PARLIAMENTARY STANDING COMMITTEE ON
PUBLIC WORKS.

REPORT

relating to the proposed

erection of a

GOVERNMENT PRINTING OFFICE

at

CANBERRA, A.C.T.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

R E P O R T.

GOVERNMENT PRINTING OFFICE.

AT.

C A N B E R R A. A.C.T.

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GOVERNMENT PRINTING OFFICE, CANBERRA.

C O N T E N T S

COMMONWEALTH OF AUSTRALIA.

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

GOVERNMENT PRINTING OFFICE.
CANBERRA.

R E P O R T.

The Parliamentary Standing Committee on Public Works, to which the House of Representatives referred for investigation and report the question of the construction of a new Government Printing Office, at Canberra, has the honour to report as follows:-

S E C T I O N I - INTRODUCTION.

Historical.

1. From Federation in 1901 until the transfer of the Parliament to Canberra in 1927, the Parliament of the Commonwealth held its sittings in Melbourne, Victoria. By arrangement with the State Parliament, the Victorian Government Printer acted as both Commonwealth and State Government Printer, and various items of printing machinery and equipment used by him in Melbourne were financed from Commonwealth Revenue.

2. With the transfer of the Commonwealth Parliament to Canberra, a Government Printing Office was established at Kingston, A.C.T., where new equipment had been installed, and second-hand machines moved from the State Printing Office, Melbourne. For the first two years the Victorian State Printer continued to occupy the dual office of Commonwealth and State Government Printer, until the appointment of a Commonwealth Government Printer in 1929. In 1924 an investigation was made into the proposal to establish a Printing Office in Canberra. It was decided that a temporary building of some 20,000 sq. ft. should be erected at Kingston, and "occupied for about three years for printing purposes and used thereafter as a store". It was suggested that the staff should be transferred from Melbourne during the Parliamentary session, and returned to Melbourne for absorption in the general printing work when the Commonwealth Parliament was not sitting. As the temporary building was to be more than a mile away from Parliament House the disability was to be overcome by the establishment of a pneumatic tube service, as it is often necessary for service to be rendered to the legislature with the greatest expedition. It was strongly urged at this time that the permanent printing office should form part of the Adminis-

trative Block as soon as it was built.

3. By the close of 1926 the temporary brick store had been completed, at a cost of £16,000, and the installation of printing machinery, valued at £30,000 was well advanced. The first 24 tradesmen were transferred from Melbourne in June, 1927.

4. In 1926 it was decided that two large administrative buildings should be erected in the Government Triangle, the permanent Government Printing Office to be housed in the one on the western side, near the Hotel Canberra. Work was commenced on the Eastern Administrative Building, but, owing to financial stringency, the Government decided to postpone further construction. The world-wide depression, followed by the second world war again forced postponement, and an adequate Government Printing Office remains in to this day in its "temporary" location at Kingston. During this period some additions and a few small buildings were added to the "temporary" establishment, increasing the accommodation to 75,538 sq. ft.

5. A considerable quantity of equipment has been installed, and both staff and production have soared, until there has developed an acute shortage of working space, retarding production and causing dissatisfaction, in spite of resolute efforts to devise workable expedients.

S E C T I O N II - THE PRESENT PROPOSAL.

The Building:

6. The proposed Government Printing Office, as referred to the Committee, comprises a building of single floor design, with natural top lighting, capable of future expansion without disruption to printing processes installed at the first stage of development. The main production area has a frontage to Wentworth Avenue of 521 ft., with a depth of 446 ft., with warehouse and stores areas at the rear 381 ft. by 160 ft. An attached two-storey Administrative Block has a frontage to Wentworth Avenue of 40 ft. and a depth of 280 ft. along Cunningham Street. There are also parking areas in the front and at the side of the building, while a rail siding and goods access are provided at the rear.

The Cost.

7. The estimated cost of the project as referred to the Committee, based upon prices ruling at April, 1959, showed a total cost of £2,800,000.

By adopting special stage constructional methods it is estimated that the building schedule for installation of printing machinery by January 1961 can be met.

