|---|
| 1923-24 .. | 18,122,234 .. | 713,112 |
| 1924-25 .. | 21,675,460 .. | 777,040 |
| 1925-26 .. | 26,085,231 .. | 953,602 |
| 1926-27 .. | 29,022,130 .. | 1,111,102 |
| 1927-28 .. | 32,002,070 .. | 1,259,100 |

The long-distance services connecting the state capitals are being utilized to a very great extent, and the number of calls between Melbourne and Sydney has grown from 66,000 in 1924 to 165,000 in 1928, an increase of 147 per cent. The increase in business over the Sydney-Brisbane and Melbourne-Adelaide trunk lines during the same period represents 131 per cent. and 59 per cent. respectively. The detailed figures are as shown hereunder:—

| Year ended 30th June. | Sydney-Melbourne. | | Sydney-Brisbane. | | Melbourne-Adelaide. | |
|---|---|---|---|---|---|---|
| | Calls. | Revenue. | Calls. | Revenue. | Calls. | Revenue. |
| | | £ | | £ | | £ |
| 1924 .. | 66,766 | 19,935 | 20,379 | 6,514 | 35,274 | 9,028 |
| 1925 .. | 55,611 | 17,165 | 36,875 | 12,134 | 39,297 | 10,163 |
| 1926 .. | 114,205 | 33,429 | 41,332 | 13 037 | 41,081 | 10,708 |
| 1927 .. | 152,384 | 44,660 | 45,049 | 14,214 | 42,188 | 10,601 |
| 1928 .. | 165,151 | 48,723 | 47,112 | 14,909 | 56,023 | 14,047 |

The proposed telephone channel between Perth and Adelaide will form the final link necessary to complete the chain of telephone communication between the capital cities on the mainland of Australia. I regard the work as urgent. There is an insistent demand for telephone communication between Perth and the eastern States. I have arrived at that conclusion as a result of my investigations in Western Australia. The new installation will provide a satisfactory service between the capital cities of the mainland of Australia. It should be possible to engage in conversation between, say, Geraldton in Western Australia and Cairns in North Queensland, a distance of about 4,700 miles. It is proposed to establish a modern service equal to the best in the world. The department keeps abreast of the latest developments in telephonic communication. In fact, we are probably in advance of most countries in long-distance telephone communications. The longest land line installation in existence is between New York and San Francisco, a distance of about 3,500 miles. In arriving at our estimate of receipts, we have taken into consideration the community of interest between Perth and the eastern capitals. We know what the position was when the Sydney to Brisbane and the Melbourne to Adelaide services were installed. Our experience shows that there is a definite relation between telegraphic and telephonic business. In addition, we have conferred with leading commercial men in Sydney, Melbourne, Adelaide and Perth, and asked them for an estimate of the use they would make of the service. Having considered all these matters, we are convinced that at least 50 calls daily will be forthcoming from the inauguration of the service. I am not in the position to say how long the work would take. There are no considerable fluctuations in the revenue derivable from telephones, excepting that it is increasing every year. There was a falling off in 1925 in the business between Sydney and Melbourne. During 1925 the route between those cities was being reconstructed, and the business naturally fell off because of a somewhat unsatisfactory service. In the following year, however, there was a greatly increased number of calls, showing that the new service was appreciated. An up-to-date system connected with Perth should increase the volume of business with that city. For two years the line between Sydney and Melbourne showed a loss, whereas to-day we cannot increase the facilities quickly enough to meet the demand. The telephone department is not paying its way. For the year ended 30th June, 1928, it showed a loss of £322,000, largely due to increased expenditure. During the last three years the capital expenditure on works has exceeded £17,000,000, on which interest at 3½ per cent. is charged. Excluding interest on capital, the department would show a profit. The department has extended its facilities into country districts which are not a commercial proposition. In some places, for an expenditure of £100, the return has been not more than £3. Of the total expenditure last year—about £3,250,000—probably one-half was spent outside the capital cities. The average cost of a country installation is about £78. It is slightly more in the cities. The increased cost is not due to the change to automatic telephones, but is principally due to the cost of external plant, which is necessary whether the system is automatic or is operated manually. The figures I have given include the cost of exchange equipment, external plant and apparatus installed on subscribers' premises. The greater portion of that cost represents external plant such as aerial wires, cables, &c. For trunk line conversations lower rates are charged to the press than are charged to other subscribers. No concession is made in respect of local calls. The normal charge for a trunk-line conversation between 20 and 30 miles is 6d.; the press rate is 4d. Similarly for a conversation between 30 and 50 miles the press is charged 6d., as against 8d. to other subscribers. The normal rate for a conversation between 50 and 75 miles is 1s., and between 75 and 100 miles 1s. 4d.; the press rate is 9d. for conversations between 50 and 100 miles. As, however, the reduced rates are only allowed when there is no business waiting at normal rates, most press messages are sent at normal rates. No reduced rates are charged the press for messages between Sydney and Melbourne and Adelaide, because at no time, excepting perhaps in the early morning hours, can we say that normal business is not waiting.

17. *To Senator Reid.*—The ideal of the department is to develop the service until every subscriber in Australia may speak to every other subscriber. This proposal is the outcome of that ideal. The trunk lines do not pay. The net loss on telephone exchange service, other than long distance services, was £58,613 last year. On the trunk line the loss for the same period was £283,000. That loss was chiefly due to the country installations, and also to the low rates charged. The loss of £58,613 on the exchange services was incurred in connexion with country services. The trunk lines between the capital cities pay well. We anticipate that the service connecting with Perth will also show a profit. The charge for a trunk line conversation up to ten miles is twopence. The department makes a loss on every one of those calls. Eighty per cent. of the total trunk line business throughout the Commonwealth is transacted over distances of less than 100 miles. The losses incurred by the Telegraph Department are shown in the department's annual report. Last year that department lost £312,074; that

was on a total revenue of £1,552,000, whereas the loss in the telephone branch was on a total revenue of over £5,000,000. Each branch bears its fair proportion of the annual charges. If the Telephone Department makes use of poles primarily erected for telegraph purposes, we pay a bigger proportion of the annual charges than does the telegraph branch. We make very little use of the telegraph wires, but the Telegraph Department makes considerable use of the telephone wires. The copper wires between Perth and Adelaide will be used for both telegraph and telephone communication. Eight telegraph messages and one telephone message could proceed simultaneously. The Telegraph Department makes greater use of our physical circuits than we do of theirs. The mileage of telephone trunk lines is greater than that of telegraph lines. In estimating the revenue we had the experience of the past to guide us. The first day the Sydney-Brisbane service was opened the business exceeded our expectations. Fifty calls a day is a conservative estimate for the proposed line. Many of the business houses in Perth are branches of establishments in the eastern States. Trade figures for Perth show that large quantities of goods are imported from the eastern States. There should, therefore, be considerable telephone business with Perth. That opinion is confirmed by interviews I had with leading commercial men in Perth.

18. *To Mr. McGrath.*—The telephone meets a different need from that supplied by the telegraph. It is much more personal, and direct. Telegraphic communication can only be conducted with the aid of an intermediary. I am not aware whether wireless broadcasting affects the telegraph. It does not affect the Telephone Department.

19. *To Mr. Jackson.*—I am not aware whether the difference between the times at Melbourne and Perth affects telegraphic communication. I have not studied the matter. It has no effect on telephone business with Adelaide, excepting that the peak period in Melbourne might differ slightly from the peak period in Adelaide. Similarly, it might affect business with Perth. The reduced number of business hours might affect the revenue, but as the service is continuous the effect would probably be insignificant. The metropolitan services pay. The loss on the exchange services is entirely in connexion with country exchanges. The volume of business transacted over trunk lines between the capital cities is small compared with the total volume of trunk line traffic. Unfortunately, the tendency is for the loss on the trunk lines to increase. In 1926-27 the loss was £225,000, whereas in 1928 it was £283,000, an increase of £58,000. In making our estimates of revenue we had regard to the fact of the great distance to be covered.

20. *To Senator Payne.*—In fixing the charge for a three minutes' conversation between Perth and Adelaide, it will be necessary to consider the value of the service to the user, as well as the length of line. The department's estimate of traffic over the Sydney-Brisbane line was more than realized from the outset. The telegraphic business between the two cities was not seriously affected. There has been a normal increase in the business of both departments. Both in labour and material costs have increased considerably during recent years. Those increased costs would be a factor in accounting for the losses incurred, but not the principal factor. It is impossible to foresee increased labour costs.

*(Taken at Adelaide.)*

THURSDAY, 6TH JUNE, 1929.

*Present:*

Mr. M. CAMERON, Chairman;

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|---|---|
| Senator Barnes | Mr. J. Francis |
| Senator Payne | Mr. Jackson |
| Senator Reid | Mr. McGrath. |
| Mr. Coleman | |

Peter Kennedy, Superintending Engineer, Postmaster-General's Department, Adelaide, sworn and examined.

21. *To the Chairman.*—I was concerned in the furnishing of information regarding the proposed installation of telephonic communication between Perth and the eastern States, but the preparation of the scheme as a whole was carried out by the central administration. The scheme provides for a telephone service as nearly approaching perfection as possible by the application of the latest scientific principles. In other words, it is the last word in telephonic communication, and it will provide a service from Perth to Adelaide just as effective as the trunk line communication between the other States. Perth and Brisbane will be able to converse as satisfactorily as Melbourne and Adelaide. The fading effect so commonly spoken of in connexion with wireless communication is not noticeable in the same way in land-line communication. One must remember that the distance from Perth to Brisbane is infinitely greater than that from Adelaide to Melbourne, and that an interruption between Brisbane and Sydney or between Sydney and Melbourne would affect the communication between Brisbane and Perth. But it may be said that the proposal provides for commercial telephonic communication to the full extent of the networks connected. Albany will be able to converse with Toowoomba, but as it will be the first time that such a considerable effect has been looked for, it may be necessary to strengthen or improve some of the less important portions of the branch lines and bring them to full efficiency. Nevertheless, as between capital and capital and principal town and principal town, there is no doubt whatever that there will be a satisfactory service. The extension will also improve the telegraphic communication between east and west. It can be stated definitely that very considerable improvements should result. Although the wires used for telegraphic purposes will be employed also for telephonic purposes, there is no relation between the two systems. They are working on almost entirely different principles. It is not necessary for me to affirm that there will not be any interference, because we have very similar systems working between Adelaide and Melbourne, Melbourne and Sydney, and Sydney and Brisbane at the present time. Taking the date of the commencement of work as the date from which all material would be available, I should say that in the ordinary course of events four to six months should be sufficient for the completion of the installation, which would be carried out entirely by departmental officers. There would be no benefit in introducing contract work. The experience gained by our officers in making the installation gives them a knowledge of the system which is essential to its satisfactory maintenance. The major portion of the work will be the installation of carrier apparatus, repeater apparatus, and suitable filters to retain the independence of the various channels of communication, and generally the wiring, cabling, and installation of power plant, accumulators and other associated apparatus to complete the system. This, together with the Adelaide terminal of the Western Australian circuit, is entirely new, because we are not equipped with any such apparatus at the present time. It will also be necessary at the Adelaide and Perth telegraph operating rooms to install transmitting and receiving equipment with all its associated parts, such as harmonic vibrators and so forth to utilize the carrier channels that will be provided by the installation of the equipment already briefly referred to. It will also be necessary to make minor changes in some of the external line plants in the nature of balancing and suitably placing conductors that might not at present be advantageously placed. The financial aspect of the proposal will show that some £4,000 to £5,000 is provided for that particular class of work. I should say that the majority of the material used would be of American manufacture so far as purely carrier systems are concerned, but quite a considerable number of items, such as angle-frame works and supports, accumulator plates and acid-containing boxes might very well be of Australian manufacture, and usually are. It is a matter of tendering and Australian preference. The policy of the department is to give preference to Australian manufactures, but in these modern systems, with the application of scientific principles, Australia has not yet reached the stage when it can enter into competition with the older manufacturing firms who have spent many millions of pounds in the development of the higher systems. If we had a factory in Australia there would not be sufficient demand for the output to keep the works going as a high-power factory. Generally speaking, the work to be undertaken between Adelaide and Perth would be started simultaneously at practically every point, but some of the higher class work, such as precision measurements of carrier characteristics and the balancing of networks, might have to be dealt with specially at one end. For instance, particular values might be determined by our central office in our research section. Then the Adelaide staff, which is well up in this work, would probably carry it out for Adelaide and possibly follow on with Western Australia, for the simple reason that it would not take a very great time to do that particular work, and no good purpose would be served by selecting a special staff for it. It would be in the nature of building up a system which, once established, would not have to be built up again. The isolation of the link connecting Port Augusta and Kalgoorlie would not lead to heavy maintenance costs; rather the contrary, because in the first place the line follows the railway route, and secondly, the country is not heavily timbered. It might be subject to occasional storms, and a higher degree of maintenance than is required on lines used in the ordinary way would be necessary. That higher degree of maintenance, however, should not be a factor worth serious consideration in a proposition of this kind, because the added facilities afforded by the installation of the carrier system give advantages outweighing by far any slight increase in the cost of maintenance. I do not think any additional staff would be needed. What you would lose in one way would be gained in another. For instance, at Cook we have a repeater staff at present for the maintenance of the repeaters. On the installation of this system there will also be a staff of a different character, and almost a purely mechanical staff, attending to the working of the apparatus. The repeaters at Cook, Kalgoorlie, and Port Augusta are of an electro-mechanical type. The repeaters in this case will be of a carrier type which have not so many moving parts to keep in order. I would not regard the proposal as involving an addition to staff. The new staff will be located at Tarcoola, which is not at present a repeating point, and also at Rawlinna. I have seen plans of the new buildings proposed to be erected along the line. I have visited Tarcoola, and after conference with the Chief Engineer, Mr. Crawford, on the spot the locations and the type of buildings required were decided upon. So far as I can see, the buildings will meet our requirements. The assets of a book value of £30,850 which will be thrown spare by the establishment of this service include a third wire which, under the new system, will not be required immediately, certain repeater apparatus of an old type by comparison with the carrier apparatus at present installed at repeating stations, and also terminal apparatus of a similar type at Perth and Adelaide. You will notice that the recovery value of terminal apparatus has been set down at rather a lower figure than that for the repeater station apparatus. The reason for that is that the expired life of the terminal apparatus is greater than that of the repeater apparatus. You ask me if I regard the service as one of urgency. I may be just a little prejudiced. I was State Engineer in Western Australia for many years before occupying a similar position in South Australia. I have not been away from that State long enough to prevent me from thinking that the western State has been starved. It has had no trunk line communication. We have an average delay at present of six minutes in the transmission of telegrams between Adelaide and Melbourne, while between Adelaide and Perth it is 27 minutes. There is no electrical or engineering reason why a message should take longer to pass from one station to another. The maximum delay between Adelaide and Melbourne is 22 minutes, and between Adelaide and Perth 83 minutes. Therefore, I say that the time is ripe to improve the communication, because a telegram is not a telegram unless it is delivered immediately. I have looked into the financial side of the proposal. Remembering that the new system not only gives telephone communication, but also increases the available telegraph facilities, there is no other alternative that could be used to produce the same result at anything like the same cost. It is difficult to forecast accurately to what extent such a service would be used, but my experience is that whether tramway services, railway communication or anything else, if you give the people decent facilities they will use them. Keeping that broad principle in mind, I think that the charge of 15s. for a three-minute conversation should provide the revenue that is anticipated. With a thoroughly satisfactory service, I think the people would be prepared to make use of the telephone at the proposed rate. I can see nothing to prevent the line from being operated satisfactorily in every way.



