

1926.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.

PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS.

R E P O R T

TOGETHER WITH

MINUTES OF EVIDENCE

RELATING TO THE PROPOSED ERECTION OF AN

AUTOMATIC TELEPHONE EXCHANGE AT
HOBART, TASMANIA.

Presented pursuant to Statute; ordered to be printed, 29th June, 1926.

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MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

(*Fifth Committee.*)

G. H. MACKAY, Esquire, M.P., Chairman.

Senate.

Senator John Barnes.
Senator Patrick Joseph Lynch.
Senator Matthew Reid.

House of Representatives.

Robert Cook, Esquire, M.P.
The Honorable Henry Gregory, M.P.
Andrew William Lacey, Esquire, M.P.
David Charles McGrath, Esquire, M.P.
Alfred Charles Seabrook, Esquire, M.P.

	INDEX.										PAGE.
Report	iii
Minutes of Evidence	1

EXTRACT FROM THE VOTES AND PROCEEDINGS OF THE HOUSE OF REPRESENTATIVES.

No. 35 DATED 26TH MARCH, 1926.

11. PUBLIC WORKS COMMITTEE—REFERENCE OF WORK—AUTOMATIC TELEPHONE EXCHANGE AT HOBART.—Mr. Hill (Minister for Works and Railways) moved, pursuant to notice, That, in accordance with the provisions of the Commonwealth Public Works Committee Act 1913–21, the following proposed work be referred to the Parliamentary Standing Committee on Public Works for investigation and report, viz.:—Hobart (Tasmania)—Erection of an Automatic Telephone Exchange.

Mr. Hill having laid on the Table plans, &c., in connexion with the proposed work—
Question—put and passed.

LIST OF WITNESSES.

		PAGE.
Becher, Edgar, Supervising Engineer, Postmaster-General's Department, Central Administration	..	1
Braithwaite, George John, State Engineer, Postmaster-General's Department, Hobart	..	7
Brown, Bruce Howard, Acting Superintendent of Telephones, Postmaster-General's Department, Hobart	..	9
Cathie, James Edward, Deputy Public Service Inspector, and Commonwealth Works Registrar, Hobart	..	14
Crawford, John Murray, Chief Electrical Engineer, Postmaster-General's Department, Central Administration	..	19
Cummins, Walter Herbert, President, Hobart Chamber of Commerce	..	15
Foley, James Charles, Commonwealth Divisional Meteorologist, Hobart	..	15
Hannaford, Edgar Morrah, Deputy Director of Posts and Telegraphs, Tasmania	..	17
Murdoch, John Smith, Director-General of Works, Department of Works and Railways	..	4, 11, 21
Perry, Roy Tasman, Secretary Tasmanian Branch, Commonwealth Public Service Clerical Association, and member of High Council of Public Service Organizations	..	13
Valentine, Francis David, Mayor of Hobart	..	12
Warlow-Davies, Harry, Acting Chief Engineer, Electrolytic Zinc Company Limited, Hobart	..	16

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

HOBART AUTOMATIC TELEPHONE EXCHANGE.

REPORT

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS, to which the House of Representatives referred, for investigation and report, the question of the erection of an Automatic Telephone Exchange at Hobart, Tasmania, has the honour to report as follows:—

PROPOSAL

1. The proposal is to erect a building on a site already acquired at the corner of Harrington and Davey streets, Hobart, and to install therein an automatic telephone switching system having an initial equipment for 4,100 subscriber's lines and an ultimate capacity of approximately 7,000 subscribers' lines. It is proposed that the initial equipment shall be capable of extension to the ultimate capacity named, thereby affording sufficient accommodation for the anticipated development in the Hobart Automatic Telephone Exchange area for a period of about 20 years.

REASONS FOR THE PROPOSAL.

2. It is represented that the existing manual exchange which serves the subscribers in the area will reach the limit of its capacity by about 1928, and it is stated to be impracticable, owing to building limitations, to extend the existing plant in the present building. It is urged that the installation of a modern plant in a new building is necessary in order that efficient service may be rendered to present and prospective subscribers in the area.

ESTIMATED COST.

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

	£
Site (already acquired)	3,500
Building	46,700
Air-conditioning, heating, de-humidifying, air compression plant, and incinerator	5,300
Exchange equipment, including that necessary at other exchanges	83,552
Sub-station equipment	11,584
Line plant (diversion) and cost of cut-over	10,482
Total	£161,118

and the time fixed for completion as from 2 to 2½ years from date of approval.

COMMITTEE'S INVESTIGATIONS.

4. The Committee visited Hobart, inspected the General Post Office building and the existing manually-operated telephone exchange, viewed the site of the proposed exchange, examined plans, and obtained from the Chief Commonwealth Architect full particulars of the building proposed to

be erected. Evidence was also obtained from the postal engineers as to the equipment to be installed, from the Deputy Director of Posts and Telegraphs, the Commonwealth Works Registrar, and others, and the Committee sought to inform itself fully on all aspects of the question submitted.

5. During its inspection of the General Post Office building, the Committee discovered that the staff of the Telephone Exchange and some of the other branches are accommodated in congested quarters and under unsatisfactory conditions, and very little ground space is available to permit of any better accommodation being provided. The Committee is, however, pleased to learn that, with the erection of the new telephone exchange building, and the transfer thither of the telephone staff and the State Engineer's Branch, more space will be available in the General Post Office, and the congested conditions will be eliminated.

SITE.

6. The site upon which it is proposed to erect the new exchange is a vacant block of land having a frontage of 105 feet to Harrington-street, by a depth of 200 feet along Davey-street. It is within a radius of 25 chains of the General Post Office, and 19 chains of the ultimate theoretic telephonic centre, and is conveniently situated in respect of the workshops site in Montpelier-road. It is reported to be advantageous from a building point of view, and from the evidence obtained the Committee is satisfied that it is suitable for the purpose for which it is intended.

BUILDING.

7. The building suggested is to have a frontage of 95 feet to Harrington-street, with a 10 feet right-of-way on the north-east side. This right-of-way will give access to the land at the back, and ensure good lighting for the exchange. The frontage to Davey-street will be 82 feet, leaving a vacant area of 118 feet by 105 feet behind the building. The main entrance will be from Harrington-street.

8. As originally submitted to the Committee, the plans provided for a fire-resisting structure of five stories, with a flat roof. The floors were to be of concrete, and the enclosing walls of brick, with plaster ornamentations. The ground floor was to be of a height of 13 ft. 6 in.; the first and second floors, 17 feet; the third and fourth floors, 15 feet — all measurements being from floor level to floor level.

9. It was ascertained in evidence that the accommodation now being provided is estimated to meet normal expansion of the various activities during the next 20 years. The present allocation of the space is proposed to be :—

Ground Floor—

Material testing room.

Storage room.

Air-conditioning room.

Power room.

Battery room.

Third Floor—

Drafting room.

Blue-print room.

Public space.

Cloak room.

Board room.

Deputy State Engineer's room.

State Engineer's room.

Staff office.

First Floor—

Switch room.

Second Floor—

Trunk room.

Telephone Manager's room.

Assistant Manager's room.

Staff office.

Observation room.

Cloak rooms, male and female.

Rest room.

Public space.

Fourth Floor—

Social Hall and Lecture room.

Luncheon room.

Reading room and Library.

Three Class rooms.

Billiard room and Lounge.

Secretary's office.

The building will be a good class fire-resisting structure, well lighted, and will be provided with a staircase, back and front, and also with one lift. There will be lavatory accommodation on a system of mezzanine floors, easily accessible from each floor of the building.

10. From inquiries made, the Committee is satisfied that adequate provision, as far as can be foreseen, is being made to meet all normal expansion of the Department for over 20 years. At the same time, it is apparent that much of the accommodation being provided will be in excess

of requirements for at least some years. The Committee ascertained in evidence that the Commonwealth is now paying rent for the accommodation of certain Commonwealth activities in Hobart to the extent of about £1,427 per annum, as follows:—

Department.	Branch.	Building.	Floor Space occupied.	points Held in Number of Rooms.	Annual Rental.	No. of Officers Employed.	Remarks.
Trade and Customs	Lighthouse ..	Salamanca-place ..	square feet. 3,780	3 rooms .. (1 storage)	£125	5	To be transferred to Customs-buildings. Rent free from 1st June, 1926
Defence ..	Naval Branch ..	Cathedral-buildings ..	1,025	4 rooms and strongroom	£160	3	
Treasury ..	Taxation ..	National Mutual ..	5,400	20 rooms ..	£700	13	Two rooms sublet at £80 per annum. Commonwealth occupies State premises, corner Macquarie and Murray streets. Commonwealth still pay rent for National Mutual buildings
Treasury .. P.M.G. ..	Sub-Treasury .. Enquiry Officer	A.M.P. Buildings .. Commonwealth Bank of Australia	680 120	2 rooms .. 1 room ..	£145 £39 and rates	5 1	Rates amount to £10 3s. 10d. per annum
Prime Minister..	Audit ..	Royal Exchange Chambers	849	5 rooms ..	£156 and rates	7	Rates amount to £39 3s. 10d. per annum
Home and Territories	Meteorological	Macquarie-street ..	350	1 room ..	£52	1	
		Totals	12,204	37 rooms ..	£1,377 and £49 7s. 8d.	35	

11. In the opinion of the Committee, a considerable portion of the space on the second and third floors of this building is not likely to be required for postal purposes for many years, and it therefore recommended that the payment of unnecessary rent be saved by accommodating in this building some of the officials now occupying rented premises, until such time as the space is required for postal purposes.

12. The Committee was unfavourably impressed by the fact that an area of about 53 feet by 36 feet on the ground floor of this building should, in the plan, be devoted to storage and test-room purposes, and is strongly of opinion that such space might more properly and more economically be devoted to office purposes, and the space required for storage and test-room be found elsewhere.

13. Some doubt was expressed as to the advisability of providing for the Postal Institute in this building rather than in or nearer to the General Post Office, but the Committee was assured by the responsible postal officials and a representative of the Public Service Association, that this location met with general approval and was considered reasonably central to the various officials who would be expected to use it.

14. The Committee drew attention to the fact that the building as designed would be considerably higher than any other building in the locality in which it will be erected, but inquiries made did not result in any local objection to this being apparent. However, at the request of the Committee, the Commonwealth Architect, by resorting to a method of flat slab construction for the ceilings and eliminating beams, was able to reduce the height of the building by about 6 feet. In the course of his evidence, he also suggested introducing freestone in the elevation of the building in lieu of plaster as originally designed, and this, too, has the approval of the Committee.

AIR CONDITIONING PLANT.

15. The evidence placed before the Committee was not conclusive as to whether the plant for eliminating dust and moisture and regulating the temperature of the air in the switch room was necessary in the case of Hobart, in view of the lower temperature experienced in that city throughout the year, and the fact that the higher percentages of relative humidity occur during the colder months. The Committee was informed that a great deal of information is being collected on this subject as a result of experience in other exchanges, and is agreeable that, at the outset, the de-humidifying plant be not installed unless future observation shows it to be necessary. The Committee considers it advisable, however, that such arrangements be made during the erection of the building as will enable this plant to be installed later if found necessary without incurring any extra building expense.

FINANCIAL ASPECT.	
16. It was stated in evidence that the total annual charges for the proposed automatic exchange as at date of commencement (31st December, 1927), would be	£38,298
and five years later	£42,170
The total annual revenue as at date of installation— (31st December, 1927), is set down at	£47,788
and five years later at	£54,638
The assets recoverable or thrown spare if the automatic exchange be installed by 31st December, 1927, are stated to have a recoverable value of	£16,224

COMMITTEE'S DECISION.

17. Under these circumstances, the Committee has no hesitation in recommending that the proposed automatic telephone exchange be installed as early as possible.

SUMMARY OF RECOMMENDATIONS.

18. Briefly summarized, the recommendations of the Committee are as follow :—

- (a) That the Automatic Telephone Exchange be installed as early as possible (paragraph 17) ;
- (b) That the elevation of the building be of brick with freestone facing in lieu of plaster (paragraph 14) ;
- (c) That the height of the building be reduced by about 6 feet (paragraph 14) ;
- (d) That the space allotted for storage and test-room purposes on the ground floor be more profitably utilized (paragraph 12) ;
- (e) That an effort be made to accommodate in the new building some of those Commonwealth activities at present housed in rented premises in Hobart (paragraph 11).
- (f) That the de-humidifying plant be not installed unless future observation shows it to be necessary (paragraph 15).

G. H. MACKAY,

Chairman.

Office of the Parliamentary Standing Committee on Public Works,

Federal Parliament House, Melbourne.

22nd May, 1926.

MINUTES OF EVIDENCE.

(Taken at Melbourne.)

FRIDAY, 30TH APRIL, 1926.

Present:

Mr. MACKAY, Chairman;

Senator Barnes	Mr. Lacey
Senator Reid	Mr. McGrath
Mr. Cook	Mr. Seabrook.
Mr. Gregory	

Edgar Becher, Supervising Engineer, Postmaster-General's Department, Melbourne, sworn and examined.

1. *To the Chairman.*—I understand that the construction of an automatic telephone exchange at Hobart, Tasmania, is being investigated by the Committee. I am under the impression that this proposal originated in the Central Office in keeping with the policy of the Department to introduce automatic telephone exchanges in the capital cities of the Commonwealth.

The proposal is to erect a building on a site already acquired at the corner of Harrington and Davey streets, Hobart, and install therein an automatic telephone switching system having an initial equipment for 4,100 subscribers' lines and an ultimate capacity of approximately 7,000 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 20 years after the proposed date of opening. The existing manual exchange which serves the subscribers in the area will reach the limit of its capacity by about 1928, and it is impracticable owing to building limitations to extend the existing plant in the present building. The installation of modern plant in a new building is necessary in order that efficient service can be rendered the existing and prospective subscribers in the area. The estimated immediate cost of the work is:—

		£
Site (already acquired) ...	...	3,500
Building ...	...	46,700
Air conditioning, heating, de-humidifying, air compression plant and incinerator ...		5,300
Exchange equipment, including that necessary at other exchanges ...		83,552
Substation equipment ...	...	11,584
Line plant (diversion) and cost of cutover ...	...	10,482
		<hr/> £161,118

The actual revenue for the year ended 30th June, 1925, 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 30.6.25.	Actual total Revenue received for the year ended 30.6.25	Estimated number of Subscribers, Lines, 31.12.27 (date of opening).	Estimated Annual Revenue, 31.12.27.	Estimated number of Subscribers, Lines, 31.12.32. (five year date).	Estimated Annual Revenue, 31.12.32.
2,370	£ 33,243	3,500	£ 47,788	4,100	£ 54,638

For the information of the Committee I submit a certificate of the accountant showing the revenue actually

received by the Hobart telephone exchange for the year ended 30th June, 1925, on which is based the estimated amount of revenue we shall receive. It is as follows:—

(a) Actual total revenue received from the subscribers in the existing Hobart telephone exchange area for the twelve months ended 30th June, 1925:—

	£
Rents	13,757
Calls	15,151
Public telephone fees	1,518
Miscellaneous charges	497
Trunk line calls	2,320
Total	<hr/> £33,243

Average number of subscribers' lines connected ... 2,310
Average number of public telephone lines connected 60

(b) Estimated annual revenue for the proposed Hobart automatic telephone exchange area as at the proposed date of cut-over, viz., 31st December, 1927, and five years later:—

—	Number of Lines.	Rents.	Calls.	Misc. Charges.	Trunk Line Calls.	Total.
31.12.1927	Subscribers 3,875	£ 20,098	£ 22,137	£ 726	£ ..	£ ..
	Public Telephone .. 67	..	1,695	..	..	..
31.12.1932	Subscribers 3,945	21,697	25,875	848	3,132	47,788
	Public Telephone .. 83	..	2,100	..	..	..
	Trunk .. 71	..	..	..	4,118	54,638

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

(Sgd.) V. HAMILTON,
Acting Accountant,
General Post Office.

Hobart, 23rd January, 1926.

The proposed site which was acquired in April, 1925, is situated at the corner of Davey and Harrington streets, and has a frontage on Harrington-street of 105 feet and a depth of 200 feet along Davey-street. The site is within a radius of 25 chains of the General Post Office, and 19 chains of the ultimate theoretical telephonic centre. It is proposed that the building shall be of simple design and built on the latest fire-resisting principles. The building will have five floors, two of which it is proposed shall accommodate the equipment necessary to meet requirements for twenty years from the date of opening of the proposed automatic telephone exchange. The remaining floor space, it is proposed, shall accommodate the State Engineer and staff, the Superintendent of Telephones and the trunk line switchboard staff, and Postal Institute facilities, the existing accommodation at the General Post Office for the staffs referred to being inadequate.

The financial aspect of the proposition is:—

Item—	As at	
	31.12.27	31.12.32
1. Capital cost, new ...	£ 161,118	£ 166,936
2. Capital cost, new and in situ ...	227,335	234,205
3. Annual working expenses of proposed automatic exchange ...	17,836	20,559
4. Total annual charges for proposed automatic exchange ...	38,298	42,179
5. Annual revenue— Actual for year ended 30.6.25, £33,243 Estimated as at 31.12.27 ...	47,788	..
Estimated as at 31.12.32 ...	..	54,638
6. Assets recoverable or thrown spare if an automatic exchange is established on new site on 31.12.27— (i) Book value ...	40,535	..
(ii) Recoverable value ...	16,224	..
(iii) Cost of recovery ...	628	..