S E C T I O N III - THE COMMITTEE'S INVESTIGATIONS.

General.

8. The Committee studied the proposal and took evidence from the officials of the Department of Works responsible for preparation of the proposal and submission to the Committee. An inspection was made of the present Government Printing establishment at Kingston, as well as the proposed site for the new building. A visit of inspection was made to the Government Printing Office in Sydney, where the State Government Printer gave evidence explaining to the Committee the details and planning of the modern multi-storey building recently put into use in Sydney.

9. Plans and models of the building were made available for the information of the Committee, and a great deal of further evidence was taken from the present Commonwealth Government Printer and officials of other departments, and independent experts in a position to give the Committee information which would be helpful to its inquiry.

Need for the Building.

10. In seeking to establish the necessity for a major project of this nature the Committee was assisted greatly by the wealth of detail, and the information submitted by the Government Printer, emphasizing the growth of the establishment during past years, and stressing the demands of the future.

11. Present Overcrowded Conditions.- During the inspection of the present printing establishment the Committee was amply impressed with the evidence of efforts which have been made to utilise all available space, and to improvise locations for machinery, stores, amenities and essential activities in the various make-shift buildings comprising the organisation at the present time. In his evidence the Government Printer pointed out that, among other things, . . much of the recent equipment has been housed in areas formerly used to store bulk paper and work-in-progress. Consequently there is an acute shortage of working space; machines are dispersed throughout the

buildings, stocks of bulk paper are stored in widely scattered areas in Canberra; publications are being damaged because of the lack of suitable storage, and platforms containing work-in-progress are unavoidably left standing for weeks in corridors and passage-ways.

12. Some slight relief has been sought by storing approximately 500 bales of paper in the basement of the Administrative Building near Parliament House and in the Department of Works Stores at Kingston, but this number is inconsequential in an annual intake of over 5,000 bales and reels of paper. In addition, any expectation of retaining this temporary accommodation for a long period must be discounted owing to the projected transfer to Canberra of further Defence personnel and Department from Melbourne.

13. Present Amenities.- It is impracticable to provide within the existing buildings the staff amenities usually available to employees in a modern establishment. The present facilities are most inadequate, and the unions concerned have had to display considerable patience with the essential delays in meeting their reasonable requests for improved conditions. In the circumstances the absence of suitable amenities reflects adversely both on the staff morale and the productive efficiency, and emphasizes the necessity for inclusion of adequate space in the new building.

14. Alterations, Maintenance and Repairs. - If a new building is not provided in the very near future there are many items of expenditure which will have to be faced, in alterations to the present buildings, renovations, additions, and heavy maintenance. These items were discussed in detail by the Government Printer, who showed that they represent an immediate expenditure of over £200,000 on the buildings in the area at present set aside at Kingston for the Printing Office. Even this expenditure would not relieve the congestion in the Letterpress Branch, which cannot be redesigned without substantial alterations. Another £500,000 could easily be spent on such alterations and still not result in a building designed for use as a printing office; there would always remain the waste and inefficiency of an unplanned unit on an unsuitable site.

Future Expansion.

15. Foremost among the reasons advanced for the construction of a new Government Printing Office is the urgent need for accommodation to meet the

increasing printing requirements of the Commonwealth Parliament and Government Departments located in the National Capital. Canberra is developing rapidly as the administrative centre of Australia, and departmental transfers envisaged within the next few years will place much greater demands on the existing facilities. The advance in designs of modern machinery; new processes being developed; and modern inventions making it possible to co-ordinate much of the work at present being done individually in various Government Departments, are all placing increasing pressure upon the already overtaxed space available. There is no doubt also, that such demands will continue to increase from day to day with the growth of the Canberra population, and scientific development of the many complex printing methods at present in use.

Summary of Needs.