22. *To Mr. McGrath.*—The extent to which the service to Perth would be used depends on the community of interests. Considering that the charge for a three-minute conversation between Melbourne and Sydney is 5s., and the rate from Melbourne to Brisbane 10s., the *pro rata* rate between Adelaide and Perth should be 15s. If it were found possible to reduce the rate, I have no doubt that the department would do so.

23. *To Senator Payne.*—I do not think that the department should give a telephone service at a reduced rate over a longer line simply to encourage the use of a service such as that proposed between Perth and the eastern States. While I admit that Perth people conduct business with Sydney and Melbourne men, and it costs them more to do that business than it costs persons in the eastern States, I believe that the proposed telephone service would be used by business men to a considerable extent. Although the charge seems high, I do not regard it as excessive. The department must make its services revenue-earning, and I should not think a business man in Perth would hesitate to spend £1 when it suited him to do so for a three-minute conversation with a business man, say, in Melbourne.

24. *To Mr. J. Francis.*—I cannot say that there has been any organized demand by the people of Adelaide for the proposed connexion. There is now a considerable volume of business by telegram between Adelaide and Western Australia; so much so that with the present facilities we are not able to handle it without the delay of which I have spoken. That is

another reason why I would urge the construction of this line. While improving the telegraph facilities, it would at the same time make provision for telephone services. The application of the carrier wave principle will greatly increase the available channels of communication without largely increasing the external plant. In addition to that, terminal apparatus will be installed at the telegraph offices to enable these carrier channels to be utilized to the fullest extent by means of the Murray multiplex printing apparatus as against the Wheatstone apparatus at present in use. We have had some interruption in the telegraph service between Adelaide and Perth. You ask me how long it takes to effect a repair on the Nullarbor Plain. You might say the worst case would involve a delay of from 4 to 5 hours. I have already stated that a higher degree of maintenance would be necessary with this new system in view of the greater number of channels of communication to be made available. At the present time we are considering the best methods of facilitating repairs. We have a maintenance staff which is sufficient for our present lines. The maintenance is now carried out by arrangement with the railway staff located at Cook, Rawlinna, Tarcoola and Port Augusta. We are considering the utilization of motor vehicles and additional postal officials for the purpose of speeding up repairs. The maximum time taken to effect a repair on the Nullarbor Plain would be about 4 hours and the average time 1½ hours. Assuming this extension were approved and authorized by Parliament, say in August, I should think the work could be completed this year when Western Australia's centenary will be celebrated; although much depends on the time of the delivery of the material. The whole of the department's requirements are already known, and there is a reasonable prospect of the work being finished this year.

25. *To Senator Reid.*—The material required is not excessively bulky. There would be two additional repeating stations, one at Rawlinna and one at Tarcoola. The telephone traffic will have to pass either from Kalgoorlie to Adelaide or from Perth to Adelaide. I do not think that the collection of intervening traffic is contemplated at the present time. The development with carriers has been very much less in Perth than in South Australia or any other State. I do not wish the committee to gain the impression that it will be necessary to send a staff from Adelaide to Perth to install the system, but it may be necessary to send a supervisor to check over that work and see that everything is in order. That is not due to any lack of capacity on the part of the Perth staff in a general way. The time that would be occupied between Adelaide and Perth in handling a call over the greater distance between those two places would be the same. It would not take longer to arrange to call from Adelaide to Perth than from Adelaide to Melbourne. The department has no tricycles or other means of transit apart from the Commonwealth railway. We are now considering the need of providing means of transit of our own at certain stations.

26. *To Mr. Coleman.*—The carrier-wave system has been in operation in South Australia for about 2½ years. It would have been practicable to connect Western Australia at an earlier date, but I do not know that there was any immediate necessity for it 2½ years ago. The carrier system has been tried out, the first scheme being between Sydney and Melbourne. Having proved satisfactory in the eastern States, it was decided upon as the most economic means of extending the service to Perth. It is only since the transfer of wires and poles to the transcontinental railway line that one could give consideration to the installation of the carrier system, so we have only now reached the stage when we could have undertaken to do the proposed work. I do not think there will be any great difference between the clarity of the Perth voice and of those in the eastern States. Distance does not affect the efficiency of the service, provided it is properly designed. I would not regard any system of radio telephony as reliable at the present stage by comparison with land lines. The cost of operating the trunk line would not be materially increased if the volume of business increased. It might safely be said that the line would carry 100 conversations as easily as 20.

27. *To Mr. Jackson.*—It is conceivable that there might be a breakdown of the Murray multiplex apparatus, but it is the practice of the department to have a close routine maintenance examination of such apparatus daily, and to maintain immediately accessible spares, but you need not seriously regard the possibility of a breakdown of the telegraphic apparatus. In the event of such a breakdown, it would not be possible to transmit telegrams over the telephone line. The present trunk telephone lines are largely availed of after business hours. The low rate after 7 p.m. is very attractive, particularly to business people. It is a fact that advantage is taken of the difference in standard time in Western Australia as compared with the eastern States in the matter of lettergrams.

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*(Taken at Adelaide.)*

FRIDAY, 7TH JUNE, 1929.

*Present:*

Mr. M. CAMERON, Chairman;

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| Senator Barnes | Mr. J. Francis |
| Senator Payne | Mr. Jackson |
| Senator Reid | Mr. McGrath. |
| Mr. Coleman | |

Frederick George Simmons, Superintendent of Telegraphs, Adelaide, sworn and examined.

28. *To the Chairman.*—The proposal will enable us to provide a very much better telegraph service between Perth and the eastern capitals. At present the conductors provide only two Creed duplex channels. The proposed system will provide a total of eight duplex channels, and obviously we shall then be able to give direct telegraph service between Perth and Adelaide, Perth and Melbourne, and Perth and Sydney, thereby greatly expediting the traffic and improving the grade of the service. At present the grade of service between Perth and the eastern capitals is not satisfactory. Adelaide has to intercept all the Sydney traffic, which means a delay entirely due to that fact. The average delay in the telegraph service between Adelaide and Perth at present is 30 minutes, and between Adelaide and Sydney twelve minutes. Therefore, the average delay between Perth and Sydney is 42 minutes. This is due to two main causes, namely, inadequate channels between Adelaide and Perth, and the fact that Adelaide has to intercept Sydney business and retransmit it. We have a direct channel between Adelaide and Melbourne working the multiplex system over carrier channels, which is precisely the kind of installation we propose between Perth and the eastern capitals. On the Adelaide-Melbourne route the average delay is eight minutes. There is no reason why, after the installation of the new service, the average delay from Perth to Adelaide, Melbourne and Sydney should not be reduced to eight minutes. My experience leads me to the conclusion that there is need for more channels between Adelaide and Perth. The population of Western Australia is increasing at a greater rate than that of any other State. During the last five years the population of Western Australia has increased by 11.4 per cent., as against Queensland 9.7 per cent., New South Wales 8.6 per cent., South



Australia 7.6 per cent., and Victoria 6.2 per cent. In Tasmania there has been a decrease of .58 per cent. If you were to examine the passenger lists to and from Western Australia you would find there are more people passing towards that State than from it. I gathered that information at Port Augusta some months ago. I see no reason why the population of that State should not continue to increase at least at the present rate. We are using the Creed system on our Western Australian lines at present, but we desire to substitute for that the multiplex system. The Creed system was excellent in its day, but the later invention makes faster communication possible, because it eliminates many of the transactions that occur under the Creed system. We are anxious to have the carrier installation so that we may be able to put the multiplex system into operation. We hope to secure an increase of business, because if the speed of the service is accelerated we expect that the public will use the facility to a larger extent than at present. The operation of the new system is estimated to cost less than that of the present system. Of the annual charges, £39,700 will be debited to the telegraph system and £9,600 to the telephone system. It is somewhat difficult to arrive at the correct distribution, because the same equipment will be used for the two purposes. We do not separate the revenue earned on the different telegraph circuits, but the total amount of telegraph revenue earned over that route on all business, including Perth, Adelaide, Melbourne and Sydney, is £42,100 per annum. I do not anticipate that the existence of a telephone channel of communication with Perth will lead to a reduction in the telegraph revenue. The telephone charge will probably be in the neighbourhood of 15s. for a three-minutes' conversation. While that may somewhat reduce our present revenue from urgent traffic, there will be a natural increase in telegraph traffic generally, which will be a satisfactory offset. We confidently expect greater efficiency than we now have, and that should lead to a greater volume of business. The telegraph system, speaking generally, is not paying its way, but that is due largely to broadcasting. Telephone competition is also a factor, but mostly in connexion with short-distance telegraphy. The telephone is more convenient for many purposes, but it can only be used by subscribers or persons who are actually at a telephone. It affects the telegraph business very closely for short distances, but it does not affect us very much in long-distance transmission. The telegraph charges in Australia are very much lower than those in other countries. We are trying to make the telegraph service pay by an intensive study of costs of operation and maintenance of plant, in order to see whether the expenditure can be brought down below the revenue. I have no authority to make any statement with respect to rates, but if after we have made this study we can do no more in the direction of reducing expenditure, the rates may have to be increased to make the service pay. I think the press rates in Australia are more liberal than in any other country. There is a special rate for press reports of parliamentary proceedings. These are transmitted at a lower rate than ordinary press messages. In providing telephonic communication between Adelaide and Perth, the difficulties due to the difference of time in those capitals should not be greater than those now experienced in connexion with the telegraph system. Questions such as the efficiency of wireless communication would be considered by the central administration. It has to be remembered that so many people can read morse that it would not do to transmit public business by means of wireless except by high-speed methods which would somewhat resemble the beam system operating between Australia and Great Britain.

29. *To Mr. McGrath.*—When we erected the line between Adelaide and Perth three years ago, the Murray multiplex system was known but not proved. We arrived at a final decision in regard to it only during the last twelve months. It was only after the carrier system had been installed between Melbourne and Sydney that the multiplex system proved satisfactory. It is also working satisfactorily between Adelaide and Melbourne. If we do not improve the service between Adelaide and Perth there will be a public outcry.

