



1928.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.

Pursuant to Statute
By Command
In return to Order

PARLIAMENTARY STANDING COMMITTEE ^{of the Senate.}
ON PUBLIC WORKS. SEP 12 1928

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE

RELATING TO THE PROPOSED ESTABLISHMENT OF AN

AUTOMATIC TELEPHONE EXCHANGE

AT

CAIRNS, QUEENSLAND.

By Authority:

H. J. GREEN, GOVERNMENT PRINTER.

F.1978.

MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

(Fifth Committee.)

GEORGE HUGH MACKAY, Esq., M.P., Chairman.

Senate.

Senator John Barnes.
Senator Patrick James Lynch.*
Senator Herbert Joseph Mockford Payne.†
Senator Matthew Reid.

House of Representatives.

Malcolm Duncan Cameron, Esq., M.P.‡
Robert Cook, Esq., M.P.
The Honorable Henry Gregory, M.P.‡
Andrew William Lacey, Esq., M.P.
David Charles McGrath, Esq., M.P.
Alfred Charles Seabrook, Esq., M.P.

* Resigned 30th June, 1926.

† Appointed 1st July, 1926.

‡ Resigned 2nd March, 1927.

§ Appointed 24th March, 1927.

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EXTRACT FROM THE MINUTES OF THE EXECUTIVE COUNCIL—No. 66, DATED 22ND DECEMBER, 1927.

Postmaster-General's Department,
21st December, 1927.

Departmental No. 146.

Executive Council
No. 66.

MINUTE PAPER FOR THE EXECUTIVE COUNCIL.

Subject :

PROPOSAL FOR THE ESTABLISHMENT OF AN AUTOMATIC TELEPHONE EXCHANGE AT CAIRNS, QUEENSLAND.

Approved in Council.

(Sgd.) STONEHAVEN,
Governor-General.

22nd December, 1927.
Filed in the Records
of the Council
(Sgd.) J. H. STARLING,
Secretary to the
Executive Council.

I recommend for the approval of the Governor-General in Council that, in accordance with the *Commonwealth Public Works Committee Act 1913-1921* the following work be referred to the Parliamentary Standing Committee on Public Works for investigation and report thereon to the House of Representatives, viz. :—

Cairns, Queensland ; establishment of an automatic telephone exchange.

(Signed) H. G. GIBSON,
Postmaster-General.

LIST OF WITNESSES.

	Bradshaw, Joseph Henry, District Inspector, P.M.G.'s Department, Queensland	PAGE
Collins, William Aloysius, Mayor of Cairns, Queensland
Crawford, John Murray, Chief Engineer, P.M.G.'s Department, Melbourne
Earl, Edward Campbell, Chairman, Harbours Board, Cairns
Hill, Thomas, Chief Engineer, Department of Works and Railways, Melbourne
MacDonnell, Henry King Nixon, President, Chamber of Commerce, Cairns
Murdoch, John Smith, Commonwealth Director-General of Works, Melbourne
Sutton, Joseph William, State Engineer, P.M.G.'s Department, Queensland

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

AUTOMATIC TELEPHONE EXCHANGE CAIRNS, QUEENSLAND.

REPORT.

The Parliamentary Standing Committee on Public Works to which His Excellency the Governor-General in Council referred, for investigation and report thereon to the House of Representatives, the question of the establishment of an automatic telephone exchange at Cairns, Queensland, has the honour to report as follows:—

INTRODUCTORY.

1. Telephone subscribers in the Cairns area, to the number of approximately 778, are served by a manual magneto non-multiple exchange which is said to be suitable only for exchanges of a capacity of 500 or 600 lines. It is represented that to extend an exchange of this kind is uneconomical; and, moreover, in the case of the Cairns telephone exchange, the equipment fully occupies the space available in an unsuitable old wooden building, and is not in a satisfactory condition electrically.

PRESENT PROPOSAL.

2. The proposal submitted to the Committee is to erect on the existing postal property a modern building, and to install therein an automatic telephone switching system having an immediate equipment for 1,000 subscribers' lines, and an ultimate capacity of approximately 3,100 subscribers' lines. It is proposed that the initial equipment shall be capable of extension to the ultimate capacity named, and thus enable requirements in the proposed automatic telephone exchange area to be met for a period of 20 years after the proposed date of opening.

ESTIMATED COST.

3. The estimated immediate cost of the work as submitted to the Committee is set down at:—

	£
Site (already acquired)	883
Building	9,500
Air conditioning plant, &c. .. .	3,300
Exchange equipment (automatic) .. .	17,750
Trunk line switch board	2,820
Sub-station equipment	4,533
Line plant (diversion)	225
Sundries	200
Total	£30,211

COMMITTEE'S INVESTIGATIONS.

4. The Committee visited Cairns, inspected the existing telephone exchange and the site proposed for the new exchange, and obtained from the Chief Commonwealth Architect full particulars as to the building proposed to be erected, and from the Postal and Works engineers details of the equipment to be installed.

SITE.

5. The land upon which it is proposed to erect the telephone exchange forms portion of the postal block of approximately half-an-acre on the corner of Abbot and Spence-streets, having a frontage of about 132 feet to the former and 104 feet to the latter.

6. Investigations made indicate that the land in question, in common with many other sites in Cairns, is of a somewhat soft nature, and that special precautions will have to be taken in the matter of foundations to ensure stability. No difficulty is anticipated in doing this, and, as the land is close to the business centre of the city, the Committee is satisfied that the site may be regarded as quite suitable for the building contemplated.

7. The Post Office building stands on the corner of Abbot and Spence streets, with the present manual exchange building flanking it on the Abbot-street frontage, and a timber building, formerly used as a Postmaster's residence, on the other side fronting Spence-street. The proposal submitted aimed at the location of the new exchange in the northern corner of the block at the back of the timber building fronting Spence-street, and at a distance of 6 feet from the north-western and north-eastern boundaries of the Commonwealth property, and inquiries were made to ascertain whether such position would be best to meet present and future requirements at Cairns.

8. Evidence obtained indicated that an extension of the Post Office accommodation is now contemplated and that such extension, when made, would be along the main street (Abbot-street) when the present old telephone exchange is removed. This block is part of the first class area of Cairns within which municipal regulations prohibit the erection of timber premises, and, although the Commonwealth is not subject to municipal regulations, it was urged that it would be a graceful act to agree to demolish the timber residence fronting Spence-street, and locate the new telephone exchange on that frontage. On the other hand, it was argued that as the public has seldom to visit an automatic telephone exchange, which is usually of plain and simple architecture, it would be uneconomical to establish it on a prominent and valuable frontage, and it was urged that the position suggested should be adhered to, and that the more valuable frontage be retained for possible future requirements. After giving the matter careful consideration the Committee agreed to recommend that the site in the northern corner of the block be utilized.

9. The decision arrived at by the Committee in connexion with this matter is shown by the following extract from its minutes of proceedings:—

Mr. McGrath moved that in order to utilize the Commonwealth land available to the best advantage for present and future requirements, the exchange be located in the northern corner of the postal area as proposed.

Seconded by Senator Reid.

Mr. Seabrook moved as an amendment that in order to comply with municipal regulations and assist the Council in beautifying the city, the old residence of the Postmaster be removed and the exchange located on the Spence-street frontage.

Seconded by Mr. Cook (*pro forma*).

The Committee divided on the amendment—

Aye, 1.

Mr. Seabrook.

Noes, 4.

Senator Barnes
Senator Reid
Mr. Cook
Mr. McGrath.

and so it passed in the negative.

The Committee then divided on the original motion—

Ayes, 4.

Senator Barnes
Senator Reid
Mr. Cook
Mr. McGrath.

No, 1.

Mr. Seabrook.

and so it was resolved in the affirmative.

BUILDING.

10. The building proposed is to be of two stories in height—10 ft. 6 in. on the lower floor and 14 feet on the upper, and will have hollow walls 15 inches thick. To counteract the softness of the land the foundations will be carried on reinforced concrete slabs up to 10 ft. 3 in. wide. The floors will be of reinforced concrete with reinforced concrete stanchions, and the walls will be of brick plastered over.

11. On the ground floor, provision is made for bringing in the cables from the street and carrying them into the switch room above. There is also a battery room 36 ft. 6 in. by 15 feet, a power room 36 ft. 6 in. by 15 feet, an air-conditioning room 15 ft. 2 in. by 29 ft. 6 in., as well as a store room, men's retiring room, and women's retiring room and lavatory. On the upper floor is to be a main switch room 61 ft. 1 in. by 36 ft. 6 in., and the trunk line exchange 36 ft. 6 in. by 14 feet.

12. The plan provided for a flat concrete roof surmounted by a timber roof covered with corrugated iron, with projecting eaves of 3 feet. In the course of the Committee's investigations, however, it was decided that greater value could be obtained from the Commonwealth land, and the risk of fire minimized if the proposed exchange were erected flush with the north-western and north-eastern boundaries, and it is recommended that this be done, and that the eaves be consequently dispensed with and superseded by a parapet wall.

AIR-CONDITIONING PLANT.

13. Although provision is included in the estimated cost of this project of £3,300 for an air-conditioning plant, it was suggested in evidence that an effort is being made to reduce this amount to some extent by installing only a modified plant, while certain experiments are being carried out to ascertain whether the total expenditure is necessary. The Committee is pursuing this matter in connexion with another inquiry, the decision on which will govern this and other exchanges, but, as the data placed before the Committee up to the present shows that the temperature and relative humidity of the climate at Cairns are high for the greater part of the year, it is probable that for the comfort of the staff as well as the preservation of the equipment a complete air-conditioning plant may have to be installed.

FINANCIAL ASPECT.

14. It was stated in evidence that the total annual charges of the proposed automatic system as at date of cut-over would be £15,568, and five years later they would amount to £19,704.

15. The revenue estimated to be obtained from the installation is set down at date of cut-over at £15,457 per annum, and five years later at £23,597 per annum. The assets thrown spare if the automatic be installed are said to have a recoverable value of £2,622.

COMMITTEE'S RECOMMENDATION.

16. Under these circumstances the Committee, after due consideration, recommends that an automatic telephone exchange be established at Cairns as proposed.

JOHN BARNES,

Acting Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Parliament House, Canberra.

1st September, 1928.

AUTOMATIC TEL. EXCHANGE, CAIRNS. 1

(Taken at Sydney.)

THURSDAY, 9TH AUGUST, 1923.

Present:

(SECTIONAL COMMITTEE.)

SENATOR BARNES, in the Chair;

Mr. Cook

Mr. Seabrook.

Mr. McGrath

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

1. *To Senator Barnes.*—The proposal is to erect a building on a site, which is Commonwealth property, at the corner of Spence and Abbott streets, Cairns, and install therein an automatic telephone switching system having an initial equipment for 1,000 subscribers' lines, and an ultimate capacity of approximately 3,100 subscribers' lines. It is proposed that the initial equipment shall be capable of extension to the ultimate capacity named, and thus enable requirements in the proposed automatic exchange area to be met for twenty years after the proposed date of opening. The type of equipment in the existing manual magneto non-multiple telephone exchange is suitable only for exchanges of a capacity of 500 or 600 lines, which number has already been exceeded at Cairns. To extend an exchange of this kind is uneconomical. In the case of the Cairns Telephone Exchange, however, the equipment fully occupies the space available in an unsuitable old wooden building, and is in an unsatisfactory condition electrically. It is proposed, therefore, to install modern plant in a new building on portion of the existing site in order to give efficient service to the existing and prospective subscribers in the area.

The estimated immediate cost of the work is:—

	£
Site (already acquired)	883
Building	9,800
Air conditioning plant, &c.	3,300
Exchange equipment (automatic)	17,730
Trunk line switchboard	2,820
Sub-station equipment	4,533
Line plant (diversion)	225
Sundries	200
	<hr/> £39,211.