16. The decrepit and obsolescent state of most of the present buildings; the overcrowded conditions under which huge, intricate machines have to be operated; and the necessity for immediate expansion with provision for the future, were impressed upon the Committee. The inescapable facts must be faced, therefore, that, despite the additions made over the past thirty years, the existing buildings have outgrown their usefulness as a Printing Office, and the site is too restricted for adequate development. The Committee, therefore, agrees that there is an urgent need for the establishment of a new Government Printing Office with adequate room for future expansion.

The Site.

17. The site for the proposal at Section 7, Kingston, is bounded on the south-west by Wentworth Avenue, on the south-east by Cunningham Street, on the north-east by the branch railway line to the Government Stores area, and on the north-west by the Technical School buildings and the Transport Depot. The shape is irregular, and the precise locations of the north-east and the north-west boundaries have not yet been finalised by the National Capital Development Commission. The approximate area will be in the vicinity of 462,000 square feet, of which 313,000 square feet will be covered by the new building. The frontage to Wentworth Avenue is 510 feet, and it is 614 feet to Cunningham Street.

18. The site has permitted the selection of a floor level at the 1840 contour level, to provide access from the rail siding, and to maintain a safety clearance above flood levels when the Canberra Lakes scheme is implemented, which it is anticipated may produce flood levels up to the 1835 contour. It will be possible for foundation construction to be carried down to solid rock.

19. Future Development. It has been planned for future expansion of the establishment to take place in a north easterly direction in a proposed three stage development when increased production warrants an extension of the existing working areas, during a period of 25 years for which the printing activities are being organised. In addition to the 10 acres for the original site an area of 7½ acres is available for the future expansion referred to.

20. The Committee was concerned that such a large area of land in this section close to the centre of the City, should have to be set aside for one project, so early in the developmental life of Canberra. It was apparent from the evidence, submitted by the National Capital Development Commission on this matter, that detailed planning of parts of the City is almost in its infancy. While some large tracts of land have been set aside to satisfy an overall estimation of industrial requirements for the future, only a certain amount of distinction has been made between heavy and light industry. The Kingston area will probably be reserved as a predominantly Government area, for such industries as transport and the Printing Office.

21. There is very little indication of forward planning for any other varieties of light or service industries for which a demand might possibly arise in the future, when the City matures, and developing scientific methods could conceivably require concentration of other buildings in this useful vicinity. The National Capital Development Commission has no doubt had its hand full in general planning up to this stage, but the Committee was concerned that this major specific project had been submitted before the firm decision had been reached on the complete site boundaries for the Printing Office. Further information was sought from the Commission in relation to possible developments in the area which might affect the Government Printing Office in future years, more particularly at the rear

of the site, where boundaries are not yet determined. It was stated that, to some extent the future of this area depends on the level of the embankment of the proposed lake, when the East Basin is formed, but a lot of the land there is at present undefined. The Committee was assured, however, that, sufficient land can be provided to meet any foreseeable requirements.

22. The possibility of saving some of the land by the adoption of a multi-storey type of construction is dealt with in another section of this Report, where it is indicated that the same area set aside for the site would be required whether construction by single storey, or multi-storey method is used.

23. The Committee is not completely happy to have to recommend a site whose boundaries are as yet not determined, but it accepts the assurance of the National Capital Development Commission that adequate land will be available for future requirement in this area. It therefore recommends that the site be adopted, on the understanding that the National Capital Development Commission will plan suitable areas adjacent to the building towards the lake, and that development in the vicinity will be restricted to activities which will be in harmony with the Government Printing Office to be established in this prominent situation.

The Building.

24. General. The first impression gained by a study of the plans and the models is of the tremendous size of the building. It is to cover an area of approximately 10 acres with total floor area of 360,000 sq. ft. A further 7½ acres is reserved for future additions to the building. The general layout provided for an extensive single storey production area, divided into a number of specific process locations, and, in addition, a two-storey Administrative Block appropriately joined to the main building to facilitate efficient working of the establishment, together with adequate supervision and security measures.

25. The Main Production Areas. The plans provide for substantial open spaces for the production areas, free from structural columns, and for a smaller enclosed area for classified printing work. Special steps have been taken to provide natural light to all critical areas, with the exclusion of actual sunlight.