The cost of press telegrams in the Commonwealth is:—

| | Within State. | Inter-state. | Press Telegrams relating Parliamentary matters. |
|---|---|---|---|
| | s. d. | s. d. | s. d. |
| Not exceeding 25 words | 0 8 | 1 4 | 1 4 |
| Exceeding 25 but not exceeding 50 words | 0 11 | 1 10 | 1 8 |
| Exceeding 50 but not exceeding 100 words | 1 9 | 3 6 | 2 0 |
| Each additional 50 words | 0 8 | 1 4 | 0 8 |

The charges within the British Isles are:—

Between 9 a.m. and 6 p.m., 1s. each 60 words or fraction thereof.

Between 6 p.m. and 9 a.m., 1s. each 80 words or fraction thereof.

Each figure counts one word. For instance, a group of five figures counts five words. (In the Commonwealth the group would count one word.)

Lettergrams are charged for at the following rates:—

Within the Commonwealth.—Not exceeding 30 words, 1s. 3d; each additional word, 1d.

Within the British Isles.—Not exceeding 36 words 1s.; 1d. for each group of three words beyond 36.

The press have to pay for the telephone the same as ordinary members of the public. They usually arrange fixed calls; but I suppose they arrange as many calls as possible after 7 p.m., when the half-rates apply. I am not aware of any concession that they get. The telephone and telegraph services in the Commonwealth are not paying, but the loss on the telephone is not so great as the loss on the telegraph.

30. *To Senator Payne.*—You point out that there is no difference between the cost of sending a telegram from Perth to Adelaide and from Perth to Brisbane. Telephone charges are fixed on a distance basis, while the telegraph rates are the same for all States. The rates are fixed by Parliament, no doubt on the advice of the Postmaster-General. During a telephone conversation a channel of communication is fully occupied by the two persons engaged in conversation, while in telegraphic communication that is not the case. Under the carrier system we shall have eight duplex channels, or sixteen in all, from the same pair of wires being used simultaneously, and we should get more telegraphic revenue during three minutes of operation than would be obtained from a three-minutes' telephone conversation. The proposal before the committee, if carried out, would tend to increase the business and give the public greater satisfaction.

31. *To Mr. J. Francis.*—The following table shows the rate at which population has increased in Australia since 1924:—

| State | Population 31st December, 1924. | Population 31st December, 1928. | Percentage Increase. | Percentage Decrease. |
|---|---|---|---|---|
| New South Wales | 2,257,448 | 2,453,358 | 8.6 | .. |
| Victoria .. | 1,657,092 | 1,760,964 | 6.2 | .. |
| Queensland .. | 834,894 | 916,689 | 9.7 | .. |
| South Australia .. | 542,103 | 583,230 | 7.6 | .. |
| Western Australia | 364,124 | 405,873 | 11.4 | .. |
| Tasmania .. | 217,839 | 216,563 | .. | 0.58 |

The statement indicates that during the four years in the period 31st December, 1924, to 31st December, 1928, the greatest increase has occurred in Western Australia, the State which it is proposed to link more effectively with the rest of the Commonwealth.

The telegraph rates in the Commonwealth and in the British Isles are as follow:—

ORDINARY TELEGRAMS.

*Commonwealth.*

| | Town and Suburban (15-mile radius). | Other places within State. | Interstate. |
|---|---|---|---|
| Not exceeding 16 words .. | 9d. | 1s. | 1s. 4d. |
| Each additional word .. | 1d. | 1d. | 1d. |

*British Isles.*

Common rate for British Isles—1s. for first 12 words, 1d. each additional word; 6d. extra for telegrams to Irish Free State.

No town or suburban rate. No interstate rate as in Commonwealth.

The "European System" is a group of States of Europe and adjacent parts of Africa and Asia. The charges on ordinary telegrams between British Isles and these States is higher than Commonwealth interstate rate. For example—

British Isles to France, 2½d. per word.

British Isles to Germany, 3d. per word.

Comparing an ordinary telegram of 20 words within the British Isles with such a telegram within a State of the Commonwealth, the comparative costs are—

British Isles, 1s. 8d.

Commonwealth State, 1s. 4d.

If the transmission distance is 15 miles or less, the costs are—

British Isles, 1s. 8d.

Commonwealth State, 1s. 1d.

URGENT TELEGRAMS.

In the Commonwealth the urgent rate is double the ordinary rate. For telegrams lodged and delivered in the British Isles there is no urgent rate. For telegrams lodged in the British Isles for other European States (and vice versa) the urgent rate is three times the ordinary rate, with a minimum of 3s. 9d. For instance, an urgent telegram London to Paris would cost 7½d. per word.

32. *To Senator Reid.*—Generally speaking, telephone equipment is a good deal more expensive than telegraph equipment, and the telephone assets in the Commonwealth are very much greater than the telegraph assets. Press telegrams do not take precedence over other business. The only telegrams that take precedence over the ordinary message are the urgent wire and the cablegram. I do not think that the introduction of the aerial mail will add to telegraphic or telephonic revenue.

33. *To Mr. Coleman.*—We expect to reduce our operating costs by the introduction of the proposed line. The present annual operating cost of the telegraph service between Adelaide and Perth is £28,153, and we propose to operate it at a cost of £18,531, so that there will be a saving of approximately £10,000 per annum. A reduction in the interstate rates would probably increase the volume of business slightly, but I do not believe we could keep the expenditure under the revenue at all. We now handle more lettergrams than previously between Adelaide and Perth.

34. *To Mr. Jackson.*—I do not think that business people in Melbourne would delay their calls in order to take advantage of the difference in time between Melbourne and Perth. I do not attribute the popularity of the lettergram to the difference in time between Perth and the eastern States. The public recognizes that it is more expeditious than a letter. I consider that our estimates regarding the proposed telephone line are based on sound premises.

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*(Taken at Adelaide.)*

MONDAY, 10TH JUNE, 1929.

*Present:*

Mr. M. CAMERON, Chairman;

| | |
|---|---|
| Senator Barnes | Mr. J. Francis |
| Senator Payne | Mr. Jackson |
| Senator Reid | Mr. McGrath. |
| Mr. Coleman | |

Edward Wheewall Holden, President of the Adelaide Chamber of Commerce, sworn and examined.

35. *To the Chairman.*—A meeting of my chamber was held on Friday last, and the proposal before the committee was considered. Following on a communication from your secretary, I took the opportunity of ringing up one or two of the large pastoral firms in Adelaide, who I knew had gone into the matter previously, so they would be ready to discuss it at the chamber meeting. First of all we tried to ascertain who might be the users of such a line, but we could not find many. The unanimous opinion expressed at the meeting was that the proposed expenditure of £69,000 was not warranted. We had a full meeting of the chamber, all interests being represented. We came to the conclusion that there would not be sufficient revenue to pay interest on the outlay. I do not know many Adelaide business men who would use a telephone service to Perth if they had to pay 15s. for a three-minutes' conversation. I cannot say whether considerable use is made of the line between Adelaide and Sydney by business firms. My own firm may use it once a week, but we use the telephone between Adelaide and Melbourne almost every day. The main difficulty between Adelaide and Sydney is that we cannot hear at all in the daytime, and we have to get in touch at night. You inform me that departmental officials say that when the proposed service is installed it will be possible for a person to speak from Perth to Brisbane as easily as from one suburb to another, but I still consider that a line between Adelaide and Perth would not be extensively used. We discussed the matter with the shipping people in the chamber, and they said they would not be likely to make much use of it because, owing to the time occupied by a boat in going from Adelaide to Perth, they did not need a telephone service. That is not the case in regard to Adelaide and Melbourne. The pastoral firms also reported that they would make very little use of a telephone to Perth. Those are the two interests most concerned. I do not think it would be of advantage to South Australia to be linked up with the West by telephone. With the developments in wireless telephony, we think that communication by that means could probably be provided within a year or so for a smaller sum than the proposed line is estimated to cost. You tell me that the departmental estimate shows a revenue of £13,000, or a profit of 18 per cent. I do not think that that estimate would be realized. A charge of 15s. for three minutes would



almost preclude the use of the line altogether, but I suppose that at a rate of 7s. 6d. you would have more calls. Apart from the difficulty of hearing on the telephone over great distances, a long delay occurs in getting a particular person to speak. We generally prefer to write out a telegram, and it often reaches its destination before we can get a telephone message through. I recognize that it would be desirable to have Perth connected with the Eastern States by telephone, but I am considering the proposal purely from the financial aspect.

36. *To Mr. J. Francis.*—You inform me that experts declare that owing to the lack of secrecy there is no danger of competition for ten years between wireless telephony and land-line telephony. If that fact had been brought under the notice of our Chamber, I do not think it would have caused us to alter our decision. We merely take the view that expenditure should be reproductive. If the chamber could be assured that a return of 18 per cent. would be obtained, its decision would have been different.

37. *To Senator Reid.*—It did not have particulars before it as to the progress of the telephone service in the various States. My own experience in talking to Sydney is that I would never use that line from choice. In five cases out of six we have to cancel the call. The proposed line to the West is longer, and I imagine it would be even more unsatisfactory. We have not taken into consideration the amount of revenue that might be earned as between Western Australia and the Eastern States. My company does a great deal of business with Western Australia, and it could all be done easily by means of existing facilities. Telegrams are considerably cheaper than trunk-line telephone calls, and you get your information in black and white. There may be cases where it would pay a business man to use the telephone, but I do not know of them.

38. *To Mr. Coleman.*—The decision of our chamber was not based on the prevailing financial stringency. I do not know that that was taken into consideration at all. I do not think that telephone communication with Western Australia is necessary at the present time.

39. *To Mr. Jackson.*—I should say unhesitatingly that the estimates of the department are usually wrong. You inform me that in most cases the actual earnings have proved to be greater than the estimated receipts. I am glad to hear it.

40. *To Senator Barnes.*—The last time I spoke from Adelaide to Sydney by phone it was difficult enough to hear the voice, but the reception was better than previously. Prior to that I might have wasted a dozen calls in the day-time.

41. *To Mr. McGrath.*—If the proposal would prove a financial success I am sure my chamber would be in favour of it.

42. *To Senator Payne.*—We were considerably influenced in our decision by the proposal to charge 15s. for a three-minutes' conversation. Telegrams can be sent from one State to another on a flat-rate basis.

43. *To the Chairman.*—When I said that five times out of six I failed to obtain satisfaction in calling Sydney by telephone, I was only speaking from memory. I suppose that in the last six months I have spoken to Sydney about six times, and it is in my mind that on five occasions I have not been able to hear Sydney. I have had to ask my Sydney manager to call me at my private house at night, when I have heard him. On the last occasion I believe I heard reasonably well.

*The witness withdrew.*

Henry Maitland Rolland, Commonwealth Works Director, South Australia, sworn and examined.

44. *To the Chairman.*—The buildings proposed to be erected at Tarcoola consist of a repeater station and two quarters for postal officials. When we were asked to prepare estimates for these buildings we referred to our previous work at Cook, where similar buildings were erected in 1927, and on the contract prices of those buildings we made our estimates. We obtained approval from the Treasury to advertise for tenders for these jobs, and with the view to cutting down the expense of preparing drawings, we got into touch with the head office in Melbourne and asked for the original tracings of the Cook buildings. Although there were a few minor alterations in the lay-out, we used these drawings and also the specifications. Owing to the site of the Tarcoola buildings being on the opposite side of the line and facing a different direction, the design for the cottages at Cook was not satisfactory for Tarcoola, and we had to make a new design, but the floor area was the same and the cottages gave the same accommodation. The repeater station is to be a brick building with a concrete floor. It consists of practically five different rooms. That nearest the railway station will be a post office and there are also other rooms for the repeater equipment, the distilling plant, the power plant, and the batteries. At the rear of the building we are putting up a brick petrol store for the power plant. There will be four 1,000-gallon rainwater tanks, and we are coming to an arrangement with the Railway Department to obtain additional supplies from its main. There was a difference of opinion as to the actual position in which the repeater station should be erected, but it will probably be quite close to the railway station. The cottages will be further away from the railway line, along the same frontage as the present railway cottages. The sites have a frontage of 72 feet by a depth of 150 feet. The buildings are to be erected of timber throughout. Practically the whole of the construction is of jarrah. Each cottage will have three bedrooms, a living room and a kitchen, and a washhouse and bathroom combined. Wide verandahs are provided, and each cottage will have three 1,000-gallon rainwater tanks. They will also probably be connected with the railway water supply. When the tendering was considered, it was thought that possibly we might obtain tenders for Tarcoola and Rawlinna at the same time. The drawings for the Rawlinna job were also prepared by our branch, and we forwarded drawings and specifications to enable the branch in Western Australia to advertise and obtain tenders simultaneously with our action here. Although we got tenders in for Tarcoola and Rawlinna, the Western Australia branch received tenders for Rawlinna only. We obtained the tenders for the Tarcoola work in two separate amounts, as we thought possibly by splitting the work into two contracts, one for the repeater station and the other for the cottages, we might get the work done more expeditiously. It was understood that the postal authorities were anxious to have the building erected as quickly as possible. The price accepted for the two cottages at Tarcoola was £2,300 and for the repeater station £1,960. This showed a reduction in the cost of construction of £1,257 on the proportionate cost of two Cook buildings, which was rather considerable and very satisfactory, although at the Cook station there were three cottages. This reduction is probably due to the present depression in the building trade. We have had low tenders for all works in the last twelve months. In hardly any case have the tenders exceeded our estimates. A recommendation was sent to our head office that the two lowest tenders for the Tarcoola work be accepted, and the recommendation was adopted. I received word from the Director-General of Works that the tenders for