Regarding item 6 of the foregoing statement, the difference between sub-items (i) and (ii), namely, £24,311, 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. The amount referred to is made up as follows:—Exchange equipment, £20,302; substation equipment, £3,312; external line plant, £697; or a total of £24,311. There is considerable congestion in the Hobart General Post Office at present, and it is impossible to extend economically the present telephone plant in the Hobart exchange. When a new telephone exchange is constructed I understand that it is intended to use the space to be vacated for expansion of postal requirements. Every care is exercised in the purchase of a site for such a building. The land in question was purchased through the Home and Territories Department after consultation with the Postmaster-General's Department. The site is within a radius of 25 chains of the Hobart General Post Office, and 19 chains of the ultimate theoretical telephonic centre, by which I mean the centre of telephonic reticulation, say, within 20 years after the proposed new telephone exchange has been constructed. The item, "Line plant (diversion) and cost of cutover, £10,482," is necessitated because existing facilities will be diverted from the present exchange site. The Department is satisfied that a suitable site nearer to the General Post Office could not be obtained and thus save a portion of that expenditure. I do not think there are any buildings on the proposed site. There is not any vacant land of a suitable size and as economical in price nearer to the General Post Office than that which has been selected. When sites for such buildings are under consideration we collaborate with the officers of the Home and Territories Department. A list of the most suitable sites situated as near as possible to the telephonic centre is submitted, from which we select the one most likely to meet our requirements in every respect. The Home and Territories Department attends to the purchase of the land. The block in question is now the property of the Government. An amount of £46,700 has been set down as the estimated cost of the new building, which is to accommodate not only an automatic exchange but also a trunk line exchange. The building is also to accommodate the Superintendent of Telephones and staff, the State Engineer and staff, and the Postal Institute. The total annual charges for the proposed automatic exchange as at 31st December, 1927, have been estimated at £38,298, and as at the 31st December, 1932, at £42,179. The telephone exchange is not bearing the expense of housing the State Engineer and staff. The annual charges so far as the building is concerned are for the automatic telephone exchange on a *pro rata* basis. The number of square feet required in the building for the telephone exchange are taken into account, and the cost of the accommodation required for other departments will be appropriately charged by the Post Office. If a comparison is made between the cost of the air conditioning plant in the proposed Hobart exchange and that in the South Brisbane exchange, it must be remembered that the latter is a single-story building. The air conditioning plant will be used for the whole of the building. It would not be difficult to apportion the cost of air conditioning, but if it were, the amount would be so small that it would not make much difference in the annual charges. The estimated cost of exchange equipment, including that necessary at other exchanges, is set down at £83,552, which is based on recent tender prices for similar equipment. We expect a slight decrease in the price we shall have to pay as compared with previous purchases. The item, "Exchange equipment, including that necessary at other exchanges," refers to the alterations which will have to be made in the equipment at Newtown, Bellerive, Glenorchy, Kingston, and Lindisfarne, all of which are, of course, at

present in common with the central exchange operating on the manual system. It is proposed that these exchanges shall be equipped to operate with the central automatic system. It may be decided later to convert the Newtown exchange to the automatic system, but as the estimated expenditure would be less than £25,000 the work would not be inquired into by this Committee. The estimated cost of sub-station equipment is given as £11,584. At present telephone subscribers' premises are equipped with manually operated telephones which will need to be changed for automatic operation. It is quite probable that some of the material which will be discarded when the automatic system is established will be of some use, but in submitting estimates of this nature it is customary to place only the residual value upon it. If we contemplated using such material in other exchanges we would have to recondition it and then state its value for installation purposes in other centres. Some of it will be of value after certain expenditure has been incurred upon it. It will take from two years to two and a half years after the work has been approved before the exchange will be in operation. I cannot state what space is at present occupied by the Engineer's staff and the Telephone Manager's staff, but that information can be obtained from the local officers. The whole of the top floor of the proposed building will be utilized by the Postal Institute, and this proposal does not provide for plant or facilities of any kind on that floor. At the outset, the whole of the building will not be occupied, but ultimately it will. There will be spare accommodation when the change over is made, but such a building must be designed to meet the ultimate requirements of the telephone exchange. When additional accommodation is required for the telephone exchange the staffs which it is proposed to accommodate in the building will be accommodated elsewhere by extending the building. I cannot state definitely whether there is a Postal Institute at Hobart, but I understand it is the policy of the Department to establish these institutes in the capital cities. This Department is not responsible for the construction of the building. We indicate to the Department of Works and Railways our space requirements, and in collaboration with the Postmaster-General's Department a structure to meet our requirements is designed. I am satisfied that the automatic telephonic system is an efficient one. So far as I know, we are not receiving many complaints from the public. I have seen the extract from a Sydney newspaper just handed to me, in which it is stated, "Telephone subscribers of New South Wales are overcharged £10,000 or more per year owing to faulty registration of calls at the exchanges." If any information is desired concerning the working of manual exchanges it could be obtained from the Superintendent of Telephones. So far as automatic exchanges are concerned, I think the overcharges, if any, are at a minimum. The newspaper article to which I have referred also contains the following:—"A short time ago a city business man communicated with the Department relative to his enormous telephone account. When the matter was gone into and his telephone thoroughly examined it was found that he was being metered a call for action of his dial." In my opinion, that is impossible. It is not impossible, but highly improbable, that one subscriber could be charged with another subscriber's calls. No system, however, is perfect. The faults that occur on the automatic system are no greater than those on the manual system. The article also suggests that overcharging is due to the understaffing of automatic exchanges, but such exchanges are not under-staffed. Ineffective calls are not registered. There is a system of observation undertaken throughout the year, from the results of which details of the service rendered to the subscriber are obtained. The Department is fully aware of the service rendered under the automatic system. A

subscriber would not be charged for an ineffective call if he operated his telephone in a proper manner. A few years ago I demonstrated to the members of the Committee at the Collingwood exchange how a call was registered in an automatic exchange, and showed that the mechanism was as near foolproof as it is possible for human beings to design. I have the greatest faith in the system, and if I had not I would not recommend its adoption. We are now obtaining automatic equipment from Great Britain as well as from the United States of America. Tenders are invited in both countries, but preference is given to British tenderers.

2. *To Mr. Seabrook.*—I have not inspected the site of the proposed building. The first, second, and a part of the third floors are to be used for telephonic services, and the remainder by the Superintendent of Telephones and staff, the State Engineer and staff, and the Postal Institute. These departments will not pay any rent, as they are branches of the Postmaster-General's Department. I inspected the Hobart Exchange some years ago, but I am satisfied from the information I have received that there is at present inadequate space for the work to be efficiently carried on. Information concerning the continuance of the present storage dépôts can be supplied to the Committee in Hobart by Mr. Hannaford or Mr. Braithwaite. I am satisfied that we have allowed ample floor space in the proposed building. Although it was anticipated that the accommodation in the General Post Office at Hobart would last many years, I have personally looked into the matter of the proposed accommodation, and have obtained population statistics from the Government Statistician in order to obtain some idea of the number of telephones that will be required in Hobart during the next twenty years. I have checked the space requirements with the possible developments. These requirements are based on the estimated population; that is the only way in which to estimate our requirements. It is true that the population of Tasmania is declining at present, but such a state of affairs is not likely to continue. The Central automatic exchange at Hobart will operate in conjunction with all exchanges in the metropolitan network, and if Moona is inside the metropolitan area it will also be included. New Norfolk and Huonville are, I understand, beyond the 10-mile radius, and their connexion with the Central exchange will be by means of a trunk-line switchboard. Information as to the type of building will be supplied to the Committee by the Director-General of Works, Mr. Murdoch. After the building has been completed it will take from nine to twelve months to install the automatic equipment. It would be very undesirable to attempt to install any portion of the equipment before the building was completed, because it would be damaged by dust and dirt. The building must be handed over to our department before we can commence the installation of the equipment, which is most intricate. An air-conditioning plant is installed in automatic exchanges in order to keep the atmosphere in the exchange free from dust. The relative humidity must be something below 70 per cent., and if it should be higher there is likely to be trouble. The incinerator will be housed in a separate room within the building, and will be used for destroying rubbish.

3. *To Mr. Cook.*—The annual working expenses are shown as £17,836 at the 31st December, 1927, and as £20,559 at the 31st December, 1932. It must be remembered that the building is to accommodate an automatic exchange and a trunk-line exchange, and that necessarily women must be employed to operate the manual trunk-line switchboard, and the various desks associated with it. Salaries and wages of the operating officers amount to £3,725, the maintenance of the building is estimated at £388 per annum, and of the air conditioning plant £186 per annum. The maintenance of the automatic exchange itself is estimated to cost £8,077, and that of the line-plant

£5,460, making a total of £17,836. As regards the items, "Assets recoverable or thrown spare if an automatic exchange is established on the new site," I may explain that the present switchboards have been in use for a number of years, and depreciate each year they are in service. The Hobart plant was erected, I think, in 1910, and although it has been added to to meet requirements there will be a certain amount of it which will be practically useless when taken out. The same remark applies to telephones in subscribers' premises. Some of these, however, may be converted for use with the automatic system. When these items are recovered there will be the loss estimated. We shall have to write off about £24,311, including the cost of recovery. We have a depreciation account, but it is really a matter of bookkeeping entries.

4. *To Mr. Gregory.*—I do not think the actual cost of the installation of automatic exchanges per subscriber in a multi-exchange network has ever been ascertained. Such estimates would not be of great value, because in a multi-exchange network such as we have in Victoria it would be difficult to assign the costs in detail to one exchange. The Central exchange has junction lines to other exchanges, and many of the suburban exchanges have junction lines to a limited number of other exchanges, and it would therefore be most difficult to arrive at the cost of one exchange. When we commence an undertaking we know the capital cost, but when plants which are operating in conjunction with others are extended it is difficult to arrive at a figure such as that suggested. We have no network in the Commonwealth which is wholly automatic. That applies to other countries, but I doubt very much whether such a record is kept. The cost per subscriber in 1932 under this proposal will be £18 12s. Some time ago the British Government decided to adhere to the manual system for a special reason, but it is now adopting the automatic system, having overcome the difficulty raised years ago of getting into the hands of a monopoly. They have evolved standard fundamentals and are converting their system to automatic. They have a huge programme in front of them. The annual charges per subscriber are actually less under the automatic system than under the manual system. We have discontinued making a comparison between the cost of automatic and manual plant. The last time such a comparison was made the capital cost of exchange equipment per subscriber was equal to £20 a line under the automatic system, and £16 a line under the manual system. The annual charges may be high, but that is due to the high capital cost and the consequent interest charges. The working costs are lower, as was anticipated when the system was introduced. We have been particularly fortunate in automatic equipment installed which has all been of a reasonably high standard. Siemens Brothers have tendered on previous occasions for the supply of automatic equipment, but there was then difficulty in operating their plant with the Automatic Company's system. This firm has, however, since supplied the equipment for the three automatic exchanges in use in Brisbane. It is possible for an automatic meter to get out of order, but the maintenance routine is such that it cannot remain out of order for long. When meters are found to be defective it is the custom to adjust the charges. Generally speaking, the meter system of registration in automatic exchanges is better than in the manual system. It gives more confidence to the subscribers, because the whole process is automatic. I could not say that the complaints are less under the automatic system, as I do not analyze complaints. The proposed building is being erected so that it can, if necessary, accommodate a larger exchange. Provision has been made to accommodate 7,000 subscribers, but we could, without difficulty, double that number. The proposed building should meet requirements for the next 20 years.

Until the Department decided to adopt the automatic system it was the custom to give the cost of the common battery manual system. The working expenses of the existing system up to the date of the cutover would be £20,229, as against £17,800 under the automatic system, or a saving of, roughly, £2,400 per annum. Although it may be said that the automatic system is fairly expensive, it is due largely to the higher capital cost of the equipment as compared with the common battery manual equipment. It is not proposed to install an air-conditioning plant at the outset, but as the proposal has come before the Committee we have included the cost of such an installation. There should be less humidity in the atmosphere in Tasmania than in any other State. The necessity for such air-conditioning plants still exist, because if the humidity exceeds 70 per cent. there is likely to be trouble with the insulation of the cables.

5. *To Senator Reid.*—We have conferred with the officers of the Department of Works and Railways in regard to the floor space required, but not in the matter of technical details. The air-conditioning plant will be situated on the ground floor. A low temperature does not affect the apparatus, and the heating equipment proposed is for the comfort of the staff. After studying statistics I do not think we need expect much trouble from humidity, which is lower in Hobart than in Melbourne, but investigations will have to be undertaken. It is possible for a subscriber under the automatic system to be overcharged in consequence of his apparatus being out of order at the time he makes the call. With the equipment we propose installing at Hobart, it will be almost impossible for a call to be wrongly charged to a subscriber. If a subscriber fails to get the person he is calling he will not be charged; he should not be under the present system. The system of registration of calls in an automatic exchange is a highly technical matter, but under the system proposed for Hobart I cannot see how it would be possible for a subscriber to be overcharged. On the other automatic equipments installed it was possible for a subscriber to be overcharged owing to a line being faulty, but that difficulty has been overcome long since.

6. *To the Chairman.*—The capital cost, new, is estimated at £161,118 as at the 31st December, 1927, and £166,936 as at the 31st December, 1932. The difference is accounted for by, say, £2,000 for exchange equipment, and £3,000 for sub-station equipment. The annual working expenses at the end of 1927 are shown as £17,836, and at the end of 1932, £20,559. The operating cost will be £5,078, the maintenance of the exchange equipment £9,168, and the maintenance of line plant £5,739, or a difference between the two periods of a little over £2,000. The total annual charges for the proposed exchange are estimated at £38,298 at the end of 1927, and £42,179 at the end of 1932. These annual charges are made up in this way: The working expenses are as shown, £17,836 and £20,559, the interest on the capital, new and in situ, is £11,367 and £11,710 respectively. The depreciation on the building is £539 in each case, on the air-conditioning plant £345, and on the exchange equipment £3,481 at the end of 1927, and £3,555 at the end of 1932.

7. *To Mr. Gregory.*—Provision has been made to erect partitions in the upper floors of the building so that they can be easily removed to meet future requirements. We shall charge the exchange only with interest on the cost of the portion of the building occupied for exchange purposes. If there is a Postal Institute already at Hobart it will be transferred to the new building.

8. *To Mr. Cook.*—Telephones and switchboards which have to be imported come principally from Great Britain and United States of America. Nearly all the protectors and fuses used on subscribers' lines are

manufactured locally, as also are the attachments and other minor parts used on public telephones. Nearly all the copper wire and solder used in connexion with telephone installation is manufactured in the Commonwealth.

(*Taken at Hobart.*)

MONDAY, 3RD MAY, 1926.

Present:

Mr. MACKAY, Chairman;	
Senator Barnes	Mr. Lacey
Senator Reid	Mr. McGrath
Mr. Cook	Mr. Seabrook.
Mr. Gregory	

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

9. *To the Chairman.*—In consultation with the officers of the Postmaster-General's Department, I prepared a plan of a building for an automatic telephone exchange at Hobart. I was not asked to consider the possibility of putting additional stories on the General Post Office at Hobart. My instructions were to prepare plans for a modern automatic telephone exchange building on a site that has been acquired at the corner of Harrington and Davey streets. I have inspected the site which, from a building point of view, is excellent. The proposal is to erect a five-story building, plans of which I produce, and to install therein an automatic telephone switching system with auxiliary services. The Postal Department reports that the existing manual exchange now located in the General Post Office buildings, Hobart, will reach the limit of its capacity about 1928, and it is impracticable, owing to building and space limitations, to extend the existing plant. I do not think it would be practicable to so alter and extend the existing General Post Office building as to make it suitable for the requirements of a modern automatic exchange. The proposed new installation will provide an up to date and more efficient service for Hobart subscribers. The initial equipment will be 4,100 subscribers' lines, capable of extension to an ultimate capacity of 7,000 lines, which is estimated to be sufficient to meet anticipated developments in the Hobart telephone area during the next twenty years. If, after that period, further extension is required there will be ample room on the site for that purpose, or for any other activities connected with the Postmaster-General's Department. The proposed building is a simply designed fireproof structure of brick with concrete floors. The estimated cost is—Land, £3,500; building, including lift, electric light and power, £46,700; air-conditioning plant, vacuum cleaning and heating system, £5,300; automatic telephone equipment, £105,618; total, £161,118. Recently the Postmaster-General's Department advised my department that portion of the air-conditioning plant may not be required immediately, but it desires provision to be made in the building for the installation of the plant later if required. The departmental letter stated—

It is noted that the estimate for a complete air-conditioning plant is £5,300. It is desired, however, when parliamentary approval has been given for the work that only the heating plant be installed at the outset, such arrangements being made as will facilitate the installation of the complete plant when such is required without incurring extra building expense.