Full details of space planned for the numerous sections involved in the production of the establishment are set out in the evidence given by the Government Printer. Provision is made for composing, jobbing, readers and teletype perforators, pressroom, bindery, lithography and offset, security, first aid, and amenities. The Publications Block includes part of the main Production Building as well as one of the links to the Administrative Block.

26. The Services Block.-At the rear of the main building is located the smaller building which will house despatch and baling, engineers, warehouse, bulk and other stores, garage and covered area. There will also be a gravelled area for vehicles, and the railway siding allowing for receipt and despatch of goods into the building.

27. Administrative Block. The two-storey Administrative Block is designed adjacent to the main production area and is located along the Cunningham Street frontage. It is linked at two points, the first containing the factory staff entrance, with the planning and designing section having access both to the administrative section and the production area, the second link serving the sales section, and incorporating the entrance lobby for all executive administrative staff. The Ground Floor of this block also contains the Kitchen, Cafeteria, and visual education theatre. The area enclosed between the Administrative Block, Production area and the two end links is paved and will contain an ornamental pool.

28. From the main lobby access is provided via a stair to the main executive offices at first floor level. This floor accommodates conference room, offices for Government Printer and Assistant Government Printers, accountant, secretaries and staff superintendents. There is also a large general office, with strong room, filing, and storage areas. A Library is located at the far end, adjacent to the Planning and Design Section, where a second stairway connects this area with the Cunningham Street entrance.

29. The link forming the Sales Department is on the Wentworth Avenue frontage, and accommodation in this self-contained department includes areas for storage of printed material, their display and sale to the public, and bulk despatch by motor vehicle from Wentworth Avenue.

30. The whole of this extensive printing establishment has been planned in great detail after special studies by the Government Printer and the

Chief of Preliminary Planning for the Department of Works, both of whom visited many overseas printing establishments of varying designs and lay-outs, with the object of planning the most appropriate and modern project for Canberra.

Use of Space.

31. In view of the particularly extensive nature of the proposal, the Committee paid special attention to the methods adopted in planning the use of space, and the necessity for utilization of the land in this locality for such a huge building. In its inspections the Committee noted the multiplicity of intricate machines and processes, as well as the cramped conditions under which the present organisation is working. In connection with the planning for the new building careful inquiry was made into the methods employed in determining the total space requirements. The evidence shows that careful study and consideration have been given to the question of economy in the use of the space. A close study of time and motion, as well as areas, for each piece of equipment has been made in an endeavour to find the most economical means of location, the shortest routes, and the greatest savings of footsteps of personnel engaged on the various tasks. A special lay-out model was prepared for use by the Committee in studying this aspect of the proposal, and the Committee is convinced that the lay-out has been well planned, both for efficient working and for economical use of floor space.

Design.

32. Design approach.- In order to decide upon the functional lay-out and desired work flow for the new Printing Office, the Government Printer undertook an overseas tour in order to inspect recently constructed printing establishments in many countries, and to note the latest production methods. In addition, the Chief of Preliminary Planning of the Department of Works also inspected various printing establishments abroad, with particular reference to single and multi-storey construction; the critical aspect of natural lighting, security precautions, staff flow, amenities and recreation facilities, and many other factors.

33. As a result of these extensive studies it was considered that,

where sufficient land was available, the trend was for single floor design. The design, therefore, is for single floor planning with natural top lighting, capable of future expansion without disruption to printing processes installed at this first stage of development.

34. Design appreciation. It was recognised at the outset that this building was to be of a predominantly functional character, of factory proportions and economical design. In view of the prominent location of this building, however, fronting the city access from Queanbeyan, and of the fact that this will be a permanent building in the National Capital, all external materials chosen are permanent and aesthetically harmonious. Facade materials will consist of selected face bricks of contrasting colours to the factory and the Administrative blocks. The model illustrates a facade to Wentworth Avenue of extensive proportions. Its somewhat modern appearance is appropriate to the demands for an economical design, while the vertical lines as viewed from both the Wentworth Avenue and Cunningham Street aspects create a rather effective impression of appropriate dignity.