Rawlinna were considered unsatisfactory. I suggested that if we re-advertised in South Australia for Rawlinna, we might obtain more satisfactory results. We did this and, by writing to the firms who had sent in tenders for the work at Tarcoola, we obtained four or five tenders for the repeater station and about the same number for the cottages. These were lower than the Western Australia tenders by £300 or £400. I understand these tenders are under the consideration of the Minister for Works. No complaint has reached me regarding buildings of the same sort on the east-west line. I think they are suitable for the climate. The contract time for the construction of the buildings expires on the 22nd October, but it is possible, by having two separate contracts, that we might be able to arrange for occupancy of the building before that time. I have prepared the following statement giving a schedule of building costs in Adelaide, and I have also shown the prices submitted by tenderers:—

SCHEDULE OF BUILDING COSTS IN ADELAIDE.

| | | |
|---|---|---|
| Concrete in foundations | £4 5 0 | per cubic yard |
| Concrete, structural | 7 10 0 | " " |
| Brickwork | 10 0 0 | per 1,000 |
| Plastering, two coats | 0 2 6 | per square yard |
| Plastering, three coats | 0 2 10 | " " |
| Rendering | 0 3 9 | " " |
| Painting, one coat | 0 1 0 | " " |
| Painting, two coats | 0 1 9 | " " |
| Painting, three coats | 0 2 6 | " " |
| Painting, four coats | 0 3 3 | " " |
| Excavation | 0 0 6 | per cubic yard |
| Stonework | 1 5 0 | per square yard |
| Flooring, jarrah | 7 11 0 | per square |
| Flooring, Baltic | 5 0 0 | " |

*Tarcoola Prices.*

| | | |
|---|---|---|
| Excavations | £0 6 0 | per cubic yard |
| Excavations, rock | 0 15 0 | " " |
| Cement concrete in foundations | 5 0 0 | " " |
| Cement concrete in lintels | 5 15 0 | " " |
| Cement concrete in floors | 0 15 6 | per square yard |
| Brickwork in cement—£68 per rod; £15 per 1,000 | | |
| Brickwork in lime—£49 per rod; £13 per 1,000 | | |

*Railway Freights to Tarcoola from Adelaide and Port Augusta.*

| | | |
|---|---|---|
| Bricks from Port Augusta | £1 2 1 | per ton |
| Cement from Adelaide | 4 9 2 | " |
| Lime | 3 13 1 | " |
| Jarrah timber | 3 2 2 | " |
| Joinery | 10 11 0 | " |
| Galvanized iron | 6 4 8 | " |

Approx. 200 tons required for repeater station.
Approx. 125 tons required for cottages.

*Rawlinna.*

| | | |
|---|---|---|
| Bricks from Port Augusta | £2 7 4 | per ton |
| Bricks from Port Augusta | 6 0 0 | per 1,000 |
| Bricks from Adelaide | 4 14 0 | " |
| Carriage | 1 0 0 | " |
| Freight | 0 7 0 | " |
| Total | £12 1 0 | " |

Our intention is to utilize Port Augusta bricks for the repeater station at a cost of £6 per 1,000. The price of bricks in Adelaide is £4 14s., but in Port Augusta those bricks would cost between £11 and £12 per 1,000. Thus, by using Port Augusta bricks, though they are not equal in quality to Adelaide bricks, we can save almost £6 per 1,000. We have used Port Augusta bricks in the post office at Port Augusta, and also in the Cook buildings. They should prove satisfactory on the east-west line because of the dry weather and the overhanging eaves. There should be no material deterioration. The roofs will be of galvanized iron, and the ceilings of fibro-cement. The walls of the repeater station will be finished off with brickwork and coloured. The cottages will each have a width of 52 feet, leaving a space of 10 feet on each side. You suggest that it is unnecessary to place the cottages so close together, but as no water is available for garden purposes, large blocks are not required. At Rawlinna the frontage is only 66 feet, as against 72 feet at Tarcoola.

45. *To Senator Reid.*—I understand that, in the original design for Cook, the Postal Department asked for brick construction to make the building more or less fireproof, and to equalize the temperature. The repeater station is 69 feet long by 22 feet wide, and the height is 11 feet. The cost of the repeater station at Cook was £2,797 10s., and the two cottages cost £2,740, a total of £5,537 10s., as compared with £4,280 at Tarcoola. In 1927 there was no building depression in South Australia, and the job being away from the metropolis, the contractors were afraid of the costs, and the prices were high. But now, owing to the trade depression, contractors are willing to take risks in order to obtain work. It must be remembered that Tarcoola is not so far from Adelaide and Port Augusta as from Cook, and the freight is less. I do not think that any alteration in the cost of material is responsible for the lower tenders.

46. *To Mr. J. Francis.*—The majority of the material proposed to be used is of Australian manufacture. There is a certain quantity of oregon in the ceiling joists, and redwood is specified for the fly-wire screens. The roof is of galvanized iron. There is no departure from what is usual in the specifications. We have provided for wide verandahs, and a deep verandah on the south side for meals.

47. *To the Chairman.*—The cottages have jarrah floors, and the repeater station a concrete one. We have no trouble with white ants when jarrah is used. I doubt whether white ants would be able to reach the ceiling joists. Practically all the rest of the timber consists of jarrah.

48. *To Senator Reid.*—The cottages will be lined inside with jarrah.

49. *To Mr. J. Francis.*—I have considered celotex as a heat-resisting material, and the only objection to it is that it is not of Australian manufacture. We have used it for experimental purposes. I told the representative of the company that as soon as it opened a factory in Australia the department would probably use that material.

*The witness withdrew.*

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Llewellyn Henry Griffiths, Superintendent of Telephones, Adelaide, sworn and examined:

50. *To the Chairman.*—Occasional complaints are made about any telephone service. I have prepared the following statement regarding the proposal to establish telephone communication between Perth and the eastern capitals:—

The proposal to establish telephone communication between Perth and the eastern States by utilizing the two existing 300-lb. copper telegraph lines for the establishment of a voice-frequency telephone circuit is another step in the direction of looping up the whole of Australia telephonically.

The proposal includes provision for the following facilities:—

1 voice-frequency telephone channel.
8 duplex teletype telegraph channels.
1 reserve wire between Port Augusta and Kalgoorlie.

The telephone channel will provide first grade telephone service. As the telephone traffic increases, two additional telephone channels can be added to the installation without incurring any further capital expenditure in buildings, power plant, or transmission maintenance apparatus; however, in this case, it would be necessary to run an additional wire on the existing poles.

The financial aspect of the proposal has, no doubt, been placed before you by the supervising engineer and need not, it is considered, be referred to by me.



Revenue.—With respect to the revenue to be derived, this can only be estimated very approximately but based on departmental estimates it is thought that £13,000 per annum will be obtained from the proposed telephone system. It is possible that the tariff for each three-minutes' conversation between Perth and Adelaide will be in the region of 15s., between Perth and Melbourne, say, £1, and Perth and Sydney £1 5s.

The estimated revenue of £13,000 per annum was prepared, as you are no doubt aware, by the central office of this department, and the figures comprehend the estimated traffic between Perth and the eastern States generally. In so far as traffic outgoing from Adelaide to Perth only is concerned, our estimated figures were approximately 110 calls per week (70 at full rates and 40 at reduced rates). It has been estimated that approximately 50 calls daily will be completed over the proposed Perth-Adelaide trunk line service, on which basis the cost of operating the proposed trunk line would be approximately £230 per annum.

ADELAIDE-MELBOURNE SERVICE.

In considering the Adelaide-Perth proposal it may be mentioned that when the provision of telephone service between Adelaide and Melbourne was suggested, doubts were entertained as to whether an adequate use of the facility would be made. Subsequent experience proved that from the establishment of the Adelaide-Melbourne service in 1914 it was fully availed of by the public generally, and before long it became evident that additional circuits would have to be provided to cope with the traffic offering. From December, 1927, three circuits have been available between Adelaide and Melbourne, and these are so heavily loaded that the provision of still further channels is becoming imperative, particularly in view of the anticipated traffic to and from Western Australia. As instancing the increased use made of the Adelaide-Melbourne facility it may be mentioned that the total earnings from trunk calls passing outwards from Adelaide over the Adelaide-Melbourne circuit has increased from £1,258 in 1914-15 to £7,866 in 1927-28, a percentage increase of 525.3 per cent. Trunk revenue as a whole in South Australia has increased from £17,332 in 1914-15 to £149,300 in 1927-28, an increase of 761.9 per cent.; the growth in the total number of completed trunk calls during the same period having been from 569,133 to 3,815,309, or an increase of 570.4 per cent. At 30th June, 1928, a total of 363,076 local lines was connected to exchanges in the Commonwealth as a whole; of these 352,275 were connected to exchanges on the mainland, and it is the aim of the department to enable all these subscribers ultimately to obtain telephonic communication with each other.

DIFFERENCE IN TIME FACTOR.

One factor to be contended with in the case of trunk traffic between Perth and the eastern States is the difference of one and a half hours in time, but no doubt some satisfactory adjustment of this difficulty is possible. Fremantle is the first and last port of call for the greater part of our overseas shipping and, no doubt, this fact will lead to very considerable telephone traffic between the east and west.

COMPARISON OF TRUNK RATES—AUSTRALIA AND OTHER COUNTRIES.

In comparison with the rates charged at the opening of the line between New York and San Francisco, the suggested trunk fees for calls with Perth appear to be reasonable. In the former case the fee was 20 dollars 70 cents, or £4 6s. 3d. for three minutes' conversation, and the full length of line was 3,400 miles. The line distance between Adelaide and Perth is approximately 1,676 miles.

As a further comparison the following tables represent the bases of trunk charges in Australia, the United Kingdom and the United States of America, but I am unable to state whether trunk charges are made radially in each instance. If such be not the case, the comparison is all the more favorable as regards Australia:—

COMPARISON OF CHARGES FOR TRUNK LINE CALLS IN AUSTRALIA AND OTHER COUNTRIES.

| Distance | Australia | United States of America. | United Kingdom (Proposed Rates). |
|---|---|---|---|
| | s. d. | s. d. | s. d. |
| 12 miles .. .. | 0 4 | 0 5 | 0 4½ |
| 20 " .. .. | 0 4 | 0 10 | 0 7½ |
| 40 " .. .. | 0 8 | 1 3 | 1 6 |
| 60 " .. .. | 1 0 | 1 10½ | 2 0 |
| 80 " .. .. | 1 4 | 2 3½ | 2 6 |
| 100 " .. .. | 1 4 | 2 11 | 2 6 |
| 150 " .. .. | 1 10 | 4 2 | 3 6 |

ADELAIDE-SYDNEY-BRISBANE SERVICE.

Regarding the Adelaide-Sydney service which service, it is understood, has been unfavorably commented on by the president of the Chamber of Commerce, Adelaide, analyses of three full days' traffic show a total of 42 calls outgoing from Adelaide to Sydney. Of this total six were cancelled, all cancellations being for reasons beyond the control of the department. During the past six weeks 379 paid calls have taken place outwards from Adelaide to Sydney or beyond, the weekly average being 63 calls. The maximum weekly traffic during the opening period of the Adelaide-Sydney service was approximately fifteen calls. The weekly maximum traffic during the present year has reached 92 calls. This represents calls outgoing from Adelaide only.

As regards the present standard of service given by the department between Adelaide and Sydney, and Adelaide and Brisbane, the department does not claim that the service is entirely satisfactory, and in this instance it should be plainly understood that the department opened this service approximately eighteen months ago only at the earnest desire of a number of business men in Adelaide and Sydney, before its intended equipment arrangements in Sydney and Melbourne were completed. It is not expected that final arrangements regarding voice frequency repeaters in Melbourne and Sydney will be completed before September or October next. When these very necessary additions have been installed the public will have little to complain of regarding the service given between Adelaide and Sydney and Adelaide and Brisbane. It, therefore, will be seen that the present standard of trunk telephone service given between Adelaide and Sydney and Adelaide and Brisbane cannot be taken as an indication of the service that will be given between Adelaide and Perth, which service it is intended shall be of a high grade from the outset, and, in my opinion, there should be no reason why when all the essential repeating units are brought into operation that a high grade service should not be provided between Perth and Brisbane.