I understand that the department will probably institute a careful examination of the climatic conditions in Hobart, with the view to determining whether or not a complete air-conditioning plant is necessary. These inquiries may show that a complete plant is not required in this climate. If it is found that in Hobart and Canberra complete air-conditioning plants are not required a considerable saving will be effected. These plants are very expensive, and sometimes in a small exchange the cost of the air-conditioning outfit approximates the cost of the whole building. The need or otherwise for an air-conditioning plant at Hobart will be determined by the electrical engineers of the Postmaster-General's Department. Whilst it is advisable to make provision in the building for its installation, if necessary, it is wise to defer the installation of any portion that investigation may show can be dispensed with. If the space provided in the exchange building for air-conditioning is not required, it can be easily utilized for other purposes. We have not yet carried out any excavations on the site with a view to determining the foundations, but as it is on the slope of a hill that has withstood the erosion of centuries, I do not think we shall encounter difficulty in finding suitable foundations for a building of this character. In the preliminary drawings I have made I have assumed that we should have to go about 3 feet below the kerbstone level of Harrington and Davey streets, and at that depth we are fairly certain to reach a formation that will carry at least 4 tons to the super. foot of foundation, which will be ample for this purpose. The foundations and every floor throughout the building will be of concrete, so that the danger of fire will be reduced to a minimum. Any other kind of building for a telephone exchange would be inadvisable, because of the possible dislocation of the service by fire. Subject to further inquiry, I propose that the enclosing walls shall be of brick with plaster ornamentation. Very good bricks are made in Hobart, and I think the brickmakers and bricklayers would appreciate an opportunity to show their workmanship in the building. It is obviously the duty of the Government to construct the building with local material and labour exclusively, and to spread the work over as many trades as possible. Since seeing the site, my original ideas, as represented on the plan before the committee, have changed, and I suggest that the design might be altered in certain particulars, without losing sight of the desirableness of complete local construction. The building will have a 95 feet frontage to Harrington-street, with a 10 feet right-of-way on the north-east side between it and the adjoining property. That right-of-way will give access to the land at the back of the building, and ensure good lighting for the exchange. The frontage to Davey-street will be 82 feet, leaving a vacant area of 118 feet behind the building. It is probable that as the requirements of the Postmaster-General's Department increase the buildings on this site will be extended, but that is not likely to happen within the next twenty years. Turning now to the internal lay-out, the accommodation provided on the ground floor is that which is usual in all large automatic telephone exchanges. The main entrance will be in the middle of the building on the Harrington-street frontage, and there will be a back entrance from the vacant ground behind the building. The height from floor to ceiling will be 13 ft. 6 in. The accommodation on this floor includes—Material testing room, 34 feet x 15 feet; storage room, 43 feet x 32 feet; air-conditioning room, 43 feet x 25 feet; power room, 36 feet x 34 feet; and battery room, 43 feet x 34 feet. There will be lavatory accommodation on every floor. The one lift will start from the main vestibule, where also will be a number of public telephone boxes which will relieve the congestion at the General Post Office.

The lift will measure 6 feet x 8 feet, and will carry ten people. The main staircase will rise from the vestibule. In an annexe behind the building and contiguous to the 10 feet right-of-way will be a second fire-proof staircase the full height of the building. In the usual way the cables will be brought in by a well sunk below the level of the floor. The first floor will be occupied entirely by the switch room, 93 feet by 80 feet, less, of course, the accommodation occupied by the lift and stairs. The height from floor to ceiling will be 17 feet. Every floor will have the same lavatory accommodation, but instead of having one set of lavatories at each floor, the staircase has been so arranged as to give access to a set of lavatories for every two flights or every sixteen steps. Every cubic foot of space is worth 1s. 5d., and to have lavatories 17 feet in height would be wasteful. Therefore, instead of having five lavatories—one on each floor—we shall have, by this system of mezzanine floors, nine lavatories. If, when the details are worked out, the full extent of lavatory accommodation is not required, we can easily utilize the space for other purposes. In connexion with the telephone system, a good deal of storage accommodation is needed. On the second floor will be the trunk-line exchange, in a room 80 feet by 37 feet. The height from floor to ceiling will be 17 feet, but it may be possible to reduce it by 6 inches or even 1 foot. I agree that it would be desirable to lower the walls at least 1 foot. It is proposed to transfer from the General Post Office the staff administering the telephone services. The telephone manager will have a room 15 feet by 16 feet; the assistant manager another room 18 feet by 16 feet; and the staff a room 30 feet by 48 feet. Other accommodation on the second floor will be—observation room, 26 feet by 11 feet; cloak room for men, 18 feet by 13 feet; cloak room for women, 18 feet by 13 feet; and a rest room for women, 26 feet by 19 feet. The third floor will be used by the staff of the electrical engineer, who controls all telephone and telegraph lines in Tasmania. The height from floor to ceiling will be 15 feet, and the accommodation will comprise—State engineer's room, 32 feet by 19 feet; deputy State engineer's room, 16 feet by 15 feet; assistant engineer's room, 48 feet by 25 feet; drawing office, 47 feet by 18 feet; staff office, 57 feet by 37 feet; board room, 26 feet by 18 feet; cleaners' room, 13 feet by 12 feet; cloak room, 13 feet by 12 feet; and blue printing room, 32 feet by 18 feet. The fourth, or top, floor will be occupied by the Postal Institute. In the General Post Office of each of the other capital cities institutes are provided for social, recreational, and educational purposes. In some of the capitals these institutes include a complete restaurant, but in the lay-out of the Hobart Institute only very little room is to be provided for refectory purposes. The accommodation will comprise cloak room, 16 feet by 15 feet; lounge room for girls, 22 feet by 19 feet; three class rooms, 31 feet by 19 feet, 26 feet by 19 feet, and 32 feet by 18 feet; a billiard room, 47 feet by 18 feet, holding two tables; social hall and lecture room, 41 feet by 32 feet; library, 23 feet by 20 feet; and luncheon room, 23 feet by 20 feet. The height of the walls on that floor is 12 feet. The effective heights of all the floors will be actually 2 feet less than I have stated. Concrete beams of the thickness required to carry the requisite load on a span of 31 feet will come into the rooms not less than 2 feet lower than the ceiling, so that although the nominal height of some floors is 17 feet the effective height below the beams will be not more than 14 ft. 6 in. or 14 ft. 8 in. My idea is that the partitions on all floors shall be made of 1-inch vertical boards of Tasmanian stringybark. Where sound-proof walls are required, I suggest the use of thin coke-breeze blocks. Both these materials are economical, and the partitions could be easily removed. The flat roof on top of the building

will be covered with a British-made bituminous material, such as rubberoid or rok. The design I have prepared, although simple, will be pleasing to the eye. Since coming to Hobart, I have been impressed by a very fine fused or over-burned brick, which, I understand, can be obtained for the same price as the ordinary brick; and I intend to investigate the possibility of facing the ground and first floors with fused bricks relieved with a little stonework instead of plaster. A building of that design would harmonize well with other edifices in the neighbourhood. It is true that they are mainly of stone, but they were built in the old days when buildings could be erected probably 80 per cent. cheaper than to-day. It is possible that instead of having nine lavatories we shall find six sufficient. If that should be so, three of these mezzanine floors will be available for storage or other purposes. The lighting throughout will be very good. In the library, reading rooms, and luncheon rooms on the top floor, the lighting will be from overhead, and that system cannot be improved so long as it is associated with good ventilation. The flat roof should be of great advantage to the staff using the institute. Fire prevention appliances will be restricted to chemicals. The only inflammable portions of the building will be the wooden partitions and furniture, and any outbreak of fire would probably be confined to the floor on which it originated. I propose to lay over the concrete floor in the switch room a $\frac{1}{2}$ -inch layer of magnesite composition, which is practically dustless. It may be desirable to use some covering on all the floors.

10. *To Mr. Seabrook.*—A good damp course will be laid between the concrete foundations and the brick-work. I agree that it would be desirable to face the building with stone if the cost were not prohibitive. A telephone exchange is a commercial building, and for that reason the Postmaster-General's Department does not like structural extravagance. If stone is introduced into the windows, doors, and cornices, it must be carried along both the Davey-street and Harrington-street elevations. On the ground floor the partitions will be of concrete blocks. On some of the floors we may lay down Tasmanian hardwood boards. In all automatic exchanges built hitherto, we have used steel window frames, which I do not think can be made at Hobart in reasonable competition with big plants on the mainland, but, in pursuance of the proposal to utilize local labour and material as far as possible, we may take the risk of substituting hardwood. In this climate the risk of fire is negligible; theories can be done to death, and I am inclined to have hardwood instead of steel in the windows. The staircases will be of concrete, and the lift will be electrically operated. The floor beams will be of reinforced concrete, and I recommend them in preference to steel for the sake of local industry. If we adopted steel-frame construction, much of the material would have to come from Sydney or Melbourne. The wooden partitions on the upper floors will be of only one thickness of wood, dressed on both sides. For the sound-proof rooms we may use t-and-g. concrete blocks.

11. *To Mr. Lacey.*—Accommodation could not be found for the new exchange at the General Post Office, except by adding stories to the existing buildings, and the structure was not designed to carry additional stories. The land on which the Commonwealth Bank is situated belongs to the Postmaster-General's Department, and there is a right-of-way between it and the General Post Office; but that passage cannot be closed up because of the rights of adjoining land-owners. In any case, the area available there would not be sufficient for the purposes of an automatic telephone exchange. Having regard to all the circumstances, the proposal to put the exchange on a detached site is wise. The principal cost in connexion with an air-conditioning

plant is the machinery. The space to be provided for it will not cost much, and, if not required for this plant can be used for other purposes. The height of the floors is governed by the mechanical requirements of an automatic telephone exchange.

12. *To Senator Reid.*—All the switching equipment will be on the first floor, and, therefore, will have reasonable protection from dust. We may have to use steel joists for the 31-ft. spans. The longest reinforced concrete span I have previously carried out is 27 ft. 6 in. In Brisbane, where the span is 32 feet, we used steel joists. We shall not rely on the partitions to carry any weight; the whole burden will be on the beams, so that the partitions can be removed or altered without affecting the stability of the floor above. The height of 17 feet on the second floor, where the trunk-line exchange will be, is in accordance with the requirements specified by the Postmaster-General's Department. The height of the third floor is to provide for possible extensions of telephone equipment in the future. If we introduce stone into any portion of the ornamentation in the façade, we shall have to abandon plaster entirely. We could not have a mixture of stone, brick, and plaster.

13. *To Mr. Cook.*—If a complete air-conditioning plant be not required, a saving of about £3,000 will be effected. Probably it will take the department twelve months to determine whether air-conditioning will be necessary. I estimate that to face this building with stone would increase the cost by about £20,000. My idea is to erect a brick building with stone sparingly used about the doors, windows, and cornices.

14-28. *To Mr. Gregory.*—The General Post Office building is overcrowded. The proposed new building will not only provide for a new automatic exchange, but by giving accommodation to the engineering branch and the postal institute, will relieve the congestion at the General Post Office. I admit that a building 70 feet high on a site overlooking a park and the river and in the midst of a residential area will be out of keeping with its surroundings, and to some extent interfere with the aesthetic value of that quarter. I would prefer a lower building, but I see no possibility of making the first floor a semi-basement. Excavation is expensive, the walls must be thick enough to retain the surrounding soil, and a vertical dampcourse must be used down the walls as well as over the floors. If we could reduce the height of the building by one story and economically provide the accommodation required in some other way, it would be advisable to do so. The big storeroom on the ground floor is unusual in an exchange building, and I do not know why it is required. The trunk-line exchange and the rest-room should have sound-proof walls, but I see no objection to wooden partitions for the majority of the rooms in the postal institute. If the electrical engineers would consent to the erection of an extra row of stanchions in the switchroom I could dispense with the heavy beams and substitute flat-slab cantilever construction. This would enable the height of the building to be reduced by about 7 feet without lessening the effective height of the floors. This would mean four more stanchions on each floor, but the area of each stanchion would be less. The site at the corner of Harrington and Davey streets is about 25 chains from the General Post Office. I understand that most of the officers who will use the institute will be employed in the General Post Office, and if accommodation could be found for it there when the telephone exchange and the engineering staff are transferred, that would be the best arrangement. If in that way we could eliminate the top story of the proposed building, and alter the construction of the floors in the way I have just suggested, we could have a building of convenient dimensions which would harmonize better with the neighbourhood in which it will be situated. I do not think there is any danger of the

work in the trunk line and switch-rooms being interfered with by noises from the postal institute. The substitution of stone embellishment for plaster would give a more honest building—one that was actually what it purported to be, whereas plaster is merely a cheap imitation of a superior material. Rather than enlarge the ground area of the building and reduce its height it would be more economical to adhere to the dimensions shown on the plan. If Hobart is to grow, tall buildings will come sooner or later. In every city they are the sign that land is becoming expensive. At the same time, I do not urge that the Commonwealth should set a bad example.

(*Taken at Hobart.*)

TUESDAY, 4TH MAY, 1926.

Present:

Mr. MACKAY, Chairman;

Senator Barnes	Mr. Lacey
Senator Reid	Mr. McGrath
Mr. Cook	Mr. Seabrook.
Mr. Gregory	

George John Braithwaite, State Engineer, Postmaster-General's Department, Tasmania, sworn and examined.

29. *To the Chairman.*—The proposed automatic exchange will be the first of its kind to be established in Tasmania, and will give more efficient and up-to-date service to metropolitan telephone subscribers. The reasons for the proposal are—(a) The capacity of the C.B. manual switchboard will, by the addition of new subscribers, reach its limit of 3,040 lines about 1928, and cannot be extended owing to the impracticability of extending the present building to accommodate the exchange; (b) the present exchange was brought into operation in 1908, and approximately 50 per cent. of the equipment by the date of cut-over will have been in operation for seventeen years and have passed the end of its economic life; (c) the vacating of the General Post Office building will free floor space badly needed at the present time for carrying on postal facilities and relieve congestion of space for approximately fifteen years to come. The site selected is within a radius of 25 chains of the General Post Office, and 19 chains of the ultimate theoretical telephone centre. It is conveniently situated between the General Post Office on the one side, and the workshops site in Montpelier-road on the other—radial distance to workshops, 23 chains approximately. The building will be so designed and situated that the fire risks will be almost negligible. The position selected is situated conveniently for diverting the existing underground cable to the new exchange, which is a most important consideration, as this class of work is costly. Entrance to the property will be from Harrington-street. It is most desirable that the staffs of the State Engineer and Superintendent of Telephones should be in the same building as the exchange for supervisory and concentration purposes. These staffs deal with all telephone activities, and need to co-operate closely. The floor space to be vacated at the General Post Office will be approximately 4,000 square feet. At the present time the need of floor space for the proper accommodation of the staff on the postal side is very acute. The governing consideration is that a new exchange is necessary, and the automatic system has been found to be more economical than the manual. We cannot build on the present General Post Office site, and even the Commonwealth Bank site, to which the department has some claim, is, in the opinion of the director, more valuable for other purposes. A telephone exchange is best situated at the copper centre

or centre of distribution, and the site selected reasonably conforms to that requirement. The area of land occupied by the old workshops' building and the yard of the General Post Office measures approximately 8,000 square feet, and is unsuitable for the purposes of a new telephone exchange. One advantage of transferring the exchange and the staffs of the engineer and the superintendent of traffic will be that space in the General Post Office, which is badly needed, will be available. This memorandum from the deputy director sets out briefly the deficiencies of the existing accommodation at the General Post Office—

1. The accountant is located in a small room inadequate in size, and far removed from his branch.
2. The inquiry officer (detective) occupies a rented room in chambers adjacent to the General Post Office. He should be in the main building of the General Post Office.
3. The inspector and his clerk are in an isolated room in the second floor of the building. The room is small and inaccessible.
4. Females rest room is combined with cloak room, which is most undesirable in wet weather. Room is cramped and unsuitable and only fit for cloak room for staff remaining if exchange removed.
5. Rest room (only one available) for females is on second floor, and at the top of a steep staircase.
6. No facilities in the direction of a postal institute could be provided in the present building.
7. Lavatory accommodation is not sufficient, consequently time is wasted. Extension will probably be necessary in the near future.
8. Luncheon room for staff is situated in the old workshop building, detached from main building, and is inadequate and unsatisfactory.
9. It will probably be necessary at an early date, to provide a room for the superintendent of telegraphs, as any extension of the main operating or telephonogram room will absorb his present office.