The actual revenue for the year ended 30th June, 1920, and the annual revenue it is estimated will be obtained on the date of opening and five years thereafter is shown hereunder:—

Average Number of Subscribers' Lines connected during the year ended 30th June, 1920.	Actual Revenue received for year ended 30th June, 1920.	Estimated Number of Subscribers' Lines 31st December, 1929 (date of opening).	Estimated Annual Revenue 31st December, 1929.	Estimated Number of Subscribers' Lines 31st December, 1934 (five-year date).	Estimated Annual Revenue 31st December, 1934.
657 ..	£ 11,230	875	£ 15,467	1,300	£ 23,587

The proposed site is at the rear of the existing telephone exchange, and is portion of the block of land now in use for the existing postal and telegraphic services. The dimensions of the whole block are approximately 132 feet to Abbott-street by 165 feet to Spence-street. It is proposed that the building consisting of two floors shall be of simple design, and built on the latest fire-resisting principles. The immediate installation in the exchange is for an equipment of 1,000 subscribers' lines, but the building will be designed to accommodate equipment having a capacity of approximately 3,100 lines.

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The financial aspect of the proposal is as shown below:—

Item.	As at	As at
	31/12/29.	31/12/34.
	£	£
1. Capital cost—New	39,211	60,474
2. Capital cost—New and in situ ..	100,540	121,812
3. Annual working expenses of proposed automatic exchange ..	6,230	8,210
4. Total annual charges for proposed automatic exchange	15,014	10,750
5. Annual revenue—		
Actual for year ended 30th June, 1929, £11,230.		
Estimated as at 31st December, 1929	15,457	
Estimated as at 31st December, 1934		23,387
6. Assets recoverable or thrown spare if an automatic exchange is established on 31st December, 1929:—		
(i) Book value	9,058	
(ii) Recoverable value	2,022	
(iii) Cost of recovery	160	

Regarding item 6 of the foregoing statement, the difference between sub-items (i) and (ii), namely, £6,436, 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 depreciation due to wear and tear and labour in installation.

I have the certificate of the accountant in connexion with the actual revenue, and his confirmatory estimate of the revenue that will be received after the cut-over. It is as follows:—

CAIRNS—PROPOSED AUTOMATIC EXCHANGE.

Statement of Actual and Estimated Revenue.

(a) Actual total revenue received from the subscribers in the Cairns exchange area for the twelve months ended 30th June, 1926:—

	£
Rents	3,038
Calls	3,447
Miscellaneous charges	188
Trunk line calls (originating) ..	4,557
Total	£11,230

Average number of lines connected during the above-mentioned twelve months, 637.

Average revenue per line, £17 1s. 1d.

(b) Estimated annual revenue for the Cairns exchange area as at the proposed date of cut-over, i.e., 31st December 1929, and five years later:—

	Number of Lines.	Rents.	Calls.	Miscellaneous Charges.	Trunk Line Calls.	Total.
		£	£	£	£	£
As at cutover ..	875	4,156	5,230	262	5,789	15,457
Five years later	1,300	6,337	8,450	487	8,313	23,387

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I hereby certify that the above figures have been computed from books and records of this office, and the figures with respect to the revenue are, to the best of my knowledge and belief, correct.

W. F. FERGUSON,
Accountant.

Postmaster-General's Department,
Queensland, 20th June, 1927.

The erection of an automatic telephone exchange at Cairns is an urgent matter. It is the only way in which the department can meet the ~~present~~ situation confronting it at Cairns. The old exchange cannot be said to be ~~out of order~~, but it is becoming very costly to maintain. The population of Cairns, which was 7,457 on the 4th April, 1921, is now estimated to be 9,000. We have now 737 lines and three waiting subscribers, making a total of 790, and 984 stations which, plus the three waiting subscribers, would make 987. The site is 185 feet x 132 feet. The existing post office is on the Spence-street side, with the postmaster's residence on the right. The existing exchange is behind the existing post office. The new exchange will be behind the postmaster's residence. The existing buildings are single story. The new exchange will be a two-storey building. On the lower floor will be the cable room, the battery room, the power room and the air-conditioning room. Most of the exchanges investigated by the committee have been metropolitan. In these there are always separate trunk line exchanges. The Cairns exchange will be a single office network, but provision must be made also for a trunk line exchange. At Cairns the trunk line board will also be in the main exchange. Provision is made for a women's room and a men's room on the ground floor. On the upper floor will be the switch room, on the extreme left a space 36 ft. 6 in. x 14 ft. is left for trunk room, in which the general trunk line switchboard will be installed. Provision is made for a cash lift to be utilized by the public paying for trunk calls at night. The lighting of the rooms and the general layout are in accordance with the latest practice. The exchange, when the air-conditioning plant is installed, will be quite a modern excellently-equipped ~~office~~. The old building is to be pulled down, and I understand that it is proposed to extend the existing post office, which is now too small for requirements. Cairns is a growing place. It is the first port on the Queensland coast at which boats touch coming south. The exchange will be the first automatic installed in Queensland outside Brisbane, and, indeed, apart from the Geelong exchange, which was installed in 1912 as an experimental exchange, will be the first automatic exchange outside any metropolitan network. There is no special reason for selecting Cairns for the establishment of the first automatic exchange outside the metropolitan network, except that we should have to rebuild the existing exchange. We were faced with the position that we would have to put up a new building and transfer part of the postal activities and extend our switchboard there, or put up a new exchange. At the cut-over the exchange will not pay: The total annual charges will be £15,814, against a revenue of £15,457, but in five years' time we shall be in a paying position. The exchange should be in working order by the end of next year if there is no delay in parliamentary approval of the project. The exchange is very badly needed, and the member for Herbert has pressed several times for

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/ the exchange should be a paying proposition.

/ I understand,

the work to be proceeded with. The estimated cost of building is not high. When I was last giving evidence before this committee I was hopeful that before next giving evidence we should have some more definite information in respect to air-conditioning plants, because of the investigations in the United States of America of Mr. Brown, the dictator, and Mr. Becker, my supervising engineer. We have received information on the subject, but it is not sufficient to enable us to put forward any alternative proposal. The system has just been introduced in America called the "Silica Gel". It is a system of small capillary pores of a silica substance which suck up the moisture by ~~holding~~ ^{locking} it. Unfortunately, we have ~~not been~~ ^{not had} information about it, but what little we know shows that it is likely to give reasonable satisfaction. However, they do not seem to have been able to apply it to any large building. It has been applied to the dining hall of the University of Maryland, and it is successfully applied to butchers' shops, refrigerating chambers, and things like that, but nothing big seems to have been tackled. The Cairns installation will not be a big one, and it is quite probable that this "Silica Gel" system would be suitable there, but the information sent out to us at the request of our director, does not give us any clear indication as to what the working costs are. It is how the working costs work out that guides you as to whether it pays to install anything. The capital cost of installing this system would be very much less than that of installing one of our present plants, but if the working costs are higher in the case of the Silica Gel system, it might pay us better to continue the old system. We are getting further information about the matter, but until the return of Mr. Brown, and until we have a full discussion with him, I cannot give the committee any further information about the "Silica Gel" system. We have carefully perused the literature sent out, but it is weak on one point which is so essential. In the circumstances I cannot place before this committee more than the proposal of the Works and Railways Department to put in one of the air-conditioning plant of the type installed in the various exchanges already erected. We have made very careful inquiries as to the need for an air-conditioning plant at Cairns. We have obtained full data from the Meteorological Department, which show that there is no doubt about the need for an air-conditioning plant at Cairns. The post office, there is not more than 10 or 12 feet above sea level, and it is separated from the ocean by a roadway. Therefore, in a hot place like Cairns, with a very humid atmosphere, it is necessary to have an air-conditioning plant. If you do not have an air-conditioning plant, you may have a break-down in the system, which nearly occurred in Sydney last year when we had a very high humidity for a long period in the summer. In Sydney we have air-conditioning plants at a number of exchanges, but not at all of them. The exchanges at which these plants are installed were not affected by the unduly long period of high humidity, but the exchanges at which there are no air-conditioning plants were in a very serious state. At Cairns during 1923 there were 204 days on which the humidity exceeded 70 per cent. at 70° Fah., and 325 days when it exceeded 70 per cent. with the temperature at 65° Fah. It shows, therefore that for most of the year there is a humidity at Cairns which is inimical to the proper working of an automatic telephone exchange. The

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makers of the automatic ~~instruments~~ *switches* guarantee them provided the humidity does not exceed 70 per cent. for any long period. In various parts of the Commonwealth the humidity rises as high as 90 per cent. If that happens in the winter it does not matter much, you heat your exchanges and drive out the moisture; but if it happens in the summer, and you have to heat the exchanges to drive out the moisture, the mechanics do not want to be parboiled. I have a rather interesting extract from the New York State Commission on Ventilation. It says:—

The experiments of the Commission have, in general, confirmed the conclusion of earlier investigators that the first and foremost condition to be avoided in regulating the atmosphere of occupied rooms is an excessively high temperature. We have found that even slight overheating, 75° Fah., produces the following results. A considerable decrease in the amount of physical work performed under conditions of equal incentive, a decrease amounting to 15 per cent. at 75° Fah., and to 28 per cent. at 80° Fah. For these reasons we believe that the dangers of rooms overheating are far more serious in their effect upon human life and efficiency than has generally been realized, and that every effort should be made to keep the temperature of the schoolroom, the workroom, and the living room at 68° Fah., or below. With regard to the problem of relative humidity, it is obvious that high moisture content, combined with high temperature, must always be harmful.

You have that at Cairns—high moisture content with high temperature, and you can see, therefore, that this exchange is one in which an air-conditioning plant is entirely necessary. When we get a cheaper system than the present cumbersome one, ~~you can depend~~ *187* we shall install it, not only to economize space, but also to avoid the trouble of having to start it and shut it down. If we get a system which is simpler in operation, and whose maintenance costs will be less, we shall install it. I do not think that the Works and Railways Department regards the existing system as an ideal one, but it is the best available at present. It is a Baltimore firm, the Davison Chemical Company, which has communicated with us in regard to the "Silica Gel" system. It may be that as the psychological effect of high humidity and high temperature are better realized, alternative schemes of air conditioning will be produced.

2. To Mr. Seabrook.—The present telephone exchange at Cairns is a wooden building. The new building will be of brick and concrete. It is proposed, I understand, to extend the existing post office over the site of the existing telephone exchange, which cannot be done until we open the new exchange and transfer the lines from the old building to the new building. But that is not part of the present proposal. I fancy a promise has been given to the honorable member for Herbert that it will be done, and if it is to be done, it will be done ~~immediately~~ *187* after the transfer of the lines from the old exchange to the new exchange. I do not know that Mr. Brown has been able to learn anything further about the "Silica Gel" system. When the Washington committee had concluded its proceedings, and Mr. Brown was about to start on his general in-

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investigations, he was suddenly ordered to proceed to London. I do not know how far he was able to proceed in making his investigations on his way to Washington, but it is certain that after the conference there he did not have the opportunity it was contemplated he would have to make his inquiries. He may not have been to Baltimore. I think he will be back towards the end of this month. It is perfectly clear from the literature we have received that we could not contemplate installing the new system at Cairns. In an exchange with an air-conditioning plant, ventilation is not required through the roof. The air in the exchange is in a state of continual movement. There is no need for ventilation except in the battery room. The switching apparatus must not be permitted to get dust on it. The windows are required in the switch room to provide light, but they do not open. We do not depend on the windows for ventilation. The air-conditioning plant reduces the temperature to about 65° Fah. There are two types of air-conditioning plant in use in our exchanges. We have one type which is simply used for washing and cleansing the air, and passing it into the exchanges. With this type of plant we depend on ordinary ventilation methods. In the case of the other type, however, with air-conditioning plants such as are in operation at Sydney South and Sydney East, and other big exchanges, the air is washed and cleansed from impurities, is heated in winter, and cooled in summer, and delivered into the exchanges through air ducts. It circulates through the exchanges and is extracted through exhaust ducts. The air in the exchanges is continually in motion, but so slightly that you would not notice it. I think it is changed in most rooms twelve times an hour. As you know, many American factories have established air-conditioning plants, not from the point of view of the plant, but simply to make the conditions of working better for the employees. It is considered that variations in temperature should be avoided, and that greater efficiency can be secured by avoiding these variations. The Cairns exchange will have a radius of two miles, but there may be lines coming into it from a greater distance. Automatic exchanges give ~~more~~ ^{higher} efficiency than do manual exchanges; ~~the operation of~~ ³⁷ disconnection is practically instantaneous and greater speed in getting an answer is secured. Experience shows that the possibility of error is less in an automatic exchange than it is in a manual exchange. If an error is made we make provision for overcoming it. If you dial a wrong number and you call the attention of the exchange to the fact, you are not charged with the erroneous call if the exchange finds where the fault lies. People get wrong numbers so rarely that they do not worry about letting the exchange know that an error has been made, but in that way the exchange is not given the opportunity of tracing where the fault lies. Sometimes there is trouble through a sticking switch. It is ~~always~~ ^{generally} something very simple that is wrong, and a few seconds will remedy the trouble. I think if Mr. Brown had any further information about this "Silica Gel" system he would have sent it on to us. He has been sending out information all the time. The proposed exchange at Cairns will give satisfactory service for the next twenty years.