I consider that the establishment of the proposed service between each and west will increase the telephone business generally between Perth and Sydney. I have been asked on perhaps 50 or 60 occasions about the establishment of telephonic communication between Perth and the other States. The staff in the telephone branch inquiry office would probably be asked daily about it, particularly by persons passing through in steamers. The proposed service will be very much better from the inception than that now provided between Adelaide and Sydney. The weakness in the Adelaide-Sydney service is due to the absence of ampli-

tiers or voice repeaters in Melbourne. We have not yet completed the Adelaide-Sydney system. When the Adelaide-Melbourne and the Melbourne-Sydney circuit arrangements have been completed the service will be uniformly satisfactory. The addition of repeaters in the Melbourne exchange will make a wonderful difference, and there will be a further set of repeaters in the Sydney exchange, which will amplify speech between Adelaide and Brisbane. Our department is watching the development of wireless telephony. We have a wireless branch in the central office. It is difficult to say to what extent wireless telephony may eventually affect the ordinary telephone, but at present there is room for the two. Owing to atmospheric trouble and absence of entire secrecy, the wireless is not entirely dependable for ordinary telephone business purposes. In my opinion, we shall have to depend for a considerable time yet on the wire systems for the best service. You ask me if greater use would be made of the telephone if there was a slight reduction in the charges between Adelaide and Melbourne and between Adelaide and Sydney. The charges must be fixed on a fair basis. Although the business has increased enormously, we do not show a profit for the last financial year. From 9 a.m. to 6.30 p.m. the inter-state long-distance telephones are used mostly by business people. After that the half-rates are introduced, and then the system is largely used for social purposes. We have never claimed that the Adelaide-Sydney system was entirely satisfactory. We have not advertised it in the same way as the line from Adelaide to Melbourne. Pending the installation of repeaters, we did what we possibly could to keep people from using the Sydney line, but the requests became so frequent and persistent that we agreed to let them use the service.

51. *To Mr. Coleman.*—The volume of speech between Adelaide and Sydney, owing to the absence of amplifiers, is not so great as it will be eventually. You inform me that Mr. Holden, President of the Adelaide Chamber of Commerce, complained of an unsatisfactory service between Adelaide and Sydney, and said he could only converse satisfactorily at night. It would be necessary to know where he spoke from during the day or at night time. His business office is at Woodville. Calls between Adelaide and Sydney would be most unsatisfactory at present from the Port Adelaide and Semaphore districts, but we have on hand the installation of a loaded cable between Adelaide and Port Adelaide, and this should improve matters considerably. I cannot recall any complaints from other members of the Chamber of Commerce. If there had been a written complaint, I should have seen it. Many verbal complaints of a minor nature are received, and any of an important nature would be brought under my notice.

52. *To Mr. McGrath.*—The department has had amplifiers on order for some considerable time. The factories in the United States of America and Great Britain have large orders to meet. I am not in a position to say whether the apparatus could be satisfactorily manufactured in Australia. A set of repeaters would cost roughly from £250 to £300. It would not be fair to say that because three such sets could not be obtained from Great Britain the department has been unable to give a satisfactory service between Adelaide and Sydney. We are still waiting for repeater apparatus for use all over Australia.

53. *To Mr. J. Francis.*—I cannot say how long it will take to establish communication between Perth and Adelaide by telephone. That is an engineering matter. I take it that the amplifiers on the Adelaide-Melbourne-Sydney-Brisbane service will be installed by September or October, long before the completion of the Perth line. We have permitted conversations between Adelaide and Sydney for about eighteen months. I have had no definite complaint regarding the Adelaide-Sydney service until to-day. The public seem to be grateful that they are able to use the line even under existing conditions.

54. *To Senator Reid.*—In 1914 a service was provided between Adelaide and Melbourne. The connexion between Melbourne and Sydney was made, I think, in 1919 or 1918. When we opened the service between Adelaide and Melbourne, voice repeaters were in the experimental stage, and we had to use a large gauge of copper wire. The voice frequency amplifiers have been known for about four or five years. The discovery of the valve and the amplifying method adopted in wireless led to the amplification of ordinary telephone speech over wires. The apparatus for amplification comes largely from Great Britain or America. The value of amplifiers had to be proved, and we were guided largely by world practice. Our research department has to satisfy itself as to what is required in each case. This means a fair amount of research work and experiment. That is one of the reasons for the delay in the supply of apparatus. I think the telephone is likely to be a commercial success between Adelaide and Perth, almost from the outset. I do not think beam wireless could be regarded as a commercial proposition for ordinary telephone purposes at present. It is largely a matter of conjecture whether wireless telephony would be of any great value between Adelaide and Perth even if we waited for some years. It does not seem to be fair to Western Australia to keep that State waiting for trunk-line communication with the eastern States on the off-chance of getting something definitely commercial from the air. I was assured at the outset that the line from Adelaide to Melbourne would never pay, and that the people would never use it, but now we find it difficult to satisfy the ever-increasing requirements of the public. There is no doubt about the success of the Adelaide-Melbourne service. My opinion, based on what I have seen occur in every other centre, is that the line from Adelaide to Perth will pay.

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*(Taken at Perth.)*

FRIDAY, 14TH JUNE, 1929.

*Present:*

Mr. M. CAMERON, Chairman;

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|---|---|
| *Senator Barnes* | Mr. J. Francis |
| Senator Payne | Mr. Gregory |
| Senator Reid | Mr. McGrath |
| Mr. Coleman | |

James George Kilpatrick, Superintending Engineer, Postmaster-General's Department, Western Australia, sworn and examined.

55. *To the Chairman.*—I submitted certain information from this State regarding the proposed establishment of trunk-line telephone communication between Perth and the Eastern States, but the proposal was drawn up in the central office. I would be responsible for the installation on the Perth side of Cook. I have prepared the following statement for the information of the committee:—

The proposal is to establish telephone communication between Perth and the Eastern States by utilizing the two existing 300-lb. copper telegraph lines for the establishment of a voice frequency telephone circuit. The telegraph traffic would then be carried on high-frequency carrier channels upon the present physical lines.

The proposal includes provision for the following facilities:—

One voice-frequency telephone channel.
Eight duplex telegraph channels.
One reserve wire between Port Augusta and Kalgoorlie.



The telegraph channels will carry all the departmental and Cable Company's traffic between Perth and the Eastern States. The grade of telegraph service will be higher than that given at present. As the telegraph traffic increases, two additional duplex telegraph channels can be added to the installations without incurring capital expenditure at any point intermediate between the two terminals, Adelaide and Perth.

This telephone channel will provide first-grade telephone service. As the telephone traffic increases, two additional telephone channels can be added to the installation without incurring any further capital expenditure in buildings, power plant or transmission maintenance apparatus. All that would be necessary would be to run an additional wire on the existing poles.

ESTIMATED COST.

The estimated cost of the work is:—

| | | |
|---|---|---|
| Buildings | .. .. | £11,600 |
| Telephone and telegraph equipment | | 54,200 |
| Line work, transpositions, &c. | .. | 4,000 |
| Total | .. .. | £69,800 |

REVENUE.

With respect to the revenue to be derived, this can only be estimated approximately, but based on departmental estimates, it is anticipated that not less than £13,000 per annum will be obtained from the proposed telephone system.

ANNUAL CHARGES.

The annual charges for the proposed telephone system are estimated to be £9,600 approximately.

FINANCIAL ASPECT.

*Capital Costs.*

| Item. | | |
|---|---|---|
| 1. | Estimated capital cost—New .. | £69,800 |
| 2. | Estimated capital cost—New and *in situ* | 225,100 |
| | *Annual Charges and Revenue—Telephone System.* | |
| 3. | Estimated proportionate annual charges of proposed telephone system .. | 9,600 |
| 4. | Estimated annual revenue of proposed telephone system .. .. .. | 13,000 |
| | *Annual Charges and Revenue—Telegraph System.* | |
| 5. | Annual charges of existing telegraph system .. .. .. .. | 40,600 |
| 6. | Estimated proportionate annual charges of proposed telegraph system .. | 39,700 |
| 7. | Estimated annual revenue of proposed telegraph system .. .. .. | 42,100 |
| | *Recoverable Assets.* | |
| 8. | Assets recoverable and thrown spare on establishment of proposed system— | |
| | (i) Book value .. .. | 30,850 |
| | (ii) Recoverable value .. | 24,200 |
| | (iii) Cost of recovery .. .. | 400 |

Regarding item 8 of the foregoing statement, the difference between sub-items (i) and (ii), namely £6,650, is an amount which will have to be written off in the departmental accounts as representing the proportion of the capital outlay on the original assets, which is irrecoverable and includes, chiefly, depreciation due to wear and tear and labour in installation.

The proposed new line will give a service from Perth to Sydney probably better than the present service between Perth and Fremantle, and it would be possible to converse satisfactorily from, say, Albany to Toowoomba. With the plant we propose to install, we can increase the volume of the voice very materially. It means practically the application of the amplifiers that are used on wireless sets. I have no hesitation in saying that the service will be perfectly satisfactory. It will be the last word in telephone communication, and the longest telephone line in the world. In addition, we shall improve the telegraphic facilities. At present we have a mechanical printing system working at high speed, but under the proposed scheme there will be eight channels working at hand speed. One of the most important features is the ease with which errors will be corrected. Errors in transmission are now corrected in 45 minutes or an hour, but under the proposed system, when an operator notes a mistake he obtains the correction immediately. With hand-speed channels, the saving of time in the transmission of telegrams will be very great. The desire for increased telephonic communication is most marked in Western Australia. The suburban services in Perth proper are going ahead by leaps and bounds. The distances are so great in this State that a number of lines cannot be erected because they are economically impossible, but work is proceeding in the country as fast as it can be economically justified. There is a strong desire on the part of business people and others for Western Australia to be linked up by telephone with the eastern States. I think that much of the revenue would be received when the overseas ships are in. It is the first chance on the inward journey and the last chance on the outward trip that passengers have of conversing with their friends in the eastern States. I have no doubt that the line would also be used for business purposes. We have estimated eleven calls a day outwards from Perth, or an average of 66 a week, exclusive of Sundays. The proposed charge of 15s. for three minutes' conversation might be prohibitive in the first instance, but a business man handling thousands of pounds would hardly think twice about paying 15s. or more if he wished to converse with his principals in one of the eastern States. The cost of a call by wireless telephone between Great Britain and America is £3. The business on the trunk lines in Western Australia is increasing to such an extent that it is proposed to put in more channels. At places like Albany and Bunbury, which are seaside resorts, we get seasonal traffic. We have put in an additional line between Perth and Albany, and we have one between Perth and Geraldton. We have all the apparatus required for two additional trunk lines to Wyalcatchem and Kellerberrin.

56. *To Mr. Gregory.*—The quality of the service between Perth and Sydney would depend largely on difficulties that might be experienced, say, between Melbourne and Adelaide. If there were a line fault, we could not give the service, but if the voice happened to be faint we could increase the volume of the transmission from Perth to compensate for that faintness. As a call is going through, the voice value can be heard, and it is only a matter of increasing the battery power. We shall use the existing 300 lb. copper wires on the proposed line between Adelaide and Perth. The proposed system lends itself to the use of existing wires. We do not require 300 lb. copper wires on the Nullabor Plain for electrical purposes but for tensile strength, because maintenance costs are high. I am afraid the mining industry is in such a bad way that the people of Kalgoorlie would think twice before they used the proposed line at a cost of 15s. for three minutes. It would take about three months to complete the work. The installation of the plant is not difficult, but the line work would take a fair time. We have to transpose the wires so that there would be no inductive interference. If the proposal were authorized, we should endeavour to have the facilities provided prior to the centenary celebration in this State.

57. *To Senator Reid.*—The proposed line might interfere slightly with the business in urgent telegrams. If a commercial man were satisfied that he could get a reply by telegram within a reasonable time, he would rather pay the telegraph fee than the 15s., but if a man desired to get into touch with his principals at short notice he might prefer to use the telephone. I am not familiar with the position north of Townsville so far as telephonic communication is concerned, but if the transmission is satisfactory between Brisbane and Cairns it would also be satisfactory between Perth and Cairns. I attach no importance to the statement by a business man in Adelaide that the proposed line would not be used at all. There is no great community of interests between Adelaide and Perth. The community of interests at present is between Perth and Melbourne and Perth and Sydney, where the great secondary industries have been established. I suppose the great majority of the *commercial travellers visiting Perth represent* Melbourne and Sydney firms. Some of our country lines are run at a loss, but taking the country and metropolitan lines as a whole, one balances the other. The policy of the department is to give facilities rather than make profits.