The space in the telephone exchange is so limited that in order to permit of an extension of the main frame, we had to build in an extra floor under the tiles. That is a most undesirable arrangement from an engineering point of view. The present exchange room has a floor space of, approximately, 1,139 square feet. The floor space to be vacated in the General Post Office, when the new exchange building is ready, is approximately 4,100 square feet. The department stated its space requirements in the new building, and was consulted by the Works and Railways Department in regard to details. The floor plans submitted by the Works and Railways Department are satisfactory. In regard to the air-conditioning plant, I understand that the initial equipment will be limited to an air compressor and vacuum cleaning apparatus. There is some doubt as to whether a complete air-conditioning plant will be required, and the committee may rest assured that the extra plant will not be installed unless it is fully justified. I have no doubt of our ability to profitably utilize the space provided for the air-conditioning plant. My experience in the department is that in the provision of buildings, we are always short of requirements. Insufficient allowance is made for development, and, if in this building there should be a little space to spare, so much the better. The layout of the floors provides room for development. The switch-room on the first floor should be ample for anticipated developments during the next twenty years. When further accommodation is required it can be found on the second floor, and the officers displaced could be accommodated in new offices to be erected at the rear of the building. A height of 17 feet from floor to ceiling will be adequate; indeed, it might be possible to lower the walls. In regard to the proposal to increase the stanchions and dispense with the beams, it is desirable that the floor space should be as free as possible, so that there may be no interference with the apparatus. The trunk-room on the second floor is to accommodate the present trunk switch-board equipment, and leave room for development. I do not know that 17-ft. walls are necessary in the trunk-room, but that height may be needed, if, after twenty years, the switch-room is extended to the second floor. I prefer not to express a definite opinion as to the height of

wall that is necessary; Mr. Becher, who has a thorough knowledge of modern exchange equipment, is better qualified to give evidence on that point. In specifying our office requirements we took into account the probable increase in staff. At the present time four men are employed in the drafting-room, and the provision for increase is based on past development. We have to provide space for records, typewriters, and adding machines. It would be a mistake to unduly limit the accommodation in a permanent building of this character; if the space is planned on the estimated increase during the next twenty years, we cannot go far wrong. At present Hobart has no postal institute. The staff has been pressing for the same facilities as are given in other capital cities, and the policy of the department is to provide proper opportunities for recreation and education. Accommodation of that kind could not be provided in the General Post Office, and the central administration has adopted the suggestion that provision should be made for a postal institute in connexion with the proposed new exchange. As far as can be estimated at present the institute will have a membership of about 260, the majority of whom will be employed outside the exchange building, which however will be almost equidistant from the workshops and the General Post Office. The staff at the workshops numbers about 100. The institute would be just as conveniently situated there as at the General Post Office; even if space could be found for it in the General Post Office, the employees at the workshops and the exchange would be inconvenience to the same extent as will the staff of the General Post Office, if the institute is established in the new building. As most of the employees are able to go home for their lunch it is unlikely that a cafeteria in connexion with the institute would be well patronized. The postal officers not employed in the exchange building will be no more inconvenienced than are those employees in the Elizabeth-street Post Office in Melbourne, who have to go to Spencer-street in order to enjoy the facilities offered by the institute. I think it would be a mistake to eliminate the fourth floor of the exchange building, and in lieu thereof, erect accommodation for a postal institute on the site of the old workshops in the General Post Office yard. The proposed lavatory accommodation in the new building will be adequate and conveniently situated. The unoccupied land at the rear of the building will provide for future expansion; in the meantime a tennis court might be made there for the use of members of the postal institute, and other portions of the yard could be used for storage. The line-yard and workshops in Montpelier-street are on a site owned by the department, and that accommodation will continue to be required. The department is not renting any land at present. The General Post Office yard could not be utilized by any building that would interfere with the right-of-way which gives access to the rear of the *Mercury* premises. The whole of the space available there is inadequate for the future requirements of the post office alone. There are four employees in the drafting-room, and, in twenty years, that number will probably be doubled. We must have a fair area of floor for drawing tables, cupboards, &c. In the engineer's room there will be eleven officers, and in the staff office sixteen. The space provided for offices on the third floor is not quite double our immediate requirements. The three principal rooms will be only half-occupied when we take possession. In the past we have always been cramped for space, and the postal building at Launceston has been torn to pieces year after year in order to extend the accommodation. Guided by the experience of the past we are now endeavouring to look ahead.

30. *To Mr. Lacey.*—The whole of the 4,100 square feet of floor space to be vacated in the General Post

Office will not be occupied by the Deputy Director immediately, but he urgently needs additional accommodation. For instance, the accountant has an office on the ground floor completely segregated from his staff. The detective is accommodated outside the building. Four or five of my engineering staff are in the old workshops building which the mechanics vacated years ago, because they did not consider it suitable for occupation. We have had to squeeze in lavatory accommodation and rest rooms wherever possible, and the building has now reached the limit of its capacity. When the congestion is relieved by the transfer of some of the staff to another building, better organization and supervision will be possible, and the staff will have more suitable accommodation. When the General Post Office was built in 1901, critics said that it was a long way ahead of requirements, and a waste of money. But now it is inadequate to meet our urgent needs. The estimate of requirements in the new building is the result of a consultation between the deputy director, the superintendent, of telephones, and myself. The postal institute is a pressing need. The officers rightly claim that they should have facilities similar to those enjoyed by the postal staffs in other capital cities. The training of telegraphists and telephonists has become difficult, and class-rooms such as the institute will provide are needed for the training of recruits.

31. *To Senator Reid.*—The employees in the General Post Office number about 280, and the rate of increase is between 5 per cent. and 10 per cent. per annum. In 1909 the telephone subscribers in Hobart numbered 1,000, in 1915 about 1,900, and at the present time 2,546. In 1919 there was one telephone to every 24.5 of the population. At the end of 1925 there was a telephone to every 19.5 of the population, and it is not unreasonable to expect by 1940 a telephone density of one to every 12 or 14 persons. In 1901 the population of the Hobart network was 30,000, in 1911 40,000, in 1920 54,000, and to-day about 56,000. The population of Tasmania is increasing at the rate of 2½ per cent. per annum. No doubt by 1945 we should be canvassing for subscribers; if we were in a position to do that now the telephone business would expand enormously. The estimate of future development is based on past growth and statistics of population and property values. The telephone expansion has a direct reference to the increase in population, and the expansion would be accelerated if we were able to push our telephone business. The provision of trunk line facilities is an inducement to people to become subscribers. The earning power per subscriber's line in 1924-25 was £13 14s., or if subscribers and public telephone lines are combined, £14 per line. I doubt whether that return was profitable, but if the business developed the department would be more likely to make a profit. The automatic system is more economic than the manual, and a faster and more reliable service will be an inducement to subscribers. Instruction classes will not be conducted in the postal institute during working hours, and no hardship will be imposed upon employees who during their off hours are required to go to the new exchange building in order to take advantage of the facilities offered by the institute.

32. *To Mr. Gregory.*—I have had no personal experience of the erection or control of an automatic exchange. If, after the proposed exchange reaches its limit of 7,000 lines, further accommodation is required, other exchanges will probably be built about the city and suburbs. Possibly a switch room 93 feet x 80 feet would accommodate more than 7,000 lines, but I think it would be advisable to retain the same height of wall on the floor above in case it should be necessary to provide for an extension of the switchboard to that floor. The material testing room and large

storeroom on the ground floor will not be fully occupied when the building is first used unless we store material other than is required at an exchange. I am sure all that space is needed, although I am not prepared to detail the use to which it will be put. I know that I shall want to put some subsidiary frames and apparatus in those rooms, and experience shows that it is economical to provide plenty of elbow room. The main postal store is in the General Post Office basement, and only small stocks of engineers' supplies are stored at the workshops, which are about half a mile away from the General Post Office. The exchange mechanics are required to store a certain amount of material on the premises. I have visited the Postal Institute in Melbourne, and I know that sounds of the piano and singing can be heard in various parts of the building during office hours, but I do not think that the duties of the girls in the trunk room of the proposed building are likely to be interfered with by jazz music, because it is almost certain that the social activities of the institute will be in progress only at night when the load is light. Not more than 30 per cent. of the whole of the postal staff will be employed in the exchange building. A big extension of the trunk line system has occurred in Tasmania during the last four years, and it is necessary to provide for further developments. We may have to employ temporary draftsmen; the staff in the drafting office may increase by two in the next five years and double its strength in 20 years. The staffs on the second floor, exclusive of the telephone office, will number about 30.

33. *To Senator Barnes.*—When the automatic system replaces the present manual system, the girls now employed on the switchboard will not be required, but the mechanical staff will be increased. The displaced girls, however, will not be thrown out of employment, but will be absorbed in the department as vacancies occur. The land at the back of the General Post Office is out of the question for exchange purposes, because the time will come when that land will be wanted for an extension of the Post Office, and further land adjoining will have to be acquired at a high price.

34. *To Mr. Seabrook.*—Something must be done immediately to provide more room at the General Post Office. The land on which the workshops at the back of the Commonwealth Bank are situated is the property of the Postal Department. No doubt buildings could be built above the right-of-way leading to the back of the *Mercury* building, but even that would not provide the floor space that is required. When the new exchange building is complete we shall still retain the stores at Montpelier-street and Salamanca-place. I do not think the area of land available at the back of the new exchange building will be sufficient to enable us to dispense with the stores at Montpelier-street. At those workshops are the line inspector's office, the carpenter's shop, and the motor mechanic's shop, and we store there poles, cross-arms, underground and aerial cables, and other large stores. The increase in the opening fees in connexion with trunk lines is not likely to retard the development of trunk line business, the bulk of which is done in office hours. All of the accommodation proposed to be provided in connection with the Postal Institute is necessary, and is in keeping with what has been done at the General Post Offices in other capital cities, and in connection with big private factories and warehouses. The Postal Institute has its utilitarian aspect. It pays the department to encourage anything that makes for the better education and training of the staff. The recruiting of the staff is a very serious problem, and anything that helps to give messengers, clerks, or juniors an opportunity to graduate for higher positions is very desirable. I understand that an ever-increasing use is made of the

Postal Institute in Melbourne, and that the initial cost is the only burden on the department. There is always a demand for properly qualified telephonists, mechanics, clerks and assistants, and if the department incurs some expense in providing opportunities for tuition, it gets a fair return. A luncheon room is necessary. We have a luncheon and rest rooms of a kind at the present time, and they are extensively used.

35. *To Mr. Gregory.*—The site at the corner of Harrington and Davey streets is not the true copper centre of the city, but is as near to it as we can get at a reasonable cost. The true centre is only about two blocks away. The site chosen is conveniently situated for tapping the main cable.

The witness withdrew.

Bruce Howard Brown, Acting Superintendent of Telephones, Postmaster-General's Department, Hobart, sworn and examined.

36. *To the Chairman.*—I was appointed to my present position on the 1st May. I have had about six years' experience of telephone exchange management. The present exchange has become so congested that it is obvious that we must either have a new exchange within the next few years or refuse service to the public. Special traffic studies were undertaken by the Telephone Branch over a lengthy period for the purpose of enabling the engineering officers to determine the type and capacity of the equipment which should be installed, and copies of the schedules supplied to the engineers are available to this committee. The existing switchboard, which was the first of its kind in the Commonwealth, is of the common battery type, and is reaching the maximum of its local capacity. That is to say, although designed to cater for 4,192 subscribers, it is not possible, because of accommodation restrictions, to connect more than 3,040, which number will meet the estimated growth in subscribers' lines until about 1928. After that date, if the anticipated development is realized, it will probably be necessary to refuse service unless a new exchange is provided. The initial installation of the existing plant was brought into operation in 1908, and at the proposed date of cut over, viz., 31st December, 1928, approximately 50 per cent. of the equipment will have been in operation for seventeen years, and, therefore, can be regarded as having reached the end of its economic life. To meet the development it was necessary in 1923 to open a new exchange at New Town, but this, while it released 284 lines at central, necessitated the equipping and staffing of a "B" position. A "B" position is one which cares for junction lines only, and junction lines are those connecting to branch exchanges or trunk switchboards. Had this not been done, we would have now reached the stage when applications for service would have to be refused. The only other direction in which relief is possible is at Lower Sandy Bay, but, apart altogether from the question of maintaining the present apparatus, the number of subscribers in that area is not sufficient to influence the proposal now before the committee. The increase in the number of subscribers at branch exchanges, and in trunk traffic has increased our "B" work to such an extent that difficulty is being experienced in accommodating the junction lines and giving the efficient service at which we aim, and which hitherto we have achieved. To meet trunk line development it has already been necessary to install detached positions in the centre of the room, and it will be impracticable to meet further trunk line switchboard development in the same room beyond 1928. In addition to the almost immediate need for more equipment, the whole of the floor space available in the present exchange is already in

use, and there is not sufficient room to place more positions there. Other sections of the General Post Office also are in need of additional space, and it is therefore not possible to extend the area of the existing exchange. If a new exchange is established as proposed, considerable floor space, which is urgently required, will be released at the General Post Office for postal purposes. The present exchange is badly congested, and the working conditions as regards space are far from satisfactory. The maximum multiple capacity is 4,199 lines, but, owing to a number of positions being required for trunk line working, the maximum local capacity is 3,040 lines. The local capacity per position cannot be further increased on account of the structure of the switchboard, whilst the size of the switch-room prevents the installation of additional positions. Even if space were available to separate the trunk positions from the subscribers' switchboard, it would only increase the present capacity from 3,040 lines to 4,199, and assuming that the equipment could be made to continue its present efficiency it would still be necessary to provide a new exchange within a very few years. But the existing equipment has been in use for more than the normal period of its economic life, and is depreciating rapidly; and this fact, together with the additional "B" position facilities that such a course would necessitate, renders the expense unwarranted. Moreover, spare parts, jack strips, &c., have to be specially made for Hobart switchboard, because the existing types (which are designed for later models) are not suitable. Many renewals and replacements are also becoming necessary, and, at the moment, 500 jacks require rebushing in order to give satisfactory service. Space is so limited that it has been obligatory to divide the subscribers' meter racks and the main frame equipment, one portion being accommodated in the test room and the other portion in a specially-prepared section of the roof up a flight of stairs. It will be seen that, besides providing new and up-to-date equipment in place of that which is now almost worn out, the installation of automatic switching equipment to be located in the proposed new exchange building will afford sufficient capacity to meet future development for more than 20 years after the date of cutover. Difficulty is being experienced, owing to the design of the switchboard now in use, in satisfactorily distributing the traffic load. This is due to the absence of intermediate distribution frame facilities, and any transfer of busy numbers, besides being restricted, is an involved process. The accommodation available in the present building for the telephone staff is quite inadequate. Congestion exists in regard to operating staff, general office staff, and also in regard to luncheon and retiring rooms. The exchange room, which is 33 ft. 8 in. x 34 feet, has not only to accommodate the switching equipment, but also a maximum of 30 officers who are on duty simultaneously. A space 22 ft. 10 in. by 11 ft. 10 in. serves for luncheon and rest room. The room is situated at the top of a steep flight of stairs, is not contiguous to the exchange, and is very badly located for rest purposes, but, because of the congestion of space in the General Post Office building, no other place is available. It is obviously very undesirable that officers entitled to rest relief should be compelled to climb a difficult flight of stairs in order to reach the "rest" room. Lavatory accommodation also is quite inadequate. One small room, approximately 12 ft. 4 in. x 8 ft. 4 in. (less a strip of 1 ft. 6 in. x 5 ft. 4 in.), serves the whole of the female staff of the General Post Office, numbering 67. A small cloak-room, roughly 12 ft. 2 in. x 10 ft. 2 in. (less 4 ft. 7 in. x 4 feet), adjoins, and also serves the same number of officers. Congestion is so pronounced that a number of telephonists' lockers and a stationery press have to be accommodated in the passage leading to the exchange. The condition of the existing equipment is a

matter for the engineers, but, in view of the fact that 50 per cent. of it will have been in continuous use approximately seventeen years at the proposed date of cutover, it is evident that, in order to maintain that system at its present efficiency, high maintenance costs are involved and that these will become higher as time goes on. Furthermore, as the equipment gets more service the various parts become worn, and the risk of faults occurring and interfering with communication becomes much greater. The proposed automatic exchange will serve the same area as that now served by Central, and will reduce the annual rental by 10s. in the case of approximately 100 subscribers. At present there are 2,550 lines connected to Central, and the following figures show the estimated development:—31st December, 1927, 3,500; 31st December, 1929, 3,900; 31st December, 1932, 4,100; 31st December, 1947, 5,800. Operating costs under the present system as at the end of 1927, and also under the automatic system as proposed at the same date, are estimated as follows:—Present system, £7,744, plus administrative charges, £2,389; automatic system, £3,725, plus administrative charges, £1,148; saving, £4,019, or £5,260 inclusive of administrative charges. Besides this saving the establishment of an automatic exchange at Hobart Central will have the effect of cheapening the cost of operating calls from suburban exchanges, because such calls will be handled by one telephonist only instead of by two, as at present under the manual system; and, as over 70 per cent. of the calls originated by subscribers connected to branch exchanges are for subscribers connected to the Central Exchange, the saving of time and the greater efficiency in the handling of the calls will be appreciable. To this end it is proposed to install dials on the exchange positions at all branch exchanges, and the telephonists there will dial direct for all calls to subscribers connected to the Central Exchange. By converting the Central Exchange to automatic working as a preliminary step, the ultimate conversion of the smaller exchanges to this class of working will be facilitated. This, when effected, will remove a number of anomalies which give rise to public complaint, as for the same rental charges it will be practicable to provide continuous service at the smaller exchanges in the metropolitan area. It will also permit the economical establishment of new exchanges in cases where subscribers in the district concerned are situated beyond the 2-mile radius of existing exchanges, and consequently are called upon to pay additional rental at the rate of 10s. for each quarter of a mile beyond the 2-mile radius of the exchange to which they are at present connected. The subsequent installation of automatic switching apparatus at Sandy Bay and Claremont, where 114 and 15 subscribers respectively are paying the excess rental referred to, will largely avoid this feature. My predecessor in office was consulted as to the accommodation required at the new exchange. I have seen the plans prepared by the Department of Works and Railways, and consider them satisfactory. The site is convenient in every respect, and is as near to the true telephonic centre as it is possible to get land at other than a prohibitive price. The distance between the true telephonic centre and the site selected is only 19 chains, and Newtown, which is the only place which could be affected by an increase of rentals, has a local exchange. At present we employ on the switchboard 30 permanent officers and eight temporary hands to attend to ordinary subscribers and trunk lines. The total staff is 43, including supervisory officers. There are one male traffic officer and four male telephonists. Of the 43 on the staff, about fifteen are engaged on trunk lines. Of the proposed trunk room, not more than half will be occupied at the estimated date of cut-over, but the development in trunk lines is likely to be more pronounced than in subscribers' lines.