3. To Mr. Cook.—There are many automatic exchanges urgently required. Some of them are very urgently required, and some of them are most urgently required. The Cairns office is one of the most urgently

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required. The estimated cost of construction is about what one would expect a two story building of this character would cost. In our accounts we have not taken into consideration the increased value of the land which was acquired many years ago. The proposed building can always be extended. In the past we have found that our estimates have been too conservative. We have made provision for fifteen years' development, but have found that in ten years we have had to extend exchanges. We are making provision at Cairns for twenty years' development.

The witness withdrew.

The committee adjourned.

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AUTOMATIC TEL. EXCHANGE, CAIRNS 8

(Taken at Brisbane.)

MONDAY, 13TH AUGUST, 1928.

Present:

(~~SENATORIAL COMMITTEE~~)

SENATOR BARNES in the Chair.

Senator Reid	Mr. McGrath
Mr. Cook	Mr. Seabrook

Joseph William Sutton, State Engineer, Postmaster-General's Department, Queensland, sworn and examined.

4. To Senator Barnes.—The details submitted to the committee by Mr. Crawford in connexion with the proposed installation of an automatic telephone exchange at Cairns were prepared by an officer on my staff. The proposal originated in Queensland, because it was found to be necessary to provide a more efficient telephone switchboard service at Cairns. The existing plant at Cairns has reached the period of its useful life, and it is not possible, economically, to extend it. The reasons for the proposal are as follows:—

1. The present type of exchange, magneto non-multiple 100-line "A" positions with no multiple equipment whatever, is only suitable for exchanges up to about 600 or 600 lines. Cairns had 787 lines connected on 30th June, 1928, and it is estimated that by the proposed date of cut-over, 31st December, 1929, 875 subscribers will be connected. After approximately 500 lines the operating costs increase rapidly, while the grade of service possible decreases owing to the fact that the majority of calls have then to be handled by two operators over local transfer junctions.

2. An automatic exchange is the more economical. This is particularly the case as the exchange grows in size. The annual charges for an automatic exchange at the date of cut-over, 31st December, 1929, are estimated at £15,914. This includes all charges on a new building, and the costs of running and maintaining an air-conditioning plant. The estimated annual charges of the existing system, as at the date of cut-over, are £10,840, which is £5,074 more than the automatic system. A direct comparison between automatic and the existing manual exchange is, however, not entirely fair to the former, as the present manual exchange is housed in a wooden building where it fully occupies the space available, whereas the automatic equipment will be installed in a new building providing space for twenty-year development.

3. The wooden building housing the existing exchange is very old, and occupies that portion of the site required for the extension of the post office building.

4. Portion of the existing equipment was installed at the beginning of 1914. Ten to twelve years is the estimated life of magneto exchange equipment and part of the first installation will, by the date of cut-over, have given fifteen years' service—three to five years more than the usual accepted economic life of such equipment. A new exchange must necessarily be established before long. As the present exchange room is not sufficiently large to provide for appreciable development and, moreover, is preventing extension of the post office building, the present time is, therefore, a suitable opportunity to cut-over to automatic working.

One particular feature in favour of automatic is the possibilities of direct dialling on trunk lines. At the date of cut-over it is estimated 44 trunk lines will be connected to Cairns. On eighteen of these lines direct dialling of Cairns subscribers by telephonists at distant exchanges will be carried out, thus reducing both trunk operating costs and the amount of trunk equipment required at Cairns.

The following are reasons why a new C.B. manual exchange is not proposed:—

The estimated cost of operating a new C.B. manual exchange would, in the twenty-year period amount to £5,780 per annum. (Superintendent telephones estimate, and including allowance for administration, pensions, &c.). Allowing £1,900 as the extra maintenance costs of automatic over C.B. manual (a very liberal estimate) the remaining annual charge for operating, £4,780, would more than pay interest and depreciation charges which totals 10 per cent. on the total cost of the automatic exchange equipment in the ultimate period estimated at £45,900. Thus, even if the new C.B. manual equipment cost nothing, an automatic exchange would still be justified economically.

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The following is a comparison of the estimated cost of operating, including administration charges, &c.:-

	Automatic System. Trunk Switchboard only.	Manual System. Sub. and Trunk Switchboard.	Difference.
	£	£	£
2-year date December, 1931	2,324	4,768	2,444
5-year date December, 1934	2,547	5,050	3,112
20-year date December, 1940	5,125	10,003	5,780

Extra cost of operating at 31st December, 1940 a C.B. manual exchange as compared with an automatic exchange	£5,780
Extra cost of maintaining at 31st December, 1940 an automatic exchange as compared with a C.B. manual exchange	1,000

Difference which represents the higher annual cost of C.B. manual exchange as at 31st December, 1940	£4,780
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The plant is worn out, and the time has arrived to replace it by an automatic exchange rather than by an extension of the manual system. It is a most urgent work. I think the new exchange will pay its way within twelve months, if not before that time. We have provided in our estimate for an air-conditioning plant, but we do not propose to put one in at once; we shall try the experiment of running the exchange without a special and costly operated air-conditioning plant. We may not succeed in doing entirely without some air-conditioning arrangement, but there is reason to believe that we may be able to substitute a cheaper system than that calculated for in the present proposal. My opinion in this regard is based on the experience we have had so far with the new suburban exchanges in Brisbane. We have no air-conditioning plant in these exchanges. We are trying the experiment of running them without these plants, and, so far, the experiment has been successful. But we have not had the exchanges in operation long enough to form a reliable opinion in this respect. The exchanges have been in operation only during the winter months, which are favorable periods for running automatic exchanges. At that time of the year the weather is dry, and the atmosphere is not as moisture-laden as it is in the summer months. Of course, as Cairns is situated on the coast, and has a humid climate, there is no doubt that in the hot season we shall require some substitute if we do not install an air-conditioning plant. A new automatic telephone exchange is urgently needed at Rockhampton. I should like to have had the Rockhampton proposal considered in conjunction with the Cairns proposal, but there have been delays in getting out the plan for the former, and we have not been able to present it to the committee. It would have been a better paying proposition to install an automatic exchange at Rockhampton as compared with Cairns, but the necessity for an automatic exchange is more urgent at Cairns because there we are almost at a dead end. There is no room in the exchange to add more manual equipment. At Rock-

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hampton we are a little better situated, because there we have a multiple B position. We have not that at Cairns, nor have we room to install it, nor is it worth while to spend money on such a position. It is better to go ahead and install an automatic exchange. There will be no need to increase the mechanical staff now employed in the exchange. I produce a curve showing the actual growth of the exchange. In January, 1918, there were 300 subscribers. At present the number of subscribers is 787. We anticipate by taking the curve that the number of subscribers by December, 1949, will be 3,100. That is, at the end of the twenty-year period. We estimate the future growth by the records of the past. In 1914 we had at Cairns three 100 line boards. The existing exchange equipment consists of eight 100 line A positions, one 200 line A positions, and five trunk positions. The original installation was completed in January, 1914; boards were installed as follows:—A positions, 1914 (3), 1917, 1921, 1925, October, 1925, June, 1926, February, 1928 (one board of original installation replaced in 1925. Two others installed in 1917 and 1921 were also replaced in 1925). Trunk positions, 1919, 1923, January, 1925, October, 1925 (2).

5. *To Senator Reid.*—Cairns is likely to grow more rapidly than Rockhampton. Cairns is in a progressive district, but I put the two proposals on the same footing from an engineering point of view. We have at Rockhampton a transfer position which we have not at Cairns. It is the transfer position that facilitates business on the non-multiple sections. There is no doubt as to the need for an automatic exchange at either place.

6. *To Mr. McGrath.*—Telephonic facilities are well extended in the out-back country of Queensland. It has been my object since I have been State engineer to build up good sound construction on our arterial routes between Brisbane, Rockhampton, Townsville and Cairns, and also on the lines running west from those places. The result is that we have good sound construction, and have made the fullest use of it by installing phantom circuits along these trunk routes. That is to say, where we have two metallic lines we are able to superimpose phantom circuits on them. We are a little short in our trunk line programme. If more money were made available we could build further useful lines. Cairns cannot be said to be already served from a telephonic point of view. ~~The system in use is impossible.~~ We have made provision for having an air-conditioning plant in the proposed new exchange, but our present idea is not to put it in. I do not say that we are right in not using air-conditioning plants in the suburban exchanges of Brisbane, particularly during the summer, but we are certainly going to try the experiment of doing without them.

7. *To Mr. Cook.*—The trunk service to the Atherton tableland through Cairns is satisfactory, but it must be remembered that business grows with facilities provided. If we give Cairns a better telephonic system, I think our anticipations will be exceeded. There is a wealthy district around Cairns, and it does not suffer from drought. So far as I am aware our telephone system in Queensland is paying its way. The proposal to establish an automatic exchange at Cairns was submitted to the Works and Railways Department before the Rockhampton proposal.

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8. To Mr. Seabrook.—We reconstructed the Townsville exchange some years back. About that time a manual system, thrown out of use from one of the Melbourne exchanges, was re-installed at ~~Rockhampton~~, but it was a mistake. We should have put in an automatic exchange. We have chosen Cairns as the first place outside Brisbane for an automatic exchange because the exchange there has grown beyond the useful limit of its purpose. The number of subscribers to a telephone exchange is always an increasing ratio. I think that the curve which I have submitted to the committee will be reached, but even if not, it will make no difference to the proposal; we shall ~~reach~~ the curve for five years. It is certainly hard to forecast for twenty years ahead, but a couple of years ago we forecasted the growth which would be reached at present date, and we struck it. We base the future growth of each exchange on its past growth. The calculated revenue at the date of opening at Cairns is £15,457. The calculated revenue in 1934 is £23,587. The annual costs at the date of installation total £15,614, slightly more than the estimated revenue, but in 1934 the annual costs will not exceed £19,750, considerably below the estimated revenue at that period. It is quite probable that within twelve months the exchange at Cairns will be paying. At the opening it may not be on a paying basis, but there will be a ~~much~~ less loss than there would be at that time by continuing a manual system. The exchange will pay by the time the curve reaches 950 subscribers, and that will be in December, 1930. If we do not need an elaborate air-conditioning plant, the exchange will probably pay from the outset. In any case, an automatic exchange will be more economical than the existing manual system.

*The witness withdrew.
The committee adjourned.*

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(Taken at Cairns.)

THURSDAY, 16TH AUGUST, 1928.

Present:

(SPECIAL COMMITTEE)

Senator BARNES, in the chair;

Mr. Cook
Senator Reid

Mr. McGrath
Mr. Seabrook.

Joseph Henry Bradshaw, District Inspector, Postmaster-General's Department, Northern Division, Queensland, sworn and examined.