58. *To Mr. Coleman.*—There is very little in the contention that we should wait for the development of wireless telephony instead of going on with the present proposal. Being in control of the wireless broadcasting station 6WF, Perth, I am familiar with wireless telegraphy, and I can say that on the average we can receive signals from Adelaide or Melbourne only about one day a week without static interference. If we attempted to use wireless telephones for commercial purposes under these conditions, it would be an utter failure. It is possible to make radio-telephony secret. At present the service between England and America is secret to this extent, that no person could receive the signals unless he used complicated apparatus. I do not know that remarkable developments are expected with regard to wireless telephony. I am certain that if the proposed service were installed the business would increase. The big manufacturing concerns are located in Melbourne and Sydney. Apart from Holden's body works there are not a great many secondary industries in Adelaide. We anticipate a profit of about £6,000 a year from the telegraph and telephone combined immediately the new system is installed.

59. *To Senator Payne.*—From personal observation I should say that the business between Perth and Adelaide would be small compared with that with Melbourne. The *banks in Perth are branches* of banks in Melbourne and Sydney. Very few banks having branches in this State have their head-quarters in Adelaide. The sum set down as the recoverable value of plant thrown spare refers largely to telegraph apparatus which has only been in use for two or three years. Similar apparatus is in use in the eastern States on the intra-state lines. I think the estimate of the recoverable value is very fair.

60. *To Mr. J. Francis.*—The ex-Deputy Postmaster-General, Mr. Ramsay, referred the proposal to the Chamber of Commerce and the Chamber of Manufactures some two years ago and received a lot of support. The experience of the world shows that the telephone follows the telegraph. In the construction of the telegraph line from Kalgoorlie to Cook we saved about £8,000 on the estimated cost, and there was a saving throughout of about £12,000 or £14,000, because the estimate was prepared on costing figures compiled from information given in the two States. We cannot cope with the telegraph traffic as it stands to-day.

61. *To the Chairman.*—Static interference can be practically eliminated at a price. The cost of the Rugby station was £500,000, and the cost of the gear that would be required to give a wireless telephone service between Perth and Adelaide would be prohibitive.

62. *To Senator Reid.*—I do not think beam wireless would beat the cable. In the event of war, an enemy would be able to put a wave in the air which would make any wireless message unintelligible, but a message sent by cable could not be interfered with unless the cable were cut.

63. *To Senator Payne.*—The department considers that business men in Perth would use the proposed telephone line. Thousands of pounds change hands at the time of the Melbourne Cup, and a bookmaker would think nothing of spending £1 on a telephone call.

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*(Taken at Perth.)*

SATURDAY, 15TH JUNE, 1929.

*Present:*

Mr. M. CAMERON, Chairman;

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|---|---|
| Senator Barnes | Mr. J. Francis |
| Senator Payne | Mr. Gregory |
| Senator Reid | Mr. McGrath. |
| Mr. Coleman | |

Sidney Laurence Monaghan, Superintendent of the Telephone Branch, Western Australia, sworn and examined.

64. *To the Chairman.*—I was concerned in the preparation of data in connexion with the proposal, so far as Western Australia is concerned. I have prepared the following brief statement, having regard to the fact that a certain amount of information has already been placed before the committee:—

It is within my knowledge that information has already been placed before you relative to the proposed provision of telephone, and additional telegraph, facilities between Western Australia and the Eastern States. In so far as this State is concerned, it is estimated that an average of eleven telephone calls per day can reasonably be anticipated to be lodged for completion. That figures represents 66 calls per week, and 3,432 calls per year, based on a working year of 300 days (i.e., excluding Sundays and public holidays). The incidence of the business is estimated to be as follows:—

| | Per day. | Per year. |
|---|---|---|
| To Adelaide .. | 5.79 .. | 1,738 |
| To Melbourne .. | 5.53 .. | 1,659 |
| To Sydney .. .. | 0.116 .. | 35 |
| Total 3,432 at 15s. per call | | £2,574 |
| Plus 20 per cent. for extended conversations .. .. .. | | 515 |
| Total .. .. .. | | £3,089 |

Say, £3,000 per annum.

Telephone business is anticipated from overseas passengers, stockbrokers, banking institutions, commercial houses, pastoralists, sportsmen, residents and government departments.

In about 1924 the Government decided to charge for trunk telephone services according to the direct distance or crow-flight mileage, and the business was stimulated so considerably that the percentage increase went up from an average of 10 per cent. to 20 per cent., and even touched 40 per cent. It may be said that there has been an average of about 40 per cent. growth over interstate lines. Trunk-line rates do not pay from an economic stand-point, but we have also to consider the need for facilities in the country. While these liberal



rates are operating, the producers are induced to use the services provided, and thus they can spend more time on the land. In the metropolitan area the telephone system pays, and although there is still a loss on the trunk lines, it would be inadvisable at this stage to recommend any variation of the present telephone rates. As the Postmaster-General pointed out in a recent report, the prosperity of the country is bound up with primary production, and the more time that the producer can spend on the land, the better it is for the country. The increase of telephone revenue on trunk lines for the year 1926-27 was 23.15 per cent., and for the year 1927-28 it was 19.95 per cent. We consider that an average of about 20 per cent. will be maintained. We introduced the carrier-wave system between Geraldton and Perth in October, 1928. The transmission was so good that it invited further telephonic communication. This is the system of thermionic valves which we propose to introduce for the Eastern States. When we started with Geraldton, the average number of calls per day had been 34, and within a few months we have touched 103 calls a day. Only this month we introduced the carrier-wave system between Perth and Albany, which is not only a shipping port but a popular seaside resort. Prior to the introduction of this system our summer traffic was 45 calls and the winter traffic nine calls a day, but since the 6th June we have touched a maximum of 38 calls a day. The improved service stimulates the telephone habit. We claim that a telephone conversation affords a great deal more satisfaction than even a letter, a telegram or a journey. A letter or telegram leaves a certain amount to the imagination of the individual who receives it; he may not know exactly what is intended by the communication. Personal contact by telephone, however, clinches the deal and that is where the telephone scores. The Chief Inspector of Telephones, Melbourne, has pointed out that the number of calls between Sydney and Melbourne increased from 66,766 for the year ended 30th June, 1924, to 165,151 in 1928, while the revenue rose in that period from £19,935 to £48,723. That was principally due to the introduction of the carrier-wave system. When the late Sir Austin Chapman introduced it, his action was not considered to be warranted. Take the line from Sydney to Brisbane. For the year ended 30th June, 1924, the total number of calls was 20,379 and the total revenue £6,514. In June, 1928, the number of calls increased to 47,112 and the total revenue was £14,909. On the Melbourne-Adelaide circuit the revenue increased from £9,028 in 1924 to £14,047 in 1928, and the number of calls increased from 35,274 to 56,023. The system of carrier-wave telephony was developed in about 1925-26. We provided, in accordance with the growth of the traffic, three additional circuits in about 1925 between Sydney and Melbourne, and we had not had them in for six months before we found it necessary to ask for three additional channels between those capitals. A similar story could be told regarding the service between Sydney and Brisbane, and between Melbourne and Adelaide. Western Australia has a vast territory of 995,000 square miles. Having regard to the results achieved by its comparatively small population, and remembering that our business concerns consist chiefly of branches of establishments in the Eastern States. I claim that community of interests already exists. The overseas passengers in and out of Fremantle number approximately 30,000 a year. I contend that hardly any person who can afford to pay for a passage between London and Australia will scruple to spend £1 to speak to relatives or business people in the Eastern States. We consider that on Mondays and Tuesdays we shall collect ten or eleven calls a day from these passengers. If the proposal before the committee is agreed to, we shall have telephone facilities on the wharfs and also on the vessels, so that it will not be necessary for the passengers to leave their ships. It is the practice in all the large ports in Great Britain to provide telephone communication on board ship, and it is the standard practice in America. When the American fleet visited Australia, telephonic communication was provided before the vessels were moored in Melbourne. I believe that the proposed telephone between Perth and Adelaide would be availed of from the inception to such an extent that it would prove payable. The charge to be made is a matter for the central office. Our trunk-line rates compare very favorably with those in other parts of the world. The comparative costs of three-minute calls in Australia, Great Britain and the United States of America are shown in the following table:—

| | 100 miles. | 200 miles. | 400 miles. |
|---|---|---|---|
| | s. d. | s. d. | s. d. |
| Australia .. .. | 1 4 | 2 4 | 4 4 |
| Great Britain .. | 2 6 | 4 6 | 8 6 |
| *United States of America* | 2 11 | 5 6 | 10 8 |

The proposed charge of 15s. for three minutes is a very reasonable rate compared with those made in other parts of the world. I have before me an extract from a statement by Mr. Frank Gill, past president of the Institute of Electrical Engineers, and member of the Committee on International Telephone Service, dealing with the subject of telephone facilities between large towns on the continent of Europe. It shows how the growth of the telephone has been stimulated by giving the people facilities. Amsterdam has increased *its telephone circuits from 5 to 12 for the period* 1925-28, Belgrade from 2 to 5, Berlin from 10 to 14, Brussels from 3 to 12, Budapest from 4 to 11, Copenhagen from 4 to 12, London from 4 to 12, Paris from 6 to 14, Oslo from 3 to 10, Prague from 3 to 14, and Vienna from 3 to 14. When wireless telephony was introduced between America and England, the business increased to such an extent that it is now proposed to provide an additional circuit. Consideration is being given to a proposal to lay a cable across the Atlantic for telephone conversations alone. The rate for a three-minute conversation was originally fixed at £5, and this was ultimately reduced, I believe, to £3. This service has proved to be a business and domestic necessity. We say that the people of Western Australia are as patriotic as any others, and we are convinced that if the west is linked with the east by telephone, the people must of necessity utilize it. There is no doubt that such a line as that proposed would be the most up to date in the world. It is an absolute necessity from a business and social stand-point. We have had several requests for telephone communication between Perth and Melbourne. I was in touch with a gentleman yesterday who desired to speak to Brisbane. If the proposed circuit were put in it would be possible to speak from north of Geraldton to Cairns. We have had people calling at the office to-day asking if they could communicate by telephone with Melbourne. When the British Economic Mission visited Australia, one of the members desired to speak from Perth to Melbourne, and expressed surprise that communication was not possible. In estimating an average of eleven calls a day, I took the relativity between the population of States between which interstate trunk lines are now provided and the revenue derived therefrom. It is found, based upon the figures covering the three years 1923-26, that the annual revenue which it is estimated would be derived by providing a trunk line between Adelaide and Perth would equal £3,040. The next theory I tested was the relation between the number of telephone subscribers in each State and the amount of interstate trunk-line revenue, which shows that the average for other States equals £20 10s. per 100 subscribers per annum. In accordance with this basis, the annual revenue is esti-

*mated to equal £2,993. The next basis was the interstate trunk line revenue as compared with the population in the metropolitan areas in each of the States, excluding Tasmania, and on this basis the annual revenue to be derived from a trunk line connecting Perth and Adelaide is estimated to equal £3,153. The comparison between the number of telephone subscribers in the metropolitan areas, as compared with the annual interstate trunk line revenue, shows the estimated annual revenue at £2,458. I consider eleven calls per day a conservative estimate. We have a population of 408,000 as at 31st March, 1928. Take the ratio of 5,000,000 to 408,000, and eleven calls from Perth to a total of 50 over the circuit, and it will be seen that the estimate is a conservative one. The prosperity of Western Australia is great compared with that of the other States, and the citizens are most loyal in their efforts to support the facilities that the Government supplies. I am sure that the proposed line will be thoroughly efficient. By means of the apparatus to be installed, it is proposed to provide for a reserve circuit between Kalgoorlie and Port Augusta, which means that if either of the physical circuits failed, an emergency service could be maintained.*

65. *To Senator Reid.*—Numbers of firms doing business in Perth, such as Goode Durrant and D. and W. Murray, have their head offices in Adelaide. If the president of the Adelaide Chamber of Commerce told the committee that the proposed expenditure was not justified, it should be remembered that Adelaide has experienced bad times in the last year or two, and its people are not so optimistic as we in Western Australia are. Let us assume for a moment that the proposal could not be justified on financial grounds. I *suggest that since our interstate circuits between* Adelaide and Brisbane are showing good profits, the *telephone system should be considered by and large, and* the profits in the eastern States set off against any *deficiency in this State. For the year 1926-27 the goods* imported from New South Wales were valued at £3,815,220; from Victoria, £3,776,555; and from South Australia, £1,068,877. We contend that business requirements will necessitate the use of the proposed telephone to the extent estimated by us. During my two and a half years' residence here I have seen the revenue bound, and I am confident that the development of the State will continue. The construction of the proposed line would further break down the isolation between Western Australian and the eastern States.

66. *To Mr. Coleman.*—Business concerns such as life assurance companies and banks would of necessity use the proposed service. Our banks here are all branches of either Sydney or Melbourne banks. When the telephone service between Melbourne and Sydney was installed, there was a good telegraph service, but there has proved to be room for both.

67. *To Senator Payne.*—In making our estimates according to the volume of business done in the other States, we had regard to the fact that the business in the other States is done at a much lower rate per call than would be charged from Perth to those States, but we think that the proposed service will prove indispensable because of the time it will save.