About nine or ten officers will occupy the trunk office, but if we have to deal with subscribers' observations there will be a good deal of equipment in that room. We shall, possibly, have two special observation supervisors. The cloak-room and rest-room accommodation, as planned, will be adequate for the whole of the telephone staff. Inclusive of seventh day relief, sick relief, and annual leave relief, the total telephone staff to be transferred to the automatic exchange will be about 28. The male operators will be retained, because we cannot maintain a continuous service without them. We anticipate that by the date of cut-over, there will be no excess of permanent officers. At the present time we employ about eight temporary telephonists, and any vacancies that may occur between now and the date of cut-over will be filled temporarily by casual employees. The staff is very anxious to have the facilities which the Postal Institute will provide, and is quite satisfied with the proposal to house the institute in the new building, because it is recognized that there is no space for it in the General Post Office. No doubt it would be better if the institute were in the General Post Office, but, as I understand that all Commonwealth officers in Hobart will be eligible for membership, no great advantage would accrue from having the institute in the building where the majority of postal officers are employed.

37. *To Senator Reid.*—I anticipate that the whole of the employees in the telephone branch will utilize the institute. No doubt the instruction classes will be conducted at night, as in similar institutions in other capital cities. The present telephone service in Hobart is efficient, but sooner or later a bigger equipment will be required, and as an automatic exchange can be operated more economically than a manual one, it is desirable that any expenditure incurred by the Commonwealth should be for the provision of the most up-to-date and efficient plant.

38. *To Mr. Gregory.*—I have estimated that the saving resulting from the establishment of the installation of an automatic exchange will be over £5,000 per annum. That calculation does not, however, take into account interest and sinking fund on the new capital expenditure. Trunk lines have developed in recent years, and we expect a further considerable expansion. By 1932 we shall require in the trunk room 22 telephonists, apart from reliefs for sickness, emergencies, and annual leave. The proposed transfer will not affect the administrative staff at all. It will still number about eight or nine officers in addition to the manager and assistant manager. I do not consider that the proposed floor space is unreasonable for that number of officers, remembering that it also includes provision for the office requisites and the contract files of all subscribers in the State. If the storeroom and material testing room on the ground floor were made available to us for offices, it would meet our requirements, but it is desirable to have the whole of the telephone staff on the same floor because supervision is essential to efficient service.

39. *To Mr. McGrath.*—The wireless service is now located in the State Engineer's room, and so far as I know that arrangement is satisfactory. I presume that it would be transferred to the new building with the engineering staff. I do not apprehend any danger to the telephone system from the competition of wireless.

40. *To Mr. Lacey.*—I regard the Postal Institute as essential to the efficient recruiting of the departmental staff. The service is generally efficient without the aid of an institute, but the facilities it would provide would facilitate recruiting and the graduation of officers to higher employment.

41. *To the Chairman.*—If the room provided on the ground floor for an air-conditioning plant be not required for that purpose, it and the store room adjoining would accommodate the telephone administrative staff, but from an administrative point of view I prefer the staff to be adjacent to the trunk room.

(Taken at Hobart.)

WEDNESDAY, 5th MAY, 1926.

Present:

Mr. MACKAY, Chairman;

Senator Barnes

Mr. Lacey

Senator Reid

Mr. McGrath

Mr. Cook

Mr. Seabrook.

Mr. Gregory

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

42. *To the Chairman.*—Since I last appeared before the Committee I have conducted inquiries regarding local supplies of brick, stone, sand, and cement. The results are most gratifying. I find that locally-made bricks are equal to, if not better than, any made in Victoria. The brickmakers are most progressive, and are prepared to go to any pains to meet the requirements of architects in regard to moulded bricks and bricks of special sizes. The prices they quoted are favorable. The appearance of the bricks also is satisfactory. In regard to stone, I have ascertained that freestone from the Byrneston quarry is probably the best obtainable here. The quarry is about 22 miles by rail from Hobart, and rough stone delivered at Hobart would cost about 4s. 6d. per foot, which is approximately the same price as we pay in other capitals. Probably it could be put into the building at about 10s. 6d. per foot. Tasmanian cement made at Maria Island or Railton, of standard quality, is delivered in Hobart at 7s. a bag. Good sand is not plentiful, but it is obtainable at about 10s. a yard. As a result of these inquiries I suggest that the plaster embellishments on the external walls be abandoned, and that in lieu a little stone be introduced. This will give a building which honestly expresses itself in brick and stone, and will afford a little work for the masons. Moulded bricks can be introduced with stone about the doors and windows. If the committee will authorize me to re-design the building, I can plan a facade that will be more artistic and honest without substantially increasing the estimated cost. As an illustration of the progressive character of the brick-making industry in this State I submit samples of bricks that are carried in stock. In regard to the possibility of reducing the height of the building, the inquiries I have made and the evidence given before this Committee indicate that there is little prospect of omitting one story, and I think it would be wise to retain the five floors shown in the original design. The Committee might allow my department and the postal engineers to investigate the possibility of re-arranging the concrete supporting stanchions to admit of flat-slab cantilever floors being introduced. If that can be done the height of the building may

be reduced by 7 feet or 7 feet 6 inches, and yet leave the floors sufficiently high to accommodate the telephone equipment. The second floor on which the trunk line exchange will be placed must be of a certain height to afford room for the equipment. A suggestion has been made that the height of the rooms adjoining the trunk exchange might be lowered. That is not possible without departing from the principle of having a series of level floors. The only way in which the superfluous height could be utilized would be by the introduction of mezzanine floors, and the height available is not sufficient to allow of that. Having regard to the fact that years hence the automatic switch room may overflow from the first floor to the second floor, it would be unwise to interfere with the height of the walls on the latter.

43. *To Mr. Gregory.*—I admit that the storage on the ground floor is expensive accommodation for that purpose, and would make excellent offices, except that the adjacent battery-room, power-room and air-conditioning plant will not be a nice environment for public offices. The air-conditioning room is the biggest I have designed with the exception of that at Brisbane. I do not think there would be much economy in dispensing with the back corridor and substituting an outside verandah to give access to the lavatories and rear staircase.

44. *To Mr. Cook.*—It would be unwise to reduce the size of the building I have planned. Mr. Braithwaite testified convincingly that the Postal Department will utilize all the space to be provided. We are usually inclined to take too limited a view of future requirements, and not make adequate provision for development. As this building will be midway between the post office and the workshops it should be reasonably convenient for all the officers who will patronize the Postal Institute. It may be that in years to come a demand for similar accommodation at the General Post Office will arise, but no doubt by that time there will be further use for the space in the exchange building that is to be occupied by the institute. Having regard to the materials available at Hobart, I think a building of the character I am proposing with fused bricks on the ground floor, stone ornamentation, and ordinary bricks from the first floor upwards, would be the most economical we could construct, consistent with the character of the neighbourhood.

The witness withdrew.

Francis David Valentine, Mayor of Hobart, sworn and examined.

45. *To the Chairman.*—The service and attention given by the present manual exchange in Hobart are very good, but the demands upon the system are growing, and I understand that to cope with them a larger plant will soon be required. The site selected for the proposed automatic exchange at the corner of Harrington and Davey streets is a very fine block, for which £3,500 is not an unreasonable price. Although the Davey-street frontage is in the residential area, the site is really on the edge of the business centre of the city. There are public buildings in Davey-street, and the consulting rooms of the medical profession are in Macquarie-street. The proposed five-storied building, 80 feet in height, will be higher than most buildings in Hobart, but within the limits imposed by the municipal by-laws. A building of five stories is in course of erection in Elizabeth-street. Most subscribers consider that the telephone rentals are too high. If the rents were lower, the number of subscribers would increase.

46. *To Mr. Cook.*—One would think that it would be better to concentrate all the activities of the

Postal Department in one block of buildings, and I do not think it is impossible to obtain additional land adjoining the General Post Office. There is a quarter-acre block fronting Argyle-street, which should be purchased for the extension of postal buildings, quite apart from the proposal now before the Committee. It would provide a right-of-way to Argyle-street which, for postal delivery purposes would be better than the entrances off Elizabeth and Macquarie streets, where traffic is more congested, and the postal vans are interfered with by the trams. I refer to the Commonwealth Bank block. The price would be more than double the amount that has been paid for the site selected for the exchange, but the position is central. Some time ago it was difficult to get a new telephone line installed, and many applicants were on the waiting list. At times there are delays on the trunk line to Launceston, but, generally speaking, the telephone service in this State is satisfactory.

47. *To Mr. Gregory.*—So long as the architecture were pleasing and appropriate to the locality, there would be no objection on the part of the City Council to the erection of any 80 feet building on the site acquired for the new telephone exchange. The height of the structure would not be any reason for objecting to its erection in that locality.

48. *To Mr. Seabrook.*—The exchange building would have a more effective appearance if it were faced with sandstone. A committee, of which I am a member, recently called for tenders for the construction of a large building, and the lowest tenders were—for a terra cotta front, £34,725, 52 weeks to complete; stone front, £36,250, 104 weeks to complete. The factor of time, not the cost, influenced the committee in deciding against stone. There is no doubt that sandstone makes a very fine facade, and all the Government buildings in the city are of that material. The General Post Office is an illustration of what can be done with the excellent freestone that is obtained at New Norfolk, Lindisfarne, and elsewhere. Cement ornamentation is most undesirable; unless it receives regular attention it becomes dowdy, even in Hobart, which is a fairly clean city. Cement washing is not effective, and if paint is used, frequent coats are required to maintain a good appearance. If the Commonwealth cannot afford to build the exchange entirely of stone, it could produce a very fine building of brick relieved with stone.

49. *To Mr. McGrath.*—About three years ago I valued the block at the corner of Harrington and Davey streets for the Government; I cannot remember the price I put upon it, but I think it was about the figure at which the land was purchased by the Commonwealth. The block near the General Post Office to which I have referred, is occupied by an unpretentious building that is used as a coach factory. The assessed value of the property is under £8,000, but the coachbuilder would probably demand compensation for disturbance.

50. *To Mr. Lacey.*—The purchase of the quarter-acre block in Argyle-street would supplement the area at present available in the General Post Office yard. All that land will be necessary for future expansion of the post office and to facilitate postal transport work.

51. *To Senator Reid.*—The development of Hobart warrants the establishment of an up-to-date automatic telephone exchange of the type proposed. Provision must be made for the expansion of the postal and telephonic services. At one time the General Post

Office was regarded as absurdly large for a place like Hobart; now it is much too small. The better the facilities the department offers the more telephone subscribers it will get. A course of fused bricks above the base would enhance the appearance of the exchange building, but I think a bluestone base would be better. There is plenty of good bluestone available, but being difficult to work, it is expensive. Stone would certainly be much more costly than brick. I suggest that the Committee should call alternative tenders for a brick building and a stone-faced building. I do not think the difference between the two would amount to anything like £20,000.

52. *To the Chairman.*—If the proposed building is to be proceeded with, I would like to see it started at an early date, because in the approaching winter there will be a dearth of employment for building tradesmen.

The witness withdrew.

Roy Tasman Perry, Clerk in Postmaster-General's Department, Secretary of the Commonwealth Public Service Clerical Association, and a member of the High Council of Public Service organizations, sworn and examined.

53. *To the Chairman.*—For some time we have been advocating the provision of a postal institute for the use of Federal public servants in Tasmania. In every other State a postal institute has been established. These institutes have two uses, firstly, they provide educational facilities for the officers; and, secondly, they provide a meeting place for social and recreational purposes. In Tasmania we have felt keenly the lack of these facilities. In other States it is possible for a member of the postal service to acquire, through the medium of the postal institute, almost any knowledge he requires for his advancement in the service. An Accounts officer may study accountancy, or a telephone mechanic may improve himself in his particular avocation. There are classes for all. In the other States postal officers have availed themselves freely of the advantages offered by the institutes, and are able to become more efficient than we in Tasmania can without those facilities. In answer to our representations, we were told that the space available in the General Post Office did not permit of the proposal being entertained then, but that the establishment of an institute would be considered in connexion with the new telephone exchange building. At the present time there is acute congestion in all branches of the postal service. Between 400 and 450 persons are employed in the Postal Department in and around Hobart, and most of them would avail themselves of the facilities provided by an institute. But the use of such an establishment are not confined to those who are able to have direct access to it. By means of correspondence classes, almost every member of the service can derive some advantage from the institute. We have given a good deal of consideration to its location. Although it might be desirable to have it in the post office building, I cannot see that space could be found for it there. Even after the exodus which will take place when the new exchange building is completed, the ordinary expansion of postal activities will absorb nearly all the space available in the General Post Office. So far as I can see, the proposed lay-out of the institute floor corresponds with a tentative plan which the High Council approved as the best possible with the space which would be available. I would urge, however, the provision of a tennis court in conjunction with the other recreational facilities to be provided by

the institute. It would be of great benefit to the officers, inasmuch as it would allow them to take recreation adjacent to their work. Public hospitals and other institutions of the kind provide tennis courts for the recreation of the staff. Telephonists work short shifts, and have two hours off. If they could take their lunch on the premises and fill in their off-time with a game of tennis, they would be more fit for their work. There is a scarcity of tennis courts about Hobart. I assume that if courts were provided showers and baths would be installed in a club-house or dressing-room.

54. *To Mr. Gregory.*—We would prefer a larger social hall than is shown on the plan, but we recognize that it would not be possible to enlarge the space provided. A social hall 41 feet by 32 feet, less the stage and passageways, would not accommodate more than 125 to 150 persons. However, it appears that a larger social hall can be provided only at the sacrifice of other facilities. There is little doubt that the postal service will expand, and in time the accommodation to be provided in this institute will be too small; but, with the exception of the social hall, the rooms will be large enough to cater for the probable expansion of the institute for a number of years. In addition to the employees in the exchange building and the General Post Office, those engaged at the line yard and the workshop will utilize the institute, and the new building will be centrally situated in relation to all three. Moreover, it is hoped that the institute facilities will be extended to the officers of other Federal departments in Hobart. If that is done, the social value and usefulness of the institute will be enhanced. If all Federal officers are to use the institute, the new building will be fairly central. The distance of 25 chains from the General Post Office will not be any detriment to the employees there. I think the Committee can rest assured that there will be no demand later for an additional institute in the General Post Office. If a postal institute is established in the new exchange buildings, and the whole of the top floor is made available for that purpose it will give satisfaction to the service generally.

55. *To Senator Barnes.*—The library and reading rooms could not easily be utilized for an extension of the social hall, because in both there would be a certain quantity of fixed equipment. The equipment in the class rooms would be more mobile, and possibly the architect might be able to re-arrange the floor plan so that two of the class rooms would be alongside the social hall. If that were done, and the partitions were movable, or folding doors were provided, the social hall could be enlarged on special occasions by taking in those two rooms.

56. *To Mr. McGrath.*—If the extra expense would not be too great, we would prefer the walls to be 15 feet high instead of only 12 feet. I have collected literature regarding the classes that are conducted in the institutes in the other States, and I anticipate that we shall be able to provide similar instruction here.

57. *To Mr. Lacey.*—It is desirable that the whole of the accommodation for the institute should be on one floor. The social hall will not be used very much, but if it is necessary to give instruction while a social function is in progress, the third class room, which will be fairly private, can be used for that purpose.

58. *To Senator Reid.*—The lack of a postal institute in this place has interfered with the advancement of officers. Necessarily, our officers cannot be as efficient as those in other States, who have facilities for acquiring those qualifications which the Department requires in those seeking promotion. I am confident that the

officers will take the fullest advantage of the educational opportunities which the institute will afford. They realize the need for such instruction, and will not be slow to appreciate it.

59. *To Mr. Cook.*—At present postal employees in Tasmania enjoy no such facilities as the institute will provide. Those officers who desire to improve themselves have to rely upon their own resources, and pay for tuition at the technical and business colleges. The tuition to be given in the institute will be confined to the knowledge that a man in the postal service requires, whereas an officer attending classes at technical colleges or private schools must take a general course, which includes a lot of instruction which will never be of use to him. The cost is another consideration. An accountancy course costs approximately £20. Courses at the Technical College extend over four or five years, so that the cost to apprentices is considerable, whereas, in the institute, the membership fees will cover all classes. Not only would this be a considerable economy to the officers, but, if they are able to get tuition that is more applicable to their work, the Department must benefit. We propose to use the social hall as a gymnasium also.