9. To Senator Barnes.—I regard the proposal to erect an automatic telephone exchange here as an urgent matter. The present plant is out of date. It is not meeting the requirements of the public or the department, inasmuch as we cannot extend it to any extent. If we had more up-to-date plant and more equipment and accommodation we should get 500 new subscribers immediately. There are not a great number of complaints from the public about the service rendered. We have a very efficient exchange foreman, who has gone through all the equipment and the services outside. The lines and telephones themselves are all right. The trouble occurs in the equipment itself, but complaints are attended to promptly. The faults in the system are mostly in the exchange itself. In 1921, we had 391 subscribers connected to the Cairns exchange, and our revenue was £5,647. In 1928 we have 778 subscribers, with a revenue of £11,198. The growth for the last four years has averaged approximately 55 additional subscribers. The revenue is increasing faster than the number of subscribers, but the reason for that is that we have installed eighteen additional trunk lines in the Cairns exchange. By giving greater facility for trunk line communication we get an increased revenue. I should think that with the installation of a new automatic exchange we should have 1,000 subscribers straight away. After that the subscribers should come on at the rate of from 50 to 60 per annum. I should say that rate of progress would continue for an unlimited period. The district is only in the making. On the Atherton Tableland operations were entirely confined to timber, but now the people there are going in for growing maize and dairying. Eventually, as the land is cleared, it must be used for growing fruit. It has been proved that excellent stone fruit can be grown on the tableland. At Horberton the thermometer does not exceed 80 degrees Fahrenheit in the summer and it drops to below 32 degrees in winter. With a climate like that it should be possible to grow grain. Where 30 years ago there was little but scrub there are now settled townships. The district has a population of 5,000 or 6,000 people. The installation of an automatic exchange at Cairns will not lead to the dismissal of any employees. The same number of mechanics will be required, and it is estimated that the growing trunk line service will absorb the whole of the female staff. We have only twelve permanent girls employed and two positions filled by temporaries, who, of course, have no right to permanent employment. The accommodation in the existing exchange is far from up to date; the sanitary system is a pan system, with only two services a week. The girls' retiring room is a very small place, 4 ft. x 6 ft.; there is no convenience for the girls to have their lunch on the premises. All these lack of conveniences are reflected in the sick leave. The fire risk in the present building is exceedingly evident, but I do

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exclusive of Cairns

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786 in by 12 ft

not know that it is any greater here than anywhere else where there are wooden buildings. So far as I know there is no proposal to do anything with the existing building. It has outlived its usefulness. It is built of pine, and there is a lot of dry rot in the wood. The equipment in the existing exchange is out of date; some of it could be used for trunk lines. The switchboards could be installed in smaller centres. The estimated value of the recoverable plant is £2,222. It seems to me that the site chosen for the new exchange in the post office block is the best that could be obtained for the building. By placing it in the north-east corner of the block allowance is made for an extension of the post office. Eventually we may need to extend the post office, but if we had the telephone exchange right up against it, we could not do so, unless we built along the Spence-street frontage.

10. *To Mr. Cook.*—My opinion of the future of this district is that it is bright. Cairns must eventually become a big seaport, and with the unlimited water power we have in the Barron River at the falls, it must eventually become a manufacturing town. Townsville will always have an advantage over Cairns, because it gets the sheep and wool trade. The coastal trade of Cairns is confined to dairy products, maize, and timber. The export of minerals has decreased to a great extent, mainly on account of the closing of the Chillagoe works and the high cost of production. The district abounds in low grade ores, but the trouble is to treat them cheaply and meet the expense of costly transport. These difficulties may eventually disappear. I understand that recently the State Government disposed of about 5,000 tons of slag to a German firm, who were able to treat it and make a profit out of it. If the plant had been available in Queensland to treat the slag inexpensively, it would not have left Australia. A bacon factory has been established at Mareeba, on the railway inland from Cairns. I understand that it is not able to cope with its orders, its business has increased so much. Thirteen years ago Mabinda on the railway south and within touch of Cairns was not heard of. Now it is a busy town, with its own sugar mill. Atherton district has come into existence within the last 25 years. At Atherton there are large maize silos, and there is extensive quarrying in the district. Last year experiments were made with a harvester to cut the sugar cane. If we can get the harvesters into profitable use for cutting cane there must be a bright future for sugar. No carry every building erected in Cairns of a substantial nature is built of concrete. So far as I know, there is no brickmaking establishment in the district closer than Mareeba. The Works and Railways Department will call for tenders for the removal of the old exchange. We have 24 trunk lines through the Cairns office, and the number is not likely to be increased at present, but the traffic with the south is growing in such a way that we must make some provision for it. The service at present is satisfactory, and from an efficiency point of view the new exchange will add materially to the satisfaction the service is now giving. I do not think that there is need to provide a luncheon-room in the new exchange. The shifts are so arranged nowadays that girls have ample time to go to their homes for their luncheon. I am satisfied with the site chosen for the exchange. I should not like to shift the existing postmaster's dwelling. I should prefer to use it by turning it into Commonwealth offices.

11. *To Mr. McGrath.*—The post office block is not the centre of the town, but it is the centre of the

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AUTOMATIC TEL. EXCHANGE, CAIRNS 14

business portion of the town. We are not refusing subscribers at the present time, but the saturation point of the existing exchange will shortly be reached because we have not space for additional equipment. I do not know what number the board is capable of taking. We have within the last two years put up two additional switchboards, one with 200 lines was recently put up, and that would possibly take eighteen months to be filled. There is no room to put up another board. We have no air-conditioning plant in the existing exchange, except electric fans for the girls. When the new building is put up there will be a septic block. There is no sewerage in Cairns.

12. To Mr. Seabrook.—The risk of fire is not likely to be any greater in the block where the exchange is to be located than it would be in any other part of the town. The town is fairly congested with wooden buildings. Our water supply is drawn from the Barron River, and last year £70,000 was spent on putting in 9-in. pipes to improve the pressure. There is also a very efficient fire brigade in Cairns. I do not favour a proposal to remove the existing postmaster's residence from the Spence-street front and erect the automatic exchange on that portion of the post office block. I should say that it would be more economical to retain the old building and renovate it and turn it into offices. The old residence was probably put up 40 years ago. The walls are all of hardwood. I understand that the present proposal is to dismantle the existing telephone exchange and extend the post office along the Abbott-street front. If that proposal is carried out and the existing postmaster's residence is converted into offices, there will certainly be congestion when the new telephone exchange is erected at the back of the residence, but seeing that the whole area is devoted to postal purposes, that will not matter much. It would be better to have an automatic telephone exchange in the actual centre of the town, but in that regard we have to take into consideration the question of altering all our cables to run them into the centre of the town. I have no idea what cost would be entailed in running out the extra cables. It is not necessary to have an exchange near a post office, except from the supervision stand-point. With the exchange alongside the post office all we need in it are monitors in charge. If we have the exchange at some distance from the post office it means the appointment of a senior officer to look after it. The mechanics are all employed in the exchange. One man is engaged testing the trunk lines, another is on the switchboard, a third attends to the out-door work and ~~makes~~ good all the faults in the district. Our district here covers several outside exchanges, and a man, of course, is despatched to attend to the wants of those exchanges. In the new exchange the mechanics will be located underneath the automatic equipment. They will not need a separate workshop. They will have plenty of room in the new building. The plans for the new exchange have been prepared by the State engineer, and I should say that he has made provision for the next twenty years.

13. To Senator Reid.—We cannot carry on a proper service under present conditions. The apparatus is congested, efficient service cannot be rendered, some of the equipment is worn out, the covering of the wires in the exchange is wearing greatly. That means that the mechanics are constantly engaged in detecting faults

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1/2 the other mechanics man

and in putting on fresh insulation. It would not pay to put a new manual system into the existing building, or to repair the existing plant, because it has become obsolete except in regard to the switchboards which have been installed within the last couple of years, and are therefore standard equipment. The conditions in the room where the girls are employed are very bad. You can see the perspiration pouring out of their backs in the hot weather. We have done what we could with fans and windows, but in the very hot weather a fan is not of much assistance. There is every likelihood that the trunk line business will increase. We must have extra channels. We are just building extra lines to the tableland from Gordonvale. The Cairns system extends for a radius of about 7 miles. All the area within that 7 miles will eventually become town settlement. There are small towns in that area now, but the city will extend out to them. I see no reason why the population of Cairns should not go on increasing at the present rate.

14. *To Mr. McGrath.*—The Commonwealth is not paying rent for offices in Cairns. The old postmaster's residence could accommodate about four officers. No one has been living in the building for the last three years.

15. *To Senator Barnes.*—I should say that steelworks must eventually be established at Cairns. We have coal and any amount of iron in the district. If the experiments which are being made to produce power alcohol are successful it must lead to the establishment of a factory near Cairns. Something could also be done in this district in the manufacture of celopex from cane fibre.

The witness withdrew.

John Smith Murdoch, *Commonwealth Director-General of Works and Chief Architect*, sworn and examined.

16. *To Senator Barnes.*—The scheme for providing Cairns with an automatic telephone service has been under consideration for several years. Two or three forms of providing the service have engaged the attention of the departments, and its latest form is the one now presented to the committee by the drawings I submit. An agreement was come to by the postal and works officers at the beginning of the present year that it would probably be the best way of providing the service, so far as the building is concerned. Having regard to concentration of electric cables at the post office site, it is considered that a building on the post office property would be in the most economical position. Fortunately, the post office property in Cairns covers half an acre of land; it has 2 chains frontage to Abbott-street, the principal street of the city, and 2½ chains to Spence-street. The post office stands on the corner of the two streets, and an early extension of it is a matter to which consideration has also been given by the Postal Department. On the completion of the new exchange it is proposed to extend the post office over the site of the old telephone exchange. The future building in which the postal work will be done will thus extend along Abbott-street from the street corner to the boundary of the neighbouring property on the west, owned by the Australian Steamship Company. Thought was given to a proposal to incorporate the automatic telephone exchange as a second story of the new extension of the post office. There were disadvantages in that proposal, inasmuch as a two-story building fairly heavily loaded, such as an automatic exchange has to

J. C. M. G.

be, would not only be not quite so convenient as an exchange would be on an isolated site, but would also be liable to subside in a greater degree than a single-story building alongside, with the result that the two buildings might separate from each other, and there would be a definite crack between the old building and the new. The outcome of all these considerations was that it was decided that the best plan would be to have an isolated building for telephone purposes and place it on the vacant land to the rear of the old timber postmaster's residence. The original idea was to keep the building 6 feet away from the Strand Hotel, and from the boundary line of the Australian Steamship Company's property. The idea was not so much to get light as to provide that the walls would be kept away from the boundary and come in the centre of the wide foundations that are necessary in Cairns to carry a two-story building of this character. In this town, and particularly near the beach, the geological formation does not lend to successful building without extensive provision to counteract the softness. In some places a comparatively thin layer of sand overlies a very bibulous strata of mud and sand, and the only successful way of building on this formation is to increase the area of resistance by making foundations wide. Although this building is to be only two stories in height, 10 ft. 6 in. on the lower floor and 14 feet on the higher, and will have hollow walls 15 inches thick, the foundations in parts have to be 10 ft. 3 in. wide, that is to say, a reinforced concrete slab 10 ft. 3 in. wide has to be constructed to carry the walls. By keeping the building 6 feet away from the hotel and Steamship Company's boundaries it enables the walls to lie in the middle of this slab. We might save the 6 feet and build right up to the alignments of the neighbouring properties by the adoption of a modified scheme of foundations. Since coming to Cairns and seeing the proximity of the new exchange to the wooden hotel, which is, of course, a highly inflammable structure, I am inclined to think that it might be a good thing to gain 6 feet on the two sides of the building and thus materially add to the area available for post office purposes. But before coming to a decision on the matter I should like to consult the fire experts of the department. It seems to me that if a fire broke out in the two-story hotel the fire brigade might have difficulty in playing water on our building. In that event our end wall would while the fire was raging be approaching a red heat, and that, of course, would have a tendency to injure the equipment inside the building. Another matter that has engaged my attention since coming to Cairns is whether we are right in proposing to put the building on this portion of the post office property—whether it might not be better to remove the existing postmaster's residence and put the new exchange where it stands, having its long side at right angles with Spence-street instead of being parallel to it as now proposed. That consideration was more or less influenced by the value of the old residence. I am advised by the District Inspector that outside the post office itself there are branches of the postal service which will require permanent offices in Cairns. It is anticipated that when the automatic exchange is established here there may be a district engineer in Cairns. Accommodation will always be required for the district inspector and for the line inspector. It is advantageous to keep these officers outside the post office proper, and I think it could be done economically and at a fairly small cost by remodelling the old existing postmaster's