68. *To Mr. J. Francis.*—Wireless telephony has not been developed sufficiently to provide stability and continuity of service. *Owing to atmospheric conditions it* cannot be considered dependable. A system of wireless *telephony has been in operation for years between Los* Angeles and Catalina Island, but it is not dependable and has not been developed. If there is one place in the world where such a system would have been commercialized, if it were feasible to do so, it is the United States of America. If the committee recommended the proposal, and Parliament approved of it, it could be carried out this year as a centenary gift to Western Australia. I think our engineers are ready to install the service within from three to six months. The department would be prepared to speed up the work.

69. *To Mr. Gregory.*—The estimate was prepared on the assumption that more business would be obtained between Perth and Adelaide and between Perth and Melbourne than between Perth and Sydney. I do not think a great many calls would be made to Sydney at the outset. The fee will probably deter some of the people from using the service. I contend that the service would give better transmission between Albany and Sydney than we are now getting between Perth and Fremantle.

70. *To Mr. Coleman.*—I am prepared to assert that *you cannot conclude business or get as much satisfac*tion from a letter or telegram as from a conversation by *telephone. A concrete instance came under my* notice last year. A traveller from Victoria could have obtained an order for 3,000 pairs of boots in this State if he had been prepared to reduce his price by a small figure. Had he been able to use the telephone and confer with his principals in Melbourne, he could have clinched the matter in a few minutes, but he lost the order.

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*(Taken at Perth.)*

MONDAY, 17*th* JUNE, 1929.

*Present:*

Mr. M. Cameron, Chairman;

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|---|---|
| Senator Barnes | Mr. J. Francis |
| Senator Payne | Mr. Gregory |
| Senator Reid | Mr. McGrath. |
| Mr. Coleman | |

Charles David McLauchlan, Superintendent of Telegraphs, sworn and examined.

71. *To the Chairman.*—I have prepared the *following* short statement concerning the proposal before the *committee:*—

In order to give a thoroughly efficient telegraph *service to the Eastern States, and thus increase the* revenue-earning capacity, it is necessary that additional *channels be immediately provided between Perth and* the Eastern States, and different methods of handling the traffic be instituted. From the telegraph viewpoint the proposal is satisfactory, financially. As the telephone service will use the same wires and much of the same apparatus as the telegraphs, the former will carry its due proportion of the annual charges, whilst the installation of the carrier channels, together with the use of new methods of operating the telegraphs, will allow considerable reduction of operating costs to be made. For instance, savings to the extent of about £2,400 per annum will be effected at Perth and Kalgoorlie, and as similar savings will be made in Adelaide, Melbourne and Sydney, and minor savings at repeater stations, it is estimated that telegraph *operating costs in all States will be reduced by approxi*mately £10,000 per annum. From a general viewpoint the proposal also commends itself, for, taking the capital cost of £69,000 and allowing interest and depreciation charges on this capital outlay at, say, 10 per cent., the annual cost for this item will be £6,900. There will be other annual charges for additional current and maintenance material, which will approximate £2,000 per annum, giving total annual charges of £8,900 per annum. There will, therefore, be a saving of approximately £1,100 per annum if the new scheme is approved. At the same time the new system will provide one telephone circuit and eight duplex telegraph channels, as against the existing three duplex telegraph channels which do not satisfactorily carry the telegraph traffic.



The following figures are of interest:—

| | Eastern States Load. | | Total: | Total State Load. | |
|---|---|---|---|---|---|
| | Out. | In. | | — | Total. |
| 1919-20 .. | 457,189 | 401,527 | 858,716 | | |
| 1920-21 .. | 399,307 | 381,298 | 780,605 | | |
| 1921-22 .. | 374,438 | 349,904 | 724,342 | | |
| 1922-23 .. | 387,598 | 336,908 | 724,506 | | |
| 1923-24 .. | 386,702 | 348,453 | 735,155 | | |
| 1924-25 .. | 401,543 | 336,560 | 738,103 | | |
| 1925-26 .. | 405,748 | 344,497 | 748,245 | | |
| 1926-27 .. | 406,635 | 345,271 | 751,906 | Estimated .. | 1,675,515 |
| 1927-28 .. | 434,197 | 449,339 | 934,036 | Actual .. | 2,114,540 |
| 1928-29 .. | 543,120 | 489,240 | 1,032,360 | Estimated .. | 2,580,900 |

Interstate Daily Averages.

| | Out. | In. | Total. |
|---|---|---|---|
| Adelaide .. | 380 | 364 | 744 |
| Melbourne .. | 837 | 802 | 1,639 |
| Sydney .. | 509 | 406 | 915 |
| Total .. | 1,706 | 1,592 | 3,298 |

Revenue.

*Total Western Australia Revenue.*

| | |
|---|---|
| 1926-27 .. .. .. .. | £148,030 |
| 1927-28 .. .. .. .. | 152,083 |
| 1928-29 .. .. .. .. | 164,271 |

1928-29 *figures are based on seven months' figures to date this year, as compared with seven months last year (no other figures available from accounts).*

Ordinary telegrams average eighteen words.
Urgent telegrams average 21 words.

| | In. | Out. |
|---|---|---|
| Average delay from 1st of year, 1929, to 5th May .. .. | 44 min. | 49 min. |
| Average of weekly maximum delays | 275 " | 325 " |
| Maximum delay since beginning of year .. .. .. | 684 " | 667 " |

10*th September.—Quarterly Count—P.T.L. of* 15 *minutes.*

| | Outside P.T.L. |
|---|---|
| Melbourne traffic—Out, 763 messages—6,067 m.u. .. | 72 per cent. |
| In, 650 messages—5,302 m.u. .. .. | 72 " |
| Adelaide traffic—Out, 962 messages—7,608 m.u. .. | 69 " |
| In, 1,997 messages—9,258 m.u. .. | 68 " |

11*th December—Quarterly Count.*

| | |
|---|---|
| Melbourne traffic—Out, 994 messages—6,759 m.u. .. | 68 per cent. |
| In, 684 messages—5,672 m.u. .. | 72 " |
| Sydney traffic—Out, 174 messages—1,397 m.u. .. | 32 " |
| In, 0 messages—0 m.u. | |
| Adelaide traffic—Out, 1,037 messages—7,740 .. | 83 " |
| In, 893 messages—8,196 .. | 69 " |

Traffic for Sydney at present requires re-handling at Adelaide with a further average delay of twelve minutes.

*Output on Creed.*—Taken over several days—

| | |
|---|---|
| Average hourly output in *messages per hour during* busy hours | 72 messages per channel |
| Maximum output in an hour | 124 " " " |
| Average output per man-hour over daily cycle— | |
| Outward .. .. .. .. | 23 messages |
| Inward .. .. .. .. | 32 " |

In 1919-20 the telegraph traffic between Perth and the Eastern States amounted to about 858,716 telegrams. A little over two years ago, when we established the new lines along the transcontinental railway route, the traffic increased from about 750,000 telegrams per annum to 934,000 per annum, and this year we estimate that the traffic will be about 1,032,000 telegrams. Originally we had two slow-speed iron hand-worked circuits and only one fast-speed line, but immediately we put in the two fast-speed lines to the Eastern States we gave a more satisfactory service and increased business followed as a natural result. Since putting in the Murray multiplex system between Sydney and Adelaide, delays have been reduced to an average of twelve minutes. Our average weekly maximum delays have been 275 minutes inwards and 325 minutes outwards. We experience a great deal of interference from the Aurora Australis. When this is much in evidence, we have up to eight or ten hours' delay. I have spent years trying to evolve methods of overcoming the difficulty, but the *proposal now before the Committee would* eliminate the trouble altogether, because under the new system we should have a metallic circuit and the Aurora currents could not affect us at all. The time has undoubtedly arrived when the telegraphic communication between west and east should be improved. There are a great number of faults inherent in the Wheatstone-Creed system. We get a maximum output in an hour of 124 telegrams, but the average per channel, say, to Adelaide, is only 72 messages. We have expert men and good organization, but when we pick out a fault we have to send back for a correction and we experience all sorts of delays on that account. For instance, one simple mistake caused a delay of 125 minutes. In another case it took us 69 minutes to get an urgent telegram finally corrected. Under the new system telegrams would be corrected practically at once at the particular channel over which it was sent. This would conserve line time. This system is much more expeditious and would certainly bring about an increase in traffic. Good service always increases business. About two years ago we decided to establish a certain grade of service throughout Western Australia. We forced a twenty-minutes' service in the country, and we could see our traffic increasing all the time. We had a partially bad year last year, and in spite of that the total number of telegrams increased from about 1,800,000 to about 2,114,000. This year we shall get 2,580,000. To my mind the improved service is responsible for the increase. We have advertisement posters on all the railways and on the trams drawing attention to the telegraph service. We put a phonogram system in, to enable persons to send telegrams from their homes. This was brought into operation two years ago next September. From a commencement of 60 or 70 phonograms a day, the number has grown to about 500. The provision of telephonic communication to the eastern States would be likely to reduce telegraphic business, but it would principally interfere with our urgent traffic. I went into the matter as closely as possible, and I think it would probably take about £3,700 per annum from the telegraph receipts, but the improved telegraph service that would be provided would more than compensate for that loss. Western Australia is making more rapid progress than any of the other States in the matter of population. I have been experimenting with wireless and am convinced that wireless telephony would not provide secrecy. Any wireless man who understood his business could intercept messages transmitted by wireless telephony. I do not fear competition in that direction. The proposal before the committee would be warranted from the telegraphic point of view alone. All the business firms in Western Australia have their head-quarters in Melbourne or Sydney. Sydney messages have to be repeated in Adelaide, but under the new system there would be direct channels to Sydney, and I estimate that, on the average, a telegram lodged in Perth would be *ready for delivery in Sydney within fifteen minutes.* The average delay this year has been 44 minutes inwards and 49 minutes outwards. We took a quarterly count of our telegraph business in September last, and roughly 70 per cent. of the telegrams handled to and from Western Australia exceeded the permissible fifteen-minutes' time lag. On the 11th December, three months later, the proportion was again 70 per cent. That is not fair to the public, and it will all be corrected under the new system. The probability

is that we shall be well within the fifteen minutes. Press messages take their turn according to the regulations, under which the order is—Urgent, cables, ordinary and press. The press are getting their service at a rate which does not pay us.

72. *To Mr. Coleman.*—About 80 per cent. of the total errors through Perth occur on the existing Wheatstone-Creed system. The average hourly output on the Wheatstone-Creed system is about 72 telegrams per channel, as against a possible maximum of about 124. If the new system were introduced, we should, under the multiplex method, get 50 telegrams per channel. We should have five outward channels, two to Sydney, two to Melbourne and one to Adelaide. Provided we got a maximum of 50 from each man we should be able to handle 250 telegrams per hour as against 144. With the existing facilities we could cope with the winter traffic, but not with normal loads. A saving of £10,000 per annum in operating costs would not mean the replacement of men, since any operators dispensed with would be absorbed in other work.

73. *To Mr. McGrath.*—If the telephone proposal is not adopted it will still be necessary to spend £69,000 to provide a satisfactory telegraph service. I consider the proposal to be justified from the telegraph point of view alone. At present the Aurora currents follow our lines to earth, but if we used a metallic circuit there would be no passage to earth for these currents, and, therefore, they would have no effect on the system. I would be prepared to stake my professional reputation on our ability to overcome the trouble due to the Aurora Australis if the proposed system is installed. In much of the traffic the telegraph cannot compete with the telephone, but if we can give an improved service, the traffic will increase.

74. *To Senator Payne.*—If the proposal is agreed to, it will obviate the necessity of certain additions to the staff in future, and thus the estimated saving in operating costs will not involve a reduction of staff. In Western Australia we could easily absorb the eight men who would be saved under the new scheme.

75. *To Mr. J. Francis.*—The main estimates relating to the telegraph service were prepared in the central office, and I consider them conservative. The proposed new system has been in operation in America for over two years.

76. *To Mr. Gregory.*—It is only about two years since a request was made for a direct service from Kalgoorlie to Adelaide, via Port Augusta. That was expected to provide a fairly efficient service, but the facility we are now proposing was then in mind. We have always known the faults of the Wheatstone-Creed system. It does its job while traffic is light, but now the traffic is going up it has outlived its usefulness. The installation put in a couple of years ago was made with the ultimate object of obtaining the system now proposed, but the time was not then ripe for its installation, because the traffic was not there. The department was also watching developments, so that when the new gear was put in it would have the most efficient plant.

77. *To Senator Reid.*—Aurora currents are noticeable practically all the time, and when they are most in evidence they are stronger than our line-working currents. These disturbances might occur at any time of day and we have no warning of them. The lines crossing America from east to west are similarly affected by these currents. We have sections 500 miles in length, and if we increased the sections to 1,000 miles, we should have twice the interference. This is a world problem and practically nothing can be done to solve it. The interstate daily averages show that the telegrams sent between Adelaide and Perth number 744, Melbourne and Perth 1,639, and Sydney and Perth 916, a total of 3,298. We think that Melbourne and Sydney will do more telephone business with Perth than Adelaide will.