The witness withdrew.

James Edward Cathie, Deputy Public Service Inspector, Commonwealth Electoral Officer and Works Registrar, Hobart, sworn and examined.

60. *To the Chairman.*—At the request of the Committee, I have prepared particulars of Commonwealth activities in Hobart that are housed in rented premises. The Lighthouses branch of the Trade and Customs Department is in rooms at Salamanca-place, for which we pay £125 per annum. The lease will terminate at the end of this month, and from the 1st June that branch will be accommodated in the Customs House rent free. Two rooms downstairs in that building are vacant, and we are converting part of the bond for the use of lighthouse mechanics. For the Naval branch of the Defence Department we are obliged to rent premises in Cathedral-buildings, for which we pay £160 a year. The Taxation Department is located in a State Government building, but has received notice to quit, and we shall have to seek other accommodation for it. It will require about 2,000 square feet to house its thirteen officials, which will probably cost £300 to £350 a year. At the present time we are paying £700 for 5,400 feet in the National Mutual building. Before the collection of Commonwealth income tax was taken over by the State Department, the whole of that space was required by the Commonwealth branch, but under the Taxation agreement the Commonwealth continues to pay for the accommodation in the National Mutual building, although the space is occupied by State officers. That arrangement will be terminated shortly, in so far as the present lease of the National Mutual Building is concerned. The State Government has intimated that it will transfer its officers into a Government building where the Federal officers are now, and the latter will have to seek other accommodation. Our lease will expire on 30th September next, and I shall have to renew our lease of portion of the space there or seek accommodation elsewhere. I have to provide for sixteen officers, including three belonging to the sub-Treasury. Of the 20 rooms we rent for £700, we sub-let two for £80. The sub-Treasury is at present located in the Australian Mutual Provident buildings, and for 680 square feet there we pay £145. These rooms accommodate five officials. By the amalgamation of the Taxation and sub-Treasury branches under the Deputy Commissioner of Taxation, that staff will be reduced from five to three. The

inquiry officer of the Postmaster-General's Department cannot be accommodated in the General Post Office, and for him we rent 120 square feet, for which we pay £39 per annum, plus £10 3s. 10d. in rates. When the new exchange building is completed, accommodation will be found for that officer in the General Post Office. For the rooms occupied by the Audit branch in Royal Exchange chambers, we pay £156 per annum and rates amounting to £39 3s. 10d. I proposed that these seven officers should be accommodated in the Repatriation building in Davey-street, but effect has not yet been given to that recommendation. The duties of the Audit officers are carried out in the several departments, and the public would not be inconvenienced if their offices were slightly away from the centre of the town. The Meteorological branch has its main office in the Defence Department rent free, but pays £52 a year for a sub-office in Macquarie-street for one officer. The total area of rented floor space in Hobart is 12,204 square feet, accommodating 35 officers, and for that we pay £1,377 in rent, plus £49 7s. 8d. for rates. The office of the Old-age Pensions branch is in the Customs building, but the pensions are paid by the Postal Department at the Masonic Hall. The public would not be greatly inconvenienced if the Taxation branch were accommodated on the second floor of the new exchange building, but its relation with the State Taxation Department and other Federal departments requires that it be accommodated centrally. It is desirable that Commonwealth activities should be centralized as much as possible. Concentration of staffs usually means better administration, and a saving of both time and money.

61. *To Mr. Seabrook.*—The Meteorological branch would be more conveniently situated in the new exchange building, which will be just as handy for the Audit branch also as the accommodation it now occupies. The officers of the Navy Department contend that an office in the city is necessary. The public attend that office a good deal when naval ships are in port. The erection of an office on the naval reserve near where the ships berth has been suggested. The income tax staff might be conveniently located in the new exchange building. Most of their business is done with the State Income Tax Office, which is housed in the Tourist Bureau building, only about three minutes' walk from Davey-street.

62. *To Mr. McGrath.*—About twelve months have elapsed since I suggested that the Audit Department should be accommodated in the Repatriation buildings, but nothing has been done yet. If, when the new exchange building is completed, there is an opportunity to economize in rent by utilizing spare accommodation there, I shall see that that is done. The transfer of income tax collection to the State has reduced the space requirements of the Commonwealth Taxation Department, and under the new arrangement the space to be rented for that branch will not cost more than about £300, instead of £700 as at present.

63. *To Mr. Lacey.*—The Customs House and other Commonwealth buildings in Hobart are occupied entirely by Commonwealth officers; there are no outside tenants.

64. *To Senator Reid.*—The Federal members' room in this building is not very frequently occupied now, but the former member for Denison (Mr. O'Keefe) used it regularly. It may be too large for the purpose for which it is reserved, but there is no other room in the building that is available. The room is used by Federal commissions and for other Commonwealth activities, thereby obviating the expense of hiring other premises.

65. *To Mr. Cook.*—Capitalized, the rents we pay for accommodation represent a smaller sum than would be

required to erect a building that would provide the departments with the space they need. Therefore, renting space as we require it is cheaper than erecting new Government buildings. The rents might be capitalized at about £18,000, and I do not suppose we could build the same accommodation under £20,000, to which would be added the cost of the site.

66. *To Mr. Gregory.*—The rents we are paying now are equivalent to a little more than 2s. per square foot. Floor space in the new telephone building will cost nearly 2s. per square foot, and that accommodation will not be nearly as convenient as the offices we now rent in the Australian Mutual Provident buildings and elsewhere in the city.

TEMPERATURE AND HUMIDITY.

	No. of Years of Observations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
TEMPERATURE IN DEGREES (FAHR.).													
<i>Means.</i>													
(1) Mean Dry Maximum	15	69.8	70.7	67.1	62.3	57.5	53.1	52.7	55.7	59.1	62.6	64.8	68.1
(2) Mean Dry Minimum	15	52.6	54.2	51.3	47.8	44.3	41.5	40.4	41.8	44.0	46.1	48.2	51.5
(3) Mean of Dry Maximum and Minimum	15	61.4	62.4	59.2	55.0	50.9	47.3	46.6	48.8	51.6	54.4	56.5	59.8
(4) Mean Wet Maximum	15	58.7	60.4	57.6	54.2	50.6	47.7	46.9	48.6	50.7	53.1	55.0	57.7
(5) Mean Wet Minimum	15	48.9	51.0	48.3	45.1	42.2	39.6	38.6	39.7	41.3	43.1	44.9	48.0
(6) Mean of Wet Maximum and Minimum	15	53.8	55.7	53.0	49.7	46.4	43.6	42.8	44.2	46.0	48.1	49.9	52.8
<i>Extremes.</i>													
(12) Highest Dry Maximum	79	105.0	104.4	98.8	90.0	77.8	75.0	72.0	77.0	80.0	92.0	98.0	105.2
(13) Highest Wet Maximum	15	72.0	72.8	70.0	66.8	64.3	56.2	54.7	57.3	63.0	67.8	70.5	75.8
(14) Lowest Dry Minimum	79	40.3	39.0	36.0	30.0	29.2	28.0	27.0	30.0	30.0	32.0	35.2	38.0
(15) Lowest Wet Minimum	15	37.8	39.1	35.7	36.0	30.1	28.9	29.0	30.8	30.5	33.0	33.5	37.6
RELATIVE HUMIDITY IN % OF SATURATION.													
(7) Mean Humidity at Maximum Temperatures (from 1 and 4)	15	48	51	53	56	59	65	61	56	52	49	50	49
(8) Mean Humidity at Minimum Temperatures (from 2 and 5)	15	75	79	79	80	83	84	84	82	77	77	75	76
(9) Mean Humidity at Mean Temperatures (from 3 and 6)	15	58	63	63	66	68	72	71	66	62	60	60	60
(10) Mean 9 a.m. Humidity	42	63	65	68	73	78	82	80	77	71	66	63	61
(11) Highest Mean Monthly 9.a.m. Humidity	42	77	80	78	84	88	92	88	85	82	80	78	79

The committee will see that the mean humidity at 9 a.m. varies from 61 per cent. in December to a maximum of 82 per cent. in June. The highest mean 9 a.m. humidity on record for one month was 92 per cent. in a month of June, which means that the air at 9 a.m. was foggy during practically the whole of that month. The average humidity in Hobart is considerably above 70 per cent. I should say that the Sydney climate is more humid than that of Hobart, especially in the summer. The effect of extreme humidity is that the moisture is condensed on the fine parts of the telephone mechanism, and a short circuit is caused. The trouble from humidity in Hobart would be less than in Melbourne, on account of the lower temperature in this place.

68. *To Senator Reid.*—The highest temperature ever recorded in Hobart was 105.2 degrees. The average humidity at the time of maximum temperature in summer is 49 per cent. For approximately half the year the wet bulb readings are above the average.

69. *To Mr. Cook.*—I should think that an air-conditioning plant would be more necessary in Melbourne than in Hobart. The average summer temperature in Hobart is between 60 and 75 degrees. As a rule, when the temperature is low, the relative humidity is much higher, and *vice versa*. Hobart has very little sultry weather.

70. *To Mr. Gregory.*—In winter, there is a greater quantity of moisture in the air relative to saturation. In wet weather the humidity for days at a time is over 90 per cent., but that is counterbalanced by the low temperatures.

(Taken at Hobart.)

THURSDAY, 6TH MAY, 1926.

Present:

Mr. MACKAY, Chairman;

Senator Barnes

Mr. Lacey

Senator Reid

Mr. McGrath

Mr. Cook

Mr. Seabrook

Mr. Gregory

James Charles Foley, Divisional Meteorologist, sworn and examined.

67. *To the Chairman.*—At the request of the Committee I have prepared the following table of temperature and humidity readings at Hobart:—

71. *To Mr. Seabrook.*—The statistics I have supplied in regard to temperatures and humidity represent outdoor readings. The readings indoors would depend upon the ventilation, heating, and other conditions. Air that is warmed up can hold a greater amount of moisture and does not deposit so readily.

The witness withdrew.

Walter Herbert Cummins, President of the Hobart Chamber of Commerce, sworn and examined.

72. *To the Chairman.*—The telephone service in Hobart has been very good, especially since it was reorganized a few years ago under a separate telephone manager, Mr. Ferris. The department has always displayed a helpful and sympathetic attitude towards business firms, and I trust that that will continue. I hope that when the automatic system is installed, consideration will be given to large houses which have several inter-office telephones in use. If each of these telephones must be connected direct to the central exchange, the service will not be as efficient as at present; but I understand that in Sydney subscribers have the option of dialling direct to the exchange or through a local switchboard. If we have that option here we shall be satisfied; usually a firm prefers to have control at its own switchboard. Some time ago when materials were short, there were difficulties and delays in getting telephone service, but when urgency was proved the department usually managed to overcome the obstacles. The Telegraph Department in Hobart seems to be labouring under very great

difficulties, and the *Mercury* office, with which I am connected, suffers very much from the delay of messages in transit. Almost daily press telegrams occupy four or five times as long to come from Melbourne to Hobart as from London to Melbourne. Interstate telegrams are subjected to considerable delay, and messages lodged in Sydney at 6 p.m. do not reach us until after midnight. The local office does everything within its power to expedite service, but it is handicapped by antiquated plant. The proposed exchange site at the corner of Harrington and Davey streets is in a good residential quarter, but, as the city grows, business houses will gradually extend in that direction. The site seems to me eminently suitable for an exchange. I can see no objection to the erection of a tall building, provided the architecture and materials are suitable. I understand that the proposal before the Committee is to erect a building of brick ornamented with plaster or stone. Cannot the Commonwealth afford to erect a building worthy of the Federal authority? Must private enterprise always be left to demonstrate what is fitting in big public buildings? The only suitable material for the front of the exchange building is freestone. The town hall was built of that material in 1860, and it looks as well to-day as ever it did. If the stone is well-chosen, the risk of fretting is very small. Plenty of good freestone is available; even builders in Victoria send to Tasmania for specially good stone. A brick building, with stone embellishments, would be an eyesore. The *Mercury* office is constructed of that combination, and we have always regretted the mistake we made. The exchange building should be either all stone or all brick. If it be made of inferior material, future generations will curse those who are responsible. In the centre of the city any building above two stories should be of stone. That should be made compulsory. Government buildings should be an example to private enterprise, and a factor in the aesthetic education of the rising generation. A new exchange building is badly needed, and as a large amount is to be expended on it, would it not be worth while to expend even an additional £20,000 in order to do the job well and create an edifice that will be a thing of beauty for all time? Freestone, if carefully chosen, is a permanent material. Risden stone is of excellent quality and hardens with exposure. There is a fine quarry at Lindisfarne, and some buildings erected of that material when the district was first settled, look as well to-day as when they were built. I protest against the use of any white plaster or any composite arrangement of materials. If the building cannot be faced with stone, let it be of honest brick. The site purchased by the Government is very valuable. My firm had to pay £3,000 for a piece of land 30 feet x 100 feet deep a few years ago.

73. *To Mr. Cook.*—Buildings in which inferior freestone has been used have fretted to some extent, but carefully-selected stone is the best material that can be obtained, and it is easy to work. Of course, limestone is everlasting, but it is a difficult material to handle. The high brick buildings in Sydney are not nearly as beautiful as those that are made of freestone. An extra £20,000 would be a cheap price to pay for lasting beauty and dignity in a Government building. Stonemasons are scarce, and the householder employs brick because he has to consider the cost. The same limitations do not apply to the Commonwealth Government. It would be desirable to erect the exchange building adjacent to the General Post Office if land were obtainable, because concentration always make for efficient administration.

74. *To Mr. Gregory.*—Having regard to the fact that there is rising ground at the back of the site at the corner of Harrington and Davey streets, I do not think that a building 80 feet high would depreciate the aesthetic value of that locality. On the contrary,

if the facade is of stone, and the structure has a dignified and solid appearance, the beauty of the neighbourhood will be enhanced.

75. *To Mr. Seabrook.*—The High School, the City Hall, and the *Mercury* office demonstrate the folly of composite construction in which bricks and stone are mingled. The site chosen for the exchange is central and convenient. Because of the gradual extension of the business area in that direction, no residences have been built there for many years.

76. *To Mr. McGrath.*—The Hobart people have been well satisfied to date with the service rendered by the present manual exchange. Our advocacy of an automatic exchange is not born merely of a desire to have Commonwealth money expended locally. If an improved service can be introduced, and future expansion provided for, Hobart should have its share of Federal expenditure. The commercial community regards this proposed expenditure as a welcome and overdue innovation. Fused bricks would be better than the ordinary red bricks. Large quantities of freestone have been exported to Victoria. I am not aware that Risden freestone has proved a failure in the Melbourne Treasury buildings. If that is so, the stone must have been badly selected.

The witness withdrew.

Harry Warlow-Davies, Acting Chief Engineer of the Electrolytic Zinc Company, sworn and examined.

77. *To the Chairman.*—My company does an extensive business with the Postal and Telephone Department. In our ordinary telephone service we have three town lines, and about the works we have nearly 60 lines connected to our own automatic exchange, which was installed in the department in 1922 and is its property. For it we pay an annual rental which I understand covers amortization, and the department maintains the service. The original installation in 1922 was for 50 jacks, but in 1924, when the company established the superphosphate works and other auxiliary plant, twenty more jacks were added, so that the present capacity of the exchange is 70 lines, although not all of them are in use. The automatic switchboard is in the general office, and during the day we employ an attendant to look after the town lines. The value of that is that, with about 50 telephone lines to different parts of the works, the town lines might easily get jammed by private and other illegitimate calls. On night and afternoon shifts when there are liable to be frequent calls to the metallurgist and others, the attendant is not at the switchboard, but a couple of the town lines are automatically coupled up. There is no air-conditioning plant in connection with our exchange. There is not even a continuous heating system, but we use electric radiators. So far as I know we have had no trouble from humidity. A little difficulty which was experienced at one time was attributed to dust rather than to humidity, and it was corrected by the more careful sealing of the room. The service is very satisfactory in fact, compared with the ordinary telephones which were installed previously, it is an absolute boon. We appreciate the insistent "engaged" signal. When one is busy and has several people to ring up urgently, and cannot get a particular call through, one can cut out immediately and dial another number, instead of being hung up indefinitely as so often happens on a manual exchange. I endorse what was said by the president of the Chamber of Commerce regarding the telephone service in Tasmania. Our system was installed satisfactorily, and has been promptly and effectively attended to whenever troubles have occurred. The department has shown a complete understanding of the plant and the utmost courtesy.

78. *To Mr. Seabrook.*—The automatic system is almost incomparably superior to the manual. I waste less than half the time in telephoning that I did previously. Although I have no complaint to make of the past service rendered by the telephone exchanges in Hobart, it is necessary, in the interests of the business community, that an automatic exchange should be established as soon as possible.

79. *To Senator Reid.*—Our switchboard is in a carefully-lined wooden room, measuring about 14 feet by 20 feet. The ceiling is of wood, and the roof of corrugated iron. As a protection against dust and temperature changes, the ceiling is lined with felt. The height of the room is about 13 feet.

The witness withdrew.