quarters. I find that the residence has a very fine hardwood frame. Its covering is also hardwood. Although it may have had a life of 45 or 50 years, the timber in it is as good as, and is probably better, than it was when first used, inasmuch as it has now been thoroughly seasoned and tested for its purpose. Assuming that this building can be used in this remodelled form as offices and could carry on for another 30 years or so, the value of it to the Government is something in the neighbourhood of £1,000, at a low estimate. There is no doubt whatever when remodelled the building would make a very convenient office for those branches of the post office I have mentioned. It is convenient to the post office itself and to the public, and its retention on the present site is well worth considering. In 30 years in its remodelled form it will have attained the limit of its usefulness, but in that time the probability is that the post office itself will require extension. The extension along Abbott-street now contemplated may by that time have reached its limit, and it may be desirable to extend along Spence-street. If so, there is no reason why it should not be done. By placing the telephone exchange on the site now proposed, we leave plenty of room for extension of the post office. That is a matter that time only can prove, but there is no doubt that for some 30 years we should be quite comfortable by extending the position along Abbott-street and leaving the remainder of the land for possible extension after that. I think that for about £450 or £500 the cottage could be put in order to accommodate the branch services of the post office, and give a building with a life of another 20 to 30 years. The hardwood in this district of Queensland has no limit to its life if it gets fair attention, and if ants are kept out of it. After study by the engineers of the Postal Department it seems that a two-story structure 78-feet long x 39 feet wide would be required to meet the introduction of the automatic telephone system in Cairns and carry it on for a period of about 30 years. As the building is proposed to be put at the rear of other buildings it need ~~not~~ have much in the way of architectural embellishment. It will hardly be seen. Therefore, a plain building of simple design is quite suitable. One essential, of course, is that it must be of highly fire-resisting construction. The proposal is that it should be constructed of reinforced concrete with steel stanchions and beams supporting reinforced concrete floors and the roof slab; that the dividing walls on the lower floor should be of brick easily removable in the event of structural alterations being required. This, from my experience, is advisable in every building. By making the dividing walls of brick the difficulty of making alterations is simplified. So far as the public is concerned, it is rather immaterial on what portion of the post office property the automatic telephone exchange is built. Up till midnight any one desiring to send a telegram or trunk line message may do so in the post office itself. After midnight and before 9 a.m. the man who has no telephone in his own home must call at the exchange and pay his fee if he desires to send trunk line messages. But I think I can assume that not a great number of people would be affected in that respect. In any case, arrangements could be made to meet the convenience of the small number who would be likely to be affected; I do not know that it would be a great disadvantage for them to have to go down to the ex-

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change through a lane at the rear of the post office. The location of the exchange at the north-eastern corner of the post office block will not be a serious disadvantage so far as the public is concerned, so that I do not think that aspect of the matter need be taken into account when fixing the best position for the exchange. Another matter to which I gave a little thought was that supposing the old postmaster's cottage were taken away, and the end of the exchange building were brought up to the Spence-street frontage, very little advantage would be gained. If the building were laid broadside on to the neighbouring hotel, I do not think it would be advisable to build to the alignment of the property itself; for fire protection purposes it would be necessary to keep some 10 feet or 12 feet away from the boundary. But, in any circumstances, even with a 10 feet or 12 feet space between the exchange and the hotel, if the latter caught fire the exchange would be liable to undergo terrific heat. The chances are that the windows would break. With the firemen playing water on the building I think that the windows, even if they were doubled, would break. In these circumstances, I do not think we would gain anything from a fire protection point of view by putting the exchange on the site of the existing postmaster's quarters. I think it is the desire of the Postal Department to preserve the old building for re-use either as a residence or as office for branches of the department. I should not support any re-use of it as a residence, but I should carry out the idea of making provision in it for branch offices. For a very small cost, I think it could be made quite attractive. The Commonwealth Bank on the opposite side of Spence-street is a wooden building, having a very important service, and every one seems satisfied with its appearance. The old postmaster's residence might be made to wear a similar appearance to the Commonwealth Bank without much expense. On the lower floor of the new exchange, which is 10 ft. 6 in. high, will be placed two telephone cabinets for the public, who may call there to send trunk line messages between midnight and 9 a.m. Provision will be made for enabling the public to pay fees for their calls. From the main entrance, stairs lead directly up to the upper floor. On the left-hand side of the stairs is a retiring room for men, which is 14 ft. x 10 ft. 3 in., and another for women, which is 15 ft. 9 in. x 14 ft.; also a private lavatory. Under the stairs there is a useful store, which the mechanics may require. An air-conditioning room 15 ft. 2 in. x 20 ft. 6 in. is provided, also a power room, 36 ft. 6 in. x 15 ft., and a battery room 36 ft. 6 in. x 15 ft. At the far end of the building is the accommodation for bringing in the cables from the street, and carrying them up into the switch room above. On the upper floor is the main switch room 61 ft. 1 in. x 36 ft. 6 in., also the trunk line exchange 36 ft. 6 in. x 14 ft. There is a flat concrete roof, and over that, so that the concrete may not become too heated, we have a projecting eave 3 feet from the wall. But since coming here, and noticing the fire risk from the two-story wooden hotel, I think it would be advisable to omit the timber projecting eaves and adopt a parapet roof. Eaves 3 feet wide protect the walls, and assist in keeping a building cool, but I think that in this case they can be dispensed with, and we should depend simply to the fullest extent on the air-conditioning of the building to keep it at a temperature required for successful automatic service. On this point

also I propose to consult the fire experts of the department. They consist of officers representing the Postmaster-General Department, the Defence Department, the Works and Railways Department, and the Customs Department, which departments are all more or less interested in fire protection so far as their property is concerned. The representatives of these departments meet every two or three months for a couple of hours and consider matters affecting the safety of buildings. They have, therefore, become more or less expert in these matters. I shall submit to them the question of building right up to the alignment of the hotel and the steamship company's property. If that is done, we shall have to close the windows on two sides of the building. But I do not think that is very material because there will be plenty of light coming from the other two sides, and, of course, in an automatic exchange where the air is conditioned, ventilation is really not permissible. By building right up to the alignment we should gain very much in retaining more land for the purposes of the Postmaster-General; and between the exchange and the back of the old wooden postmaster's house we should have about 42 feet of yard space, which would enable vehicles to turn quite freely. Of course, I assume that the back kitchen wing on the old house would be removed. There would not be much advantage in retaining it. The space it occupied would be more useful as a yard. While I am not sufficiently expert to know whether an air-conditioning plant would be required here, I should say that if any part of Australia required one it would probably be Cairns, on account of local humidity. But it would be a great thing for the public if it were found we could carry on without one, because in this small installation the air-conditioning plant will cost something like £3,300. It is possible that the postal and our engineers may decide to make an experiment with a direct radiating system at a cost of about £550; but that is a matter that can be decided only by practical experience of local conditions. The chances are that in 30 or 40 years' time if it found necessary to extend the post office, it may be decided to erect a new building, but if an extension were built along Spence-street for 60 feet, it would leave 32 feet between it and the boundary, giving plenty of room for vehicles to pass between the extension of the post office and the hotel boundary. The existing telephone exchange was the original Cairns post office. About 24 years ago, when the new building was put up, the old building was shifted along to its present site and used for a telegraph and telephone office. Within the next three years there will be an extension of the post office along Abbott-street. In 24 years it has been found necessary to extend the post office itself, and it is reasonable to suppose that within the next 27 years its further extension may be required. The life of the old cottage would probably be about 30 years. The present proposal is to extend along Abbott-street for about 55 feet. It is proposed to introduce some bricks into the new building. All the dividing walls will be of bricks. I think they are made at Mareeba. Between the concrete stanchions which support the beams in the concrete first floor and the concrete slabs in the ceiling will be brickwork plastered over. I am convinced that it is economy to use a brick filling. That method is employed elsewhere, and if the Mareeba brick is suitable, we shall use it. There will be no fire risk if we build up to our two boundaries, or if we keep 6 feet away from them, so long as we do not put any windows on

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those sides. I should like to save the 6 feet, and gain more room on the property. We shall have plenty of light from the other two sides. The building is only 39 feet wide. In Brisbane we are carrying light 64 feet. I have known Cairns since its infancy. Its prospects are getting brighter every day; there is any quantity of land to be taken up behind Cairns for sugarcane growing, farming, and pastoral purposes in the district. The usual chemicals will be installed in the building for fire prevention; the windows will be of steel frames with wired glass. No matter what happens to Cairns, although the post office is in a corner of the town, the business of the town will be done at the wharf. I do not think the banks will be removed. They are all established within about 100 yards of the post office, and where the banks are established it naturally follows that the business centre is there. If another site were chosen for the exchange it would add considerably to the cost, not only in the price that would have to be paid for the land, but also because of the additional cabling required. If the town does grow to the extent that it is no longer economical to use the existing exchange, the usual procedure is to establish satellite exchanges in the suburbs.

17. *To Mr. Cook.*—If £500 is spent on the old cottage, it will make it quite presentable and in keeping with the surrounding buildings. It will not give it a second-hand appearance. I could give it the same appearance as the Commonwealth Bank. I could put in concrete piers. I undertake to make quite a decent building of it. There might be a little difficulty with the town council. It is the practice of our department as far as possible to observe local municipal regulations, and if we were building a new building I should certainly not recommend building it of wood, but it is quite a different proposal to alter an existing building. If we do not use the cottage as it stands, its value is really gone. It would mean very little if we got a new site for it. We might get a little for the material if we advertised it for sale for removal, but I doubt it. The building is there, and we want it for offices. It is quite a good building. Of course, it is a matter for discussion with the postal people in Melbourne. If it were necessary to provide a building to accommodate the officers who will occupy the renovated cottage, it would cost about 25s. a foot, whereas we can get the same accommodation with an outlay of £500, which is about 8s. a foot. If we could introduce into the proposed telephone exchange accommodation for these officers it would not only cost 25s. a foot, but would also unduly load the building. We do not want to go higher than two stories. The estimate of 25s. a foot is low. The 10 ft. 6 in. foundations are calculated on the basis of the natural formation being able to bear 15 cwt. to the super foot. We know the weight of the building, and we know how many super. feet of foundations are required to carry it. I would not put up a big building in Cairns. Information I received from the architect for Samuel Allen's building shows that they had to bore 42 feet before they got hard clay foundation. I think the foundation we have provided will be ample. We have taken reasonable care to ascertain what has been the experience of others, and that is all we have to guide us. If we build up to the boundary of the property, it will probably cost another £100 to provide extra cantilevers. It is right for us to see that posterity

has a chance to use the extra land, and the day is coming when we shall need all the land we have available at Cairns for postal purposes. If we use steel, we must encase it in concrete to preserve it and keep it fire-proof. The steel beams in the exchange proper will be uncoated. I do not see the need for encasing them in concrete as the danger from fire is all external.

18. *To Senator Reid.*—The old cottage has weather-board outside and is lined inside. I can find no trace of ants in it. The chances are that in order to make it a nice attractive building of the modern kind, we may put a dado of plaster around it. Under present conditions it would cost about £1,600 to build the old building in Cairns as a new proposition. It is the feeling of the Postal Department that the old cottage should be preserved. There are two reasons against shifting it and putting the exchange in front; they are, the lack of economy in shifting it and the fact that by doing so you might be eventually preventing the post office from being extended. On the fire risk side nothing would be gained by increasing the thickness of the walls of the new exchange. Given heat of a certain intensity, concrete becomes red hot in time. If a fire occurred alongside this exchange it would be all over in twenty minutes. There would be a danger in having parapet walls on the sides facing the adjoining properties and eaves on the other two sides.

19. *To Mr. Seabrook.*—In the renovated cottage there would be rooms for the engineer and his assistant and a line inspector. They would probably occupy four rooms. In the present design of the building there are four big rooms and two small rooms. I do not think it would be better to house these officers in the telephone exchange and build the exchange on the Spence-street front. I agree that it would improve the appearance of the street to remove the old cottage and build the exchange there, but the alterations that I have in mind would make it quite presentable. The public mind in regard to wooden buildings is that they are something inferior. I cannot concede that. It is quite natural to have a wooden building in a place like Cairns. It is true that by building the exchange on Spence-street frontage the public requiring to make trunk line calls would be inconvenienced, but we cannot place that advantage in favorable comparison with the disadvantage to be derived by erecting the telephone exchange in a place where it will stand in the way of a later extension of the post office. It has taken 25 years to require a duplication of the present post office, and we may expect the same process to go on. In other words, we shall be preventing further extension of the post office if we do not leave room for it. I prefer to keep the postal service on the front street. In any case, I do not think there will be any room available in the new exchange for the officers who would be accommodated in the renovated cottage. I am under the impression that an air-conditioning plant will be required for the exchange. I do not anticipate having trouble with the foundations; there will be four layers of reinforcement, and the object is to have a sufficient area of resistance. It is of no use to pile. We would not get resistance for the piles unless we put them down to 40 feet. No space is required on the post office site for storing material. A site near the railway station is used for that purpose.