Construction.

35. The major factory unit has been designed as a steel framed structure providing an 80' by 80' grid to supply the necessary open areas for immediate and future locations of printing machines. The process floors have been designed to take a loading of 200 lbs. to the square foot, with a loading of 600 lbs. to the square foot for the paper store.

36. Roof construction. The steel framing consists of principal roof trusses at 80' centres, with a grid of secondary trusses at 20' centres over practically the whole of the area. A light roof framing above has been specially planned to form a series of ridges running across the full width of the building. Each face of the roof slopes contains skylights with individual wells fitted with internal baffles to prevent sunlight penetration, whilst admitting natural light. Internally the ceilings will present a flush appearance punctured by a series of shafts leading to the skylights.

37. Natural Lighting.

Before a final selection was made of the proposed roof lighting system, a considerable number of variants were considered by the planners and small models were studied on the Helidon, a method of producing the

the angle and travel of the sun. A large scale model was then tested by the artificial sky method by the Commonwealth Experimental Building Station at Ryde, Sydney, as this it the first time such a roof has been used in Australia. On the basis of an acceptable standard of 20 lumens the results of this method proved to be most efficient.

38. The Committee was impressed with the care taken to achieve optimum natural lighting conditions, required for some of the processes in the printing work, but, following a visit to the new New South Wales Government Printing Office in Sydney, where particular attention has been paid to obtaining the best light conditions with scientific studies of artificial lighting, further evidence was sought on the question. A certain amount of conflicting opinion was encountered in connection with the advantages and disadvantages of both the natural and artificial lighting systems. Further inquiry also emphasized the fact that the cost of providing the special roof lighting structure proposed had added £100,000 to the cost of the roof structure, as well as £108,000 in additional provision for air conditioning, made necessary by the extra heat load associated with the provision of this type of roof for maximum natural lighting.

39. In amplification of the reasons for the final choice of the natural lighting system, the planners submitted a resume of the research carried out on this question. It was pointed out that high class colour printing, with its necessity for accurate colour matching of inks and copy, is greatly assisted by natural daylight conditions, and it is possible to obtain in the Canberra climate, conditions greatly in ecess of the 20 lumens regarded as the acceptable standard.

40. The possibility of the adoption of saw-tooth method of roof construction as well as other methods, was studied, but it is recognised that, in this latitude the sun throws light into windows with a southerly aspect at certain seasons and times of the day, necessitating the use of louvres or other protection which would seriously reduce the light.

41. The psychological aspect was investigated both in Australia and in overseas establishments, and it is considered that windowless factories have an oppressive physical effect on the staff.

42. The financial implications were important in weighing the merits of the proposed natural lighting proposal. An economic analysis was made of each production area, and costs were arrived at under the several headings, both in favour of the system and against it. The net result, in simple terms, was that the specially designed roof for this natural lighting requirement would cost £100,000 more than a normal roof from the structural point of view, as well as £108,000 for additional air-conditioning equipment. The immediate reaction to these large sums was to question whether the results to be achieved by it were worth the expenditure involved, and the Committee pursued the investigation along this line.

43. It was finally stated that the heavy cost of this feature of the building had been carefully studied by the Department of Works and the Treasury, in their efforts to plan the appropriate building with due regard to economy. It was also pointed out that the Government Printer is required to run the establishment on a sound commercial basis, and he produced figures to show that he has been able to do so in the past. As it will also be his duty to do so in the future, he has paid special regard to keeping the capital cost to a minimum. He states with conviction that, in spite of the heavy cost of the natural lighting proposal, he is satisfied that it will result in the achievement of technical requirements of the industry, improvement in staff morale, increase in output, and an improvement in all-round efficiency. It is expected that the result will return a handsome profit on the investment of over £200,000, involved in this matter.

44. After weighing all the evidence on this matter the Committee accepts the Canberra Government Printer's contention that the heavy cost of the special roof structure to provide natural lighting conditions for the printing establishment will be justified, and recommends that it be approved as submitted.