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*(Taken at Perth.)*

TUESDAY, 18TH JUNE, 1929.

*Present:*

Mr. M. CAMERON, Chairman;

| | |
|---|---|
| Senator Barnes | Mr. J. Francis |
| Senator Payne | Mr. Gregory |
| Senator Reid | Mr. McGrath. |
| Mr. Coleman | |

George Sydney Cook, Commonwealth Works Director for Western Australia, sworn and examined.

78. *To the Chairman.*—Buildings are proposed at Tarcoola in South Australia as well as at Rawlinna in Western Australia. It is just possible that economy of working may result by entrusting the Rawlinna buildings to the Works Director for South Australia, who will be doing the Tarcoola building. On the other hand, the Rawlinna group being in this State, it would normally be entrusted to me. The Director-General of Works has not yet definitely decided whether I shall do Rawlinna, or whether the Works Director for South Australia will do Tarcoola and Rawlinna concurrently. There are buildings also at Merredin which will obviously come under my control. The buildings at Rawlinna are more extensive than those at Merredin, and comprise a brick repeater station together with two cottages for housing the staff. They will be similar to those recently erected at Cook, with very minor alterations, and will be constructed of similar material. The repeater station will be a brick building with concrete floors and a galvanized iron roof. The cottages will be of weatherboard, and will have a galvanized-iron roof. At Merredin the battery room block will be of brick, with concrete floors and a galvanized-iron roof. The Merredin building is of a much smaller type than that at Rawlinna, which will include a post office. The estimated cost of the Rawlinna buildings is £5,500, the repeater station being estimated to cost £2,489 and the two cottages £2,807; fencing and gates are estimated to cost £200. A period of 22 weeks has been allowed for the construction of the buildings. The building at Merredin should not take longer than three months. If I carry out the work, the bricks will come from Perth. I am not familiar with the present cost of Port Augusta bricks, but when doing the Cook buildings about three years ago we found them a little cheaper than bricks from Perth. At that time the delivery of Port Augusta bricks was not sufficiently rapid, and, had I been carrying out the building at Cook, I should certainly have used Perth bricks, which are machine-made and of a better quality than those from Port Augusta. Perth bricks would cost about £13 5s. a 1,000 delivered alongside the railway at Rawlinna. The site of the building is only about 40 yards away. The specifications provide for Western Australian hardwood, with one exception, namely, oregon, for ceiling joists. I do not think that ants would reach the ceiling joists. The object of using oregon would be to prevent the twisting that is liable to occur if unseasoned jarrah were employed. As the oregon comes from overseas, it gets a much better chance of being seasoned on the voyage. It is almost impossible to obtain scantlings in seasoned jarrah at the present time. I should say that the estimated cost of the repeater station would include about £342 on account of freight, extra allowances for workmen, and an extra allowance by the contractor for the inconvenience of working there. I should think



that the proportion would be the same with respect to the cottages. Of the sum of £842 freight would account for £560. Tendering is not brisk for work so far away from large towns as Rawlinna. Three years ago we received only one tender from Perth for the Cook buildings. Others were obtained from South Australia. We received only three tenders from Perth for the Rawlinna buildings. The building trade is certainly brisk in Perth at present. We erected a building in a remote part some time ago and, as the tenders were not particularly satisfactory, we did the work departmentally at a considerably lower cost than the lowest tender received. The buildings under consideration have been designed to minimize maintenance. Galvanized iron stands up well to the weather conditions inland. The design and locality of the buildings were settled in Melbourne by consultation between the Postmaster-General's Department and the Commonwealth Department of Works. The Postal Department asked particularly that the buildings at Cook should be used as the basis of the designs for Rawlinna. I think that Mr. Murdoch on one occasion thought that a little more space should be allowed for the cottages, but he has decided to retain the two blocks as they stood. Those who will occupy the buildings should be satisfied with them. Exception may possibly be taken to the fact that the internal walls are single-lined. In a metropolitan area the average citizen does not have a frontage of 66 feet.

79. *To Senator Barnes.*—In the case to which I referred where a building was erected departmentally there was too great a difference between the departmental price and the lowest tender. I have not built any other premises of any size in Western Australia under similar circumstances. The policy of the present Government is to carry out all work by contract wherever possible.

80. *To Mr. McGrath.*—If in this case I am not satisfied with the tenders, I shall recommend the Minister to have the work done departmentally as in the previous instance to which I have referred. If I could obtain seasoned jarrah, I should recommend its use. The department makes no provision for storing a supply of seasoned jarrah. The policy is to use Australian timber and Australian material generally. During my four years' experience in Western Australia I have only used a few feet of oregon in one instance. In some buildings I have used Western Australian timbers throughout. I notice that in some cases the ceiling joists span 28 feet, and that may account for the choice of oregon. It may be considered too great a risk to use timber that would twist.

81. *To Senator Payne.*—This is the only case in which I have noticed the use of imported timber.

82. *To Mr. J. Francis.*—I notice one unusual feature in the specifications, as compared with, say, suburban residences. Concrete stumps are provided in order to combat white ants. Judging by the plan of the buildings, they should be suitable for the climatic conditions.

83. *To Mr. Gregory.*—The ceilings will be of fibro-cement. If the ceiling joists shrank, the cover strips underneath would have a very wavy alignment. I would put in karri in preference to jarrah for the ceilings. No timber is seasoned in Perth except wood for doors, counters, and cabinet work. All contractors have very great difficulty in obtaining seasoned timber, particularly scantlings. I have looked into the question of cement bricks, and I prefer to pay the extra cost of ordinary bricks. The strength of cement bricks is not equal to that of pressed clay bricks, and I do not think they would be much cooler. If I were building at Carnarvon, or a place where clean sand was easily available, I should probably use cement bricks, but I should probably take precautions to render them waterproof. The usual construction with that type of brick is to build a verandah on the weather side to protect the wall. I doubt whether economy could be effected at Rawlinna by using cement bricks, because it is difficult to obtain sand. It would have to be taken from Coolgardie. Investigations made at Cook three years ago show that sand could not be had within a reasonable distance. The freight on bricks would be £9 15s. per 1,000. Where buildings have to be erected quickly, it is necessary to have a recognized source of supply. A very good brick used to be made at Bruce Rock, but it was not so satisfactory as the product of the State brickyards. We found from inquiries that the owner had, temporarily at any rate, abandoned the works at Bruce Rock, which goes to show that you cannot rely too much on a continuity of supplies from small brickyards in the country. Generally speaking, concrete is not as cheap as brickwork. Take the Commonwealth Bank, Melbourne: while concrete has been used for the piers, beams, and roof, and I think also the floors, brick-work was put into the curtain walls between the concrete beams and piers. Here we pay 8s. a bag for cement. At Byford it costs £7 4s. a ton, and there is a shade more for freight from Byford to Perth.

84. *To Senator Reid.*—Bricks cost £3 6s. a 1,000 at Byford, and probably £3 11s. in Perth. Our machine-made bricks are sufficient for all purposes, and compare favorably with other bricks I have known. The Port Augusta brick is not machine-made, and is liable to fret. When additions have to be made to buildings, it is difficult to wed in bricks that are not of a standard size, and I think it is wise to adhere to a brick that is likely to remain standard. Hand-made bricks are generally a shade thinner than those made by machines. In calling for tenders we specify machine-pressed bricks; this, and the uncertainty of supplies, practically limits tenderers to Perth or Port Augusta. I do not know that I could readily obtain accurate information as to the comparative costs of cement and pressed clay bricks. The 6-in. cement blocks might be cheaper than the bricks. While cement blocks could be made soundly by firms accustomed to the work, there is always a tendency for the contractor to make them for himself. Unless they were well cured after having been made, there would be a tendency to put shoddy material into a building. I have more faith in an 11-in. cavity brick wall than in a cement wall of 6 inches. I have used Western Australian timbers for ceiling purposes. At Merredin there is not the risk of twisting that there would be at Rawlinna. The external walls in the Rawlinna repeater station are to be cavity walls, and the internal walls will be 9 inches thick.

85. *To Senator Payne.*—Both on the Kalgoorlie railway and on the trans-Australian line, preferential freight is charged on timbers grown in the Commonwealth. The use of a small quantity of oregon for the ceiling joists of a building of this description does not constitute a serious departure from the policy of Australian preference.

86. *To Mr. Gregory.*—I have not made an investigation of the white-ant trouble, but if I were informed that the ants were not troublesome at Rawlinna, I should still take precautions. They will tackle karri when they will leave jarrah alone. If I used jarrah for ceiling a heavier section would be required than for karri.

*(Taken at Perth.)*

THURSDAY, 20TH JUNE, 1929.

*Present:*

Mr. M. CAMERON, Chairman;

| | |
|---|---|
| Senator Barnes | Mr. J. Francis |
| Senator Payne | Mr. Gregory |
| Senator Reid | Mr. McGrath |
| Mr. Coleman | |

Benjamin Rosenstamm, president of the Perth Chamber of Commerce, *sworn and examined*,

87. *To the Chairman.*—I have prepared the following statement for the information of the committee:—

On behalf of the Chamber of Commerce I have the pleasure to inform you that the Postmaster-General's proposal to provide the necessary facilities for a telephone connexion between Western Australia and the eastern States of the Commonwealth has our full support. It is very pleasing to us, as members of Perth's business community, that a government department should evince such readiness to extend facilities of this nature, at the same time backing up its recommendations with accurately-compiled figures which give promise that the scheme, if brought into effect, will prove a paying proposition from quite an early stage.

Our support of these proposals is based on various grounds; first amongst which is the unquestionable fact that Perth is destined to be one of the foremost capitals of Australia, and, by virtue of its geographical position, the forwarding centre for mail matter to and from the United Kingdom and the Continent, the Far East and the eastern States. The fact that it is also the first inwards and last outwards port of call for many important shipping lines, both passenger and freight, furnishes another reason why interstate telephone communication must be regarded as a commercial necessity; but perhaps the most important consideration of all is the fact that the need for this means of communication has been widely felt by our own ever-growing commercial community for some considerable time past. The advantages of a three-minutes' telephone conversation as compared with what can be achieved by an exchange of telegrams are so overwhelming and so obvious that the point needs no elaboration; but when we remember that even urgent telegrams are frequently subject to delay in transmission we are forced to realize that the saving in time which an interstate telephone service offers is of great commercial importance and value.

On general grounds of progress and development, my chamber has no doubt that the time is ripe for the inauguration of this telephone system, and although at the very beginning it may be viewed by some sections of the community as more of a luxury than a necessity, we are fully persuaded from the experience in other parts of the Commonwealth that it will quickly come to be regarded and utilized as an indispensable adjunct to present day commercial requirements. I may mention that, although we clearly understand that there is no intention to look to the business community for guaranteed support of the proposed service, I have satisfied myself from personal inquiries that quite a good number of our commercial and financial houses fully expect to avail themselves of it fairly extensively right from its inception.

We have noted that Adelaide's attitude towards the service is somewhat adverse; but we are not disposed to give a great deal of weight to this opinion, for the reason that from the commercial viewpoint Adelaide is, after all, an intermediate centre of quite secondary importance to Melbourne, Sydney and Brisbane.

I understand that if the proposal is carried out, the effect will be to considerably improve the telegraphic communication between Perth and the eastern States. I have no doubt that the telephonic facilities would be availed of both for private and business purposes. The personal touch is always so valuable, say in the case of sickness, or when people arriving or leaving by mail steamers desire to communicate with their friends. In my own business we are in constant touch with Brisbane. When we receive offers of hides, urgent telegrams are frequently transmitted, and if there is a delay we often miss a market. A telephone conversation would give us the atmosphere of the market at once, and would be of tremendous advantage. The proposed charge of 15s. for a three-minutes' conversation between Perth and Adelaide is most reasonable, considering the cost of urgent telegrams.

88. *To Senator Payne.*—The Chamber of Commerce has been discussing this matter for years. About three years ago we approached the business community, and a resolution was passed that the proposed service was desirable. But, speaking from memory, the department asked us to provide a certain guarantee, which the commercial community was not prepared to give. At a recent committee meeting of the chamber, it was decided unanimously that the present proposal had the full support of the commercial interests, all of which are represented in the chamber. The bulk of the Perth business is done with the far eastern States. Although flat rates are fixed for telegrams, I do not think the cost of calls on the proposed line would prejudice the use of the telephone over such long distances. It seems to me that twelve calls a day would be a very low estimate.

89. *To Mr. Gregory.*—Our support of the proposal is subject, of course, to the provision of an efficient service. Fremantle being the first port of call of the overseas steamers, I am convinced that the proposed service would be largely availed of by overseas passengers.

90. *To Senator Reid.*—The Perth chamber is in touch with the rest of Western Australia. We have just formed a federation of the Chambers of Commerce in this State.

By Authority: H. J. GREEN, Government Printer, Canberra.