~~The witness withdrew.~~

~~The committee adjourned.~~

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AUTOMATIC TEL. EXCHANGE, CAIRNS 23

(Taken at Cairns.)

FRIDAY, 17TH AUGUST, 1928.

Present:

(~~Sectional Committee~~).

SENATOR BARNES in the Chair.

Senator Reid		Mr. McGrath
Mr. Cook		Mr. Seabrook

William Aloysius Collins, Mayor of Cairns, sworn and examined.

20. To Senator Barnes.—The only interest I have had in securing the erection of an automatic telephone exchange in Cairns is the interest I should have, as Mayor, in advocating what the citizens consider as a reasonable extension of facilities which we are entitled to expect in regard to any public service. In my opinion, the existing exchange gives fairly satisfactory service. I do not take exception to what are merely human lapses on the part of the attendants. On the whole, the service rendered is reasonable. The expectation of an increased population in Cairns and the district surrounding is undoubted. Everything points to an immediate extension, because of the growth of subsidiary industries to sugar cane growing. We are reaching a stage when celotex will be a marketable commodity, and when power alcohol will be produced from sugar and used for industrial purposes. If the British Government grants the measure of preference to dominion-grown sugar outlined by Sir Benjamin Morgan on his recent visit to Cairns, there is no doubt it will lead to a greater production of sugar in Australia; and the Cairns district being favorable for an expansion of sugar growing, the town will naturally derive great benefit. In the past, railways have been the only means of communication we have had with the back country, but the scheme of main roads construction now in operation will bring Cairns into contact with the hinterland more expeditiously. Within two years we shall probably have a main road tapping the great centres of Mossman and Port Douglas, 30 miles north. There are very valuable sugar lands there. We have a main road already in existence over the range to Atherton. It is already taxed to its utmost to meet the traffic requirements of the tableland, where the prospects for dairying, fodder conservation, and tobacco growing are proved to be bright. It is estimated that from 8,000 to 10,000 people could be settled in settlement schemes for the development of those industries. On the coast further north, and adjacent to Cairns, companies are acquiring land for the manufacture of paper pulp and artificial silk. An area for that purpose has been acquired in the neighbourhood of the falls. A great incentive to the establishment of industries should promote greater trade in the port of Cairns. I do not know what progress has been made in the development of power from the Barron Falls, but if the water power there could be utilized it would certainly give a great incentive to the establishment of industries in the coastal areas. A direct line to the falls would not be more than eighteen or twenty miles in length, and would pass through country adapted to the opening up of industries. This country is now in the shire of Cairns, but would become portion of the city. Mining has languished a good deal of late, but there are great possibilities for mining development in the hinterland. The present population of Cairns is 9,500. When the census were taken in 1921 it was about 7,500. The average rate of increase since then has been 500 per

annum, but with the establishment of new industries the population would increase more rapidly. A few years ago the Queensland Government appointed what was known as the Cairns and District Hydro-Electric Board to gather data in regard to the possibility of harnessing the Barron River Falls. The board is still in existence, and has in its possession several valuable reports from noted technical experts. Later on it was anticipated that there would be a possibility of utilizing the power under the terms of the British Migration Scheme. The proposal was submitted to Mr. Gepp, chairman of the Commonwealth Development and Migration Commission, and two experts from Tasmania were sent up here at the request of the Government in collaboration with the Migration Commission to prepare a further report on the scheme. I understand that their report has been presented, but what it is, I do not know. It has been suggested that it would cost £250,000 to harness the falls and provide power for Cairns and Atherton Tableland. An alternative scheme for the utilization of the power for Cairns and its immediate environment has been estimated to cost less than £100,000. The main roads to which I have referred have been built by the Main Roads Commission. The range road has cost £200,000 for a distance of 12 or 14 miles. In my opinion, the time will shortly arrive when the block of land on which the post office is built will be unduly cramped. I think the department is expecting to accommodate too much on the limited area available. I form that opinion from my experience of what has taken place in other centres. If the block is to be utilized by single-story buildings only, the congestion will be considerable, but the difficulty may be overcome by having a two-story structure. The frontage to Spence-street is worth from £35 to £40 a foot. I do not know that any economical advantage would be derived by separating the telephone exchange from the post office and removing it to another part of the town. Land values are equally high in other central blocks in the town. I do not know that it can be said that there is among the business people in the town any standard complaint against the existing telephone exchange other than the usual one about pin-prick delays. These grumblings never develop into what might be called complaints against the system.

21. *To Mr. Seabrook.*—I have been resident in Cairns since 1900, and I have seen the town progress and become prosperous. I have seen the back country in its boom days and in its lean days, and I am satisfied that it still contains a good deal more wealth than has ever been taken out of it, and that with development its prospects are assured. Every class of mineral can be found in the district. I am satisfied that in its present state Cairns will weather any financial stress that may be existing over the whole country, and that it will reap a greater advantage than any other port from any industrial development that may occur. Unless the new telephone exchange has certain architectural features, the Postal Department is anxious to display, or unless the municipality can insist on architectural features on the building, I see no reason why it should not be built at the rear of the post office; so far as utility is concerned it can give equal service in the back yard to that which it could give on a front street. I should not say that the old cottage is worth the expenditure of £500 to renovate it. I should rather say that it is fit for the scrap heap. It would be a decided

disadvantage and inconvenience to the public to compel them to go down a lane to use the telephone, and it would be a benefit to the public to utilize the Spence-street frontage and build the telephone exchange on the street alignment. The fire risk would certainly be greater by the proximity of the old wooden building, but I do not think it would be a very serious one, seeing that the new building is to be of concrete construction. Local opinion might be divided on the matter of shifting the telephone exchange to another site altogether. When all the mails arrived at Cairns by steamer, the business block ran from the post office to the wharves. Later on when the railway from Brisbane reached Cairns, and the southern mails arrived by rail, the centre of the town shifted from the first block, extending from the wharves to Spence-street, and extended west from Spence-street. The recent development of Cairns from a business and residential point has been to the north and north-west. The probability is that if we attempted to put the exchange in a more central position than that now chosen it would be more convenient. I have no doubt that within five years or ten years, or, at the outside, fifteen years, the population of Cairns will be 20,000. As a matter of fact, the population of the town and the district immediately adjacent, the requirements of which are administered to by Cairns, is up to 20,000. I am of opinion that the old wooden residence is an eye sore, and that it will not give the life of service that would be given by a concrete structure. As a matter of fact, the block in which the post office is situated is a first-class area in which any building over which the Town Council has jurisdiction, must be of first-class material, brick or concrete. I think the life of the old cottage can be said to have expired.

22. *To Senator Reid.*—I should say that the present post office is far from up to date. It does not appear to offer facilities to the staff to perform their duty without undue congestion among themselves. If the building were extended over the site of the present telephone exchange it ought to relieve the position for the time being, say, for ten or fifteen years. The building is situated in a position which is fairly convenient to the business section of the town. Accepting it as a temporary expedient to renovate the old cottage and leave the space it occupies for future expansion of the post office fifteen or twenty years hence, I should say that it was a wise business arrangement. But it must be remembered that the area available for postal purposes at the corner of Spence-street and Abbott-street is only half an acre, and unless it is decided to erect two-story buildings, I do not think it would be any very permanent advantage to leave the room along Spence-street front. It is true that if necessary the building could be three stories high, so long as plenty of space is left available on the ground floor for the public. But in that case it would be necessary to make the foundations sufficiently strong to stand the extra weight. In Cairns we have sand with water beneath it, and unless our foundations are sufficiently wide and strong it is a matter of impossibility to build three stories. Building foundations vary considerably here, subsidence is considerable. It is not possible to contemplate utilization of the Spence-street frontage by any other structure than a postal building, but my objection is to spending funds to any considerable amount, in order to transform into offices the old cottage now occupying the site.

If the expenditure were inconsiderable, it might suit the departmental purpose very well; but I think it would be unwise to expend money on the building to make it serve a purpose for any length of time. I understand that the public have very little to do with a telephone exchange. If it were otherwise it would be necessary to have the exchange on the street alignment. I have no doubt that a more central position could be found for the telephone exchange. The city is now developing away from the existing business area. As it exists now, the post office is certainly central, but as Cairns develops the centre will be removed more and more from its present location. The post office is, so to speak, on the fringe of the town, and as development proceeds it will be more and more away from the actual centre. But, speaking generally, it is in a fairly central position for business activities. I think that the extension of the post office along the Abbott-street frontage is a matter for immediate consideration. I think it is an urgent work. I am well aware that the old telephone exchange is doing good work. Nevertheless, I am of opinion that more facilities should be provided to give a service to the public. I should say that the construction of an automatic exchange is also a matter of urgency to enable the department to cope with the business that may be expected with the population we shall have in Cairns. It is a matter of vital importance to outlying places that they should be able to get prompt trunk line communication with Cairns at all hours of the night. I should consider it most undesirable that people should have to go down a lane to make a trunk call after midnight at the Cairns automatic telephone exchange. There are frequent complaints made at the Municipal Council Chambers about the abuse of vestibules, and the vestibule at the post office has been one of those mentioned. The various banks and business places in the vicinity of the post office regard the lanes as no end of ~~business~~. They have made frequent applications to the municipal council to have conveniences provided at various spots to avoid the nuisances which are created in these lanes and vestibules. It is not desirable that women should have to pass down a lane to make use of the telephone. In this connexion it has to be borne in mind that the exchange will be in a section of the town which is not lighted by the business places. It is among public buildings with a bank opposite. For this reason the council has found it necessary to keep the whole section well lighted by street lamps. Part of our purpose has been to prevent the occurrences of the nuisances to which I have referred. There are lanes behind the buildings in these blocks, and they are a source of long series of complaints.

23. *To Mr. Cook.*—The tourist traffic in Cairns is considerable at this time of the year. Kuranda has been an established tourist resort since the building of the Cairns railway about 1885, but since the building of the main roads the main tourist traffic runs directly to Yungaburra, the return journey being made by motor car over the range road. To the north of Cairns the main road to Port Douglas will open up tourist resorts at Double Island, Barron Beach, and Yorkies Knob surfing beaches in close proximity to Cairns. Greatest development in the immediate outskirts of Cairns has taken place at Red Lynch and Freshwater. The sugar lands that have come into cultivation within the last six years have transformed the whole area within a 10 miles radius of Cairns. It is the most prolific sugar-producing area of this district. The Colonial Sugar Refining Company have built a line of

nuisance

their own for a distance of about 15 or 10 miles through that area. The lands to the north of Cairns have unlimited supplies of all valuable timbers. There are valuable timbers on the territory extending back from Mount Molloy. I would not say that the Commonwealth Bank in Cairns is unsightly, but it is not commensurate with the requirements of the town. It is all right in theory to provide office accommodation at 8s. a foot by renovating an old wooden building, but with my experience I would not hesitate to adopt permanent construction. The old building has weathered a few cyclones, but no matter how you may strengthen a wooden building you run an unwise risk. Under normal conditions, the old building may have a fair life, but there is every possibility of a wooden building being swept away like a pack of cards by a cyclone. We have had seven cyclones in the last twenty years, and their effect is to strain wooden buildings and break their backs. I think the committee ought to take into consideration the risk of storms and their effect on wooden buildings. If the property were mine I would not entertain the idea of renovating the old wooden structure to serve a public purpose, even at a cost of 25s. a foot, instead of 8s. I would make provision for offices in a permanent building. You never know how cyclones move. The people in Cairns have profited by their past experience, and have built to withstand the effect of storms. Their present disposition is to adopt concrete or brickwork for public buildings.

24. *To Senator Barnes.*—You cannot effect insurance against a cyclone. I understand that the Repatriation Department protects soldiers' homes against cyclones, but they are the only people who make any insurance in that respect. I think the Commonwealth Bank falls far short of the requirements of the position it occupies in the town. The hotels in the block in which the post office is situated cater mostly for tourist traffic, and the old postmaster's cottage certainly is no attraction. On the contrary, it gives a rather bad impression, and I do not think it is a building that is worthy of much consideration from the point of view of the Postal Department.

is as a building

The witness withdrew.