45. Work-flow and form of Construction.- The construction of the building has for its chief aim the achievement of optimum work-flow in the production areas.

46. Single-storey construction.- In the submission it was stated that the single floor construction is based on the latest work-flow practices adopted overseas, where excellent examples of modern lay-out were studied, though

other methods were also examined critically in order to make the best comparisons. It was confidently stated to the Committee that, if the project is constructed along the lines of the original submission, the establishment will be at least equal if not superior to the best seen overseas.

47. Radial work-flow.- A new concept in printing factory design is the radial work-flow, but following inspection and examination of several examples, particularly in the United States of America, this type of structure was not recommended, as it is stated to be frustrating in lay-out and unsuitable for the wide variety of processes used in Canberra.

48. Multi-storey construction.-While inspecting the New South Wales Government Printing Office, the Committee noted the method of work flow from floor to floor in this multi-storey building, in order to compare this system with the single floor design selected for the Canberra project. Evidence was taken from the New South Wales Government Printer, who is strongly in favour of the multi-storey planning. In previous evidence it had been stated that, while a number of the principal Government Printing establishments overseas were of multi-storey type, this form of construction was mainly dictated by limitation of site in the thickly populated cities concerned.

49. As the building for the Canberra project is to occupy such a large area of land some members of the Committee favoured the adoption of the multi-storey construction, in order to conserve part of the extensive site for future years. However, it was stated in evidence, that if a building in multi-storey form were to be built to accommodate the 800 people anticipated for the single storey plans, it would still require the 10 acre site., as traffic capacity and population density must be related to the total employment figure proposed.

50. A great deal of consideration was given to this aspect of the project, and the Committee weighed the various factors, submitted in the evidence bearing upon the point involved. The decision of the Committee is shown in the following extract from the Minutes of Proceedings of the Committee:-

Mr. Dean moved - That the single floor design proposed in the departmental submission be agreed to.

The Motion was seconded by Senator Anderson.

Discussion ensued.

The Committee divided.

Ayes (7)	Noes (1)
Senator Anderson. Senator Maher. Senator O'Byrne, Mr. Brimblecombe. Mr. Dean. Mr. Fairhall. Mr. Griffiths.	Mr. McIvor.

And so it was resolved in the affirmative.

7. Accommodation.

51. The building has been designed to cater for staffing figures providing for expansion of staff and equipment up to 1984, that is a further 25 years, when it is anticipated that the building as designed will be fully manned. The total staff to be accommodated on completion of the project will be approximately 500, increasing to approximately 800, as required by production targets. In the production areas it was decided to allow for approximately 25 per cent increase in space for efficient future expansion.

52. The total area of 360,000 sq. ft. was worked out section by section, each area being provided with its proportionate space for future development of production for 25 years, and the departments have been grouped so as to maintain the sequential contact that is necessary for economical machining and other printing operations.

53. After examining the extensive details submitted in the evidence regarding the amount of accommodation essential for efficient operation, and as a result of study of the layout model, together with the physical inspection of the present establishment, the Committee is satisfied that the provision planned for present and future accommodation requirements have been thoroughly prepared, and are appropriate for the new project.

Amenities.

54. The Committee, having noted the difficulties being experienced under present conditions in providing reasonable amenities in the various sections of the organisation, as referred to earlier in this Report, studied the provisions now proposed. In the planning of the new building a good deal of care has been taken to provide adequate amenities, and areas set aside for

this purpose include 7,300 sq. ft. for food services; 2,000 sq. ft. for visual education, and 700 sq. ft. for a technical library.

55. Cafeteria. - The cafeteria is to cater for a simple hot meal and light refreshments at any hour during the day, as well as a restricted service for the night staff at the 10.30 p.m. and 7.30 a.m. meal breaks. It is intended that the cafeteria and the adjoining enclosed court year will provide ideal seating facilities for a staff requiring rest from high-pressure production. Three rooms have been planned in the main production area for tea points to minimise staff movements during the ten-minute tea breaks.