Edgar Morrah Hannaford, Deputy Director of Posts and Telegraphs, Tasmania, sworn and examined.

80. *To the Chairman.*—In all branches of the General Post Office there is considerable congestion at the present time. In order to find room for the manager of telephones and his staff, I have had to take the accountant away from his branch on the first floor, although it is desirable that he should be accommodated in close proximity to it. The room he and his typist occupy is small and not at all suitable. The inquiry officer is housed in a rented room in Commercial Bank chambers, for which the Government pays £39 and rates amounting to £10 per annum. Recently, in order to find accommodation for the registered letter section, I had to partition off portion of the main mail room. On the ground floor is the mail room, the cashier's section, superintendent of mails, public room for all services, parcels post room, registered letter section, dead letter room, accountant's room, lavatories, and the telegraph dispatch room. The last-named is small and inadequate. There is no room for any extension that may be necessary, and during the summer season the office is very congested. The postal inspector and his clerk are in a small and inaccessible room on the second floor, whereas they should be brought down into close contact with other officers. On the first floor are the telephone exchange, the telephone manager and his staff, the testing and power rooms, the stamp-distributing room, the telegraph manager, the telegraph operating room, the telephone contracts section, my own room, the chief clerk's room, and the lavatories. In the accounts section, which has the largest room on the first floor, the congestion is very acute. The correspondence room was lately relieved by removing the contract clerk into the Stores branch. We have had to provide a ladies' retiring room under the roof. The present cloak-room and lavatory accommodation for females is very inadequate; the same remark applies to the luncheon room for the telegraph section. Portion of the old workshop in the yard is being used by the mechanical staff attached to the State Engineer's branch, and the other portion as offices for his staff and for draughting and blue printing. The common luncheon room also is in the same antiquated premises, and is entirely unsuitable for the staff to eat in, but I have no other accommodation to offer. There is no space in the General Post Office building that could be made available for the extension of telephonic business. The staff at the General Post Office numbers 285, of whom about 192 will remain when the new exchange building is erected. The staffs of the engineer and the telephone manager, numbering 89, will be transferred to the building, and that will leave vacant the present exchange room, measuring 34 ft. 7 in. x 33 ft. 9 in.; the testing room, 19 ft. 4 in. x 18 ft. 3 in.; the power room, 12 ft. 7 in. x 13 ft. 3 in.; the accumulator room, the engineer's offices, the electrical engineer's room, the telephone contracts room, and the room of the telephone manager. The telephone manager's room will revert to the accountant

and his typist, and the room vacated by the accountant on the ground floor will accommodate the inquiry officer, thus obviating the need for renting a room for him. That will save an annual charge of £49 3s. 10d. The large room and small office now occupied by the State engineer will probably be handed over to the correspondence section, which is now on the first floor. The telephone manager's room I propose to use for the inspectorial staff, which is now under the leads. When the present correspondence room is vacated, I shall be able to put some of the accounts staff there. The accumulator room will probably be used to extend the telegraphists' meal room, in response to frequent requests from the men who are engaged there continuously, and we are also making provision for the training of telegraphists, and we may have to use that room for that purpose. I may have to retain the testing room for the mechanical staff, if the Murray multiplex system of telegraphy is introduced. I have not yet decided how the present telephone exchange room will be occupied. It may suit me to put the Accounts branch there, and reserve the correspondence room accommodation for future expansion. At present we pay £52 a year for an office in which the pensions are paid, and I do not see how I can avoid that expense. There are about 1,800 pensioners, many of whom are old and decrepit, and I cannot find a spare office on the ground floor. The accommodation at the public counter is very limited, and in the near future it will be necessary to extend the private letter-boxes, and I shall have to take for that purpose either the room occupied by the superintendent of mails or the cashier's room. That will involve finding other space for the strong-room and the superintendent of mails. The lavatory accommodation at the General Post Office is altogether inadequate. Recently we expended £250 on the lavatories used by the clerical staff on the first floor; the lavatories used by the postmen and men employed in the Stores branch on the ground floor are located in the right-of-way at the back of the *Mercury* office. An amount of £500 for the extension of this accommodation is on the estimates. In the ladies' lavatories there are only three W.C.'s for a staff of over 70 women. The men's lavatories are also congested. When the new exchange building is completed, and portion of the staff is transferred to it, I shall have in the General Post Office, I estimate, sufficient accommodation to meet requirements for the next fifteen years. When we occupied that building in 1903 we were told that the place was 50 years ahead of its time. I predicted that within ten years we would not have a vacant room, and that forecast has been verified. Space for an automatic telephone exchange could not be found in the General Post Office building except by the addition of a new story, which would not be practicable. That building was erected in the midst of the depression in 1900, at a cost of £35,000, and I am told that to add one story to conform to the original design would cost £60,000. The possibility of building other accommodation on the site of the old workshop and land adjoining was considered some years ago. The land available there is very narrow, and its usefulness is limited by a joint right-of-way. For the sake of administrative efficiency, it is desirable that all the activities of the Postal Department should be concentrated in one building, but I do not think that is possible in Hobart, and it does not obtain in any other capital city. I see no outstanding disadvantage in the proposal to accommodate the telephone exchange in a separate building.

81. *To Mr. Seabrook.*—The increase in postal revenue is steady. In 1904-5 the revenue amounted to £111,923, and in 1924-5 to £307,295. My Department pays 1,000 military pensions at the Masonic Hall, and 800 old-age and invalid pensions at the People's Hall. I could not find space in the General Post Office for the

payment of the military pensions. It would be necessary to have a room that was easily accessible. The only suitable place would be in the vicinity of the public counter, and if pensions were paid there the congestion during the summer months would be intolerable. There is no provision for storing telephone equipment in the General Post Office cellar. The ordinary store stock is kept there, and its average value is about £32,000. It would not be possible to find space for that in the telephone exchange building. Therefore, the basement accommodation will not be relieved by the storage to be provided in the new building. Presumably the telephone mechanics will be transferred to the new exchange, and their rooms and the old workshop will be vacated, but I have already explained that, if the multiplex system of telegraphy is introduced, we shall probably have to increase the number of telegraph mechanics. The stores at Montpelier-street are primarily workshops for the carpenters, platers, and mechanics. The new building will not afford any relief in respect of that storage. I do not think that the vacant ground adjoining the exchange site has been sold. It might be advisable for the Government to buy that area and transfer the store from Montpelier-street thither, but that land will be very costly. Moreover, the Montpelier-street site has entrances from two frontages, and they facilitate the handling of poles. That store is a pole dépôt. I do not know whether by the suggested purchase we could get sufficient area to house the departmental motor wagons and the pole-dressing dépôt. The acquisition of that land would necessarily lead to a concentration of postal activities, but the distance from there to the workshop is not great. At Salamanca-place there is a well for testing cables, &c., but that accommodation could be provided at Montpelier-street. If the area available at Harrington-street were sufficient, the concentration of the workshops and pole dépôt would be advisable. All the telephonists who will be displaced when the automatic system is introduced will be absorbed into other branches of the postal service. The new automatic system will not extend beyond the metropolitan area, and, therefore, will not serve Huonville and New Norfolk.

82. *To Mr. McGrath.*—If the area adjoining the Harrington-street site were acquired by the department, we should still have to retain portion of the workshop at Montpelier-street, because the space available at Harrington-street would not be sufficient. The pensions should be paid at the Repatriation Department. If that department would merely provide us with accommodation there, my staff would attend to the payment. The repatriation building is almost a white elephant, and there is nothing to prevent its being utilized for pensions purposes because it is easily accessible to the public. For some time that building was utilized fully, but I understand that it is used very little now. I have not made any representations to the Repatriation Department on that subject. The price of the land adjoining the Commonwealth Bank would probably be prohibitive. In a recent taxation case land within 30 yards of the General Post Office was estimated to be worth £350 to £400 per foot. When I mentioned that fact to the Director, he said that the property was too valuable for postal purposes, although the Commonwealth Bank site was acquired by the department for only £7,500. The common lunching room is in a disgusting condition, but some of the men who use it will not attempt to keep it clean. The labourer is supposed to keep it swept and washed, but the accommodation is utterly inadequate and nothing can be done to make it habitable. The yard leading to it is often half-flooded. I spent £250 in improving the lavatories upstairs, but the men do not help to keep them in a sanitary condition. The conditions of the luncheon room now are such that the

clerical staff will not use it; it is used principally by the artisans, and they do not help to maintain it in decent order.

83. *To Senator Reid.*—By the transfer of some of the post office staff to the new exchange building the number using the lavatories will be considerably reduced, and by a little expenditure I shall be able to improve the existing accommodation to make it adequate for the 40 females who will remain in the building. The lavatories for males, which were recently enlarged, are fairly adequate, but I do not see how they can be further extended when required except by utilizing portion of the dispatch room on the ground floor. The Works Department asked whether the lavatories could be built in the basement instead of in the right-of-way. That was not possible, because I could not afford to sacrifice any of the already inadequate storage room in the basement. Also, if the lavatories were put in the basement costly excavation would be required. I do not know to what use the old workshops can be put when they are vacated by the present occupants. The buildings are narrow and dilapidated. When the telephone exchange is transferred to the new building I shall be able to provide a better luncheon room, but only temporarily, because if the postal work of the department expands in proportion to the development during the last twenty years I shall not be able to spare any accommodation for long. With the exception of the telegraph clerks, for whom we provide a separate rest and luncheon room, the officers will go to the institute in the exchange building for their lunch. I do not think it would be wise to centralize all the workshops and stores in the city. Because Montpelier-street was claimed to be in a residential quarter there was great opposition to its acquisition for the purpose of postal stores. The business centre must extend towards Harrington-street, and, therefore, it would be unwise to establish workshops and stores there. I expect that from 260 to 300 of the officers in my department will take advantage of the accommodation offered by the Postal Institute. We are considering the advisability of extending its facilities to officers of other Federal departments in Tasmania. Unless such an institute is established my staff must be prejudiced when applying for positions in other States, because they have not the educational facilities that officers elsewhere have. The Postal Institute seems to have worked well in other States, and I believe that in a large business like the Postal Department the advantages that an institute offers, particularly in the form of instructional classes, are essential.

84. *To Mr. Cook.*—I recognize that it would not be possible to concentrate all the activities of my department in the one building. When the inadequacies of the accommodation became acute, we took steps to shift the exchange, and we have selected for it the nearest site to the theoretical centre that is obtainable. In all the capital cities the department has recognized the impracticability of concentrating the whole of the postal, telegraphic, and telephonic business in one set of buildings. It would be a wise policy, if practicable, to provide space in the new exchange building for all Commonwealth departments that are now renting offices. I think that the Postal Institute will be self-supporting, in as much as it will increase the efficiency of the staff and put Tasmanian officers on an equal footing with those in other States. Unless we have a Postal Institute, the majority of the appointments will go to the men on the staffs of the larger States, because of the greater facilities they have for acquiring the requisite knowledge. The gratifying attendances at lectures on the automatic telephone and Murray multiplex system of telegraphy were an indication that the officers are anxious to acquire knowledge.

85. *To Mr. Gregory.*—The department is always taking precautions against the interruption of its services to the public by fire, and because in an isolated, specially-constructed building, the fire risk will be negligible, I think it better that the new automatic exchange should not be built at the General Post Office, even if space for it could be found. The risk of inconvenience to the public should be minimized as far as possible. I see no objection to the storeroom provided on the ground floor of the new exchange building. In the basement of the General Post Office stock worth £32,000 is stored adjacent to the telephone exchange and telegraphic plant. I do not think that is a fair risk. A short time ago an outbreak of fire occurred in the *Mercury* office, but, owing to the prompt action of a postal officer, it was quickly extinguished. Had a change of wind occurred, however, the whole of the telephonic and telegraphic equipment would have been jeopardized. I estimate that 50 per cent. of the patrons of the Postal Institute will be from the General Post Office, 25 per cent. from the workshop in Montpelier-street, and 25 per cent. from the exchange building. The exchange building will be almost equi-distant from the General Post Office, Montpelier-street workshop, and the mechanical workshops. I do not anticipate that the operations of the exchange will be affected by noises from the Postal Institute. If I thought there were any risk of a demand later for the establishment of a Postal Institute in the General Post Office, I would not suggest that the institute facilities should be made available to the officers of other Federal departments. Future needs of the General Post Office may be met by pulling down the old workshops and erecting a modern building on that site. The Telegraph Department could be accommodated in such a building, but the transfer of the batteries and other mechanical equipment would be costly. I would prefer to accommodate the parcels office, the registered letter office, and the dead-letter section there.

(Taken at Melbourne.)

WEDNESDAY, 12TH MAY, 1926.

Present:

Mr. MACKAY, Chairman;

Senator Barnes	Mr. Gregory
Senator Reid	Mr. Lacey
Mr. Cook	Mr. McGrath.

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

86. *To the Chairman.*—I have discussed with Mr. Murdoch the proposal to decrease the height of the building, but I cannot say that he has yet prepared a new plan since he saw the Committee in Hobart, but he has indicated to me the alterations which can be made to carry out the suggestion of the Committee. They meet with my approval. The question was whether the piers shown in the original plan would, if altered, permit of our apparatus being installed without our having to make undue alterations. At first, the whole of our automatic apparatus will go on the first floor, and I find that we can fit in with Mr. Murdoch's view by making slight variations in our layout. Mr. Murdoch has empowered me to tell the Committee that the result of our conference was that the height of the building can be reduced from 82 feet to 75 ft. 6 in., but that the cost will not be proportionately reduced, because when he was in Hobart, by means of a trial sinking at the corner of Davey and Harrington streets, he ascertained that, contrary, to

his expectations, the depth of the foundation will be about 10 feet, necessitating rather more extensive foundations than were anticipated. This will partly offset any saving likely to be effected by reducing the height of the building. Mr. Murdoch is reducing the height by eliminating the reinforced concrete beams. The proposal which he has in mind will allow him to put in reinforced floorings without the same depth of beams. The saving will be effected by the elimination of the reinforced concrete beam, either wholly or in part, meaning a saving of approximately 14 inches on each floor. This will not mean an increase in the number of stanchions; they will simply be put in different places. The actual height between the floor and the ceiling on the first two floors will be 15 feet instead of 17 feet, and will be quite satisfactory to us. On those floors will be installed our automatic apparatus should it be necessary at any time to increase the number of subscribers beyond those for which provision is now being made on the first floor. The accommodation on the first floor will not be fully occupied for approximately fifteen or twenty years, but of course in erecting an exchange for a capital city it is always wise to look ahead even beyond that period. In the meantime the second floor will be occupied by the trunk lines, but they will not take up the whole of the space, so that any overflow apparatus from the automatic exchange can at the end of twenty years find accommodation there. In other words, on the first and second floors we can cope with the ultimate growth for 25 years in respect of automatic switching apparatus and trunk switchboards. It is true that the whole of the space on the second floor will not be immediately required, and possibly spare space will be available on that floor for other Commonwealth departments, but only for a time. The State Engineers branch will take up the whole of the third floor. It is not essential, but it is very desirable to have the automatic equipment on the first floor, the reason being that one does not run very expensive cabling for a greater distance than is absolutely necessary. It would mean an extra 16 feet for 12,000 pairs of cables to install it on the second floor. We would have no objection to accommodating other Commonwealth departments in the building, provided there was an adequate separate means of access. We would not desire officials of other departments to traverse the portion of the floor devoted to the automatic apparatus. The first floor will not be fully occupied within the next ten years, but it must be borne in mind that when the first, second, and third selectors are installed you place them in their ultimate positions. You do not put them altogether. There may be a few here and a few there, allowing for the growth of each. Therefore, while the whole of the floor will not be covered by switching apparatus, it will all be occupied by groups of switches. If there is floor space available on the second floor or in any other part of the building we would have no objection to accommodating other departments. The air-conditioning plant for the Hobart Exchange is a matter for very close study at the present time. We are keeping special records of the maintenance costs at the older exchanges which have not full air-conditioning plants and comparing those with the maintenance costs of the newer exchanges which are equipped with full air-conditioning plants. Until we have had an opportunity to study these records it is not proposed in certain of our exchanges where the general humidity conditions are not as severe as in others to put in a full air-conditioning plant. The committee may remember that such a plant includes cleansing the air, heating it in winter, and cooling it in summer. A heating arrangement will be necessary at Hobart as well as a cleansing arrangement, but we have not sufficient data to tell us that a refrigerating system will be necessary there. But in order to be quite safe we

have included the full cost of an air-conditioning plant in the proposal before the committee on the understanding that if we do not need the refrigerating part of it it will not be installed. It is cheaper to provide the room for the whole plant inside the building than subsequently to put up an outside building in which to install a refrigerating plant. The manufacturers of automatic equipment do not guarantee efficient work when the humidity for any considerable period exceeds 70 per cent., and the meteorological office at Hobart cannot help us in that respect. Possibly the manufacturers have laid down rather too severe a condition. What applies to Sydney and Brisbane may not apply to Hobart. We may be able to eliminate the refrigerating plant at Hobart, and if we can do so we shall, because we do not want to spend £2,000 or £3,000 on a refrigerating plant if the circumstances do not absolutely justify it. At the cut-over fourteen mechanics will be employed in the new exchange, and in five years the number will be increased to sixteen, plus a labourer for cleaning. The number of operatives in the manual exchange is 30, excluding the trunk board attendants, who, of course, will be needed in the new exchange. The surplus officers will be absorbed in other departments. Among telephonists there is a tremendous wastage through marriage. It is, I think, about 25 to 30 per cent. each year. Side by side with the growth of the automatic system is the growth of the trunk line system, so that the trunk lines ought to absorb the number of officers made redundant by the installation of automatic exchanges.