Henry King Nixon MacDonnell, President of the Chamber of Commerce, Cairns, sworn and examined.

25. *To Senator Barnes.*—Since 1924 the Cairns Chamber of Commerce has been in direct communication with the Postmaster-General with a view to having proper postal facilities for this town. The need for a new telephone exchange was urged by the Postmaster-General himself. It was not a matter that was initiated by the chamber. For the last three and a half years there has been a somewhat acrimonious correspondence between us and the Postmaster-General as to why the department has not proceeded with the building of the extension to the post office. We have had no complaints in regard to the facilities afforded for telephonic purposes; there are the usual pin-pricks, but nothing of any consequence. Of course, the district is growing, but we are mainly concerned with getting an extension to the post office. I submit figures showing the progress of Cairns for the years 1925, 1926, and 1927. There has apparently been a substantial diminution in the value of exports for 1927 as against 1926, but that has not been due to any decreased prosperity in the district. The cause has been mostly due to the operations of the

Sugar Board. From inquiries I have made at the Customs Office, it would appear that for some years the sugar pool sent the bulk of its overseas sugar direct from Cairns, but it has not always followed that practice. The production is here just the same, but the output may not go overseas direct from Cairns. Overseas vessels have come here to go direct to Canada. From my knowledge of the district I should say that its population will double within twenty years. It is expected that the harnessing of the Barron Falls will enable secondary industries to be established here. It will enable electricity to replace steam in the sugar mills, thus permitting ~~what~~ ^{gas} is now used as fuel to produce ~~gas~~ to be utilized in the development of secondary industries. An ~~American~~ visitor has pointed out that artificial silk can be made from ~~what~~ ^{gas} is now used in the sugar mills for ~~the manufacture of gas~~. It is hoped that large industries in the mineral world will be established when conditions in the mining fields are suitable for resumption. It is hoped that cheap power will enable us to have smelters for treating zinc. There are no iron deposits of any magnitude in the locality. We have two districts here, the coastal district and the tableland; the latter being 2,500 feet higher than the former, naturally we have two different classes of products. I am confident of the future prosperity of this town, and I have proved my confidence in this regard by spending large sums of money in the town.

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26. To Mr. McGrath.—At the present time there is a limitation to the cultivation of sugar-cane, but we hope that that will soon be removed. Sir Benjamin Morgan, in addressing a number of citizens of the district, intimated that he had good grounds for believing that the British Parliament would encourage the development of sugar in the dominions. He expressed the hope that if 200,000 or 300,000 tons of sugar could be produced in Queensland the British Parliament would make such an allowance in its tariff as would enable that sugar to be produced economically here, taking into account the home consumption price. If electric power is used in the sugar mills the latter will not be consuming the ~~gas~~ now put through the boilers for heating purposes, and that ~~gas~~ could be used by the mills for the manufacture of artificial silk. As a citizen of Australia, I do not think it is a good financial proposition to renovate the old cottage at the post office and use it as offices for the next twenty years. I think the building ought to be pulled down. I am certain that we are about to have the post office extended. The old building should be removed; it is only increasing the fire risk.

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27. To Senator Reid.—I quite understand that the post office cannot be extended until the existing exchange is removed. It is quite probable that the public will be more content when a new telephone system is installed. It is certain that even if a new exchange is not urgent at the present time, it soon will be. The department must cater for the business that is coming forward. Nevertheless, we are under the impression that it is more urgent to have proper postal facilities.

*The witness withdrew.
The committee adjourned.*

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AUTOMATIC TEL. EXCHANGE, CAIRNS 28

(Taken at Cairns.)

SATURDAY, 18TH AUGUST, 1928.

Present:

(SECTIONAL COMMITTEE.)

Senator BARNES, in the chair;

Senator Reid

Mr. McGrath

Mr. Cook.

Mr. Seabrook.

Edward Campbell Earl, Chairman of the Cairns Harbour Board, sworn and examined.

28. To Senator Barnes.—From what we know of the automatic telephone exchanges in the south, we think it would be a great advantage to have one of them in operation in Cairns. We are not getting a satisfactory service from the system we have in operation here. Sometimes when you ring you do not get an answer. I have often wondered what is the cause of the delays. I have rung up the postmaster and asked him if there has been anything wrong with the telephone; he has always been obliging, and has done his best to put matters right. It is generally understood here that the plant is out of date. I am satisfied that the staff is most anxious to give the best service possible, and I believe that if it had the means to do so it would give a much more efficient service.

The following is a comparison of statistics for the last three decades, viz., 1908, 1918, 1927, showing the imports and exports, setting forth the industries which have languished and those that have prospered according to Port returns:—

YEAR 1908.

Imports .. 78,600 tons (this includes 30,000 tons coal and coke)

Exports Tons.

Principal items— 57,000

Minerals 17,000

Sugar 15,200

Timber 10,000

The Minerals comprised— Tons

Antimony 60

Blister Copper 4,300

Bismuth 60

Copper Ore 450

Lead Ore 2,000

S. Lead Bull'n 7,000

Molybdenite 100

Silicite 10

Tin Ore 670

Tin Ingots 1,500

Tin Concrts. 900

Also Bunch Bananas, 80,000; Coffee, 100 cases; Maize, 6,000 tons; and Case Fruit, 1,700 tons.

YEAR 1918.

Imports .. 54,000 tons (coal and coke, 14,000 tons)

Exports Tons

Principal Items— 98,000

Sugar 39,000

Timber 20,000

Minerals 1,500

The Minerals comprised— Tons

Bismuth 33

Bismuth-Wolfram 46

Copper Ore 3,000

Molybdenite 90

Silicite 11

S. Lead Ore 328

Tin Ore 480

Tin Ingots 200

Tin Concrts. 31

Wolfram 308

Bananas, 6,500 bunches; Butter, 320 tons; Case Fruit, 3,000 tons; Coffee, 6 tons; Maize, 8,000 tons; Meat, 1,800 tons.

YEAR 1927.

Imports .. 73,826 tons (coal, 9,000 tons)

Exports Tons

Principal Items— 124,000

Sugar 71,000

Timber 25,000

Minerals 3,000

(Includes 700 tons of Flour, and 500 tons of Tin)

Butter, 251 tons; Fruit (case), 213 tons; Maize, 3,700 tons; Meat, 1,900 tons.

From the above figures it will be observed how the trade has advanced along various lines such as export sugar and timber and languished along other lines such as minerals, coffee, bananas, fruit, and maize. New industries such as butter and meat have sprung up as compared with 1908. The imports show a marked decrease for the first decade but for the second decade there is a marked increase when the coal is excepted. This is due to the Mulligan use locally. In the twenty years life of the proposed new exchange the population should double itself, because the increase has been very marked during the last six years. Our exports have increased each year as follows:—

	Tons.
1915	77,000
1916	90,000
1917	89,000
1918	98,000
1919	82,000
1920	102,000
1921	92,000
1922	113,000
1923	132,000
1924	135,000
1925	118,000
1926	157,000
1927	124,000

The great increase in 1926 was due to the fact that there was a shipping dislocation in 1925, and 1926 got some of the previous year's export trade. The average quantity exported from Cairns during the last five years has been about 131,000 tons. The increase of the business on the harbour front has been very marked within the last four years. From my knowledge of the town it is going rapidly ahead in population. I am not at all optimistic by nature, but I say it is a fairly good estimate that the population will double within the next twenty years. It will do more than that if the place progresses at the rate at which it is now progressing. The best evidence of the progress of Cairns and district is that such conservative institutions as banks are spending money here. They will not do so unless they can see well ahead. The Bank of Australasia, which for some time had a very poor office here, something you would hardly class as a bank, has recently come to the determination that Cairns warranted it in putting up a building at a cost of £30,000. I think you can say that 99 per cent. of the local people invest their money locally. Even at the present time, when the financial position of Australia is not too good, private people in Cairns are putting up buildings which are costing up to £30,000. If the Barron Falls hydro-electric scheme becomes an accomplished fact, there is no doubt that factories will be established in Cairns. We consider that maize should be treated and turned into something in the shape of meal. With cheap power, there seems to be an unlimited market for by-products of sugar, such as colotex and power alcohol. There are unlimited deposits of ironstone on the tableland. There is every possibility of the manufacture of carbide. The deposits are within 100 miles of Cairns, and the haulage would all be down grade to the coast. I think it would be unwise to spend money on the old postmaster's cottage; the site it occupies is too valuable for that class of building to be even repaired, let alone erected. If it were mine I do not think I would spend any money on it. A good rental could be obtained if the Postmaster-General could lease the site, because it is really one of the picked spots of Cairns. The Commonwealth Bank on the opposite side of the street may be all right, but I am sorry that a more striking building has not been erected there. I think there was a little bit of misunderstanding. I do not know what it was, but originally the bank intended to build something better.

20. *To Senator Reid.*—In 1927 the quantity of sugar exported from Cairns was 74,500 tons, of which approximately 25,000 tons would go overseas. The overseas trade is certainly improving every year. The sugar growers are producing more sugar every year, and if the Australian demand is not sufficient, the surplus must be exported. If Cairns grows, as it has been growing, and it produces more sugar, there will be more exported overseas; but, of course, the output of the mills has a limitation. The growers are utilizing fertilizers, and improving their method of cultivation. They are getting more per acre than they previously did when their soil was virgin. If we could profitably export sugar overseas we could double our sugar production. Every ton of sugar grown creates quite a big settlement. Sugar is one of the biggest settlers in tropical country. Of course, an increase in settlement would lead to an increase in the use of telephones. Oranges and lemons are grown on the tableland and sent south. I think that the trade in that direction is likely to increase. If the fruit fly trouble can be overcome, there ought to be an unlimited production of these fruits, provided there is a market for them. The meat trade through Cairns is frozen-meat. During 1927 the value of hams and bacon exported was £28,170, and that of by-products £2,600. The value of chilled pork exported was £2,120. In the same year there

was exported from Cairns 2,000 tons of beef valued at £64,692, while the value of sundries and by-products exported amounted to £25,587. The tableland should carry thousands of people more than it is carrying at the present time. Coal is mined at Mount Mulligan. The Harbour Board is building a wharf at a cost of £80,000. The original idea was that the Queensland Government would provide bunkering facilities on the wharf for the export of Mount Mulligan coal. When Mr. Theodore was Premier, he visited the mine, and, in conference with the manager, investigated the whole scheme. He then came to Cairns and discussed it with the Harbour Board. He told us that the coal reserves warranted the board in building the wharf, and the Government in providing the bunkering facilities. According to the statement made at that time, the coal was good for export. The wharf should be built at the end of twelve months, and it will then be for the State Government to carry out its part. There is no doubt that a little more room would enable the postal staff to do better work. In this tropical climate it is essential that there should be ample space in offices. The development of the district requires the extension of the existing post office when the new telephone exchange is completed.

30. *To Mr. Seabrook.*—I have not been inside the exchange, but the place must be congested with the telephone operators and the telegraph operators in the same small building. If the exchange were built in the corner of the yard it would leave sufficient room for the extension of the post office, but I think it is the Government's duty to study the appearance of the town, and the convenience of its employees. The proposed site of the new exchange is one where the employees will not get a chance of getting a bit of air. There is every possibility of trunk calls being made after hours, and I think it very inadvisable that the people who want to make these calls should be compelled to go down a right-of-way to make them. I think women would probably forego making the calls rather than go down the right-of-way. I would not spend money on the old cottage. It would be better to have the exchange built on the Spence-street frontage.

31. *To Mr. McGrath.*—The use of an air-conditioning plant will alter the whole position. I thought that the employees would be compelled to work in the corner of the yard, and have no means of getting fresh air. The Spence-street front is very valuable, but I do not think it wise to spend any money on the old building. If office accommodation is needed, it ought to be incorporated in the new building. The falling off in the export of minerals was principally due to the interruption caused by the war, but another reason has been the high cost of production. At the present time there is quite a big move in the back country in tin. Sluicing plants are being as they did before the war. We all know pretty well that the Malay Straits settlements have petered out, and that there is a tendency now to work the underdeveloped tin areas of Queensland. We have unlimited deposits of tin, which can be worked if there are cheaper means of transport and working.