56. First-aid Room. - The first-aid room is located in the centre of the building, as most patients are treated without leaving the building. The room is located on the central corridor, however, to allow rapid evacuation of serious cases to the Canberra Hospital.

57. Change Rooms and Lockers. - Protective clothing is provided by the management for staff employed in certain sections, such as stereotyping and smelting, but the majority of employees are expected to supply their own proper and safe working apparel. Change rooms are therefore provided near the main corridors, and standard steel lockers are to be provided for each member of the staff.

58. Visual training. - The availability of skilled staff depends largely upon the training of apprentices for the work. At present the apprentices go to the Canberra Technical College under the supervision of teacher from the Printing Office. Improvements in the Graphic Arts in the last five years have been tremendous; and it is necessary to keep the staff, particularly the boys and younger members, abreast of the latest developments. This can be done most effectively by visual education, now that it is possible to obtain good films and prepared lectures.

59. Kitchen. - Study of the plans revealed that the Kitchen section of the Administrative block occupies a central position on the ground floor of the block, with direct entry to Cunningham Street, while the Visual education theatre adjoins at the rear. This situation for the kitchen appears to be inconvenient, in that delivery of goods and provisions of all kinds will have to be made across the footpath used by the hundreds of staff who will

have to make their way round to the staff entrance at the rear of the building several times a day. There is also no provision for a store yard to facilitate temporary holding of boxes, and bulk packaging, and also for clearance of wet and dry garbage.

60. It should not be difficult to replan this section of the building to place the kitchen at the rear, with suitable storage yard, thus allowing staff to enter the lobby by way of the paved area. This would also have the advantage of reducing by half the long walk from the front of the building which the staff would otherwise have to traverse in inclement weather. The Committee recommends that, in the next stage of planning further thought should be given to redesigning this portion of the building to place the Kitchen in a more convenient position.

Air Conditioning.

61. Included in the proposal for the building was provision for air-conditioning, ventilating and heating the various parts of the establishment. It was proposed to instal a boiler plant of 8,000,000 B.T.Us per hour capacity, and a plant of a total capacity of 750 tons of refrigeration. This would consist of refrigeration compressors, cooling tower, pipework, controls, and the necessary auxiliaries.

62. In connection with the mechanical equipment for the building the services of an eminent firm of consultants had been engaged, in order that special attention might be given to this section of the planning. This was particularly desirable owing to the extensive nature of the building and the complicated problems involved, both in connection with the printing processes, and the effect of the special roof structure for natural lighting.

63. Detailed evidence was presented to the Committee regarding the study and research which had been undertaken in this matter, and a diagram was produced with the plans, showing the particular treatment recommended for the various sections of the process areas, and the other parts of the building. Certain production areas were stipulated where it was considered that full air conditioning will be essential; for other sections it was suggested as desirable, while other forms of heating and ventilating were recommended

for the remaining portions of the building.

64. Cost. - Figures produced for the various items showed that the estimated costs included Air conditioning £367,000, heating and ventilation £55,000, boiler equipment £28,000, air compressor £4,000 plus contingencies. In addition, the annual charges indicated estimates of £52,000 per annum for interest and depreciation, attendance and maintenance, electricity and fuel.

65. The Committee was seriously concerned at the magnitude of these figures for air conditioning the building, and searching inquiry was made into the necessity for all this equipment. Evidence was sought with the object of confirming whether these provisions were essential, and with the hope of at least reducing the extensive areas to be treated - thus minimising the cost.

66. After taking the evidence of experts in printing work and the requirements for quality production work, and from air-conditioning experts with knowledge of the conditions, the Committee considered area after area very critically. A comparison was called for between the costs of full air conditioning as against ventilation without refrigeration in the various areas concerned, and an estimate was made of the cost per employee in respect of the benefit of air-conditioning over ventilation. The amount quoted was 8.8 shillings, which represents 3.7% of the weekly wage for the additional cost of air-conditioning above the cost of ventilation.