87. *To Mr. Lacey.*—Temporary employees would no longer be required, thus permitting the department more easily to absorb the permanent employees in the manual exchange. By the elimination of the reinforced concrete beams there will be a saving of a little more than 12 inches on each floor; it actually amounts to about 14 inches for each floor, or 6 ft. 6 in. for the whole building. If there is any spare space in the building, we shall have no objection to allowing other Commonwealth departments in Hobart to occupy it, nor would we have objection to the erection of additional rooms if it were possible to do so, so that other departments now paying rent in Hobart may be accommodated.

88. *To Mr. Cook.*—It would be an advantage to us to have any spare space in the building occupied by other departments, because those other departments would be debited with a certain portion of the cost, and to that extent our balance-sheet would be relieved. We shall make a re-arrangement of our switches to accommodate the new position of the piers, as proposed by Mr. Murdoch. If he were increasing the number of stanchions, it might be awkward, but the number happens to be the same, although the positions are slightly different. The activities of the postal institutes in the various capital cities where they are in existence are very satisfactory. The attendances are excellent. On a visit I paid at the Melbourne Institution not very long ago, I was surprised at the very high percentage of attendances by the students. That is the best indication of the success of the classes conducted in the institutes. Therefore, I feel it is essential to have such an institute at Hobart. It gives facilities to a large number of our branches to train men in purely postal work, which, after all, is a specialized sort of work. Every concession is given to those who attend the classes. It costs them less at the institute than it would at a technical college.

89. *To Mr. Gregory.*—A staff of fourteen mechanics will not be too large. The number includes those who are now employed on the manual exchange, and it must be remembered that the exchange is open 24 hours a day. It is true that on the ground floor a large area is devoted to storage purposes. All our equipment stock of parts used in the exchange (telephones, repeaters,

switches, and ranks of switches of various sorts), will be stored there. In every automatic exchange we have storage accommodation. It is exceedingly inconvenient not to have it inside the building itself. To have the store outside is a very undesirable arrangement. The mechanics have to go outside the exchange and cross the yard to an outside building. Not only does it waste their time, but it also brings into the exchange a certain amount of dirt. The store at Collingwood is a reasonable size. The room for the air-conditioning plant is ample, but in most cases we find that there is too much congestion. For instance, in City North, Sydney, it is necessary to walk sideways between the various units of the plant. I agree that we could do with a little less room than is provided on the Hobart plan, but in this respect we are governed by the size of the first and second floors. They must be a particular size, and their size determines the space available on the ground floor for the air-conditioning plant. It is possible that portion of the space on the ground floor could be utilized in another way. We must have a storeroom there. Possibly we may make use of it for our outside staff. We must have a battery room and an air-conditioning plant room, but we might manage to do without half or three-quarters of the storage room, and thus make it available for other purposes. When you change over from a manual to an automatic, you have to change all the telephones on every subscribers' premises. That, of course, involves an outside door staff of mechanics temporarily engaged for the purpose, and they require accommodation. In fact, we have often been hard put to it to accommodate these men in various holes and corners of an exchange just at the time when the exchange was at its maximum pressure. They must work from the exchange as a centre. There is no accommodation in postal workshops for men who are doing this sort of work. Men are sent out with the telephones from the exchange itself, and it pays you to follow that practice. The work they do is entirely different from the work done in a postal workshop. It only occurs once in the history of an exchange. Obviously we have no accommodation elsewhere for this temporary staff. However, we may be able to make some of the storage room available for other purposes, but I do not think it will be possible to let it to another occupier unless a separate doorway is provided. It would not be possible to deprive the Telephone Department of the whole of that space. The ultimate capacity of the first floor will be 7,500 subscribers. The overflow will be accommodated on the second floor, giving an ultimate capacity of 15,000 subscribers for the two floors. If in twenty years Tasmania develops more rapidly telephonically than we have estimated, the overflow must go to the second floor. If other departments occupied space in this building, they would ultimately have to vacate it; but it is quite an easy matter to put up temporary partitions and remove them. If the other departments occupy space in this building, they should be confined to one floor. I do not think that the playing of pianos on the floor occupied by the Postal Institute would affect the trunk-line section. The reinforced concrete floors have a very limited conductivity for sound. When I was State Engineer in Melbourne, I was situated on the third floor, just above the Postal Institute, and, although I was aware that pianos were being played on the second floor, I did not hear them. It might be possible to incorporate in the lecture room the whole of the corridor dividing it from a class room. Another entrance could be given to the class room.

90. *To Senator Reid.*—The exchange will not occupy the whole of the site at the corner of Davey and Harrington streets. We determine our allotment by the size of the exchange, but, of course, we cannot always get one the actual size we need. We must have a minimum sized room for a switch room. Therefore, we

ask the Survey Department to obtain a site giving us that minimum dimension. If they get a site which is rather larger than is absolutely necessary, we can make use of additional space for storage of outside material. The Survey Department know that, if we ask for a site to accommodate an exchange so many feet long by so many feet wide, we also require light, if possible, on all sides, but in any case on three sides. Therefore, they look around for an allotment to give us the minimum dimensions plus the light area. The site at Hobart will give us very fair accommodation for storage purposes. Our automatic equipment is of standard size. The following is a statement of the humidity at Hobart as given in the *Commonwealth Year-Book*:

Month.	Relative Humidity (%).		
	Mean 9 a.m.	Highest Mean.	Lowest Mean.
No. of years over which observa- tion extends	41	41	41
January	63	77	51
February	65	80	51
March	65	78	58
April	73	84	61
May	78	88	68
June	82	92	68
July	80	88	72
August	77	85	64
September	71	82	60
October	66	80	51
November	63	78	50
December	61	79	49
Average	70	..	..
Extremes .. ..	..	92	49

One has to remember that this is not humidity for a few minutes only, but is humidity for a more or less prolonged period—several hours, for instance. The humidity in a building like this might not be as high as outside, but I do not know where those records were taken. There has been no institute at Hobart for the reason that there has been no accommodation for one. I think that the more we can get our officers to study and make themselves efficient, the more the public service will benefit. I am glad to say that the officers are embracing the opportunity afforded to them. We are getting some real smart men trained in the institute and in the technical colleges. As you know, in Sydney the mechanical work is not done in the institute; it is done at a technical college. In Melbourne, however, it is done at the institute. It is necessary to train the men, but whether it should be done at a technical college or in a departmental institute, I cannot say. I think that the institutes have added to the contentment and attractiveness of the service. I would not hesitate in the matter of trying to improve the welfare of my staff in every way. I think the Postal Department should provide these facilities. If the second floor of the building at Hobart were partly occupied by another Government department, we should have to see that the work done was of the usual clerical type. Obviously, we could not have any manufacturing or anything like that going on. The partitions would be sufficient to exclude any reasonable sound. I do not think there will be much room available on the second floor with the repeater and carrier-wave apparatus to be accommodated there. In fact, I do not think there will be much space available in the building, except on the ground floor, where we might find room for other than the exchange staff.

91. *To Mr. McGrath.*—The height of the floors will be reduced by 14 inches. Mr. Murdoch told me that the saving to be effected would not be proportionate to

the reduced height because of the additional cost of the foundations. A lot of the land will not be built on. We estimate that the requirements of Hobart will be fully met by the exchange for the next twenty years. We shall not require the balance of the land for exchange purposes for at least 40 years.

92. *To Mr. Gregory.*—The cable well will be a tunnel underneath the ground floor. It is true that the storage room and material-test room will occupy 1,376 square feet, representing 2s. a square foot, which is the estimated cost of the building, an annual rental of £120. We could make portion of that space available for other purposes. We cannot carry the heavy batteries over the cable well. That portion of the floor in the battery room has to be raised occasionally to enable the mechanics to get into the cable well. We could not store heavy material on the first floor in the space that may not be used during the next fifteen years for automatic equipment.

(*Taken at Melbourne.*)

THURSDAY, 13TH MAY, 1926.

Present:

Mr. MACKAY, Chairman

Senator Barnes	Mr. Gregory
Senator Reid	Mr. Lacey
Mr. Cook	Mr. McGrath.

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

93. *To the Chairman.*—The Committee will remember that in Hobart, after having examined the site and made inquiries locally, I suggested that it might be desirable to erect a building of exposed brickwork rather than one where the brickwork would be covered with cement plaster. I undertook also to consider the possibility of lowering the height of the building by substituting concrete floors of a different design, eliminating the beams. By doing so the same effective height would be obtainable in each floor, the ceilings of which would present an unbroken appearance, excepting just over the stanchions where a concrete plate would be introduced to take the excessive shear that characterizes this form of construction. That necessitated a re-arrangement of the stanchions, for the reason that the original plan provided for spans of 32 feet, whereas the altered construction does not permit of spans of more than 26 feet. Having considered all these matters, I have found that by a re-arrangement of the stanchions, providing for spans of not more than 26 feet it was possible to do away with the beams without increasing the number of stanchions. I then had to consider whether such re-arrangement would suit the electrical engineers of the Postmaster-General's Department. Both systems are equally safe, and the cost would be about the same. By eliminating the beams the effective height of the rooms would be the same, although the total height of the building would be about 6 feet less. I now recommend the slab construction in preference to the beam system. The natural lighting from the windows would not be affected. It is not unusual to employ the cantilever principle in buildings of several stories. We have used it in buildings higher than the one proposed. There is no sacrifice of strength in the proposed departure from the original type of construction. That must always be the first consideration. The floors, instead of being 4½ inches thick as in the original proposal, would under the new system be 9½ inches or 9¾ inches thick, but the effective height of the rooms would not be

lessened. By eliminating the beams and reducing the height of the building the cost should be lessened, but, unfortunately, additional expenditure will be encountered in connexion with the foundations. In preparing our estimate we assumed that a good bearing foundation would be obtainable at an average depth of about 3 feet but shafts which have been sunk show that not until a depth of about 10 ft. 6 in. is reached is there a stratification on which I would care to place the corner of the building. I do not know what kind of foundation has been found in the other holes which were being sunk when I left Hobart. Fortunately, the position is not so bad as the figures indicate, because, in any case, the cable tunnels would necessitate deep foundations in that position. The walls of the building would not go down to that depth. The stanchions would have to go down to that foundation but the walls would be carried on beams between the piers. The walls of the telephone tunnel would have to go down to the depth required by the Postmaster-General's engineers, and the walls surrounding the stairs and the lifts would have to go to the bottom. The cable well will be covered at the floor level by movable sections of flooring. The altered arrangement of the stanchions has necessitated a rearrangement on each floor. I think that the arrangement under the altered scheme will be, perhaps, better than in the original scheme. The social and lecture hall is now designed to admit of the library and reading room being added to it should occasion arise. Larger classrooms are also possible under the new arrangement. The billiard room will be a little smaller, but still large enough for two tables. The lounge room and the luncheon room will be one room, larger than either room in the original plan, but smaller than the two together. The rest room for the female employees will be on the second floor. All the employees will use the same luncheon room. I suggest that instead of having a brick building covered with cement plaster an honest brick building be constructed. That is the desire of the people of Hobart, who also desire to employ some stonework in the building. That, I think, can be done without exceeding the estimate or increasing the time required for construction. Excellent bricks are obtainable. The work should be completed in about fifteen months after a contract is let. That will suit the convenience of the Postmaster-General's Department. The building is designed to meet the requirements of the department for the next twenty years. In the meantime, it might be possible to house some other department in the building. At this juncture I should hesitate to recommend the construction of a building to house all the Commonwealth officers now scattered throughout Hobart in different buildings. Rents at Hobart are lower than in the other capital cities. Were all the Commonwealth departments to be housed in one building, the result would be to create empty premises in the buildings now occupied, and to add to the depression which already exists in Hobart. At present Hobart is overbuilt, and I do not recommend that that condition be accentuated. At the same time, it should be possible to construct a building to house all the Commonwealth departments in Hobart at a cost not exceeding what is now paid in rent.

94. *To Senator Barnes.*—The social and lecture room under the amended plan will be 54 feet by 23 feet in place of a room 42 feet by 31 feet in the original plan. The previous plan provided for class rooms 31 feet by 18 feet, 23 feet by 18 feet, and 24 feet by 18 feet. These will now be 31 feet by 26 feet, 27 feet by 24 feet, and 26 feet by 24 feet respectively. The billiard room in the original plan was 47 feet by 18 feet. The new plan provides for a room 31 feet by 28 feet.

95. *To Mr. Cook.*—Some of the saving consequent on the lowering of the building will be absorbed by

the extra cost of foundations. While a building finished in brick and stone would cost more than one finished in cement, I do not anticipate that the estimate for the building would be exceeded by the alteration. There is keenness among the builders in Hobart to obtain work, and we may reasonably expect favorable tenders. Another factor is that the workmen of Hobart are more active than those in the other capital cities. In some respects the new plan is an improvement on the old one. Officers of the Postmaster-General's Department who have studied the plan are satisfied with it. Hobart bricks are of good quality, and better than those obtainable in some of the other capital cities. A building finished in Hobart bricks would be quite satisfactory. The department could commence the construction of the building within three months after approval of it.

96. *To Mr. Gregory.*—I am in favour of reducing the height of the building, seeing that it can be done economically. The plan is a little more lavish than in the case of other automatic telephone exchanges, with the possible exception of the Brisbane Exchange. In the past the machinery has been somewhat crowded. It should be possible to place the department in the building at a cost of from 2s. to 2s. 3d. per square foot per annum. I agree that it might be advisable to erect a less expensive building for the accommodation of stores, and to utilize for other purposes that portion of the building proposed to be used as a storeroom. I do not think that the occupation by another department of that portion of the building proposed to be used for storage purposes would add to the fire risk. It would depend on the nature of the material stored. Metal spare parts would not cause any danger from fire but the storage of inflammable goods would add to the fire risk. I think that it would be a good idea to store material on another portion of the property, and to utilize the space in the main building for the accommodation of some other department. It might be advisable to call for tenders for the main building only, leaving the subdivision to be tendered for later. That would give the Postmaster-General's Department an opportunity to study its requirements. For the partitions it is proposed to use Tasmanian oak 1 inch thick. Such partitions could be placed to suit requirements without affecting the structure of the building. The size of the trunk telephone room appears to be somewhat large for about sixteen employees. It might be possible to accommodate the staff in less area than the department now proposes, and for a time, at least, to use the space for the accommodation of another department. The partitions on the second and third floors could be altered to meet requirements.

97. *To Senator Reid.*—The original plan provided for beam ceilings for the reason that the length of the spans was in excess of that considered safe with slab construction. By a re-arrangement of the position of the stanchions the span, which in the original plan was 32 feet, has been reduced to 26 ft. 6 in., which is just about the limit unless beams are used. The elimination of the beams will add to the appearance of the rooms as well as to their cleanliness. A well-constructed brick building is, in my opinion, better than a brick building covered with cement. A brick building would be worthy of the site selected in Hobart. The Postmaster-General's Department regards its telephone service as a business proposition, and does not want to be handicapped by unnecessarily costly buildings. The depth of the cable well is a matter for the officers of the Postmaster-General's Department. I should say that the cables would be 6 or 7 feet beneath the surface. The roof of the tunnel inside the building will be covered with movable slabs. If rents in Hobart were to increase considerably, it might be advisable to extend the building,

though I think it would be injudicious to do so now. Timber partitions between the various rooms on the ground floor will be quite satisfactory.

98. *To Mr. McGrath.*—The lowering of the building should reduce the cost of the building by about £3,000. The height of the postal institute room under the new arrangement will be about 5 inches less than formerly. There will be about 7,600 square feet on each floor. An additional story would cost about £9,000 or £10,000. The erection of an additional story would probably result in a saving to the Government, but it would mean that the premises now occupied would remain empty. The removal of departments involves considerable expense. If the building were to be extended I should not recommend that it be done vertically. By accommodating the staff of the Postmaster-General's Department in less space than is now proposed, it should be possible to find room for another department in the building. That is a matter which should be gone into carefully.

99. *To Mr. Lacey.*—The reduction in the height of the building will not affect its architectural beauty.

The construction of an additional story depends on the strength of the stanchions rather than on the strength of the walls. In buildings of this type the stanchions bear the whole of the weight. The walls are really weather curtains. The strengthening of the stanchions to enable another story to be added would not add considerably to the expense. I doubt if the requirements of Hobart during the next 50 years will necessitate an additional story. A vertical addition to a building is an economical way of obtaining additional floor space but in a telephone exchange, where the elimination of dust is of importance, additions of this kind are not desirable. I think that any extension of the building should be over the vacant land. I have not yet had time to prepare an estimate of the difference between the cost of a building finished in plaster and one finished in sandstone and brick.

The witness withdrew.

The Committee adjourned.