32. *To Mr. Cook.*—The town council has declared certain blocks in the town first-class blocks, and no one in one of those blocks is allowed to repair even a motor car shed without the consent of the council. It is the only way to keep the town as you see it to-

day, with a few decent class buildings in it. In the circumstances, it does not seem altogether fair that the Commonwealth Government should come along and do what a private individual is debarred from doing.

33. *To Mr. McGrath.*—I would not recommend putting on the street frontage a building to which the public have no need to go.

34. *To Senator Reid.*—I should like to leave the Spence-street area for the future expansion of the post office, but I do not see the wisdom of spending £500 on the cottage, although it might be a wise business investment to do so.

~~The witness withdrew.~~

~~The witness withdrew.~~

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(Taken at Melbourne.)

MONDAY, 27TH AUGUST, 1928.

Present:

Senator BARNES (in the chair).

Senator Reid
Mr. Cook

Mr. McGrath.

(Sessional Committee)

John Smith Murdoch, Director-General of Works and Chief Architect, Department of Works and Railways, recalled and further examined.

/s/ C. H. G.

35. To Senator Barnes.—I have given further consideration to the fire risk in connexion with the proposed exchange building, and this morning consulted with Mr. Lee, late superintendent of the Melbourne brigade, and Mr. Hill, the Commonwealth Chief Engineer. The original proposal was to place the exchange building 6 feet away from a two-story wooden hotel on the adjoining allotment, and a similar distance away from the boundary of the Australian Steamship Company's property. Mr. Lee considers that it would be dangerous to leave those 6-foot divisions and that the safer policy would be to build right up to the hotel and also to the Australian Steamship Company's boundary, if we can dispense with windows that side. I think we can do that. Mr. Lee's views coincide with my own, and I think we can save that 6 feet at the end and side of the building and have more room on the postal property. Mr. Lee stated that the 6 feet space between the from the boundary of the Australian Steamship Company's two-storey hotel and the proposed new exchange building would act as an air funnel if a fire occurred in the hotel, and would involve greater risk to Commonwealth property. Because of the construction of the hotel, a fire in it would be over quickly, and the heating of our building would not be very great if we had a blank wall on that side. I propose, therefore, that we should accept his advice to build right to the boundary, and dispense with windows on that side. It is not so easy to dispense with the windows on the side adjoining the steamship company's property, but for the time being we can provide the windows, and if the company ever builds up to its boundary we shall have to close them. The company's building has a brick frontage, the rear being of wood construction; but, as it is a long distance from the proposed exchange building, there will be no danger to the latter until the company re-builds. Probably that allotment will not be built on for the next 40 years, and we are only providing an exchange to cater for the requirements of the next twenty years. A further objection to the 6-feet passage way is that the accumulation of ~~paper and other~~ rubbish would increase the risk of conflagration. Obviously, it will be necessary to omit the projecting eaves and substitute a parapet wall, ~~and also have an iron roof instead of a concrete roof.~~ That would add probably £100 to the estimated cost. Certain further costs will be entailed by putting the wall up against the boundary on two sides, because the wall will be on the edge of the foundations, and that will necessitate an increase of the area of the foundations inside the buildings. That may cost an extra £50 or £60. To counteract any eccentricity of load the broad footings of the walls can be extended up to the first line of pillars; so that, if there is any tendency to overturn the footings, these extensions will act as a cantilever. Another matter to which I have given further attention is the retention of the present postmaster's dwelling and its conversion into offices. I arranged for one of ~~my~~ officers at Brisbane to estimate the cost of conversion, and he prepared a sketch which shows a very attractive reconstruction, estimated to cost between £400 and £500. That sketch will be forwarded to Canberra, and the committee will see from it that the old dwelling can be made quite presentable; as

possible
/37/s/ with the iron roof
behind it.

/our

the frame is sound, it may be depended upon to give good service for the next 25 years. I do not regard a wooden building as temporary, unsightly, or inappropriate in a Queensland country town. It is quite a legitimate structure so long as it has a presentable appearance.

36 / 1. *To Senator Reid.*—If we build up to the boundary of the allotment on two sides, our walls will sit on the very edge of the foundation. Under that stress the foundations, instead of being entirely in compression, will become a cantilever, the end of which will be held down by the first row of stanchions on each side. The small amount of extra concrete and steel required to extend the footing to the first row of stanchions would not cost very much. The steamship company has between 30 and 35 feet of area of ground for future building extensions. In the meantime, we should take light and ventilation also, if an air-conditioning plant is not installed, from the vacant allotment. As an act of courtesy, we shall tell the steamship company that we propose to insert windows on the side overlooking its property, if it has no objection. In the Brisbane exchange we have fitted windows with locks similar to those on railway carriages, the key of which will be under the control of one man. There are certain days when the air does not require to be conditioned by the mechanical plant, and when the windows may be opened with safety and with advantage to the health of the staff. Probably we shall put similar windows in the Cairns building. In regard to the old residence, my proposal is to improve the front elevation, so that it will be quite up to the architectural standard of Spence-street, and to also make the interior of the building a little more attractive. Of course, that land will always be available for the future extension of the post office.

37. *To Mr. Cook.*—I am convinced that the renovation of the old building will be in the public interest. The timber in the frame is as good as it was 20 years ago. / 40

38. *To Mr. McGrath.*—For an expenditure of £500 the postmaster's old residence could be made just as presentable as the Commonwealth Bank building in Cairns. Special window locks, the key of which should be in the possession of only one officer, have been proposed for the Brisbane exchange, but have not been tried elsewhere in Australia. When I provided projecting eaves for the Cairns exchange building, I was not aware that it would adjoin a two-story hotel building. / timber

The witness retired.

Thomas Hill, chief engineer, Department of Works and Railways, sworn and examined.

39. *To Senator Barnes.*—In response to a request from the Postmaster-General's Department, estimates were furnished by me about a year ago for certain engineering services in connexion with the Cairns automatic telephone exchange. They are as follow:— / this department

(1) Full air conditioning plant ..	£2,450
(2) Direct radiator heating (as alternative to (1)) ..	500
(3) Vacuum cleaning and compressed air services ..	550

These figures are for a much smaller exchange than that now submitted, and it is desired to revise the estimate as follows:—

(1) Full air-conditioning plant ..	£3,300
(2) Direct heating (as alternative to (1)) ..	550
(3) Vacuum cleaning and compressed air services ..	620

The full air-conditioning plant (item 1) is strongly recommended if the Postal Engineers consider it essential that the humidity in the exchange shall not exceed 70 per cent., which, I understand, is one of the condi-

tions upon which contractors tender. The responsibility of my department is to provide the conditions specified by the engineers of the Postmaster-General's Department. Cairns is a coastal tropical town of high temperatures and humidities and air-conditioning is the only method of keeping the humidity within the limits required for the efficient working of the telephone equipment. The plant will be similar to that installed in other automatic exchanges. It will consist of:-

A centrifugal fan delivering 4,000 cubic feet of air per minute; an air washer and heater; a refrigerating plant of five tons capacity for cooling the spray water; a cast-iron water boiler for re-heating the air after washing; and galvanized iron ducts to distribute the air throughout the switchroom. Air will enter the switch room through registers placed close to the ceiling and arranged at intervals along the north-east side wall. It will travel across the room and leave, under the pressure of the plenum system, through outlets placed on the opposite wall. These outlets will be so arranged that the air will escape at either a high or a low level, or both, as desired. It is proposed to mechanically ventilate the switch room and trunk line room only and the plant proposed will give six changes of air per hour. The refrigerator will take ten horse power and the fan three horse power to drive, making the total power requirements 13 horse power or about 12 units per hour. The estimate of £3,300 includes an automatically-operated oil-burning boiler. If an ordinary coke-burning boiler is used, the cost will be reduced by £250.

Direct radiator heating is an alternative to (1) and consists of hot water radiators ranged along the walls of the switch room. It is quite unsuited to the climatic conditions at Cairns and is not recommended.

Item (3) provides for a single sweeper stationary vacuum cleaning plant, with fixed pipe connexions to various hose points in the switch room and power room. The compressed air plant will consist of a small motor-driven air compressor, about 10 cubic feet per minute capacity, air receiver, and piping to hose points placed alongside the vacuum hose valves. The points will be so situated as to reach any point with 30 feet of hose.

The alternative to the above is a portable truck type combined vacuum producer and blower. This has smaller capacity than the stationary type and is more cumbersome to handle. It would cost about £120. The Postal Department has had experience of both types and should be able to advise whether the portable type is suitable for its requirements at Cairns. Our opinion is that the fixed apparatus would be more suitable. The estimate of £3,300 for an air-conditioning plant in an exchange with 1,000 lines is not excessive. It is based upon the cubic contents of the buildings and its ultimate capacity, and not on the number of telephone lines, except in so far as they influence the size of the building. The proposed plant would serve 3,000 subscribers' lines as well as 1,000. It is not for my department to say whether such a plant is or is not necessary. We are continually on the look out for alternative methods of controlling dust and humidity in the atmosphere, and at the present time are closely examining two proposals for obviating the cost of operating the ammonia compressor. So far, we have found no means of so efficiently extracting dust and moisture from the air as the air-washing and drying equipment. In America, I examined the plants in many of the big hotels, public buildings and theatres, and found a system very similar to that which we employ almost universally in use. However, we are now experiment-

ing with a system of dust extraction by passing the air under pressure through screens dipped in oil, and I am asking the Commonwealth analyst to carefully analyze the oil and air, so that we may know the full effect of these oil screens in periods of high temperature. For instance, it would be disastrous if, in hot weather, fine particles of oil were carried into the exchange building and formed a film over the more delicate parts of the mechanism. I hope to be able shortly to place the results of this investigation before the committee. The "Silica Gel" system of moisture extraction used in ~~the~~ ^{glass} furnaces in England seems to have certain possibilities for us and is still being experimented with. Subject to satisfactory preliminary tests we would like to try out one of these alternatives in a small exchange for twelve months. In the trial tests we have the valuable co-operation of the experts in the munition factory at Maribyrnong. In regard to the proposal to carry the Cairns exchange building right to the boundary, I am not in favour of gaps or funnels between buildings. Having a knowledge of wooden houses in Queensland, and bearing in mind the possibility of a wooden building being erected on the north side as well as the eastern side, I recommend that the walls be built right to the boundary. Our experience is that narrow passages accumulate rubbish and act as flues in the event of fire. Any disability arising out of the placing of the walls on the edge of the foundation could be counteracted by carrying the walls on to a concrete slab acting as a cantilever.

40. To Mr. McGrath.—Air-conditioning is not required in the battery room, the power room, or the men's room, and economy is effected by not extending the plant to those parts of the building. I am not prepared to recommend a coke burner. The efficiency of such a plant would depend upon the quantity and quality of the coke available. If coal gas is available for ignition purposes, I prefer the oil-burning plant. Moreover, the latter has an automatic cut-off and is more adaptable than the coke plant. If the postal officials can so enclose their wires and equipment that they will operate efficiently in a humid atmosphere, air-conditioning will not be necessary. I understand that tenderers insist that the more delicate mechanism of the automatic plant should not be required to operate in a temperature the humidity of which is above 70 per cent. It is questionable whether air-conditioning is required south of the Dividing Range. At present we are only installing heating and air-washing plants, and are omitting the ammonia compressor for cooling, but we leave space in the power room for its installation, if experience proves that cooling is required.

41. To Senator Reid.—The used air is taken off in a duct either at the ground floor or near the ceiling. If an exchange building is to adjoin other buildings we allow the air to escape between the ceiling and the roof, and this helps to keep the rooms below cool. If there is to be an iron roof above the concrete roof of the Cairns exchange it will be advantageous to discharge the air between the two. I regard the fixed vacuum cleaner as more economical than the portable. I have seen the effect of fire upon concrete walls; walls such as will be in the proposed exchange building would not be endangered by the burning of an adjoining two-storey wooden building.

*The witness withdrew.
The committee adjourned.*

/s. some blast

*/s. of the Silica Gel system
who are heavily interested in the
problem of air treatment.*

/s. proposing to install / filtering

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