67. Economic application. - In addition to the necessity for air conditioning in various production areas, where critical conditions are essential for quality production, there are a number of other factors which affect the decision regarding air-conditioning. These include comfort of operatives, its direct effect on efficient work and volume of production; and the incentive of attractive working conditions. The Committee has given a great deal of study to this aspect of the matter.

68. The evidence shows that recent reports on research connected with control costs of air-conditioned as against naturally ventilated areas, show an increase of 9.5% in production, a decrease of 2.5% in absenteeism and a decrease of 0.9% in errors. It is not necessary to accept these impressive theoretical figures to prove the economic value of air conditioning, as it is pointed out that it only needs an increase of the 3.7% in production, mentioned above, to pay for the air-conditioning in the bindery section, and

somewhat similar figures would apply in other areas. There is little doubt therefore, that an efficient air-conditioning system will be an economic proposition, notwithstanding the high cost.

69. The question of the high capital cost of air conditioning equipment, which arises repeatedly in projects dealt with by the Committee all over Australia in recent times, has given the members a good deal of experience in this work, but it has engendered a mounting conviction in their minds that the huge capital sums involved inflict an aggregate burden of tremendous proportions upon the taxpayer, in spite of the apparent proof of economic soundness of the schemes. It is therefore most important that no stone should be left unturned in an effort to reduce the cost, as well as the heavy maintenance figure, wherever possible.

70. Further research. - As a result of the Committee's concern at the overall capital cost in the general question of air-conditioning, which has affected so many of the recent inquiries, the Committee has requested that a special investigation be made immediately into the possibility of adopting some alternative to the costly equipment at present regarded as essential in the production of satisfactory air conditions. The use of small window unit air-conditioners was canvassed some time ago, but was proved to be of use only in a limited number of cases in some buildings. The Department of Works has now been asked to pursue inquiries into the possibility of using more recently developed equipment referred to as package units, which might have a very definite use in particular circumstances, and could perhaps reduce costs very considerably in the projects now under consideration.

71. The study of all the factors involved has convinced the Committee that air conditioning and other air treatment are essential in different sections of the Canberra Printing Office buildings, and it is recognised that the detailed suggestions included in the proposal have been made after careful evaluation of all the varying requirements. It is recommended, therefore, that air-conditioning and ventilation be approved for the building in the areas proposed by the consultants in this submission.

72. The Committee recommends, however, as hundreds of thousands of pounds are involved here, that the final decision on the method to be used

to achieve the required conditions be reviewed if the investigation into this matter by the Department of Works proves advantageous.

S E C T I O N IV - THE COMMITTEE'S CONCLUSIONS.

73. The following is a list of the Committee's conclusions in summary form only, arrived at after study of the proposal, models, plans, and the evidence involved. The full recommendations are contained in the body of the Report, and may be referred to in the paragraphs quoted at the close of each of the following recommendations:-

(1) There is an urgent need for the new Government Printing Office (Paragraph 16)

(2) The proposed site should be adopted, on the understanding that the National Capital Development Commission will plan suitable development in the vicinity, and restrict activities to those which will be in harmony with the Government Printing Office there. (Paragraph 23)

(3) The lay-out has been well planned, both for efficient working and for economical use of floor space. (Paragraph 27)

(4) The design will create an effective impression of extensive proportions with appropriate dignity. (Paragraph 30)

(5) The Committee is satisfied that the special roof construction to achieve natural lighting is justified. (Paragraph 44.)

(6) The single floor design proposed in the departmental submission should be agreed to. (Paragraph 50.)

(7) Further consideration should be given to the planning of the kitchen section, with a view to giving it more convenient access. (Paragraph 60)

(8) Air-conditioning is recommended in the areas proposed. (Paragraph 71)

(9) The type of air-conditioning plant to be installed should be decided upon when the investigation by the Department of Works is complete (Paragraph 72.)

Office of the Parliamentary Standing Committee on Public Works.
Parliament House. Canberra.
3rd September, 1959.

(Allan Fairhall)
Chairman.